Sakai: Building an Open Source Community

A Retrospective Diary

Version 0.8

Charles Severance

Preface

Writing software that supports teaching, learning and collaboration is far more than just a job. Since teaching and learning are some of the most fundamental human activities, we all have a vested interest in teaching and learning software. Discussions about the design of teaching and learning software can evoke passions from virtually everyone involved in the process. Passions run high and the stakes are high. On most college campuses, the software to support teaching and learning (Blackboard, Moodle, Sakai, etc.) is used more often than any other campus software. Student and teacher lives revolve around the software. A significant outage of a course management system in the last few weeks of class is likely to produce howls of anger from students, teachers, and administrators alike.

Building an open source product and community around the Sakai Learning Management System was far from a mere technical activity. This book is about that journey of making open source software and deriving and changing the rules as to how we would make that software as we went along. It is about software developers, managers, designers, and end users all dropped into a crucible and put under pressure to make something great and do so in record time.

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About the Book

My intention in writing this book is to give a first-person account of the effort and passion that goes into an open source project. I think that society oversimplifies open source as a bunch of altruistic nerds working in their

basements around the world. Open source projects are often as complex, exciting, rich, and stressful as commercial efforts. In some ways, open source is more complex than commercial activities because there are so many moving parts and there is no real "boss" to make final decisions.

Decisions are made based on long discussions that search for the group's consensus position, often with strong passions on all sides. I hope to capture some of the emotion behind the scenes in the Sakai project that was launched in 2004.

Many people participated in the leadership of Sakai and they have their own stories. This book presents my story and perspective as chief architect in the project. Others are likely to have different perspectives on the events I describe.

You can find errata, links to supporting materials, images, videos, and a full timeline of my involvement in Sakai at:

`http://www.dr-chuck.com/sakai-book/`

You can also find me on Twitter as @drchuck. You can add '@drchuck' to a tweet and I will see it. Feel free to send me comments, reviews, typos, factual errors, or any other reaction as you read the book.

Since it takes a village to find and fix my mistakes, I need to thank all of the many people who looked at early versions of the book including:

Brad Wheeler, Glenn Golden, Seth Theriault, Anthony Whyte, Rob Lowden, Lance Speelmon, Craig Counterman, Lois Brooks, Shoji Kajita, Vivie Sinou, Ian Dolphin, John Norman, Ian Boston, Robert Crouchley, Adrian Fish, RJ (Robert) Allan, Stephen Marquard, David Horwitz, Alan Berg, David Barroso, Alexandre Ballesté, Joseph Hardin, Susan Hardin, Mark Norton, Greg Gay, Steve Swinsburg, Joel Greenberg, John Williams, Shawn Mehan, Beth Kirschner, John Leasia, Noah Botimer, Jim Eng, David Haines, Gonzalo Silverio, Matthew Jones, Marc Alier, Eva de Lera, Francesc Santanach Delisau, Lluís Vicent, Pablo Casado Arias, Megan May, Tom Finholt, Jan Posten Day, John Fontaine, George Kroner, Erin Knight, Nathan Gandomi, Andrew Krumm, Nicola Monat-Jacobs, Sam Ottenhoff, Scott Siddall, Kazou Yana, Russell Severance, Richard Wiggins, Judy Matthews, and Mary Miles.

The book was written on a Macintosh using the "vi" editor and formatted using LaTeX. Early drafts of the book were printed on the Espresso Book Machine at the University of Michigan Library with help from Terri Geitgy.

Contents

Chapter 1

Before Sakai

I have been developing computer software since the 1970's. While technology and connectivity have improved greatly since then, in a sense there has been little change in why I love to write software. From the beginning I loved to write software that would surprise and delight the users of that software. The more people who found the software to be helpful, the happier I was. For someone who was a nearly invisible nerd through high school, it was pretty exciting to have an audience of users that waited anxiously for me to announce the next feature to be developed and released. Finally, I mattered to a bunch of people — even if they did not know who I was. Even if I was not so cool as a person, the software I produced was pretty cool.

For those of us close to the emerging Internet and World-Wide-Web between 1985 and 1995, it seemed as though we needed to educate everyone so they could be part of the growing worldwide community connected by the network.

In 1994, East Lansing, Michigan was one of the first communities in the country to rollout high speed 10 Megabit per second cable modems. I helped set up the connection between Michigan State University and the TCI Cable network infrastructure. Based on the friendships that were developed during that project, I was asked to co-host a talk show about the Internet with my good friend and fellow Michigan State employee Richard Wiggins. TCI Cable would produce the program with John Liskey as the Executive Producer and Amy Leahey as the Producer and Director. The purpose of the program was to use TCI Cable modems on our show and regularly remind our viewers how much faster *our* connection was when compared to their measly 56 Kilobit per second telephone-based modems.

The Internet:TCI program was produced monthly in East Lansing and tapes were shipped to TCI Cable stations around the country to be aired on their "Local Origination" channel. At its peak, Internet:TCI was aired in about 15 markets including Chicago, San Francisco, and others. The program pre-dated any other technology program airing nationally. We won

a number of regional and national awards for programming produced by the cable industry in 1996.

Internet:TCI had a brief moment in the sun because by 1996 it was clear that the Internet and World-Wide-Web were big business. Well-financed national programs like TechTV were quickly produced and delivered daily or weekly via satellite. Also in the late 1990's there was a lot of consolidation and horse-trading in the cable industry. Our show moved from TCI Cable to MediaOne and then to AT&T Cable Television. In each transition, we lost momentum and other programming in the market made a talk show with two middle-aged geeks talking about computer technology pretty much irrelevant. John Liskey, our long-time executive producer and cheerleader, convinced TechTV to take a look at our audition tape in 2003 to see if we could do a few pieces now and then for one of their programs. But by then even TechTV had decided that smart geeks were no longer relevant in a market increasingly interested in attracting teenagers by doing video game previews.

Even though the Internet:TCI program did not result in a television career for me, it did give me an excellent excuse to interview pretty much anyone in the emerging Internet field. Back in the mid-1990s when things were just getting started, everyone would talk to you. We interviewed Tim Berners-Lee, Richard Stallman, Jeff Bezos, and many others. Since both Rich and I were technologists before we were journalists, our interviews often tried to get the interviewees to look forward into the future and share their visions of where things might go.

In one interview with James Wells of the RealAudio (now Real Networks) company, he posited that someday we would be using the Internet to teach courses using streaming audio and 28 Kilobits per second modems. This seemed like a great idea to me and I set about spending my spare time at Michigan State University trying to cobble enough technology together to let me stream audio (and later video) along with images taken from PowerPoint slides to remote students over the Internet. I built a bit of software called Sync-O-Matic-3000 that helped blend the audio, video, and slides into a single online lecture. The software was named after a Saturday Night Live skit called "Bass-O-Matic" that aired on April 17, 1976.

Once I had Sync-O-Matic working in 1998, I created a new course at Michigan State University called "EGR124: Internet and Technology" that would be taught online with recorded streaming lectures. I saw the students in-person once per semester when I scheduled an in-class midterm exam.

I tried to commercialize Sync-O-Matic in the late 1990's but was unsuccessful. In my inexperience, I failed to realize that venture capitalists do not pay money for good ideas. Instead they wanted ideas that already have customers and a revenue stream. I ended up in a bit of a tussle with the Michigan State University technology leadership as to "who owned Sync-

O-Matic." Once I tried to find a buyer for the product, they decided it must be valuable and then later when I wanted to stop trying to sell it and I decided to give it away, they told me it belonged to them: that they would decide how to best maximize the profit around Sync-O-Matic and so took control of the program away from me.

Even though I was not successful selling Sync-O-Matic, I had given a number of presentations at academic conferences and had met a number of people in academia that liked the idea.

In the fall of 1998, I gave a talk at San Diego State University about Sync-O-Matic and was approached by the University of Michigan and asked if I would come to work for them. I had seventeen years of seniority at Michigan State University and was eight years away from early retirement. But the lure of being able to pursue my dream of building technology for teaching and learning in a freer and more supportive environment led me to join the University of Michigan in mid-1999 as part of the Media Union.

My new boss at the Media Union was Barbara O'Keefe. Barbara was the director of the Media Union and seemed to have been given plenty of resources by the university administration. Barbara saw our competition as MIT Media Lab. When I started my job, she told me to use whatever resources I needed so long as I did something impressive.

Almost immediately, I found out that some University of Michigan physicists were trying to use my Sync-O-Matic software to record some lectures at the CERN High-Energy Physics Laboratory. They handed me a credit card, told me to buy whatever I needed, and I got on a plane to CERN to help them out. If my first two months were any indication, this new job was going to be a lot more fun!

Since there was still disagreement as to who owned the source code to Sync-O-Matic, I decided to build a whole new lecture capture system using the Apple Macintosh and QuickTime technology instead of the RealMedia and Windows technology I used for Sync-O-Matic. I quickly picked up the Macintosh programming environment and by early 2000, had a working prototype of my next generation of lecture capture technology which I called ClipBoard-2000.

ClipBoard was far superior to Sync-O-Matic in every way. In Clip-Board, there was a single desktop application that recorded audio, video, screen scribbling, text annotations, and cursor animation. And it produced a single multi-track QuickTime file instead of the hundreds of interlinked web pages that Sync-O-Matic produced for an online lecture. Early in 2000, I even visited Apple and demonstrated ClipBoard. I wanted to give Clip-Board to Apple so they could make it part of their operating system. Back at the University of Michigan another developer was assigned to work on a Windows version of ClipBoard.

Then in the summer of 2000, things got a little scary. Barbara left

the University of Michigan to become the Dean of Communication Arts and Sciences at Northwestern University and there was talk that the Media Union needed to "settle down" and stop having so much fun (i.e. stop spending so much money). Since the College of Engineering had been paying half my salary since I was hired, they asked me to teach their sophomore class in C++ in the fall of 2000. It started to look like I would have very little time to pursue building any teaching and learning software going forward.

At some point, I had coffee with my friend Bryan Holland and told him about my concerns regarding my position at the University of Michigan. Bryan and I had worked together at Michigan State University and he was now the Chief Technology Officer for Strategic Interactive. Strategic Interactive was a startup formed in 1997 focusing on building teaching and learning technology and content delivered over the Internet.

Bryan told me about a secret project in Microsoft called "Microsoft Learning Technology" (or MLT) where Microsoft was going to extend Microsoft Exchange to become an extensible learning management system and Strategic Interactive was to be one of the earliest preferred partners on the project. Bryan said that my lecture capture technology would be the perfect first plug-in for MLT if we could get started quickly. I would have to rewrite my technology one more time using Windows Media, but I figured that with the experience of building Sync-O-Matic and ClipBoard, it would not take much time at all and I would be able to make a better product with tight integration with the MLT servers.

So in October, I quietly agreed to join Strategic Interactive in January 2001. But the semester had already started and I was teaching EECS280 at the University of Michigan with Jim Eng. This was my first teaching experience at the University of Michigan, and I was nervous about teaching a course with 400 students in a single lecture hall. Thankfully Jim was an expert in all the ins and outs of teaching at the University of Michigan College of Engineering and we got through the semester without any major mistakes. As the semester progressed and the stress level dropped, I really started to enjoy the class.

I was using my ClipBoard software to record my lectures and had developed the server version of ClipBoard that would automatically upload and transcode my recorded lectures into various formats for streaming. I would push a button in ClipBoard on my laptop at the end of the lecture, and by the time I walked back to my office, the materials would be automatically uploaded to the web.

The course went so well that one of our students invited Bjarne Stroustrup (the inventor of the C++ language) to give a guest lecture. We moved Bjarne's lecture to a large theater and invited anyone in the College of Engineering to attend and had a book signing of the hardcover edition of Bjarne's book.

By the end of the semester, it was one of my favorite teaching experiences and things were really looking up for me at the University of Michigan. But since I had made the commitment to go to Strategic Interactive, I left the University and went to Strategic Interactive in January of 2001.

After I had been at Strategic Interactive for about two weeks, I was told that Microsoft had cancelled the Microsoft Learning Technology (MLT) effort. They had just pulled the plug. This was not good as I was a rather expensive employee and if there was no high-revenue project for me to work on, I felt that things might become uncomfortable pretty quickly.

In February 2001, Strategic Interactive was battling for a contract to develop a learning management system for Ford Motor Company called the "Ford Learning Network." SI was one of two finalists for the contract and it was increasingly looking like SI would lose the business. They decided to send me down to a meeting in Dearborn to see what I could do. The meeting went pretty well, and we ultimately got the contract from Ford with the stipulation that I was to be the chief architect of the effort. This was great for me because not only did I have a strong project to be involved in, the contract was bringing enough revenue to cover my own salary and several other employees.

Building the Ford Learning Network (FLN) was a great experience. Ed Sketch, Charles Ogunwy, and Matt Deseck were our primary contacts at Ford and they had high expectations of the project. At the core of the FLN was a search engine from a company called Autonomy. The idea was to look at employees' training histories, their current and desired future competencies, as well as the learning experiences of other employees using various learning resources. A personalized set of search results would be produced for each user. In addition, there was to be a Digital Dashboard where management could track student progress and unit progress toward competency goals. In short, the system was aimed at solving some of the hardest problems in teaching and learning.

While the FLN never quite achieved "artificial intelligence", the year-long project produced a nice product. As the financial condition of Ford Motor Company started to worsen in the post-9-11 downturn, some of the project funding was reduced and we had to deliver a product that functioned but did not deliver all of the features we had hoped to build.

Towards the end of 2001, the Ford Learning Network project wound down almost as quickly as it had ramped up. And again I was faced with the prospect of being a highly paid employee with no way to generate revenue to support my salary. The culture of Strategic Interactive was also changing. The company founders Tom Bohn and Mark Morrison were reaching the end of their five-year contract with our parent company (Provant). It did not look like Tom and Mark were going to stay around when their contracts expired. And they were not at all interested in any kind of long-term invest-

ments in products. They wanted short-term revenue that would be quickly collectable while they were still there.

When Mark and Tom left, Jim Pizzimenti took over as our executive. I liked Jim a lot and had high hopes that he could run the company as an executive. Together we could invest in some longer-term efforts to build product-based revenue instead of services-based revenue. And then I could get back to building and commercializing my lecture capture technology.

But Jim turned out to be a by-the-book business type. He was not interested in any risk. It was all about revenue in this quarter and making EBIT (Earnings Before Income and Taxes) to keep the parent company happy. With such a short-term approach and the lack of any possibility for strategic investment, I gave up on Strategic Interactive and started to put out feelers at Michigan State University and the University of Michigan.

During the fall of 2001, I almost had arranged a teaching appointment at the University of Michigan to start in January 2002. But we could only find funds to cover half my salary so that position fell through.

In February 2002, Joseph Hardin contacted me about a possible job opportunity at the Massachusetts Institute of Technology (MIT). Joseph had worked at the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign and had been instrumental in the development of the Mosaic Web browser software in 1993 and 1994. He moved from NCSA to the University of Michigan in 1997 and we had worked together at the Media Union from 1999-2000.

In 2002, Joseph was exploring the possibility of going to MIT to work on the Open Courseware Initiative (www.ocw.mit.edu). He wanted me to come with him to MIT and act as his chief technical architect on the MIT OCW project. When Joseph got a job offer from MIT, I started researching moving my family to the Boston area.

Ultimately, Joseph decided to stay at the University of Michigan since he had been given enough funding to pursue his open source ideas at Michigan. With his new budget for open source, Joseph hired me to come back to Michigan and work on his already-in-progress CHEF project[1] to take it to the next level as an open source project. CHEF (CompreHensive collaborativE Framework) was an open-source approximation of many of the features of the popular Lotus Domino collaboration system.

Just as a quick summary so far, between 1999 and 2002, I quit three different jobs in order to continue to pursue my dream of building innovative teaching and learning technology. Each job had promised that I could work on my passion, and as each of the jobs shut down that option, I simply went out and found another job that would pay me to continue my pursuit. It seemed like Joseph Hardin had the same passion as I did and had several

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[1]www.chefproject.org

years of solid funding, so it looked like I could finally settle down and make some real progress.

In August of 2002, when I came back to Michigan, CHEF was a web-based collaboration system that could be used for teaching and learning or group interactions. Loosely based on the popular Lotus Domino group-ware, CHEF had been in development for several years as part of a research project Joseph had been running called the Space Physics + Aeronomy Research Collaboratory (or SPARC). SPARC was intended to allow Space Physics researchers around the world to collaborate and share their findings and synthesize their independent research to produce larger aggregate results.

Joseph wanted to turn CHEF into an open-source Collaboration and Learning Environment that could be used around the world for research and teaching. So I set about learning the Java programming language and the CHEF architecture as quickly as I could.

In October of 2002, I was invited to attend a meeting of a research project called NEESGrid at Argonne National Laboratory. NEESGrid was a project to build collaborative research technology for the high-end experimental facilities for Civil Engineering. The NEES project was to connect all of the facilities so they could share data and perform hybrid experiments using multiple facilities at the same time.

At the NEESGrid meeting, it seemed to me that the project was somewhat disorganized. They were two years into a four-year project and not much had been delivered. The University of Michigan was originally involved to help assess the user requirements for the project, but I felt that our real contribution to the NEES research collaboratory might be the CHEF software itself. At least we could have a way for all the researchers to talk to each other, share files, etc.

So I joined the NEESGrid[2] project and quickly started adding features to CHEF to support the needs of NEES. I started working with Dennis Gannon and Marlon Pierce of Indiana University on building a generic user interface to scientific equipment and data. They had been working with a portal called JetSpeed and adding features to it and since CHEF was based on JetSpeed, it was a pretty straightforward task to merge the Indiana-developed software into CHEF to create a collaborative grid portal. This work led to us writing a National Science Foundation grant to productize our Grid portal as part of the National Middleware Initiative (NMI) effort.

Throughout the end of 2002 and the first half of 2003, it seemed as though the best way to promote the CHEF software and brand was as a research collaboration system rather than a teaching and learning system.

By the summer of 2003, we had generated enough interest to hold our first CHEF workshop with about 25 people in attendance from around the country. It was a pretty proud moment for me and it seemed like the trajectory of CHEF as an open source research collaboration system was pointing upwards nicely.

In the summer of 2003, the NEESgrid project was still floundering. The CHEF part of the project was going well but the rest of the project seemed to be making no progress. The National Science Foundation told the University of Illinois that they needed to change some of the management of the NEESGrid project or risk future funding for the project.

The University of Illinois brought Bill Spencer, in one of their rising stars from the Civil Engineering Department to act as the new lead for the project. Bill was young and aggressive, very good at Civil Engineering, technology, and management. If anyone could turn the project around in a year, Bill could do it. We hit it off immediately since we were both action-oriented. He immediately created a new set of goals for the project that were both tangible and achievable and I became Bill's architect of the NEESGrid data management strategy.

In September of 2003, we were notified that our National Middleware proposal[3] had been funded by the National Science Foundation `www.nsf.gov`. Marlon Pierce and Dennis Gannon were the leads on the grant but I was a co-Principal Investigator on the grant. It was my first NSF grant and a proud moment for me. The NSF grant would fund half of my salary for the next three years to work on adapting CHEF to become a research portal toolkit.

I always like to get a head-start on any grant to reduce risk of failure, so even though the grant did not officially start until January 2004, I set up a meeting in Ann Arbor in October 2003 to start planning the first CHEF deliverables for the grant and started work delivering the first release of our portal toolkit early in 2004.

As 2003 drew to a close, I felt like I was finally in the right place in my career. I had a lot of work to do, was working with extremely talented people and had all the support and resources I needed. The NEES project, CHEF project, and the National Middleware Project were more than enough to keep me out of trouble for a few years.

But all that turned out to be only preparation for what was about to happen. And the pace was only going to get faster.

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[3]Portions of my work in Sakai were funded by the National Science Foundation grant NMI-0329756.

Chapter 2

Forming the Sakai Coalition

In a sense, Sakai started for me in August 2002 — the moment Joseph
Hardin hired me to come back to the University of Michigan to help him
take CHEF to the next level. I spent the first few months working as an
apprentice programmer in the CHEF project learning the ropes from Glenn
Golden, the chief architect and lead designer for the CHEF project at the
University of Michigan.

In October 2002, Joseph and I attended the Educause conference in At-
lanta Georgia. We were primarily interested in meeting with the team from
the MIT Open Knowledge Initiative[1]. The OKI project was a high-profile
project that was developing a standard set of application program interfaces
that would allow a software component to be plugged into a Learning Man-
agement System. The Andrew W. Mellon Foundation had funded MIT to
do the OKI project and everyone developing teaching and learning software
was trying to be part of the project.

I wanted to propose that we bring CHEF into the OKI project as a stan-
dard for the user interface for learning applications. All of the other OKI
documents covered the non-user interface aspects of a program and I felt
that CHEF would fill the missing gap nicely.

Since Joseph already knew most everyone at MIT involved in teaching
and learning, we quickly ended up in a conference room with Jeff Merriman,
Scott Thorne, and the rest of the OKI leadership. I quickly proposed my
ideas regarding adding a specification for learning tool user interfaces and
drew a few pictures on a whiteboard. While they didn't immediately agree
that they even needed such an interface, they would be happy if we worked
with the OKI project as a partner.

I attended several OKI meetings in 2002 and 2003, but was not partic-
ularly impressed with the results of the OKI project. The problem was that
it was simply too vague. Their specifications had a lot of detail, but they

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[1] www.okiproject.org

never had the right detail to tell the programmers using OKI exactly what to do. These unspecified details were called "out-of-band agreements" and the claim was that the out-of-band agreements were necessary for flexibility. But the out-of-band agreement approach kept most projects on the sidelines when it came to adopting or seriously using the OKI specifications.

The OKI technical specifications never really had a significant impact in the marketplace, but the project brought a lot of technical people from higher education together. The three years of OKI meetings allowed higher education to figure out who the major players were in teaching and learning. Schools like Wisconsin, Stanford, Indiana, MIT, and Michigan were always strong participants in the OKI effort.

By the middle of 2003, it became increasingly clear that the OKI project would not deliver sufficient technical specifications to achieve their goals of software portability and system interoperability. Joseph and I did not believe that the Andrew W. Mellon Foundation would renew the funding for OKI due to the overall lack of achievement by the OKI team.

We saw an opportunity to have CHEF be the follow-on project after OKI. We would pick up where OKI left off and then complete what we considered to be the Engineering tasks that remained to be done to make OKI complete. I felt that CHEF was strong in defining precise and usable application programming interfaces that were similar to OKI and then CHEF could be the first "reference" implementation of those interfaces.

The Andrew W. Mellon Foundation also funded the uPortal project to build a campus portal toolkit. The funding for uPortal was coming to an end at the end of 2003. The Principal Investigator of the uPortal project was Carl Jacobson of the University of Delaware. Carl had promised publicly that he would complete his project and not ask for a second round of funds. The uPortal project was nicely on schedule and was not going to need renewal funds, but there were some things that might benefit from additional funding. We decided to bring uPortal into our proposal to the Andrew W. Mellon Foundation with the idea that we would bring the CHEF and uPortal projects together to use a newly emerging technology standard for portals called JSR-168.

As we formed these ideas, Joseph began communicating with Ira Fuchs of the Andrew W. Mellon Foundation in order to get an idea as to what they might consider funding. The first mail message I have that mentions Sakai is as follows:

Subject: Sakai doc
From: Joseph Hardin
Date: Fri, 16 May 2003 13:30:47 EDT
To: Glenn Golden, Chuck Severance, Terry Weymouth, Tom Knox, John Leasia

Here is a working sakai doc. Add to and get back asap. Use word change tracking for revisions.

And I've advised Vijay at OKI that we now officially have a project called SAKAI that is focused on a usable interoperability platform. He uses the term "application profile" to talk about this, btw.

In those discussions, Ira Fuchs wanted other academic institutions as partners in the grant and he wanted each partner institution to sign an agreement that they would run whatever software this project would create. This was the ultimate "eat-your-own dog food" agreement. We could not take the money, give it the old college try, and then claim that it was "too hard" and then just walk away. We all had to agree to run whatever software the project produced.

And Joseph added his own requirement that all of the software be open source. Any university that received money from the grant was required to release any and all software with a free and open source license. The University of Michigan had a open policy when it came to releasing free software developed by University of Michigan staff, but Stanford and MIT have a long history of making money from software licenses so this clause was a bit difficult for them to accept.

Indiana University and the University of Michigan had a history of working together, both in the OKI project and in a project called Navigo where they were co-developing a quiz, survey, and assessment engine. Indiana University had just chosen Java as their primary language of choice for the whole campus and their homegrown Learning Management system called OnCourse[2] was written in Microsoft's Active Server Pages (ASP). Since Indiana was already thinking of rebuilding their LMS in Java, partnering in our project was a natural.

In the fall of 2003, the proposal started to take shape with the University of Michigan, Indiana University, Stanford University, MIT, the OKI Project, and the uPortal project as the partners. There was a fifth university that was interested in being a partner but they were not willing to agree to all of the conditions of being a partner so they were dropped from the project.

Of course we needed a name for the new project. The new software was to be a "best-of-breed" combination of the current software from Indiana, Stanford, Michigan, and MIT's existing learning management systems. Joseph and I knew that we would be using CHEF as the backbone for it all and bringing the other software into CHEF. We did not want to name the new project using CHEF in the name because we wanted something that

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[2]OnCourse was the basis of the Angel Learning LMS

everyone would own, not the next version of the University of Michigan software.

Joseph named the project "Sakai" after Hiroyuki Sakai of the television program "Iron Chef." This way we could have an inside joke about the connection to the CHEF project, but unless anyone made the connection through the television program, it would stay our little secret. We agreed not to reveal the source of the name. I believe that the source of the name remained a pretty well-kept secret until well into 2005. We even invented a plausible acronym that spelled SAKAI: Systems Architecture, Knowledge And Infrastructure.

By October 2003, we had gotten enough positive signals from the Andrew W. Mellon Foundation that the Sakai proposal was likely to be funded. So Glenn Golden and I set to the task of evolving CHEF into Sakai. I wanted to use the last few months of 2003 to get a head start on the deliverables for the Sakai project. Technical delivery targets had been set so that we could make our deadlines without much effort at all.

I was so confident of the strength of the underlying architecture of CHEF that our first planned deliverable was an Alpha version of Sakai at the end of February 2004, two weeks after our kickoff meeting at Stanford University. I figured we would start on a sprint and never slow down. I wanted Sakai to be the quickest and most successful project that the Mellon Foundation had ever funded.

Glenn and I felt that since CHEF was already three years old, we needed to revisit and refresh some of the technical choices that had been made and update CHEF to use more recent and more modern software approaches. We decided to replace the Velocity user interface framework which seemed a bit old and creaky with the soon to be released Java Server Faces Technology (JSF). Using JSF was a little more complex but we felt that in the long run it would be more elegant and give us more control over a common look and feel between the tools[3]. We also wanted to update the way that the tools accessed the low-level internal services within CHEF. CHEF used a service framework called Turbine which was pretty much an antique by 2003. After an evaluation of more modern solutions, we selected the Spring framework.

We decided that Sakai would be CHEF plus Java Server Faces and the Spring Framework and that would be what we would deliver at the end of February as our Alpha release. Glenn set about reworking CHEF to use these new technologies while I juggled my responsibilities as a senior contributor on the NEESGrid and National Middleware portal project and the newly minted chief architect of the soon-to-be announced Sakai project.

My travel schedule in November and December 2003 showed how I had

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[3]Java Server Faces turned out to be a bad technical choice.

to interleave the two projects, both working at breakneck speed:

November 17-21 In Phoenix, Arizona at the Supercomputing Conference, missing the first Sakai board meeting in Ann Arbor.

November 24 At Bloomington, Indiana for a Sakai planning meeting with developers.

November 25 At Urbana-Champaign, Illinois for a NEESGrid meeting.

November 26-28 Back in Ann Arbor, MI for Thanksgiving

December 1-2 At Lawrence, Kansas for a NEESGrid Workshop.

December 3 Davis, California at UC Davis for a NEESGrid visit.

December 4-5 Santa Monica, California at a NEESGrid meeting at Information Sciences Institute.

December 8-9 Ann Arbor, Michigan at a meeting between the technical staff of the Sakai project and the uPortal project.

During this time period I was putting a lot of my energy into the NEES-grid and Middleware projects (which were both using CHEF/Sakai) while Glenn Golden was spending his time reworking the technical internals of CHEF in anticipation of our February release. I was very much involved in the design of the CHEF technical work, often spending hours on the cell phone with Glenn as I travelled around. I could drive for five hours between Ann Arbor and Indianapolis and be on the phone the entire time in a Sakai or NEESGrid meeting. If I was driving in the early evening as the East Coast was shutting down, I would make calls to collaborators in the Mountain and Pacific time zones.

Glenn's daughter Gracie was quite young and Glenn wanted to avoid travel so he could spend as much time working from home to be close to Gracie. We split the work with me doing all of the travel and presentations and Glenn sitting at home implementing the designs we crafted on those long phone calls from the car or while sitting in airports.

In the above schedule, you can see the "triangle trip" that I would make many times over the next few years. The lead institution on the NEESGrid project was the National Center for Supercomputing Applications (NCSA) at the University of Illinois at Urbana-Champaign (UIUC), and the lead institution on the National Middleware Grid Portal effort was Indiana University in Bloomington. The University of Michigan in Ann Arbor was the lead on Sakai and Indiana University was one of the four founding institutions of Sakai. So I would get in the car and make a trip in the shape of a triangle

visiting Bloomington, Urbana-Champaign, and coming back to Ann Arbor. I could schedule day-long meetings at all three schools in a three-day period if I were willing to do most of my driving at night.

On December 8 and 9, we had a project meeting between the uPortal technical team and the Sakai technical team to come up with a joint project plan. Since our grant was paying for the continuation of the uPortal funding as their own grant was coming to an end, we wanted to make sure that the uPortal priorities going forward met the needs of the Sakai project.

In a sense this meeting between the Sakai project and the uPortal project was a bit of a role reversal. The uPortal[4] project was the darling of the projects funded by the Andrew W. Mellon Foundation. It was funded from 2001 through 2003 and in that time had built and released two versions of the product and had a large and growing open source developer community. They had two conferences per year as well as two developer meetings each year.

In many ways, I modeled the Sakai approach to community building after the uPortal model. I wanted to learn from the uPortal success and build on that success. I had been going to uPortal conferences and developer meetings for a while and was being mentored by Jim Farmer, Ken Wiener and others from that project.

But starting in 2004, the next three years of uPortal funding was to come through the Sakai project. This changed my role from one of being mentored to holding the purse strings of their funding. The uPortal team was quite curious as to what I wanted them to do over the next few years; the December 8 and 9 meeting was to lay out the high level plans for the Sakai / uPortal effort.

Part of the deliverables of the Sakai proposal was to move both the uPortal and CHEF/Sakai code to use the emerging JSR-168 standard for portals. A portal is a user interface design pattern where a web page has a number of blocks on the screen at the same time like iGoogle. Each rectangle could contain any tool or widget and the layout of the tools was typically under end-user control.

In 2002 when both the CHEF project and the uPortal project were initially created there was no standard for building tools for portals so both projects invented their own standards for a tool to plug into each system. The uPortal project had developed an "iChannel" interface for their tools and CHEF had adapted a portal technology from the JetSpeed open source project and modified it and called each of the tools "TeamLets."

When we were doing the initial planning for the technical architecture of Sakai, the JSR-168 was still being developed in a closed process by companies like Sun Microsystems, IBM, and Oracle. We were not able to see

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[4]http://www.jasig.org/uportal/about

any draft documents until they were released on October 27, 2003[5]. By then we had already decided that JSR-168 was a core deliverable for the Sakai project and made the commitment as part of our grant proposal.

At the December uPortal / Sakai meeting, the JSR-168 specification had been reviewed by both Glenn Golden and Ken Weiner, but I had very little time to review it because I was traveling for nearly all of the four weeks between the time the specification was released and the Sakai/uPortal meeting. Glenn was disappointed because we had hoped that the JetSpeed portal would have been the inspiration for the JSR-168 specification which would have made our task easy as CHEF was already based on JetSpeed. But instead the IBM Websphere product was the inspiration for the JSR-168 model so it seemed that we had quite a bit of work ahead of us to get CHEF to comply with the JSR-168 standard.

Even though I was disappointed that the JSR-168 specification would be hard for CHEF to support, it seemed like a good idea for uPortal as a portal product to support this new standard in order to maintain its relevance in the portal marketplace. So I decided that we would simply use the Sakai funds to support adding JSR-168 support to uPortal and then figure out what we would do with CHEF later.

We agreed to a two-phased approach with uPortal. First we would build an adapter between the existing uPortal iChannel interface that would support JSR-168 portlets. Since the uPortal interface was already richer and more powerful than JSR-168 the adapter approach made good sense. And there was a Java-based open source implementation of JSR-168 provided by the Apache Pluto project which would serve as a starting point.

Once we completed the JSR-168 adapter in uPortal and released uPortal 2.4, the plan was to put all of the Sakai-provided resources into building the next generation of uPortal that would be built around the JSR-168 standard. The Sakai funds would pay for the uPortal 3.0 project that would be a complete rewrite from scratch. Then once uPortal 3.0 was finished, we would build a JSR-168 to iChannel adapter to bring all of the existing uPortal tools forward into uPortal 3.0.

The plan seemed to make good sense to all of us at the meeting and I particularly liked the fact that the two projects could move forward independently for a while. I was already feeling pretty busy working on three intricately linked projects at the same time.

By the end of 2003, even before the grant was awarded, I felt that the Sakai project had gotten a head start and was already making great progress on our first round of technical deliverables. I felt I had all of my projects nicely lined up and overlapping in a way that I could move them all forward quickly and with a minimum of stress on my part.

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[5]http://www.jcp.org/en/jsr/detail?id=168

Chapter 3

The Sakai Project Begins

In January 2004, the Sakai project started when we were awarded $2.3 Million dollars over a two-year period. Each of the founding schools were required to provide a four-to-one match in terms of staff salaries dedicated to the project and all of the work produced by the project was to be released under an open source license.

In a sense, the actual awarding of the funds was a non-event for me, since I had done so much pre-work in the last few months of 2003 that there was not much to do in January but celebrate. Glenn Golden was busily altering CHEF to support the Spring Framework and Java Server Faces and Ken Weiner was already making good progress on adding JSR-168 support to uPortal. For me, January 2004 was a good time to relax and reflect.

On January 8 and 9, the National Science Foundation visited the University of Illinois to review our progress on the NEESGrid project. While the NSF appreciated all of the great progress that Bill Spencer had made getting NEESGrid moving forward during 2003, it was pretty clear that the NSF was still unsatisfied and if we were to get any extension funding after year four, we would have to pick up the pace and do even more and do it more quickly. But that was mostly Bill's problem because the University of Michigan portion of NEESGrid based on CHEF was humming along smoothly and well ahead of schedule.

From January 12-16, I visited Cape Town, South Africa as part of an AIDS related grant led by Gary Olson of the University of Michigan's School of Information. The idea was that I would give presentations about CHEF and its collaborative research applications. The hope was that if we could get AIDS researchers around South Africa and the world to collaborate better, that we could make better progress on the disease. The trip was timed to coincide with the "IDLELO: First African Conference on the Digital Commons" that was being held at the University of the Western Cape. The IDLELO conference, funded by the Shuttleworth Foundation, brought young technologists from all over sub-Saharan Africa together to share their

experience with open source software.

There was a great deal of energy at the IDLELO conference and since I had no presentations to give, I was just an observer drinking it all in. As this was my first trip to Africa, it felt like my personal world-view was expanding with each passing moment. The meals and parties were wonderful and each broadened my cultural awareness. The excitement of the young IDLELO attendees was infectious. It made me doubly proud to be embarking on a large-scale open source project like Sakai, realizing the potential impact we might have worldwide.

At one point during the week I met with Derek Keats, the IDLELO conference organizer. Derek was a faculty member and IT leader at the University of the Western Cape. Among other achievements, he had also built an open source learning management system called KEWL that was written in the PHP language. KEWL had also been funded by the Shuttleworth Foundation adoption was on the upswing in sub-Saharan Africa. While Sakai and KEWL may have seemed to be natural competitors, to me it seemed to be the best approach to be friendly and work together. KEWL had a focus on Africans building technology for Africans and that approach made a lot of sense to me. After all, Sakai had just started and the longer I could fly under the radar in the project, the more I could "get it right" before taking on the world.

After I got back from South Africa, it was off to San Diego for the annual Globus World conference that covered all things Grid. Because I did not have any presentations at the conference, I brought my family along on the trip. The conference hotel was only two miles away from SeaWorld and I had bought my wife Teresa tickets to swim with the dolphins there as a Christmas present. I convinced the conference organizers to provide my son Brent with an attendee badge so he could sit with me in the conference while Teresa was off on her SeaWorld adventure.

The Globus World conference was high-energy with keynote talks from Ian Foster and Carl Kesselman, the founders of the Globus/Grid efforts many years earlier. I remember thinking that someday I wanted Sakai to be able to have such a nice conference in a beautiful location like San Diego and that I would someday be up in the front giving those keynote speeches about Sakai. Experiencing the excitement of the Grid community gathered together gave me something to shoot for as we developed the open source community around Sakai.

While the primary focus of the Sakai grant was to develop an open source learning management system that would meet the needs of Michigan, Stanford, MIT, and Indiana, the Mellon Foundation also insisted that by the end of the two years of grant funding we would be sustainable so we would not have to keep coming back for more money. They felt that the best way to insure sustainability was to ask us to develop a Sakai Partners

Program.

The basic idea of the Sakai Partners Program was that we were to convince 200 other partner schools or commercial organizations to each give us $10,000 per year. The Mellon Foundation had two goals in mind when they asked us to build a partners program: (a) it would provide an ongoing revenue stream when the grant funds ended, and (b) it ensure that we would listen to and respect the opinion of potential customers beyond the initial four founding schools.

In order to insure that the Partners Program would not impact the overall delivery schedule, the William and Flora Hewlett Foundation gave us funding for separate staff to manage the partners program. I insisted that Jim Farmer lead the partners program as he had done such a great job mentoring me and helping me get involved in the uPortal project during 2003. We also hired Mark Norton to help with the partners program. Mark was a long-time consultant in the teaching and learning business and had worked for the IMS Global Learning Consortium as a standards developer and was part of the OKI project at MIT.

As January 2004 was coming to a close, it seemed like everything was in order. From that point forward, it was just executing the well-thought out plan and I was in complete control of the situation and way ahead of schedule.

On Thursday, January 24, 2004 the Chronicle of Higher Education magazine published an article announcing the formation of the Sakai Project and the receipt of $2.3 Million dollars of funding from the Andrew W. Mellon Foundation. The founding partners were an all-star cast of Michigan, Indiana, MIT, Stanford, OKI and uPortal. This team was going to produce an open source collaboration and learning environment (CLE) suitable for use in either teaching and learning or research collaborations and to complete the task in two years.

Pretty much everyone in the higher education marketplace reads the Chronicle of Higher Education regularly. Being mentioned in the Chronicle of Higher Education is the logical equivalent of a book being mentioned on the Oprah Winfrey show.

The requests for information, briefings, and meetings poured in over the next few weeks. Since we all knew that we needed as much help as we could get with developing our partners program — everyone in the project from the Advisory Board to the Chief Architect (me) said "yes" to the requests. We knew that the buzz generated by the announcement in the Chronicle would only last so long so we needed to talk as much as we could in those first few months of 2004.

It is probably a good time to describe the internal management structure of the Sakai project. The general structure of any grant always includes a "Principal Investigator" or "PI." The PI is officially given the grant money

and controls money given to any partners in the grant. The PI is held 100% responsible for either the success or failure of the grant and is generally allowed to make any and all decisions regarding the grant team. Joseph Hardin of the University of Michigan led the writing of the Sakai proposal and was the PI of the Sakai Project

Joseph has a very inclusive management style so he set up the structure within the grant to maximize input and participation from all partners. There was to be an advisory board with the lead individuals from all of the partners in the grant and Joseph was the chair of that board. As chief architect of the Sakai Project, I reported to Joseph and the board. Jim Farmer reported to the Sakai Board and Joseph as the lead of the Sakai Partners Program (SEPP).

The initial board members for the Sakai Project included Joseph Hardin of Michigan (chair), Brad Wheeler of Indiana University (co-chair), Babi Mitra of MIT, Lois Brooks of Stanford University, Jeff Merriman of the OKI project (at MIT), and Carl Jacobson of the University of Delaware representing the uPortal project.

The technical staff of the project reported to me. The grant was structured so that the grant funds would roughly cover one staff member per institution for the two-year period. Each of the partners was to contribute four more full-time staff members to the Sakai talent pool. This meant that the project staff of 20 full-time employees reporting to me with me reporting to the board.

My plan was to sprint with Glenn in the last half of 2003 and first few months of 2004, complete the transformation of CHEF to become Sakai 1.0 and then use the remaining staff to build new capabilities for Sakai. I figured that we needed to complete the hard work before we ended up with a team of 20 people because a team that large quickly becomes unwieldy. I really wanted everyone to wait until the first version of Sakai was done.

As part of that first version of Sakai, I had agreed to deliver the master document that describing all of the details needed to write a Sakai Learning tool. This document was called the "Tool Portability Profile" or "TPP." Once I completed the TPP it would be a simple matter to get the team of contributed staff members building the necessary functionality to produce our common Learning Management System.

Up to this point in early 2004, I had never actually used a commercial Learning Management System such as Blackboard or WebCT. There was literally no one on the University of Michigan team that had ever really used a commercial Learning Management System. Because the University of Michigan had built and used CHEF as our teaching and learning software and had created a product called CourseTools based on Lotus Domino groupware before we built CHEF, the only software any of us had used for teaching and learning was groupware.

In addition, because the University of Michigan was not particularly in-

terested in scaling up any online or distance education efforts after a public flameout of such a project in the late 1990's, any notion of tools to support primarily online interaction were simply not on the University of Michigan's radar.

Perhaps it was ultimately best that I literally had no idea what I was getting myself into as the chief architect of the leading high-visibility open source Learning Management System effort for higher education. Not knowing the scope of the problem we were facing insured that I was confident that we would succeed and allowed me to go forward fearlessly.

During January, 2004 the board primarily focused its thinking on how to develop the Sakai Partners program. Given that we were told to get 200 partners in two years, we needed to get moving. One proposal that I did not like was that only partners would have access to the project source code and mailing lists where the development work was being done. The board wanted some tangible benefit for membership.

Coming from an open source background, I was opposed to this notion. My view was that paying for a membership in the Sakai Project was more like contributing to Public Radio. If you did not contribute, the project would go on without you and you could still benefit from the project. Of course if you wanted to be "cool" and listed on the "cool list" you would join and contribute. I chose not to fight with the board on that battle because I was still just trying to get the first version out by the end of February, 2004. If we never delivered software, it hardly mattered whether we functioned as an open or closed organization.

On February 9, 2004, we attended the Andrew W. Mellon Foundation's awardees retreat in New York City. The retreat was a who's who of the open source higher education community. There were representatives from the Fedora Digital Library project, the MIT DSpace project, the uPortal project, the Chandler project[1] led by Mitch Kapor the founder of Lotus, and many others. Joseph and I were the new kids on the block and I was just happy to be there amongst all of the other luminaries. Our ten-minute presentation introduced the Sakai project and talked about our deliverables and challenges.

The official kick off meeting of the technical parts of the Sakai project was held at Stanford University on February 19, 2004. For the first time we were all together in the same room so we could see that we were indeed a pretty large group of people. Glenn's Sakai 1.0 software was complete enough that we could all play with it a bit and I gave a number of presentations about the architecture and project visions and everyone was in a pretty happy mood at the end of the kickoff.

After the kickoff meeting was completed, I was booked with travel,

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[1]See the book "Dreaming in Code"

meetings, and presentations. I was excited as the requests poured in from all over the country and the world to meet with or give a talk to various groups. Some of the meetings were related to the NEESGrid and CHEF/Grid for research collaboration and other meetings were about our newly minted Sakai project.

Here is a summary of my travel in February and March of 2004.

February 23 Edinburgh Scotland to give a talk about CHEF and the Grid at the Edinburg eScience institute.

February 24 Cambridge, UK to meet with the members of the Centre for Applied Research in Educational Technologies (CARET).

February 26-27 Urbana-Champaign, Illinois for a NEES meeting

March 1 Boston MA for a Sakai Architecture meeting at MIT

March 2 Hanover, NH for a NEESGrid meeting with Creare, Inc. to talk about releasing their Data Turbine product as open source

March 3 Berlin, Germany for a NMI Portal meeting with Jason Novotny of the GridSphere project

March 5 Warwick, England to give a talk about CHEF and the Grid.

March 10-12 Albany, NY, for a NEESGrid members meeting and software demonstration at Rensselaer Polytechnic Institute (RPI)

March 15 New York, NY, visit Columbia University to coordinate activities between the Sakai project and the uPortal and HyperContent projects.

Over a three-week period, I never slept in the same bed more than two nights in a row including my own home and I flew back and forth across the Atlantic twice. I was enjoying every minute of the attention as I was able to quickly increase the Sakai Project's brand recognition.

After a while, the crazy travel just became normal. At one point, my wife tried to explain to her co-workers what I did for a living. The concept of being well paid to fly around the world to "sell" free software seemed ludicrous. Eventually they decided that I must be a spy working for the government.

During my meeting at Cambridge University, I met John Norman, the director of Centre for Applied Research in Educational Technologies (CARET) and Ian Boston, his chief architect. They had already downloaded a version of CHEF and had done some analysis of its strengths and weaknesses. They very much wanted to be partners of the Sakai project but John insisted that

he would not join as a partner unless Sakai opened its source code and mailing lists to the public. I felt that the CARET team was strong technically and having Cambridge as an early partner would be a big win for our project.

When I came back from Cambridge, I told the board that we needed to release the source to the public and needed to create a public developers list in addition to the private developers to get Cambridge to join. The board agreed and Cambridge joined, and then I quietly told all of the developers to stop using the private mailing lists and do all their work on the public lists. With a bit of a nudge from John Norman, I had taken an important step in getting Sakai to function as a real open source project.

When I came back from England, we also found that we had quickly made it onto Blackboard's radar. Blackboard was the market leader in the commercial sector of the Learning Management System marketplace. I had run into Chris Etesse of Blackboard at the Edinburgh eScience meeting and he followed up our conversation with the following E-Mail to Jeff Merriman of OKI/MIT, Babi Mitra of MIT, and me.

March 2, 2004

Chuck, Jeff and Babi,

It was my pleasure talking to you both during my travels recently — Chuck in person in Edinburgh and Jeff & Babi via phone from Europe. As promised, I wanted to pass on a link to a white paper we just released on Blackboard & Standards as well as restate my invitation to host a meeting at Blackboard with Chuck to discuss how we can interoperate going forward. Finally, the second link is to the Blackboard SDK's for our various products — I thought it might be of some interest. I look forward to working closer with you each.

Warmest regards,
Christopher Etesse
Senior Director of Technology
Blackboard Inc.

To me, working with Blackboard was just another opportunity to spread the word about Sakai, and in particular, the ability to look at Blackboard and emulate their approach seemed like a good way to move Sakai's engineering design forward quickly. It would really save me a lot of effort if I could make use of Blackboard's engineering experience.

So I asked the board if I could fly to Washington, DC and talk to Blackboard about possible collaboration going forward. The board decided against working with Blackboard and explicitly told me that any and all communications with Blackboard regarding Sakai was exclusively a matter for the

board going forward.

It seemed wrong to me that an open source project would work with some commercial partners and not work with others. But since I was already pretty busy at the time, and I did not need yet another task, I let the matter drop. I felt good that just two months into the project, the commercial market leader was interested in working with us.

We had delivered the Pre-Alpha release of what Glenn Golden and I called "Sakai 1.0" shortly after the February kickoff meeting. During March, while I was traveling and giving talks, the other partners had installed Sakai 1.0 and had taken a closer look at its feature set. Sakai 1.0 did not have a grade book and it did not have a testing engine. As Indiana, Stanford and MIT reviewed Sakai 1.0, they were rightfully shocked that University of Michigan even called it a "Learning Management System" given that it was missing so many basic features that one would simply assume would be present in an LMS.

We had a meeting in Ann Arbor on March 29-30, 2004 where we focused on listing the missing functionality in Sakai 1.0 and developed a plan to address what we called "the gaps." Since all of the schools had agreed in advance that they would run whatever software the project produced, they were rightfully quite concerned about how to quickly address the functionality gaps before they put Sakai in production.

Particularly for Indiana and Stanford, installing Sakai 1.0 would result in a significant loss of functionality from the homegrown software (OnCourse and CourseWork respectively) that they were already running. In addition, the MIT Stellar software did not use iframes. Sakai 1.0 used iframes so MIT felt that going to Sakai would be a step backwards in terms of usability.

I knew we were missing features in Sakai 1.0 but I had no idea that we were missing so many. By the time we were finished, we had identified over 120 gaps. Most of the gaps required significant development effort and some of the gaps required changes to the core Sakai architecture. I knew we had a lot of work ahead of us.

Both Stanford and Indiana were in the midst of pre-existing projects to build an Assessment Engine that handled quizzes, tests, and surveys. The Stanford project was called "SAM — The Stanford Assessment Module" and the Indiana project was called "Navigo" — both based on a standard from the IMS Global Learning Consortium called "IMS Question and Test Interoperability" or QTI. The QTI specification was large and cumbersome and required a lot of complex design to build software to comply with QTI. In the short run, I decided to let those two projects continue independently while I worked on the core functionality of Sakai and prepared it to handle the expanded requirements identified by the gaps.

The members of the architecture team that worked through the initial technical issues in Sakai included:

Glenn Golden, University of Michigan
Lance Speelmon, Indiana University
Craig Counterman, MIT
Rachel Golub, Stanford University
Mark Norton, Sakai Partners Program Representative
Ken Weiner, Unicon, uPortal Project Manager
Daisy Flemming, Stanford University
Lydia Li, Stanford University
Peter Wilkins, OKI Project
Jeff Kahn, OKI Project

The uPortal team made excellent progress in adding JSR-168 support to uPortal and provided us a test version of the software on March 6, 2004, releasing the software on April 6, 2004 as uPortal 2.3a. This was great news and right on schedule and we embarked on plugging the existing Sakai tools into uPortal's user interface framework as we had described in the project plan.

Since I had been thinking about the technical aspects of Sakai since the middle of 2003, the technical governance came together quickly. The other major governance activity that we needed to create around the end-user functionality and end-user requirements would need to be addressed. Rob Lowden of Indiana University led the "Tools Team" that would focus on the user experience of Sakai.

Luckily, Indiana University already had a pretty good governance approach around the end-user features for their OnCourse project. I figured the simplest approach would be to simply adopt the Indiana approach for identifying and prioritizing user requirements.

Rob and I met in Fort Wayne, Indiana to come up with the overall project governance. We chose Fort Wayne, Indiana because it was about halfway between Lansing, Michigan and Indianapolis, Indiana. At the meeting, I asked Rob if anyone had passed him between Indianapolis and Fort Wayne. Rob said that no one had passed him. Since no one had passed me during my two-hour drive from Lansing to Fort Wayne I figured that Rob and I were the most Type-A drivers on I-69 that day. We would need all the Type-A we could muster to make it through the next two years.

We came up with an overall project governance structure that pretty much adopted the Indiana procedures.

At the end of March, the OKI and MIT teams took a look at the core Sakai 1.0 technical architecture and services and started to ask the question at the board level, "Where is the support for OKI within Sakai?" I really had no good answer for this question.

My own personal assessment of the OKI effort was that it was an or-

ganizational and market success and that it was responsible for creating a community of higher education institutions interested in co-developing software for teaching and learning. However, I felt that on a technical level the OKI project was pretty disappointing. Their "Open Service Interface Definitions" or OSIDs were far too vague and the MIT/OKI team covered the shortcomings in their specifications using the "Emperor's new clothes" argument. They kept telling us that if we could not see the grand elegance of their design, it simply meant we were not intelligent enough.

There was no benefit from arguing with OKI and I had planned all along to let the OKI project glide along taking their Sakai-provided funds and relax for a while. My hope was that after a year, I would quietly re-engineer the OSIDs based on the far more precise Sakai designs and then do a bit of name changing to pay proper homage to the OKI designs and release the new "Sakai-based OKI OSIDs." I figured this was a win-win situation for everyone. The OKI brand would live forever even if the OKI specifications circa 2003 would not be the ultimate blueprint for software interoperability for the ages.

I tried to convince Joseph Hardin that we simply needed to ignore the OKI board members and tell them to relax and that Glenn and I would work it all out by the end of 2004. Not surprisingly, Joseph did not agree with my approach and told me to get on a plane, go to Boston and not to come back until I had a plan to make the OKI team members happy.

Joseph did not care that following a detour to make the OKI team feel better might slip the schedule in addressing the gaps. At some point, I sat down with Joseph and asked him which of us would be the "good cop" in the project governance and which of us would be the "bad cop" in the project. I said that one of us would have to be the bad cop and make the unpopular decisions and then the good cop would have to rescue the bad cop. As I recall, he never actually agreed to be either the good cop or the bad cop role in the project. After that meeting, I pretty much figured that Joseph was not going to be the bad cop in Sakai.

As Joseph requested, I flew to Boston on May 24, 2004 to meet with the OKI team and come up with a plan for Sakai to support the OKI OSIDs. I briefly floated the idea that we could quietly re-engineer the OSIDs removing the out-of-band agreement concepts, release a "next generation" OSIDs which looked a lot like OSIDs but were really a whole new interface and we could all declare victory. Not surprisingly, this approach did not go over well.

Their position was that Sakai was to comply precisely and exactly to the existing OSID specifications as they were in 2003 and we were to develop and publish proper out-of-band-agreements for Sakai. And if I made any attempts to extend the interfaces in any way, I would be immediately in violation of the MIT license agreement that covered the OKI OSIDs and

action would be taken. Having no other options, I gave up and promised that I would do exactly what they asked for, knowing full well it would be pointless.

By the end of May, pretty much nothing was going according to my well-laid technical plans. We had started the year well ahead of schedule but everyone else in the project was disappointed with our improved CHEF as Sakai 1.0 and I was feeling very much on the defensive. Members of the Sakai Architecture team wanted to remake the architecture and while I was not opposed to a ground-up rewrite, it just did not fit into the schedule and we were already falling behind because of too much talk and not enough action.

Even while the technical aspects of Sakai seemed to be falling apart, the marketing buzz and hype around Sakai as "the next big thing" was continuing to grow. We had gained a number of partner schools in the first half of 2004. Sometimes schools actually contacted us to join and support our effort out of the blue after reading a magazine article. Other times Brad Wheeler of Indiana University would drop a note to the CIO at a school and encourage them to join which they often did solely based on his recommendation. Still other times, I would go and make a personal visit to a university and walk away with a new membership.

Everywhere I went, I heard stories of how badly Blackboard was mistreating their customers. A typical story would be if a school wrote some code that looked directly at the Blackboard database, Blackboard would send a nasty cease-and-desist letter to the school. The letter would leave a bad taste in their mouths and then the story would get told and retold over and over.

It took very little to convince a school to join as a Sakai Partner. Everyone wanted a real, enterprise open source solution to put a little fear into the commercial vendors in the marketplace — particularly Blackboard. Some schools joined as partners because they liked Sakai and other schools joined Sakai because they disliked Blackboard. Either way, our membership was growing quickly.

Even with the concerns about the underlying architecture and the lack of functionality in Sakai 1.0, we continued to work on the software in order to meet our Sakai 1.0 Alpha release deadline in June, set to coincide with our first ever Sakai Partners Program conference. We figured that we needed some software to release for the meeting, and anything that might be wrong, we could fix over the summer.

Chapter 4

The First Summer of Sakai

The summer of 2004 started with my confidence of our ability to succeed in the project at a relatively low level. I had a small core team of talented folks who were putting the pieces together but it was increasingly clear that many of my architectural decisions may not have been such good ideas after all. Technology is easy to evaluate and choose and you often do not find the pitfalls until much later when you push the chosen technology to its edges.

We were also preparing for the first Sakai Partners Program conference in Denver, Colorado scheduled for June 23-25 and focused on delivering what we would call the Alpha release of Sakai 1.0. It was a bit of a Frankenstein combination of CHEF and uPortal with the new support for Java Server Faces and the Spring framework. It was what we said we would deliver, but it also started to look like a big mistake.

After months of disappointment and disagreement in the project, we were about to face 180 of our partners in Denver. I had no idea whether we would be seen as heroes or if the attendees would be hostile and critical.

The conference had two primary tracks. I would lead the more technical track to cover the Sakai Architecture and Rob Lowden of Indiana led the end-user facing track. Our software may not be quite ready, but I was really confident in the public speaking ability of Rob, Joseph, Brad, and myself. So at least we could tell the story well even if the story itself was less complete than we had hoped.

As the conference started it became increasingly clear that everyone was pleased with our progress so far. Even though it felt to me like we were going nowhere technically in the first six months, in actuality we had progressed relatively quickly compared to many other similar projects out of the gate.

After a successful first day, Rob Lowden, Mark Norton, Lance Speelmon and I celebrated with a nice dinner at the Palm Restaurant in the Westin Tabor. It took about three hours and we had a great time. Craig Counterman joined us for desert. By the time it was all done, the total bill was over

$1200. I think we added a $300 tip to the bill. Rob later found out that it was that server's first night on the job and they sent Rob a personal thank you note.

For me, the end of June and the beginning of July was a time to catch up with my responsibilities in the NEESGrid project and prepare for a combined business/family trip to Switzerland and Italy.

I had been invited to be one of the instructors of an annual Grid Summer School in Vico Equense, Italy and had an invited talk about research applications of Sakai at the CERN high-energy physics laboratory in Geneva, Switzerland. I had enough frequent flier miles to bring my family along on the trip.

July 17-18 Zurich (weekend with Dave)
July 19 CERN Talk
July 20 CERN Talk / Tour
July 20-22 Alt-I-Lab (I did not attend - San Francisco, CA)
July 21 Travel Day
July 22-23 Grid Portal Workshop (two classes), Vico Equense
July 24-25 Vico Equense (Weekend)
July 27-28 Rome
July 29 Leave from Rome

Since my son Brent has Cerebral Palsy and was in a wheel chair, the trip took months of planning to make sure everything would work. He was still small enough that we could pick him up and carry him if needed and he had a pretty significant surgery scheduled early in 2005, so it seemed like a good time to take the family to Europe. It would be the first trip to Europe for my son and daughter Brent and Mandy.

We arrived in Geneva Switzerland, and drove to Zurich to spend a long weekend with my good friend Dave LeBow. Dave is an expatriate from Pinckney, Michigan who had been living in Switzerland for over a decade. He had a lot of spare rooms and gave us a number of guided tours of beautiful Swiss vistas.

I had known David since we were in college. After he graduated from college in 1985, he emigrated to Switzerland and started a small software development business called APEX Computer Technologies AG. His company did a lot of software development first on the CTOS platform (Convergent Technologies) and later on Microsoft products, so it was always good fun to compare experiences between my open source world and his proprietary world over a 20-year friendship. Over the years, I visited him as part of many different trips to Europe. In particular if I stayed over a weekend, I could swing by his house for a few days of free lodging, free food, free wine, free use of a washer and dryer, and great conversation. David was also

a great tour guide and always had some new adventure we could embark on to some new place in Switzerland I had never seen before.

It made sense to plan my family's first weekend outside the United States at Dave's house as it would be a nice place to crash and adjust.

After a long weekend in Zurich, it was off to Geneva and CERN. At CERN, we were hosted by Steven Goldfarb, a University of Michigan Physicist living in France near CERN. Steven had originally used Sync-O-Matic to record lectures at CERN back in 1999. He was also a tour guide for the Atlas Detector that was under construction. We joined one of Steven's tours and have a nice family picture taken deep underground with the partially completed Atlas detector[1] in the background.

I gave my presentation at CERN and then we drove to Italy, stopping at Chamonix, France to explore the Mer de Glace glacier. I had to carry Brent on my back down some stairs so we could go inside the glacier and get yet another family picture. It was possible to get up to the top mountain and look at the glacier without leaving the wheelchair, but to get inside the glacier, we needed to carry Brent down several hundred stairs.

Our destination in Italy was Vico Equense, just south of Naples. Vico Equense is one of those picturesque towns built on steep mountains and/or cliffs. In my research using the web, it appeared that there were no hotels that were accessible in Vico Equense.

Luckily, one of my former students Giosue Vitagliano lived a few miles away in Castellammare Di Stabia at the time. Months earlier, I asked him to visit all of the hotels in Vico Equense and survey them for accessibility.

Giosue found that the Hotel Aequa[2] had an elevator between the floors, underground parking and all of the entryways were accessible. He explained to the Hotel Aequa staff that Brent was handicapped and would be in a wheelchair. The hotel staff immediately reserved one of their nicest and most accessible rooms for us.

Our time at the Hotel Aequa was the most enjoyable time I have ever spent at a hotel. When you wake up Mount Vesuvius is in the background as you have your morning coffee. The pool and patio are beautifully landscaped and the weather in July is simply marvelous.

Since Giosue lived only a short distance away, he became our tour guide during our stay in Vico Equense. One day he took us over the mountain to Amalfi and another day he took us to Sorrento for the evening.

One day, we planned to take a train ride from Vico Equense to Pompeii and spend the day at Pompeii. Giosue had warned us that the train workers might be going on strike that day, but we decided we would give it a try.

When we went to the train station at Vico Equense and purchased tick-

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[1]As featured in the movie Angels and Demons.

[2]http://www.aequahotel.it/

ets to Pompeii, the attendant noticed that Brent was in a wheelchair and informed us that the northbound station at Pompeii was not accessible so we would have to go one station beyond Pompeii and then come back south to Pompeii.

The attendant called ahead to the station where we would transfer and we were met by two workers with a ramp to take us off the northbound and they even held the southbound train for a few minutes and helped us get onto the southbound train. It was very impressive service.

Pompeii of course is a profoundly moving experience that cannot help but take you back in time. My personal observation is that the human condition has not really changed all that much between 79 A.D. and the current time. I was most impressed by the fast food restaurants. You could walk in from the street and get a quick bite to eat just like a Starbucks or Subway restaurant today.

On our way back from Pompeii, our train unexpectedly stopped between two stations. The claim was that there was a mechanical problem, but most on the train guessed that the train worker strike had just happened. We were stuck on a train with Brent in a wheelchair in 105-degree heat with no air conditioning and a half-bottle of water. After about 30 minutes we decided to leave the train and walk along the tracks to the train station a half-mile away. The other people on the train helped us with the wheelchair and I carried Brent on my back the half-mile back to the station.

The next problem was how to get back to Vico Equense without a train. I quickly called Giosue on the cell phone and in about 30 minutes he arrived and we packed five people and a wheelchair into his little car with the air conditioner blasting and we went back to Vico Equense. It almost looked like I was a spy when I could make a call from some random place in Italy and a "colleague" would show up and pick us up.

While I taught my sessions for the Grid Summer School, my family swam in the pool, petted the kitties that live around the Hotel Aequa and explored the town of Vico Equense. On our last day in Vico Equense, Giosue took us on a tour of Naples.

We were going to spend the last few days of the trip as an extended weekend vacation in Rome and then leave for home from there. Rome is an absolutely wonderful city, the people are wonderful and friendly and the sights and culture are amazing. I was quite impressed that the Coliseum was handicap accessible with nice elevators. I think that the Coliseum was Brent's favorite part of the trip. I would add that our trick to getting around Rome with the wheelchair was to take lots of cabs. We could move quickly and conveniently from place to place with a minimum of effort and fuss. Combining the cab rides with a few walks allowed us to see nearly all the sights in two days.

On the second day, we went to St. Peter's Basilica which always had

a line. As soon as we got close to the ticket counters, the St. Peter's staff noticed our wheelchair and whisked us to a special line and gave us the accessible tour. If you are in a wheelchair, you go through the tour backwards because that is where all of the ramps are installed. This was great for us because we avoided all the crowds and made it all the way into the Sistine Chapel. All in all, a wonderful day and a moving experience.

Brent and Mandy had been having a great time but grumbling throughout the trip because of the fast pace. Since I was interleaving work and vacation, the schedule was pretty tight and since I wanted them to see as much as possible we packed something into nearly every day. The long weekend in Rome seemed like the first time we had slowed down in three weeks and were simply on vacation. Our last dinner in Rome was in a cafe near the Trevi fountain with a violin playing in the background on an absolutely gorgeous evening.

Throughout my trip, I had tried to keep tabs on both the Sakai and NEESGrid projects. The lack of consistent and affordable Internet access made it nearly impossible. It was the first extended period where I accomplished very little work on either project. Up to that point, I was working like crazy one week on Sakai and working like crazy the next week on NEESGrid.

A number of things happened while I was away. Perhaps the most significant event was the Alt-I-Lab meeting July 20-22 in San Francisco. Pretty much all of the Sakai technical and board leadership (except me) attended the meeting. It was the first big face-to-face meeting of the Sakai teams after the Denver Partners meeting and I was not there.

Being gone for three weeks emphasized to my University of Michigan management that I was not giving Sakai 100% of my effort as its chief architect. They decided I would need to greatly reduce my involvement in NEESGrid and stop being the lead of the Michigan effort in NEESGrid. The feeling was that no matter how hard we had tried, the NCSA[3] management had made so many mistakes in the first two years of the NEESGrid project that it was pretty clear that there would be no way they would get follow-on funding after the fourth year. So we turned my NEESGrid responsibilities over to Beth Kirschner who was a senior developer at the University of Michigan. I knew Beth would do a great job and I could focus all of my effort on the Sakai project where Michigan was the leading institution and I was the chief architect. It was painful for me to walk away from NEESGrid, but I knew it was for the best.

In July we also decided that our technical approach to plugging Sakai into uPortal was so flawed that it effectively broke uPortal. We had altered the uPortal code so much to do the integration that we could hardly call

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[3]National Center for Supercomputing Applications at University of Illinois

it uPortal any more and we would have to separately maintain a copy of uPortal just for Sakai. We decided to scrap the notion of plugging Sakai into uPortal for a while and we stayed with our JetSpeed based portal that we had used in CHEF. Since the 1.0 release of Sakai was supposed to go into production in the fall of 2004 at the University of Michigan and Indiana University, we needed to start making some tough decisions that would make Sakai more of a solid product and less of a "proof that we did what we said we would do."

Also at the end of June, Blackboard contacted the Sakai Board again. This time Blackboard applied to become a paying Sakai commercial partner. Up to that point, we had pretty much accepted any partner with board approval. Each applicant was asked for an explanation as to how that partner would contribute to and support Sakai. The board considered, and turned down Blackboard's application for membership at the end of July.

My feeling was that we should have an open door policy and not try to sort out the "good companies" from the "bad companies."

My guess is that Blackboard told some of its customers who were also Sakai members about being turned down. As a result I had heard that a number of influential Sakai partner schools that were current Blackboard customers sent a letter to the Mellon Foundation complaining that the Sakai board was refusing to allow Blackboard to participate. I was hoping that the letter would force the board to positively engage with Blackboard but even with the pressure from the Mellon Foundation and influential Sakai Partners the answer was "no." The board's compromise idea was to propose a standard for tools interoperability to be developed in the IMS Global Learning Consortium. Blackboard could participate in IMS if they truly wanted to work with Sakai. This felt to me like a reasonable way forward and gave Sakai a venue to engage and effect the marketplace.

In the first week of August, the 13th World Conference on Earthquake Engineering was in Vancouver, BC. While most of the NEESGrid technical responsibilities were moving to Beth Kirschner, I still went to the conference. We were going to show the "Mini-MOST" for the first time on the 13WCEE trade show floor. The Mini-MOST was a six-foot tall hydraulically actuated device that would slowly twist and stress small two-foot concrete columns simulating the shaking patterns of various historical earthquakes until the concrete columns slowly crumbled and broke.

The Mini-MOST was real hardware and so I was mostly an observer and cheerleader. After a bit of a scare with a hydraulic leak that miraculously got fixed on the Sunday before the show opened, the Mini-MOST was a great success. It showed in a very tangible way the idea of combining computer and physical simulations that was the heart of the ideas driving the NEESGrid project. For me the meeting was sort of a "victory lap" with me having very little formal responsibilities and a little free time to be a tourist

and take floatplane ride around the Vancouver Bay.

I got to sit in the right seat of the floatplane and remember some of my own piloting experiences from my private pilot's license. The pilot used a GPS which had not been available when I had been flying in the 1970's. It was quite an improvement to have a device that let you see exactly where you are flying in three dimensions on a moving map.

Back in Sakai, in August we started preparing for production deployment of the software in earnest. One of the things we did was to conduct our first stress tests of Sakai 1.0 to see how many users it could handle. The University of Michigan had been successfully running various versions of Sakai in pilot experiments with several hundred users all summer, but this would the first time that the software would see thousands of users overall and hundreds of users using the system simultaneously so performance testing was important. Most software fails when it faces its first scaling test. After all, the programmers who have been creating the software do all their testing with one user and small pilots usually only have 1-2 users poking at the software at the same time.

Sakai's first scalability tests failed spectacularly. Once we had more than 25 users on a server, it became agonizingly slow. And even worse, over time as the users stored more data in the system, it got even slower. And after enough long-term usage, the amount of data in the system grew to the point where Sakai 1.0 would crash after even a short load test. The mistake was an overuse of in-memory data structures. Systems like Sakai store their data in a database. But to give a system better performance, often some of the data is also kept in memory to reduce the use of the database. Sakai 1.0 made the mistake of trying to keep too much of the data in memory, thinking that it would make performance even better. In some cases, Sakai 1.0 pulled all of the data from the database into the memory and kept it in memory. The problem was that if that data gets too large, it simply cannot fit in memory and the program runs out of memory and fails.

The solution was to restructure how Sakai 1.0 stored data in its database and make it so Sakai retrieved data from the database efficiently and only kept a subset of its data in memory to improve performance. This meant a quick rewrite of a few of the core elements of Sakai during the first few weeks of August and then redoing the storage approaches of the rest of the code that had originated in CHEF.

I distinctly remember sitting in a board meeting thinking that things could not get worse technically on the project so I might as well be honest with the board. I told them that we needed to slip the entire schedule three months so we could take time to rewrite the core elements of Sakai and produce a 1.5 release in December that would solve the scalability problems. I also said that we would need to delay our planned progress on addressing the outstanding gaps in the core architecture as well.

With Glenn's great ability to quickly rework the code, we were able to make enough changes in Sakai so that it could run without crashing at moderate usage levels in production at Michigan and Indiana in September 2004. Once again, we had achieved a grant milestone to be in production at two sites, but only barely, and had given up on many of the technical and architectural goals we had set for the project when we wrote the grant. And we kept not making any progress addressing the gaps in the Sakai software.

As usual, the outside perception of the Sakai project did not match the intense stress that we were experiencing inside the project. Between February and September 2004, we added 45 commercial and academic members to the Sakai Partners Program. The growth was almost a perfect straight line with 1-2 new members joining every single week. Not only was it a good indication that people wanted us to succeed, it represented $450,000 of additional revenue for the next three years that would sustain us when our grant funding ran out.

Chapter 5

The Big Meeting

We sprinted during August making the necessary changes to Sakai 1.0 so it could run in production at the University of Michigan and as a large-scale pilot at Indiana University. We made it into production in September and then continued working on issues as they arose, often upgrading the production software several times per week.

After the tumultuous spring and summer, the board felt we needed an all-hands meeting where we would sit down and calmly figure out where this project was really going. We scheduled a three-day meeting at Indianapolis on September 13-15 with the entire board, architecture team, and tool design team members in attendance. We were not interested in blaming anyone for what had happened — we just needed a plan to go forward. It was a relatively relaxed period because Indiana and Michigan were in production and we were just putting the final touches on the 1.0 release.

The meeting started with an architecture discussion and ended with a board discussion. There was a lot of criticism of the CHEF-based "legacy" architecture and how limiting our user-interface technology using Java Server Faces had turned out to be. Most of the criticism of the architecture came from Jeff Merriman of OKI/MIT and Craig Counterman of MIT. Jeff Merriman suggested that the only solution to these deep architectural problems was a complete rewrite from scratch. Jeff even had a code name for the rewrite. He called it "Project Murimoto" because Masaharu Murimoto was one of the two original Iron Chefs along with Hiroyuki Sakai. Jeff felt that we needed to go back to the beginning and start over.

Brad Wheeler of Indiana and Lois Brooks of Stanford felt like we could not take the time to do a rewrite because we had lost so much time and had made so little progress on the missing functionality that was needed, that it put them at risk of not having enough functionality in the product by the end of 2005 for them to be able to put it into production. The Indiana and Stanford developers were already being significantly delayed by our lack of delivery of core architectural features that they needed to make progress on

the Sakai tools they were building.

I was in a strange position in the discussions because I knew that Jeff and Craig were right and we needed a significant rewrite. I also knew that if we took the time to do that rewrite that Lois and Brad's predictions would come true as well. And to further complicate things, my feeling was that I had low credibility with the board and Architecture Team on technical matters, that if I revealed which of the two positions I agreed with, I suspected that the majority of the board would immediately vote to do the opposite of what I suggested.

So I kept my opinions to myself as much as possible, secretly rooting for Jeff and Craig to carry the day. It was probably just as well that I muzzled myself because at the end of the discussion, we came up with a good compromise plan. For the last few months of 2004, Indiana, Michigan, and Stanford would focus on improving our existing code base while Craig Counterman from MIT would write prototype code that would prove that we could redo the worst bits of the Sakai 1.0 architecture in a far simpler manner.

Once we agreed to this distribution of labor, we set about defining the problems that Craig's code would need to solve to prove that his approach was indeed feasible. We came up with five "challenges" and if Craig could provide technical solutions in the form of working code, we felt like a rewrite would both be possible and that the results after the rewrite would be far more elegant than the Sakai 1.0 architecture.

As a concession to the board, I agreed to change my project management reports to the board. Throughout the project so far, I had used a "Balanced Scorecard" approach with a list of tasks and a simple Green/Yellow/Red indicator on each task along with any notes. Going forward, I was to provide them with a full PERT chart of each fine-grained task in the project, the estimated time of completion of the task and the resources assigned to each task.

I tried in vain to tell them that software development was not the same as a construction project and that in my experience, every single time I had given management a Microsoft Project description of a series of software development tasks, the management always would press the "Resource Leveling" button and tell me to restructure the project based on resource leveling. They assured me that they would do no such thing and the project plan would only be a communication device that was fully under my control.

As the retreat ended, I agreed that we would switch to Microsoft Project for our project management. I explained to Joseph that I felt that creating the Microsoft Project document was a complete waste of my time, so he brought Mike Elledge in to help with the preparation of the Microsoft Project document. Mike was our expert in accessibility and I really enjoyed working with him and he had a calm personality and I thought it would be

helpful to have more calm people on the team. The project plan became Mike's responsibility and he would be in the board meetings presenting the plan, so I could pretty much ignore the plan except when Mike needed something from me. This kept me free to work on the short-term production problems and architectural gaps in Sakai 1.0, supporting the Stanford and Indiana developers working on new tools for Sakai, and keeping track of Craig's work on the "Framework-II" prototypes.

After the retreat, Joseph felt we needed to improve the overall approach to the quality of the product. Up to that point in the project, all the developers did the Quality Assurance for each release and we did a pretty good job of those relatively simple releases.

Joseph had met with Carol Dippel who had inquired as to whether or not we could use some help on Quality Assurance. Carol was from Berkeley, California and she had just finished her master's degree from the University of San Francisco where her research was in open source development in higher education. She wanted to get involved in the Sakai project to test some of the ideas from her master's degree.

My first reaction was that the last thing we needed was a QA Director who would simply become yet another person clamoring to set the priorities and directions for the small amount of real resources I could actually allocate.

So I initially ignored Joseph's requests, but he was insistent that I talk to Carol and see if she could help us on the project. In the first week of October, I had a trip out to Berkeley for a meeting and I agreed to have dinner with Carol just so Joseph would stop bugging me.

I liked Carol as soon as we met. She was more solid than I had expected. She had gone back to school as an adult to get her Master's degree and she had a lot of real-world QA experience in high-pressure situations with Silicon-Valley companies.

Half-way through dinner, I felt comfortable enough to launch into my "QA Speech" about how most of the QA people I had met in projects were the folks who did not have the skill to contribute any other way. I felt that most of the time they were more interested in adding paperwork to processes than they were about improving the quality of the product. I went on to say how they really don't contribute all that much to the project but instead spend all their time complaining to management about how no one is paying any attention to them. I think that my goal in this little speech was to scare her away.

Carol politely listened to my little speech and when I was done, she smiled broadly and said, "We are going to get along very well in this project." She went on to say she had heard that same speech many times from developers like me on other projects she had worked on and by the end of those projects, those same people had become her biggest fans.

I then smiled and said, "Welcome to the project." Carol became our first director of Quality Assurance and she immediately started attending our meetings and becoming familiar with the project.

Carol's approach to Quality Assurance used a technique she called "White Box Testing" where they did not treat the system as a "black box" and poke it and prod it to see if they could get it to break. Her approach meant they would look at the project from both the inside and outside and use their understanding of how the program was structured internally to guide their QA efforts. QA was continuous, and did not require a lot of effort or paperwork for it to work. She was committed to her work adding value to the project rather than slowing us down. It all sounded great to me.

Carol's first task would be to coordinate the Quality Assurance of the Sakai 1.5 release scheduled for the end of the 2004 year.

A few weeks later, October 5, 2004 we felt we had fixed enough to release the real version of Sakai 1.0. I shaved my head to celebrate the moment where we felt like we had made it through the stressful times and produced real production ready software. It felt like the experience of putting the software in production and then quickly fixing the problems that arose was a great way to improve the quality of the product quite quickly. We were later rather surprised to find out that several schools that we had never heard of had installed Sakai 1.0 in production and it worked nicely for them.

The University of Lleida had taken the Beta release of Sakai 1.0, installed it, translated it into Catalan, and used it for teaching and learning on their campus. Later they told me that the software was solid as a rock for them. Again, we see the significant difference of the perspective from the inside versus the outside of the project.

The 2004 Educause Conference was in Denver, Colorado October 18-22. With the Sakai 1.0 release in hand, and work progressing nicely toward the Sakai 1.5 release, as I was preparing to go to Denver, it felt a bit like the clouds over the project had parted for a moment and a bit of sun had started to shine through.

Our board members had done really well in getting presentations accepted to Educause. This was particularly interesting because the call for papers was all the way back in January when the project was just getting started. Whatever their official topic, somehow they worked Sakai into their presentation. Brad Wheeler, Mara Hancock, Lois Brooks, and Vivie Sinou all gave great presentations. And the proudest moment of all was when they would ask the crowd how many of them had previously heard of the Sakai Project. Nearly every hand in the room was raised. We all felt that this was a very impressive feat. In nine short months our Sakai brand was almost universally known among the leadership in higher education. I attribute this to a lot of hard work on the part of our board members, proudly promoting Sakai everywhere they went.

I kept wondering why it seemed that we had so much internal disagreement and yet all the while, all of the partners were so proudly and publicly supportive of what we were doing and trying to do. It was like the Sakai Project was a family — we might fight with each other over one thing or another, but we always stuck together.

On the Thursday night of Educause week, we had a nice reception with free food and drink to recruit new Sakai Partners. It was an awesome event, the board members and technical leadership functioned like a well-oiled sales machine as we recruited new members of the family. In the time period immediately following that Educause meeting, we added 20 new Sakai Partners in two months giving us a total of 75 members overall.

Chapter 6

The Little Project That Could

In November and December of 2004, it felt like the project was regaining some sense of control. While we had failed on some of the grant deliverables and had made limited progress on the functionality gaps, we had produced software that could run in production and the teams at Stanford, Indiana, and Michigan were working pretty well together and making progress building tools for Sakai. MIT was working on the prototype code that would guide the Sakai 2.0 rewrite effort.

Mike Elledge did a great job as a project manager, contacting all of the technical staff, getting task and time estimates from them, and keeping the board informed during their regular bi-weekly meetings. As I predicted, as soon as they had a relatively complete and honest Microsoft Project document showing that some of the desired deliverables would not be done by our December 15 code freeze for the Sakai 1.5 release, they started pressing the "Resource Leveling" button in Microsoft Project and asking Mike to negotiate with the developer teams to change their estimates so it would look like more would get done by December 15.

Mike did all that the board asked and gave them lots of paper to make them feel good and when it was all said and done, we accomplished almost exactly what the honest project plan predicted before the board added their "value add" to the project planning process.

I rolled my eyes at the amount of time the board wasted on the project plan but loved the fact that the board was distracted by it. While they were distracted, I could focus on fixing and improving our product as quickly as possible.

Glenn Golden continued to quickly fix every production problem encountered at Indiana or Michigan and even had time to support some of the developers who were building new tools. We also brought on Jon Andersen at Michigan full-time to help us. Jon had been a student since the CHEF days and understood Glenn's code really well. Jon worked directly with the Stanford team to try to address some of the issues that were blocking them

from making progress.

Craig Counterman of MIT had developed his prototype "Framework II" code that addressed all of the challenges we had identified in our September meeting. Craig's solutions looked simple and elegant and it was clear that we should start the 2.0 rewrite as quickly as possible.

Since the Sakai 1.5 code was relatively complete except for the Samigo testing engine being developed by Stanford, we froze the code on December 3, 2004 and turned the Quality Assurance of the release over to Carol Dippel and her team. She would test the release, identify problems, and work with the developers to fix the problems and decide when the release was ready to go.

On December 3, I attended an open source conference in Phoenix, Arizona organized by John Robinson of the rSmart company. As part of a panel discussing the future of open source in teaching and learning technology, I used an analogy of water transforming from a frozen to liquid and then to a gaseous state. I suggested that the primary purpose of Sakai was to unfreeze the marketplace — when you melt ice or boil water, sometimes you just have to keep adding heat without the temperature going up. I suggested that Sakai was pushing the market toward the liquid stage, but the real goal was to open things wide open in the future where we could freely plug in lots of portable learning tools regardless of which learning environment you would be using.

I told the story of having quit three jobs in four years in order to pursue my dreams to innovate in the teaching and learning space. I also suggested that Sakai for me was just an interim step and that some day, once the market truly was opened up, I could stop being a Learning Management System architect and go back to being a teacher that would hack up a few tools in my spare time. I proposed a roadmap of Sakai with versions 1.0, 2.0, and a content and mash-up centered Sakai 3.0. I said that the IMS Tools Interoperability standard was the path to my future vision.

In addition to the Chief Information Officers and technologists at the summit, there were several IBM employees including Mike King and Chris Davia. IBM had noticed Sakai's emergence and was interested in seeing how they could get involved and support Sakai. IBM was already a solid supporter of the open source Apache, Linux, and Eclipse efforts so it was exciting to have IBM interested in Sakai. We had some early conversations about them becoming a commercial partner.

Our second partners' meeting was December 8-10 in New Orleans, LA. The meeting was in a great party town and we were staying at the W Hotel which was pure fun. To me the project felt to be in pretty good shape. The Sakai 1.5 release was in Quality Assurance testing and work had started on the Sakai 2.0 rewrite and looked like it was going to work out wonderfully thanks to Craig Counterman's excellent research.

I composed a song called "We Are The Developers of Sakai" which was sung to the tune of "We Are The Champions of the World" by Queen. I used the song to make a music video that included groups of people and individuals singing the song. It turned out pretty cheesy, but we needed to have a little fun after a full year of running the project at breakneck speed and bouncing from one problem to another.

The Thursday night of the meeting was a demonstration of various innovative uses of Sakai along with free food and drinks. As it was our last night in New Orleans, after the demonstration reception, a few of us went out on the town to celebrate. We had a great time and I ended up drinking above my normal levels. The next morning, I had one of the final presentations of the conference starting at 9AM in the morning. Since it had been a pretty late evening the night before, I was still in bad shape when I arrived to give my presentation. I sat at the front table with Lance, Mark, Craig, and the rest of the architecture leadership while someone made some introductory remarks.

When I got up to give my presentation, the room started to spin and I was not sure I could stand up for 40 minutes. With as much coolness as I could muster, I turned to Lance and said, "I am still drunk from last night and I cannot give this presentation. I need you to give the presentation.", and sat down. Lance had seen most of the material many times before and he was quite familiar with the topic so Lance stood up, took over and gave my talk for me.

After the conference, things started to slow down due to the upcoming holidays, but Glenn, Craig, Lance, Mark Norton, and I took the opportunity to get a head start on the Sakai 2.0 rewrite.

Chapter 7

Framework II — The Sequel

Sakai 1.0 and 1.5 were great learning experiences because we learned what not to do. We also let go of the details in the original grant proposal and decided to simply build the best learning management system software we could, as quickly as possible.

January 12-14, 2005 I was at Northwestern University attending an IMS meeting working on the IMS Tools Interoperability specification with Anthony Whyte when we found out that the production servers running Sakai 1.5 were slowing to a crawl and then crashing. It was actually the first time since we had started Sakai that the University of Michigan Sakai servers had failed in production.

It was an all-hands-on-deck situation. Within five hours, Anthony and I working remotely with Glenn had a patch that we felt partially addressed the problem and would give us more data about the real extent of the problem. That patch was installed the next morning and we limped through the day with sluggish data but no crashing servers and based on the data we had collected developed a second patch which fixed the problem. While having a production slowdown is never good, particularly when we were running the entire learning management system for the university, it was nice to have a fix in place three days later, with a total of 18 hours of outages.

On January 18-19, we had our third all hands meeting where the board, tools team, and architecture team came together to plan the next six months. This was also the first all hands meeting where the team members from the University of California Berkeley and Foothill College attended the meeting. This would be the team that would develop Sakai during the second year of our grant.

This was a important meeting because we were starting the Sakai 2.0 rewrite effort and at the same time, we were defining the requirements that Stanford and Indiana would need to put Sakai into production in the fall of 2005 to meet their grant requirements. We were very much running out of time to say "Oops" and execute a "do-over" move. So while just a month

earlier we were celebrating a year of amazing progress in New Orleans, as we laid out what we needed to accomplish by June, the journey ahead seemed nearly impossible.

Simultaneously doing both a framework rewrite and functionality push greatly increased the overall risk to the timeline. If either of the efforts experienced a hiccup, it would throw the other off schedule.

The major requirements for the 2.0 release would be completing the Samigo testing engine and building the Sakai grade book which was to be led by Berkeley and MIT. Indiana would continue to evolve its tools and Michigan would lead the development of the Sakai 2.0 framework and the legacy adapter so that Sakai 1.x tools could be plugged into Sakai 2.0.

Foothill College and Berkeley brought additional developers into Sakai but also brought in new requirements that were important for their own adoption of Sakai. Berkeley needed a "Sections Tool" that allowed for students to be allocated to "discussion sections" during the first week of a course. Foothill would work on a content authoring and organizing tool they called "Melete."

The Samigo testing engine was already integrated into Sakai 1.0 so it would remain a Sakai 1.0 tool and be plugged into Sakai 2.0 using the legacy adapters. Because Berkeley and MIT did not want to use any of the inelegant Sakai 1.0 Application Program Interfaces (APIs), they decided to build their grade book as a stand-alone application and plug it directly into Sakai 2.0 as the first pure Framework-II tool.

The Berkeley approach was a little risky because we did not know exactly what Sakai 2.0 would look like until we were nearly done. But we figured that plugging a stand-alone web application into Sakai 2.0 might ultimately be easier in the long run than building a whole new Sakai 1.0 tool from scratch. And it allowed MIT and Berkeley to progress on a independent schedule with their own self-organized design, project management, and developer teams. With as tight a schedule as we had for Sakai 2.0, having some parts able to progress without cross-team coordination was quite nice. We had a grade book developers meeting at Berkeley on January 25, a week after the all hands meeting.

To me, the new Sakai 2.0 framework was the most important deliverable since the rest of our 2.0 plan was built around it being delivered by the end of March. For my own time, I spent most of my design and development time in January getting the 2.0 effort started.

The underlying principle of Sakai 2.0 was to produce a framework that was less proscriptive for the developers and allowed a wider variety of approaches to building a Sakai tool. The Sakai 1.0 framework was very proscriptive and forced every tool to be written using a specialized Sakai dialect. We wanted our new framework to be as close to simply writing a standard Java web application as we best could.

At each point in the design and implementation when we introduced something, we tried to keep it as simple and unintrusive as we could. Craig Counterman's prototype code gave us a great blueprint for the simplified approach.

While Craig had built the prototype code, he did not want to build the new Sakai 2.0 code. Craig had responsibilities back at MIT that kept him from working full-time on Sakai so we decided that Glenn would take the development lead on Sakai 2.0.

Glenn wanted to write specifications for each of the technical elements of Sakai 2.0 before we wrote any code. He took Craig's ideas and fleshed them out as specifications that we reviewed and approved before any code was written. Then once the code was finished, we had developer documentation for each of the features of the Sakai 2.0 framework.

We kept the group involved in Sakai 2.0 design and reviews relatively small. The group consisted of Craig Counterman of MIT, Mark Norton, Lance Speelmon of Indiana, and Glenn Golden and me from the University of Michigan. By this point, we knew each other well and had a high level of trust and respect in the group. Glenn would write a specification for a portion of the code, we would quickly review it and modify it as needed and Glenn would write the code for use to test and examine. As we did this over and over during the first three months of 2005, the low-level bits of the Sakai 2.0 framework came together.

The Berkeley and MIT grade book team started out on their design for the grade book. We dedicated Jon Andersen to work with the Samigo team to finish the Samigo work for the Sakai 1.5 release, keep Samigo well aligned with Sakai 2.0 as it evolved, and then help to get Samigo plugged into Sakai 2.0 when the new framework was finished.

The Michigan team would continue to address gaps and make improvements in the core Sakai 1.0 tools. Daphne Ogle of the University of Michigan led a cross-tool effort to improve the Sakai 1.0 tools compliance to the newly minted Sakai Style Guide that was developed by the Tools Team.

Another task that we added to Sakai 2.0 was the ability to translate the Sakai user interface into more than one language. And the help came from an unexpected source of strong talent at the University of Lleida in Spain.

CHEF was originally written as an English-only application so Sakai 1.0 was also an English-only application. We knew that this was a terrible shortcoming in our product but since the four founding schools were all in the United States, the priority of making Sakai translatable just never got near the top.

As we were completing the development of Sakai 1.5, I created a spreadsheet that I titled "Chuck's Scary List." The list included 29 things that I felt should have been in Sakai 1.5 but were simply not going to make it. Some of the items in the list had a note that we might get to them later and

other items on the list were left blank to indicate that they probably would not even get done in 2005.

Internationalization was an item on the list that had no resources and I felt had no chance of getting any resources in 2005. I knew it was increasingly important as our partners now were from all over the world but the four schools were fighting for their very survival and there was no room for "nice to have."

I had intended to send my scary list to the board and project leadership but instead I mistakenly sent it to the entire worldwide developers list of about 1000 people. A few days later, I got the following mail message:

On 12/13/04 7:25 AM, "David Barroso" wrote:

Hello Charles,

We, at University of Lleida, can do the internationalization work for sakai 2.0.

We are very interested in it !!

When can we start job ?

Regards,

It turned out that the University of Lleida had downloaded an early version of Sakai 1.0 and had translated it to Catalan and had been running it fall semester on their campus.

They were starting to get concerned because we were making new releases every 3-6 months and they realized that they could redo the translation for every release or simply help us make it so that Sakai could be easily translated into any language. In the long run it would save them a lot of pain and time. They had four developers available for the task and they were already quite familiar with the Sakai 1.0 tools. I told them that Sakai 2.0 would be a race and that we were doing some user interface cleanup during the 2.0 development cycle so we would be touching every single tool in the 2.0 effort.

The only approach that I felt would work without harming our schedule would be for them to work on one tool at a time. We dedicated Beth Kirschner to be their local contact. Beth would review and commit all of their changes. They would pick a tool to work on, and we would freeze the tool from other developers for a week. During that week the four Lleida developers would work together to quickly make the necessary changes to support translation and then get the results back to Beth so she could check the code back in and unfreeze the tool for the rest of the development team. The

Lleida team would repeat this for each of the tools until they had changed every tool in Sakai. The plan worked to perfection. The Lleida team of Alex Ballesté, David Barroso, José Garcia, and Carol Manchó worked quickly during the Sakai 2.0 effort and as a result Sakai 2.0 was released with the ability to be easily translated into any language.

I feel that in some ways, if we had waited another full year and had only provided translatability in June of 2006 instead of June 2005, it may have been too late.

By the end of January 2005, it finally felt as though we were working like a team across all of the organizations. Everyone knew what to do, and we had distributed leadership so that Glenn and I were no longer the rate-limiting factor on the project's productivity.

Getting the project organized and working smoothly could not have come at a better time for me personally. Brent was scheduled for hip surgery on February 18, 2005 and I needed to stay with him 24 hours per day for about three weeks as he recovered.

Brent had spent so much time in a wheelchair that his right hip socket had not properly formed around his thighbone. They needed to graft an extra triangular piece of bone onto his hip socket so his hipbone would fit properly into its socket.

We had an architecture meeting in Indianapolis two days before Brent's hip surgery. When I was driving back to Michigan from the meeting, I was getting a bit nervous and in a bit of a hurry to see Brent and spend his last pre-surgery day with him. I got a speeding ticket in Northern Indiana for going 90 miles per hour in a 65 mile per hour zone.

The surgery went well, but Brent's first night after the surgery was a bit rough. It felt a lot better when we went home the next day. Brent was in a plaster body cast from his chest to his toes. Since this was his third surgery, I had the nurse job pretty well figured out. My main job was to be right next to him 24 hours per day and help manage his pain by carefully monitoring the time and dosage of his pain medication. After a week passed his pain was greatly reduced and I left the house to give a Sakai talk at Michigan State University for a few hours and then got right back to be with Brent.

I stayed in touch with the project teams using E-Mail and my cell phone. Things were humming pretty smoothly so thankfully I could focus on Brent most of the time.

I remember having one bad afternoon where I had a series of stressful phone calls in quick succession. I think that the first was about something in NEESGrid, and the second was some political issue in Sakai, and Brent's pain medication was wearing off so he needed help. Feeling helpless and overwhelmed, I busted a gasket and out came some combination of shouting, crying, and swearing. I was fine a minute later, and to this day I do not remember the exact topics of the phone calls, but for about a year after that,

every time Brent would hear me getting tense on a phone call, he would ask, "Is that so-and-so on the call?" Perhaps he remembered the incident better than I did.

After three weeks of recovery, Brent was no longer in any pain so I could travel once again. My first trip was to Los Angeles on February 11 to support Vivie Sinou's Etudes project as they introduced their Etudes Next Generation product that would be based on Sakai 1.5. A week later, I was in El Segundo at a uPortal developers meeting where I experienced my first earthquake.

I was back on the road, with my own technical focus on a small fraction of the project (the Sakai 2.0 framework) with solid leadership in all of the other areas of the project team that did not need my day-to-day interaction.

From December 2004 through March 2005, Carol Dippel had been leading the Quality Assurance work of the Sakai 1.5 release. It was fun to watch her work. She lead, taught, mentored and guided her small team. They would find problems, bring them to the developer's attention, and then gently manage and track the bug-fixing tasks, working individually with each developer.

What I liked the most about Carol's process was that I was hardly involved at all. Every once in a while she would ask me to do something technical or work with her to get some attention from another team to something that she felt was not getting enough attention. All in all, she insured that the 1.5 QA moved inexorably forward toward a release. Her leadership allowed me to focus on the 2.0 release during that same time.

The hardest part to get finished for Sakai 1.5 was Samigo. Daisy Flemming, Ed Smiley, Charles Kerns, Marc Brierly, and Lydia Li had inherited a massive code base that contained some Stanford code and some Indiana code. Portions of the Samigo codebase dated back to 2002 when the Navigo and SAM projects were separate efforts within OKI. And between 2002 and 2005, the rules that they were to follow kept changing. First they were to be OKI tools, then they were to be Sakai 1.0 tools, rewritten in Spring and Java Server Faces. Throughout 2004, they were continuously waiting on gaps to be addressed in Sakai 1.0 to let them make forward progress in converting their code to use Sakai 1.0 patterns.

There had also been some turnover in the technical team and leadership of the Samigo effort, and all of the work had been done "in a hurry" because of the aggressive Sakai timelines.

Samigo was also a large tool. The software to give tests and quizzes often is over 1/3 of the code base of a typical Learning Management System. And the data and performance requirements of an assessment engine are harsher than the rest of an LMS. As an example, it is quite common to herd 300 people into computer labs to take a three-hour online final exam at the same time so no one can cheat. And of course the students will be typing and

clicking as fast as they can. This heavy use of the same database tables and code at the exact same time is challenging to build and keep reliable. And if an hour into that final exam, the testing software starts failing, the faculty member is likely to be white-hot in anger. So the stakes were high for Samigo and the code was a mess. Daisy, Lydia, and Jon Andersen worked throughout the end of 2004 and the beginning of 2005 trying to clean it up and shoehorn it into Sakai 1.5.

The rest of Sakai 1.5 had been frozen December 15, 2004 and had been nicely moving through QA, but the Samigo development continued well into February. At some point, we decided we needed to ship the Sakai 1.5 release without Samigo and then follow it up quickly with a 1.5.1 release that included Samigo. This would let us focus all of our QA efforts on Samigo.

I sent the following e-mail to Carol as the Sakai 1.5 QA drew to a close:

From: "Charles Severance"
To: "Carol Dippel"
Cc: "Joseph Hardin"
Sent: Wednesday, March 09, 2005 7:21 AM
Subject: I am such a fan now

Carol,

I want to say "thanks" for all of the QA work you did on 1.5. I have already told you many times that you are "not like those other QA people". Your work on 1.5 is very impressive to me.

I have never in my 30-year career developing and releasing software felt more confident about a release that I barely touched from a QA perspective. (Knock on wood).

What was particularly cool was not only *what* was done - but how many people were involved, how quickly they responded, and how well it was all communicated to the QA team and the rest of the team.

Again, thanks. I am now officially spoiled. Heaven help the next QA person I meet :)

P.S. I was gushing about you to Joseph and he gushed right back at me about how he feels about your work :)

We released Sakai 1.5 without Samigo on March 25, 2005. It was the first time we had made a release of software before it had been in production

and was the first time we had a professional approach to Quality Assurance for the project.

March 28-29 was the annual Andrew W. Mellon Foundation Awardees meeting in New York City. I love going to New York City and loved being with the amazing people that had been funded by Mellon. But unlike the previous year, I felt like Sakai, Joseph, and I were rising stars in the portfolio of Mellon-funded projects. It had been a tough year but we had made it through and with Sakai 2.0 effort underway, we were finally moving forward in a good direction at a quick pace. I watched as most of the other awardees re-hashed their previous year's slides and Mitch Kapor's Chandler project was trying to finesse the fact that his project had gone back to the drawing board.

Joseph and I reported on Sakai and spoke of two successful releases (1.0 and 1.5), two partner schools in production, two well-attended partners conferences, and having gone from zero to 92 members in a year that would give us nearly a million dollars of annual revenue after the grant funds were over.

We wanted another round of funding because we saw an amazing upside if we could re-work Sakai to expose all of its data securely on the web using a technology called Resource Definition Format (RDF). With RDF, we felt that entire new applications could be written outside of Sakai making use of all of the data stored in Sakai. We knew that the community priorities would never choose to develop such a feature so we wanted funds for 2006-2007 to take the project to the next level technically.

Everyone at the meeting was talking about their RDF plans so we turned out to be just one of many groups who felt that their next round of funding should be around adding RDF capabilities to their product. RDF was the hot research buzzword of 2005-2006.

Back in the Sakai project at the end of March, it was time to bring all the Sakai 1.0 efforts (the Berkeley stand-alone grade book, the Stanford Samigo assessment engine, and the new Sakai 2.0 framework) together as a single functioning product. I knew it was possible but that because there were so many little details that would need to be worked out. I knew it would take a long time.

Chapter 8

The Devil is in the Details

In March of 2005, the Sakai 2.0 framework looked really good. It met all of our design goals of being simple and elegant. When we compared Sakai 2.0 to Sakai 1.0, Sakai 1.0 looked like a mess of spaghetti. It was no wonder that all of the developers who were forced to work with Sakai 1.0 had such a painful experience.

But at the end of March we needed to switch gears from building Sakai 2.0 to bringing the Sakai 1.0 tools into Sakai 2.0 so we would actually have a real working product by mid-June. This was to be done using the "Legacy Application Adapter" that would make Sakai 2.0 emulate Sakai 1.0 using a hopefully thin layer of software "glue." I told Glenn to shift his priority to the integration efforts in the beginning of April.

But there were a few other details that needed a bit of attention at the overall project level.

The biggest wild card in the Sakai 2.0 schedule was the Open Source Portfolio Initiative (OSPI) — another Mellon-funded project led by Indiana University and rSmart. OSPI 1.0 initially started as a stand alone portfolio system and completely independent product. As they finished OSPI 1.0 in 2003 and started designing OSPI 2.0 they found that many of the features they wanted (file management, email, threaded discussion, etc) were already going to be built by Sakai. The technical approach for the OSPI 2.0 project was that it would be built as an extension on top of the Sakai platform but the user interface would be quite different and there would be a number of changed and additional tools to make the resulting software a stand-alone portfolio system.

The OSPI project would take each Sakai release and add or tweak the code and then release its own independent release. Throughout 2004 and the beginning was in a state of flux and our releases were coming fast and furious and usually our releases arrived at least 1-2 months after their scheduled dates.

This meant that any slip in the Sakai schedule automatically slipped the

OSPI schedule even further. In the first half of 2005, Indiana wanted to merge the OSPI code into the core Sakai release and then when we would release a version of Sakai, the OSPI product would be included as part of the release. The two code bases would live side by side and be co-developed from that point forward.

The problem was that since the OSPI approach was based on altering the Sakai code base to make an independent release, they would not hesitate to make a dramatic change in any part of the user interface of Sakai so as to better meet the needs of building and maintaining portfolios and the portfolio tools.

Success of the OSPI software was important to Indiana and nearly everyone loved the idea of having a learning management system that also contained a portfolio system. But for everyone except Indiana, having OSPI in the Sakai 2.0 release was a "nice to have" but a low priority in a learning management system that was missing an assessment engine and a grade book. I believed from the beginning that OSPI was on the bubble and in a pretty risk-filled schedule, I gave it very little attention.

At the same time, the Indiana OSPI team was fully aware of the 2.0 time line and was working as hard as they could to get their product ready to be integrated into Sakai 2.0 for the release. I was happy to see all the effort and felt that once we had shipped Sakai 2.0, it would be a small matter to add OSPI to Sakai over the summer. I also really would have preferred if Indiana would run the Sakai 2.0 and OSPI combination in their own production before the code became the community responsibility to support, fix and improve. But the OSPI project was running out of time and they were pushing hard to adapt their work to the Sakai 2.0 framework.

They had made great progress in moving their work forward, but it really took a lot of core aspects of Sakai in very different directions. They had taken their Sakai 1.5 code which cut deeply into Sakai and brought it forward into Sakai 2.0 without much effort put into blending OSPI functionality seamlessly into Sakai's user interface or code base.

What the OSPI team was doing made perfect sense to them because they were a small independent project with their own design team. And of course their OSPI designs were fine for the OSPI project, but the Sakai style guide and user interface was result of a lot of consensus building and not something I was willing to throw away and simply accept the OSPI user interface.

Blending two feature sets and user interfaces together without breaking either one is a careful and slow process. It was not something to drop on a community six weeks before anticipated code freeze and 10 weeks before the release that would define the measure of our project forever. I knew that without a doubt Sakai priorities needed to have precedence over OSPI priorities even if it meant the OSPI team needed to be patient.

I sent the following rambling email status update to the entire Sakai community at 12:27PM:

Hello all,

I figured that I would drop a line about some of the things that are going on in Sakai these days. Sometimes it is quiet — too quiet. But there is much activity underneath the "quiet calm surface". :)

Probably the biggest thing is the sakai2 framework work led by Glenn Golden and Craig Counterman — it is really looking good and pretty much done. The idea is to rewrite and re-factor the low-level "glue" code that connects tools and services together. In 1.5 things were a bit monolithic which made it hard to make changes. Integrating things like Samigo and Xwiki into 1.5 was a learning experience which among other things led us to a much cleaner approach in 2.0. You can see it all in the sakai2 CVS area and read design documents under Resources in the Sakai Development site on the collab.sakaiproject.org site.

When you check it out from CVS, don't be surprised that Sakai2 is not yet "all of Sakai" — now that the framework is in place, the tools and services are being moved from the Sakai CVS to the sakai2 CVS — in effect re-gluing things together. It is probably a few more weeks before sakai2 is ready to handle all development (tools, APIs, etc).

Common services (the new Sakai Gold standard APIs) are forming up in the common CVS area led by Lance Speelmon and a new set of JSF widgets are being grown in CVS as well by Jon Andersen and Ed Smiley.

In the tools area, there is a lot of activity:

The grade book is moving well - and always pushing the envelope in terms of what the framework, APIs and JSF can provide - this is exactly what we wanted the grade book to do. The Sakai board told us that the grade book and anything that the grade book depended on was their highest priority for the 2.0 release.

In a recent development, Sakai is working more closely with OSPI to merge the OSPI repository with the Sakai Resources. This should be very cool and provide us a new and improved WebDav based on the Web Construction Kit (WCK). This will also be really good news for folks who want to deploy OSPI in their Sakai deployments (probably that includes everyone :)).

Mucho mucho gracias to the folks at Universitat de Lleida (David, Jose, Carol and Alex) and Beth Kirschner of the NEESGrid project, we have internationalized versions of the current Sakai tools. This was amazing work and done with resources outside the core of Sakai!

The existing Sakai tools are being cleaned up and made style guide compliant. This is a bunch of work and being led by Daphne Ogle.

Foothill is working on a module building tool called Melete - it is going into pilot production with Sakai 1.5 in a few weeks with 300 classes - very cool.

I met with the uPortal developers and we are getting on the same page. Andrew Petro of Yale will be acting to help align the Sakai uPortal efforts as we move forward.

We are starting work on adding Web Services to sakai2 in anticipation of the IMS demo at alt-i-lab in late June. While I hate to commit to things, it is better than 50-50 that Sakai 2.0 will have some basic web services when it ships (and no Tom this is not an April's fools joke :)).

Sakai 1.5.1 is moving along well - David Haines, Lance Speelmon and Daisy Flemming are putting the finishing touches on the release to hand over to QA. We are not rushing 1.5.1 - it will come out when it is in good shape.

Each release improves our approach to QA. Craig Counterman has built a whole series of QA systems, with different databases for more thorough testing of Sakai running on different databases. Carol Dippel and her volunteer QA team continue to amaze me. In a way it seems like we are inventing "open-QA" - time to write a magazine article I think...

At times, it seems like Sakai 2.0 is a "Hamster Wheel" release. We are running very fast, and yet, when we are all done we won't seem to be very far away from where we started in 1.5 - but it will be *much* better code and much cleaner in the anticipation of the move into the post-2005 model for development and governance.

I guess that is all I can think of right now sitting here with my morning coffee.

Worrying about merging OSPI into the Sakai 2.0 release caused me a some stress, but the rest of Sakai 2.0 was actually moving along pretty much according to plan.

I shared both my optimism and concern in an email exchange with Joseph a few days later:

On 4/7/05 11:25 AM, "Joseph Hardin" wrote:

Sounds like fun. "Integration" seems to have many meanings for some. How is Glenn holding up? He seems OK to me. I just told him he has to go to Palo Alto; he told me you're getting him a first class upgrade...

On 4/7/05 11:31 AM, "Charles Severance" wrote:

Glenn is fine. Things are looking really good in sakai2.

The 2.0 freeze date is going to be painful - we are on a great trajectory but will simply run out of time. We lost a lot of time in 1.5 and 1.5.1.

I figure I will get upgraded to first class and give it to him. We will do things together so I will WorldClub him, etc etc etc.

On 4/7/05 11:50 AM, "Joseph Hardin" wrote:

So, will we have a 2.0 for UM by June 1?

On 4/7/05 12:03 PM, "Charles Severance" wrote:

We have to decide if 2.0 is going to be

Date+Scope with quality compromised
Date+Quality with scope compromised
Quality+Scope with date compromised.

Pick your poison.

Throughout April, Glenn started building the glue layer and experimenting with pulling in the Sakai 1.0 tools one at a time to see if they would work in Sakai 2.0. The first tools to come in were the original CHEF tools developed by the University of Michigan. The next tools were the Indiana tools that used Java Server Faces and Hibernate. The Indiana tools were relatively straightforward so they caused few problems as they were plugged into Sakai 2.0.

Of course Samigo was the largest single tool and caused the most problems as it was plugged into Sakai 2.0. By the end of April, we had everything working well enough in Sakai 2.0 to switch everyone except the Samigo team to be developing in Sakai 2.0 rather than Sakai 1.5.

On April 27, I went to a meeting at Stanford with the Sakai board and

a number of publisher representatives. A number of publishers had contacted Vivie Sinou about creating a standard so publisher content could be imported into Sakai.

When we met, the publishers wanted Sakai to invent an "import standard" for the marketplace that they would then force across all of the LMS vendors. The publishers were particularly frustrated because Blackboard kept changing their format on nearly every release and for Blackboard customers that ran on Blackboard hosted servers, Blackboard insisted on getting a cut of any revenue generated by the sale of course content. The publishers wanted to get Blackboard out of their revenue stream so they had strong motivation to support Sakai and make a competing standard.

I knew that engineering a "course import and export format" would be a difficult task and that the Sakai team had almost no expertise in course import and export. With our primary focus on preparing our product for the four partner schools production needs, import and export was low on our priority list. Frankly, I did not want to wage a war with Blackboard on behalf of the publishers when there would be little benefit to Sakai. So I suggested that we all engage Blackboard in the context of IMS and develop a standard around course import and export. If Blackboard was willing to play, it would be great and if Blackboard chose to ignore the specification, we would build the specification into Sakai and then publishers would begin to support the specification and we would go right around Blackboard if necessary.

My experience with the IMS Tools Interoperability specification had shown me that we could work cooperatively between the open source and commercial players in the marketplace. It had taken nearly two years to go from initial idea to finished specification working code on IMS Tools Interoperability, but we had every major player in the marketplace involved.

For me this suggestion was partially a delaying tactic so nothing new would be added to the Sakai 2.0 scope and partially because I knew that the management of specification development took a set of skills that the Sakai community simply did not have. I did not want to take on a responsibility for a task that I thought we would not be well suited for.

The publishers liked this idea and we decided to flesh the idea out a bit and have one of the publishers propose the idea at the upcoming IMS meeting in Sheffield, England. We were already planning on attending the Sheffield meeting because it was where we would roll out the demonstration of IMS Tools Interoperability running with Sakai, Samigo, Moodle, WebCT, and Blackboard. We all decided that the best person to propose the idea was Ray Henderson from Pearson Education. We felt that since Pearson was such a strong market player, having Ray introduce the idea would get us started on the right foot.

The rest of that week, a meeting of the board and technical team was

scheduled at Stanford. For me with Sakai 2.0 moving nicely at the 2/3 point in the schedule, it was really the first time since February 2004 that I felt optimistic about our chances to finally deliver the set of features we had set out to do in the time we had allotted and with a full month for QA, with a final on-time delivery date of Sakai 2.0 on June 15, 2005.

The meeting had a particular festive feeling for me because it was the first time Glenn Golden had been willing to (or forced to) travel for the project. Glenn had wanted to stay at home close to his daughter Gracie up to that point, but by now Gracie was three years old and she could handle her dad going away for a few days. In addition, Glenn's parents lived in the Bay area and they were unable to travel to Michigan so he had not seen them in quite a while.

When we set up the trip, we included time to go visit Glenn's parents, and perhaps more importantly, I also arranged a visit to Apple with lunch in the Apple cafeteria and a trip to the company store with an Apple employee discount thanks to Scott Morris. I made sure Glenn was upgraded to First Class and took him into the World Club at the airport for free food, drinks, and WiFi. I wanted his first airplane trip for Sakai to be an all around great experience.

In particular, Glenn had been working remotely as the technical lead for the Sakai project with all of these people and this was the first time we would have one of our meetings with Glenn present. We always had a great time in the evenings when we were together. Even if we disagreed from time to time, sometimes quite fiercely, when evening rolled around, we were all good friends and had built a family-like bond. So it would be fun to physically bring Glenn into the family he had helped create over the past year and a half.

For the first time in a long time I was actually looking forward to a Sakai all-hands meeting. The meeting started out with me reporting that everything was on schedule and that in two weeks we would have a meeting that I called "Integration Week"[1] in Ann Arbor and work together to do the final integration of the Sakai 1.0 tools, Samigo and the grade book into Sakai 2.0. I was confident that we would be ready for code freeze a week or two after Integration Week followed by six weeks for Quality Assurance and then we would release Sakai 2.0 right on time on June 15.

The only outstanding issue was whether or not to include OSPI in the Sakai 2.0 release. I felt that it should not be included because I was sure that it would slip the schedule quite a bit. There was some strong disagreement at the Stanford meeting as to whether or not we should include OSPI. At

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[1]I had used the notion of an Integration Week in the NEESGrid project. I would have a weeklong meeting where the entire team would come together and simply work on whatever details needed to be done to complete a release.

times it got a little tense, but I stood my ground and insisted that we would not include it. We had just spent nearly 18 months where we had slipped schedules and tolerated lower quality releases to achieve political goals and it seemed like success on Sakai 2.0 was in our grasp. While many of the others saw the inclusion of OSPI as harmless, my technical assessment was that the OSPI code was not ready to be included. I did not want to swing and miss on our third straight release.

When I came home that Saturday, Brent and I went to the Polaris dealer and purchased a 90cc Four-wheel all-terrain vehicle. It was about two months since his surgery and I wanted to celebrate his recovery. And even more, I knew that I would take him with me to go trail riding and I would have a built-in riding companion. We bought him a full set of riding clothes and taught him to ride. I made a sappy video about his surgery and his ATV loosely based on the MasterCard commercials. For us, this would be a whole summer of trail riding. It would be a nice distraction from all things Sakai.

Later, I would write the following letter to Polaris that captured my feelings as I watched him tear off down the trails with me chasing him on my dirt bike.

Dear Polaris,

My son Brent has Cerebral Palsy and has reduced ability in his legs. He walks with arm crutches. In February, Brent needed hip surgery. We decided that after he recovered from the surgery we would purchase him an ATV. The Polaris Predator 90 was the only choice because of its hand-operated transmission. We purchased his new Predator in May and have been riding it all summer. By the end of summer, Brent and I were having so much fun that mom wanted her own, so we added a 2005 Phoenix to the family.

Riding his Polaris is about the only physical activity where Brent does not have to compromise because of his disability. Riding, leaning, and standing up on his Polaris is some of the best exercise that Brent can do. Riding his ATV has improved his strength, flexibility, and balance.

On his Polaris he can go as fast as he wants and do donuts like any other fourteen year old kid. Riding with Brent deep in a forest and chasing him power sliding through sweep turns makes me think about 'escape' in a whole new way.

I really would give my most heartfelt thanks to whomever inside of Polaris made the decision to build a hand-shifted 90 CC quad with reverse in 2005. For us the timing was perfect.

Also over the weekend, the board got involved in the OSPI decision. They wanted to override my position and force me to take OSPI in the release. Joseph was stuck in the middle and for a few days, he tried to quietly talk things through with me to find a middle ground that would include OSPI in the Sakai 2.0 release one way or another. The more I looked at the OSPI code and the more I thought about it as folks asked me questions and challenged me for detail, the more sure I was that adding OSPI to Sakai 2.0 would be a fatal mistake.

On May 5, we had a phone conference where Joseph was going to review all of the options and hear a summary of the issues and he would make a decision regarding the inclusion of OSPI. Others in the meeting re-stated that it was very important to the OSPI team that it be included in the release. I said that I agreed that it would be nice to have it included, but it was just not technically ready.

I felt I needed to make a strong statement to protect the release so I simply said that I would resign from the project if they forced me to include OSPI in the release. In a sense, I had nothing to lose. I felt that if we included OSPI and slipped the 2.0 release, the project might as well shut down.

I was feeling the weight of having a community with over 100 partners and a product that was taking its place in the marketplace. The will of the overall community and market (at least as I perceived it) slowly became my new guiding purpose rather than the will of the Sakai board and the Sakai project grant agreement.

I got what I felt was essential for Sakai's survival, but at a cost of a loss of innocence. Sakai had become much more serious and it was simply not possible to always say "yes" to everyone.

Chapter 9

Sakai 2.0: A Star is Born

As the project moved into May, 2005, our focus became going over the Sakai 2.0 code in preparation for the release. Integrations were checked and rechecked and we tweaked the architecture as we found little rough edges. Sakai was really starting to feel like a professional product.

I sent the following status update to the Sakai board on May 7:

Hope your weekend is going well. Sitting here with coffee I figured that I would give everyone an update. Mike can chime in if he has more to say.

At a high level, we are in great shape - we have every reason to believe that the code freeze will hold and we will have a clean QA'able release 5/23.

While things may seem calm at your level, there is continuous activity (and yes stress) at the technical level. Everything feels stretched very taught and we run into 1-2 "little blockers" per day, but nothing seems to get stuck for very long. Most little blockers are resolved in 3-4 hours usually with a team effort from several sites.

Here are the big items from the last week:

- The new Kernel is coming up well. In the move to the new Kernel and new portal render, Glenn changed the event delivery (Courier). Instead of fixing it the old way, this week he just put it in right. The new courier uses XMLRequest rather than frames, and as such Sakai is far more accessible out of the box and will be a much smoother user experience (i.e. No annoying clicks any more).

- Syllabus has made it fully into the new Kernel. This is important because it means that the first JSF+Hibernate+Spring application is up and running. Lance, Chen and Glenn have worked very closely on this. This makes the

Samigo and GB integration more tractable.

- The Grade Book is coming in slowly but surely. Because Grade Book is more like a rich JSF application than TPP applications like Syllabus, it stresses the framework in more ways. But so far, as each new issue comes up Josh and Glenn fix it rapidly.

- I have not heard much about Samigo integration lately - I asked Jon that he place working with Daisy at a higher priority than non-essential JSF widgets. Widget cleanup can be done in a 2.0.x release.

- The legacy style guide work at UM is going well but will go right up to the wire. Unfortunately, if the head of CVS is unstable because something new is checked in, those developers can get stuck and lose precious hours. I am setting up a nightly server to rebuild every three hours to keep track of the health of the head of CVS so Glenn does not have to respond to 3-4 "CVS is broken" messages per day (sometimes it is broken).

With all of this, I am like a cat on a hot tin roof. My instinct is to triage any "nice to have" at this point until we see Grade Book and Samigo solidly in the release. I want to move things to the 2.0.x releases and 2.1 releases that are non-essential. Once we see Samigo and GB comfortably in nightly, then we might be able to pick up a few nice to haves.

Another risk is the release process. I am unhappy to report that 1.5.1 is still not out. We made some decisions about what and how we would release in Stanford that cleared up some confusion. But according to Carol as of this morning we still are not out of the woods in terms of the 1.5.1 releases we have to test. I am sure that the remaining details are small and likely to be packaging rather than technical at this point. I quietly gave a 1.5.1 pre-release to Chuck Powell a few weeks back and he seems happy with it as of two days ago - so I think that it is fine technically.

The problem is that I am not going to pull any 2.0 resources off to back-fill 1.5.1 until 2.0 is out of the woods. This means that David, part of Craig, and Carol are effectively alone on 1.5.1.

If 1.5.1 mushes next week as well, we slide into integration week. This could be a blessing. Part of integration week is to produce the packaging and release information for 2.0 - the nice thing is that the whole team will focus on the 2.0 packaging (the reason for Integration Week). Perhaps in free time during integration week, we can bring some resources back on 1.5.1 if it still is unfinished. But even then, 2.0 is the highest priority.

One issue is where QA resources need to go. Once 2.0 is ready to QA, any QA effort on 1.5.1 is not our best investment to be honest until 2.0 is ready to ship. We have made a lot of painful decisions to insure that we really had 3 weeks of QA for 2.0. I don't want to dilute this by simultaneously doing 1.5.1 QA.

So that is the news for now.

I also forwarded a copy to the technical leadership with the following summary:

My goal with this message was to make sure that the board knew that everyone was working *really hard* and that there are non-trivial issues yet to finish.

Sometimes at this point in the project when all seems quiet from the top, it is important to let management know that this is still a very hard task with much left to do.

That way when we *make* the date - no one assumes that it was "easy" - because this is *not* easy.

On May 9-11, we had a meeting of the IMS Tools Interoperability (TI) Working Group in Madison, WI. Given the pressure inside of Sakai, I had let the leadership of the TI work fall to Chris Vento of WebCT, Dirk Herr-Hoyman of the University of Wisconsin, Lydia Li of Stanford University, and Anthony Whyte of the University of Michigan. The first integration to work was WebCT and the Concept Tutor software from Wisconsin. Having one functioning implementation of the LMS and tool side made us feel that we were in good shape in terms of the web service definition and we started to lock down the code in Sakai and Samigo based on those web service specifications. Our planned demonstration was at the IMS Alt-I-Lab meeting in Sheffield, UK and things felt to me like they were going very well.

For me, the IMS Tools Interoperability specification represented the real future in terms of innovation for teaching and learning. It showed how the entire market could co-engineer something if given the right opportunity. While I liked what the IMS Tools Interoperability symbolized, I generally thought it way too complex and hard to implement — particularly because it used Simple Object Access Protocol (SOAP) web services[1].

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[1]SOAP web services are decidedly not simple.

Joseph Hardin and his wife Susan had a trip to Japan to visit Hosei University the week of May 13, 2005. His hosts had arranged a meeting with Hiroyuki Sakai himself. Hiroyuki owned a restaurant in Tokyo and he had a connection to Hosei University. One evening, Susan and Joseph were taken to dinner at Hiroyuki's restaurant and Joseph gave him a white chef hat with the Sakai logo embroidered on it.

Joseph, Susan, and Hirouki (In Tokyo)

Hiroyuki did not speak any English but it was clear that he found it pretty humorous that a bunch of Americans had named a software product after him. They took a picture of Joseph, Susan, and Hiroyuki with Joseph and Hiroyuki wearing their white Sakai chef hats.

The week of May 17 was our first integration week. I knew that the only way we would get all the little details of Sakai 2.0 wrapped up would be a week of co-development by the technical leads of the project. We just had to get into a room and sit around the table and things would work out. The people at integration week included: Lance Speelmon of Indiana, Chen Wen of Indiana, Glenn Golden of Michigan, John Ellis of rSmart and OSPI, David Haines of Michigan, Gonzalo Silverio of Michigan, Jim Eng of Michigan, Zhen Qian of Michigan, Beth Kirschner of Michigan, Jon Andersen of Michigan, Daisy Flemming of Stanford, and Josh Holzman of Berkeley.

The week went really well. In the first two days we moved very quickly though the issues list and by Thursday we were starting to relax a bit. I set up a camera to record a stop-motion animation of our activity, added some funny music and uploaded it to Google Video.

With John Ellis in attendance, we spent some time looking at the kinds of issues that we would face when we would bring OSPI into Sakai. John was one of the technical leads of OSPI and knew the internal details quite well. We wanted to identify if there was a set of small, safe changes that we

could make in Sakai 2.0 that would make it easier to bring OSPI into Sakai 2.0 over the Summer.

One of the most critical features of OSPI was that it needed to override the default security system at times when it needed to access files that were included in a portfolio. As an example, a student might upload some of their writing to their workspace in Sakai, and then add that writing to a portfolio presentation. The student would then give permission to several portfolio reviewers. The reviewers could see the file if they were looking at the portfolio, but they could not see the file as originally stored in the user's workspace. And if the student removed the reviewer's permission from the portfolio, the reviewer could no longer access the files in the portfolio. In essence, the portfolio permissions trumped the file's permissions when the file was being viewed through the portfolio.

We looked at how this was accomplished in the OSPI code that was based on Sakai 1.5 and felt that it was not very elegant and prone to failure but that we might come up with a better idea that would fit nicely in Sakai 2.0 and have value well beyond portfolio applications.

We broke for lunch and continued talking about the problem while we ate. We reduced the requirement down to its simplest form and realized that all we needed was the ability for any tool in Sakai to be able to request an override of a low-level Sakai permission on a file. The tool would look at whatever configuration it needed and make the ultimate decision whether the viewer had permission to view the file. If the tool approved the user, they would set an indicator that would bypass all further security checks for the file.

We called the idea a SecurityAdvisor and had it implemented and checked in by mid afternoon. It was an example of just how effective the face-to-face time could be.

Lance and Chen had become our experts in bringing Java Server Faces tools into Sakai 2.0. They brought their own tools into the Sakai 2.0 framework and Chen had written the required implementations of the grade book facade code that connected the grade book with the rest of Sakai. With Josh Holzman with us at integration week and Ray Davis working remotely at Berkeley, we were able to connect Chen's work with Josh's work, all the while with Glenn and Lance available to help at any time.

Jon Andersen and Daisy Flemming worked on Samigo all week long and made a lot of progress. Slowly but surely, as the other integration problems were solved, Lance turned his attention to Samigo which was our last remaining item that was problematic.

I think that one of the reasons that everyone was so focused during integration week was because of the recent tension around inclusion of OSPI in the Sakai 2.0 release. They too had been through the last fifteen months of delivering software that was less than stellar technically and usually months

late with poor quality and poor feature sets.

We knew that this was the last major effort that we would function as a "core team." Increasingly as 2005 would draw to a close, our approach would become more inclusive and less well funded and our team of 15 developers would evolve to an open source development community with committers from many schools around the world. I think that we all wanted to produce a release that reflected well on what we as the core project team had accomplished.

As integration week came to a close, we were in pretty good shape on all fronts except for Samigo. Samigo was just too complex and we were trying to do too much at the same time.

We were trying to finish the Quality Assurance on Samigo running in Sakai 1.5.1 at the same time as we were trying to connect Samigo to the grade book while we were connecting both Samigo and the grade book to the new Sakai 2.0 framework. There were just too many moving parts. With the planned code freeze only two weeks away, it looked like once again, Samigo would simply not make the release. We had released Sakai 1.5 without Samigo, and the Quality Assurance of Sakai 1.5.1 was struggling with making Samigo work.

We knew that if Samigo did not make the release fall production would be a disaster at Indiana. Indiana had been apologizing to their users for the lack of a assessment engine for nearly a year and they promised all would be well in fall 2005.

In the weeks after Integration week, Lance spent nearly all of his time on Samigo. He just picked it up and made it his problem.

We released Sakai 2.0.0 Alpha 2 on May 23, 2005. At this point we started Quality Assurance in earnest. By May 26, things were looking really solid and I sent the following message to the team:

The problems with transactions and Hibernate Mike and I mentioned this afternoon were resolved by about 4PM with a quick QA and signoff by Lance, Daisy, and Jon.

We are on track to tag Sakai Alpha3 in about an hour and issue another internal release.

Some cosmetic fixes to Samigo in terms of frame height were also done so you can see Samigo in its real glory on my nightly box.

It looks pretty.

Stop being nervous about 2.0 for a few minutes and feel very proud of the team. Then go back to feeling nervous :)

I sent the following note to Brad, Joseph and Rob on May 27:

I just want to quietly let you know the magnitude of Lance's contributions to Sakai over the past two weeks.

While Daisy and Jon are doing a great job with Samigo and working very hard, Lance has made extra effort to dive into Samigo and figure out any and every technical sticking point - within *hours*.

Yesterday he re-factored a bunch of code (i.e. Cleaned it up) just so we could solve the transaction problem. It sounded scary to me when he proposed the idea to me at 10AM *yesterday* on the phone and now less than a day later it is complete, tested, in CVS, tagged, released to QA and Daisy is on her flight to Germany.

In addition to the technical aspects of his work, he has been sensitive to people's egos as he goes in and does surgery on Stanford's code. Everything he has done keeps everyone in the loop and makes sure that Daisy buys into and supports his work before he goes in and fixes things. He does not expect accolades at all - he just passionately wants this to work.

Not to take away from anyone else's contribution over the past two weeks - but you should be very proud.

I had known all along that there would be countless tiny issues and had built a few weeks of time to find and fix the little issues with Sakai 2.0. On May 25, I made a trip to Indiana to begin the work of integrating the OSPI capabilities into Sakai. I had promised that we would start the work in earnest after Sakai 2.0 was released and that we would take the time to do it right. The May 25 meeting was the kickoff of the design work around the modifications needed to the Sakai Resources tool (file uploading and management) to meet the needs of OSPI. The idea was that we would look at all of the slick features of the OSPI replacement for the resources tool and move them into the existing Sakai resources tool so it would serve the needs of both OSPI and Sakai.

On June 7, 2005, Glenn sent the following message to the Sakai public developers list:

I'm pleased to announce the pre-release of Sakai 2.0.0. This is a release candidate that we are testing in preparation for the final release June 15th. You are welcome to download it and give it a try. I'd hold off on going into production with it before the final release, though :-) We will likely have one

more candidate (rc3) at the beginning of next week, before our final version on the 15th. You can get the rc2 release from our pre-release area (see attachment). The code in cvs is in the "sakai2" module and tagged "sakai_2-0-0-rc2". Simply unzip (windows) or un-tar/gz (*nix, mac) the -demo file, and see the readme for instructions about how to start the included tomcat and Sakai.

As tight as the 2.0 development cycle was, we did not have a lot of time to run Quality Assurance on the release. Most of the Sakai code was taken straight from Sakai 1.5 which had been given a lot of QA attention. The grade book was relatively simple and had a lot of testing as part of its development at Berkeley and MIT. Samigo had been passing the Stanford QA tests all along in terms of functionality. And as we began testing the early releases in mid-March, everything felt solid to me so it did not feel like we would need to slip the planned June 15 ship date to allow for more Quality Assurance.

The only risk in the back of my mind was Samigo. I was glad it was finally solidly in the release, but since it was large and complex, I was a bit worried. Developer testing is great but it always misses something and it is particularly bad at catching problems that happen when software is run in production at high usage levels. In my experience, at some point the only way to catch the remaining few things is to go into production, encounter the problems, and then fix them. While we could have slipped the schedule to allow more testing time, my feeling was that it would barely improve the quality of Samigo. With all of the pain that we had endured to make the schedule, a schedule slip for more testing that I was pretty sure would not really improve the quality very much seemed like a bad idea.

Chapter 10

Lost in Transition

While the Sakai technical team had been building the release for the world, Joseph Hardin and the Board had been preparing for the end of the grant and transition to the project becoming a stand-alone 501c3 non-profit corporation. At this point, with over 100 members and a million dollars of annual revenue, we needed a business structure rather than a grant account at the University of Michigan. Most grants have a fixed time period and then they are completed.

Sakai was going to have revenue and expenses for years to come and universities get a little nervous when faculty operate businesses from within the university. The university properly insists that all expenses follow university policy and if Sakai were to hire staff, they would be hired as University of Michigan employees, and if there was a contract to be negotiated, the university would need to get involved. For those and many other endless details, it was important that we shift the revenue and expenses from the University to a non-profit organization.

Joseph had spent a great deal of time researching the formation of a corporation, building a set of draft bylaws for the organization, and working with the Board and community with those bylaws to build consensus around our future governance.

I had not been particularly involved in the formation and discussion of the bylaws because building Sakai 2.0 had taken every ounce of my energy just to get it completed. And I trusted Joseph to get the bylaws right. I really had little patience for long consensus building discussions when I felt the answer was obvious, but it was going to take another hour to "socialize" the answer. These discussions were quite important, they were simply not something that I enjoyed. And since I was overbooked time-wise it was just as easy to miss those meetings.

With Sakai 2.0 looking like it would be successful, I was starting to spend more time "promoting our brand" than managing a technical team. I had been working with Scott Morris of Apple for about a year discussing

whether or not there was a place for Sakai in an Apple product. Apple has a strategy of bundling free open source software as part of their OS/X Server product. I think that Apple's idea was to cede the raw, basic UNIX server market to Dell and Linux and make it so that OS/X Server would pre-include all of the useful software and have a nice simple management interface.

Our ideal use case was that a small school would want Sakai so they would buy an Apple X/Serve, install it, press a few buttons in the user interface and voila! They would have a Learning Management System. All the upgrades and security fixes would be distributed along with all of the OS/X Server fixes.

Scott and I did a lot of talking and eating Sushi in Mountain View, but with Sakai in a constant state of change, we never really had a moment where the Sakai software was stable enough to suit the requirements of the X/Server team. They really wanted a mature package that would just put out a few patches here and there. They did not want major conversions of user data to happen as part of an X/Server upgrade.

But Scott and I felt that some point in the future, we might still be able to make it happen. And in general, we wanted Apple to have something to talk about in the teaching and learning space so Scott got me several speaking engagements in Apple venues.

My first presentation was to the Apple developers at the Apple Worldwide Developer Conference on June 15, 16 in San Francisco, CA. Giving a talk at an Apple Conference is a lot of fun. I had to prepare my slides well in advance and provided them to Scott, who gave them to Apple marketing and an Apple graphic designer. Then we would go through a series of reviews of the slides. They worked through the content, asking me to simplify slides and move toward a more "Steve Jobs" style of presentation where we would communicate ideas using simple pictures, words, and graphics on the slide rather than long sequences of text like I used when I was teaching. The graphic artist redrew all the diagrams, simplifying where necessary and adding lots of pretty eye candy. The backgrounds of the slides were all black and the text was all white or bright colors (like Steve's slides).

They made me give the presentation several times to different small groups from Apple Marketing. Their comments focused mostly on me simplifying my narrative and hitting the high points. I mostly think that they just wanted me to practice before I got up in front of the crowd at their conference. They were sensitive to the fact that when they put me up in front of their crowd, I was part of their brand. As a dedicated Apple fan, I was more than happy to fit into their marketing and reinforce their messages as much as possible. After all, I very badly wanted our Sakai software to fit into their OS/X Server product.

The presentation went well. I was disappointed that the audience was a

bit small, but was pleased that I had spoken at an Apple Developer's conference. After my talk, I attended a number of other sessions including how to build an automatic installation package for Macintosh OS/X. Sitting in the back of the session, I built an install package that allowed you to install Sakai 2.0.0 on a Mac OS/X system in a few clicks.

The Steve Jobs keynote is the highlight of each Apple World Wide Developer Conference (WWDC). Of course he is a great speaker and he loves to introduce new things at the annual developer's conference. Since it was the last few days before the Sakai 2.0 release, I spent most of Steve's keynote on my laptop working on Sakai using the wireless network.

Then Steve announced that the next generation of Apple computers would support Intel processors and that their support of the PowerPC would slowly be phased out. A chill of excitement went up and down my spine as I immediately realized how brilliant this would be. It would allow dual booting of Windows and really great Windows emulation on the Macintosh. And since Apple OS/X was UNIX it could easily be ported from one hardware architecture to another while Windows was stuck with the Intel architecture. At the same time, the Intel architecture was cheaper, used less power, and ran faster except for a few floating-point calculation operations where the PowerPC had an advantage.

Next, Steve told us that he had a secret lab with five employees that had kept all of the versions of OS/X running on Intel hardware for the past four years — since Mac OS/X 10.0. I loved this approach where he always kept a "Plan I" ready in case the PowerPC processors were (a) too expensive, (b) used too much battery power, (c) ran too hot, or (d) could not improve performance rapidly enough. When all these became true, it was time to switch to Intel.

Then Steve talked about an emulation mode called "Rosetta" that made it so that old PowerPC software could run on the new hardware with virtually no performance impact. He showed us that the computer he had been using all along to do his presentation and all of his demonstrations was an Intel processor running most of the software in emulation mode. My jaw dropped to the floor. Steve said that as we would walk out of his talk, there were several rooms that would be opened where we could play with working hardware prototypes and test our software on the newest version of the Apple operating system running on Intel hardware.

I ran out and quickly tested Sakai on the new hardware. It was more than twice as fast to compile and start Sakai on the new Intel hardware when compared to the older PowerPC hardware. The time to start Sakai was 81 seconds on a PowerPC Laptop and 31 seconds on the new Intel-based prototype Apple hardware. I wanted one of the Intel-based Apple systems just for my own development productivity. I walked out of the session and called my brother-in-law and in passing, told him that I believed Apple stock

would triple in three years. I told him that it would only be a matter of time before Windows would work wonderfully on the new hardware and having both Windows and Apple on the same laptop would be a powerful new way to work with computers. He took my advice and invested some of his spare cash in Apple and did very well the next few years.[1]

For me, it was a exciting feeling. Our Sakai product was emerging at just the right time and if we played our cards right, we might even be able to be included in some future version of the Apple server operating system and through that we had the potential of literally thousands of smaller schools that would be able to run and manage our software with just a few clicks. Sakai was going to be a rising star and I was going to make it happen.

I was really looking forward to the Sakai Partners meeting the next week in Baltimore June 8-10, 2005. It would be the first meeting where I was not apologizing for a schedule slip or missing functionality. It would be the first meeting where I was not going to have to explain how I got it wrong in the grant project plan and had come up with a new plan.

Our software was (mostly) elegant, it was (mostly) production-hardened, it finally had a grade book and an assessment engine, it supported multiple languages, its architecture and developer patterns were clean and reasonably well documented, it had Web Services, and it was coming out for release the following Wednesday and you could play with it *right now*. I kind of felt a bit like Steve Jobs. It would be nice to surprise and delight our Sakai Partners for once.

This was a stark difference when compared to the previous conferences where I believed there was a decent chance of being lynched by our partners at each one. The number of attendees at the Baltimore conference greatly exceeded our estimates. People were coming not just to monitor our progress, but to begin to plan to adopt our software. It felt more like a user and adopter conference than a developer meeting making reports to our partners. The small rooms were all overflowing and the presenters were having a great time. We had to re-do several of the presentations more than once because there was so much demand.

We had increased the number of tracks, and provided tracks for end-users, portfolio, and quality assurance, along with the traditional developer tracks. These new tracks reflected our transition from a heads-down grant-funded group building software to being a much larger community of interest around our emerging product that we would soon collectively own.

It was particularly satisfying to see all the members of the Sakai team getting attention and accolades for the work they had done over the past 18 months. And the OSPI / Sakai 2.0 tension of the past few months seemed

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[1]On June 13, 2005 Apple stock was trading at 38.31 and on June 9, 2008 Apple stock was trading at 172.37.

behind us.

Baltimore was also the first time we allowed people to attend from schools that were not yet partners. Up to that point, you could only come to the conference if you were a partner, and if you were a partner the conference was free. The food, drink, snacks, and wireless Internet were all paid from the member dues. And we hosted some pretty fun conferences.

For me, this was the first conference where I was no longer the center of attention. I had a few talks on architecture and status reports, but increasingly those were just one of many talks. I liked the new pattern. I spent a lot of time in the hallways and in small rooms with the technical team, going over the final testing and details around next week's release.

Our keynote speaker was Brian Behlendorf of the Apache Foundation. His speech was perfectly timed as we were imagining how our community could become a Foundation like his Apache Foundation. Brian eloquently described all of the open source principles that I so passionately believed in. It felt great to have his commentary on the very day before we were going to have a whole day meeting discussing and editing the by-laws for the soon-to-be-formed Sakai Foundation.

I was more than happy to be too busy to sit through the bylaws discussion. Joseph had recruited John Norman of Cambridge and Chuck Powell of Yale to lead the bylaws discussion. He wanted to make sure that the bylaws reflected the entire Sakai Community and not just the Sakai Project institutions. This made a lot of sense because going forward there would be no "core schools" and "Sakai Partners." Everyone would simply be members of the Sakai Foundation working together.

The bylaws conversation went well, each time I read a draft, I was always pleased. Everyone was doing a great job looking at Jasig, Apache and other foundations that had come before us and making wise choices.

Sakai 2.0.0 shipped Wednesday June 15, 2005. The feature list for 2.0 was: (a) tools user interfaces reworked to be style guide compliant, (b) new portal navigation (Charon), (c) improved ability to customize the user interface (re-skin), (d) re-written framework, (e) supported any number of languages, (f) grade book, (g) assessment engine, (h) web services support, (i) architecture design documents, and (j) improved install documentation. It was an impressive feat for a hard-working and talented team of individuals. The timing was perfect for us to take our place in the market. We had opened a window into the market in January 2004 and had driven through that window in June 2005.

There was no time to celebrate. I had sold my soul to keep OSPI out of the Sakai 2.0 release and I had promised I would make it good with Indiana over the summer. Indiana was going to put a lot of energy into bringing OSPI into Sakai 2.0 so they could run it in production in the fall. I would be spending a lot of time in Indianapolis and Bloomington over the summer.

Our first meeting to work on moving OSPI into Sakai was a week after the Sakai conference on June 17.

We also had another fun trip on June 20-22 to the 2005 IMS Alt-I-Lab conference in Sheffield, England. It was time to demonstrate the implementations of the IMS Tools Interoperability specification. Travel to a fun location, having drinks and dinner together always rebuilt team cohesion. We could talk tension out and forgive each other and talk about the future instead of the past. And if I had offended anyone on the team, I could apologize over beers.

In particular at this meeting, it was a bit of an introduction of Sakai to the marketplace with most of the international players in the LMS marketplace present at Alt-I-Lab. Unlike at the Sakai meetings, Sakai played a relatively small part. There were no keynote speeches about Sakai. At this meeting, Sakai was a product in the marketplace. And most importantly, if you look at who had shown up, it looked like the market leadership was Blackboard, WebCT, Moodle, and Sakai. "And Sakai" sounded so wonderful in particular because I knew that our 2.0 software was very strong. Thanks to the work of Beth Kirschner and the team at the University of Lleida, we were truly ready to play on the international stage.

The real work of the demonstration fell to Anthony Whyte of Michigan and Lydia Li of Stanford. There were only two tools that had been part of the demonstration along with the four learning management systems. But Samigo was the only real assessment engine. Assessment was the core use case of the Tools Interoperability approach. Tools Interoperability could launch a tool and have a score sent from the tool back to the LMS.

Samigo was the star attraction. All of the LMSs did their demonstrations focusing mostly on how Samigo worked in WebCT, Blackboard, Sakai, and Moodle. During the run through the day before the demo, we stressed the hotel's network and Internet infrastructure so badly that they had to drive up from London with new network hardware. But for an experienced demonstrator, this was just par for the course. If you look at my video from Alt-I-Lab 2005, you can see Anthony and Lydia relaxing after the run-through, totally confident and relaxed.

Anthony Whyte had picked up the development tasks around the Sakai implementation of Tools Interoperability since I had so much going on with Sakai 2.0. I pretty much was a cheerleader for most of the Tools Interoperability work while Lydia and Anthony did the hard work.

The demonstration went well and the crowd was pleased to see the four competing LMS systems cooperating. It showed a window towards a possible future where standards would increasingly make it less important which LMS you had. There was a long way to go, but it was time for celebration.

The Tools Interoperability group celebrated both at Kevin Riley's house and a pub in Kevin's neighborhood. While we had been meeting and work-

ing with Kevin all around the world as the project manager for the IMS Tools Interoperability specification, Sheffield was Kevin's hometown. So the whole IMS Tools Interoperability demonstration group trouped over to get a tour of Kevin's amazing bachelor pad. After the tour, we went to the Kelham Island Tavern down the hill from his house and celebrated with some food and a few beers. I love small, local, unique, intimate dining experiences and this was perfect. Kevin even knew the dog that lived in the pub and the dog sat under the tables as people talked about everything under the sun.

The next day, it was time for the IMS Technical Advisory Board meeting and introduce the idea of the IMS Common Cartridge that we had discussed with the publishers back in April at the Stanford meeting. Ray Henderson of Pearson Education introduced the idea of developing a standard (IMS CC) to be a common import and export format for publishers and learning management systems. The timing was perfect and we had the perfect person doing the presentation. We had just finished a great demonstration of how all the marketplace could work together cooperating instead of fighting. The IMS Common Cartridge idea went over unanimously and in the excitement, we promised that we would have an equally awesome demonstration at the Alt-I-Lab 2006 conference that would be held in Indianapolis, Indiana.

For me the week at IMS Alt-I-Lab in Sheffield reminded me that my goal for Sakai was to change the marketplace. It was clear to me that we *could* use the influence of Sakai as a gentle agent of change in the marketplace. As we had built the IMS Tools Interoperability specification, the University of Wisconsin did the majority of the Moodle work without help from the central Moodle development team. Blackboard participated in the specification development and demonstration but they were never leading the design work. Since WebCT and Sakai had jumped headfirst into Tools Interoperability, Moodle and Blackboard had to come along for the ride or they would have been left out.

Since Sakai and WebCT were the up-and-coming LMS systems and Blackboard was the entrenched old-guard in the marketplace, Blackboard knew that if the cowboys (Sakai and WebCT) were successful and Blackboard was shown to be a "foot-dragger", that both the smaller players (Sakai and WebCT) could use it against Blackboard in their marketing.

I liked working with Chris Vento and the others from WebCT. They liked new ideas and were a more agile company than Blackboard and were far more willing to take risks and invest in emergent ideas. I knew that I could build up the alliance between WebCT and Sakai and use it to gently begin to move Blackboard in the right directions.

The next week, on my way back from England, I stopped in Washington, DC and with Jim Farmer's help I had my first face-to-face meeting with Martin Dougiamas, the creator and lead on the Moodle project. Martin is a

great guy with great charisma and we hit it off right away. I felt absolutely
no need to compete with him. We talked for a while and I shot a short video
interview so I could introduce Martin to the Sakai community to make him
seem less of an opponent and more like a fellow innovator working on the
same challenges as we were. Moodle and Sakai were more like cousins than
enemies.

On July 4 2005, John Merlin Williams, the Executive Director at the
University of Michigan Media Union, asked me how I was doing and I
replied with the following message:

Keeping one step ahead of things. The big conflict is and will likely continue
to be the "inside of Sakai" politics versus the "outside of Sakai relationships
and opportunities".

These two pools of thinking need to inform one another, but the "insiders"
are all focused on the next three months building a learning management
system.

People like Joseph, Brad, and Rob Lowden also operate in both arenas so it
is not so bad, but hopefully after the first of the year the "Sakai insider club"
will be a little less self-focused.

Until then it seems like I lead a split life :)

On July 18, 2005, we had our first community developers meeting at
Yale University. Now that we had delivered Sakai 2.0, it was time for me to
focus on enabling more schools outside of the core to adopt and install the
product. Our documentation was weak so we hoped to just get people from
the community together and work through the issues.

As the workshop started, I gave a few presentations that covered Sakai
at a high level and when I finished, I opened the floor for questions. The
questions quickly moved into areas that were beyond my expertise. In re-
ality, I was one of the less technically skilled people at the workshop and
there were clearly a lot of details about Sakai that I was unaware of.

But before it became clear that I was clueless, the workshop attendees
started answering each other's questions. While I had been distracted trying
to manage the project, others in the community were digging through Sakai
to figure out how to install it and make it work.

It got so bad, that at one point someone asked if we could have a tool
that would allow technical support staff to switch into a user's account so
they could check to see if the user was having a problem. I gave a long
answer that talked about how hard such a tool would be to build and what
parts of the Sakai architecture would need to be addressed to build such a

tool.

When I finished my little speech, Zach Thomas of Texas State San Marcos piped up from the back of the room and said, "I already have written a tool to do what you need and you can download it and use it.".

As the day went on, I increasingly realized that the Sakai community was already quite strong and that I no longer needed to be the only expert on all things Sakai. Since we were open source and we had a lot of schools interested in Sakai, we had a lot of bright people in the community that were starting to take care of each other.

It was a great feeling to know that as we were finishing the grant-funded phase of the project, we already had a growing talented community that would own the project starting in 2006.

At the end of the first day, I sent the following message:

The Yale meeting is going really well. We have a number of short presentations.

We have covered a lot of ground:

- Andrew Poland's talk about how IU runs in Production
- Seth Theriault's discussion of perl and web services to pre-populate courses in Sakai 2.0
- John Leasia redid his Baltimore talk.
- We had an overview of CAS from Yale
- We had talk about Shibboleth from Steve Carmody from Brown
- Zhen talked about providers
- Jon Anderson talked about how UM maintains our production environment
- Vihsal from SunGard is here and we are doing some initial WSRP integration for 2.1

The breaks are buzzing - lot of code being worked on and people sharing stuff.

Walking away from this meeting I am far more comfortable that our fall 2005 sites will actually make it.

As the meeting wound down on the second day, and I was starting to relax, several attendees started a conversation about their complaints about the QA in Sakai 2.0 and complaints as to how priorities were set in the project. The points everyone brought up were reasonable and mostly due to the difference between the priorities that the founding Sakai organizations needed to pursue for their own production needs and to meet the requirements of the initial Mellon grant which was to be completed December 2005.

I had no good answers to the complaints. So I just let them vent. For me it was frustrating to end the otherwise successful Yale developers meeting with negative energy.

As we moved from July into August, the Indiana and Michigan teams were installing, configuring, and testing their Sakai 2.0 production environments. Since I was not directly involved in either school's production environment, this gave me a good chance to work on my National Science Foundation grant tasks, so I scheduled a weeklong trip to Indiana and Illinois the week of August 8-12.

The week started very well. Over the weekend before I left for Indiana, I had built a JSR-168 portlet that allowed us to plug a simple version of the Sakai user interface into any of a number of JSR-168 compliant portal systems. It felt good to be making progress on both the research and teaching and learning applications of Sakai.

But on Thursday August 11, I found out that Indiana was having significant problems with Sakai in production. It was running out of memory and then hanging and crashing. Michigan was not crashing under similar testing and load.

Unfortunately, I was not experienced in the subtleties of running a complex Java application like Sakai. The University of Michigan was not yet running the Samigo testing engine. Indiana needed to run Samigo because the system they were replacing had a testing engine.

Because Indiana and Michigan were running different configurations, it did not look like the Michigan team would be able to help Indiana. And I did not have the skill to solve their problem. The only other school that might be able to help was Rutgers University. They were also going into production with the Samigo testing engine.

On the morning of August 12 at 9:41AM, I sent this note to Chuck Hedrick and Bill Crosbie at Rutgers. Chuck was the Chief Technology Officer of Rutgers and Bill was a developer on the Rutgers Sakai team. Both were active Sakai developers.

Bill and Charles,

Indiana is struggling with a memory leak (we are guessing that your memory leak is the same problem). I suggest that we work together and share knowledge and results. Our basic problem is that neither IU nor UM have much experience with memory leaks. Neither IU nor UM has much experience with profiling.

Here is a summary of the situation:

- IU is running some code beyond 2.0 and using Samigo/Grade Book (GB)

and running out of memory

- Rutgers is running stock 2.0 and Samigo/GB and running out of memory

- UM is running code beyond 2.0 (mostly 2.0.1 plus local stuff) without Samigo and *not* running out of memory. UM is doing heavy testing of the application with stress tests, and has seen no memory related problems.

We suspect the Samigo or GB code mostly because those are new and to date has not run in large production like much of the rest of the software but have no real evidence at all of that hypothesis other than the information above.

Bill and Chuck, I would be most appreciative if you could contact Andrew Poland quickly and share knowledge and help if at all possible.

Anyone who has something to add should feel free to comment on this to this group.

Thanks in advance.

I sent the note just hoping against hope that something good would happen because I knew that I would not be able to figure out their problems.

By noon, Bill Crosbie had responded with an initial assessment of the problems and a summary of what Rutgers was doing and had been doing. The message was very detailed with a clear roadmap of what was wrong and what steps Rutgers had taken in investigating the problem and what steps Indiana should take to further investigate the problem. The following is just a small part of Bill Crosbie's message that went on for several pages.

On Aug 12, 2005, at 11:59 AM, Bill Crosbie wrote:

I think Chuck [Hedrick] is in meetings for the day, so I am taking first responder role. C. Hedrick will surely respond with more detail on top of this.

When we were getting OoM [Out of Memory] errors we noted that there was plenty of physical memory still available, but it was not being used. There was a lot of suggestions about config parameters, but there was little understanding of what was actually happening in memory.

With Rutgers coming to the rescue, I could again breathe a sign of relief. We had made it past another crisis that had the potential to derail the project, and as was to become an increasing trend we found the talent to move the

project forward from sources outside the four founding universities.

On August 16, we released the Sakai 2.0.1 release with over 160 bug fixes and improvements. This was timed so schools could upgrade in time for the start of the fall semester.

Two days later, we had another Sakai Developer's meeting at the University of Michigan in Ann Arbor. It was a lot of fun and a good time for us all to spend time together and plan for the upcoming semester.

One of the attendees at the Ann Arbor meeting was Steve Githens. He was a programmer who just loved being part of an open source project. He had recently graduated from Michigan Technological University and was working as a Chemistry lab assistant at Northwestern University. Without ever meeting anyone in the community or working at a Sakai school, Steve had built and distributed a set of simple web service end-points that many schools were already using to handle repetitive or automated administration tasks for their production Sakai systems.

I made a video where I interviewed Steve and asked him about his ideas regarding what it was like to participate in Sakai and some of the ideas and plans he had for Sakai. You could easily see his excitement and the energy he brought to his work in Sakai.

In September, as part of the ramp-down of the grant phase of the project, we disbanded the "Tools Team". The Tools Team and Architecture Team were the two planning structures that guided the grant phase of the project. The Architecture team was more of the technical members of the project while the Tools team focused on the user features and style guide for Sakai.

There was some natural tension between the desires and goals of the two teams. For me, the problem was that we never were out of a crisis for long enough to allocate resources to most of the issues raised by the Tools Team. This led to the Tools Team feeling that they were generally ignored most of the time.

The Tools Team wrote a final report that summarized their activities and views of the project and put it in our Sakai wiki. A few excerpts from that document capture the sense of tension and disappointment.

"The Architecture Team, like the Tools Team, had representation from each of the core schools. The Team met regularly to build consensus, but almost all framework-related decisions about what did and didn't get done ultimately were made by the project lead and the framework architect. Again, it is not clear to what degree functional requirements were considered in the deliberations and making decisions."

"Having been the lead on most of these requirements gathering efforts, I think I can safely say that they have been largely ignored in subsequent

development activities, the one exception being Course Management (in development now)."

It would be fun sometime to go back in time and do a project like Sakai without any time pressure and whenever something went wrong, simply slide the schedule out a bit to allow sufficient reflection and time to recover. Unfortunately if you have the luxury of slipping schedule in an attempt to make everyone happy, you usually end up with a product that never ships.

Reading the report felt like a personal failure on my part to do more and be more responsive to their issues. But at least we had shipped software and that software was running in production at scale at two schools.

In a sense, given that we had started on the Sakai 2.0 rewrite in January 2005 and were in large-scale production at two schools in September 2005, was a testament to our ability to "make an omelet" even if we had to break few eggs in the process.

Now that we had software worth keeping for the long run, it was time to build a strong worldwide community to sustain Sakai.

Chapter 11

The Great Beyond

As September 2005 started, it looked like Sakai was here to stay. With Indiana and Michigan solidly in production and a number of other partner schools putting it into production, it looked like there was more than enough commitment to the Sakai software to insure that we would have a solid long-term open source project with a diverse and supportive worldwide community.

I had a busy fall planned with lots of travel, so before it all started, I took Brent up to Leota, Michigan for a weekend of dirt bike and ATV riding in the pinewoods of Northern Michigan. Over the summer he had become an accomplished rider and he was quite good at ripping around the high-banked sandy corners on the trails through the woods.

We were starting to drive fast enough for it to be fun for me and each time we would take a ride he would push himself even further. I took lots of pictures and videos of his ever improving riding ability.

We stayed at a small hotel called the Leota Lodge and eat all of our meals at the Riverside Bar (the only restaurant/bar in town). We had been to the Riverside Bar enough times that the staff greeted us by name and knew our orders. Given that Brent always arrived in hand-crutches, it never took anyone too long to remember us. It was a lot of fun to get away from the meetings and airports and just hang out with Brent in the woods.

On Sunday, we got up and took a few rides before packing up to go home. It had been a great weekend and we kept going faster and faster as confidence grew. By the third ride of the day, we were starting to get a little competitive. As we came around one corner onto a straightaway at about 20 miles per hour, Brent's ATV drifted to the side and his left front tire caught a root that stuck out of the side of the trail and he rolled his ATV right in front of me and he ended up underneath the ATV. In a moment, I was off my motorcycle and at his side. His 90CC ATV was quite light and I easily lifted it off of him and set it upright. Luckily, he had landed in soft sand and the ATV was so light that he was not hurt at all. I picked him up out of the

sand and sat him on the side of the trail and brushed him off.

We sat for a bit and then laughed as we decided that perhaps we had reached the limit of how fast we should be going. We decided that from that point forward, our goal would no longer to be to go faster and faster but instead to slow down a bit and have more fun. And in particular, we would stop racing with each other to see who was the fastest rider.

After a bit, we hopped back on and finished the ride back to the parking area, loaded up the bikes and went home to get some clean clothes and take a nice shower.

By this point my wife Teresa had decided that all this motorcycle and ATV riding was too much fun and she insisted that we needed to buy her an ATV as well so she could come up and ride her own. So I started looking for a used Polaris 200 ATV that we could buy for her.

Back in civilization, the University of Michigan was running the entire campus on Sakai in the first few weeks of September, so Joseph and I could increasingly look towards the post-grant phase of the Sakai community.

We wanted to get a second round of funding with a more narrow focus of dedicating resources to further strengthening the core architecture of Sakai. In our hurried Sakai 2.0 re-write in January 2005, we had run out of time to rewrite everything so at some point we stopped rewriting Sakai 2.0 and plugged the rest of Sakai 1.0 into Sakai 2.0.

We felt that as the more schools adopted Sakai, there would be increasing pressure to add user-facing features. We felt that the open source community priorities would not address core long-term internal architecture issues.

We wanted grant funding so we could have a dedicated team to focus on completing the rewrite and set Sakai up with an elegant internal structure that would make it possible to build a number of whole new kind of distributed teaching and learning tools.

Through 2004 and 2005, the University of Michigan had been particularly generous making about five developers available to me to work on the issues that I saw as high priority for the Sakai community. Since Sakai was based on CHEF, my feeling was that all the requests from outside Michigan had higher priority than the end-user requests from within the University of Michigan.

That meant that the University of Michigan end-users of CHEF and then Sakai saw a series of changes to the software that were driven by community needs and desires while their needs and desires were being put on hold. I was concerned that the University of Michigan would rightly want to change this arrangement once the grant ended in December 2005 and switch their resources from community priorities as determined by me and to local priorities responding to the on-campus end-users.

I felt that getting a second grant was the only way to assure that at least

some of those resources would continue to be available to work on community priorities first. The other Sakai schools were applying for Mellon funding for their own community source projects. Indiana was starting their Kuali project for open source administrative computing and Berkeley and the University of Toronto were planning the Fluid project.

It made good sense that the core schools that worked on Sakai had proven their talent in the open source space and were good candidates for the next round of funding. But for me as these schools moved on to their next projects, I wanted to make sure that Michigan received some compensation to provide continuity for the Sakai software.

Joseph and I went to Princeton to pitch the idea of funding architecture improvements to Sakai to Ira Fuchs of the Mellon Foundation. Ira had given Joseph the original grant for Sakai and we felt that we had done a pretty good job of delivering on the original multi-institutional Sakai grant. We hoped that Mellon would see that we were a good bet for a smaller and more focused investment. Ira listened to our proposal and suggested that we write up a pre-proposal document to get things started. We needed to finish the Sakai project, and put in the report before we would be seriously considered for follow-on funding. That made good sense to me.

We also visited Chuck Hedrick, Bill Crosbie, and the Rutgers team on the trip. For me it was a great opportunity to convey my thanks in person for their help with the performance issues that Indiana had faced early in August. I tried to make it clear that without their help, we would have been in a very dire situation.

When we got back from the Princeton and Rutgers visit, I was off on a visit to Japan to meet with the Sakai community in Japan with Beth Kirschner.

From the moment the University of Lleida in Spain did the first translation of Sakai, Beth Kirschner had become the czar of Sakai translations. She worked with communities around the world building their translations and getting the translations committed into the source tree for each release. It was an amazing amount of technical work and more importantly it required the right kind of person to gently motivate all of our worldwide collaborators. And Beth has always done an outstanding job.

Our primary contact in Japan for the trip was Shoji Kajita of Nagoya University. I first met Shoji when he was leading the internationalization and translation activities for the uPortal project. Shoji was involved in his campus portal, educational technology, multimedia, and even high performance computing. As soon as Sakai was formed, Shoji became involved in Sakai. He was very good at getting research grants in Japan to work collaboratively on projects like Sakai with his students.

Shoji had arranged the following schedule for us in Japan:

Sept 12: Arrive at Nagoya Airport from DTW at the evening
Sept 13: Aichi Expo for adjusting the jet-lag
Sept 14: Localization and Internationalization discussions at Nagoya University
Sept 15: Sakai Workshop (whole day) at Nagoya University
Sept 16: Hosei University in Tokyo
Sept 17: Sightseeing in Tokyo area
Sept 18: Leave for DTW from Tokyo-Narita Airport

On the first day, to keep us moving and walking so we would adjust to the time zone change, Shoji took us to the Expo 2005 Worlds Fair. We rode the Linimo magnetic levitation train out to the Expo and had a great day.

On the second day, we met with Shoji's development team at Nagoya University to talk about moving beyond the problem of simple translations of the user interface and we started to identify needed changes to how the software needed to function to be truly translatable.

Beth and I gave a day of presentations at the Sakai Developers Workshop, then we went to Tokyo for a series of meetings with Kazou Yana and others at Hosei University.

When we got back from Japan, I took a quick weekend run up to Leota to go ATV riding with Brent and then it was back to the airport to begin the trip to England and the Cambridge Sakai Developers meeting.

One of my secondary goals of the trip to England was to make a visit to the Open University in Milton Keynes, UK and try to convince the Open University to join the Sakai community.

I had been aware of the Open University since the late 1990's. The Open University was one of the world's leading distance-education Universities. They had a large campus in Milton Keynes with a large faculty and staff but no students. All of the education was done at a distance using a wide range of technologies.

The Open University was designed from its founding in 1969 to be the "University of the Air." The Open University also had a partnership with the British Broadcasting Corporation (BBC) and for a time, Open University lectures were broadcast all over the UK on the BBC channels late at night.

I found their approach and attention to detail very impressive. I felt that if we could get the Open University involved in Sakai, that they would bring a lot of creativity, talent, resources, and credibility to our community.

Earlier, I sent a note to Martin Weller to see if I could spend a day at the Open University.

Martin,

I will be in the UK with some spare time. I added two days in case I could

spend a day at Open U. Milton Keynes is "close" to either Nottingham or Cambridge so it should be pretty convenient.

Arrive Monday September 19 - London
Monday (19) - Thursday (22) - Nottingham for the JISC all hands meeting
Friday (23) - Free day
Monday (26) / Tuesday (27) - Cambridge - Sakai Developers
Wednesday (28) - Free day
Thursday (29) - Depart from London

On Sep 2, 2005, at 5:31 AM, M.J.Weller wrote:

Hi Charles

We'd be happy for you to visit — the 28th looks the best bet so far. I have contacted a few others who would be interested in meeting you. Joel Greenberg is probably the most significant of these, but he's on leave till Monday, so I'll come back after that with some definite plans. But let's say the 28th now, we'll sort out the details later.

Once we had set up the date for the visit, we agreed that I would give a talk about Sakai at the Open University. It seemed like a great opportunity to bring one of the world's leading universities into the Sakai community.

The trip to the UK started at the eScience meeting at Nottingham, UK. This meeting was a great time because Sakai was different from the other learning management systems in that it could easily be used for general-purpose small group collaboration. Much of my National Science Foundation grant activity was working with Sakai to increase its suitability for research groups to use Sakai for their collaboration interaction.

The Nottingham meeting was the annual meeting of the eResearch projects funded by the UK JISC research funding agency. Everyone showed up and made presentations and demonstrations of their latest results. Sakai had made significant inroads into the eResearch community. Folks like Rob Allan from Daresbury Laboratory and Rob Crouchley, Adrian Fish, Miguel Gonzalez Losa, Ties van Ark and others from Lancaster University were increasingly using Sakai in their eResearch projects so the meeting was a great opportunity for me to see the work they had done and plan our next moves.

While I was in Nottingham, I had found a Red Polaris 200 ATV on eBay so I put in a bid.

After the conference finished, I rode back to Lancaster with Rob Crouchley and we spent two days in the offices at Lancaster University making some technical improvements to Sakai to address some of their problems.

A big key for them was better connectivity between Sakai and various other portal systems.

Friday night we had a nice dinner at Rob Crouchley's home. On Saturday Anthony Whyte arrived to join us in Lancaster so we could travel to Cambridge together. On our last night in Lancaster, we had dinner with Adrian's and Ties' families. Ties and Adrian lived next door to each other in two sides of a duplex so we had dinner at their combined houses and spent the evening with both their families.

That evening, the eBay auction on my Polaris ATV was coming to an end so I spent an hour sitting in Ties' office pressing refresh on my eBay page waiting for a sniper to swoop in and bid up the price. My bid was an amazing deal at $1855 and I was sure that I was about to get sniped and lose the ATV. But there was no sniper and I won the auction. Sitting in Ties' home office in Lancaster, UK I was the proud owner of a slightly used shiny red Polaris Phoenix 200.

I was a little nervous when I sent the seller a message telling him I needed a few days before I could show up and pay for the ATV and pick it up. I said, "Hi, I am the winning bidder of your eBay auction — but I am currently travelling in England and will be home in five days to pay for the ATV." It sounded like complete spam. But the seller agreed to wait until I got back from England.

Once I rejoined the group after successfully winning my eBay auction, we spent the rest of the evening drinking good wine and eating fine cheese. Ties was an absolute connoisseur of all things cheese, being originally from Amsterdam. We all engaged in an extensive discussion of cheese, Amsterdam politics, world politics, and pretty much everything under the sun.

On Sunday morning, Anthony and I said our goodbyes and left Lancaster for Cambridge.

The Cambridge Developers Meeting was September 26 and 27. When we planned the meeting, I asked John Norman to set us up with "The Cambridge Experience." I wanted us to meet in on-campus rooms and I wanted to stay in a college dorm room and eat in the college cafeteria. I wanted to see what it was like to be a student at Cambridge and I figured it would be a lot of fun for the other attendees as well.

Anthony Whyte and I arrived a day early and we spent time in Cambridge with John Norman, doing the standard Cambridge tourist activities like taking a ride in a punt[1]. on the river Cam.

Later we had a pint of beer at the Eagle, a pub in Cambridge where the American pilots stationed in Cambridge during World War II used candles to draw their initials on the ceiling. The Eagle has left the initials on the ceiling and you can still see the signatures today. It is one of my favourite

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[1] A "punt" is a flat-bottomed boat that is pushed through the water using a pole.

places in Cambridge along with the Anchor pub which is considered to be the birthplace of Pink Floyd.

The Cambridge workshop was a great success. We had attendees from England, the Netherlands, and South Africa. It was amazing how many people around the world were interested in Sakai even though we were less than two years into the project.

The "Cambridge Experience" was perfect. Our dorm rooms were in an old stone building and a bit damp and cold. We had an amazing breakfast every morning in a large cathedral-like cafeteria where we had bacon, mushrooms, eggs, tomatoes, sausage, and other items.

During the workshop, I was doing very little of the talking and I liked that. The other attendees gave a number of presentations and I could sit back and watch the community grow and mature.

After the workshop, Anthony Whyte and I travelled to Milton Keynes and the Open University on September 28. After some coffee, I gave my presentation. After my presentation, Joel Greenberg took us on a tour of the campus including some of the former BBC studios. As a person with a hobby in television, I really loved the idea of a university partnering with a television network. The Open University provided both educational programming to the BBC as well as special high-end support for Nova-like shows.

We also saw the massive printing operation that the Open University used to print its educational materials. Even in 2005, they found that printed materials were still useful for students learning complex topics at a distance.

After the tour Anthony and I went back to Joel's office where we met with two other OU staff members that we did not know. It turned out that the Open University was in the middle of evaluating their learning management system strategy and wanted to ask some questions. It seemed like the perfect situation to present Sakai, but the topic of the conversation quickly shifted to be mostly about what I thought of Moodle.

I have a lot of respect for Moodle and had no desire to be seen as a competitor to Moodle. I felt that there was plenty of space in the marketplace for more than one open source product. So my answers to the Moodle questions were always positive and complimentary even while I was trying to figure out who these people were and what their agendas were.

About 30 minutes into the conversation, I was handed a copy of the recently published "Using Moodle" book from O'Reilly and Associates and told that it was written by Jason Cole (one of the people in the meeting). Given that the Open University already had the author of the Moodle book on staff, it was pretty obvious that the "evaluation" was mostly over and Moodle had been selected.

This didn't really bother me too much other than the fact that I had spent 30 minutes talking to Moodle folks without knowing it. I quickly mentally

re-checked the conversation up to that point and luckily everything I said up to that point was pretty complimentary to Moodle.

We continued to talk more about strategies for the Open University. Joel said that they were considering installing Sakai and Moodle and trying to come up with a hybrid blend of the two systems. Joel asked if I thought that combining Sakai and Moodle to make one system would be a good idea. I said that would be a bad idea and told him that I would far prefer that he just picked Moodle and went with it than trying to take pieces of Sakai and Moodle and mash them together.

Later, Joel would jokingly tease me by telling people that I was the one who told the Open University to go with Moodle (which was technically true). Joel and I continue to be good friends to this day and we still laugh about that meeting.

I left the meeting knowing that the Open University would choose Moodle and thinking that it was a bad idea for them. I think that part of their reason to choose Moodle was that they felt that the OU was late to the Sakai party. With schools like MIT, Stanford, Indiana, Michigan, and Cambridge already at the top, the OU did not want to have to play catch-up. I think that they also wanted to be the largest school in the Moodle community thinking that would gain them significant influence.

My feeling is that if the Open University had joined Sakai at that time and brought in their development team and strong design talent, they would have ended up as one of the leading institutions setting the future direction of Sakai.

At the same time, I liked the fact that the Open University could act as a conduit between the Moodle and Sakai projects. I felt that both projects needed to cooperate going forward rather than compete. With Cambridge and the Open University less than an hour apart and with leadership roles in the Sakai and Moodle communities respectively, it seemed like a great way to increase the connectivity between the Sakai and Moodle projects.

When I got back from England on September 30, I immediately went and picked up the new Polaris 200 from the eBay auction. We immediately went shopping so Teresa could have a complete set of red protective gear and clothing to match her new red ATV.

The next week it was off to Boston and the Global Grid Forum to work on our National Middleware Infrastructure grant. I was working with Marlon Pierce, Marcus Christie, and Dennis Gannon of Indiana University and Joe Futrelle of the University of Illinois at Urbana-Champaign as well as others. Meeting at the Global Grid Forum allowed us to present our work and continue to move the project forward.

In a spare day, I went to the Stata Center at MIT to visit with Hal Abelson to talk about where he saw the future directions of the Sakai effort. Hal had not been deeply involved in the Sakai effort, but he had been watching

closely from the sidelines. Hal was on the MIT committee considering the future of learning management system technology at MIT so it was important that I talked to him to understand his issues.

MIT had been running their own locally-developed LMS called Stellar. Craig Counterman was the lead developer on that project. I always felt that Stellar software was more elegant in its internal architecture but Sakai was a more solid workhorse even if Sakai's internal structure and design left a bit to be desired. While MIT had agreed to move to Sakai as a condition of taking the Mellon grant funding, it looked like they would never really install Sakai. They kept running Stellar because while they were not entirely happy with Stellar, they felt that it was closer to their ideal system than Sakai.

It never bothered me that MIT did not install Sakai. I always felt that the founding principle of open source was voluntary action and if we were to somehow coerce MIT into adopting Sakai, I would feel like we had violated that most basic rule of open source. In some ways, it felt good to me for Sakai to be held to a higher technical standard by the MIT team. It made me want to strive to make Sakai elegant enough that it would be seen by everyone at MIT as a positive upgrade from Stellar.

When I met with Hal Abelson, he told me that the committee doing their evaluation kept looking at different LMS systems with no clear winner emerging. I told him that I agreed with their approach and they should probably stand pat until they truly saw something that they liked.

Hal then laid out what he saw as the critical next major steps in learning management systems in general. He felt that learning management systems needed to stop protecting content and only sharing it between teachers and enrolled students. He wanted a world where all courses would be taught in the open (following the lead of MIT's Open Courseware) so people could just pore through the actual courses taught around the world and learn for the materials in the course, the assignments, discussions, etc. He wanted to see Sakai take the lead as the system that would change the default protection from "locked down by default and difficult to open" to "open by default and difficult to lock down."

I agreed with his assessment and goals but suggested that there were a lot of legal factors that pushed hard against such an approach. Keeping course content in a walled-garden avoided problems where teachers were not always careful about copyright clearance of their materials and legal restrictions on the privacy of student learning activities. He agreed with these limitations but felt that the software like Sakai should still lead the way and make it increasingly easier to teach in the open.

While we were talking, Richard Stallman came into his office (which was right across from Hal's in the Stata building) and ended up on a phone call with someone on the other end where Richard was explaining in a pretty

loud voice the subtleties of the GPL software license. I had met and interviewed Richard Stallman many years earlier at a conference in 1999 and we had featured him on our television program. Listening to him talk in his office was a fun reminder of the kinds of serendipity that can happen with all the talented technologists wandering around the MIT campus.

Later that day there was a talk by Sun Microsystems about some of their efforts to license parts of their patent portfolio to open source projects. It was part of an increasing awareness on the part of corporations that they were gaining a lot of benefit from open source projects and that open source projects needed the same protection from patents as commercial entities. Towards the end of the seminar, Richard Stallman showed up and gave the speaker a piece of his mind on what was wrong with the patent system. Richard's comments were a little misdirected because the speaker was talking about taking steps to address the shortcomings of the current system without needing to overthrow the entire patent system. Of course Richard's position was that we should overthrow the patent system and eliminate all patents.

When I got back home at the end of the week, we went on our first ATV excursion where both Teresa and Brent had ATVs. It was a lot of fun and the trees were starting to display their fall colors.

The next week was a trip to California to meet with the Berkeley team to talk about adding a facility to support groups of students within courses to Sakai. Berkeley needed to write a tool that would allow students to select a discussion or lab section for a course within the Learning Management System. This requirement was due to the fact that their Student Information System could not schedule discussion or lab sections. Stanford had a similar requirement.

I had been struggling for a while to find the resources and time in the schedule to add groups and a general purpose hierarchy to Sakai to meet these important end-user use cases. At the Berkeley meeting, it finally felt to me that we had come up with a design for the groups use case that could be implemented relatively quickly. It felt like we could implement the new features and make the December deadline for our 2.1 release.

After the Berkeley meeting, I spent a day at the San Francisco offices of the Hosei University meeting with their developers and giving a remote seminar to be streamed back to Japan. Hosei University had installed and was evaluating Sakai for use on their campus so they had a number of questions.

I rounded out the week in the bay area with a visit to Apple Computer to visit Scott Morris. The next week was the annual Educause conference and I was scheduled to speak about Sakai in the Apple booth on the tradeshow floor and Sakai would be featured in the demonstration area of the Apple evening gala event at Educause. Anthony Whyte, Jeff Kahn, and

John Leasia were also going to be in the Apple booth and presenting at the Apple Gala event.

I always looked forward to the Educause conference because it was like summer camp for educational technology. All the companies would put on their best show at Educause and all my friends in the business would always show up at Educause. So I was really looking forward to the following week in Orlando, Florida.

The week before Educause Blackboard announced that they were beginning the process of purchasing WebCT. WebCT had the second largest share in the commercial learning management system market. I had gotten quite close to Chris Vento of WebCT, and WebCT had taken the lead on the IMS Tools Interoperability specification and demonstration that was so successful earlier in the year.

This news was a blow to my strategic plans for overall market impact. I was expecting that Sakai and WebCT would form a long-term alliance and implement standards like IMS Learning Tools Interoperability and IMS Common Cartridge and slowly force Blackboard to come to the table and support these standards as well. It was the standard ploy of the number-two and number-three vendors ganging up on the number-one vendor in the marketplace.

But Blackboard had removed my new marketplace ally with a checkbook and the stroke of a pen. I was back at square one in terms of having a strategy to force Blackboard to come to the table and embrace standards for data portability and software interoperability. Ironically, my Educause presentations for the next week already alluded to my strategy for changing the market using WebCT as a lever against Blackboard.

This was only the announcement of an intent for Blackboard to acquire WebCT. Given the relative market shares of Blackboard and WebCT it would be necessary for them to prove to the Department of Justice that the acquisition would not result in a monopoly position in the marketplace for Blackboard. But since the federal government in 2005 had a policy of mostly letting business "do their thing", it seemed like the merger was highly likely to be approved.

The week of October 18-21, 2005 was Educause in Orlando Florida. The conference was abuzz with the WebCT acquisition and I was giving talks about Sakai at the sexy Apple booth right by the entrance to the trade show floor. The whole idea of having me present was to get the Apple booth to overflow with people so the rest of the booth staff would be able to interact with the attendees and show them various Apple technologies for education. My talks were essentially "bait" for the people walking by the booth. And with the WebCT news, folks could not hear enough about Sakai. Every time I spoke, the booth was absolutely packed. Apple graphic designers had built a beautiful set of slides and Apple marketing had honed

my presentation to make it short, fun, informative, and punchy. As I spoke repeatedly to overflow crowds, I started to feel a little bit like Steve Jobs.

I had a schedule conflict with the Apple Gala evening event so it was covered by Jeff Kahn, Anthony Whyte and John Leasia who all had been flown down at Apple's expense to participate. Even though I could not make the Apple Gala event, I ended up stopping by to help Jeff Kahn get a particular feature working in his Sakai demonstration. I was later bummed to find out that the shrimp at the Apple event were the largest that Jeff and Anthony had ever seen.

We also had our multi-project Open Source reception where we entertained our current and prospective Sakai partners. By this point in time, we were approaching 120 partners at $10,000 per year that assured the Sakai Foundation of 1.2 million dollars per year for at least the next two years.

On the last evening of Educause, we all went to the conference-wide party at Universal Studios. The Thursday night Educause parties are always a lot of fun because by that point in the week, everyone was pretty much finished with all their responsibilities and we could relax and enjoy each other's company.

I spent the evening with Indiana University folks like Rob Lowden, Kristol Hancock, Stacy Morrone, and others. While many universities had contributed to the overall success of the grant phase of the Sakai project, the University of Michigan and Indiana University had provided the strongest leadership throughout the project. Both schools had brought their best and brightest employees into Sakai and when the going got tough, both schools dug deep and came up with whatever additional resources that were needed to get the project over the finish line.

Thursday night in Orlando at Universal Studios CityWalk was the perfect time to hug each other, reminisce about the tough times, tell tall tales to each other about the grand battles we had endured during the last 24 months. But most importantly we were enjoying the new life-long friendships that formed because of the project.

After Educause, it was time to get serious about the transition from the grant-funded Sakai Project to the non-profit Sakai Foundation. Thanks to Joseph Hardin's wise money management and the 120 Sakai partners that had already joined the Sakai Project, we would be able to start the Sakai Foundation with nearly a million dollars in the bank and an annual recurring revenue of 1.2 million dollars per year.

Joseph Hardin, John Norman, and Chuck Powell had crafted an excellent set of bylaws for the Sakai Foundation and were well down the path of creating the Sakai Foundation legal structure. The idea was to have the founding Board of Directors of the Sakai Foundation be the advisory board from the Sakai project consisting of Joseph Hardin of the University of Michigan (chair), Brad Wheeler of Indiana University (co-chair),

Lois Brooks of Stanford University, Ian Dolphin of Hull University, Vivian Sinou of Foothill College, Mara Hancock of the University of California Berkeley, and Jutta Treviranus of the University of Toronto[2].

The goal was to slowly move from the founding Board of Directors to a board elected by the members over time. The founding board members would draw straws to find if their terms would expire in 2007 or 2008. The founding members could run for re-election when their initial terms expired, and the Sakai Foundation would elect three new at-large Board members from the community at the end of 2005 who would serve on the Board for three years. Board members could serve no more than two consecutive three year terms. It seemed like a nice gentle transition from an appointed Board to an elected Board.

Joseph filed the papers to form the Sakai Foundation as a Michigan non-profit corporation on October 12, 2005 and I was quickly nominated to run for one of the three community-elected Board positions.

The following was my platform statement:

Going forward, the Sakai Foundation intends to produce the best collaboration and learning environment with a limited number of directly funded employees. The real work of Sakai will be done by "volunteers". Sometimes those volunteers will be institutions and sometimes those volunteers will be individuals. Sakai must properly harness and orchestrate all of the talent in its community.

Thanks to the hard work of the Sakai Project, we are starting out with a nice piece of software in the form of the Sakai 2.1 release. This software has a reasonable set of features, is production ready, and is in production at a number of institutions. The Foundation's challenge is to determine how we move forward from here and build on the work of the Sakai Project in a sustainable way.

Perhaps the best example of how I see the future working is how the Mail-Tool is being developed. This tool was developed by an individual who was adding a feature to their own Sakai. The tool started out very simple and then several other Sakai sites adopted the tool. These sites helped improve some of the little flaws in the tool until it met their needs. Then the Sakai Project took a look at trying to include the tool in the 2.1 release. It was still a little too rough on the edges so the team went back to cleaning it up. After the 2.1 release introduced sections and groups in the Sakai framework, the

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[2]Jutta and her team moved from the University of Toronto to OCAD University `www.ocad.ca` in 2010 where she founded the Inclusive Design Research Centre, the Inclusive Design Institute, and a Master's program in Inclusive Design.

MailTool team is setting about how to make the tool section aware and getting it ready for possible inclusion in the 2.2 release.

This is an example of the community at work. It happened in a somewhat organic fashion. But it did happen in the context and community of Sakai. The design and implementation work is all done in the open and the entire Sakai community is informed of the project and welcome to join the project. The Sakai architecture, release and QA folks drop in on the project from time to time and give some guidance as to how to best fit this into Sakai — but otherwise the project is left to its own devices. It finds and uses resources, it makes design decisions, it fixes bugs. In short, it is its own little entrepreneurial "nexus" within Sakai.

There are other excellent examples of dynamic teams which have done development in the way that I see the future of Sakai: Melete, JForum, IU Discussion, Rwiki, OSP, and the SU tools are excellent examples where work was accomplished by teams that did not require continuous involvement from Sakai — each of these teams has self-organized and self-managed. Sakai "staff" have only been consultants to these projects as necessary. The Sakai community members are informed of the work in these projects and get involved in the projects as they see fit.

The Sakai Foundation is not the "Vendor" or "Creator" of Sakai — the Sakai Community is where Sakai is created and evolved. The Foundation must focus its energy in building the community and then supporting and coordinating these distributed efforts and insuring that the efforts eventually improve the overall Sakai product. Individuals and institutions affect Sakai by their contributions to the community.

The good news is that we have already made progress in changing the thinking from "Project" to "Community" already — the 2.1 release effort included developers from 10 (not 4) institutions

My platform statement walked a fine line — trying to get the community to think beyond a top-heavy meeting and committee-oriented management structure that we used in the grant-funded phase of the project. I was concerned that the community would decide that the governance structure of the Sakai Project should simply continue as the governance model for the Sakai Foundation. And with so many of the Board of Directors coming directly from the Sakai Project to the Sakai Foundation, this was a very real risk.

I wanted to move the community toward real open source meritocracy as the way we would guide our efforts. I was honestly tired of being forced

to talk to project participants that liked to talk a big talk at meetings and then not deliver when it came to building software. I wanted the "talkers" to slowly fade out of the project and have the project led by the organizations and individuals who were doing the work.

But I had to walk a fine line because I needed to win the election to get on the board so there would be some developer representation on the board. First I would get elected and then I would slowly adjust the governance to be more Apache-like.

Once my nomination was completed and the election had started, it was time to get back to work on the last sixty days of the project.

Chapter 12

Finishing on a High Note

As October 2005 drew to a close, with sixty days remaining on our two-year Mellon grant for the Sakai project, I wanted to finish on a high note and send the project into its open source community phase with a lot of positive inertia.

In the first week of November 2005, I was back in the Bay area with a visit to Scott Morris at Apple Computer to talk about how to build on our success from the Educause presentations. We looked into bundling Sakai into Mac OS/X Server, but Sakai was still too much of a moving target to meet the requirements to be included in OS/X Server.

After my visit to Apple Computer, I drove out to the University of California at Merced to visit with the Sakai team there. UC Merced was a brand new campus founded as an expansion to the UC system 1995. Since UC Merced was a brand new campus, it wanted to take a fresh look at all aspects of what it meant to be a University. Roger Kogut, the Chief Information Officer (CIO) of UC Merced decided that one attribute of the university of the future would be to rely on Open Source software as much as practical. The UC Merced focus on Open Source solutions made Sakai the perfect choice as their Learning Management System. They had been an early Sakai Partner and I wanted to take the chance to visit them and thank them in person for their long-term support.

The following week, I was back in Michigan and drove to the University of Toronto to meet with Jutta Treviranus and her team. Jutta was one of the world's leading experts on the design of accessible web sites. Jutta led the development of the Canadian and worldwide standards for accessible web sites and it was a great honor to have her on the Sakai Board. I really wanted Sakai to have outstanding support for users with accessibility issues so I wanted to make sure to align Sakai's project goals with Jutta's team.

Jutta's team also had built a successful open source learning management system called ATutor led by Greg Gay of the University of Toronto. While ATutor had a small worldwide share of the LMS market, well behind

the market share of Moodle and Sakai, it was still a quite successful project and Jutta and Greg used ATutor to showcase the latest and best approaches to accessibility. I wanted to make sure to create a supportive alliance between Sakai and ATutor going forward.

The University of Toronto had also developed a lecture recording technology called "ePresence" which I found quite interesting because of my prior work in lecture recording in my Sync-O-Matic and ClipBoard-2000 projects.

After I got back from my visit to Toronto, it was time to go to an IMS quarterly meeting in Princeton, NJ. The IMS Global Learning Consortium was in a management transition. Ed Walker had stepped down as the CEO of IMS and they were in the process of interviewing the new candidates for the CEO position in IMS.

But there was no time to pause because we were working furiously to finish the IMS Common Cartridge specification in time for the demo we had planned for the Alt-I-Lab meeting in June 2006. Even with Blackboard acquiring WebCT, it looked like we were on track to have an excellent demonstration. The publishers were still making a strong push to keep the standard moving forward and when Angel Learning became increasingly involved in the standards effort as it looked like Angel Learning would inherit the number-two market share position from WebCT. This would put Angel in an excellent position to be seen as the "commercial alternative to Blackboard." The acquisition of WebCT further reinforced the notion of "Blackboard as the mean and nasty market leader" and Angel knew that they would quickly be seen as the "good guys" in the market.

If Angel could cooperate with the publishers and support Common Cartridge as the way to get standards-based publisher content into their system, it would put a lot of pressure on Blackboard to open up and further strengthen Angel's position in the market.

For me, having Angel Learning start to take the initiative in the IMS Common Cartridge work was a great turn of events. I now had a new long-term strategy. I could align Sakai with Angel Learning and use that alliance between a strong commercial player and a strong open source player to push my tool interoperability and data portability agendas in the marketplace. Angel and Sakai would be a great combination, both were still small enough to be hungry and both were in a great position to increase market share.

Even more ironically, Angel Learning was founded using the Microsoft-based Indiana University OnCourse software that Sakai was replacing at Indiana University. Indiana had built OnCourse based on Microsoft technologies but a campus wide strategic decision to move toward open source resulted in Indiana's participation in Sakai and the deployment of Sakai on their eight campuses as OnCourseNG (or Next Generation). David Mills had been a contract developer who had been paid to work on OnCourse to

develop its Tests and Quizzes module. When the work was done, he liked it so well that he made arrangements with Indiana University to license the software and formed Angel Learning just before Indiana's involvement in Sakai. It also meant that Angel's world headquarters were in Indianapolis, Indiana and it was only a four hour drive from my home to Angel headquarters.

On November 15, I was back to Edinburgh, Scotland to attend the JISC/CETIS meeting on virtual learning environments. A major buzz of the conference was about the concept of Personal Learning Environments (PLEs). The idea was that a Virtual Learning Environment (what the British called Learning Management Systems) was set up by the teacher and used by the students. A Personal Learning Environment would be fully under the control of each student and they would gather and share resources with each other Napster-style and take more control of their learning. Given the increasing interest in lifelong learning, the concept of Personal Learning Environments was attractive to people trying to imagine an alternate future vision for educational technology. And given that funding agencies tend to prefer spending money researching the future, it made good sense for JISC/CETIS to be exploring PLEs to better understand their potential.

I am usually a bit too pragmatic to get research funds because I tend to want to build the software that people need now, rather than coming up with ideas that might make sense in the future. The JISC/CETIS meetings were full of bright talented people involved in teaching and learning research in the UK and there would certainly be a lot of great brainstorm sessions that I could learn from. With Sakai in hand, it might be fun to imagine what the next steps in the industry might be. After all, Joseph Hardin and I were hoping for some follow-on funding from the Mellon Foundation to build capabilities into Sakai to enable applications like Personal Learning Environments.

The brainstorming sessions came up with a nice model for a Personal Learning environment. The idea was that an individual's learning environment was drawn from many sources including their schools, courses, teachers, fellow students, and friends. With a PLE the student would interact with all of these sources and accrete learning resources. The PLE was more of a long-term personal repository that held their own searchable copies of the resources they encountered while learning. It also helped the student contribute resources to the various courses and group learning activities they might be involved with and retained copies of those learning artifacts. One of the uses of the PLE was to be able to republish their personal learning content and reflect on that content as part of a personal portfolio.

While the model felt pretty good to the attendees, it seems as though even now no one has built a Personal Learning Environment using this personal-repository model. Much of the PLE work continued to approach

the notion of a PLE as a Napster or Torrent-like peer-to-peer resource sharing network where resources moved from one end-user computer to another.

I gave myself an extra day before the meeting and went to Hull University to see Ian Dolphin. Ian was a Sakai Project (and soon to be Sakai Foundation) board member and we had a good relationship. In addition to being involved with the Sakai project, Ian was a member of the Jasig (uPortal) board, involved in digital library projects like Fedora and DSpace, and very well connected in the UK higher education research space. Ian worked in the University of Hull Library and the University of Hull was gently considering adopting Sakai so we took the opportunity to have me meet with a few key people at Hull.

As soon as I got back from Scotland, it was off to the Supercomputing 2005 conference in Seattle, WA. Supercomputing was another of my favorite conferences of the year because of my previous research in High Performance Computing and my involvement in the National Middleware Infrastructure project. Supercomputing had a large trade show where I would be able to run into all of my friends from the industry and catch up. The NMI project had a day-long workshop were we were to present our results of the grant. This workshop would also generate a special issue of the "Concurrency and Computation: Practice and Experience" journal. I gave a talk at the workshop about the research applications of Sakai and contributed a paper to the journal.

On December 1, I went to Montreal, Quebec to meet with a group of Quebec Universities that were interested in Sakai. The various universities of Quebec had an approach where they would coordinate their strategies on technology and software. The idea was that by working as a group, they would be more efficient and could help each other. Some of this coordination work was done by an organization called CRIM (Computer Research Institute of Montreal) `www.crim.ca`.

CRIM had coordinated a multi-university and multi-school effort with uPortal called Mille and I hoped that CRIM might lead a similar effort to support Sakai across Quebec. Most of the Quebec Universities were customers of WebCT. The origins of WebCT were at the University of British Columbia so it made sense that it would appeal to other Canadian universities. But with the Blackboard acquisition of WebCT, the universities had become quite nervous about the future of WebCT and were interested in having CRIM do an evaluation of Sakai.

The primary purpose of the trip was to give an overview of the Sakai community and a technical overview of the Sakai product and then meet with critical stakeholders from the participating universities. For me, having the activity coordinated by CRIM was an excellent structure. I told them that by pooling their resources together, the Quebec universities would have much more influence in the future directions of Sakai.

On December 2, we released Sakai 2.1 — the final release of Sakai under the grant-funded phase of the project. This was our last moment to define the legacy of the grant and the last moment to attempt to meet the deliverables we had set out for ourselves in the grant.

Since Joseph and I had not yet secured additional funding, it was also the last time where we would have guaranteed resources on the project so I made sure we cleaned up as many loose ends as we could. The release felt like a very solid product, particularly having survived a semester of heavy usage at both the University of Michigan and Indiana University.

Sakai 2.1 contained the following features:

Sakai 2.1 release: December 2, 2005
Web Services for Remote Portlets Producer
Community Driven Release and Quality Assurance
Resource tool with support for Open Source Portfolio
Group and Section Support (Berkeley)
Course Site Template / Student Role
Translations: Chinese / Korean / Dutch / Japanese
In Progress: Danish / Hebrew / Portuguese / Slovak / Catalan / French / Spanish
Database Performance Improvement
Improved user and roster providers
The SakaiScript web services (Stephen Githens and Seth Theriault)
The "Become User" Tool (Texas State San Marcos)
The "Roster Tool" (Indiana University)
Wiki Tool (Cambridge University)
Repository OSID / TwinPeaks (Indiana University)

While it was not everything we promised in the grant, it was an impressive list of accomplishments. In particular with all of the contributions from schools and individuals outside of the founding institutions, we were already well on the way to being a community-driven product rather than a grant-driven project.

This was a good indication that the Sakai community and Sakai Foundation had a long and healthy future ahead of it. I had made a conscious decision in the last half of 2005 to build the community involvement in the product rather than simply trying to be as true to the grant proposal as possible.

On December 6, Carol Dippel sent out a note of thanks for the Sakai 2.1 Quality Assurance effort:

Special thanks go out to Boston University, Cambridge University, Columbia University, Edgenics Learning Institute, Indiana University, Massachusetts

Institute of Technology (MIT), Stanford University, University of California-Berkeley, University of Capetown, University of Michigan and Virginia Polytechnic Institute and State University (Virginia Tech). Please make an effort to personally thank colleagues from these institutions when you get a chance. Thanks! –C.

Sakai 2.1 QA Working Group Metrics:
27 Institutions 54 People 6 Countries

This was another strong indication of the broad support for Sakai worldwide.

Once the Sakai 2.1 release had been shipped, Carol Dippel resigned as the Sakai Project Quality Assurance Director. She had done an outstanding job on an impossibly vague task under extremely demanding conditions and was underpaid for her contributions. She wanted to continue to be involved during a transition but she needed to go back to her career and pick it back up. Carol didn't make it to the Sakai Conference in Austin so I composed a song titled, "We Love You Carol, Oh Yes We Do" and I made one of the plenary sessions sing the song to Carol and I recorded it and sent her a copy.

I was elected to the Board of Directors of the freshly minted Sakai Foundation along with John Norman of Cambridge University, and Chris Coppola of the rSmart Corporation. My term would begin December 10, 2005. Going forward, it was time for me to get involved in Sakai on a political level in addition to my promotion, marketing, technical and project management involvement of the past two years.

With so much of the Board of Directors from University IT management, I knew it would be hard as the only real developer on the board to get the Sakai Foundation to appreciate how open source projects needed to run. Their first instinct always was to run it like any other University IT project but with staff from more than one organization.

I always felt that the only way to scale up a worldwide community of part-time developers was to treat them as valued volunteers, each with their own resources and motivations, and use the Foundation to coordinate and support those volunteers.

December 7-9, 2005 was the fourth Sakai conference in Austin, Texas and it would be the last meeting we would have as part of the grant-funded phase of the project. It would be the first meeting that Rob Lowden of Indiana University would miss because he was days away from having his first child. He wrote me the following note to introduce me to Megan May. Megan had been the Indiana lead for the Sakai Quality Assurance effort.

Chuck,

While you are in Austin next week, if it is not too much trouble, would you please seek out Megan May and introduce yourself and say a few words of encouragement. She is a super trooper and has only been with the team for 1 year, but she is an amazing addition to the team and she is going to go places. Thanks.

Rob

I not only introduced myself to Megan in Austin, I immediately asked if she would be our Quality Assurance Director going forward. She accepted the job and started working on the Sakai 2.1.1 release in early January. Later we would work out the details of a contract and the Foundation hired Megan as the QA director half-time with Indiana University paying the other half of her salary.

I really enjoyed the Austin conference because it was a bit of a "victory lap" for the grant-funded phase of the project, and for the moment, there was nothing more that could be done to address the deliverables of the grant. For better or worse, the grant would be over and then the history could be written.

I really relished the notion that from that point forward, we would never again have to talk about things like, "but we agreed to this in the grant" or worry about the distinction between the "core team" and the "Sakai Educational Partners." From that moment forward, we were one community with the sole goal of building great software that we all could use and the members of the Sakai community would be whoever wanted to use the software and whoever showed up with resources to work on the software.

There also were a number of attorneys at the Austin conference interviewing people about the Blackboard acquisition of WebCT. The key question was whether or not the combined company would have such a large market share that it would border on a monopoly.

Blackboard had timed the acquisition perfectly with respect to the Sakai community. We had just formed our non-profit corporation, just released the very solid Sakai 2.1 release, and were in a hotel with a bunch of Sakai fans. We also were quite sure that Sakai would be able to sweep in and take a number of WebCT customers away from Blackboard. And with WebCT no longer in the marketplace, Sakai would be even more prominent as the alternative to the commercial enterprise learning management systems.

I felt like the Blackboard acquisition of WebCT would only benefit Sakai in the market. I confidently told the lawyers that the merged company would not be a monopoly and that Sakai was certainly a strong and viable alternative in the marketplace and I was not really worried at all about the WebCT acquisition.

On December 14, Rob Lowden's son was born. At this point, Sakai was

like a large worldwide family and we appropriately forwarded the birth announcement around the world.

On Dec 14, 2005, at 9:24 AM, Wheeler, Bradley C. wrote:

Baby 1.0 is Released

Brandon Robert Lowden was born this morning weighing 8 pounds and 5 ounces with a full head of hair. Initial QA reports that all is well with baby, mother, and project manager.

– Brad

From: Hancock, Kristol Joy
Sent: Wednesday, December 14, 2005 2:09 PM

Good afternoon! As you may have heard, Baby Oncourse was born this morning around 8:15 a.m. His name is Brandon Robert Lowden and he weighs 8lbs 5oz.

I was told by the proud papa that I could send out pictures to anyone at all, so here they are:

https://oncourse.iu.edu/access/...
https://oncourse.iu.edu/access/...

Kristol Hancock
Oncourse - Indiana University

Five days later on December 19, Anthony Whyte's son Jack Frederick Robert Whyte was born Anthony sent the following announcement to the Sakai worldwide family:

Jack Frederick Robert Whyte, 8lbs, 3 oz., 20.5 inches long, born 19 Dec. 2005, 10:33 am.

Momma and Jack doing well, Poppa in awe.

P.S. Apologies for the spam.

It was further evidence of how productive the members of the Sakai project had been for the past two years.

As the year wound down and folks starting going on their Christmas

holiday, I decided to spend a few days exploring some of my ideas around a desktop interface to a Learning Management System similar to some of the Personal Learning Environment ideas we had talked about back in Edinburgh at the JISC/CETIS meeting.

I ended up writing a Sakai desktop application for Windows using the Visual Basic Language and another Sakai desktop application for Apple in Objective C. It was fun to shut off all of the Sakai group activity and work on an individual project all by myself between Christmas and New Years. I often take the time between the year-end holidays to play a little bit with technology or write a book[1].

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[1]This book was written starting December 26, 2010 and finished in May of 2011. Virtually all of the writing was done during the holiday break, spring break, and the week after final exams.

Chapter 13

Beyond the Mellon Grant

As 2006 started, there was a lot of interest in a Request for Information (RFI) from the State University of New York(SUNY). SUNY had a long history of innovation in teaching and learning technology and they represented over 20 SUNY campuses around the state. For me, SUNY represented the potential for increased adoption, but more importantly would increase our developer talent pool. And since they would come into Sakai with an agenda and resources, we could learn a lot from them.

SUNY had proposed a SUNY Learning Network (SLN 2.0) that would be a mash-up of the best of breed capabilities from various learning management systems like Sakai, Moodle and the Learning Activity Module System (LAMS). What was particularly interesting to me was that their current learning environment (SLN 1.0) was based on Lotus Domino. Sakai (and CHEF) were designed to be a replacement for Lotus Domino so it might be a perfect match for SLN 2.0.

The central idea of SLN 2.0 was that all of the learning would be rolled up and presented to the user through uPortal in a single unified user interface. While this idea sounded wonderful on paper and when drawn on a white board in a conference room, in reality, it was simply not possible at that point in time given the maturity of the products in 2006.

Even though I did not feel that SLN 2.0 was even close to being technically feasible, it gave a bold vision of the kinds of choices that should be available to teachers. Even though the deadline for formal public comments was in November 2005, Patrick Masson encouraged me to send in a response. I wrote an unsolicited 25-page response to the RFI and submitted it January 4, 2006.

The SUNY Request for Information was a great trigger to get me to take a moment and reflect on the larger picture of where we had come from and where Sakai was going. For the past two years, I had focused on making one project successful and meeting the requirements of a grant. In my response to the SUNY RFI, I laid out a vision of where we all might go together. You

can read the entire report online. Here is an excerpt from the conclusion of the document:

My overall goal of this document is to try to get SLN to view its technical efforts in the context of a larger picture. Everything in this space is a moving target and there will be wonderful new capabilities built over the next few years. Reading the Technology Strategy Report, I got the sense that SLN felt that with enough careful analysis, SLN could "pick" the right combination of things and then make that combination work.

The problem is that the combination that SLN picked and the way that was described connecting the components together (some of which I have made assumptions on) is a challenging path forward. SLN has chosen to use technologies in ways quite different than other organizations. I appreciate trying to jump "ahead" at the moment where you are considering new technology so as to skip as many intermediate steps as possible.

However, when I look at migrating a large (and relatively happy) user base from one technology to another, I get pretty conservative. I don't like promises of future features from any vendor (commercial or open source). I like to make my decisions on what I can see, download, install, and use today.

I prefer to innovate in an iterative fashion, always working from a safe production environment. You may think that faculty and students want rapid innovation and to use the best-in-class technologies all the time. My experience suggests that this is not generally the case. Solid production environments that evolve and improve slowly over time are what make users the happiest.

If SLN makes the right choices and invests their development talent wisely, SLN can have a dramatic impact on the still evolving Open Source teaching and learning field all the while keeping your faculty, staff, and users happy with solid production services based on the best available open source solutions.

I was both advocating for the use of Sakai and gently encouraging them to think about bringing their development talent into Sakai. I was explicit with SUNY because I felt earlier I had made a mistake not explicitly telling the Open University that they could have had a lot of influence in Sakai by bringing in their development team. In general, my goal was to grow the developer community as my top priority. Expanding the adopter community for me was secondary. In a sense, every new adopter that brought no additional resources into the community was a drag on our limited resources. I was not opposed to expanding adoption, it was relatively low in

my priorities.

Inadvertently, just at the moment we were transitioning from the grant-funded phase of the project to the open source community, the SUNY RFI had triggered me to think deeply about not only my ideas on their technical path forward, but also my views as to where Sakai should go over the next few years.

The future world would not be one of monolithic Learning Management Systems but increasingly we would need to function in an ecosystem with many sources of learning capabilities. But there was still a long way to go and Sakai still had some glaring technical holes that needed fixing.

On January 10, I went to an IMS meeting at Blackboard headquarters in Washington, DC to talk about the IMS Common Cartridge specification and demonstration we had planned for June 2006. Crunch time was coming and we needed to make some progress. It was my first trip to the halls of Blackboard so it was a bit fun for me. I had gotten to know Jan Posten Day since she came to all of the Sakai conferences and had gotten to know Bob Alcorn through our work on IMS Tools Interoperability and IMS Common Cartridge.

I had never even used the Blackboard Learn and was never at a school that used Blackboard so it was a curiosity to me. There were many angry Blackboard customers and former customers in the Sakai community but I had never experienced either the good side or the bad side of Blackboard.

One of the important agenda items for me for the trip was to have a steak at the Sam and Harry's Grill in Washington, DC. One of my "bucket list" items was to have a steak at all of the "Great Steakhouses of North America." The steakhouses were listed in an advertisement in every issue of the Northwest airlines magazine. Since I had done so much travel and seen the list of steakhouses so many times that I decided to make it a point to go to all of them.

Sam and Harry's Grill, Washington DC
Metropolitan Grill, Seattle, WA
Gene and Georgetti, Chicago, IL
Rainwaters on Kettner, San Diego, CA
Pierpont's at Union Station, Kansas City, MO
III Forks, Dallas Texas
Brook's Steak House, Denver, CO
St Elmo's, Indianapolis IN
Vic Stewart's, Walnut Creek, CA
Manny's, Minneapolis, MN

I had made a reservation at Sam and Harry's Grill, but it was a bit late and the other attendees wanted to go to a nearby Morton's steak house in-

stead. But I wanted to have dinner and talk with them so I decided that I would go both to Morton's and Sam and Harry's Grill. Kevin Riley of IMS agreed to join me later at Sam and Harry's Grill so I would not have to dine alone.

As the evening started out, at Morton's and I only had an appetizer and a glass of wine. Everyone felt sorry for me when the steaks came that they cut off small pieces of their steaks and gave me a little steak sampler. Morton's makes a very nice steak and they all were different but wonderful. When the Morton's dinner finished, I went to the Sam and Harry's Grill and met Kevin for my real dinner.

Sadly the steak at Sam and Harry's Grill was not as good as the Morton's steaks. Just to be clear, the "Greatest Steak Houses" list is simply an advertisement. But since this was a "bucket list" item, I was happy to have it taken care of[1].

Towards the end of January, I had a meeting of the JSR-286 expert group at the IBM facility in Boeblingen Germany where the JSR-286 lead Steffan Hepper lived and worked. The JSR-286 standard was to be the follow-on specification to the JSR-168 portlet specification. For me it was a great honor to be invited to be part of the expert group. I hoped that I could represent the use cases needed in a teaching and learning environment. I also figured that it would force me to learn more about portals and portlets and make good connections with the other projects like the Apache Pluto and JetSpeed portal projects.

Like I usually do in these types of trips, I added extra time at the beginning and end of the trip to visit potential new Sakai members. I had arranged a meeting with Intel Corporation in Munich with Craig Zematis and Andy Powell. Intel spent a lot of money supporting educational activities as part of its marketing and outreach activities and I hoped to interest them in joining Sakai and joining IMS and generally supporting our efforts.

It was the first time I had rented a car on a European trip. I got a cute little Mercedes Benz A140. I was looking forward to driving on the Autobahn and experiencing roads with no speed limit. It took me a while to understand the signage to figure out what the speed limit was. It turns out that there are only certain segments of the road that had no speed limit and some segments would change based on the traffic level. After a while I figured out that they would put a number on a sign like 100 kilometers per hour when you were subject to a speed limit. And then when you approached a road segment with no speed limit, they would put up a sign with the number 100 on it and a "not" symbol across the number. I took this to mean

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[1]I do highly recommend the steaks at Gene and Georgetti, St Elmo's and Vic Stewart's. The shrimp cocktail at St. Elmo's is simply the best shrimp cocktail in the world. I would also add Alexander's at Urbana-Champaign, IL and Little Zagrebs in Bloomington, IN to your "must dine" list.

"the speed limit is no longer 100 kilometers per hour." Sometimes they had electronic signs which would display either a number or a red circle with a line through it to indicate "no speed limit."

Driving on the Autobahn in the country was the most fun. What was interesting was that I could drive whatever speed I liked. I did not floor the accelerator and drive at the vehicle's maximum speed, but instead I just found a speed where the vehicle seemed to be nicely balanced and running smoothly at a reasonable pace. And you never looked at the speedometer. Instead you watched the road, other traffic, your mirrors and the pretty scenery. Of course you also avoided the far left lane where other drivers in beautiful luxury sport cars would absolutely fly by.

What was also interesting was the fact that whenever the road had tight turns or traffic constriction, there would be a very conservative speed limit. And all the cars would slow right down and obey the reduced speed limits because these were the places where the police would sit and watch for speeders. But it was great fun and relaxing to drive on the Autobahn.

Craig Zematis and I had arranged to meet for dinner the night before our meetings at Intel. We had a nice quiet dinner at a small restaurant and after dinner we were walking down a nearly deserted street as a light snow was falling and Craig asked if I wanted to have a beer. Of course I said, 'yes', so we continued to walk a few more blocks. It was so quiet and empty that I kept wondering if this was the day of the week that all the shops were closed (like Sundays in Geneva Switzerland) and everyone stayed home.

Finally we turned into a building and walked in. The place was brightly lit and absolutely packed with people sitting at long tables drinking beer from large glasses, eating pretzels and listening to a loud band playing drinking songs. As we sat there with our beers, the band would strike up a song that everyone knew and the whole place started singing along with the band and swaying back and forth. The reason we had not seen anyone on the streets was that they were all in the beer hall! It was a lot of fun.

The next day, we met at Intel and talked of possibilities. Intel had provided a lot of support for the development of a suite of SCORM content for K12 students in the European SchoolNet project. We talked about ways to bring Sakai and IMS into such a project, or perhaps have Intel support our activities. We never really came up with a solid idea but agreed that something might happen in the future.

After my meeting at Intel, I had a free weekend so I drove down to visit my friend David LeBow near Zurich, Switzerland.

Dave had recently moved to a house near the top of a ski slope near Zug, Switzerland, so we spent the weekend walking around the ski area and riding his sled down the ski slopes. On Sunday I started back towards Germany, stopping for lunch in Zurich with Giosue Vitagliano who had now moved from the Naples area up to Zurich to work developing games

for mobile phones.

After lunch, I continued my drive from Switzerland back to Germany for the meeting at IBM. I finally was able to talk to Paul Courant of the University of Michigan about the information he was gathering as he was preparing a report titled, "OOSS (Organization for Open Source Software) Study" for the Mellon Foundation. This report is now generally referred to as "The Courant Report." The problem/question at the heart of Paul's investigation for this report was how academic institutions should approach open source projects. In a sense, the two sides in the debate differed in how these projects were to be governed.

When we wrote the grant for Sakai, we did not call it "open source." Instead we invented the term "community source" to capture the notion that our project was more than simply a collection of random individuals working in their spare time on software with an open license. In the Sakai project, the contributors worked for schools like the University of Michigan, MIT, Indiana, and Stanford and were being paid by those organizations to work on the Sakai project.

The plan was to pool all of the developer resources into one centrally managed group whose resources would then take their guidance and priorities from several steering committees. In Sakai the guidance and priorities were to be set through a combination of the Advisory Board, the Architecture Team, and the Tools Team. Schools that contributed more resources to the pool of developers would get more influence when the steering committees would make priority and functionality choices. There was to be one (or a few) central staff that would project manage the contributed resources to achieve the priorities and goals set out by the steering committees.

In the Sakai structure, I was to be that central person that would make sure that the collective will would be achieved using the shared resources provided by all of the participating partners.

In the case of the Sakai project, things did not exactly go according to this structure which looks quite nice drawn up on paper. One simple explanation was that I was just a terrible manager and instead of taking the collective input, I just took off like a cowboy with my own agenda using my central power to roll over those who might disagree with me.

I think that by the end of the Sakai grant, there were plenty of people who would make this claim and in some ways, it was true. I certainly do not deny that after I took the input from a wide range of stakeholders, I came up with project plans that I felt were achievable based on the actual resources and talent that were available. Making everyone feel good was not my goal.

On the other hand, there were a number of factors that simply made it impractical to run the project in the manner that we laid out in the Sakai grant proposal including: (a) the software was very immature at he beginning and needed basic cleanup work before we could just set 20 developers

loose coding five days per week and without clean documentation only the most talented developers could actually work on the code, (b) there was no filtering process nor requirements as to the staff that each school actually contributed as their 'share' of the resources, (c) the schedule was overly optimistic and was structured with the assumption that the hard work would be nearly done well before the project started, (d) the folks who wrote the project plan (Joseph and me) had little understanding of the real scope and complexity of a learning management system, and (e) we were told from the beginning that we needed to recruit and involve a large community of partners and convince them to pay us a partnership fee and this goal conflicted with the goal of writing software to meet the needs of four schools.

Some schools contributed their best and brightest staff for the entire two year period with no strings attached. Other schools provided requirements experts and project managers when we needed developers. Still other schools hired brand new staff and contributed the new staff as their resources. And the worst problem was that the software needed so much work in a short period of time and the software requirements expanded greatly within a few months after the start of the project.

In retrospect, it was not so bad that the large number of Sakai partners distracted us from exclusively focusing on immediate needs of the four founding schools. By listening to the needs of the broader community (i.e. this software needs to support more than one language), we laid a foundation for the long-term survival of the Sakai effort.

It would have been straightforward to deal with some of these issues if it would have been possible to expand the two year schedule to four years. But no one was willing to take twice as long to finish the software. All four founding schools had their pride on the line because the grant was from the highly-respected Mellon Foundation, and none of the schools wanted to disappoint them. I especially did not want to disappoint the Mellon Foundation. As a matter of fact, my goal was for Sakai to be the single most amazing project ever funded by the Mellon Foundation regardless of any challenges we might have faced.

So Sakai made it up as we went along at a high rate of speed. There was no time for long deliberative design processes, nor staff training, nor carefully weighted votes as to each and every priority on a project plan. Instead I simply figured out where the talent was and used whatever talent I had to make it through one way or another. We made it through the project one week at a time but I did break a few eggs as we went along.

Since the Sakai project had not worked out as it was planned, it was logical for the Mellon Foundation to commission the Courant study across multiple projects and multiple stakeholders to see what the right approach might be to these kinds of projects. Higher Education needed to look beyond the particular example of Sakai and find the general best approach.

I talked to Paul Courant for about an hour as I was driving from Switzerland to Germany. We had to reconnect several times as I would cross a border and my cell phone would have to be turned off and back on or I would drive behind a mountain and lose a signal.

I told Paul that the structure needed to be far more dynamic than we had proposed in Sakai and in particular we needed to deal with the widely varying kinds of resources that schools contributed. What worked best to get Sakai out of the chaos was to have multiple teams with local senior leadership at each school to train, mentor, and monitor the employees working at the schools. We had to accept the fact that schools wanted assurance that their "contributed staff" generally worked on things that blended their local priorities with the overall community priorities. In a sense, the proper structure was a combination of individual resources and organization-provided resources with central coordination and communication but not strict central control over priorities, dates, and deliverables.

I felt that we needed to model the resources as "volunteers" and allow them to work on things that scratched their own personal or organizational itches. I felt that we only needed central resources to enhance communication amongst the groups and take care of giving the groups a sense of identity through conferences and other meetings where folks could get together and do joint planning across the resources from many sources.

I said that top-down central control that flowed from a board of management down through a set of hierarchical committees would result in slow-moving projects that consumed lots of resources and took a long time to complete. After about an hour of conversation, dropped calls and mountains, Paul thanked me and said he had gotten what he needed from me.

Since it was pretty clear that Ira Fuchs of the Mellon Foundation (also the former Chief Information Officer of Princeton University) preferred a top-down approach, I expected that a recommendation for a central management structure would be the inevitable conclusion from Paul's report. I expected it would go on to say that the Sakai project, while moderately successful, was an aberration from the ideal model[2]. I was ready to accept that conclusion. I hoped future projects might learn from the pain that we had endured during the Sakai project. I felt good that I had been asked for my opinion as I flew by the rural German countryside with no speed limit.

While I was at Dave's house, I also worked on the design of the Sakai support for iTunesU. Apple was rolling out a project to host audio, video, and documents on their iTunes servers and allow these resources to be directly referenced through a Learning Management System like Sakai. The iTunesU support used a simple and elegant launching protocol to allow pro-

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[2]I was surprised to find out later that Paul's report did suggest that it was a good idea to model organizations and individuals as volunteers.

fessors to upload materials to iTunesU and only share them with the students in their classes. Apple and Stanford had done a small technology demonstration pilot and now it was time to build support into Sakai for the iTunesU launch protocol.

I loved the idea that Sakai could build the software before iTunesU would be rolled out and we could be part of the iTunesU launch. I had so badly wanted Sakai to be part of Apple's education strategy and while we had never got to the point that Sakai was in the Apple OS/X Server distribution, being part of the iTunesU rollout would be a nice indication of our growing position in the marketplace.

Another idea that came together was the notion of "Sakai Fellows." The idea for Sakai Fellows actually started months earlier while John Norman, Anthony Whyte and I were punting on the river back in Cambridge on the Sunday before the Cambridge Developer's meeting. We were brainstorming ways that the Sakai Foundation could compensate our best "volunteer developers" with some form of recognition or financing. The idea was to publically thank these most talented people for their contribution to the needs of the community. Often these people worked nights and weekends on community priorities after completing their local organization's work during the day. We wanted to find a way to encourage and tangibly reward that behavior.

I sent the following note to my fellow board members with my latest thinking:

One of my action items was to define the concept of Evangelist. I decided that (1) this was a loaded term and while Microsoft uses it, we should not and (2) as I thought more about how the Evangelists would be picked I became concerned that this would become a way that I (or others) would reward pals or folks that have helped - that smacked to me of opportunity for some conflict and tension when we said "no" to someone's nomination.

So here are my newest thoughts.

(1) Call them Sakai Fellows

(2) Define the financial scope of their benefit - say $3000 that they could spend on travel or equipment - with the ability to fund additional requests on a case by case basis with board approval.

(3) Make them two-year grants - with the opportunity for re-nomination and re-selection.

(4) Have a clear and community-led process to nominate and choose the

Fellows (just like IEEE).

(5) I think that we should limit the number of fellows based on member-ship. IEEE demands that the ranks of fellows be no more than 0.1 percent of membership. Perhaps the number should be something like we have one fellow for each 10 Sakai members. That would put us at about 10 right now at a budget cost of 30K. This is something that is a value proposition for membership - If you join, you are supporting our "Fellow Program!".

(6) Give them business cards, and shirts (of course there must be a spe-cial shirt - this is Sakai after all)

We might want to fill all 10 slots in the first year - the top five fellows get the 2-year gigs and the next five get 1-year gigs.

We had talked about Sakai Fellows off and on during the project, but now that I was on the board, I wanted to move the idea forward so that we could nominate, select, and announce the Sakai Foundation Fellows at the June 2006 Sakai conference in Vancouver, BC.

Travel always provided a lot of idle time and for me that time was a great opportunity to let my mind to wander and work through back-burner ideas.

The JSR-286 meeting at IBM in Boeblingen, Germany was great. There were the best and brightest architects from companies like Liferay, Oracle and JBoss as well as open source projects like Apache Pluto and Apache JetSpeed. I had tried to get Eric Dalquist of the uPortal project invited to JSR-286 but since I had slipped in just under the wire, they would not allow me to bring Eric in as well. Eric was far more an expert in Portal and Portlet technology than I was but I was more well-known by that point in time.

I did have one advantage over the other attendees. I was carrying a Uni-versity of Michigan credit card connected to the Sakai Project grant account and I was authorized for hosting expenses. I could not pay for any alcoholic beverages, but I could pay for dinner. So at dinner the first night I picked up the tab for all the attendees. It was my way of putting myself on their radar. Since they were all working engineers and not sales people at their organizations they thought my credit card was pretty cool and magical.

People misunderstand the value of paying for food. It is one of the least expensive ways to build relationships. The cost to the Sakai Project for that dinner might have been about $450. But if you think about the daily cost of the talented engineers plus the travel expenses of coming to Germany for a three day meeting, it is an insignificant cost. And if it was enough of a business value for Sakai to pay $2500 of my travel expenses to put me in that meeting, adding $450 to make sure that I made a few more contacts

was a solid value.

One thing that I absolutely love about the University of Michigan is how it allows faculty and staff to function like entrepreneurs in startups if they have the money, follow the spending guidelines, and fill out the proper paperwork. Sakai was a startup. It needed to function like a startup in all ways and needed to be able to do whatever was necessary to gain an advantage. The University of Michigan understands this and devolves decision making to the edges of the organization wherever possible. I could not act outside of policies, and I needed approval for the expenses, but the policies were reasonable and the approval was Joseph. So as long as we had grant funds in the Sakai account, it was like I was the CEO of a 20-person startup.

Once I got back to the states, I was immediately off to the IMS Quarterly meeting in Boston, MA. IMS had selected Rob Abel as their next CEO and he was at the Boston meeting hanging around in the background and soaking things up while Ed Walker did most of the work running the last meeting Ed would run as CEO.

After I got back from Boston, I made a trip to Argonne National Labs to meet with Marlon Pierce from Indiana University and the others from our National Middleware Infrastructure grant. The goal was to think through a follow-on proposal that we might prepare and submit to the Department of Energy SCIDAC `www.scidac.gov` program that would allow us to continue to build infrastructure for collaborative eScience portals.

Chapter 14

To Be or Not to Be

During the first few months of 2006, the Sakai Foundation Board was in the process of hiring an Executive Director. I assumed that with my pivotal role in the project so far, I would be the obvious choice for the Executive Director when the position was filled. But for the moment I was merely a member of the Foundation Board of Directors.

After two years of sprinting, it felt to me like we should relax a bit and clean up some of the rough edges in the software and really consolidate our gains in the marketplace and set ourselves up for a nice future where we slowly improved our software and increased the size of our developer community. I was worried that our hype was still too far ahead of our software and I wanted to quietly get the software in better shape before the market looked at it too closely.

I felt that as Executive Director, I could usher in a period of calm and quiet and get away from the pattern of frenzied last-minute heroics to meet deadlines and political games-playing that to me characterized the grant-funded phase of the Sakai project during 2004 and 2005.

On Saturday March 4, 2006 we had the first face-to-face meeting of the Sakai Foundation Board of Directors in New York City. I was one of the three newly elected members on the board and the other board members were grandfathered in from the advisory board from the grant-funded Sakai Project. I was looking forward to announcing my candidacy for the Executive Director to the other board members, get the hiring process over with and get to a calmer and less political way of doing business.

Part-way through the meeting when the discussion about executive director position came up, I announced my interest in the position. While I had talked to some of the board members about my candidacy, I had not talked to all of the board members. When I announced my candidacy, one of the board members spun around with a look of shock on their face and asked, "What?" I continued and said that I was planning to fill the role of Executive Director and have Glenn Golden, the long-time technical lead for

the Sakai effort as my chief architect. Furthermore, I was going to focus
for a few months on getting the software locked down and add some pol-
ish to the software so we could confidently go forward with an intention of
sustainable market share.

My candidacy and approach clearly did not set so well with several of
the board members. I think that their plan was to hire someone else as the
Executive Director and keep me as the Chief Architect and have someone
a little more "businesslike" and less technical make the decisions and talk
to the Board while I would stay in the back room and quietly work to clean
up all the technical bits, and take orders from the Board and their more
businesslike Executive Director.

In retrospect, I guess I should not have been surprised by this reaction
from the Board. I was well-liked by the developer community but I had
not invested much time in making the Sakai Advisory Board happy during
the 2004-2005 period. My priority was always getting working software
released in a timely manner. I was less worried about who ended up feeling
good and who ended up feeling bad. I tended to make decisions based on
the technical needs of the product. In order to reduce risk, I limited what
we put in each release so we could ship the product on-time.

The advisory board always wanted more features and more capabilities
in the same time frame and while I did my best, at times I had to cut out
work in order to keep a release on schedule. Sadly because the project was
done in two-year sprint, short-term survival usually trumped Board wishes.

I wanted things to be better going forward. I wanted to take six months
and polish what we had so we could technically breathe a sigh of relief and
then move toward a model where we could pick and choose the things we
wanted to add to the product going forward. Clearly as tired as I was of
the Board's attempts at meddling with the priorities, the Board was equally
tired of me ignoring their requests, because of one or another "crisis" that
we encountered over the past two years.

Now that we were a non-profit corporation, the board was no longer
an "advisory board to a grant." The board was a corporate board with the
ability to hire and fire staff and owned the copyright of all of the Sakai soft-
ware. This gave them real power if they chose to exercise it. I had promised
the community members repeatedly that they were joining an open-source
effort — not supporting some centrally-run bureaucracy.

While I was thinking about the fact that my nice simple model of the
Sakai Foundation going forward might not work out the way I had imagined,
the Board suggested that I recuse myself from the rest of the meeting so they
could go into executive session and discuss the Executive Director position.
They also asked Mary Miles, who was the Board secretary to leave the
meeting as well.

Mary and I went down to the hotel bar to wait out the rest of the board

meeting. I was feeling a little down because I had assumed everything was going to go smoothly and I knew I needed some time to recompute my expectations and plans. When I sat down, there was Guinness on draft right in front of me. One thing that all the travel for Sakai had done for me was introduce me to lots of new beers but I had never tried Guinness. It always looked kind of scary — I imagined it might even be somewhat gritty and thick like sandy pudding. But since I was kind of down, I figured that I might as well try a Guinness — after all how much worse could the day get? It turns out that I loved Guinness, it was smooth with great flavor and I realized that I had made a mistake avoiding it up to that point.

So Mary and I sat in the hotel bar, passing the time until the Board meeting finished and the Board came down and we all went to a nice dinner. I particularly remember Brad Wheeler of Indiana University ordering a tower of seafood as an appetizer and we had some good wine and I had a great steak and I was in New York City on a weekend with the Sakai Board members. While I often disagreed with the Sakai Board as a Board — they individually were wonderful bright and funny people that I liked to spend time with. I had plenty of time to work out the details of my plans for the Executive Director position — that night I just enjoyed myself with good friends celebrating a successful two-year project that had great potential for the future.

On Monday we went to the annual Mellon Foundation retreat where various funded projects meet together and give each other status updates on their progress and help the Mellon Foundation Program Director Ira Fuchs brainstorm where he should invest in the next round of Mellon Foundation funding.

These Mellon retreats were energizing because some of the brightest people in higher education were invited and everyone put forth their best efforts and showcased their greatest accomplishments. Of course everyone was also hoping that they would be selected for another round of funding. For me, these meetings were particularly enjoyable because it gave me a chance to measure the success of Sakai against other projects like Mitch Kapor's Chandler effort and the Fedora project led by Sandy Payette as well as MIT's DSpace project led by MacKenzie Smith, and others. I always felt that at least on one measure, we were the most successful Mellon-funded effort ever. The measure that meant the most to me was how fast we produced software, how quickly that software was adopted, and how large our real market share had become.

In a sense, when the Mellon Foundation funds a project, their goal was always to take a project that was "ready to go big time" and provide some short-term funding to get the right project over the hump and to the point where the market would pick the project up and move it forward with no further funding from the Mellon Foundation. This made a lot of sense because

it would just be too easy to come back to the Mellon Foundation year-after-year for renewal funding and have a project keep slogging along with grant funding without having any real impact. By Ira taking a "tough love" approach to his projects, we all knew that we needed to take advantage of the funding while we had it and use the funds to quickly "get to the next level."

Sakai fit this model perfectly — in two years, we had gone from zero market share to a two percent market share worldwide, a million daily users of the software, and had a million dollars of revenue coming in to our non-profit foundation each year to help sustain the Sakai community and effort. None of the other projects could claim as quick a rise to market share nor such a solid sustainable funding model. I was pretty proud of how hard we had worked and how much Sakai had accomplished in such a short time. It was a nice feeling to have met and exceeded expectations (at least by my own measure) and to be able to present our results to all of the other awardees.

But there was no time to gloat, because I could not stay in New York City for the second day of the Mellon retreat. Richard Wiggins my lifelong best friend and television co-host was having his 50th birthday on Tuesday March 28.

Rich did not want a big fuss over his birthday so he conspired to be in Key West on his birthday to insure it would be a low-key event. He had announced his plans to hide away in Key West for his 50th birthday months earlier to make sure that no one made any plans for any kind of a surprise party back in Michigan for him. Of course that approach backfired because it gave the rest of us several months to come up with a plan to surprise him despite his best efforts.

The plan was for me to secretly come to Key West and bring a webcam with me. There would be a party for Rich back in East Lansing, Michigan with a webcam. I was to fly from New York City to Key West and sneak unnoticed into Rich's hotel. Then I would surprise him and use the webcam to bring him a 50th birthday party from the people in Michigan who would be all at his favorite bar back in Michigan over the Internet.

I left New York City early on the 28th to arrive in Key West about 3 PM. When I got near the hotel, I called Rich's wife Judy Matthews and it turned out that Rich had decided to take a nap in the afternoon so we set up the camera and network connection at the Tiki bar at the Southernmost Hotel in Key West. I sat at the bar with Judy and waited until Rich woke up and came around the corner to see me at the bar and a bunch of crazy people celebrating Rich's birthday over a webcam.

As another surprise, another friend John Liskey (who was the executive producer of our Television programs) had shipped a replica of Rich's "Internet" vanity license plate and had it mounted on the wall at the Half Shell Raw Bar. We went to see the license plate and then went to dinner. After

dinner, we walked to the Hogsbreath Bar on Duvall Street to have a nightcap. I could not stay out late because I had a very early flight to Syracuse, New York to participate in a meeting talking about the SUNY Learning Network (SLN 2.0) hosted by the State University of New York (SUNY).

The next morning I got up early and jumped into a cab for the Key West Airport. I was worried that I would miss the Key West flight and then since I had a tight connection in Atlanta, I might even miss my flight from Atlanta to Syracuse. I made the Key West Flight with a only few minutes to spare and I rushed through the Atlanta airport and made my connection to Syracuse in Atlanta.

Once I was seated on the nearly empty flight from Atlanta to Syracuse, I finally felt I could relax after five days of pure adrenalin. As I started to relax I let my mind drift back to the Sakai Foundation board meeting and the Executive Director position.

I knew I needed to rethink my ideas and recompute my plans in light of the recent board meeting and board member negative reactions to my interest in the Executive Director position.

My mistake was that I had not calculated the effect of having the initial Sakai Foundation Board be the same people as the Sakai Project Advisory board. If I became the Executive Director and I did not please the board, I would be fired. My loyalties were to the Sakai software and the Sakai community.

Usually when I am faced with this kind of "success-is-not-an-option" situation, I just walk away and let the other side have their way. I always think, "If you think you are so smart, lets see how well you do it without me." After all, I quit my job three times between 1999 and 2002 because my management would not let me work on the kinds of projects I found interesting. And I had threatened to quit Sakai back in May 2005. It was never hard to find a new job.

But then I started to think about the open source Sakai Community that I had personally recruited and assembled over two years from the talented people I had met from around the world. These people deeply cared about Sakai and deeply cared about each other. And they trusted me (mostly). It felt to me that the community was not quite fully formed and without clear leadership and the Board switching from my "organic management" approach to the Board-preferred "centrally managed" approach, I feared that our nascent community would dissipate rather than grow. I also thought about the Foundation employees who might lose their jobs if things fell apart because I walked away at such a vulnerable time.

I found myself caught between my own self interest and my view of what would be necessary for the survival of the community. If I stayed and became the Executive Director, everything would seem fine to the community and we could clean up the software as I had planned. With more time

to grow, the community would become stronger and be able to sustain itself regardless of the kind of management structure that came from the board.

But I also knew that if I stayed, I would continue to do what was in the best interest of the community and continue to ignore the political agenda of the Foundation Board of Directors. And with an already frosty relationship between me and the Board, it would only get worse over time and would eventually get to the point where the Board would get fed up and take a vote and fire me.

As the plane taxied out to the runway at Atlanta airport my choices became clear to me. I could not be selfish and walk away because of all the community who had placed its trust in me personally to be there for them. If I stayed, I would eventually be fired and perhaps even be viewed negatively. If I stayed, it would give the community a sense of calm and security for a while to let the software and community solidify. When I considered all the consequences, it looked like staying was the only logical choice.

As the plane started its climb out from Atlanta, it struck me that my remaining time in the Sakai project now was rather limited. Seven days earlier I had a plan to run Sakai as its Executive Director until I retired and make it the best open-source software product the world had ever seen. Now sitting in seat 27D I realized that my tenure as a leader in the Sakai project would be over quite soon and that until my tenure was over, my remaining time as its leader would be a tense and painful existence.

I did a quick recheck of all of my assumptions and concluded that at the highest level of analysis, I was not going to be able to finish what I started and the tears started to flow. I knew I needed to grieve and get it over with so I could be strong going forward. I needed to be strong enough to not question my commitment to the Sakai community even if things got a little rough with the Board of Directors.

I needed to execute my plan for the next year or so without letting my emotions factor into my thinking — so I let my emotions have their way until the attendant came by with the beverage cart. I took a few napkins to dry my eyes. She never gave me a second glance. I am sure that in her line of work she sees people who need a tissue during the climb pretty regularly.

By the time the flight landed at Syracuse, NY I was back on my game, focused on the task of building the Sakai community and convincing SUNY that Sakai was their best option for the SLN 2.0 project. My decision to become the Executive Director had been made and it was time to execute on the plan and focus on taking things one day at a time.

Chapter 15

Onwards, Upwards, and Down Under

Feeling sorry for oneself is generally a waste of time. And in a sense it is wrong. While my long-term prospects as the leader of the Sakai community felt pretty dim, my short-term prospects were still going to be a lot of fun while they lasted. I was still in charge of a high-energy open source project that folks all around the world wanted to hear about and talk about. And the more we pushed, the more impactful we could be in the marketplace.

And the next place I was scheduled to go was Australia. I had never been to Australia so I had been looking forward to the trip for months.

Since Northwest did not fly to Australia, and no airline flew direct from Detroit to Australia, I broke the trip into two flights. I would first fly Northwest to San Francisco and then take a less-expensive roundtrip from San Francisco to Australia on United Airlines. It saved a lot of money and it would also would help the jet lag if I could spend one night in San Francisco. But since the flight to Australia left late in the day, I found myself with a spare morning in San Francisco.

I had arranged a visit to the headquarters of Mitch Kapor's Chandler project to build an open source calendaring system. The Chief Architect of the Chandler project at that time was Lisa Dusseault. Lisa was one of the WebDAV and CalDAV working group leaders and a worldwide expert on distributed content and distributed calendars. I had met Lisa at one of the Mellon retreats and Lance Speelmon and I had also had spoken with her about content strategies for Sakai at an Educause conference.

Lisa agreed to give me a tour of the headquarters of the Open Software Applications Foundation (OSAF)[1] where the Chandler calendaring system was being developed. OSAF was founded by Mitch Kapor (founder of Lotus) and Mitch was providing some of the start-up funding for the Chandler

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[1] http://www.osafoundation.org/

project. The Chandler project would later be documented in "Dreaming in Code" by Scott Rosenberg.

My visit with Lisa was mostly just to see the inside of a California-style start up and have some Cappuccino from their free coffee machine. Sakai already used WebDAV and the CalDAV specification was still being feverishly developed.

In retrospect, the Chandler project never really produced any significant software, but because they spent resources (in the form of Lisa and others) working through CalDAV issues, the entire marketplace ultimately benefitted greatly from their effort. The fact that my calendar in 2011 moves seamlessly from my laptop to the web to my cell phone is due in a large part to the work of Lisa and the others at OSAF back in 2006.

After spending the morning at OSAF, it was time to get back to the airport for the long flight to Australia. I had long ago learned to arrive early at the airport for international flights. When I came up to the United counter to check in, the agent looked calmly at my passport and flight reservation and asked, "Do you have a Visa for Australia? You do know that Australia requires a Visa for Americans to go to Australia." My heart sank. I told the agent that I did not have a Visa for Australia and asked her what I would have to do to get one. She informed me that I would have to purchase a Visa and that I could purchase a Visa there at the counter for $50.00. Whew! I am sure she did that many times per day just to see the look of terror on people's faces.

My schedule for the trip was as follows:

Arrive March 11 Sydney
March 13-15 Visit to MELCOE - Sydney (LAMS)
March 16 Visit Charles Sturt University - Bathurst Campus
March 17 Visit Australian National University in Canberra
March 18-19 Weekend in Brisbane
March 20 Queensland University of Technology - Brisbane
March 21 Travel from Brisbane to Melbourne
March 22 Visit to Melbourne University and Monash University
March 23 Open Seminar from 10.00am to 2.00pm
March 23 Late afternoon and dinner with Sakai partners
March 24 AM: Sakai Partners meeting in Melbourne
PM: Department of Education, Science and Training (DEST)
Leave March 25 Melbourne

We had scheduled the trip for two weeks because it took so long to recover from jet lag. We figured that I might as well stay for a while. Given that it was my first time to Australia, the local Sakai partners took care of all my hotel arrangements and flights within Australia.

Mike Rebecci of Charles Sturt University did most of the coordination across the schools to get the schedule put together. At one point, I suggested that I just rent a car and drive from one city to the other. Mike laughed at my complete misunderstanding of Australian geography. Australia is a big place and while there are not too many cities they are far apart. So they wisely set up local flights between the various cities. It would be a blur of meetings, hotels, and flights for two weeks. I loved it!

Starting in Sydney, I spent a day recovering from jet lag and then another day doing a few tourist things like taking a boat tour and taking the required picture of the Sydney Opera House.

Then it was on to Macquarie University and a visit to James Dalziel of the LAMS (Learning Activity Management System) project. I also met with James' architects Fiona Malikof and Ernie Ghiglione. LAMS was very different than Sakai in that Sakai was focused mostly on content distribution and asynchronous learning activities. LAMS was aimed at learning situations where more synchronization was needed. LAMS was useful in K-12 education where students would collectively go through a structured exercise over a few hours. LAMS was interesting to higher education but Sakai was a better fit for how higher education tended to use technology.

The combination of Sakai and LAMS would appeal to a much broader audience than either product would by itself. So the goal of the meeting was to better understand each other's technology and see if there were places where we could share technologies and approaches.

They had designed an elegant way of plugging learning software into LAMS called the "LAMS Tool Contract." Sakai's approach to adding a tool required writing a bunch of Java code and having the tool call Sakai's Java Application Program Interfaces. The LAMS Tool Contract was much simpler and actually more powerful.

Plugging a tool into LAMS was done through a simple set of Web URLs and data transfer conventions. The LAMS Tool Contract had provisions for: (a) content authoring, (b) content launching, (c) monitoring progress and returning results, (d) tool administration, (e) import and export of a tool placement, and (f) the production of a portfolio-oriented view of the tool data for inclusion in the student's portfolio.

The LAMS Tool Contract was the most sophisticated and rich tool integration approach that I have ever seen. It's combination of the richness of feature set and simplicity of use is still innovative years later. It would have been a logical move to adopt and support the LAMS tool contract inside of Sakai so we could reuse all of the LAMS tools within Sakai.

Even though using the LAMS Tool Contract outside of LAMS was a really great idea on paper, so far it has not happened. There are a couple of reasons for this. First Sakai and LAMS took different approaches internally in terms of how they wrote their software. For system administrators to

install, maintain, and patch a combination product, it would be like running two systems instead of one. Another problem is one of funding. LAMS was a grant funded project and needed to move down its own path to insure a continued funding stream.

Sakai's development path depended on the priorities of the schools that contributed their developers, and those schools usually were interested in short-term focused improvements rather than investing in long-term elegance. Reworking your code to elegantly bring in a new approach takes a lot of effort and management and funding agencies see the internal elegance of software as something that makes programmers happier.

It is hard enough to get funding and resources to do the things that your end-users are demanding. So there are almost never any resources to invest in long-term benefits. Both Sakai and LAMS were innovating at a fast pace down their own independent paths so there was little time to stop and align the two projects technically.

Our meeting was not so much about tight technical integration between LAMS and Sakai but more about making sure that we fully understood each other's architecture and approaches so that if an opportunity arose in the future, it would be easier to coordinate activities across both projects. Also it was important to make it clear that Sakai and LAMS were not competitors and both would be supportive of each other in the marketplace and to funding agencies. The marketplace loves to pit folks against one another because it is a natural human instinct to assume that everything is a battle. We needed to make sure that all of our communication internally and externally made it clear that Sakai and LAMS were friends and supportive of one another.

Here is the trip report that I sent to the Sakai community:

Report of Australia Trip
Charles Severance
March 25, 2006

Hello all, For the past 2.5 weeks I have been traveling in Australia talking Sakai with our Australian partners and friends of Sakai. I visited the following locations: MELCOE (Sydney), Macquarie University(Sydney), Charles Sturt University (Albury), Australian National University (Canberra), Queensland University of Technology (Brisbane), Monash University (Melbourne), and Melbourne University (Melbourne).

The main reason was to talk with James Dalziel about moving forward and getting Sakai to work better with LAMS 1.1. I made a Sakai Interview Video with James

Most of the topic was about Sakai and eResearch. Most of the universities I visited are pretty happy with their current home grown and commercial LMS solutions.

I need to give a hearty thanks to all the people who arranged this and made sure I was never allowed to get lost in the Outback and killed by poison toads: Mike Ribbechi, James Dalziel, Ernie Ghiglione, Fiona Malikof, Matt Morton-Allen, Vic Elliott, Regina Obexer, Nathan Bailey, Claire Brooks, David Hirst, and many others.

MELCOE, Macquarie University, Sydney (2 days)

The org structure of LAMS is a small foundation that owns the copyright to the LAMS software, then there is a company called LAMS International which makes money off LAMS in many ways - any code LI writes comes back to the foundation under GPL. MELCOE is an academic center in Macquarie which does grant funded work, also giving its code results to LAMS Foundation.

http://www.lamsinternational.com/
http://www.lamsfoundation.org/
http://www.melcoe.mq.edu.au/

The initial purpose of the trip was to meet with the technical folks from MELCO to discuss LAMS and Sakai. I spent two days with their tech lead Fiona Malikof and Ernie Ghiglione. We covered their next generation "Tools Contract" which is a set of rules that tools must follow to "fit" in with the LAMS system.

The summary is that there are a series of URL conventions between the LAMS and any tool for configuration, playback, printout, etc. If a tool meets the contract LAMS can make it work. We also did some code review of both Sakai and LAMS looking for the best way to implement the Tools Contract in Sakai.

Macquarie University, Sydney (1 day)

In terms of an LMS, Macquarie currently is running WebCT - they are in the middle of an LMS evaluation - I gave a talk with their evaluation committee and it went well. I talked about research agenda and the Twin Peaks repository integration.

http://www.mq.edu.au/

Charles Sturt, Albury (1 Day)

Much of this trip was arranged by Mike Ribbechi of Charles Sturt University - many thanks to Mike.

I first met with the teaching and learning group. Charles Sturt is a big distance education place - they are like the Open University in UK. They have a large staff of instructional designers and production support. They have a careful process to produce high quality materials for their courses. They allow instructors to put up optional materials in a Sakai-resources area like tool.

They are not thinking seriously of Sakai as a potential LMS for now. Their LMS is a homegrown set of connected products they have built over time. They have recently written a nice course evaluation system in Java - I suggested that this might be a fun thing to move into Sakai someday. I also went into a discussion of TwinPeaks - I talked about it as a way for instructional designers to deliver their leaning objects into a course.

Next I met with the production deployment folks. They will be deploying Sakai in production in support of research in April. They have a strong and well managed team led by Dorothy Cottee (aka Dot). I met with the developers, project managers, production folks, and Data Base Administrators.

Next I met with their academics (that is what they call faculty) from their Information Sciences area and we talked about ways to get funding with Sakai.

Reference: http://www.csu.edu.au/

Australia National University (ANU), Canberra (1 Day)

ANU is an interesting place. Over 2/3 of their staff are non-teaching. They have 11,000 students. They run the supercomputer center called the Australian Partnership for Advanced Computing (APAC). ANU is also Michael McRobbie's most recent stop in Australia before coming to Indiana.

We talked a lot about NEESGrid, Shibboleth, MAMS, and Globus and the difference between research software and production software. We also talked about portals and portfolios as well. We also talked about using Sakai in the EOT activity of the APAC.

There is also a big effort working with DSpace at ANU as well as a strong interest data archive related to high performance computing. One of the current DSpace committers - Scott Yaden was part of the meeting. I talked in great depth with Scott and the other library guys about all of the phases of TwinPeaks including some of the RDF, Web 2.0, and Semantic futures.

The ANU conversation went well into the evening - Robin Stanton and I were still talking loudly about some technical thing well after midnight - much to the chagrin to the other people who having dinner with us :)

References: http://www.anu.edu.au/, http://nf.apac.edu.au/

Queensland University of Technology (QUT), Brisbane (1 Day)

QUT has an LMS called OLT. They have 40 instructional designers. Their instructional designers like it a lot. It is like Melete but with the ability to place interactive bits anywhere on the page. In a sense in OLT, Melete *is* Site Setup and things like discussion, etc are just part of the modules that OLT organizes.

QUT is in the middle of LMS evaluation. I did an extensive demonstration of Sakai in teaching (my guest account in Etudes came in really handy here), research (using collab), and e-Portfolio using the nightly server.

Reference: http://www.qut.edu.au/, https://olt.qut.edu.au/

Monash University, Melbourne (1 day)

Monash is a WebCT Vista shop. It is a recent roll out and they are pretty happy with it.

In terms of research we had a lot of good conversations - I gave my complete NEESgrid and Sakai/eResearch talk and left them with a bunch of papers including the US/UK Sakai in eScience paper.

A new Synchrotron is being built at Monash with a beam line starting up in 1.5 years. We talked about Sakai as part of an e-Research toolset around that project.

Monash has two neat digital library projects. The first is Australian Research Repositories Online to the World (ARROW). This is more about publishing valuable information to the world. This project uses Fedora.

The Data Acquisition Accessibility and Annotation e-Research Technologies (i.e. DART) project is about capturing large data sets as might be generated by an experimental facility. DART will use Storage Resource Broker(SRB), Fedora, and Semantic technologies.

References:
http://www.monash.edu.au/
http://arrow.edu.au/
http://dart.edu.au/

Melbourne University, Melbourne (1 day)

Melbourne is an "old-school" university (buildings made of sandstone). They have 40,000 students and focus on face-to-face instruction. They are ramping up their campus-wide Blackboard rollout so our conversations focused on Sakai as an eResearch platform.

I spent most of my time with the campus-wide Instructional Designers and media folks. This is a professional and strong organization which produces good work. They are in one of the older buildings on campus (made of sandstone), but the inside looks like a California startup company.

They currently have a nice home grown system which works like a like a super-Melete called NEO (yes it is from the Matrix). Their designers effectively can use NEO to make a sequence of modules, or even clean it up a bit and make it seem like an interactive web site with the little NEO bar across the top. Some of it also reminded me of LON-CAPA. They have a quizzing tool.

Probably the coolest thing I saw was a tool they called "strata" - it is a role-based messaging system that is used in a number of different teaching contexts. You pick a role (like a doctor) and things start happening (all messages) - you get a patient report and have to react - based on the reaction something happens. Sometimes the responses are from other participants and other times the responses are canned coming because the student ran across a trip wire. They have success in using it in Medical for problem based learning and journalism courses. I thought this was very cool and wished we had something like this in Sakai because it seemed like a useful pedagogy that is not in common use.

Since Melbourne is a big research place, we also talked about Sakai as a research application - I suggested that they start with a simple Sakai to get

people working together (meeting support, etc), then they find some of the neat data oriented web silos and wrap Sakai around those data sources to build communities around those sources, and then move towards common data areas using technologies like ARROW and DART.

References: http://www.unimelb.edu.au/

Sakai Seminar, Melbourne University

This was an open meeting with 60 attendees both from the Melbourne campus and around Australia and New Zealand.

The first speaker was James Dalziel - he was speaking on Open Source in general - he has a grant to be an Australian version of OSS-Watch (ASK-OSS). This was an early version of a keynote he will be giving April 10-12 at the OSSWatch meeting in Oxford covering open source in general.

I was the second speaker - and gave my Sakai Overview talk for the 12th time in two weeks :) It went very well. Good questions, etc.

Mike Ribbechi of Charles Sturt was the third speaker. He gave a great talk. It was extremely pro-community source and had a bunch of neat analysis in ways I had not previously thought about. A lot of it focused on agility rather than Total Cost of Ownership (TCO). I thought it was an insightful view of things.

James was the fourth speaker and he talked about LAMS and LAMS-Sakai going forward - an overall good talk.

Sakai Partners Meeting

The overall wrap up for the two weeks was the Sakai Partners Meeting Friday in Melbourne where all of the folks on the trip came together in a single meeting.

We discussed how the Sakai partners would present and organize themselves in Australia. They will soon have a web site as a starting place.

We had a discussion about eResearch - I presented some ideas that I called "Putting Science at the center of eScience" and suggested that we write a white paper describing the vision in some detail.

The University of Auckland was invited as a potential Sakai partner - after

the meeting a few of us hung around and they demonstrated their recently rolled out local LMS called CECIL. CECIL is written in .NET it is quite impressive - looks like Microsoft Outlook - A combination of Sakai features and Melete features but with an outstanding look and feel using AJAX, drag and drop.

Reference: http://www.cecil.edu/

Conclusion

Most universities were quite happy with their current commercial or home-grown LMS systems, so much of the discussion focused on research applications of Sakai. We had a lot of good conversations about SakaiBrary/Twinpeaks, Portfolio use of Sakai, Australian Wineries, poison toads, and other topics.

Another important theme was our work in standards and commitment to working with commercial vendors - things like Tool Interoperability were well received as it gives them a chance for their commercial LMS systems to perhaps play in the Sakai world (especially eResearch).

All in all a great two weeks. Thanks to all the folks who took time to meet with me.

– End of Trip Report –

For the weekend in Brisbane, I decided to act like a tourist and explore some of the Australian tourist destinations. I would rent a car and drive north of Brisbane and visit the Australia Zoo and the Sunshine coast.

I had never driven a car with a right-side steering wheel so I figured it would be a bit of an adventure learning to drive. I guessed that learning to drive on the wrong side of the road would be mentally taxing so I made sure to get a really good night's sleep the day before I rented the car.

Driving out of Brisbane, everything went surprisingly well. Having the steering wheel on the other side was a constant reminder that things were different and it did not take long before I was making turns and finding the proper lanes. It actually helped a lot when there was more traffic because you could simply follow the other cars. The only problem I kept having was turning on the windshield wipers when I wanted to use the turn signal.

As soon as I could, I turned into a residential subdivision to give myself some driver's training. I could practice left and right turns, starting and stopping, going into driveways and properly backing out into the correct lane. I kept driving in the subdivision until I was confident I would not

make a mistake on the highway.

I headed north and drove to Steve Irwin's Australia Zoo. Steve, Teri, and Bindi were not there but I really enjoyed my visit. I particularly liked the large area where we could walk around and feed the Kangaroos. They were kind of like giant rodents but they were quite friendly.

After the Australia Zoo, I drove further north to the Sunshine Coast. The scenery was beautiful and I passed these volcanic structures called Glass House Mountains. The climate and vegetation was like the Los Angeles area. It was tropical and somewhat dry but with enough water to support abundant vegetation. I drove by lots of pineapple fields. At one point I stopped at a road-side stand and had a "Pineapple Smash." It was a simple drink: take a perfectly ripe pineapple from the fields and put it in a press and squeeze it until you get a drink of mostly juice and a bit of pulp. It tasted amazing.

When I reached the Sunshine Coast I kept driving until I found a beach. It was beautiful with white sand. I was amazed that it was so deserted with very few houses on the beach. I kept thinking that this must have been exactly how Los Angeles would have looked before all of the people showed up.

After the beach I drove back to Brisbane and turned in my rental car without any scratches. I was pretty happy that I had survived a whole day of driving on the left hand side of the road.

After I got back from Australia, it was time for a family trip to Memphis and Nashville. It was a music-themed trip with visits to Graceland and the Sun Studio while we were in Memphis. When we got to Nashville, I had to take a quick day trip from Nashville to New Brunswick, New Jersey to speak at Rutgers for a day. The topic of my talk was a perspective on how I might do eScience differently if I could start over and do it again. I felt bad that the NEESGrid project had not turned out as well as I would have liked and just wished I could get the chance to do the same kind of project again, but this time starting from scratch. After the talk, I flew right back to Nashville to rejoin the family and go to the Wild Horse Saloon, buy some cowboy boots, and go to the Grand Ole Opry. We stopped by the mall on the way to the Grand Ole Opry. While there, a tornado warning sounded we were made to move into an interior hallway. I wanted to be outside to take a picture of the tornado but Brent and Teresa vetoed that idea.

After the tornado warning cleared, we walked over to the Grand Ole Opry. I was not looking forward to the show because I don't find old-time country music particularly appealing and I don't know any of the artists. But it turned out to be a lot of fun because of the fact that we are the studio audience for a live radio show so we could watch all the production activity during commercial breaks and that made it a lot more enjoyable to watch.

The next day we drove north going home and drove right through the

area where the tornado had touched down. It was not a laughing matter. It literally looked like a big vacuum cleaner had been dragged across the landscape.

We had our Integration Week for Sakai version 2.2 the week of May 1, 2006. Integration weeks were in Ann Arbor, Michigan and we were getting to the point where these meetings were a developer retreat. We would always go to Ashleys and Ann Arbor Brewing Company for beer and Zingerman's deli for lunches. It was a great team-building activity that allowed us to both get a lot of work done and also reaffirm our friendships and personal commitment to each other.

In the second week of April, we had an IMS Quarterly meeting at Stanford University to do the final preparation for the IMS Common Cartridge Demonstration at the upcoming Alt-I-Lab meeting in Indianapolis.

There was also a JSR-286 experts group meeting at Oracle the second half of the week. This was the second meeting of the group and the first meeting in the United States so we met a few new faces including David DeWolf from the Apache Pluto Project. David was an independent contractor working in Washington DC on a number of government software projects and on his nights and weekends, he had become the lead committer on the Apache Pluto project. In a way, he simply had "taken over" the Pluto project between versions 1.0 and 1.1.

The Apache Pluto project was the "reference implementation" of the JSR-168 specification[2]. The Java Community Process (JCP) requires that the lead company that was producing the specification provide both a reference implementation of the standard as well as a test kit to verify that other software that would be developed complied with the standard. The Apache Pluto 1.0 product was the required implementation for the JSR-168 product. Ken Weiner had used pieces of code from the Pluto 1.0 project to quickly add JSR-168 support to uPortal 2.4 back in March of 2004.

But the Pluto 1.0 code was not designed to be reused in other portals, so Ken had to split Pluto into two pieces so they could plug the lower-level support for JSR-168 into uPortal. It was a crude and effective technique but it was hard to maintain given that there were now two slightly different copies of the Pluto code being separately maintained in both the Pluto and uPortal projects.

Over the years, a number of projects were forced to perform this "hack" on Pluto 1.0 to re-use it in their own environments. At one point David DeWolf proposed that the Pluto project should restructure the Pluto code into two parts. One part would be a reusable library of low-level code that could be used to add JSR-168 support to any Java-based web application.

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[2]The JSR-168 Portlet specification was the precursor to the JSR-286 Portlet specification

The other part of the Pluto code would be a simple portal that used the Pluto library and functioned as a demonstration as to how the reusable Pluto library code was to be used.

Initially, the Pluto team members were not too excited about the idea of restructuring their code base to make this reusable library, so David set out on his own, calling his project Pluto 1.1 and agreeing that he would prove that his ideas were feasible by simply doing the work. After David was finished, virtually everyone liked what he had done, so they accepted his work as the next version of Pluto and he promptly became the new lead committer on the Apache Pluto project from then on.

I was impressed when I met David at the JSR-286 meeting at Oracle Headquarters in Redwood City. He was young, bright, energetic, yet thoughtful and a good listener. He spoke calmly and quietly from a deep technical expertise. He fit right in among the legends of commercial software and open source projects we had around the table. I felt a bit like an outside observer with all the talent at the table.

When I got back from California, we had a meeting with Bill Spencer whom I had worked so closely with on the NEESGrid project. Bill had a new project called the Mid-America Earthquake Center (MAE) that he had gotten funded and he wanted to explore the option of bringing some of the NEES team back together. He invited Beth Kirschner and I down to Urbana-Champaign Illinois along with Greg Peters. Beth is a private pilot and is a one-quarter owner of a single-engine plane. We decided that we would fly ourselves from Ann Arbor, Michigan to Urbana-Champaign, Illinois. I also had a pilot's license but had not flown in a small plane in many years so this sounded like a great idea. Beth even said she would let me take the controls for a while to let me see if "I still had it."

One the way down, I sat in the back seat. I had my laptop, cell phone, and my battery-powered GPS and did some coding on the flight down. I figured Beth didn't need me looking over her shoulder and right-seat-driving. I would get to fly in the right seat on the way back. Greg was a little queasy about flying a small plane so he sat up front on the first leg of the trip.

As I watched Beth fly the plane it was obvious that she and I had different approaches to flying. I always approached flying as if I were a commercial pilot (in a tiny plane) and worked to be precise at all times in terms of navigation and attention to detail. Beth on the other hand flew with emotion. She should have been a barnstormer in a bi-plane or at least have an open cockpit with a white scarf, leather bomber jacket, and goggles. She flew with so much joy whereas I flew with my brown leather jacket and Ray Ban sunglasses and clipboard, trying to look oh-so-commercial-pilot in my tiny single-engine plane.

Ironically, in terms of approach to programming, our personalities were the opposite. As a programmer, I was the creative fearless barnstormer with

the white scarf and goggles and Beth was the precise, logical professional programmer with her Ray Ban sunglasses and clipboard.

It was fun to watch Beth fly — it was as if she was playing with the clouds. She did not spend much time looking at the map, nor was she obsessed with the navigation radios. Most of the time she was looking outside the plane at the absolutely beautiful day with blue skies and widely scattered clouds over a pretty patchwork of farmland. While I was watching Beth fly out of the corner of my eye and, coding with my laptop on my lap[3], I was also quietly watching my GPS. Back when I had been flying small planes, GPS units were not commonly available so I wanted to see how they worked on a plane. Beth was not a fan of GPS units. I think they got in the way of her creativity and enjoyment as a pilot.

But as we were approaching where Beth thought we should be seeing Urbana-Champaign, my GPS indicated we were lost. We were 35 miles east of where Beth thought she was. We had plenty of fuel and it was an absolutely gorgeous day and I was just enjoying being in the air so I decided I would wait and see how long it would take Beth to figure out she was lost. She was confused because where she had ended up, there was a city and she knew that at Urbana-Champaign the airport was a few miles southwest of the city, so she wandered southwest of the wrong city for a while looking for the airport that she would not find. With my GPS and peering at the map over her shoulder, I knew that we were flying over Danville, IL and not Urbana-Champaign.

At some point it dawned on Beth that the airport was not where she expected it to be and the city was more of a town and way too small to be Urbana-Champaign. As she was discussing her thoughts about being a little confused with Greg, I just quietly mentioned that I wondered if we might be over Danville instead of Urbana-Champaign. Beth quickly took a look at the map and everything she was seeing quickly confirmed that we were indeed over Danville so she headed west following I-74 and quickly found Urbana-Champaign and the airport. I waited until we landed to tell her that I had cheated and used my GPS.

The meeting with Bill went well. Unfortunately, I was so deeply involved in Sakai that I really could not help him in his new project. Beth was also pretty busy at the time as well so we decided that Greg would be the primary MAE contact on the work and Beth and I would act as consultants to the effort.

On the way back it was my turn to sit up front with Beth in the right seat. True to her word, Beth let me fly for a half hour or so after we got to altitude. I was surprised at how rusty I had become after fifteen years of not

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[3]Like I am writing this very sentence in a bouncing shared-ride van en-route to Logan Airport

flying. But after a while the ability to hold a heading and altitude started to come back. It felt great to be flying again. After a half-hour, I gave the controls back to Beth and simply enjoyed the rest of the flight home with Beth at the controls.

Chapter 16

V-Day

At the end of May, it was time to go to Vancouver BC for the fifth Sakai meeting. This would be the first meeting of the Sakai as a community of peers with our non-profit Sakai Foundation as the host of the conference. It was also the meeting were the board would select the Executive Director. I was a candidate for the Executive Director position and quite confident of being selected.

I was not really nervous at all when I thought about the Executive Director selection. In a way, I was mentally prepared for someone else to be selected as the Executive Director. If the board selected someone else, my plan was to simply fade out of the technical side of the project and watch what would happen from the sidelines. After all, I was still legally elected to the Board of Directors with a three-year term. If they selected someone else, I would still be in Board meetings for the next three years so I would be able to watch events unfold first-hand.

The Vancouver conference was an absolute blast. The community was continuing to expand and energy was high. Sakai 2.2 had slipped about a month — but a lot of effort in Sakai 2.2 had been spent on making it a cleaner and more elegant product in terms of its internal structure. The Samigo testing engine was becoming more solid and more of the Open Source Portfolio features were being brought into Sakai. Our developer and QA teams were humming. Megan May was an outstanding QA director. She had worked closely with Carol and made some improvements to our processes. She also had Indiana resources that she could use to help move QA forward.

We had also started to greatly expand the number of schools and developers directly involved on the core software development and testing. With the Board recovering from the grant period and spending most of the spring focused on the Executive Director hiring, I could actually direct our resources the way I saw fit for the first six months of 2006.

I finally got to have some input on our Thursday evening conference

party at Vancouver. Historically Joseph did all of the conference planning and we always had some type of open bar / community party on Thursday nights. It was usually Thursday nights that I would get in a bit of trouble at the party and after parties.

Most of the Thursday parties were hits, but at the Austin, Texas conference, Joseph hired a country band and we were all supposed to learn to line dance. I had brought a cowboy hat and cowboy boots[1] to Austin to be a team player. But the Austin party was not one of our better parties. The band was way too loud so no one could talk. And few people wanted to dance — after all, we are computer nerds.

Given the disappointment in the Thursday entertainment at the Austin meeting, Joseph actually asked other folks what we should do on Thursday night in Vancouver. We did an open source party planning exercise. I of course suggested Karaoke and others suggested a bunch of video games with big screens. So the Vancouver Thursday party was an open bar, a Karaoke DJ, and group video games. It was great. We laughed, drank, and talked and it was perfect. Who knew Zach Thomas from Texas State at San Marcos was in a punk/metal band and had a great singing voice!

The board had been interviewing Executive Director candidates throughout the week and they announced at the Thursday party that I had been selected as the Executive Director. That made it even more fun and relaxing because that weight was off my back. Later that night, a few of us went to a Vancouver blues bar to relax and I met Amy Stephen, a long-time contributor to the Joomla project. A few years earlier the Joomla project had been called Mambo but there was a rather public blowup between the developers and the copyright holders resulted in the project being forked and the developers calling the forked version Joomla. For a while the company that owned the Mambo copyright claimed that they would continue without the volunteer developer community but that did not last very long at all and Mambo quickly faded from the marketplace. It took a few months for Joomla to get reorganized and get its feet back under itself, but after that it took off and has never looked back.

Other than a few blog posts while the Mambo and Joomla combatants were shouting at each other, there was never much detail revealed about what happened. Since I was anticipating that at some point there might be a need to fork Sakai and form a whole new product. So I was curious to learn about the internal details of the Mambo / Joomla battle. Amy was pretty tight-lipped about the details regarding the conflict, probably since we had just met, so I let the matter drop.

Friday morning we had an outstanding keynote speech from Mitchell Baker, the CEO of the Mozilla Foundation. Mitchell's husband Casey Dunn

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[1]Purchased during my trip to Nashville.

was a Sakai developer working at Stanford University. Mitchell talked about open source and how the Mozilla policy was that Mozilla employees did not get the right to commit to the product until those employees were accepted by the community. She understood that even when there was sufficient money to hire developers, it was important to stay true to the core principles of Open Source. It sounded a lot more ideal to me than the Sakai Board's approach to "community source."

After Mitchell finished, I gave a short speech as the new Executive Director. Everyone applauded and we closed the conference.

After my talk, Mark Norton came up to me and told me that now that I was an executive, I should invest in some more clothing. Up to that point, I pretty much had worn the exact same suit for every talk that I gave. It was a nice 100% wool double-breasted suit that I liked a lot, but Mark suggested that I needed to have more than one suit.

When I got back home from Vancouver, I went to a clothing store and promptly purchased a navy blue and grey suit so I could look more executive-like. Several days later, I got a call from the credit card company because their software had detected a possible fraudulent transaction. Now this was a credit card that I had used all around the world for travel and expenses at a wide range of locations. Sometimes I would use the credit card in Tokyo and then 72 hours later I would be charging with the card in Amsterdam. Actually I was surprised that I did not get these "suspected fraudulent charge" calls more often.

The charge that was suspicious was the purchase of the two suits. Apparently their artificial intelligence software knew me so well that their software was sure that (a) I would never purchase a suit at a real clothing store and (b) I would never pay non-clearance prices for a suit. I assured them that it had really been me that had purchased the two suits.

I would later find out that the decision to select me as the Executive Director was by no means a unanimous decision. Actually it sounded as if less than half of the board members had me as their clear first choice. The other top candidate was impressive with skills that some felt were complimentary to my own skills.

One board member who I have a lot of respect for suggested that I consider finding a way to involve the other candidate in the foundation one way or another, perhaps in a marketing role. This sounded like a really great idea but I was worried about the financial stability of the Foundation and was absolutely not in the mood to expand expenditures (in particular recurring expenses like salary) until we could see what the post-grant run-rate of income and expenses.

My goal as Executive Director was to clean up loose ends and get the Foundation running smoothly with a positive cash flow. I already had excellent employees that knew how to do their job without much supervision.

Mary Miles could run the finances, Anthony Whyte was the community liaison, Megan May was our Quality Assurance Director, and Peter Knoop was our project coordinator. We had already been working together for over a year and each person knew their role. When I run organizations, I try to get everyone to the point that they can manage themselves. I wanted to get to the point where I would sign a few papers every week or so and otherwise my time would be 100% free to work on improving the Sakai product and growing the Sakai community.

The finances of the Foundation sounded pretty good on the surface since we had a solid revenue of 1.2 million dollars per year for the next two years and a staff of 4.5 FTE. The problem was that Joseph loved to host a very nice conference. We had two conferences per year and each conference typically lost $250,000 per conference. Also, up to the point where I was selected as the Executive Director, the University of Michigan had paid for my salary as the Sakai Project Chief Architect. So that would be well over $100,000 of expenses to the Foundation when benefits were included. My back of the envelope calculation was that from the very first day I became the Executive Director, we were in a negative cash flow situation.

This negative cash flow was masked because we had a million dollars in the bank thanks to Joseph's wise money management throughout the grant. The money was spread between Sakai Foundation accounts and University of Michigan accounts and we were not so good at accounts receivables or balance sheets for the nascent Sakai Foundation. This all made it hard to get a precise sense of where we stood and where we were going financially. It would take months to figure out the real financial position of the Foundation but I was pretty sure we were not in a positive cash flow.

The Board was not as obsessed with the finances of the Foundation as I was. Their prior experience was during the grant funded period where the Mellon Foundation, Hewlett Foundation, and Sakai Partners poured money into our accounts. Indiana University and the University of Michigan went way beyond their required contributions in terms of staff, salary and other generous support for Sakai. As far as the board understood, we had an infinite amount of money and we could fund any idea they came up with. Now that my salary and the salary of four of my friends was coming from this tiny non-profit company, I wanted to be a bit more conservative with the spending. At the same time, I now was an employee of this board of directors and knew that I had only a slight majority of board members that would support me when push would come to shove. I knew it would be hard to tell them "no" when their brainstorming sessions came up with some new initiative for us to spend money on. But I was pretty certain that I did not want to agree to add $150K of recurring salary expenses within the first 12 hours of my tenure as the Executive Director.

After the Vancouver Sakai conference I took a quick trip to the Second

Holland Open Software Conference in Amsterdam, NL. It was fun to be promoting the Sakai Foundation as its first Executive Director.

When I got back home from Amsterdam, it was time to go to the IMS Alt-I-Lab meeting on June 19, 2006. It had been a year since our IMS Tools Interoperability demonstration in Sheffield England and about 18 months since the publishers and Sakai had hatched the idea for IMS Common Cartridge back at the secret meeting at Stanford. And now at Alt-I-Lab, we were going to see demonstrations of support for IMS Common Cartridge from Pearson and McGraw-Hill, Sakai, Blackboard, WebCT, and Angel Learning. We would generate a cartridge at one table and put the cartridge on a USB drive and walk around and import it into the LMS systems.

The demonstration worked wonderfully and I produced a video featuring Chris Vento (now working at Blackboard) and David Mills of Angel Learning. The video also included Mike Farnesi and Mladen Maljkovic of Pearson Education. Toward the end of the effort, David Mills had really stepped up as the leader of the group. Angel Learning was far enough along in their support for IMS Common Cartridge that they were shipping support for importing IMS Cartridges in their next release of the product — even before the specification was completed. They knew the specification would likely change a bit before it was finalized, but Angel Learning was so excited that they just could not wait.

Moodle did not participate in the IMS Common Cartridge demonstration, and while it was not a big deal, it allowed me to begin to show how Sakai was more aligned with the commercial vendors that were focused on the "enterprise" space for learning management systems. While I had no desire to directly compete against Moodle, it was good to be able to find a bit of the market space that could belong to Sakai uniquely.

Another thing that was great about the 2006 IMS Alt-I-Lab conference was that it was in Indianapolis and all of the developers from Michigan and Indiana descended on the meeting. So it was a great retreat for the two leading schools in Sakai at that time. And in particular, we were not getting together to plan, debug, solve some crisis, or argue over priorities. We were just having a great time together sitting in sessions and attending a conference. It also allowed a lot of the Sakai developers who did not do much travelling to tangibly see our place in the marketplace as genuine peers to Blackboard, WebCT, and Angel Learning. It was a great time to relax, soak it all in, and celebrate how far we had come in thirty short months since January 2004. We were the real thing. What we had done was very much worthwhile.

The last day of the conference was a workshop organised and convened by Joel Greenberg of the Open University. It was a significant event, being the first time that Open Source and commercial LMS vendors as well as users had come together in such a forum to discuss common issues as well

as their views on the future of online learning.

I gave a presentation that talked about some of the ideas that Joseph and I had proposed to the Mellon Foundation for follow-on funding. We called it the "Swiss-army knife." The idea was that the data in Sakai would be accessible through any number of standard protocols. Martin Dougiamas of Moodle was also scheduled to be there and I was looking forward to seeing him again. I also wanted to show Sakai as being on equal footing with Moodle in terms of our commitment to Open Source and pushing forward with innovations that the commercial vendors might never consider. Martin never made the meeting and ended up giving his talk over a really bad network connection from a Los Angeles hotel. I felt pretty bad for him.

Martin was both the chief evangelist for Moodle and its lead developer, so he avoided too much travel. In particular since he was based in Perth, Australia, it took a lot of effort for him to make it to the US and Europe. I had a tremendous advantage being based in Michigan. The Detroit airport had direct flights to every major city in the country and I was just a few hours from anywhere in the US, UK, or Europe. And I had an unlimited travel budget. I also had Glenn Golden, Lance Speelmon, Anthony Whyte, Gonzalo Silverio and others who focused on the technical detail of the project.

I would code up nifty ideas sitting in an airport or hotel, and then check it in to the source tree for Sakai and someone else would jump in and make it professional. With such a great technical team behind me, it was pretty straightforward for Sakai to move forward quickly during 2006. I knew we had started out way behind Moodle in maturity and market share, so I had to make up for that with a lot of travel and talks to give us time to catch up.

Chapter 17

Family "Vacation" Time

I had scheduled a combination work/vacation trip to England with my family toward the end of June 2006. This was our itinerary:

06-26 Family in London (Weekend)
06-28 Manchester eSocial Science Meeting @ NeCSS
06-29 Cambridge workshop, Web 2.0 and Beyond
07-03 Working at Lancaster
07-04 Family time at Rob Crouchley's house (Weekend)
07-06 JISC Meeting in York

This would be the first time Teresa, Brent or Mandy had been to England. I had been to the UK so many times that it almost started to feel like a second home to me. When we arrived at Victoria Station from the Gatwick Express, everyone was a bit tired so we decided to take a cab to our hotel. I was amazed to see the cab driver fit four people, our luggage and a wheelchair all into one of those amazing black London cabs. We got to the hotel about noon, checked in, freshened up and then it was off to sightseeing. I always like to push at least until dark on the first day after arrival to cope with jet lag. We wandered around London that first day, finally ending up at Big Ben as night fell. We had walked a lot so we were plenty tired and everyone slept well when we got back to the hotel.

On our first weekend, we did all the tourist things, London Eye, the Globe Theater, Natural History Museum, Harrrah's, and Chelsea Stadium. It was a bit of a marathon because we only had the weekend and I wanted them to see everything so we would run to one place, get a few pictures and then run to the next place and get more pictures.

We loved the London busses. For three pounds, you could get an all-day pass and go anywhere you liked. And with Brent in his wheelchair, we were impressed with the way the busses handled handicapped people. They have a special button by each door that can be pushed from a wheel chair. When

you push the button, a little mini ramp comes out so you can roll right into the bus. And each bus had a nice little area for wheelchairs. If people were in the wheelchair areas, they would always give up the space, even if the bus was quite crowded.

Also, there was absolutely no reason to pay 35 pounds per person for the double decker tour bus. By the time you have taken a couple of bus trips with transfers, you have seen all the sites of London for a three pound daily bus pass. And most of the transfer spots are right at the tourist destinations.

The one thing that Brent and Mandy loved the most about London was going to a Blue Man Group show. It was the first time they had seen the show. After the show, where everyone crowds around the Blue Men, a staff member noticed Brent in the wheelchair and took us to a little private after-show meeting with our own Blue Man. We got lots of pictures and the Blue Man took some paint off his face and gave both Mandy and Brent their own blue stripe on their faces.

After London, it was on to Cambridge for the family. I had rented a small van that we picked up in the North of London. Since I had one day of left-side driving experience from Australia, I decided I was an expert. The kids were impressed that I could competently drive on the wrong side of the road.

I actually had a one-day meeting in Manchester so I drove my family to Cambridge, checked them into the hotel there, gave them a quick tour of Cambridge, and then I continued up to Manchester for a one-day eSocial Science Meeting. At the meeting, I gave a talk titled "Collaborative eScience: Evolving Approaches" where I looked back at various eScience projects such as NEESGrid and talked about what went wrong on those projects and imagined how I would have done them differently if I could do them again.

Once the eScience meeting was completed, I drove back down to Cambridge to attend a one-day workshop looking at where we saw Virtual Learning Environments (VLE) headed in the Web 2.0 era. I gave a talk at that meeting titled, "VLEs Going Forward: Scanning the Horizon" where I showed a Learning Management System market would increasingly support standards like IMS Tools Interoperability and Common Cartridge and then proposed some ideas for data interchange even beyond those standards.

After the meeting, I introduced my family to Ian Boston, John Norman and every else one at the Centre for Applied Research in Educational Technologies (CARET). James Dalziel of the Learning Activity Management System (LAMS) from Macquarie University in Sydney was also at CARET for the Web 2.0 meeting.

At CARET, I had my first encounter with the Sakaiger. The first Sakaiger was an image drawn by Andrew Thornton at CARET. It was a happy blue and white tiger dancing on top of the bottom half of the Sakai logo (www.

`sakaiger.com`). He was very cute and happy. I was later told that the Sakaiger was the second Sakai-related animal that they had drawn. They claimed that the first animal mascot they had drawn and discarded was the Sakainoscerous.

The Sakaiger

I took the family punting on the river Cam and we had a bit of a scare when we nearly dropped Brent into the river lifting him out of the punt We had a nice lunch with John Norman and his wife and we visited the Anchor and Eagle Pubs. Cambridge was one of our family's favourite stops on the trips because it was a pretty small town with plenty of shops and restaurants and easy to get around using taxis.

We left Cambridge and drove up to Lancaster. We had scheduled a few days of coding at Lancaster University and then planned to spend the weekend visiting with friends in Lancaster. Our trip overlapped the World Cup soccer tournament so we became honorary fans of the England team. I remember listening to the game on the radio as we drove and then stopping at a rest area to watch the last few minutes of one of the games on television.

When we arrived in Lancaster, Rob Couchley's wife Dorothy had volunteered to entertain Teresa, Brent and Mandy for the two days I was working with Rob and Adrian by giving them a tour of the cute villages in the Lake District and the home of Beatrix Potter who wrote "The Tale of Peter Rabbit."

At Lancaster, we really focused on the eScience applications of Sakai and came up with the idea that instead of mashing uPortal and Sakai together as one product, what we should do was add JSR-168 support to Sakai so we could build a single tool and have it work in both Sakai and uPortal. The idea was that we would use the Apache Pluto 1.1 code to insure portability of tools between the various eScience portal systems. This seemed like a better solution than trying to force every project to use the same portal system. We did some feasibility analysis and concluded it would probably work.

We decided that the quickest way to get the work done might be to pay David DeWolf (the lead committer of Apache Pluto) to do all or part of the

work adding Pluto 1.1 to Sakai and uPortal. We agreed that we could split
the costs between my National Science Foundation grant for the National
Middleware Infrastructure program and their UK JISC grants for eScience.
For me it looked like it might finally be a way forward to meet the original
commitment I had made to supporting JSR-168 in Sakai back in 2004.

After the meeting was over, I sent the following note to David DeWolf:

David,

Hi - I sat next to you are the JSR286 expert group meeting at Oracle. I
really would like to get Sakai to have Pluto 1.1 "embedded inside of it". We
last talked about possibly hiring you to help do this. I may have come up
with a funding source for this and would like to touch base to see if you are
interested.

On the weekend, we all drove to a country estate named Holker Hall[1] to
spend the day. Adrian's wife Becky and Rob's wife Dorothy made all kinds
of wonderful food for the picnic and we spent the whole day on the grounds
of the estate, taking a tour, having some ice cream, and walking the gardens.
It was absolutely lovely, the food was great, and we needed a rest day with
no rushing whatsoever.

After lunch, they brought out a bat, ball, and wicket to play cricket. I had
never played cricket but I watched it on television and I was quite sure that
we didn't have enough people to field two cricket teams. But they told me
not to worry. We didn't need two teams and really we didn't even need one
team. All we needed was a bowler (i.e. pitcher), batter, and a few fielders.
We would each take a few turns batting and we would keep score for each
batter individually.

We only had enough fielders to cover half of the outfield so we declared
that hitting to other half of the field would be an out. So the only way for
the batter to score was to hit it towards the fielders and for the fielders not
to catch it. It was an absolute blast and everyone had a great time. After
a while we just stopped counting the scores because Adrian had five times
as many points as anyone else. He was a good cricket player and he would
hit these booming drives that we would all run like crazy to catch but were
never be able to do so. It was so much fun and was unlike any cricket game
I had ever seen on television. As the afternoon wore on, we just relaxed, sat
and talked under the trees.

The next day was July 4 and Rob Crouchley planned a barbecue and
party at his house so the American guests could celebrate even when we
were in England far from home. Rob's children had made a poster for the

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[1]http://www.holker.co.uk/

party that said "Happy Independents Day." Rob Allan came up from Daresbury for the party. It was great. Part of the reason I planned this type of trip was to get away from the tourist activities and see real people and real homes.

I later found out from Brent and Mandy that Ties Van Ark had taken them aside and explained to them in some great detail (as they told it) how bad the United States was in terms of politics, energy use, poor public transportation, and a host of other issues. Of course Ties had never been to the United States but he apparently knew a lot. Later when they told me of their conversation with Ties, I had to laugh. Another of the wonderful aspects of international travel for Americans is that people will tell you what they think of America. Sometimes it is good to hear about your own country from someone else's perspective regardless of how "accurate" the perspective might be because all too often perspective is reality and that is an important lesson to learn as well.

The day after the party Mandy had to return home. We took a train ride to the Manchester airport, checked her in, and sent her through security to fly home alone. Teresa had realized that Mandy would be traveling without a cell phone so she had spent a good bit of money to purchase a UK pay-as-you go phone so Mandy could call us from the Amsterdam airport in case she got lost while changing planes. She didn't get lost, never had to make a single phone call, and made it home safely where the phone didn't work at all and had to be thrown away.

The last stop on the trip was York, England where I would be attending a two-day JISC meeting on education and research. York is a beautiful city with city walls that date back to Roman times and tiny streets that give a medieval feel to the city. We did standard tourist things like visit the Cathedral, shop for souvenirs, and we went to the Jorvik museum and tour.

About this time, the stress of sprinting for two-and-a-half weeks was starting to get to everyone. Since England usually has pretty mild weather, they don't have air conditioning in many hotels. In York, we were staying in a nice hotel right on the river with no air conditioning. We were experiencing record high temperatures and sleeping in the hot rooms with only a fan was starting to fray a few nerves. At one point, we decided to go to a movie theater to catch a movie and cool off in some air conditioning for a while.

After our visit to York was complete we drove all the way back down to London and Gatwick airport to go home. On the way, we stopped in Nottingham to have a meal at the "Ye Olde Trip To Jerusalem" which was the oldest Inn in England, continuously operating since 1068.

Everyone was pretty happy to get home and I learned an important lesson — never again plan a family vacation of more than two weeks long, especially one that included international travel.

While I was on the trip to England sitting on the grounds of a country estate with my family, we had released Sakai 2.2 with the following features:

Framework cleanup - more logical naming conventions
Improvement of the primary key pattern for user accounts
OSPI tools were in the release as provisional tools
Indiana had written a new tool called Message Center
Ian Boston of Cambridge had added content search
We added a Small Calendar tool from Nuno Fernandez from Universidade Fernando Pessoa in Portugal
We added a tool called "PostEm" from Indiana University that was used to distribute grades from a spreadsheet

I was happy that the release both improved the internal elegance of the product as well as added needed user-facing features. By taking a more flexible approach to planning, each of the contributors to Sakai was working on what they wanted to work on and as such they were working more effectively.

While I was in England, I was appointed as one of the IMS Technical Advisory Board co-Chairs along with Linda Feng of Oracle. It felt good to have gained enough respect in IMS through the Tools Interoperability and Common Cartridge efforts to be given this leadership position in the IMS organization. It also was a further indication that Sakai was becoming an increasingly significant player in the industry.

Once I got back, I worked up some design ideas for JSR-168 support in Sakai and forwarded them to David DeWolf to get him thinking about what it would take to do the work.

July 17, it was back across the Atlantic to the Edinburgh eScience Center in Scotland for a Portlets and Portals workshop. The Edinburgh eScience Center had become one of my favourite places to visit. It was a nice modern facility that was crafted into the inside of an old stone building. It was the place where JISC-funded eScience researchers would go from time to time to hold workshops, meet, and share ideas. My first international talk about Sakai was also at Edinburgh eScience Center back in January 2004 so every time I would come back, it was like coming back to where it all started for me.

This workshop brought together the brightest folks in the eScience portal world for a one-day retreat. The group included Jason Novotny (grid-nomad) from the GridSphere project in Berlin, Rob Allan from Daresbury, Rob Crouchley from Lancaster and Marcus Christie from Indiana University. This was a group of people that had been working collaboratively in the problem space for over two years and we were really getting to the point

where we understood the problems and their solutions. Now since we had what I thought was a great technical strategy for portlet support in Sakai, we were right in the mix of the innovative thinkers.

I remember Jason Novotny giving a really great talk about how he thought that after all the fuss about portals and portal technology and all the software we had written, that we had missed the point somewhat. We needed to take the next step and understand that these were simply rectangles and we needed to make it as easy as possible for users and developers to put rectangles on a page. He suggested that we needed to reduce the placement of a rectangle to be almost as simple as embedding a YouTube video on a web page.

His ideas spoke to me and I started hacking on Sakai's portal with the ideas of making it far simpler and improving its accessibility. Our portal uses an HTML technology called "iframes." The best way to describe iframes is that they are seen as tacky and harmful to accessibility and Sakai was always criticized for using iframes in its portal. Sitting in the meeting I had an inspiration on how we could create a frameless portal based on some earlier work by Ian Boston of Cambridge. I would also create a simple user interface that would support smaller portable device like phones and hand-held computers.

On July 19, 2006 I sent the following note to some of the workshop attendees and the Sakai developers who were working on the portal.

I spent the last 24 hours in airports and in airplanes building an iframe free PDA friendly version of Sakai. It is a hack. I followed Ian Boston's lead using filters but instead added portal navigation to the tool output *after* buffering the tool output.

I got inspired by the comments made by Marcus and Jason about making "portals" not such a big deal and getting portlets as the important thing.

It has good potential to be extremely accessible. Maybe when I get back to the states, I can sit with Gonzalo and tune up the HTML and give it a whirl for accessibility.

Here are some cool images and the source code can be dropped into 2.2 - IT IS A BAD HACK - but was a fun way to spend 24 hours.

Now that it works - I have to rethink the right way to do it - Chopping Charon to bits is a bad approach.

When I get it up on a network box, I can really test it with my PDA.

I liked travel and I liked writing software. It had been a pretty fun month up to that point.

Chapter 18

Educational Community License

I didn't come straight home after the Edinburgh Portals and Portlets workshop. Instead, I planned a quick side-trip to Lleida, Spain. I decided that it was time to visit Lleida and personally thank David Barroso, Carles Mateu, Alex Ballesté, and the others who had done all of the development work to make sure Sakai could be translated into so many languages. I still feel that the work by Lleida in Sakai 2.0 was one of the top five most significant contributions to the success of Sakai, in particular the timing of their work meant that Sakai 2.0 was ready to be translated when it was released.

To me that was worth a trip to Lleida to thank them and buy a few beers. I flew into Barcelona and spent the first night there.

The idea was that David Barroso and Carles Mateu would drive down from Lleida in the morning spend the day in Barcelona with me going to meetings and then they would take me to Lleida at the end of day. David had arranged a breakfast meeting with representatives from the Univesitat Oberta de Catalunya (Open University of Catalonia) as well as staff from a Catalan government initiative called the "Campus Project."

The Campus project was a Catalan government-funded effort to build a comprehensive set of open source software for the various universities across Catalonia to share. There was a strong passion for everything open source in Catalonia. I think that it is because the Catalan culture is passionate about controlling its own destiny. Since Spain has the second highest level of involvement in Moodle (behind Australia), it was logical that many would prefer that the Learning Management System for the Campus project would be Moodle. David, Carles, and the others from Lleida also wanted Sakai to be included as an alternative LMS in the Campus project. If we could get Sakai included in the Campus project, funds could flow to support Sakai development at the University of Lleida and it would be much easier for other universities to adopt Sakai.

The Univesitat Oberta de Catalunya (UOC) was founded in 1994 to provide distance and technology enhanced education broadly across Catalonia

and the world. Dr. Valverde was the Vice President for Technology of UOC and at breakfast he told me they were in the middle of an LMS evaluation. The UOC was also going to be a big part of the technology development for the Campus project as well.

So while the breakfast started out to be just a cup of coffee and a meet and greet, it turned out to be a situation when I might be able to recruit some significant additional development talent and resources for Sakai. And given that both the UOC and Campus Project were going to fund creation of new technologies, and the fact that the University of Lleida had already shown that they were quite skilled and good at participating in open source, getting UOC involved in Sakai would add valuable talent and resources.

The staff from the Campus Project told me that there was some concern about the Sakai licensing terms and that the Sakai license was not considered to be "GPL-friendly" by their lawyers and that we would have an extended meeting later that day so I could have a chance to talk to their lawyer.

This was not the first time someone had accused the Sakai software license of not being "GPL-friendly." Actually, way back on May 19, 2005, there was a discussion about Sakai in a forum on `moodle.org` where Martin Langhoff claimed[1] that the Sakai Educational Community License was a less-than-ideal license that would make it hard to fork.

Here are Martin Langhoff's comments from May 19, 2005:

Charles, cheers for joining in (courageous ;)! I have a quick question.

What is the reasoning behind Sakai's license? From a FOSS (Free and Open Source) point of view, it cuts SAKAI from the community: SAKAI can't use GPL (GNU Public License) code, can only really use BSD-style licensed code, and pretty much no-one can grab SAKAI's code. Leads to a lot of wheel reinvention / NIH.

The "supply original code + separate patches" clause in the license also means you can't really fork it, should SAKAI's central development line stagnate. Has this been considered?

The word "fork" is used to describe the right of a new group of developers to take a copy of an open source project and move it forward in a different direction than the original creators of the software. The term comes from the phrase, "You are at a fork in the road."

Martin Langhoff was one of the leaders in the Moodle Community and

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[1] `http://moodle.org/mod/forum/discuss.php?d=22988` Search for "May 19, 2005"

it was a great opportunity for me to make some friends in the Moodle community by showing now nice and reasonable I was.

So (back in 2005) I replied:

The intent of our license is to allow anyone to take any portion of our code and use it in any way they see fit and with no constraints on the license of the resulting derivative work. So a GPL project should be able to take Sakai code and use it in any way it likes and keep the GPL license of that software.

Someone *can* fork the code - I sure hope so if the central line stagnates.

We talked further and Martin pointed out the modification notification clause in our license. While I somewhat saw his point, I knew that it was the explicit intention of the Sakai Project to have a forkable license. Since in May 2005, we were in the final throes of the Sakai 2.0 release, I didn't think much more about the conversation at the time.

Back in Barcelona, we went to the offices of the Campus Project to meet Malcolm Bain who was the lawyer who had concluded that the Sakai license terms were not "GPL-Friendly" so it could not be part of the Campus project in any way.

Malcolm went on to say that the Sakai license had a clause requiring "notifications of modifications" that many interpreted as making a project unforkable. In a way it was a benign-sounding poison pill in an open source license.

For me the short-term issue was getting access to the resources and developers from Catalonia, but the license also had implications for my own plans for the future of Sakai. Throughout the entire Sakai project, as there was friction between me and the board, I had a backup plan to fork the project myself and take the developers with me to form a new project. If there was a clause in the Sakai license that made it difficult to fork as Martin Langhoff had said in 2005 and now Malcolm Bain was again saying at this meeting in July 2006, it made me quite concerned about our license.

Up to that point, I had assumed that our license was forkable because I knew it was the intention of the Sakai board when it created the license to make it forkable because we knew that the "right to fork" was an essential tenet of open source. I was in the meetings where we designed the license and talked about how important it was for a license to give the right to fork.

When we came up with the license for Sakai back in early 2004, instead of using one of the widely available Open Source Licenses such as the GPL, BSD, MIT, or Apache licenses, we had invented our own license and called it the "Educational Community License." We created the license by taking bits and pieces of various licenses and gluing them together to make our own license. It didn't seem like a big deal at the time to invent our own

license.

There are hundreds of different open source licenses and to truly describe them all and their subtle strengths, weaknesses, and differences would take many thousands of pages so please forgive me if the following is a highly over-simplified summary.

The goal of a software license is to define the rights of someone who ends up with a copy of your code. Basically an open source license allows someone other than the original owner of the code to make a copy of the code, make changes to the code, and specifies some terms as to how the modified software can be re-used and re-distributed.

The simplest open source license was the MIT open source license. It really said, "Here is some software, do anything you want with it. You cannot sue us." The MIT license was typically used when someone wrote a small clever bit of code that they just wanted to give away. The MIT license was also used when a group was releasing software at the end of its lifecycle and they didn't want to throw it away. A kind of software recycling as it were.

As open source projects became more organized, larger, sophisticated, developed brands, and lived for long periods new problems popped up and open source licenses began to be increasingly complex.

Some projects were concerned that another group would take their software, change two lines of code and publish a competing product with the same name. This led to open source projects trade marking their names and changing their licenses to prohibit any derived versions of the software by new projects from distributing a modified version using the trademarked name of the project. They didn't prohibit forking of the code but they did prohibit using the name of the original in the forked version.

Some universities like the University of California Berkeley were concerned that those who created derivative works would use Berkeley in their advertising to gain credibility for their product. If the resulting modified product was not of high quality, it would reflect badly on Berkeley. So the BSD (Berkeley Software Distribution) license had a clause prohibiting mentioning Berkeley in advertising regarding the product without prior permission.

Some projects were concerned that some company might take their open source project, make a copy, make some changes to the product and then hide the resulting source code and release a new product under a different name. There are plenty of examples of these companies turning around and marketing against the free versions of the software they took and claiming their commercial version was better and spreading FUD (Fear, Uncertainty and Doubt) about the free version. Which as you can well imagine didn't sit well with passionate and high-strung open source developers who carefully built and then gave software to the marketplace as a gift. So this led to

clauses in licenses that insisted that all modifications to the software must be published. At least we could see the changes the company made to the software and might be able to debunk their marketing claims.

Other projects such as those under the Apache Foundation wanted to encourage lots of commercial involvement in their open source activities so they explicitly permitted creating closed-source versions with no requirement for publishing modifications. Since the commercial companies wanted to make a lot of money off the software, they were concerned about software patent issues. So the Apache license added some clauses around what would happen if an open source contributor added something to a program that happened to be patented by the contributor or their company.

And other projects wanted to take a strong, activist approach to open source. The GNU Public License (GPL) used by Linux, Moodle, and many other open source projects insisted that any and all derivative works that were derived from or even used this particular bit of software, needed to be (a) open source and (b) must be distributed under the GPL license. Fans of the GPL call it a "copyleft" license as in "copyright + left wing" while those who prefer other licenses tend to call the GPL license "viral" because it infects every thing it touches.

Both characterizations are accurate in that the goal of the GPL license is to increase the amount of open source software over time in a ratchet-like manner to the point that perhaps after 50 years or so, we will have sufficient open source to solve all the challenges in computing.

So, with that as introduction to the variation amongst licenses, I can now describe what the Sakai Project *intended* to accomplish with the Educational Community License (ECL). We wanted our license to be commercial-friendly like Apache to the point where we were quite comfortable if companies like rSmart, IBM, or Oracle would make a copy of our code, modify it, and redistribute it as proprietary software. Our only caveat was that we owned the Sakai trademark and were investing a lot of energy in creating the Sakai brand worldwide so we added an advertising clause to the ECL.

Since we were investing so much effort in the product, we didn't want another project to spring up, take our code, make a few changes and claim that they were the "real Sakai." At the same time, we wanted to leave the option open so that if the Sakai project ran out of steam and ceased to work on the code that it would be OK for a new group to pick up and take over. To address this, we added a clause that said that any modifications that were made to the product would need to be published.

The two clauses in the ECL that got us in trouble with folks were two requirements that the license placed on anyone who redistributed the code:

Notice of any changes or modifications to the Original Work, including the date the changes were made.

The name and trademarks of copyright holder(s) may NOT be used in advertising or publicity pertaining to the Original or Derivative Works without specific, written prior permission.

The Notice clause was really the biggest problem because it could be interpreted as making the software difficult to fork exactly as Martin Langhoff had pointed out back in 2005.

Since the GPL community was somewhat activist, they took steps to make a list of which of the other licenses were and were not compatible with the GPL and they published a list of what the creators of the GPL "considered" to be compatible with the GPL. The GPL list didn't list the Educational Community License as either "compatible" or "not compatible" since from their perspective, the Educational Community License was a small, boutique license. But they generally considered licenses with "notice of change" clauses as incompatible with the GPL[2].

I could see the point of being concerned about a "notice of change" clause in a license. In particular because the clause was vague. Lawyers have to consider worst-case scenarios where folks are quite upset at one another.

In the Mambo/Joomla situation where there was a dispute between the copyright holder for Mambo and the developers of Mambo. Mambo had an open source license (in this case GPL which does not have any notification of change clause), so when the developers decided to walk away and "fork" the code, they grabbed the latest copy of Mambo, trademarked the name Joomla, changed the name of the product from Mambo to Joomla and told the Mambo copyright holder to "piss off." And for a while the Mambo copyright holder was pretty pissed off.

Imagine for a moment if the copyright of Mambo was the Educational Community License instead of the GPL license and contained a "notification of modifications clause" that did not specify what was sufficient to count as notification. Most folks at that point generally assumed that if you made a web page that listed the modifications or if you published the new source code, that was sufficient. But what if the Mambo copyright holders decided after Joomla was created that this was not sufficient and informed Joomla that in order to meet the notification requirement, that Joomla must send Mambo a letter describing each modification in detail and send that letter to Mambo headquarters by registered mail and it needed to arrive within 10 days of when the modification was done. And if this was not done for ev-

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[2]As of 2006, the GPL list did consider some licenses with notice clauses as "compatible." Other licenses were deemed "not compatible" because of notice clauses. In my opinion the formulation of the list was somewhat less than legally precise.

ery modification, Mambo would find Joomla in violation of the license and have the Mambo lawyer send a cease-and-desist letter to Joomla shutting the Joomla project down forever.

Now this all sounds unreasonable and petty and no sane group would ever go to such lengths or expense to hassle another group in a way that they probably would not even ultimately win in court. Mambo would probably lose based on the argument that if the requirement for notification included registered mail, then they should have put it in the license.

But you need to understand that when an open source project is forcibly forked like the Mambo/Joomla split, it is worse than an extremely bitter divorce because there can easily be hundreds of people involved. These projects are like tight-knit extended families with deep emotional ties. And when these "families" are split in half because of a dispute over Intellectual Property, the loss of that closeness can be a painful loss for everyone.

Back at the meeting in Barcelona with David Barroso of Lleida and Malcolm Bain from the Campus Project, my mind was spinning at a fever pitch. I realized that this was a real significant problem and in particular, I saw a scenario where the Board could stop me from forking the Sakai code. So I was quite nervous. But I did not want anyone to know I was nervous, so I told Malcolm that I would look into it and get back to him as quickly as possible.

When we left for the one hour journey by car to Lleida, my mind was still crunching on the licensing problem. As soon as I checked into the hotel in Lleida, I grabbed a network connection and dumped all my thinking into a message to the Sakai board.

I came to Spain just to "say thanks" to the team who did the original Sakai internationalization back in 2004 at Universitad de Lleida. But things got pretty exciting quickly.

Back in June David Barroso of Lleida had mentioned something about the Catalan Government standardizing on an LMS. He asked if I could come over in June but since it overlapped the Vancouver meeting - I had to say "no". He told me that my coming was not crucial at that time and that he and others at Lleida would be able to represent Sakai at the meetings. I had not heard anything about the meeting since then.

As I came down to the hotel lobby this morning for coffee I was met by five people:

o The CIO of the Open University of Catalonia
o Two program directors from the Catalonian government
o David Barroso and Carles Mateu from Lleida that I was expecting to meet

and have Tapas with over the next few days

Here is the situation. The Catalan Government has funded have a 5 million Euro project to build a software distribution for teaching and learning for Catalonia that will also be used by the Catalan Universities. The Catalan Government has stated that *anything* produced with Government funds *must* be GPL. Period.

Sakai *cannot* be part of the distribution because the government's open source lawyers (more later) decided that the ECL was "not GPL friendly" because of the patch clause in the ECL.

Later in the day, we had another meeting at the government office with the program officers, Lleida folks, and the government attorney. He was a sharp guy and was very deeply into open source licensing - we had a great conversation

Brad - we might want to invite him to the IP summit at some point - perhaps to offer an international perspective. He is also on the review panel for the OSI group and well connected to OSWatch at Oxford, etc.

He reiterated the problem with the ECL.

All they need is for Sakai to have an OSI certified and GPL-friendly license to remove the roadblock. If Sakai were to use Apache 2 - they would be ecstatic and all of the problems would be resolved because it would allow them to brand their *distribution* as GPL and feature Sakai in the distribution licensed as Apache 2. They would carefully separate any contributions back to Sakai in the form of patches and let us have them. If the project ($5Mil) built new tools - they would have to be GPL - but we can tolerate that - it would just be two distributions if our users wanted these tools. Work done outside this grant (such as Lleida) is not subject to the rules and can be given to Sakai without using GPL.

So the short version here is that this is a very good time to switch to Apache 2 from ECL. We have been talking about this for over a year and so far we keep delaying the decision. But for me now is the time to "just do it".

If we do not do this, it is likely that the Catalan project and the Open University of Catalonia will go Moodle. Just telling the lawyer that the "We think the ECL *is* GPL friendly" or that "Sakai has a FAQ about the ECL" will hold exactly zero water in this situation.

Regardless of the outcome, places like Valencia and Lleida (already well into Sakai) will stay with Sakai - they like Sakai well enough to ignore the direction of the masses.

But to lose this opportunity to be the centerpiece of the Catalan project and project and to run at the Catalan Open University over a license issue would be a pretty bad mistake IMHO.

Of course my own agenda was to quickly get the license switched to something forkable in case I had to execute my "Plan F." I knew it would take some time for the license change to percolate through the source code, and I wanted to put the license quickly in place so that the upcoming Sakai 2.3 release (which was looking really nice) could have an Apache license. If I was going to fork the project, I wanted to fork the project based on a version that was nice and polished and had gone through our Quality Assurance and testing.

Within 15 minutes, Brad Wheeler replied with the following message:

Thank you for sharing this. Licensing is going through the "tunnel of chaos" chapter now, and we are likely to face many different "absolutes" from here, there, and yonder in the coming months over licensing. Thus, the timing of the Open Source Licensing Summit is right. I am hopeful that Mellon will provide some support funding very soon. We have tentative dates, and invite list, and an agenda...more to follow. And yes, we would be delighted to include Malcolm in the conversation.

My next message will be a forward from the Open Source Initiative's "License Proliferation Committee" that is not yet public. I've had no contact with this work, but I was **delighted** to see they classified ECL as a "Special Purpose License" suitable for educational establishments like the NASA license is suitable for government use.

That has always been my point....it is about higher ed being able to control our licensing destiny as our industry is not like many other industries. A few years ago, almost no one had patent language in their licenses, and now that is a concern for revision. What comes next?

What if higher ed NEEDS a provision that Apache does not find palatable in the future?

I'm 200% behind revising any language in ECL that makes it a stronger open-open, GPL-friendly, and clear license for higher ed. That is an explicit work objective of the Summit for completion by the end of this year.

The other work objectives are a comprehensive review of the CLA and a set of educational materials as part of "An Licensing and Policy Framework for Open Source Collaboration in Higher Education" – though I see no strict issues re HE versus other parts of education.

Thus, Chuck, you said there are specific working problems that in their view make ECL unfriendly to GPL. I would like to fix that rather than switch to Apache as that could just be changing our current problem for a different one down the road.

Can you enlist their help for the revision and participation in the Summit? More to follow.

Since there was a whole series of Sakai-like projects (Kuali, OpenCast, Fluid, etc.) that were in the pipeline, Brad was seeking funding to support a two-day wide-ranging summit to figure out these licensing strategies once and for all and in a way that would work across all schools and all projects. We hoped the summit would be sometime in fall 2006 once Brad had secured the funding.

Brad was right in that we were between a rock and a hard place at that moment. We knew what was wrong with the Educational Community License but if we revised even one word of the license, it would take months (or perhaps never) to get the modified license approved as truly "open source." And once we made that change, we might find another problem and have to go through the process all over again (and over and over and over).

After I had sent all of the emails from my hotel room, David was going to take me on a tour of the Lleida sights and then we would meet with Carles later in the afternoon for a few beers to watch the sun set. David's wife Yolanda pulled up in the car to pick us up for the tour. David's wife was wheelchair-bound with no use of her legs and she was going to drive us around Lleida on the tour.

Given that Brent was also in a wheelchair because of reduced ability in his legs, I was curious as to how this was all going to work out. From the first moment I met Yolanda, it was clear that she didn't need any help and was fully independent. David is a big guy and could have helped with a lot of things like getting the wheelchair into and out of the car, but it was clear that David and I were just to be passengers as we drove around Lleida.

The car had a hand-actuated accelerator mounted on the steering wheel that Yolanda operated with her left wrist as she held the steering wheel with her left hand. She had a hand-operated brake mounted below the steering wheel that she operated with her right hand and she also operated the transmission with her right hand. Lleida is a medieval city with lots of hills and

twisty narrow roads. It was pretty clear that I had nothing to dread. Yolanda deftly operated the controls as we zipped around Lleida. When we would come to a stop at one of the sights on the tour, Yolanda would whip out her wheelchair from behind the driver's seat, hop into the wheelchair using her arms, close the door and be ready to go well before I had time to climb out of the back of the car.

It was cool to watch, but in particular as the parent of a physically handicapped child who would someday need to learn to drive, watching Yolanda drive with her handicap made it clear to me that I didn't have to worry too much about Brent learning to drive. I would think back to my driving tour with Yolanda many years later as we were working through the seemingly endless issues getting Brent a driver's license.

As we finished the city tour, Carles rejoined us at a cafe outside the Cathedral at the top of the hill in the center of Lleida and we watched the sun set and had a few more San Miguels. This was followed by a dinner of baked land snails — a Lleida specialty.

Every May, Lleida shuts down for a city-wide three-day snail festival. There is music, much drinking, and consumption of massive quantities of snails. It helps if you know a local so you can join their group's area for eating and drinking.

All my prior snail-eating experience was eating butter drenched snails as an Escargot appetizer at French restaurants. But in Lleida, snails are the main attraction and main course. The snails are baked over charcoal. They put about 120 snails in a square metal pan, still alive and in their shells, with their "feet" facing upwards. They then sprinkle salt and spices on the snails and bake them. You eat them right out of the pan. You pick up each shell and use a needle-like instrument to pluck out the snail flesh and eat it.

They were tasty, spicy, salty, and delicious. We had plenty of San Miguel beer (locally brewed in Lleida) to wash down the snails. I thanked them many times and many ways and they kept saying that they were honored just to find a way to help and excited to see their work being used worldwide. Sitting there in the tiny restaurant in Lleida with my new friends, sharing stories, snails and beers with my friends, it felt like I was the luckiest person in the world to have such a wonderful job.

The next morning, I got up and went to the Lleida campus to meet the rest of the Lleida team and talk in more depth about Sakai, Lleida, and the Campus Project.

When I walked into Carles Matheu's office, I was surprised and pleased to see that he had two giant computer monitors on his desk and they were filled with code. It was Sakai code all over his screen. Carles was both the Chief Information Officer of Lleida and an active Sakai developer.

I seldom got to meet a CIO who was actively slinging code in as complex a system as Sakai. As I talked to Carles and with the rest of the Lleida

team, it was clear that they were not just using Sakai as a Learning Management System. They liked it so well that they had decided that Sakai would be their primary solution for enterprise applications on their campus.

They had built Sakai tools to handle student registration, their library system, and a myriad of other general university services. They had even built an application development framework called "Virtual Secretary" (similar to Rails or Django) in Sakai that allowed them to build new enterprise applications quickly.

The reason that Lleida was able to do so much so quickly in Sakai back in early 2005 was that their entire IT organization, from the CIO down to every developer were working on Sakai. It was pretty much their entire technology solution for campus applications. It was a beautiful example of how a smaller campus with a clever and coordinated IT operation could achieve amazing efficiency and flexibility with open source.

We talked about the Campus Project and how Lleida wanted to build a whole new kind of tool that would work equivalently in Sakai and Moodle and how strongly they felt that the Campus Project needed to include both Moodle and Sakai so that they could create new groundbreaking tools that could plug into any learning management system rather than just building more Moodle modules. With all my experience in IMS standards and the IMS Tools Interoperability specification and demonstrators, I agreed that any future-looking effort needed to think across multiple Learning Management Systems.

I knew that building tools that worked across Learning Management Systems was a daunting technical design and programming task. It was far more difficult that drawing a few boxes and lines on a whiteboard. But since the Campus Project had five million Euros to spend in a coordinated fashion, it felt to me like the effort had a good chance of success if we could get the Sakai licensing worked out in a timely manner.

Earlier in the year, the Mellon Foundation had developed an award program called the "Mellon Award for Technology Collaboration" (MATC) to recognize participants in open source projects that had made a great contribution to a project without ever receiving any Mellon funding. I nominated the University of Lleida for the award and they were one of the winners of that award in 2006.

After the meetings, they had arranged for a car to take me back to Barcelona. I had a few hours to see a bit of the Gaudi architecture before I hopped in a cab back to the airport. Two days in Barcelona and Lleida was were not enough time for me. Thankfully the friendships I made in Catalonia would continue to grow and I would be back to Barcelona, Valencia and Lleida many more times.

Once I was back in the mindset of going back to the states, and starting again on Sakai my thoughts once again turned back to Sakai's licensing

problems. I didn't want to wait for the outcome of Brad's Intellectual Property Summit because I felt that our license was broken and I wanted to fix it as quickly as possible, even if we had to fix it twice.

My proposal was that the Board would immediately switch the license in the source code to the Apache 2 license for the Sakai 2.3 release and then have the IP summit. If the summit came up with a revised Educational Community License, we would again switch to the new license. The Board could switch licenses with a simple majority vote.

After about a week of E-Mail discussion with various Board members, I had an informal count of an 8-2 majority of the board members willing to switch to Apache 2 as the interim license and then switching again to whatever license the IP summit would select or develop in the fall. But the vote was never taken because the board was striving for unanimous consensus.

It was frustrating to me to have a simple, obvious, safe, solution to the Educational Community License problem in hand with a majority of the board ready to adopt it and then being told to wait for six months.

I was so frustrated with the board on the licensing issue that I spent one of my hour-long morning commutes thinking of good names to call Sakai after I was going to fork the project Joomla-style. I came up with a number of new names and registered the domains opencollab.com, opencollab.org, opencollab.net, freecollab.com, freecollab.org, and freecollab.net on August 8, 2006. I had no immediate plans for these domain names, I just wanted to have them in case something came up.

But there was soon to be an Intellectual Property problem that would make the issues around the Educational Community License almost insignificant by comparison.

Chapter 19

U.S. Patent No. 6,988,138

When you work for a non-profit corporation that is built around an open source community building a learning management system, you know it is a bad day when you pour yourself a cup of coffee and read your E-Mail to find out that the market leader with a cantankerous reputation announces that they have been awarded a patent on the core function of a learning management system and have immediately filed a lawsuit against one of Desire2Learn for infringing on the patent.

It was doubly sad that the entire marketplace had shown unprecedented cooperation six weeks earlier in the IMS Common Cartridge demonstration at the Alt-I-Lab meeting. If you look at the video I shot at the Alt-I-Lab meeting, there is a certain innocence and happiness that comes through. Engineers from many different companies (even fierce competitors) were laughing, joking and buying each other beers.

But now all that innocence was gone. The U.S. Patent Office had awarded Blackboard Patent No. 6,988,138 — "Internet-based education support system and methods." The following is the abstract from the patent:

A system and methods for implementing education online by providing institutions with the means for allowing the creation of courses to be taken by students online, the courses including assignments, announcements, course materials, chat and whiteboard facilities, and the like, all of which are available to the students over a network such as the Internet. Various levels of functionality are provided through a three-tiered licensing program that suits the needs of the institution offering the program. In addition, an open platform system is provided such that anyone with access to the Internet can create, manage, and offer a course to anyone else with access to the Internet without the need for an affiliation with an institution, thus enabling the virtual classroom to extend worldwide.

In their infinite wisdom, the U.S. Patent Office had given Blackboard a

patent on the very concept of a learning management system. It was as if the U.S. Patent Office had issued Blackboard a patent on the very air we were breathing.

I have never met anyone in the software development industry that likes software patents. Since computer science is such a young field and continuously innovating and most of the early innovators are academics focused on the discovery of new ideas, it was seldom that the person who first came up with an idea actually patented that same idea. New ideas and techniques became obvious and widespread so quickly that no one really felt the need to patent those ideas. Academics would figure something out; write a paper, and then move on to their next idea. Diving into your next idea was always so much more fun than spending two years talking to lawyers and filling out patent paperwork on your last idea. Academics were not compensated to write patents that had a small chance of generating revenue. There was almost no risk to an academic that they would get sued years later by someone who might file a patent on their idea because they would likely be working on something different by the time the patent worked its way through the system.

But companies (including Blackboard) could not take the same risk. They had to patent even the seemingly obvious ideas, even if they were relative widely known. If they didn't patent the obvious idea, their competitor might and then years later they would get sued. Companies made sure that their engineers and researchers were compensated when they filed and received patents, often providing support staff to handle the dull paperwork needed to get a patent.

Filing patents on a company's core technologies and ideas was just standard operating procedure and most companies like Sun, IBM, Microsoft, and Oracle amassed gigantic patent portfolios. Very few of these patents ever generate any real licensing revenue. Since the Patent Office was pretty clueless about computer technology in general and patents were likely to be about relatively advanced ideas the Patent Office tended not to reject patents and figured that if a patent was awarded as a mistake, that it would all work out when the combatants would go into court.

So while software professionals universally hated software patents, they created quite a revenue stream for attorneys.

Companies would amass large portfolios of "defensive patents." To illustrate how defensive patents work, you need to remember that the patent office awarded lots of overlapping patents. Lets say that Microsoft got a patent on something and decided to sue IBM to try to collect license revenue. The IBM lawyers would look through the IBM patents and find ten or so related patents that IBM had received in the same area that Microsoft might be infringing on. Then they would call a meeting and say, "we have these 10 patents that you are infringing on and we are preparing to sue you

unless you drop your suit against us." Usually they quickly reached some arrangement that did not require a protracted court battle.

The scenario would be even worse if Microsoft decided to sue IBM, Sun, and Oracle at the same time as all three companies would get together pool their patents together for just long enough to pound the Microsoft patent lawyers into submission.

The result of this was an uneasy peace in regards to software patents among the large well-established software vendors. But when one of the companies was much smaller than the other, this "mutually assured destruction" did not work so well. And it did not matter which of the two companies was smaller.

If the company holding the patent and filing suit was really tiny and not actually operating in the marketplace, they really had nothing to lose. So they could drag the larger company into court and hold on for dear life until the company either lost the suit or settled out of court. We called these companies "Patent Trolls" because they sit under a bridge until some company walked across their bridge and then they would pop out and extract a "patent toll."

When the company doing the suing was much larger than the organization being sued and the organization being sued had no patents to use as a counter-suit threat, the game was pretty much over. Fighting patents was an expensive proposition and the smaller company would bleed money until it died. Once you are dead, it hardly mattered that you had the high moral ground or not. You were still dead.

This was the problem we had with Sakai. The Sakai Foundation was tiny and had no defensive patents. Thus, Blackboard possessed the instant death ray for us. From that moment forward, Blackboard could shut us down pretty much with a single cease-and-desist letter from their attorney. As the Executive Director, they would send that letter to me and I would be the one to open it.

My first reaction to the patent news was actually pretty Zen. I quickly realized that we had absolutely no chance if Blackboard attacked us. But until they attacked us, I thought that I might as well not lay awake nights waiting for the letter to come. It was kind of the natural developer reaction to anything to do with patents. If you ignore something, maybe it will go away.

But the Sakai Foundation board was not as Zen about the Blackboard patent. Joseph Hardin had spent some time acting as a consultant in a number of patent lawsuits regarding early web innovations. Since Joseph was at NCSA at the time when the web really took off outside of academic circles and he was a founding member of the World-Wide-Web Consortium (W3C), he was a walking encyclopedia of the history of web innovations. Joseph disliked patents because he saw them as constraining free innova-

tion. Particularly when a patent was filed well after the innovation had become common and widespread.

Brad Wheeler was beginning to develop the Kuali Foundation series of projects that would develop open source products to compete directly with costly products like PeopleSoft from Oracle. Brad knew that Learning Management Systems were small potatoes compared to Human Resources, Payroll, General Ledger, and Student Information Systems. Once Kuali got started and started to erode Oracle's market share, the gloves would come off. It was easy to see that the Blackboard patent suit was just a skirmish in a potential major war as Higher Education started building its own software rather than buying software from vendors. Sakai proved that such a model could actually build and deliver open source end-user application software that could replace commercial products. It might take longer to build a general ledger, but once it was done, the money saved by using an open source general ledger would be significant.

Brad did not want Sakai to fold under the pressure from Blackboard. Instead, he wanted Sakai to go on the offensive and make an example of Blackboard to send a strong message that commercial companies should not mess with academic open source projects like Sakai and Kuali.

Chris Coppola of rSmart also was concerned with the potential impact of the patent on the future of his company. Their business model was to take open source software like Sakai and Kuali and "productize" it so schools could use the software without requiring a large IT staff. Customers could treat the rSmart product almost like a commercial product except that it was lower cost and backed by an open source community. So Chris Coppola and rSmart were also highly motivated to go on the offensive in regards to Blackboard to make Blackboard look like even more like the "bad guy."

It turns out that some open source projects and the companies involved in those projects had realized some time earlier that open source projects did not have the same protection against patent suits that large companies had. In February of 2005, a number of companies including IBM, funded the creation of the Software Freedom Law Center (SFLC) with the intention of providing free legal counsel to open source projects if they were subject to a patent lawsuit. Companies including IBM and SUN also made a number of their patents available to SFLC and open source projects to be used to defend against patent lawsuits. The SFLC had some very high-powered lawyers. The most well-known of these was Eben Moglen from the Columbia University Law School. Eben was a fighter. He was not afraid of anyone or any company.

So while I really had no clue as to what to do about the Blackboard patent, Joseph, Brad, and Chris knew exactly what to do. They contacted the Software Freedom Law Center and got Eben Moglen involved. They also made contact with Martin Dougiamas of Moodle and Greg Gay of ATutor

and they agreed to allow Eben Moglen and the SFLC to represent them as well.

Creating the coalition of open source projects was essential because it emphasized that all open source projects were all equally at risk and galvanized the customers and stakeholders of all the open source projects against Blackboard over the next few months.

Many in the higher education community came to the defense of Desire2Learn. The most important task in any patent lawsuit was to find as much "prior art" as possible to prove that the patent was not novel because the ideas claimed in the patent were already public knowledge at the time the patent was developed. If enough convincing prior art could be assembled, it could be used to overturn the patent.

Since the concept of a learning management system was well understood by the year 2000, there was a lot of potential prior art. The community built web sites to collect the entire body of prior art and place it on a timeline. Hundreds of people combed their archives and hard drives to come up with evidence to kill the patent and provide it to the collective defense.

I did my part, looking for any prior art I could find and contributed it to the cause, but with Joseph, Brad, and Chris on the job, I trusted them to pursue it and focused on the Sakai software and the Sakai community for a while.

Chapter 20

The Fall

During the fall of 2006, the Board was focused on the Blackboard patent and I was focused on moving Sakai forward both technically and as a community.

In the last week of August, I visited the National Science Foundation as part of the wrap up of the NEESGrid project. The National Science Foundation was accepting the final project report and making some press releases. We were bringing the miniature version of the MOST[1] experiment from the University of Illinois. The Mini-MOST would stress and twist a miniature reinforced concrete column using hydraulic actuators until cracks would form, and the column would eventually break into pieces. It was visually entertaining and did a good job showing the kinds of experiments that the NEES funding made possible.

It was a great time to catch up with Bill Spencer and the rest of the NEESGrid team and celebrate the results of the project.

When I returned, I got word that Georgia Tech was curious about Sakai. I generally did not go on "cold sales calls", but since I knew that Georgia Tech had a great computer science department and was generally a tech-savvy organization, I figured that they would be a great addition to the Sakai community development resources so I quickly set up a trip to Atlanta with some talks and meetings and to answer any questions they might have about Sakai.

They were happy to see me as they were talking about really ramping up their on-campus resources dedicated to technology, teaching and learning. They were excited about Sakai and wanted to be part of helping build Sakai to its full potential. This was wonderful news, If Georgia Tech selected Sakai as their next Learning Management System, we could count on solid technical contributions from them going forward. They still needed to do an evaluation to select an LMS and I promised to answer any questions they

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[1]MOST stands for Multi-Site Online Simulation Test.

might have in that process.

I liked the fact that Sakai was becoming almost the automatic choice of LMS for the top-tier research schools around the world. It is a very powerful brand position to have. We were starting to reach a "tipping point" where top research schools were starting to feel that they were on the outside looking in if they did not have Sakai as their LMS.

The first week of September, I went to Lubeck, Germany for the European Sakai members meeting. This meeting reflected the increasing interest in Sakai in various European universities. I gave a talk at the meeting titled, "The Story of Sakai" where I looked back at the people, organizations, and timeline of the Sakai project. I was trying to move the image of Sakai from struggling, emergent open source entry in the marketplace to an image of Sakai as a well-established safe and solid choice. Now that we had a bit of history, I wanted to emphasize out how far we had come in such a short time.

After the Lubeck meeting, I took a short trip up to Copenhagen, Denmark and visited Roskilde University to produce a video about their use of Sakai. I was consciously changing the topics of my video reports from a focus on technical contributors to Sakai to end-users and the applications of Sakai in diverse teaching and learning environments.

When I got back from Europe, it was time for the Integration Week meeting to prepare the Sakai 2.3 release in Ann Arbor. I had kept a pretty tight rein on extending Sakai throughout most of 2006 because I really wanted to nail down the core of Sakai before we started working on end-user features. There were a few in the community who chafed at my conservative approach to the product during 2006, but I was trying to get the product stability and reliability high enough to catch up with the marketing hype that we seemed to keep generating.

The IBM corporation had arranged a meeting at North Carolina State University to explore the use of open source software in K12 schools September 20-21. Open source like Linux and Sakai were making good inroads in higher education, but K12 adoption was moving slowly. The idea of the meeting was to bring bright minds together to think through how open source communities might break through this logjam and begin to make an impact in K12.

It was a wonderful meeting. I was on a panel with Brian Behlendorf, the creator of the Apache Foundation and I interviewed him for one of my video reports. He described how Apache was formed by a group of web masters who were using the HTTP web server from NCSA (developed by programmers working for Joseph Hardin at NCSA in 1993-94) and when those programmers left and went to form Netscape, the folks who had been using and fixing (patching) the NCSA web server decided to get together and share their patches. Because the first purpose of the organization was to

collect patches for the NCSA web server, they called the resulting product jokingly called, "A Patchy Web Server" that later was shortened to be the "Apache Web Server."

In a sense, both the Apache Foundation and Sakai Foundation could both be traced back to Joseph Hardin who played a pivotal role in their creation. For me, it was further evidence of the amazing and unsung impact Joseph Hardin has had on the web, open source, and Internet that we now enjoy today.

Next I went to Oxford England to participate in a meeting between the Bodington and Sakai projects. Bodington was another open source learning management system that was actually older than Sakai. Bodington had been started by Dr. Andrew (Aggie) Booth and John Maber of Leeds University. They built a small collaboration of schools using Bodington including Oxford and the University of the Highlands and Islands in Scotland. Bodington was a nice product and the collaboration was working quite well, but with Sakai's dominant market position in top research schools around the world, it was pretty clear that Bodington really did not have much of a future competing with Sakai for adoption and developer talent.

After a few initial discussions, it seemed that a good approach would be for the Bodington schools to transition to the Sakai instead of continuing to "go it alone" with only three schools. The meeting in Oxford was to make sure that the Bodington schools and developers felt comfortable with the Sakai community. I wanted to make it clear that the Bodington schools should come into Sakai and help us improve Sakai in whatever way they felt was necessary. I did not want them to feel as if they were guests in Sakai. I wanted them to feel like they were part of the core of Sakai from the moment they joined.

We had a tremendous advantage in that Cambridge had become one of the leading worldwide contributors to Sakai, so the Bodington schools could work with a fellow UK school as their mentor as they joined Sakai.

The Oxford meeting went well and we agreed in principle to slowly fold the communities together going forward. I made a video introducing John Maber as the lead architect for Bodington to the Sakai community in order to build relationships between Sakai and the new Bodington developers as quickly as possible.

It took some time for the communities to blend together. Oxford was the first Bodington school to make a real commitment to Sakai, and it did not take long for Oxford to be a strong force in Sakai in its own right. Oxford, Cambridge, and Michigan worked closely together (and still do) to take the lead in the all-important portal code for Sakai that provides the entire site and tool navigation. Oxford was able to introduce features into the Sakai portal over the next few Sakai releases that allowed them to replicate many of the needed navigation functions from Bodington in the Sakai portal.

University of Leeds and the University of the Highlands and Islands did not fare so well. The University of Leeds was already moving away from Bodington and the Leeds leadership decided to get out of the open source business and install Blackboard, much to the chagrin of Aggie Booth, the original creator of Bodington.

The University of the Highlands and Islands spent several years trying to come up with a unified LMS strategy across all the UHI campuses. I worked with Sean Mehan and Alun Hughes to try to form that unified strategy. Our hope was that Sakai could be selected as the UHI-wide LMS system. But after several years, it just become too politically complex so UHI stopped trying to install a system-wide LMS and let the individual campuses run whatever LMS they liked.

I suggested that we invite Aggie Booth as the keynote speaker for the December 2006 Sakai meeting in Atlanta, Georgia since he had strong user-centered perspective in learning management systems and I thought we could learn a lot from his Bodington experience.

The next major event was the Educause meeting in Dallas, Texas October 9-12, 2006. Educause was always a great opportunity to see where we fit in the marketplace. Since most of the CIOs and all the vendors were at Educause, it was easy to talk to virtually any of the movers and shakers at in the industry in one location. Like the previous year, I was invited to speak about Sakai in the Apple booth.

In a sense, there was less Sakai buzz in this year (2006) than there was in 2005 when Educause was fresh on the heels of the announcement of Blackboard acquisition of WebCT.

At the 2006 Educause it seemed like Sakai was just another product in the marketplace. Sakai was no longer exotic, scary, or emergent. Sakai had arrived. It made me both happy and sad to have arrived as a solid market player. In one sense, it meant all the work of the past three years had been successful. In another sense, it meant Sakai was becoming boring and normal.

But just like the previous year's Educause conference, the controversy around Blackboard's behavior was the center of attention. This year all the fuss was around the Blackboard patent that had been announced almost three months earlier. By the time the Educause conference rolled around, people had been talking heatedly about the patent for quite some time. The general conclusion was that Blackboard was being evil and not at all playing by the rules.

Blackboard had vastly underestimated the fury that the patent would raise in both their current and prospective customers. It is a pretty rare occurrence for an entire customer base to get riled up over a software patent lawsuit. Usually these lawsuits were settled in some mahogany-lined conference room filled with lawyers. But this patent and the lawsuit between

Blackboard and Desire2Learn was being fought on a public stage. The academic customers felt that Blackboard did not deserve the patent because a role-based LMS was such an obvious idea. It was almost like Blackboard was a student caught cheating on a final examination.

There were presentations where otherwise quiet and reserved CIOs stood up and started shouting at Blackboard in the middle of the presentation. Blackboard was starting to have a bit of a black eye from all of the public relations beating it was receiving at the hands of its current and prospective customers because of the patent.

The Thursday night Educause party ended up going pretty late. The next morning, I got up early and went down to the conference center. I had forgotten that the trade show closes on Thursday night and gets torn down on Friday morning. Since I only had a trade show badge (i.e. not a full conference badge), I could not go to any of the Friday morning sessions.

Since I was pretty tired and had a bit of a headache from the night before, I found a quiet area in the hall behind a half-wall. Using my backpack as a pillow, I took a quick nap, hoping I would feel a little better after a bit of sleep.

I had the unfortunate luck that shortly after I fell fast asleep in the hallway, the Friday morning sessions finished and everyone streamed out into the hallway or the morning coffee break including Lance Speelmon and Rob Lowden of Indiana University. They saw me sleeping in the hallway lying on the floor with my backpack as a pillow. They found some cardboard and made a sign that said, "Will write code for food." They then took turns posing with big grins on their faces, as they held the sign in front of my chest while I slept.

I must have been pretty tired because I never woke up while they were posing and taking the pictures. They never told me about the pictures until they got back to Indiana and put them up on Facebook and we all had great laugh over it.

When I got back from Educause, I had a double-booked schedule conflict. I had been invited to give a keynote speech about Sakai to a retreat of CIOs of the California State University System on October 18 and the Intellectual Property summit where folks from all over open source would meet and work through the problems with the Educational Community License was being held in Indianapolis on October 18.

I was torn because the Cal State CIO retreat was an opportunity to promote Sakai to all the Cal State campuses at the same time and the IP summit would hopefully give Sakai a real, respectable open source license. Even after the Sakai Board had refused to allow me to change the Sakai 2.3 license to be Apache 2.0, I had continued to talk with various Board members about the issues around licensing in preparation for the summit.

In one session, I spent an hour on the phone with Brad vigorously de-

bating the license issue and he suggested that I write down my position and send it around. I spent the weekend really digging into the details of my position so I could produce an air-tight case.

After I had a hour-long conversation about the evils of the ECL with Brad - he challenged me to write up my position and hit him with my best shot.

In writing it up I started doing some research to prove some points that I had previously thought were obvious. As I continued to write all weekend - my opinion began to change because the data and reality was pointing me in a different direction. Perhaps someday I will reveal version 1.0 of this document :)

Here is the short and surprising summary.

ECL 1.0 still sucks - because it is a copyleft license - I think I know how the clause got in

The claim that ECL 1.0 is not GPL-friendly is badly flawed - I think that ECL 1.0 is provably GPL-friendly

Apache 2 is *not* GPL friendly - we kind of knew this - but it turns out to be important

When you look at the intersection of the GNU-declared GPL-compatible licenses and the OSI-Certified licenses an amazing trend emerges - there is no suitable license for an organization which does not want copyleft and wants to be GPL-Compatible. I allude to the gamesmanship that is going on the part of GNU and suggest that there are fundamental problems keeping Apache and GPL from fitting together well.

My ultimate recommendation is that we produce a ECL 1.1 removing the copyleft clause - submit it to GNU first and then submit it to OSI for approval. My comments below can be recast to make a case that OSI needs to certify ECL 1.1. If approved we switch to ECL 1.1.

If ECL 1.1 fails either test - we pretty much should go to Modified BSD - not Apache 2. If Apache and GPL ever work things out - we could then go to Apache.

   This was just a moment in the discussion as many others including Chris Coppola, Mara Hancock, John Norman, and Joseph Hardin were all deeply involved in thinking the licensing through. In a few short months we had be-

come more knowledgeable on the nuances and complexity of Open Source licensing.

Following my message, there was a discussion about the definition of "GPL-friendly" around the board that Chris Coppola summarized nicely in this message:

Being GPL friendly isn't all that clear. There are as many attorneys who specialize on this stuff that will say Apache 2 is GPL friendly as there are that will say it's unfriendly.

The choice to stick with ECL or switch to a popular license is one choice and is based on factors like those Brad posed in the Summit site.

If we believe that we are best served (all things considered) using a popular license that is being maintained and kept current with the ideals it holds, then we should look at which license serves us best. This decision should be made in concert with an attorney who is very knowledgeable of the issues and can advise us on the complexities.

My belief remains that we should move to a popular license, and that the best choice is Apache 2. I've described in more detail why in the Summit site.

By the time the conversation was over, while it did not feel like we had an absolute conclusion in hand, it was clear that we all would recognize it when we saw the right answer.

To me it was a great example of collective wisdom because there was vigorous debate with strong contradictory positions being taken and explained to the group and I was allowed to get a little passionate at times. We all kept listening to the substance of each other's positions and our collective understanding improved greatly.

I told Brad that I was really pleased with our collective understanding going into the summit and we agreed that it might be best if I did not attend the summit because I was so passionate about the issue. There would be a lot of attorneys at the summit and Brad felt that they could work through the issues. I might not be patient enough to let those detailed discussions happen. I agreed that I was not needed at the summit so I could go and speak at the California State University CIO retreat in Monterey, CA.

The trip to California was the first leg of a trip that would include New Zealand as well as Australia so it would also be an extended period where I would be away from politics and working with the members of our community.

I arrived in Monterey a day early so I could catch a round of golf with

a few of the retreat attendees. Now I am not much of a golfer but I do enjoy it. I hadn't played around of golf in over five years, but since I play in a hockey league every week, I have decent hand-eye coordination hitting small objects with long sticks. In preparation for the round of golf, I had hit a few buckets of balls at a driving range before the trip.

We met at the Pacific Grove Municipal course. The other players were skilled golfers so in order to make it interesting, I told them that I needed a handicap factor of two. The idea would be if they took four shots on the hole and I took seven shots on the hole, I would win the hole. And if they took four shots on the hole and I took nine shots on the hole they would win.

My logic was to avoid trying to hit the ball as hard as I could. If I tried to overpower the ball on each stroke in order to maximize distance, I would hook and slice most of my shots and waste a lot of time searching for lost balls, embarrassing my golfing buddies, and possibly endangering the other golfers on the course. My idea was to just hit the ball smoothly and accurately and as straight as possible. Then we would ride the cart down the fairway and hit the ball again. With this strategy, I did hit somewhat between half and two-thirds the distance of the other players. And given that they were better at putting than me, my rule of double strokes worked out pretty well and kept each hole interesting and competitive even with the significant mis-match in golfing talent between me and the other golfers.

At the end, I actually won the round by a small margin when their score was doubled. It had been a really fun day.

The next day, I gave my talk at the Cal State CIO retreat and had a number of great conversations with the CIOs. In a sense they were not really all that interested in Sakai because several of the more technical Cal State campuses had already gone to Moodle and were seen as leaders in the Moodle community.

Several of the University of California campuses were playing a significant role in Sakai including UC Berkeley, UC Davis, UC Santa Cruz, and UC Merced. Also, the Etudes group at the Foothill College campus was quite successful with Sakai in California Community Colleges.

So it made sense for the Cal State system to make a choice of Moodle to be distinct from the UC System and the California Community Colleges.

But at the same time they were curious about Sakai and I was always looking for universities that might serve as connection points between the Sakai community and the Moodle community so the trip was still worth my while.

Back in Indianapolis, Brad's Intellectual Property summit was going very well. It was a two day meeting, and Brad had been able to assemble the right groups of Open Source experts and university attorneys. I was getting e-Mail and text updates as the IP Summit progressed.

When the IP Summit finished, it had come to a good but somewhat surprising solution. As the discussion progressed, what emerged were some real ways that universities were truly different kinds of organizations from large companies particularly when it came to patents. While a company like Sun or Microsoft has a patent portfolio that consists almost exclusively of technology related patents, a university will have patents across a wide range of disciplines from pharmaceuticals to agriculture. The blanket patent clauses that companies were willing to sign in the Apache contributor agreements and license did not sit well with lawyers from schools like Berkeley and MIT that had relatively large and diverse patent portfolios.

The idea was to take a close look at the Apache 2 license and try to find the smallest alteration to the license that would make it acceptable to those university attorneys. In the end, they found they could fix the license by removing something like 17 words. This felt really good to me as a nice middle ground.

The proposal was to call the slightly-altered Apache 2 license the Educational Community License version 2.0. We would submit the modified license to the Open Source Initiative for approval along with the solid rationale for the license. If OSI certified the new ECL 2.0, the Sakai board would change the Sakai license to ECL 2.0. If OSI refused to certify the ECL 2.0 license, we agreed that we would change Sakai's license to Apache 2. I absolutely loved this outcome because the logic and rationale was so solid. And one way or another, in a few months the Sakai code base would be truly "forkable."

Brad had invited Malcolm Bain of the Campus Project to the Summit so Malcolm could work with all of the other lawyers thinking through the proper license. I hoped that once he was part of the discussion, that he would approve the use of Sakai in the Catalan Government's Campus project. I don't know the exact detail as to how it happened, but ultimately Sakai was allowed to participate in the Campus Project. It was great. I would have a whole new set of friends that I could work with and visit and in Barcelona.

I had an open day in California before I left for New Zealand so I had arranged to interview Dr. Paul Kunz at the Stanford Linear Accelerator (SLAC). This interview was not particularly Sakai-related, it was more my continuing fascination with interviewing people who had made contributions to the Internet and World-Wide-Web. It was like a continuation of my television show, even though I no longer had a television show.

Paul Kunz installed the first World-Wide-Web server in America on December 12, 1991. Up to that point all of the 20 or so web servers were installed at CERN and in Europe. When Tim Berners-Lee and Robert Cailliau invented the web at CERN, they were solving a problem of distributed hyperlinked programmer documentation for the software that was being built to analyze the data gathered by the high-energy physics experiments being

run at CERN. The Web was originally intended to be a distributed, editable source of online documentation for programmers.

In the fall of 1990, Tim Berners-Lee showed Paul how the web could be used to search the online documentation and Paul decided to try to build a web interface to search the online database of 300,000 Physics papers hosted at SLAC. So Paul came back to SLAC and used the CERN web server on the IBM mainframe to connect the SLAC database of papers to the web. You might call it the "first search engine."

The SLAC papers were the first example of connecting an existing well-known (at least within high-energy physics) source of information to the web. When people saw the SLAC database easily accessible, it started people down the path where they saw the value of the web outside of the documentation editing realm.

I have always been fascinated by moments where a technology reaches a turning point. Far too often, we think of technology as this inexorable march forwards. In my experience luck and serendipity play a much more significant role in major breakthroughs than anyone would like to admit. For me the chance meeting and Tim Berners-Lee demonstrating the web to Paul Kunz in his office was just that type of serendipity that ultimately may have led to the creation of an entire industry. Sometimes it is the small things that make the real difference.

My trip to New Zealand was paid for by the University of Auckland. I had met Scott Diener on a trip to Australia and at the Sakai meeting in Vancouver. Scott was a little different than most of the members of the Sakai Community in that he liked Microsoft products. His team at the University of Auckland had developed an excellent Learning Management System called Cecil `www.cecil.edu` based on Microsoft technologies. They were quite happy with Cecil since they had just finished it and rolled it out campus-wide. So Scott was not interested in switching to Sakai, but he saw a great future in worldwide cross-institutional collaboration on open source projects. He figured that in a few years, they might need to retire Cecil so he was interested in Sakai as a potential future direction.

The University of Auckland was also interested in learning more about the open source trends so they had funded a speaker series where they would bring a speaker in for a week to give a talk and also participate in a series of smaller meetings with various campus stakeholder groups to discuss the topic in the context of those groups.

Scott invited me to the University of Auckland as part of that speaker series. All expenses would be paid and I would fly to New Zealand in Business Class. After all of this travel, it would be my first international flight in Business Class. I never used my frequent flier miles for upgrades because I needed to save the miles to take my family on cool trips. As a result, I spent every international flight in coach class. But this time I would

fly business class and be able to lie down to sleep for the first time ever.

My week at the University of Auckland was excellent. I gave an introductory talk and then met with many groups including the enterprise architecture team, the library team, the computer science department, and the Cecil development team. I always learned so much from the various interactions and perspectives. It was great fun presenting ideas and getting feedback from so many different people.

One thing I particularly loved at the University of Auckland was that they had a wonderful "computer museum" sitting in the hallways of the computer science building. It was as if, every time they were throwing away some technology over the past 30 years, they would throw all of the items away except for one item and then leave that item somewhere in the hallway. There was an old IBM-026 keypunch machine that I had used to type FORTRAN programs back in 1976 when I was first learning to program. None of the items were behind glass so you could touch them and play with them if you liked. It was like a chaotic impromptu hands-on computer museum.

Once the work was done at the University of Auckland, the plan was to spend the weekend at Scott's home on Waiheke Island. It was about a 20-mile ferry ride from downtown Auckland. Scott lived about a 30-minute drive to the opposite side of the island from where the ferry dropped you off.

Scott was originally from San Diego and he loved to sail. When he was living in San Diego, he lived on a sailboat moored at a marina. At some point, he must have done well in some business so he retired early and decided to sail across the Pacific in his boat. He was in no hurry and as he crossed the Pacific he would stop at many of the small islands in the South Pacific. But as he tells it, when he saw Waiheke Island he knew that his wandering was over. His house overlooks his own personal cove where he keeps his sailboat moored.

The island and climate were amazing. There is plenty of rain and it never gets below freezing at any point in the year so the vegetation is green and lush. Scott has an orange tree in his back yard and a year-round garden.

We spent the weekend working, talking, eating, drinking wine, and watching movies. On Saturday afternoon, he took me sailing on the Pacific Ocean. It turns out that there are a lot of people in high technology fields that love to sail and there are a number of people in the Sakai community like Joseph Hardin, Scott Diener, and Ian Boston that are excellent sailors. At the Vancouver conference back in June, a group of people arrived few days early and rented a pair of sailboats and sailed up and down the coast of British Columbia for a few days.

I was definitely not one of those sailboat people. I was far too impatient to ever depend on the wind to get from one place to another.

Scott plotted a nice route that took a few hours to circle a small island

and then come back to his cove. It was wonderful. Scott was very good at sailing and he quickly trained me so I could help with simple tasks like adjusting the sails or steering the boat. Scott's boat was an oceangoing sail boat so it was solidly built to withstand storms and rough weather in the middle of the ocean. In a sense, as long as you are patient, sailing is quite simple and since the wind is free, you can go long distances at low cost. For that afternoon, I could relax and get a sense of the Zen of sailing.

After the weekend with Scott on Waiheke Island, it was time to go to Australia for a quick visit to Charles Sturt University for a few days. Charles Sturt had selected Sakai as their next Learning Management System and we wanted to sit down and talk with the development team, taking advantage of the fact that I was already close by in New Zealand.

We released Sakai 2.3.0 on November 3, 2006. We had promoted the Cambridge Wiki and the Universidade Fernando Pessoa developed Calendar Summary tool to be core tools. The Podcast tool from Indiana University, LinkTool from Rutgers University, and Blog tool from Lancaster University were added to the 2.3 release as provisional tools. Provisional tools were tools that were "on probation." We wanted the provisional tools to be used and tested by the community, but we wanted to get some real feedback about the quality of these tools before we placed them in the core distribution. Sakai 2.3 also included the code to import IMS Common Cartridge that Zach Thomas had developed as part of the summer Alt-I-Lab demonstration. The Common Cartridge specification was still under development but we figured some support for Common Cartridge in Sakai was better than no support.

The 2.3 release was the last release where I held the line on who could work in the core of Sakai. Up to that point I had tried to be quite conservative as we added or changed the core features product. But a number of schools chafed when I said 'no' to a framework change or feature request. After almost two years of me holding back certain innovations, there was a small group of people that were getting pretty upset and putting increasing pressure on me to loosen the reins a bit.

After the 2.3 release, I had to relent and start allowing a wider range of people the ability to work in the core of Sakai. The pace of innovation quickened, but the quality of the code dropped somewhat and the Quality Assurance cycles started to get longer and longer as more people started working in the core parts of Sakai.

My next trip was to the IMS Quarterly meeting in Heerlen, Netherlands at the Open University of the Netherlands (OUNL). I added two days to the beginning of the trip to visit Alfa College in the Netherlands. Alfa College was a trade school that had been using the Sakai Open Source Portfolio (OSP) successfully. Since my understanding was that the OSP code was still quite rough around the edges, I was curious to find one of the places

that had actually made it work. The visit to Alfa College had been set up by Jim Doherty from `portfolio4u.nl` who had set up the systems at Alfa College. My goal was to make a video to send to the community to help everyone better understand how we could make portfolios work in Sakai.

It turned out that Alfa College was indeed successful in using OSP for their portfolios. One reason was that Alfa used paper-based portfolios as part of their overall teaching approach since long before Sakai and OSP were developed. All they had done was to convert their paper-based system to an online system using Sakai. It turned out that their use cases were a perfect match for the OSP software and they were impressed.

By using the Sakai OSP system, Alfa College no longer had to maintain rooms full of file cabinets with paper portfolio documents. Students and teachers could work on a student's portfolio any time of the day or even on a weekend. And when the student graduated, they could keep copies of all of their digital documents. All in all it worked well and my video turned out nicely.

The IMS Quarterly meeting in Heerlen was a nice weeklong retreat for me to get away from Sakai issues. It was held at the Open University of the Netherlands (OUNL). I really wanted Sakai to be adopted by as many of the "Open Universities" as possible. The OUNL was in the same space as the Open University (UK), Open University of Catalonia, Charles Sturt University in Australia, and UNISA in South Africa. I saw the Open Universities as having an increasing influence on educational technology going forward with their emphasis on distance and online education. These Open Universities also had a long history of significant software development investment and I wanted their resources and talent to be part of the Sakai community.

At the OUNL I met Rob Koper, who was the designer of the Kopercore software that implemented the IMS Learning Design (LD) specification. I was not a big fan of the concepts behind the Learning Design specification. I always felt that IMS LD was aimed at a model where instructional designers created material and instructors used the material. I always preferred approaches where teachers prepared their own materials. But Rob Koper's team had built the only complete implementation of IMS Learning Design so I knew they were quite skilled. I never could get them interested in Sakai.

When I got back, it was off to Tucson, AZ to attend the first Kuali Days meeting. Kuali was an open source project intended to build open source software to support the needs of administrative computing in higher education. Indiana was the leading institution in Kuali and Brad Wheeler had built Kuali from the ground up to be a community source organization. As Brad built Kuali, he was careful to imitate what worked well in Sakai and tweak areas that needed some improvement.

He decided that Kuali needed fewer partners that would be more deeply involved in Kuali development activities with more solid contributions of

funds and staff from each institution. Kuali was going to be more organized in terms of requirements gathering and priority setting than Sakai.

The technical direction of Kuali efforts would be guided by a Functional Council with designated representatives from the partner schools. The Functional Council was to be the application stakeholders (i.e. not the developers) and the Functional Council would negotiate feature sets, roadmaps, schedules, and priorities. These priorities would be fed to Kuali project managers and multi-university developer teams to be built. The entire process would have lots of communication and feedback so that everyone was aware of how the work was progressing. Regular reports would be prepared and given to the Functional Council and the Kuali Board.

It had more of a top-down structure than I preferred, but given that the initial application developed by Kuali was a general ledger system, their structure made a lot of sense. The experts in what the software needed to do were on the Functional Council and so it made sense to have the Functional Council as the primary driver in the process.

It was a lot of fun to go to Kuali Days in Tucson, particularly since I was there as a guest, listening and absorbing. It was fun to watch a new community starting to form and gathering inertia as it prepared to move forward. It was almost exactly like a Sakai meeting, except it was less chaotic. Everyone seemed to know their place and know where they were going. One night we had a great evening playing Texas Hold'em until the wee hours of the morning.

Chapter 21

The Winter

After Blackboard had been shouted at during its Educause meetings, they began to realize that perhaps they had stirred up the wrong hornet's nest and that unless they did something differently the anger against Blackboard would simply keep growing. And all the fuss was greatly benefitting Desire2Learn. Until the patent, Desire2Learn was virtually unknown as a market player. But as soon as the Blackboard lawsuit was made public, every university that was running a Request for Quotation (RFQ) for a learning management system started to include Desire2Learn in their vendor list.

All the fuss seemed to be helping Desire2Learn in the marketplace and greatly hurting Blackboard. The CIOs in higher education had done such a good job of educating one another about the patent so that it was impossible for Blackboard sales people to go and visit their customers without being grilled constantly about the patent.

The problem was that while Sakai and Moodle still had relatively low market share, they were seen as a way to keep the market fair and keep Blackboard honest. Lots of customers running Blackboard with no intention of switching to Sakai liked having an alternative in the marketplace. Many Blackboard schools paid $10,000 to join Sakai just so they could wear their Sakai lapel pin to the meeting where Blackboard would negotiate the annual price increase.

But the Blackboard patent had the open source projects scared so we were making quite a fuss. Blackboard repeatedly said that "they had no intention to sue any open source project" but no-one (including me) believed that line even for a second.

By late October, Blackboard was beginning to negotiate with the Sakai Board through Brad and Joseph and well as Eben Moglen and Richard Fontana of the Software Freedom Legal Center (SFLC) about the possibility of formally granting open source projects a permanent license for the current Blackboard patent and several later related patents that were in the pipeline and likely would be awarded to Blackboard.

This idea sounded great to me as it would allow Sakai, Moodle, and ATutor to get back to building innovative software and let the closed-source companies beat themselves up over the patent. I just wanted the patent to be a non-issue. I just wanted it to go away so I could focus on working on Sakai.

The idea was discussed and went back and forth through several iterations during November 2006. Things were not resolved by the time the Sakai winter conference rolled around on December 6, 2006. Joseph came up with an idea that we should have a lunch time panel discussion with Eben Moglen of the SFLC (our lawyer) and Matt Small who was the general counsel of Blackboard and our primary point of contact for the patent negotiations. After Matt and Eben made their initial comments, there would be an open question and answer session where the audience could ask questions of Matt and Eben.

We recorded the session and you can listen to the session online. The session started with Joseph posing some broad questions and then giving Eben and Matt time to answer the questions. The initial responses to Joseph's questions were well articulated. At about 31 minutes into the talk, the gloves came off a bit and Eben went on the offensive. All in all it was a entertaining afternoon and emphasized to Matt that the only option to Blackboard was to license all of their patents to any and all open source projects. There was not going to be a simple handshake and pat on the back and this would be over.

In the closed Board meeting we reiterated that Blackboard's only option was to unconditionally grant a license for all of their patents to all open source projects. We were going to legally pursue Blackboard through the SFLC until the patent was either destroyed or Blackboard relented and give all open source projects a formal written non-revocable license to all of their current and future patents.

In the middle of December, I got a note from Brian Behlendorf, the founder of the Apache Foundation. Brian had given the keynote at the Sakai Summer 2005 conference in Baltimore and I had met Brian at a conference on Open Source and K-12 education at North Carolina State University back in September. I made a video interview of Brian where he talked about his CollabNet company (`www.collab.net`).

It turned out that his company had started a new initiative that they called `open.collab.net`. But when people heard of the initiative, they mistakenly typed `www.opencollab.net`. That was one of the domain names I had registered back when I came back from Barcelona thinking about what I might name a forked version of Sakai. Brian's customers were typing the `opencollab.net` URL and ending up looking a picture of me on `www.dr-chuck.com`. Brian was calling to find if I would sell him the domain. I told him I would sell it to him for a free beer the next time I was in

the bay area.

The Board conversations for the second half of December increasingly focused on what would be acceptable language for the Blackboard patent pledge. The pattern would be that Blackboard would propose some text, our lawyers would look at the text, we would review and find any issues with the text and send those issues back to Blackboard, and then Blackboard would revise the text and send us a new copy of the text and the process would continue.

We made good progress on the pledge in a few weeks. Blackboard kept trying to limit the scope of the pledge in small ways, but Eben and the Board stuck to their guns and Blackboard pretty much ended up accepting all of the points that we wanted. The resulting document was pretty reasonable and felt pretty airtight from our side as long as the software in question was open source.

One of the problems that slightly confused these discussions about the pledge was that Blackboard was trying to accomplish two things at the same time. First, they wanted Sakai, Moodle and ATutor out of the patent fray. They also wanted to become "friends" with Sakai over time. Blackboard wanted the Sakai Board to show some public appreciation for the sacrifice that Blackboard would be making in providing Sakai and the rest of the open source community a no-cost license for the patents.

The Sakai Board and Sakai community were not in any mood to publicly thank Blackboard for publishing the patent pledge. We thought that Blackboard had done a downright mean, nasty, and rotten thing in using such a crap patent so aggressively and while we would be happy to no longer be operating under the dark shadow of the patent, there was little interest in praising Blackboard. What the Sakai Board would have preferred was for Blackboard to publicly apologize for its actions and hang its head in shame for a while.

I could see what Blackboard was trying to do and I could also see that there was no way that the Sakai Board would ever give Blackboard any public kudos just because Blackboard made the patent pledge. About the most positive thing the Sakai Board would say was that "Blackboard sucks a little less because of the patent pledge."

We got to the point during December that negotiations were starting to go in circles because neither the Sakai Board nor Blackboard were communicating what they really wanted. Both sides were 99.9% in agreement on the substance of the wording of the patent pledge but it seemed like the negotiations over the press statements were either going to drag on forever or fall off the rails.

It seemed like the more Blackboard hinted that they wanted some positive press about the patent pledge from Sakai, the more the Sakai Board started to talk about how they should continue the fight and punish Black-

board because Blackboard had done something wrong.

By the end of December 2006 and in early January 2007, Blackboard started to realize that they were wasting their time attempting to get any positive words from the Sakai board for the grant of immunity from the Backboard patent. Blackboard had to decide whether to try to play hard ball with the Sakai board or just publish the patent grant to defuse the tension so everyone would stop talking about the patent.

Thankfully, Blackboard decided to press forward and publish the patent grant and stopped trying to negotiate with the Sakai board for a positive press release.

The following is the text of the patent pledge:

Blackboard hereby commits not to assert any of the U.S. patents listed below, as well as all counterparts of these patents issued in other countries, against the development, use or distribution of Open Source Software or Home-Grown Systems to the extent that such Open Source Software and Home-Grown Systems are not Bundled with proprietary software.

Patents covered: 6,988,138, 7,493,396, and 7,558,853

The commitment not to assert any of these named U.S. patents and all counterparts of these patents issued in other countries is irrevocable except that Blackboard reserves the right to terminate this patent pledge and commitment only with regard to any party who files a lawsuit asserting patents or other intellectual property rights against Blackboard or its parent or subsidiaries. This pledge is binding on Blackboard's successors and assigns.

I was happy when the patent situation was resolved because I could get back to working on the Sakai software and Sakai community. The patent had been a nearly all-consuming distraction.

Chapter 22

The Tipping Point

The University of Michigan was in the Rose Bowl January 1, 2007. Jim Eng (a senior Sakai developer at the University of Michigan responsible for the Resources tool) was able to get me four tickets to the Rose Bowl. I decided to surprise my son Brent and nephew Brandon Shotwell and his dad Ted on Christmas day with Rose Bowl tickets and plane tickets to Pasadena California for the Rose Bowl. It would be an all-guy trip.

While I was in Los Angeles on vacation, I took one day to meet with faculty and staff from UCLA. Many of the other UC systems (Berkeley, Davis, Merced, Santa Cruz) had chosen Sakai and I was hopeful that I could convince UCLA to join Sakai as well. We had a good meeting, but it was pretty clear that the UCLA faculty already had a strong preference for Moodle. I said that I understood how important it was to make the faculty happy and that I hoped the UCLA and the other UC-campuses could work together to enhance communication and cooperation between the Sakai and Moodle communities.

We had a great time on the trip and while the University of Michigan lost to USC in the Rose Bowl, it was very much worthwhile. It was a nice distraction from the intense discussions between the Sakai board and Blackboard around the patent.

When we got back from the Rose Bowl, it was time to leave on my trip to China. It would be my first trip to China and I would be accompanied by Zhen Qian from the University of Michigan. Zhen was a senior Sakai developer at the University of Michigan responsible for the Site Setup and Assignment tools. We figured that we needed a native Chinese speaker on the trip to make sure that the meetings were productive.

Zhen had been involved in Sakai from the beginning and was an expert in Sakai from a programmer perspective as well as the open source governance perspective. Zhen made all of the travel arrangements and set up all of the meetings. I knew that I was mostly coming along as the symbolic "head of state" while Zhen would do most of the talking and answer most

of the questions.

Here is our schedule

1/15: Beijing Normal University
1/16: Beijing University of Posts and Telecommunication
1/17: Beijing University
1/18: China Open Resources for Education(CORE)
1/18: afternoon flight from Beijing to Wuhan
1/19: Huazhong Normal University
1/21: Flight from Wuhan to Shanghai
1/22: Shanghai Jiaotong University
1/23: Huadong Normal University

This trip was going to be a lot of fun for me as my job was pretty simple with Zhen as my guide.

The pattern for most of the meetings consisted of me giving a talk in English and answering a few questions and then we would go into a room with the leadership from each university and have in-depth discussions where Zhen would do all of the talking in Chinese. I was comfortable because I knew that Zhen and I were on the same page.

I was struck by the fact that the notion of open source was somewhat foreign to most of the people we spoke with. China was clearly interested in opportunities to make money and we were pressured to sign some kind of "exclusive" arrangement for distribution of Sakai in China. I kept reiterating that in an open source project, the notion of "exclusive distributor" made no sense. It was cool to see the level of entrepreneurial activity at each of the universities we visited.

Outside the meetings, Zhen and I had a lot of fun. Because she is a native Chinese speaker, and familiar with the cities we were visiting, we would often go off on some kind of adventure well off the beaten path.

One evening after we finished our discussions at the Beijing University of Posts and Telecommunication (BUPT), Zhen decided she wanted a haircut. She claimed that the only people who could cut her hair properly were barbers in China. We stopped into a hair salon. Zhen decided that I should get a head massage so I would not be bored while she got her hair cut. The woman who gave me the head massage had extremely strong fingers. While I was getting my head massaged, I could watch Zhen getting her hair cut and talking to her stylist. After a while I got the sense she was telling the entire story of our trip, who I was, and what we were doing in China.

After a while her stylist started talking about me and pointing at me and it appeared that Zhen and the stylist were making some sort of plans. Of course, not knowing any Chinese, I had no idea what the detail of the plans might be. After Zhen's hair cut and my head massage, Zhen told me that

the stylist had suggested that she get a facial. Zhen said that I could wait or I could get a facial as well.

We both went into the back room and were treated to an hour of face massage, some kind of skin peel, cleaning, steaming, hot towels, the whole nine yards. It was great fun and it felt great. Zhen and I were in the back of the salon being pampered and chatting on and on about Sakai, the trip and lots of other topics.

Afterwards, my skin felt great. I can see why people like facials and spa treatments. They make you feel great. Perhaps I will get another facial sometime when no one is watching.

In another of our adventures, I wanted to buy a fake Mont Blanc pen. As you walk around in tourist areas, you are continuously approached by people selling you knock-offs of brand name items. But with Zhen as my guide, we actually went through a bunch of alleys to the little stores where they had a much wider selection of counterfeit items. I limited my purchase to a few fake Mont Blanc pens that actually broke even before we got back to the United States. It was fun to have a local guide.

Our trip was planned across three cities so I got to see a number of different views of China. And Zhen always had built in a little spare time so we could explore each city.

Beijing is the traditional city with beautiful classic architecture. We visited Tiananmen Square, and toured the Forbidden City and Imperial Palace.

Our second stop was the City of Wuhan. Wuhan is a large modern city and crowded. It was a study in contrasts. Most of the automobiles were old and produced a lot of exhaust fumes which left a haze over most of the streets. But the stores were nice with an amazing array of products and food items.

Our last city of our visit was Shanghai. Shanghai is an amazingly modern and impressive city. One day, we took a trip on the Shanghai Maglev Train. The Maglev train has a top speed of 258 miles per hour and travels between downtown Shanghai and the airport. Since we wanted to take a ride, we just booked a round trip ticket so we would get off at the airport and get back on for the ride back downtown. The train was very fast and since it was "floating" on the magnetic fields, it moved from side to side with bouncing off the vertical magnetic fields that kept the train in the middle of the tracks. Overall you got the feeling that you were not really connected to anything but you were flying along at almost 300 miles per hour. It felt like a fast, flat roller coaster. It was great fun and very exciting but it was not particularly relaxing because it was a little scary.

When I got back from China, I had scheduled a meeting with John Merlin-Williams to talk about my role in Sakai. John was the Executive Director of the Media Union (now Duderstadt Center) where the University of Michigan had started and hosted the Sakai project. The Media Union was

intended to be an agile organization that could react quickly to opportunities and new projects. While I was employed by the Sakai Foundation as its executive director, the funds were routed through the Media Union and I was paid as a seconded University of Michigan employee. This made John my on-campus management reporting structure.

Over the past few months, I had told John about my frustration with the Sakai Board of Directors. In my January 29 meeting with John, it was really clear that my frustration level was at a peak because of the stress of the Blackboard negotiations and the general tension between me and the Board. John made it clear that if I ever wanted to come back to the University of Michigan as a regular employee, he was sure that they would find a place for me as soon as I was ready. I really appreciated having a backup plan in place because I knew that once the Board set its sights on making me obey them, it would get pretty ugly pretty quickly.

There were several points of significant disagreement between me and the Board. The first was our financial health. We had a million dollars of revenue per year from over 100 members, each paying $10,000 per year. Those membership arrangements were for three years and since most universities had joined in 2004, those memberships were up for renewal in 2007.

It turns out that over half of the 100 members had never installed the Sakai software, and had been to zero or one of our conferences. They initially had joined to support Sakai either to make the market fair or out of curiosity, but they never seriously intended to run the software. And since we were successful, it was not clear that these schools would continue to pay $10,000 per year. So there was a reasonable chance that our revenue would drop to $750K per year.

The second hot button was the cost of the conferences. Back when the project started, the conferences were "partner" conferences and only official partners that had paid their $10,000 fee could come to the conferences. But once you paid the fee, conference attendance was free. And we put on some lavish conferences, with each conference typically costing the Foundation $250K per conference for a total expenditure of $500K per year.

I knew that we would need to add a registration fee for conference attendance to make the conferences more revenue neutral in the long run. But Indiana University and University of Michigan usually sent twenty staff to every conference. And since the conferences were twice per year, a $300 registration fee would cost Indiana and Michigan an additional $12,000 per year in addition to their $10,000 fee. Given that Michigan and Indiana were the leading board members, adding a conference fee would be a touchy subject. Also, when we polled members, they often said that "free conference registration" was one of the clear value propositions that would allow them to justify the $10,000 annual membership internally within their organiza-

tions.

So the combination of the worry about member renewals in 2007 and adding conference registration cost for member schools made it seem to me that I should not add a registration fee for members until 2008. But because I could not reduce the obvious large expenses in 2007, to me that put the Foundation finances at risk.

If you added up the roughly $500K of annual salary and approximated some level of revenue loss in 2007, things looked pretty bleak financially to me.

One the other hand, we had money in the bank left over from the project phase so the board members felt that I was just being a "chicken little" when I raised financial concerns. I wanted to keep our reserves as reserves and get to the point where we had a positive cash flow and then strategically invest the positive cash flow above a reasonable level of reserves.

The other area where I disagreed with the board was how the community should be run and how resources should be invested. The Board was holding on to the notion that they would set high level directions for the Sakai product and I was to herd the volunteer contributors to achieve the goals of the Board as we had done with varying levels of success during the grant-funded phase. The problem was that even during the grant-funded phase of Sakai (2004-2005), each organization and programmer pretty much made their own decisions as to what they would be willing to work on. And while the Sakai Foundation could make sure that the different community members operated in a coordinated fashion, we could not tell someone in the community to stop working on their own priorities and instead work on the Board's priorities.

The final area of disagreement between me and the Board came down to how the Foundation would interact with the rSmart company. The rSmart company was one of the first commercial affiliates for Sakai and one of the most supportive and active commercial partners. Chris Coppola was the CEO of rSmart and had been elected as a Sakai Foundation Board member in 2006.

My model for commercial affiliates was based on the Apache Software Foundation's model. We welcomed commercial participation in Sakai, we had a commercial-friendly license for Sakai that allowed a great deal of flexibility in commercial offerings, and we were happy to feature our commercial partners at our conferences through sponsorships, talks, and demonstration areas during conference receptions.

The Board saw our relationship with rSmart going beyond these arrangements. There was a sense that rSmart should be viewed as a logical extension of the Sakai community and the Sakai Foundation should take steps and invest money to insure rSmart's long-term success with Sakai. In a sense, some of the influential Board members felt that rSmart's priorities

were to be my priorities. And with the CEO of rSmart one of the influential Board members, any opposing opinion did not have much chance of success at the Board level.

All these conflicts came together when the board decided that the Sakai Foundation needed to hire a permanent staff person focused on improving the usability and look and feel of the Sakai software. The claim was that rSmart was having difficulty marketing Sakai against Moodle because we were not "flashy enough" and we needed to spend the first few months of 2007 making Sakai look better so rSmart would have something better looking to market for the fall 2007 school year.

This went against my grain on several levels. First, I felt that we could not afford a new staff member with the current financial troubles. Second, this was an open source project, and if rSmart wanted to make the product look better, they could hire their own staff and improve Sakai all on their own and contribute those improvements back to Sakai. I felt that rSmart was supposed to give resources to the open source community, not be given access to community funds to meet their commercial goals and agendas. The final problem I had with the idea was that the Sakai community developers really would barely care if someone with a lofty title like "Associate Director for Usability" started wandering around the community barking out orders to volunteer developers.

Hiring someone to fill a User Experience position had "failure" written all over it. I knew it would be a complete waste of money and it would simply fail and the Board would blame me for not forcing the volunteer developer community to take orders from the new employee.

But the influential Board members thought it was the best idea ever. I had a convenient excuse to miss a few Board meetings while I was in China where the Board worked through their logic as to why they wanted me to hire such a person. After the Blackboard patent was no longer their primary topic, this new hire became the focus of their discussions during their meeting every two weeks.

Every time the topic of the new hire was brought up, I would cite financial concerns, but the board would just roll on in their brainstorming as to why it was such a great idea. To them it was such a great idea that it was worth taking the financial risk.

At some point, I missed a board meeting and the board took an on-the-record vote to force me to hire a Director of User Experience. When I found out about this vote at the next meeting, it was not too pretty. The nice formulation of my comments was that I told them "no" and that I would not consider such a hire until later in 2007 when we would have a better picture of our member renewals.

February 2, I made a trip to Washington, DC to participate in a two-day code marathon to combine the code from the Apache Pluto project,

Sakai, and uPortal. We were going to fly in Peter Kharchenko and Eric Dalquist from the uPortal project and me from the Sakai project and all meet in David DeWolf's basement in Washington, DC for two days of coding. David DeWolf was the lead developer for the Apache Pluto JSR-168 project.

The idea was that we would just sit around the table and fix whatever needed fixing between the three projects for the two days and then be done. We figured that by sitting together with committers from each of the three projects, we could quickly fix anything quickly. It was a great two days and by the end, we had a first cut at compatible JSR-168 support in both Sakai and uPortal based on Pluto's 1.1 library code. This nicely cleaned up the uPortal support for JSR-168 as well as giving JSR-168 support to Sakai.

For me it was important to complete this work because it was something I had promised to the Mellon Foundation back in 2004. And even though that grant had been over for more than a year, I still felt a need to complete the milestone. Most of the Sakai community was no longer interested in JSR-168, but I knew it would be a valuable addition, particularly for the research portal applications of Sakai.

February 5-8, 2007 was the IMS Quarterly meeting at Oracle Headquarters in Redwood Shores, California. It was a pretty cool meeting, Michael Feldstein of Oracle gave a great talk about Oracle and Sakai and how he saw things going forward. I was proud to have been part of a project that had grown to the point where we were on Oracle's radar.

On February 7 I had a free afternoon and I got a text page from Ian Dolphin that there was an invitation-only Sun Higher Education meeting in downtown San Francisco. He thought that if I could get down there he could get me a registration for the event and for the fancy dinner party. I always loved hobnobbing with folks in educational technology so I rushed down, and Ian got me a complimentary registration. It was one of those cool serendipity moments where things fall nicely into place. The afternoon sessions were really interesting and I got to see a lot of Sun's strategy for engaging higher education.

The evening dinner was on the top floor of the hotel with a wonderful view as the sunset and the city lights coming on throughout the evening. I was sitting at a table with Ian Dolphin and Lois Brooks of Stanford University. Ian and Lois were on the Sakai Board of Directors but they were not the problem. Sadly, there were three Board members that did nearly all of the talking and most of the other Board members (including Ian and Lois) mostly listened patiently to the three most talkative Board members.

The evening was going really nicely until I ran into John Robinson of rSmart in a hallway outside of the elevators. While Chris Coppola was the President and CEO of rSmart and on my Board of Directors, John Robinson was the Chairman of the rSmart Board of Directors and had founded rSmart. John had a long and successful history in technology in higher education,

having started, built and sold several successful companies including Sun-Gard SCT and others. John was passionate about open source and evolving technology around open source in higher education. This was one of the reasons that he founded rSmart.

Since John Robinson was the chairman of the board of rSmart, he was effectively Chris Coppola's boss. So I decided to have a quiet hallway conversation with John about how I was becoming frustrated with Chris' behavior on the Sakai board. I told John that it seemed as though Chris wanted to run the Sakai Foundation from his board seat and that was not right. I told John that unless Chris backed off, I would likely resign as the Executive Director of the Sakai Foundation.

John seemed to miss the point of my comments and his next suggestion was that if I decided to leave the Sakai Foundation, that I should come to work for rSmart. At that point, I got a little more upset and I started using vocabulary and tone of voice that were not suitable for a businesslike conversation.

The conversation ended and the rest of the evening was without incident. But word of my outburst was quickly communicated throughout the Sakai board of directors. It was definitely "behavior unbecoming to an Executive Director" since I had lost my cool.

Ironically, on the exact same day (February 7, 2007) the Chronicle of Higher Education ran a story on the Blackboard patent pledge, effectively announcing to the public that Sakai was no longer subject to the patent. Sakai, Moodle, and ATutor had won the battle with Blackboard and pretty much won on our terms. But the tension and stress that had built up over the past few months, left me wounded and angry.

This was not the first time I had gotten myself in trouble due to some outburst or disagreement. In all of the previous incidents, I had apologized profusely and Joseph had helped me recover from my mistake. But somehow this time I was not sure I wanted to apologize.

The following is a note I sent to a board member on February 9 that gives a sense of my state of mind two days after the outburst in San Francisco:

Your assessment is essentially accurate on all counts. It is why I expect that in a few weeks the only conversation will be a transition strategy to a new ED.

In my private discussions with "friendly" board members - most think I am wrong in my approach to the situation. Another indication that it is time for me to step down as ED before I cause damage to something I care a lot about.

In my career when I find myself at odds with people I consider to be very

bright and talented and that I generally respect and care for - it is just time to walk away rather than fight forever with those people.

This is not about any of the individuals - it is how the board operates when they get together.

I had a trip scheduled to the UK to attend a Service Oriented Architecture workshop at Birmingham, and then planned to spend the weekend at Cambridge with John Norman who was the chairman of the Sakai board and a good friend. I had also scheduled an extra day to visit Leeds University so I could do a video interview of Aggie Booth, one of the founders of the Bodington project.

Once I got to Cambridge, John and I spent two days together just talking. Most of the time we would talk logically about how to deal with the situation, how we could improve how the way the Board operated and how I would deal with the Board. The conversations would be punctuated with me losing my temper and going off on a rant about one thing or another. I never got upset at John — I would just rant about the situation between me and the Board. John would calm me down and we would talk logically for a while and then off again I would go on a rant.

It was a strange experience for me, I was in one of my favorite places in the world, with good friends that I cared about and respected, and yet the anger at the Sakai Board just kept coming over me in wave after wave of emotion. At some point, we just gave up trying to reason with me.

On Saturday February 17, I went to a Rugby game at the Cambridge Rugby club with John and his family. I remember that day as one of my most enjoyable experiences throughout the Sakai project. The day was cold, and there was a light rain falling and these Rugby players were running around with their shorts and no protective equipment. They would tackle each other and mud would fly everywhere. John played Rugby as a child and he was carefully explaining the details of the game to me on each play. John's sons were watching the game and John was explaining it to them as well. I thought to myself that I must be the luckiest person in the world to have a job where I could be paid to spend such a lovely weekend in Cambridge with such good friends. I wanted to relish the experience because I figured that my time as the Executive Director of the Sakai Foundation and its worldwide travel would soon be ending.

Once it became clear that I might be resigning, I had several conversations with Joseph Hardin who was the founder of the Sakai project and Board Chair for most of the life of the project. He was very supportive and wanted me to do what was best for me. He never said anything, but I got the sense he was a little disappointed in my decision to resign. I understood completely. There had been so many times that Joseph had rescued me

from crises of my own making over the past three years. No matter how bad I messed things up, he never gave up on me and he never gave up on Sakai. And now I was giving up. But he never complained, he simply supported me in whatever I needed to do.

Once I got back, I gave myself a week to cool off but at the end of the week, I still had not cooled off. I decided to resign on March 1, 2007. But there were a number of details that needed to be worked out. First I needed to write a resignation letter.

This was my first version of my resignation letter that I sent to a few friends on March 2.

Subject: Resigning as Executive Director

I would like to submit my resignation as the Executive Director of Sakai. Increasingly it is becoming clear to me that I am not the right person for the job. Continued conflicts between my vision for the Sakai Foundation and the board's vision for the Sakai Foundation put me in a position where it is not possible to fulfill the duties of the job as I see them. I hope to find a way in my next career move to remain involved in the Sakai community and Sakai software development effort.

I would like to cooperate in any way possible to ease the transition to new leadership. I am happy for the resignation to be effective anytime between now and three months from now. I would like to hand over my responsibilities for the operation of the Foundation and interaction with the Foundation board to someone else and to turn my focus to transition issues and my career options looking forward as quickly as possible.

No one seemed to like my wording when I sent it around to my friends. One friend said that it was the worst resignation letter they had ever read. They said they would not resign from job at a fast-food restaurant with such a letter.

If I was resigning, it was foolish to put a cheap shot in my resignation letter. I should find a way to take the high road on the way out as much as possible.

Also the University of Michigan wanted to make sure that my resignation was not seen as a reduction of Michigan's commitment to Sakai and so I had several meetings on March 5 to get the story straight.

On March 6, I sent John Norman, the Sakai Board Chair, my formal resignation:

I hereby resign my position as Executive Director of the Sakai Foundation, effective June 1, 2007.

I want to thank the Sakai Foundation Board for the opportunity to lead this historic effort. Not only have we built a world-class collaboration and learning environment serving over a million users around the world, we have also demonstrated for the world a new model for software development - community source.

I have already discussed my future options and am pleased that the University of Michigan has a position for me that will allow me to continue my involvement in the Sakai community.

As I make this transition from Foundation employee to community member, I will of course assist the Board in transition issues, and in any other ways that advance the Sakai mission.

It was certainly far more professional than my first draft. Sometimes it is good to let folks who are calm help craft your message when you are under stress.

Interestingly the morning before I sent my formal resignation to John Norman as the Sakai Board Chair on March 6, I was already in discussions with the University of Michigan's School of Information regarding a possible faculty position for the fall of 2007. They had seen my draft resignation note that I had sent around on March 2 and already were interested in talking to me about a teaching position. It felt good to have the beginnings of a plan as to what I would do after Sakai.

My resignation was announced to the Sakai community on March 20. It caught a lot of people by surprise.

Chapter 23

After the Fall

Once I resigned as the Executive Director of the Sakai Foundation, things got easier. I no longer had to go to the Board meetings and I no longer worried about the long-term financial health of the Sakai Foundation. I could focus on putting as much energy into the Sakai software and community as I could during my remaining time as the Sakai ED.

In mid-April, there was an IMS Learning Impact meeting in Vancouver, BC. Going to an IMS meeting was a great way to distract me from issues in Sakai. IMS Learning Impact meetings are like a small version of Educause where mostly leadership and executives show up and talk strategy publically and privately. I always enjoyed Learning Impact meetings because it let me see the shape of the Learning Management System market outside of Sakai.

We had developed a large group we called the "Karaoke BoF"[1] and since we had now been to Vancouver several times, we had found some favorite Karaoke hangouts. We went out for group Karaoke for two nights with large groups and had a great time. It was a great way for me to feel part of something broader than Sakai.

Before I resigned, I had been invited to give a keynote at the Australian Educause conference. Since they would cover my travel expenses, I decided to extend my trip a bit and visit some of the universities that had adopted Sakai in the previous year.

I went to Charles Sturt University in Bathurst, and had two-days of intense design discussions focused on what they needed to change in Sakai to meet their use cases. The discussions were very wide ranging. One particular feature that they wanted was to associate two Sakai "sites" in a parent-child relationship. Many courses would have a single lecture and a number of smaller discussion section meetings associated with the lecture. They wanted a way to visually connect the lecture materials with the discussion materials.

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[1]BoF is short for "Birds of a Feather".

Having hierarchical site relationships was one of the most-requested features in Sakai dating back to March 2004 when we had our first reviews of the CHEF software. Over the years I had come up with a number of elegant but complicated designs to solve the problem. But we never had time to do the complex implementation I had designed so the feature just hung out there as an obvious and painful shortcoming. I had been in many design reviews over the years where the feature was requested and I had a whole little speech about how hard it was to implement the feature.

Paul Bristow (a Charles Sturt software architect) and Matt Morton-Allen did not like my stock answer even when I kept repeating it over and over. They kept telling me that they needed the feature so badly that they would force-fit it into Sakai one way or another no matter how ugly it might be. After a while, it was clear that they would indeed do whatever was necessary to add the feature, so the conversation switched to what the most elegant hack might be.

We started to think about the simplest and quickest hack to Sakai to make the feature work even if it was kind of ugly under the hood. But as we started to draw pictures and think through possible approaches, a reasonably simple and elegant design started to emerge. As a matter of fact, the design was so elegant that I decided that I would immediately build it and add it to Sakai instead of letting the Charles Sturt developers do it as a patch. It was a feature that everyone would like and a feature that I had been dreaming about for nearly three years.

I started working on the feature constantly as I traveled from Bathurst to Melbourne for the Educause conference where I was on the program giving a keynote along with Brad Wheeler. It would be the first time I saw Brad since my resignation.

The night before my keynote, I could not sleep so starting at about 3:30 AM, I decided to pitch my slides for the keynote and write a whole new slide set about the overall experience around Sakai including my motivation for getting involved, and how we figured things out as we went along, and how well everything had turned out. I thought it was a pretty good talk reflecting on the past three years. I carefully avoided any vitriol about the board. Brad spoke right after I spoke and gave a great talk on the philosophy, economics and business case for open source in higher education.

Without even coordinating or sharing slides, our two talks fit together perfectly. I presented the technical perspective and Brad presented the business perspective. I sat watching Brad's talk and thinking that we made such a great team when we were working together for a common goal. But at the same time, I knew it would be the last time Brad and I would deliver awesome one-two punch speeches on the same topic, on the same project, as a team, and from the same stage.

My friendship with Brad would continue but our extremely close col-

laboration trying to make Sakai a success for the past three years was at an end. I already missed that closeness.

By any analysis, me leaving as Executive Director was entirely my fault. I would love to pin the blame on someone else or pin the blame on the Sakai Board but I cannot blame anyone except myself. I never made it easy on my friends on the Sakai Board. We simply had differing views on the definition of open source and I was never going to compromise. For three wonderful years, the forces that held us together were stronger than the forces pushing us apart. But in early 2007, the balance shifted and the forces pushing us apart finally became larger than the forces keeping us together.

On my last night in Melbourne, I decided not to sleep in order to get a head start on my jet lag adjustment going back to the United States. The conference hotel was very close to a riverfront casino so I decided I would go to the casino and play Texas Hold'em until I ran out of money. I had about $100 of Australian money and taxis in Melbourne take credit cards so I intended to lose every penny of my remaining Australian money at the poker table.

I converted all my cash to Casino credit and sat down at about 10 PM at a Texas Hold'em table with six other people. The players were all pretty well matched and the money flowed back and forth. After about two hours we were down to four players and I had doubled my money to about $200. Just after midnight, two new players sat down and then it seemed like my luck changed. Slowly but surely each of the four remaining players who I had been playing with for the past two hours ran out of money, losing to the two new players. And pretty quickly, I was out of money as well, having lost to the two new players so it was time to go to bed and get ready to return to the US.

As I walked back to the hotel, it dawned on me that from 10PM to midnight, I was an unskilled tourist playing with other unskilled tourists and that after midnight two real poker players showed up to take all the money away from the tourists. Given that they showed up at the same time, there was a pretty good chance that they were cooperating in their fleecing of the happy tourists. Of course this just seemed funny to me as my whole purpose was to lose all my remaining Australian dollars and have a good time losing my money.

The next morning, I got back to building the hierarchical site capabilities that we designed at Charles Sturt University earlier in the week. I had made a lot of progress and thought I might be able to finish up the work during the flight back to the US.

As the United 747 took off, we heard a loud "bang" on the right side of the aircraft. Everything seemed OK as we climbed out over the Pacific Ocean to go back home. I immediately started working on Sakai to finish up the hierarchical sites feature. After a few minutes, the pilot came on the

intercom and said, "I would like to apologize to the people near row 23 on the right-hand side of the plane. I understand that there is quite a vibration for a few rows. We have talked to the maintenance crews on the ground and while the vibration is annoying, it poses no safety of flight issues."

I continued working on the Sakai hierarchy feature until my laptop battery ran out and then I fell asleep. I was awakened after a few hours by the pilot once again coming on the intercom and saying, "Sorry folks. It looks like we are going to have an unscheduled landing in Hawaii. It is the only airport between here and San Francisco and we need to land. I am sorry for the interruption of your flight. When we get on the ground, you will all be rebooked on other flights to San Francisco."

We landed without incident, but as we left the plane, we could see a three-foot diameter hole in the plane just under the right wing. And there was hydraulic fluid streaming backwards from the hole covering much of the right side of the plane. The general consensus of the passengers was that it was probably a good idea that we landed in Hawaii.[2]

The rebooking process in Hawaii was a disaster. They were not prepared for a 747 full of people to be dumped into the tiny airport. There were only two agents on hand to do the rebooking and as usually happens, the first few people in line spend 30 minutes griping to the agent to try to get an upgrade or some other perk for their trouble instead of getting a boarding pass in two minutes and letting everyone get back on a plane. The line moved agonizingly slowly and there was no air conditioning because I guess they thought the weather was always perfect in Hawaii. It would have been perfect if we were wearing shorts and Hawaiian shirts but for folks in business clothing it was pretty uncomfortable.

The rebooking process took nearly four hours during which two half-full flights took off to San Francisco because we could not get our new boarding passes quickly enough. Our line snaked around and we all sat there with our luggage scooting forward a few feet every 5-10 minutes.

The good news for me was that the line snaked past a series of electrical outlets. While I was sitting in line, I plugged in my laptop, charged it up, and got back to working on the hierarchical sites feature in Sakai. I put the finishing touches on the code sitting and waiting in line to be rebooked. When I finally got my boarding pass and went through security, I found my way to the WorldClub (thankfully with air conditioning) and using the free WiFi, checked in the feature into the Sakai source code and sent a note back to Paul and Matt at Charles Sturt University.

Back in the states, I purchased and read the "Dreaming in Code", the book that described Mitch Kapor's Chandler project. It told a story of too

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[2]Much later I learned that John Baker, the founder and CEO of Desire2Learn was also on this same flight with one of his executives.

much discussion and not enough action. It seemed that each time they added staff, the new staff wanted to throw the old code away and start over. This was why the project never finished and at times seemed to be moving backwards.

It was kind of bittersweet to compare Mitch's approach to Chandler with my approach to Sakai. In Chandler they were consensus-based and really wanted to find solutions that had strong buy-in from the entire team. In Sakai, I would listen to people for a while and when the conversations started going in circles, I would make a decision and we would move forward. At some point neither approach was 100% successful. Chandler never delivered a project, and I had to resign as Executive Director before I got fired by the Board because people got tired of being told "no."

It was doubly sad because my guess was that after I left, Sakai would likely swing towards the more inclusive discussion-oriented management style and end up going in circles for a while and losing its forward momentum. But that was no longer my problem.

My old-timer hockey league playoffs were also going on during May. I had played in a Sunday-night beer league for the past 10 years and had never won a playoff championship. But this year, my team was very strong and we kept winning in the playoffs. In the semifinals we were up against one of the best players in the league but he was on a somewhat weak team. The standard defense in this situation is to swarm the star player and never let him get any inertia. We knew that we had to play team defense to win.

At one point, he got the puck behind their net and I rushed to cut off his escape route to force him to pass. Instead of passing to the center of the rink, he tried to shoot it past me on the boards before I got there. But I beat the shot to the boards so his very hard shot was coming right at me in a sensitive area. So I moved my hand to protect myself and my hand took a direct hit. My hockey gloves were cheap and did not have much padding so the shot hurt my hand. When I got back to the bench, I looked at my hand and a puck-shaped bruise was already starting to form on the back of my hand. But I continued to play and we won the semi-final game and made it to the finals.

After the game I decided to go to Redi-Care to get it checked out. I figured that it was just a bruise but I wanted to be sure. When I got to the Redi-Care they laughed and told me that I almost certainly had a broken finger. X-Rays confirmed that the puck had broken my left index finger. Luckily the rest of the hand was OK. They suggested I go to the hospital and get it set and cast. That would mean that I could not play in the hockey tournament finals the following week, so I declined the hospital cast. They made me a temporary cast that could be replaced with an ACE bandage. They said it would help with the pain.

That week was also when I was going to give my "interview talk" to be

considered as a faculty member in the University of Michigan's School of Information. I gave the talk with a giant ACE bandage cast on my hand. I thought the talk went really well.

The next Sunday, I played in the tournament finals and we won the championship. I had wrapped my index finger tightly and it really did not hamper my playing too much.

The next Monday I went in to get the bone set and get a real cast put on my finger. It was pretty painful to set the bone and the doctor was not too amused that I had waited a week before getting the bone set so I could play another hockey game.

The next week, I was scheduled to give a keynote talk at the University of Windsor at a technology conference. The University of Windsor had just converted to Sakai so they invited me to speak as part of their campus communication plan for their Sakai rollout. And since Windsor was a short drive from Ann Arbor, it made a lot of sense.

Just as my talk was about to begin, the entire campus had a complete power outage. No microphone, no laptop, no projector and a room full of people ready for a talk. The organizers checked and it looked like the power outage was going to last a while so I decided to just make up a talk and give it off the cuff. I just started to tell them the story of Sakai (kind of like a short version of this book) and went on for the hour. It went really well and suggests that perhaps it is a good thing to lose all of our technical crutches sometimes and just sit and talk.

My trip to Windsor had a secondary goal. Back in June 2006, our conference was in Vancouver, BC. We had shipped a bunch of shirts and gifts to the conference and were having trouble getting the left over shirts shipped back to the United States because of customs issues. It was silly because we could prove that all the shirts were made in the USA and we had paid proper import duty on the shirts when we shipped them to Canada. We should be able to legally ship the shirts back to the US without any duty but no shipping company would ship the shirts without charging a duty.

We had shipped the shirts and gifts to Windsor and the idea was that we would put all the shirts and gifts in the trunk of my car and I would drive them back to the United States. Mary Miles had given me all of the receipts proving the purchase of the shirts in the US and payment of the Canadian import tax. So as I was preparing to leave the University of Windsor, we packed my trunk full of Sakai T-Shirts.

As I drove towards the border, I debated whether I should just pull a James Rockford and not mention the shirts (i.e. smuggle them in) and slide through customs or should I admit I had the shirts and deal with whatever happened. The problem was that I was going straight to the Detroit Airport to leave for a trip to Edinburgh Scotland and the last thing I needed was to end up talking to US Customs agents for a "few hours."

I had not made up my mind what to say even as I pulled up to the border officer. He said, "Do you have anything to declare?" On the spur of the moment, I decided to tell the whole truth. At least if they confiscated our T-Shirts I would make my flight on time. I told him that I had a trunk full of T-Shirts that were made in America, shipped to Vancouver, then shipped to Windsor and now in my trunk going back to the United States. I showed him all the receipts. He looked at the receipts for a while and then looked at me for a while and then asked me to stay in the car and open the trunk. He rooted around in the trunk for a while and then closed the trunk, came up to the window, handed me the receipts, and told me I could go.

Once I got out of sight of the border, I did a little fist pump and drove off to the Detroit Airport and my trip to Edinburgh.

When I got back from Edinburgh, I did something that I wanted to do for a long time. I went down to Blackboard headquarters for a day. Since I was technically still a Sakai Foundation employee and the Sakai Board would not likely approve my visit to Blackboard headquarters, I took a vacation day, and paid for all of the trip expenses personally.

I went to Blackboard and spent the day with Jan Posten Day, John Fontaine, Bob Alcorn, Matt Small, and Michael Chasen. First I thanked them personally for the patent pledge. I told them that they had done the right thing by making the patent pledge and I wanted to point out how the patent pledge had taken the wind out of the Sakai Board's sails. Even though the Sakai Board never gave Blackboard any positive kudos for the patent pledge, the Board simply woke up one morning no longer the center of attention and with no further reason to badmouth Blackboard publically.

The furor had died down quickly after the patent pledge and while the Desire2Learn suit was still in progress, the market had pretty much stopped fussing about the patent. I wanted to emphasize that even though they did not get any positive press from Sakai, Blackboard "did the right thing" and things worked out well for them. I wanted to make sure that in the future they would perhaps "do the right thing" right away instead of living through six months of an angry marketplace.

I also wanted to tell them that I had wanted to work with them all along but the Board just was completely irrational in its hatred of Blackboard. I also thought having a company with "We Hate Blackboard" as its primary marketing message as a Sakai Board member was a massive conflict of interest but that no one else on the Sakai board agreed with me. I also told them that if they had been more open about their own products like Building Blocks and had not sent so many cease and desist letters to their customers who looked at the Blackboard database, Sakai might never have happened. Sakai happened because of Blackboard's mistreatment of their own customers.

I also told them that the patent pledge was effectively the reason I re-

signed (before I was fired). I told them that once the patent was no longer the Board's primary focus, it was only a matter of time before they would see me as an Executive Director that really did not care about making them happy and that they would start taking action to "rein me in." And of course I would not take kindly to being micro-managed by the Board and that led directly to my resignation. I said that I did not care that I had lost my Executive Director position and that having the patent pledge was worth whatever sacrifice I personally had to make.

While I did most of the talking during my Blackboard visit they shared some of their plans to make Blackboard capable of including more than one Learning Management System (i.e. Blackboard and WebCT running in the same system). The idea was that Sakai and Moodle could also be plugged into the Blackboard portal using the same technique. This sounded appealing and later this idea evolved into the Blackboard Learning Environment Connector project that was a pretty cool technical result but not much of a market success. They also asked if I was interested in working for Blackboard. I said I was not interested because I needed some time away from the rat race. I needed some time to reflect and recover.

As I came home from Washington, DC after my Blackboard visit, I felt really good. My goal in starting Sakai was not to create a combative product to wrest market share from the commercial vendors, but instead to use an open source alternative to affect the marketplace in positive ways so that all the products would get better and all teachers and students would benefit from better educational technology.

I did not know where the path forward would lead, but I knew that to the extent I would continue to be involved in Educational Technology going forward, that I would never again focus on a single project or product to the exclusion of others. Sakai had "unfrozen the marketplace" as I had predicted back in December of 2004 and I was excited to start working in and influencing that new, unfrozen marketplace.

Chapter 24

The End of an Era

After my resignation, I had virtually no communication with the Sakai Board and I liked it that way. Joseph Hardin was still on the Board, but he never told me anything that happened at the Board. We always kept our conversations very partitioned.

I was blissfully unaware of the process they were going through to select my successor. I later found out that they selected Michael Korcuska as the new Executive Director. Michael was from Berkeley, CA and most interestingly, he had interviewed for the Executive Director position back in June 2006 in Vancouver when I was selected as the first Executive Director.

Michael was the person that they wanted me to hire back in June 2006 because they thought he could bring a lot to Sakai. He had impressed the Sakai board and to be frank, he almost beat me out for the job back in June 2006. Given that it was less than nine months after my hire and Michael was still available, it made really good sense just to go ahead and hire him as the Executive Director.

Michael could not start right away due to a prior commitment so I would continue to be the Executive Director until July 23, 2007. This timing was perfect for me because my new faculty position in the University of Michigan's School of Information was starting September 1, 2007. I could continue to work on Sakai nearly the entire summer and then make the switch to teaching in September.

Even though Michael could not formally start until the end of July, he would attend the Sakai meeting June 12-14 in Amsterdam where we would both be at the meeting and I would make my final presentations as the Executive Director and Michael would be introduced to the community. The timing worked out very well for the Foundation and the community and for me.

I don't remember when I first met Michael in person, but I do know that I liked him from our first interactions and meetings. Michael was taking over my pride and joy and I wanted him to succeed because I wanted Sakai

to succeed. I knew his job would not be easy. All of the financial concerns that I knew were present did not just vanish with a new Executive Director. In some ways they were worse because Michael's salary was more than mine and Michael needed to quickly build relationships with partners who would be thinking about their renewal options at the end of their three-year membership contracts.

Just because the board liked Michael, it did not change their desire to spend money they did not have to try to make Sakai a competitive alternative in the marketplace. And Michael was coming into a situation where he knew that there had been intense conflict between me and the board so he would be well advised not to cross swords with an already cranky Board of Directors early in his tenure.

I liked Michael personally and really hoped he would succeed so I could ride off into the sunset taking credit for the success of Sakai. At the same time I felt sorry for him because he inherited the mess that I was escaping from.

With the new Executive Director chosen, we need to at least informally figure out who would be the new technical lead for the Sakai community. Glenn Golden had already moved on from his project-wide leadership position to work on a more narrow project called "Mneme" where he was building a new testing engine for Sakai. He also was tired of the stress and pressure of being the center of attention for three years.

An additional problem was that the University of Michigan and Indiana University were stepping back somewhat from their strong leadership position so to focus on meeting the needs of their on-campus users. This made a lot of sense, given how much both schools had sacrificed from 2004-2006 to make Sakai a success.

The heir apparent as the technical lead for the Sakai community was Ian Boston from Cambridge University. Ian had become a strong force in the Sakai 2.2 and 2.3 releases and he had developed the Wiki tool and Sakai's search capability as well as putting a lot of effort into the Sakai portal. Ian was quiet and calm and skilled and it seemed as though Cambridge was stepping into leadership roles in Sakai. If you look historically, Cambridge was an early partner with MIT in the OKI project, and an early partner in the Sakai project, but had never really led a project on their own. It made good sense for Cambridge to take a leadership role going forward and to be celebrated for taking that role.

We decided to hold a retreat at the University of the Highlands and Islands in northwest Scotland. Sean Mehan of UHI would host Ian and me for a two day retreat where we could think things through. Sean was involved because he was one of the leaders of the Bodington project and felt that the Bodington relationship was something we needed to take good care of during the transition. We took a few days right before the Sakai conference in

Amsterdam and just sat down in Skye and worked through what we thought would make sense going forward.

I left Scotland from Aberdeen for a quick trip to Barcelona before the Sakai Conference in Amsterdam. The night before I left we found a Karaoke bar in Aberdeen, and I sang "Born to be Wild" and a "Summer Nights" duet.

I had squeezed a one-day trip to Barcelona in between the Scotland retreat and the Sakai Conference in Amsterdam. The Open University of Catalonia (UOC) was working on their Campus Project to build a tool that could connect both into Sakai and Moodle using the MIT Open Knowledge Initiative (OKI) approaches. We had a number of great meetings during the day with all the stakeholders to describe the overall approaches at a high level. After all the meetings and dinner were over, two of the architects of the project, Francesc Santanach Delisau and Pablo Casado Arias took me off to a small bodega called "La Bodegueta". We had tapas and beer and did an architecture review of their software approach by drawing block diagrams on napkins well into the night.

The Sakai conference in Amsterdam was pretty surreal but also a wonderful for me. All the stress was gone, Michael Korcuska was there, I had not talked to the Board in nearly four months, it was our first international conference and the community felt very strong. I gave my farewell talks including a talk titled, "Sakai Technical Future Musings" where I just laid out the things I would do with the product going forward without taking any responsibility for delivering on the ideas.

While the Sakai meeting in Amsterdam in June 2007 was my last meeting as the Executive Director of the Sakai Foundation, it was the first meeting where the Sakaiger (`www.sakaiger.com`) actually appeared in physical form. We wanted some kind of gift to give all of the people who had worked with Megan May on the Sakai Quality Assurance team over the years. We had talked about creating a stuffed animal version of the Sakaiger off and on but it seemed impractical because most stuffed animal orders require an initial purchase of 1000 items.

I found a seamstress who would hand-make the Sakaigers. She designed the Sakaiger based on a Simplicity 3779 pattern for a stuffed rabbit. The seamstress adjusted the arms, legs, and ears to make it look more like a tiger. We made a 10-inch tall Sakaiger for Megan and twenty smaller 8-inch tall blue and white "baby Sakaigers" for Megan to give out to her QA team. The entire development of the Sakaigers was done in secret and they were all brought to Amsterdam in various people's luggage with everyone sworn to secrecy.

Megan always gave a report of the Quality Assurance at each of the Sakai meetings and when she was finished with her report in Amsterdam, we surprised Megan with the big Sakaiger and the baby Sakaigers for her to give away to her volunteer QA team. You can see a picture of Megan and

that first Sakaiger on `www.sakaiger.com`.

Everyone wanted a baby Sakaiger since they were so cute. No one could purchase a Sakaiger at any price and we made a rule that the only way you would ever receive a baby Sakaiger was to put in significant effort into the Sakai Quality Assurance effort and be awarded a baby Sakaiger by Megan.

On Thursday in Amsterdam, Michael Korcuska gave his first presentation to the community as the incoming Executive Director. At the end of his talk, he graciously thanked me for all my effort getting Sakai started and off the ground and they gave me a standing ovation. It was a nice way to formally end one phase of the project and begin the next phase of the project. I didn't cry.

Chapter 25

Epilogue

The story continues after June 2007 on a somewhat different arc. In the fall of 2007, I started full-time teaching and had no time to work on anything else. I continued to attend Sakai meetings during late 2007 and early 2008, but I really had not let go emotionally. As often as not, I would get in arguments with people about Sakai governance and make a fool of myself. I just needed more time away from Sakai.

I maintained my involvement in the IMS Global Learning Consortium, working on the IMS Learning Tools Interoperability and IMS Common Cartridge specifications. In February 2008, Rob Abel mentioned that I might be interested in joining IMS as a consultant to act as an evangelist to get the IMS standards adopted in the various learning management systems.

The idea of working with IMS really appealed to me because it would mean that my sphere of influence would be the whole marketplace and not just a single product. Working with IMS would allow me to travel worldwide and continue to work with all of the people I had gotten to know during my years with Sakai.

Before I could start working with IMS, I needed to work through the conflict-of-interest issues at the University of Michigan as I was the official IMS representative for Michigan. The University of Michigan saw my deeper involvement with IMS as a positive step so we decided Noah Botimer would take over as the Michigan IMS representative and I became a part-time IMS employee in March 2008.

In the summer of 2008, I participated in the Google Summer of Code where I advised two students who worked on adding Simple Learning Tools Interoperability to both Sakai and Moodle. Simple LTI was an informal prototype specification that I extracted from the IMS Learning Tools Interoperability. The Sakai work was done by Katherine Edwards of McGill University. The work in Moodle was done by Marc Alier and Jordi Piguillem from the UPC. Universitat Politècnica de Catalunya. Marc and Jordi were part of the Moodle development community.

Over the summer, I also worked with Microsoft, Angel Learning, McGraw-Hill, and Pearson Education to demonstrate plugging content securely into learning management systems using Simple Learning Tools Interoperability. We showed these integrations at the October 2008 Educause conference. While this demonstration was rather small and limited, it followed the pattern of on the earlier multi-vendor Alt-I-Lab demonstration projects. The demonstration allowed us to use engineering exercises to inform and motivate standards building activity.

In 2009, we decided to evolve Simple LTI to produce IMS Basic Learning Tools Interoperability and release Basic LTI as a formal standard with a certification suite.

In May 2009, Blackboard announced that they were purchasing Angel Learning. This was pretty disappointing as I had built a good working relationship with David Mills, Ray Henderson, and Kellan Wampler of Angel Learning. I was hoping to use that relationship to have Angel release the first commercial implementation of IMS standards as we developed them. I was planning to use Angel's quick action to motivate Blackboard to move forward. And once Blackboard would move, then pretty much the rest of the market would have to follow and match Blackboard.

But like they had done in purchasing WebCT two years earlier, all my plans were disrupted by a checkbook and the stroke of the pen. It really drove the point home that no for-profit commercial player in the marketplace was above being sold. In a sense, if a school really wanted to avoid being a Blackboard customer, the only option is to choose an option owned by a non-profit corporation or use open source software themselves.

As 2009 drew to a close, I started to feel like I had been away from Sakai long enough. And looking at the Sakai public tax returns (Form 990), it was clear that Sakai's finances were in pretty bad shape. Michael Korcuska was doing a great job, but during 2008 and 2009 Foundation revenue started to drop as the number of members dropped from 120 down to 80. The drop in membership level was affected by an economic downturn and higher education budget cuts. The other cause for the drop was that quite a few schools had initially joined Sakai but had not adopted Sakai.

At the Board's urging, Michael had hired a number of additional Foundation staff members with a goal of increasing adoption of Sakai. The resulting negative cash flow resulted in dipping into the Sakai Foundation's cash reserves, and slowly increasing the attendee costs for the conferences, and dropping from two conferences per year to one conference per year.

Even with those cost savings, the Foundation's negative cash flow eroded the reserves. The Foundation then moved to billing memberships up to three years in advance, and then started dipping into the pre-collected revenues to cover negative cash flows once the cash reserves were depleted.

On December 15, 2009 Blackboard dropped their patent suit against

Desire2Learn. It had been over three years of tension in the marketplace that added little value. Many in the market felt that this happened partially because Ray Hendersen (formerly of Pearson, formerly of Angel Learning) was now in charge of the Learn products at Blackboard. It was good to close that chapter of the marketplace and get back to innovating for teachers and learners.

At the end of 2009, I decided that it was time to run for the Sakai Board again. There had nearly been a 100% turnover of the Board members since I was Executive Director and I hoped that perhaps we could slowly adjust the mission of the Foundation to be more in line with my earlier visions. I knew it would take a long time to change the Sakai board culture, but I was in no hurry.

In January 2010, my son Brent was the lead singer in a heavy metal band named "This Day Means Nothing" (`www.td-mn.com`) and he wanted to get a tattoo. I decided that I should get a tattoo first to test out the tattoo shop and see how it all worked so I had the Sakai logo put on my right shoulder. I figured that if I ever wrote a Sakai book, I could use the tattoo as part of the cover art.

Early in 2010, Michael Korcuska left the Foundation to work as an executive at LinkedIn. LinkedIn was a great opportunity for him. Michael made many contributions during his tenure including: finishing the transition to an independent corporation with one set of books, nurturing the involvement of teachers focused on the pedagogy around the use of Sakai, and forming a structure and gathering resources for the Sakai Open Academic Environment[1] effort. I never blamed Michael for the financial situation because I was pretty sure that the board was always urging him to spend money.

With Michael leaving, the Foundation once again needed to hire an Executive Director. Over the first few months of 2010, it became increasingly obvious to the Sakai Board that their finances were in rough shape and that they needed to rein in their spending or go bankrupt.

In May 2010, the IMS Basic Learning Tools Interoperability specification was published with a full certification suite, and we had a number of LMS vendors and tools already certified to be compliant with the standard on the day the standards was released. No vendor had native support, but a number of people had built plug-ins that added Basic LTI support including Stephen Vickers of Edinburgh University and George Kroner of Blackboard. It was a proud moment for me.

In June 2010, the Sakai Board hired Ian Dolphin as the Sakai Foundation Executive Director. Ian had been on the Sakai Board of Directors during my tenure and he was the one who texted me to come to downtown San Francisco to the Sun meeting where I later lost my temper talking to John

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[1]The Open Academic Environment (OAE) was initially called "Sakai 3"

Robinson. (I never blamed Ian for the incident by the way.)

Ian was an excellent choice as the new Executive Director, because he saw the problem areas right away and got to work getting the Sakai Foundation back on solid financial footing during the last half of 2010.

At the June 2010 Sakai conference in Denver, the Sakai technical community formed the Technical Coordination Committee (TCC). It is the first form of governance in Sakai where the primary criterion for membership was being a long-term committed contributor to the Sakai Collaboration and Learning Environment (CLE).

The TCC was founded on real bazaar-style open source principles. Everyone is a peer and everyone is judged by the quality of their work and the quality of their ideas. The formation of the TCC gave me a structure that finally made me comfortable rejoining the Sakai community as a contributor. I am happy to be judged by my peers. My fellow members of the TCC were the people who earned my respect over the years because of the work they did rather than the title they held.

Here are the founding members of the Sakai CLE TCC:

Alan Berg, Universiteit van Amsterdam / Sakai Foundation
Noah Botimer, University of Michigan
Matthew Buckett, Oxford University
John Bush, rSmart
David Horwitz, University of Cape Town
Matthew Jones, University of Michigan
Beth Kirschner, University of Michigan
Jean-François Lévêque, Université Pierre et Marie Curie
John Lewis, Unicon
Megan May, Indiana University
Charles Severance, University of Michigan
Steve Swinsburg, The Australian National University
Seth Theriault, Columbia University
Anthony Whyte, University of Michigan / Sakai Foundation
Aaron Zeckoski, Unicon

The TCC founding members represented a great deal of talent and commitment and reflects the heart and soul of the Sakai community. These are the people who are around for the long-term.

At the October 2010 Educause meeting, Desire2Learn announced support for the IMS Basic Learning Tools Interoperability and IMS Common Cartridge import in their core product. This was a major breakthrough and frustrated Blackboard because Desire2Learn had beaten them to the market even though Blackboard was one of the co-chairs of the IMS Learning Tools Interoperability Working Group. Of course I was pleased to see a lit-

tle competition starting to happen as to who would be the first to support a standard.

The University of Wisconsin was in the 2011 Rose Bowl and my father Russ Severance is an University of Wisconsin graduate. So I surprised him on Christmas day with a Rose Bowl ticket and first-class plane ticket (frequent flier miles) to Los Angeles. It would be a father-son trip to the Rose Bowl.

I was deep in the middle of writing Chapters 1-10 of this book during the trip, so when we had down time or were on a plane, I had him review draft chapters as I typed in new chapters and printed them on hotel printers. We had a lot of fun and while Wisconsin lost the Rose Bowl, it was a great time.

Also in January 2011, Blackboard released their 9.1 Service Pack 4 with support for IMS Basic Learning Tools Interoperability and support for IMS Common Cartridge import and export and in February Blackboard announced their CourseSites offering where they provided a hosted instance of Blackboard available at no charge for faculty to use[2]. By providing IMS Common Cartridge export and providing a free hosted instance, Blackboard one-upped Desire2Learn. This kind of competition to show which vendor could better serve teachers and learners through standards and interoperability made me happy.

For me Blackboard 9.1 and CourseSites marked an important tipping point in the marketplace where I think we will begin to see the emergence of whole series of Web 2.0 teaching and learning tools and content that work broadly across a wide range of learning management systems. While there is still far more work to do, it was a proud moment for me.

With Blackboard supporting Basic LTI out of the box, the list of Basic LTI compliant systems included: Desire2Learn, Blackboard, WebCT, OLAT, Sakai, Moodle, Jenzabar, and Learning Objects. Penn State University was working on a version of Basic LTI for Angel Learning and once that was completed, it would mean all of the LMS systems with significant market share supported the specification.

In many ways, having a open specification to plug tools into the market-leading learning management systems with a minimum of technical effort was what I had been working towards since 1996.

I was pretty satisfied with how far the market had come but a new problem was that Sakai was no longer the market leader in terms of the "best support for interoperable standards." So I decided to spend some time in 2011 working on helping Sakai catch up with Desire2Learn and Blackboard.

It feels good to be playing catch up.

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[2]www.coursesites.com

Chapter 26

Reflection

The Sakai Project and Sakai Foundation were an amazing experience. For me it was a once-in-a-lifetime opportunity to have virtually unlimited travel budget and an outstanding team of people dedicated to the simple purpose of making Sakai a success, whatever "Sakai" might mean.

We had broad commitment from people with a very wide range of talents and this diversity is what led to our rapid success. When I look back at the team we formed somewhat by happenstance, we ended up with coverage of all the necessary talent areas for a successful startup.

We were a startup and we functioned like a startup. Our success was viral, and that left us out of breath and feeling out of control for three exciting and stressful years. And yet we emerged with something wonderful — just like a startup.

It is important to note that successful diverse groups are those that can have strong disagreements and work through those disagreements using reasoned discussion. Quite often this worked to perfection in the Sakai project. The results of the Sakai licensing discussion was a collective learning and growth experience for all of us. We ended up with a collective result that was better than anything we would have come up with individually.

There were of course, conflicts that did not resolve so nicely and in particular, there was a pretty fundamental disagreement between me and the Sakai Board(s) about the core values of the organization. This disagreement would show itself over and over in little ways throughout the project and ultimately I snapped in February 2007 because I just was tired of the continuous small battles. It was clear to me that the underlying disagreements were going to be with us forever.

We simply had differing goals and core values at the founding of the project.

At the beginning, everyone agreed that the goal was an open source product with an open license and an open developer community. When we started, we carefully did not call the project "open source." We de-

scribed Sakai as the first example of a "community source" project because we understood that the universities were first-class stakeholders in the Sakai project. We knew that virtually all of our design, development, and quality assurance resources would come from universities so we needed a way to engage those universities more broadly than just through their technical staff as individuals.

We were trying to find a way to have a more sustainable long-term source of resources than the typical Apache project. Some Apache projects (i.e. the Apache Web Server) have large robust teams with lots of long-term developer commitments, but there are far more small Apache projects with teams in the range of 1-10 people and widely varying resource availability. We hoped that by creating a community, with conferences, a Foundation, and a small central staff that we could create a solid point where resources could be aggregated for the overall good.

Up to this point, we all agreed with the goals and values and structure of the organization. Where the disagreement starts, was the mission and purpose of the Foundation, its Board of Directors, and the centrally funded staff positions.

My opinion was that the purpose of the Foundation was to have a light touch and focus on nurturing the individual and organizational members of the community. The Foundation was to be the cheerleader, the communicator, throw good parties several times per year, give awards like the Sakaiger, choose fellows and generally give folks a rallying point to find each other. My view of the Foundation was modeled on the Apache and Python Foundations with a bit more money available centrally. A critical element of my view was that the Foundation was never to take the responsibility for the direction of the product, nor should the Foundation hire core developers, nor should the developers report to Foundation staff to receive their assignments.

The opposing view held by the majority of the board members was that the Foundation and Foundation staff were a form of command and control with the top of the authority hierarchy as the Sakai Foundation Board of Directors. The organizational management stakeholders were concerned that letting individuals and organization make their own priority decisions in regards to development activities would be too risky for the adopting schools. Central control and guidance was needed to insure that the product would move forward according to a well-defined and well-understood roadmap and do so on an agreed-to schedule.

Brad Wheeler summed up our shared intentions nicely using a reference from Eric Raymond's book, "The Cathedral and the Bazaar" which compared hierarchical organizations (Cathedrals) with more organic and self-organizing open organizations (Bazaars). Brad would say, "Community Source is neither a cathedral nor a bazaar, it is more of a pub where we

get together and talk and work things out."

Brad's characterization fits my model at a high level, but there was still a subtle difference between our two models. In Brad's pub, depending on the project, there would be roles and a structure. As an example, there might be a table labeled "functional experts" and another other table labeled "development team." Information flowed freely between the tables but at the end of the day, the one table would make design decisions and another table would be tasked with implementing those decisions. In my pub, everyone was just a worker. Management and leadership were important tasks to be done and as such managers and leaders were welcome at any table as long as their purpose was to bring value to the effort and not just sit back and make decisions. Brad's pub had job titles, committees, procedures, and structure. My pub is organic, unstructured, focused on finding whatever resources were needed and connecting them to get work done.

It would be wrong to characterize either of these approaches as universally wrong and the other approach as universally correct. Both approaches have their place and I think that it really depends on the kind of community you are trying to build and the kind of software problem you are trying to solve.

The reason that I prefer a bazaar-style organizational structure for Sakai was that software for teaching and learning is something that everyone understands and has feelings about. We all are teachers, learners, and parents of learners. There is not one set of designated experts who can define and design teaching and learning software and hand that design to some developers and have them "code it up" as if programming was an advanced form of typing.

Teaching and learning software is always evolving and in a state of flux, good ideas can literally come from any part of the world and an idea can come as easily from a student as from a professional instructional designer. So I felt that it would be wrong to let design and priority decisions rest in the hands of a select few.

On the other hand, Brad formed the Kuali Financials project using his hybrid-cathedral structure and I think it works well for that application. Kuali Financials is accounting software supporting general ledgers, chart of accounts, etc. Unlike teaching and learning software, there are identifiable domain experts that know the right way to build accounting software. The developers building accounting software are not as likely to be the source of innovative ideas for accounting software, so it makes perfect sense to do design and prioritization in a more centralized manner. And in Kuali there is still the opportunity for teams or individuals to make local choices and add innovative features on their own initiative.

I like to think of Kuali Financials and the Sakai Collaboration and Learning Environment (CLE) as two points on a continuum where the extreme

end points are labeled "Cathedral" and "Bazaar." Apple Computer would be at the Cathedral end and Apache Pluto would be at the Bazaar end. Both Sakai and Kuali Financials are somewhere in the middle with the Sakai CLE slightly closer to "Bazaar" than Kuali Financials.

There is not a right or a wrong — there just are governance dials that can be adjusted to adapt to the kinds of applications a group of people are trying to build together.

My hope is that the long-term contribution of the notion of "community source" is that we can pick and choose pieces of the Cathedral and the Bazaar to produce interesting and useful structures. I hope that future projects can learn from the Sakai and Kuali experiences and end up building the right structure for themselves without having to go through an extended period of conflict debating over the right model.

I need to emphasize (one more time) that while there was a lot of stress, tension, and conflict for me in Sakai from 2003-2007, things never got so bad that people stopped being friends.

My final reflection is about Joseph Hardin. In the book, "The Starfish and the Spider: The Unstoppable Power of Leaderless Organizations" by Ori Brafman and Rod A. Beckstrom, they suggest that there are two important archetypes needed to create long-lived Starfish organizations. The "Champions" are those in the organization who promote the organization and recruit new members and explain it to the new members. Sakai had lots of outstanding Champions in Brad Wheeler, Mara Hancock, Rob Lowden, Lois Brooks, Vivie Sinou and others. Our Champions had magnetic personalities and were excellent speakers and were trusted and well-liked and were great assets to the project.

But the most important archetype in a Starfish organization is called the "Catalyst." The Catalyst is the one who causes the organization to form and establishes its core values over time. Generally the Catalyst is quieter and more thoughtful and focuses their energy on helping and guiding everyone else in the organization. Catalysts have the ability to set things up and then trust the organization enough to step back and let the organization take its own path.

Joseph Hardin was the Catalyst for Sakai. His contributions were the most important contributions of all. They were quiet and subtle and he never took any credit for what he did. He just helped and supported everyone in the project regardless of what each of us needed.

Joseph made it possible for all of the giant talent and giant egos that we brought together in the Sakai project to work together and accomplish great things even during times of conflict.

Joseph Hardin was the force that held everything together and made the project possible. And regardless of the magnitude of Joseph's contributions, he always let someone else take the credit.

About the Author

Charles is currently a Clinical Associate Professor and teaches in the School of Information at the University of Michigan. Charles is a founding faculty member of the Informatics Concentration undergraduate degree program at the University of Michigan. Charles also works with the IMS Global Learning Consortium promoting and developing standards for teaching and learning technology. Previously he was the Executive Director of the Sakai Foundation and the Chief Architect of the Sakai Project.

Charles is the author of the book, "Using Google App Engine" from O'Reilly and Associates and the book "Python for Informatics: Exploring Information". He also wrote the O'Reilly book titled, "High Performance Computing". Charles has a background in standards including serving as the vice-chair for the IEEE POSIX P1003 standards effort and edited the Standards Column in IEEE Computer Magazine from 1995-1999 and currently serves on the IEEE Computer Editorial Board. Charles writes a monthly column in IEEE Computer Magazine titled, "Computing Conversations" that showcases innovators in the computing field through an article and video inerview.

Charles is active in television and radio as a hobby, and has co-hosted several television shows including "Nothin but Net" produced by MediaOne and a nationally televised program about the Internet called "Internet:TCI". Charles appeared for over 10 years as an expert on Internet and Technology as a co-host of a live call-in radio program on the local Public Radio affiliate (www.wkar.org).

Chuck's hobbies include off-road motorcycle riding, karaoke and playing hockey.

Charles has a B.S., M.S., and Ph.D. in Computer Science from Michigan State University.

Reviewer Comments

"The author's personal style puts you right at the centre of the maelstrom. The book also gracefully highlights how well the individuals involved worked together despite the daily wear." - Alan Berg (Free Software Magazine)

"An insightful look into a real open source project." - Mark Norton

"Sakai was a pioneer in teaching higher education that we could collaborate at scale. Countless lives were changed through that journey, and Chuck gives an insider's look at the people and myriad decisions that shaped the community." - Brad Wheeler

"Charles Severance is Sakai." - Joel Greenberg

"Chuck's conversational style in the telling of the story of the historically significant Sakai open-source project and its worldwide impact in higher education makes it an enjoyable read!" - Carol Dippel

"As somewhat of an insider myself, I was still intrigued by the inside inside look and thrououghly enjoyed discovering what I never knew was happening behind the scenes. It was great fun reliving the Sakai experience - it brought to mind many forgotten friends and experiences." - John Leasia

"Building software is easy, building a community is a whole different animal." - Rob Lowden

"Can the global educational community provide leadership in educational technology? The story of Sakai shows that the answer is 'yes'. This book chronicles many of the individuals involved - all of whom deserve a special thanks." - Rob Abel, Ed.D.

"Sakai and its leadership demonstrated that a mainstream, multi-faceted application for non-technical users could be designed, developed, maintained, and improved under the open source business model. The product and the community it fostered, secured a place for open source as an operative path to bring significant productivity tools to market." - Jeff Kahn

"This book is a real learning-by-doing experience. A love history between Chuck and the Sakai Community." - Francesc Santanach

"Dr. Chuck is rare beast, able to go from the hills of enlightenment, vision and strategy and then down to the seventh level of Dante's Hell with concrete technical detail and hang with the geeks." - Marc Alier

"Warning: Exposure to such high levels of boldness, insight and refreshing sanity may result in a extreme desire to engage in community source projects." - David Barroso