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The Open Source Business Resource

Editorial

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Reflecting on Fifty Issues of the OSBR

Chris McPhee

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Editorial

Chris McPhee

For this issue of the OSBR, we issued a general invitation to authors to submit articles on the topics of open source business and the growth of early-stage technology companies.

Anthony Casson and Leslie Hawthorn introduce the Oregon State University Open Source Lab, which is home to more than 50 leading open source projects. The lab's staff and students offer hosting, customer software development, vendor partnerships, and industry events. The article focuses on the value of the lab to open source projects and its student employees in particular, who benefit from an immersive educational experience, enhanced professional identities, and real-world work experience.

Tyler Mitchell, Executive Director of the Open Source Geospatial Foundation (OSGeo), applies the concept of technical interoperability to the important social interactions that take place within communities. He uses OSGeo as a case study to show that innovation requires more than technical interoperability; it also requires high levels of social interoperability.

Sandro Groganz, Co-founder of Age of Peers, describes the benefits of business ecosystems for partners of open source vendors. He provides insight into the structures and relationships of vendor-driven open source ecosystems, with the aim of giving partners of open source vendors a strategic foundation for their interactions with the community.

Tony Wacheski, CEO of Anystone Technologies, shares lessons learned during the first year of his mobile applications startup. During this time, the company has released applications for children and music learners, and it has started an open source project that provides an enhanced

development framework for handling in-app purchases and related transactions. The article describes the company's first applications and the valuable development, marketing, and sales experience they provided.

In the final article, I look back at four years of the OSBR and describe upcoming changes that will see the publication become the *Technology Innovation Management Review* starting in September. I describe how the OSBR started in July 2007, the knowledge gap it hoped to fill, and the diversity of topics and authors that filled its pages over 50 issues. Finally, I describe the new publication's broader scope, which formalizes a shift that has been gradually occurring over the four years of the OSBR.

In September, we look forward to the first issue of the *Technology Innovation Management Review*. We welcome your feedback and invite you to submit articles on the topics of managing innovation, entrepreneurship, open source business, economic development, or the growth of early-stage technology companies. Please contact me at chris.mcphee@osbr.ca if you are interested in submitting an article.

Chris McPhee

Editor-in-Chief

Chris McPhee is in the Technology Innovation Management program at Carleton University in Ottawa. Chris received his BScH and MSc degrees in Biology from Queen's University in Kingston, following which he worked in a variety of management, design, and content development roles on science education software projects in Canada and Scotland.

Introducing the Oregon State University Open Source Lab

Anthony Casson and Leslie Hawthorn

“One of the greatest and simplest tools for learning more and growing is doing more.”

John Roger

The Oregon State University Open Source Lab (OSUOSL) is the home of growing, high-impact open source communities. Its world-class hosting services enable the Linux operating system, Apache web server, the Drupal content management system, and over 50 other leading open source software projects to collaborate with contributors and distribute software to millions of users globally. Through custom software development, vendor partnerships, and industry events such as the Government Open Source Conference (GOSCON), the lab's staff and students encourage open source adoption in education, government, health care, and other sectors. In addition, the lab creates real-world educational opportunities for its students by providing high-value development and hosting services for open source communities. In this article, we describe the benefits of the OSUOSL to open source projects and to students of Oregon State University.

Introduction

As open source projects grow and evolve, their needs for a stable home often outgrow the services provided by free-of-charge “canned hosting” sites such as SourceForge (<http://sourceforge.net>), Google Code (<http://code.google.com>), and GitHub (<https://github.com>). New needs can include dedicated systems administration support for items such as regular security upgrades or mailing list management. Further, code repositories and documentation sites, such as wikis, experience a much greater load as the user and developer bases for a project increase, leading projects to require more bandwidth and an infrastructure that does not crumble under increased user load. While most of these problems can be solved using commercial services,

many open source projects lack the funding required to make use of said services or to hire dedicated staff for infrastructure creation and maintenance. Even in cases where funds are available, many open source communities may require that their “home” be trusted and fortified against the slings and arrows of the market; a company may change its terms of service at will to be in conflict with the goals and governance of the project or funding sources may suddenly become unavailable.

Enter the Oregon State University Open Source Lab (OSUOSL; <http://osuosl.org>). The OSUOSL provides open source projects and communities with services from custom software development to hosting, including virtualization, DNS management, network monitoring, database

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management, backups, FTP mirroring, mail relaying and hosting of physical servers in our data centre. As a trusted, reliable, and neutral third-party with a demonstrated record of support for the open source community, the OSUOSL provides deeply needed services in an environment where projects know that their interests are understood and their needs will be met by fellow open source community members – people who share their goals, values, and enthusiasm for open source development methodologies and collaborative community practices.

The mission of the OSUOSL is to accelerate the growth of high-impact open source software projects worldwide through professional hosting services, custom development, and industry expertise provided by the staff and students of Oregon State University (OSU; <http://oregonstate.edu>). Through custom software development, vendor partnerships, and industry events, the lab's staff and students encourage open source adoption in education, government, health care, and other sectors. The lab is also providing an invaluable educational opportunity for OSU students, who have a chance to learn more about open source software development, capabilities, and applications through part-time jobs or internships.

In this article, we describe the services offered by the OSUOSL and illustrate how they create opportunities for students to: i) enhance their educational experience at university, particularly in subjects related to open source software and its development; ii) gain valuable real-world work experience and enhance their professional identities, iii) contribute to the greater good of their communities, and iv) find employment during and after their time in university.

History of the OSUOSL

In 2004, IT administrators at OSU were searching for a way to cut costs while ensuring that

needed services remained available. By deploying the open source search product Nutch (<http://nutch.apache.org>), the systems administration team was able to cut spending on these services from \$125,000 USD per year in licensing costs to only \$10,000 USD per year, the latter figure being the increased staff time resulting from the need to train and have additional support resources for Nutch as an off-the-shelf solution. In light of this initial success and faced with a budget crisis, the university performed further investigations into potential costs savings from open source.

Soon after, the university's primary operating system was switched to Gentoo Linux. During this switch-over, the university also decided to maintain an open source mirror site, which became the catalyst for an increasing number of relationships with open source projects. The success of the mirror and the relationships that grew from it ultimately encouraged the development of hosting capacity at OSU for many of these projects.

The OSUOSL was founded in 2004 as a way for OSU to give back for the benefits it received from using free/libre open source software (F/LOSS).

From the beginning, the OSUOSL grew organically and opportunistically. Growth was driven by word of mouth and one project was added at a time, such that the lab could increase its capacity in step with the increasing needs of the projects it hosted. As the lab's experience and reputation grew, further opportunities to offer additional benefits to projects, communities, and students became apparent.

The OSUOSL is now home to over 50 leading open source software projects, including the Linux operating system, the Apache web server, and the Drupal content management system, which together represent millions of users and

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contributors around the world. The OSUOSL also offers development services to many open source projects and government organizations that are looking to implement or extend open source software to meet their needs.

The OSUOSL is part of Information Services Department at Oregon State University. Its staff members are all OSU employees, and its student employees are all students within the Oregon University System. The OSUOSL receive many benefits from being a part of the university, including office space, data centre space, infrastructure, and a close tie to students who are interested in working with open source. However, the OSUOSL receives very little direct funding from the university, which is why the lab relies on a combination of external donations, support contracts from those residents of the lab who can afford to pay for services, and research grant funding for its operations. Largely, the OSUOSL is supported by generous donations from corporate sponsors such as Google, Facebook, and IBM, with Google by far being the lab's greatest benefactor since its inception. Additional work in the area of research and development in partnership with the academic world will be required to make the OSUOSL fully sustainable over the long term.

The OSUOSL's Advisory Council, composed of leaders in industry, open source, and non-profit management, provides strategic guidance to the lab. The open source players include Chris DiBona, head of open source at Google, Dries Buytaert, founder of the Drupal project, Justin Erenkrantz, former President of the Apache Software Foundation, Greg Kroah-Hartman, Linux kernel maintainer, Jason McKerr, Vice President of Development for Puppet Labs, and Allison Randall, the lead developer and architect of the Parrot project. On the non-profit knowledge side, the OSUOSL is fortunate to count among its advisors Marie Deatherage, Director of Communications for the Meyer Memorial Trust, a foundation that serves a wide variety of public interests in the state of Oregon.

OSUOSL Services

The OSUOSL develops technology and tools to expand and manage growing open source software projects. The OSUOSL offers a full range of hosting and development services, including requirements analysis, design, coding, and testing. All of these services are offered by the OSUOSL staff, which includes students.

The OSUOSL provides hosting for projects and communities involved with open source software development. If organizations have a server to host, need to purchase a server, or maybe even just need a portion of a server, the OSUOSL can help. Typically the lab refers to the Open Source Initiative's (OSI) definition of open source, found at <http://opensource.org>. If a project follows an open development model and is freely available under an OSI-approved license, it may qualify for hosting. Specific hosting series are listed below:

- virtualization
- DNS management
- Nagios monitoring
- graph monitoring
- database management
- backups
- FTP mirroring
- mail relaying
- shared website hosting
- project co-location hosting
- PowerPC development

OSUOSL development staff and student employees also provide full software development services including requirements analysis, design, coding, and testing. The lab's development solutions have served many open source projects in addition to educational and government organizations that are looking to implement or extend open source software to meet their needs.

The alternatives are largely commercial vendors. In most cases, F/LOSS communities appreciate that the OSUOSL is a neutral player dedicated to

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helping the community rather than a commercial entity. In reference to stability, the support extends beyond just server uptime, for example. The lab has dedicated staff to help projects grow and flourish whether or not they are able to pay for the service now or in the future. People know that, if something is hosted at the OSUOSL, it has a good, permanent home, regardless of future ability to pay or changes to commercial services that may be in conflict with project goals and governance.

OSUOSL Initiatives

In addition to its hosting and development services, the OSUOSL runs several initiatives to share its accumulated knowledge, support open source communities, and raise awareness about open source software:

1. GOSCON. The OSUOSL's Public Sector program was formed in 2005 to educate and share information amongst governmental organizations and other public sector institutions. One of the program's main initiatives, the Government Open Source Conference (GOSCON; <http://gosccon.org/>) is produced and hosted by the OSUOSL as part of its mission to educate and build community. GOSCON has helped fuel the adoption of open source technology in the public sector by attracting information technology leaders worldwide to its annual event. Ongoing conference content includes lessons learned in the development and integration of open source solutions into agency environments, exposure to projects and existing software applications and services, and opportunities to establish and foster relationships for collaboration around shared interests. Industry luminaries and pioneers from public and private sectors gather, present, and network in a non-commercial setting.

2. Beaver BarCamp. One of the OSUOSL's most engaging and localized events is Beaver BarCamp, an annual "unconference" – a business conference that veers from the norm – that gives students, faculty, and members of the wider com-

munity a chance to connect and learn from one another. Beaver BarCamp follows a timetable, but participants determine the presentation topics. The technical topics vary, from open hardware to multi-touch device programming to geolocation services. The BarCamps are relaxed conferences for people to share knowledge following the open source view. They give students opportunities to network with technologists and meet potential industry mentors.

3. Open Source Education Lab. The Open Source Education Lab (OSEL) is an organization built for students to get them involved with F/LOSS development. Experience outside the classroom is important, and this group helps students learn new skills through peer-to-peer teaching. Faculty and students support newcomers and help them find projects that will develop their abilities to meet the requirements of the professional world. The OSUOSL's proposed OSEL charter would focus on establishing a student-run consulting group providing expertise and best practices in open source software.

4. Supercell Testing and Ganeti Web Manager. Businesses and groups that lack access appropriate hardware or sufficient funds to outsource software testing can turn to Supercell, an OSUOSL cluster funded by Facebook's Open Source Team. Project developers can use Supercell to manually test patches and packages on particular operating systems or distributions using a large cluster of virtual machines running concurrently. Supercell provides temporary space for developers to test new features in their code base on their website. Short-term virtual machines are provided; Supercell is not intended for production services such as web or mail.

Cluster management is controlled with Google's Ganeti software (<http://code.google.com/p/ganeti/>) built on top of a kernel-based virtual machine. To give users access to their clusters, the OSUOSL offers Ganeti Web Manager, a homegrown project developed by the lab's full-time and student employees that gives adminis-

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trators and clients access to their Ganeti clusters. It includes a permissions and quota system that allows administrators to grant access to both clusters and virtual machines. It also includes user groups for structuring access to organizations.

5. OSU Linux Users Group. This group is run by students from the OSUOSL; students within OSU's School of Electrical Engineering and Computer Science (<http://eecs.oregonstate.edu>) are actively encouraged to attend. The meetings provide an opportunity for students to learn about open source and the OSUOSL in a peer mentorship framework.

Value to Students

While non-profit organizations and community-based projects benefit from the services offered by the OSUOSL, the benefits to the students at OSU are substantial and represent the primary motivation for the university's support in expanding the lab. Students are involved with every service the OSUOSL currently offers, allowing them to realize the following benefits:

1. Enhance their educational experience at university, particularly in subjects related to open source software and its development. Lessons learned at the OSUOSL better prepare students for their classroom assignments and better prepare them for their future careers in industry. This preparation is not just in the form of technical learning; students get the opportunity to learn more about different approaches to collaboration and team work, community building, how non-profits work, and how fundraising, business development, and marketing are done in this context. Professors also frequently bring students to the OSUOSL for tours of the lab; through their professors, the students can learn about the data centre, servers, and other hardware, along with the various open source software projects. They also learn what it is like to work in the lab.

2. Gain valuable real-world work experience and enhance their professional identities. Working on open source projects not only gives our students a great opportunity to use, understand, and contribute to new technologies, but also puts their work out in the open where it can be seen and appreciated by users, developers, and potential employers. Since the students' work is open source, their contributions are visible to future employers as a means to evaluate their technical and social aptitude.

3. Contribute to the greater good of their communities. The OSUOSL is a strong supporter of the Humanitarian Open Source community, hosting such projects as the Sahana Software Foundation, a disaster preparedness and response software system, and OpenMRS, an open source medical records system designed to meet the needs of small clinics in the developing world that are providing care to those with HIV and AIDS. For further information about Humanitarian Open Source, including these two projects hosted by the OSUOSL, see the December 2010 issue of the OSBR (<http://tinyurl.com/2dytlb6>).

4. Find employment during and after their time in university. Working at the OSUOSL is a great job for students. Beyond the opportunity to get great experience and make a name for oneself while still in college, it is paid work with a flexible schedule that is specifically tailored to the needs of students. Several incoming students in the School of Electrical Engineering and Computer Science have noted that they came to OSU because of the lab and the university's interest in open source.

The lab employs an average of eight part-time students every term. Student employee work hours are restricted by the university to 20 hours per week during the fall, winter, and spring terms, but about half of the students work full time over the summer.

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Helping students develop skills for the workplace after college is one of the OSUOSL's primary goals. The lab exists as a mechanism to help transform a student's future for the better. The lab has seen many of its former student employees become successful professionals and entrepreneurs, including the following:

1. Alex Polvi founded Cloudkick (<https://cloudkick.com>), a cloud-computing management company. After 11 months, Polvi sold the San Francisco startup to Rackspace.
2. Eric Searcy is now a systems administrator for the Linux Foundation.
3. Ben Kero is now a systems administrator at Mozilla.
4. Narayan Newton is a partner and CTO of Tag 1 Consulting (<http://tag1consulting.com>), a Drupal consulting business in Portland, Oregon.

Most alumni continue working on open source software – in some cases on the very projects to which they contributed during their time at the lab. Alumni also maintain personal and professional connections to the lab, often directly through their subsequent employment with projects hosted at the lab. Alumni also play a role in promoting the lab and answering questions from visitors and project personnel. Some alumni have also stepped in to volunteer with lab work during periods of peak activity. As one of our OSUOSL slogans says: "It's about community."

Conclusion

The OSUOSL is an organization for the people. Its staff members immerse themselves in the open community and this in turn fuels their belief in open source software development and business venture. For students, the OSUOSL is a challenge-rich environment in which they can improve their skills, learn new ones, and sprout

into industry as professionals. Projects have a stable home at the OSUOSL, one where passion helps drive improvement and longevity and where project developers can feel at ease. OSU also generates significant international attention and goodwill from the OSUOSL's activity, both in its relationship to academia and in the public sector.

The lab has experienced tremendous growth over the years since its birth, and it continues to grow. This growth is desirable; all of the progression is to benefit every aspect of the technical world in which the lab resides.

Anthony Casson is a part-time student writer for the Oregon State University's Open Source Lab since January 2011 and also works with Oregon State Athletics as one of the Sports Information Department's feature writers. He is pursuing a career in writing and is studying new media communications. He will graduate with a B.S. in Liberal Arts in December. Anthony has written for various publications, both domestic and international, predominantly as a feature and profile author. You can find him on Twitter as @ASCasson.

Leslie Hawthorn has more than 10 years experience in high tech project management, marketing and public relations. She currently works as the Outreach Manager for Oregon State University's Open Source Lab. She also serves on the Boards of the Sahana Software Foundation & CASH Music, as an Advisor to the Humanitarian FOSS Project and on the Editorial Board for the Open Source Business Resource. Leslie previously worked as a Program Manager for Google's Open Source Programs Office, where she was responsible for the company's developer outreach efforts, most notably the Google Summer of Code program and the Google Highly Open Participation (now Google Code In) contest. You can find her on Twitter as @lhawthorn or read her personal blog at <http://hawthornlandings.org>.

Beyond Technology: Enabling Communities Through Social Interoperability

Tyler Mitchell

“Personal relationships are the fertile soil from which all advancement, all success, all achievement in real life grows.”

Ben Stein

Technical interoperability between open source software projects is increasingly common. Applications that were designed to communicate effectively with other applications are more robust and give users the freedom to combine them with other applications that were built to interoperable specifications. Projects such as Apache, Linux, and other development platforms, have helped fuel this move to interoperability in unique ways, including the capability of building further applications upon their foundations. They also encouraged the development of new communities and ecosystems of users and developers.

The OSGeo Foundation (<http://osgeo.org>) has taken advantage of these powerful open source platforms with several open source projects focusing on technological interoperability. However, there is also significant *social* interoperability taking place within the organization. What seem to start as ad hoc communities, in turn, create further opportunities for both social and technological advances. This article uses OSGeo as a case study to show that, when individuals contribute to the community and join together with other likeminded members, new technology *and* relationships pave the way to further innovation.

Introduction

In the world of software development, the term “interoperability”, can take on different meanings, including the general ability to share data or the creation of open application programming interfaces (APIs) for inter-application communication. In the case of this article, technical interoperability refers to the range of ways to have applications talk to one another for the purposes of sharing data. Various organizations have overseen the creation and management of standards that help define common interoperable criteria. By using these standards, software projects can be certified as compliant to a cer-

tain specification. The benefit to end users, developers, or system integrators, is the possibility of handling an overall system in a modular manner. If a product is no longer the best solution for a particular need, it can be easily replaced with another one that is also standards compliant. Vendor lock-in is highly related to a lack of significant interoperability. In contrast, interoperability can allow solutions providers to give their clients a choice between proprietary and open source options; if competing applications are interoperable, they may also be interchangeable.

Interoperability standards are not only for the largest or most progressive open source projects;

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they should be given close consideration by all who develop software. Public pressure continues to encourage proprietary software creators to move away from “silos” and “black boxes” and one of the best ways to do so is by adopting existing standards (or even creating new ones). Standards have been around for almost as long as computing has existed, although we may take some of them for granted, such as POSIX, ASCII, TCP/IP, and graphics outputs (VGA). If the benefit of even one of those standards disappeared today, it would be keenly felt by all.

For the purposes of this article, these kinds of standards are considered *foundational*. They formed a foundation that ultimately made it possible for the next level of innovation to occur. Examples include email protocols, file formats, HTTP, programming languages, and more. Stopping short of trying to enumerate these as a second generation of standards, it is enough to see that standards beget further standards and help seed innovation. Likewise, it can be argued that this innovation occurs because more people are able to collaborate as they become increasingly able to find other likeminded collaborators. Without the ability to communicate there is little hope for innovation or interoperability.

True interoperability increases our capability to communicate effectively. History will likely show that “the next great thing” involves three key aspects: i) interoperable standards (enabling communication); ii) open source development (enabling participation); and iii) people collaborating on topics of similar interest (building relationships). Technical interoperability has received considerable attention, yet the social aspect of increased communication within project teams is worth more consideration. People and the relationships they build are critical to the next stages of breakthrough, and both open source businesses and open source project communities (developers, users, integrators, etc.) can benefit from reviewing the patterns behind the social dimension of interoperability. In this

article, we examine the Open Source Geospatial Foundation (OSGeo) as a case study on social interoperability.

OSGeo

OSGeo (<http://osgeo.org>) is a non-profit umbrella organization representing a loose collection of software projects. The software projects focus on tools for building, sharing, and mapping geographical information. Many of these projects have been enabling technical interoperability long before OSGeo was formed in 2006. De-facto standards have often arisen, but the international standards organization – the Open Geospatial Consortium (OGC; <http://opengis.org>) – has helped set the stage for serious, long-term, interoperable specifications.

OSGeo projects were already building to these standards and being actively used, so what OSGeo brought to the table was more on the social side, such as marketing, communication, networking, and education. For more background on OSGeo and its efforts to promote open source geospatial products to end users, see the author's OSBR article entitled “Reassuring End Users of Open Source” (Mitchell, 2009; <http://tinyurl.com/3mmjj4c>).

If interoperability is about more than technology, evidence might show that the relationships between people within OSGeo are just as important for future success as the software itself. Likewise, increasing the personal and professional abilities of the people in the community would also help drive innovation forward as they collaborate at higher and higher levels. Engaging the people and helping them connect has been an important part of OSGeo's strategy.

It became apparent early on that individuals from across the spectrum of software projects would be the organization's key resource. As hoped, these individuals quickly self-organized into local groups and committees, which has

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propelled the organization forward faster than anticipated. This tidal force further enabled a stream of capabilities, including regional outreach, global events, and international academic connections.

OSGeo and Interoperability

Due to the open nature of open source development, the application of practical OGC specifications is critical. To effectively promote any product in today's marketplace, it must have key set of interoperable features (i.e., a list of OGC specifications the product technically supports). If a product cannot communicate with other compliant applications, then it is an infamous silo or, even worse, a black box. Integrators and clients have decreasing tolerance for both of these scenarios in this age of "open data".

OSGeo has focused on telling others *about* the technology that is available, that it exists, that is being used successfully, and that it helps deliver solutions. Instead of listing all the detailed features of a piece of software, the focus has been more on matching particular user needs to the right product or package of products that support the required standards.

Since open source products compete with proprietary products for market share on the same grounds of interoperable platforms, what makes it possible for open source geospatial products to increase their adoption rate? Two competing software products may be similar ranked from a technical aspect, yet the open source option has an increasing chance of being chosen. Why is that? Naturally, part of the decision may relate to licensing or cost, but the other area that is often considered is the social environment around the product. Communities can help drive adoption in cases where specific features are not the primary differentiating factor.

OSGeo has helped bring together a largely disparate community that crosses many project

boundaries and geographical areas. When reflecting on the role OSGeo has played and how existing communities became integrated and new communities were formed, it is possible to see a clear pattern of coalescence between groups. These, on their own may not sound so interesting, but each act of joining together has led the way to a higher level of cooperation and productivity. These groups were all developed informally, as a sort of adhococracy, by the individuals involved.

Technology enabled the increased communication required for cooperation within communities. Open source software development platforms, such as the GNU compiler collection, Linux operating system, Apache web servers, email servers, mailing lists, networking, and databases, all contributed to the growth of many open source projects, including ones targeting the geospatial/mapping domain. OSGeo came to help spread the word about these projects, but in order to do so it had to find the mechanism for that growth and outreach. The answer was people.

Cultivating OSGeo

In OSGeo's infancy, there were many projects running, each with their own ways of communicating and working together. An individual from one project may also be working closely with people from another project through a loose personal affiliation. There were only a handful of concerted efforts, mostly just a few websites, to draw attention to the broader collection of tools that were available.

From these projects and from companies known to be using them, a base group of founders were able to meet each other face-to-face for the first time and commit to working together with a common spirit. These charter members were the first fruits of OSGeo; they drew together dozens of individuals from around the globe to meet and plan the next tier of cooperation.

Enabling Communities Through Social Interoperability

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Following this formal establishment phase, a community-focused mailing list was created and quickly grew with new subscribers. While some of these subscribers knew each before OSGeo, they had no common way to communicate across projects, often cross-posting emails to several lists as needed to reach a broader audience. Yet others who were not sure which products to use now had a safe place to come and ask for opinions from a much larger group.

This simple boost in the ability to communicate easily was a catalyst to growth, acting as a sort of interpersonal interoperability. For example, from these lists, people offered to create, join, and maintain other lists. These early steps enabled more formal committees to form, allowing OSGeo to formalize some of its operations early on. Members of OSGeo formed the lists and the lists represented real people, on the ground, working toward common OSGeo goals.

Other lists were for starting regional or language-based OSGeo groups, called local chapters. Because the main discussion list made it easier for groups of members from around the world to find each other, it was now possible to meet people who shared a common interest in open source in the geospatial realm. It has not been uncommon for individuals to find others in their same city for the first time through these lists. This lower barrier to finding likeminded individuals in an area or language group has helped make OSGeo a truly international organization.

The formation of local chapters also encouraged face-to-face meetings and events. OSGeo runs an annual international conference and the involvement of local groups is critical to running a successful event. Local chapters themselves also run events in their own region or language. These events, in turn, draw in more people to those local chapters and likewise into OSGeo's mission and projects.

The next steps are particularly interesting to observe and involve the formation of particular networks of groups. Consider OSGeo's Education and Curriculum Committee, which aims to bring training on OSGeo software into schools. In the past year, a new sort of interaction has started to arise from this basic committee. There is now an increased interest in creating cooperation agreements between schools and OSGeo. This symbiotic relationship helps advance the mission of both institutions and encourages others to do likewise. At the time of writing, there are five such collaboration agreements being drafted.

The initial partnership is only one year old and helped OSGeo grow to the challenge of finding ways to cooperate on common goals in education. Through an agreement with the University of Nottingham's Centre for Geospatial Science (CGS; <http://www.nottingham.ac.uk/cgs/>), it became possible to brand particular research projects as being under the umbrella of the agreement with OSGeo. This added further relevance to the research projects and encouraged those who were interested in open source software in particular to work with CGS. Five project internships were awarded for research under this new program, which is called the Open Source Geospatial Lab. Other schools are now interested in a similar relationship with OSGeo as a way to work alongside, and contribute to, similar goals in a more formal way than the traditional grassroots committee.

Lessons Learned

In non-profit environments built around advanced, and often turbulent, technology, creating five or ten-year plans is a grand challenge. Unless there are many paid staff being compelled toward a goal, it is not always possible to plan with much certainty. Volunteers can be motivated, but it is not always possible to predict how much time they will have to contribute. If

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the master plan is to build higher and higher levels of cooperation, yet there are no people available (or interested) to achieve them, many people will become frustrated. Most lessons that have been learned by OSGeo relate back to the context just described; below are just a few of the key lessons we have learned.

1. A group cannot be created out of nothing.

Just as humans cannot create matter out of thin air, it is not wise to try to corral people into committees if they are not already interested. Regular querying of communities is needed to find if new ideas resonate with enough people to gain traction. Ideas are usually self-generated and new committees are usually self-organized.

2. A small or temporary project will attract commitment more readily than a large one.

Breaking ideas or tasks into small phases with clear start and end points helps make goals achievable and makes it easier to secure commitment from community members. Closely related to this is the idea of documenting all business processes. If all processes are well documented, then tired team members can resign in peace, while potential new team members can easily understand the overall scope and finer details of their duties.

3. Over-communicate. Communication is key in building further levels of sophistication in an organization, but over-communication can help people find other areas of interest for future cooperation, provided that the communication is not so mind-numbing that it begins to be filtered out. The community needs to be comfortable sharing even the silliest thoughts to a broad audience, with the expectation that some ideas are going to evoke a shared response from others. These ideas may or may not be the catalyst to the next innovation, but keeping ideas quiet or planning in secret can often get in the way.

4. Build associations. Just as important as communication is networking, which means helping people find each other. Events are often the best place to encourage networking. Encourage local communities to find any excuse to meet together so they can get to know one another. In an increasingly online culture, there is still no replacement for a face-to-face meeting. Do not rely purely on serendipity through email and other online services; get people together in the same room, and make them talk.

Conclusion

Understanding how to encourage interoperability in the social context of an organization can help build further opportunities for innovation and development. Without having people developing new relationships with other people, the chances of success decrease sharply. Academic developments within OSGeo are one good example: OSGeo interacts with officials from a university, who in turn provide opportunities for individual research students to do applicable research. The result is someone new who learned about OSGeo and who perhaps contributed some tool, idea, or research back to the broader OSGeo community. The student receives support (possibly financial but definitely educational) and shows off any ability for future opportunities through the school. The school receives recognition as an open source geospatial leader while also attracting students seeking such an affiliation. Relationships glue together every step of the journey.

Interoperability is about increasing the ability to effectively communicate. As demonstrated in the case of OSGeo, *social* development can be stimulated by creating opportunities for like-minded people, and their organizations, to meet one another and maximize communication. Often, the result is that members are able to collaborate in new ways in their efforts on *technical*

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development. Without efficient communication, the likelihood of collaboration is minimal.

What will happen when these higher level groups form and then begin to find ways to collaborate with one another? What great initiatives will come from an academic group collaborating with a business or government group? The answers to these questions are not yet known, but one thing is for certain: the future will be built by people enjoying the benefits of effective communication.

For further information on this topic, see the author's related presentation given at the University of Nottingham's OSGIS event in June 2010 (<http://tinyurl.com/3tm2yok>) and learn more about OSGeo-related projects at their annual event, FOSS4G 2011 in Denver, Colorado (<http://2011.foss4g.org>).

Tyler Mitchell is the Executive Director of OSGeo. He is also the author of [Web Mapping Illustrated: Using Open Source GIS Toolkits](#). He has 15 years of GIS experience, much of which involved open source technologies. He can be found speaking at open source and geospatial events around the world and is dedicated to introducing great tools to great people.

Benefits of the Community for Partners of Open Source Vendors

Sandro Groganz

"The most important single central fact about a free market is that no exchange takes place unless both parties benefit."

Milton Friedman

Open source vendors can benefit from business ecosystems that form around their products. Partners of such vendors can utilize this ecosystem for their own business benefit by understanding the structure of the ecosystem, the key actors and their relationships, and the main levers of profitability. This article provides information on all of these aspects and identifies common business scenarios for partners of open source vendors. Armed with this information, partners can select a strategy that allows them to participate in the ecosystem while also maximizing their gains and driving adoption of their product or solution in the marketplace.

Introduction

Every free/libre open source software (F/LOSS) vendor strives to create a business ecosystem around its software product. Doing this offers two primary advantages from a sales and marketing perspective: i) it increases the viability and longevity of the product in both commercial and communal spaces, and ii) it opens up new channels for communication and innovation.

Access to source code, coupled with open communication channels, exposes each actor within the ecosystem to higher competitive pressures, but it also creates greater possibilities for cooperation. This so-called *coopetition* (simultaneous cooperation and competition) is a common phenomenon in open source communities. In addition, individual actors in an open system can achieve higher visibility, which adds to their reputation and public profile within the ecosystem and can make it easier for them to market themselves or their services.

For partners of F/LOSS vendors, therefore, there are some key questions they must ask in order to maximize their gains from the ecosystem and attain positive business benefits from their involvement and investment of time or money:

1. What is the structure of the ecosystem?
2. Who are the actors in the ecosystem and how do they relate to each other?
3. How do I benefit from co-opetition and higher visibility in this ecosystem?

This article presents a practitioner's view of an aspect of business ecosystems that has been largely neglected by analysts and authors. It illustrates how a partner network can leverage the same business strategies within an open source ecosystem as the vendor who owns the code. Attention is focused on how long-term, win-win situations can be established that will enable not only cost savings for partners but also

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innovation and the opening of new markets. Insight into the structures and relationships of open source ecosystems is offered with the aim of giving partners of F/LOSS vendors a strategic foundation for their interactions with the community.

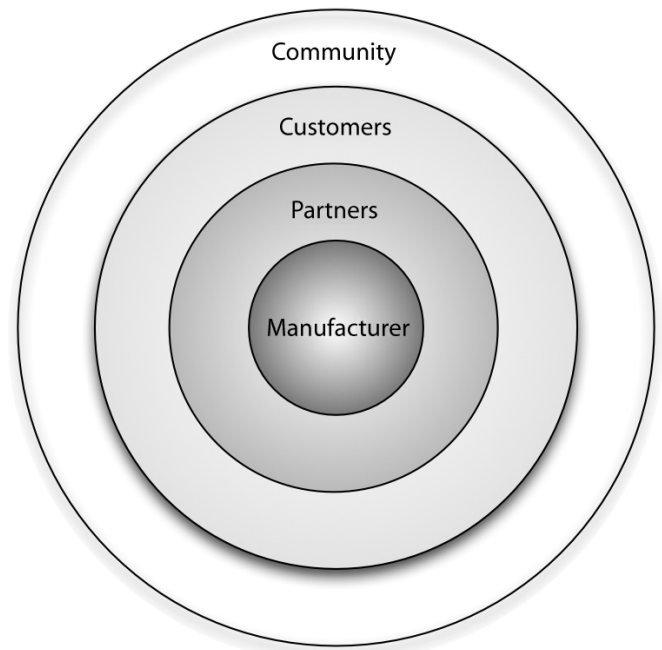
The ideas discussed in this article are illustrated with reference to an existing F/LOSS product, OXID eShop (<http://oxid-esales.com>), and its vendor, OXID eSales. OXID eShop is an e-commerce system written in PHP (<http://php.net>). In November 2008, OXID eSales made OXID eShop available under the GNU General Public Licence (GPL; <http://gnu.org/licenses/gpl.html>). This opening of the source code was accompanied by the transformation and expansion of the OXID business ecosystem, which previously centered on a proprietary product. Today it comprises the users, partners, and developers of OXID eShop, together with the vendor, OXID eSales.

Vendor-Driven Ecosystems

Every F/LOSS vendor strives to create a vendor-driven, open source ecosystem around his or her software product. Doing this is advantageous for the vendor for two reasons: i) it increases the long-term viability and attractiveness of the product in the marketplace, and ii) it allows the vendor to derive a business advantage from its superior product expertise, as owner of the software copyright, trademark, and other intellectual property.

The best known example of such an ecosystem is MySQL (<http://mysql.com>). The former CEO of MySQL, Mårten Mickos, referred to this dual-licensing model as "the cathedral in the bazaar" (Figure 1). This is, of course, an allusion to Eric S. Raymond's famous essay "The Cathedral and the Bazaar" (<http://tinyurl.com/2uv35jf>), in which Raymond discusses the benefits of an open and public software development process (the "bazaar") as opposed to one in which development occurs within a restricted group (the "cathedral").

Figure 1. A Vendor-Driven Ecosystem Model



The OXID ecosystem conforms closely to this model. The vendor, OXID eSales, is at the centre of the ecosystem. Business partners are grouped close to the vendor; they have direct relationships with both OXID eSales and with their own customers, and they serve as a two-way link for information exchange between customers and the vendor, and for joint cooperation on customer projects.

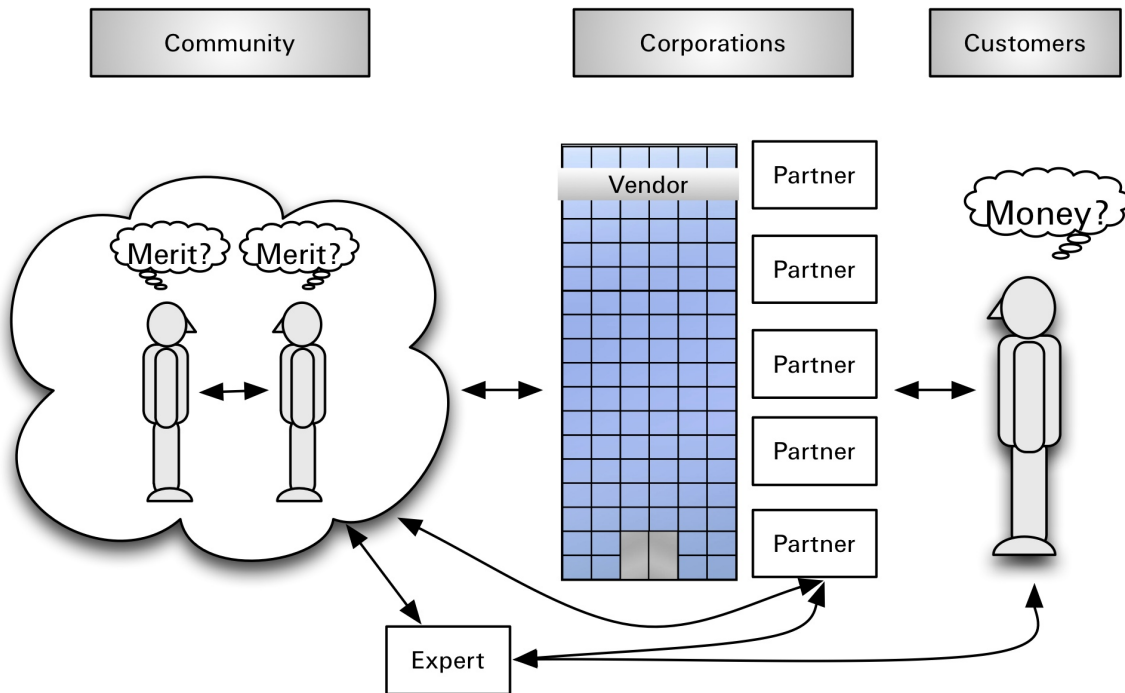
Partners are also part of the community and have direct contact with users of the OXID eShop. For example, software developers of partner companies are active in the OXID eShop forums and mailing lists, participating and communicating with users by solving common problems, providing advice on deployment, or creating new modules.

In a vendor-driven ecosystem, the manufacturer acts as a link between the community and the customer. On the one hand, it is part of the community with which it trades; on the other hand, it serves customer wishes through its partner network (Figure 2).

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Figure 2. Relationships in a Vendor-Driven Ecosystem



The main difference between “customer space” and “community space” in this ecosystem is compensation for time spent. Customers pay money to partners to obtain services or additional software products. Within the community, recognition is the key currency. Or, to put it another way, in customer space, one invests money to save time whereas, in community space, one invests time to save money.

This ecosystem also supports one or more “lone wolves”, which are recognized experts that independently implement customer projects or work with partners as subcontractors.

Business Strategies for Partners

A wide range of business strategies are available to partners of F/LOSS vendors within a vendor-driven ecosystem under both proprietary and open source licensing models. Partners can employ any element of an open source strategy that is available to the manufacturer. The following

sections present these elements, and various possible combinations thereof, within a F/LOSS vendor-driven ecosystem. However, only the most important variants are presented; an exhaustive analysis is beyond the scope of this article.

Key Strategic Elements

The key strategic elements of a business strategy can be illustrated using a model developed by the analyst firm The 451 Group (<http://www.451group.com>), as shown in Figure 3. This model defines the key elements of an open source business strategy and serves as a useful tool to consider the strategically valuable levers in an open source ecosystem.

The following sections describe the important elements of this model for partners of F/LOSS vendors and illustrate these elements with reference to the OXID ecosystem.

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Figure 3. Elements of an Open Source Business Strategy

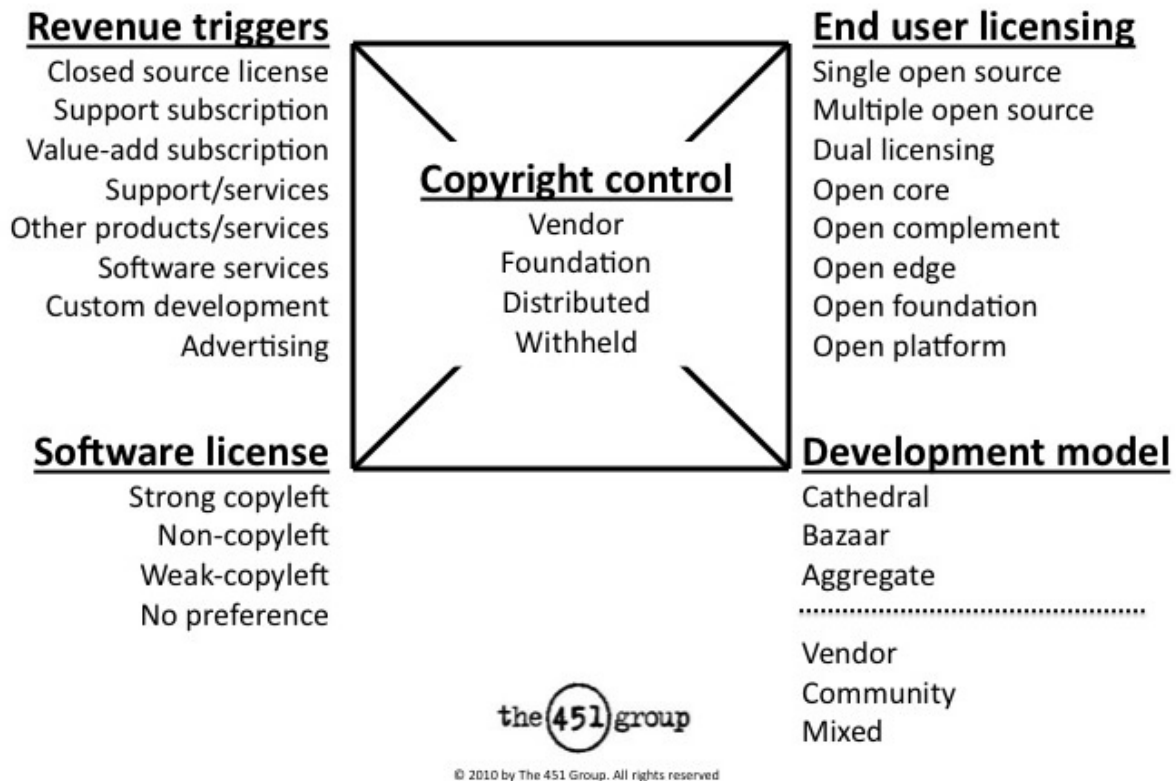


Image used with permission, courtesy of Matthew Aslett and the 451 Group. (<http://tinyurl.com/3mu7z6f>)

1. Copyright Control: Who Owns What? The question of who owns the copyright to the source code is of central importance, because it determines to a great extent the business model of the vendor and, by extension, the strategies available to partners. For example, a vendor may follow a dual-licensing business model, a subscription model, or a service model.

To illustrate, consider that in the case of OXID eShop, it is OXID eSales that owns the copyright (in Figure 3, Copyright control: vendor). So, it is able to offer its product within the framework of a dual licensing model (End-user licensing: dual-licensing). There is an OXID eShop Community Edition (CE) available under an open source GPL license; an OXID eShop Professional Edition (PE) and an Enterprise Edition (EE) are also available under a proprietary license.

2. Revenue Triggers: Who Earns What? A vendor can earn revenue from multiple sources for the same product. For example, a vendor can sell a commercial license to the product (e.g., Magnolia: <http://magnolia-cms.com>), a subscription (e.g., RedHat: <http://redhat.com>), or a support or training package (e.g., OTRS: <http://otrs.com>). Vendors can exploit their copyright control and central position in the business ecosystem to incentivize customers to “upgrade” from an open source license to a commercial one, or they can use their in-depth knowledge of the product to sell additional services such as support, training, or integration.

By putting the CE under the GPL, OXID eSales created an incentive to acquire the PE or EE as soon as the product is to be used together with other proprietary software (Revenue triggers:

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closed source license). The GPL is a license that, simply put, requires that software based on the OXID eShop, or that is used together with it, must also be open source (Software license: strong copyleft).

In addition, OXID eSales offers support and other services, partly only for the PE and EE (e.g., technical support), partly also for the CE (e.g., training), which establishes another source of income (Revenue triggers: support services and software services).

3. Development Model: Who Does What? It is also important to consider whether development is driven by the vendor or the community, and if it is conducted in private, in public, or as a private/public collaboration. On one hand, a completely vendor-driven model that is closed to community input risks alienating users and partners because product managers may well prioritize paying customer feature requests over those of community members. A completely community-driven model, on the other hand, may lack the coordination and close supervision needed to satisfy commercial and service-level commitments.

OXID eSales has chosen a public development model: the code, the bug tracker, feature tracker, forums, mailing lists, etc., are open to the public (Development model: public). However, the development process of OXID eShop (see http://wiki.oxidforge.org/Development_Process) is strongly driven by the manufacturer, OXID eSales (Development model: vendor).

Common Business Strategies

In a vendor-driven ecosystem, partners will typically offer services such as custom software development or product training. This is certainly the case with our sample ecosystem, where a large number of official OXID partners offer services as system integrators or web agencies.

Partners usually own the copyright to customer specific adaptations or extensions of the product. A partner therefore has the entrepreneurial opportunity to offer its customers, for example, an extension as an independent module. Under what license this module can be offered depends on two factors:

1. Does the module make use of third-party, open source code?
2. If so, is it *reciprocal* (requiring that the module itself is also open source) or *permissive* (allowing the module to be either open source or proprietary)?

Depending on how these questions are answered, a partner can offer such a module under a single or dual license. For example, the partner has the opportunity of building a dual-licensing model and distributing the module subject to a charge for the commercial license. Of course, the partner may also decide to offer the module under a single proprietary license (subject to a charge) or under a single open source license. If the module should also be offered partly or solely under an open source license, then the partner would benefit from the advantages of rapid dissemination and thus an increased demand for support and software services, such as support services, software services, and custom development.

A partner module that is available as open source software could be developed publicly or purely in-house. The latter is usually the case for proprietary modules.

Comparison of Partner and Vendor Business Strategies

Comparing the elements of the open source business model of OXID eSales with those that are available for OXID partners, it is clear that the same elements are available for the partners

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Table 1. Business Strategies in the OXID Ecosystem

	OXID eSales	Partners
Copyright control	Vendor	Vendor
End user licensing	Dual licensing	Dual licensing Single open source Closed ... and more
Software license	Reciprocal	Reciprocal Permissive
Revenue triggers	Commercial license Support services Software services	Commercial license Support services Software services Custom development ... and more
Development model	Public Vendor	Public Private Vendor ... and more

as for OXID eSales, plus additional ones (Table 1). The strategic options of partners will only be limited, for example, by the license that includes third-party software that was built into a module.

Common Business Scenarios

A partner will make the decision – about whether a module should be available partly or solely under an open source license – on the basis of its own entrepreneurial motivation and also after taking into account the competitive situation. For example:

1. If no competing product already exists, it makes perfect sense for a first mover to provide a module under a proprietary license, subject to a fee. This approach will produce the highest margins.
2. If a proprietary module already exists, it could be a sensible decision to provide the competing module for free and under an open source li-

cense. This approach will guarantee a high degree of distribution. A partner could then generate revenue from support and professional services, or it could also offer a paid version within the framework of a dual-license model.

In any case, partners in an open source ecosystem are under extreme pressure to be efficient and have to expect – even more than in a purely proprietary environment – that someone will offer the same module free of charge and that their revenue may be generated purely from services.

Community Benefits for Partners

An open source ecosystem also offers other opportunities and benefits for partners. For example, it gives them the opportunity to establish a name for themselves through collaboration with the open source community in the development of modules, themes, libraries, widgets, and so on. This benefit accrues regardless of whether a partner has created an open source module or

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merely contributes to it. It also accrues to partners who generate their companies revenues exclusively through services.

Partners of F/LOSS vendors can thus choose from a wide range of elements for an open source business model within the vendor ecosystem. Moreover, they can also profit from the same advantages in marketing, software development costs, service and product innovation, and business growth, which the vendor has also gained for itself.

Efficient Marketing

As an open system with open communication channels, an open source community provides the opportunity to generate high visibility with little effort. So-called word-of-mouth marketing can be wonderfully implemented here, especially with social media tools, such as Twitter and Weblogs. Thus, for example, a new module may quickly become known within the community with little effort on the part of the vendor or partner.

This environment is ideal for lead generation, although usually this does not occur through direct contact with customers. A code snippet that facilitates previously missing functionality could, for example, come to the attention of the vendor or another partner. If this code can be used in a prospective customer project, but still needs additional extensions, who better than the author of the code for making the extensions?

To illustrate the efficiency benefits of co-marketing in the OXID eShop ecosystem, consider some examples.

1. Joint press releases for a new case study benefit not only OXID eSales and the partners involved, but the entire OXID ecosystem. The community as a whole, which also includes the partner network, benefits from the overall higher

visibility of OXID eShop, which in turn means a potential increase in demand for the product.

2. Through its two freely accessible software distribution channels, OXID eXchange (<http://www.oxid-esales.com/en/exchange>) and its collaborative development channel OXIDprojects (<http://projects.oxidforge.org>), OXID eSales gives partners the opportunity to offer their proprietary or open source extensions in a cost-effective manner.

3. Officially-certified OXID partners have the advantage of enjoying higher confidence from potential customers than businesses that cannot show preferred business relationships with OXID eSales.

Cost Savings and Innovation

Compared to the proprietary model, the open source development model is generally considered to be more efficient, including in terms of costs (<http://tinyurl.com/3f7aqcs>). Partners can take advantage of this efficiency within a vendor-driven ecosystem in a number of ways:

1. Cost savings due to better error detection and correction. First, partners can use the existing software development infrastructure to develop their own open source extensions. The development community can see the source code, report errors, propose new features, or discuss ideas and issues in forums or mailing lists. For example, for the OXID community, OXID-projects provides a collaborative, open development environment that allows partners and users to participate in the development of OXID eShop.

This mechanism allows for medium to long-term cost savings because errors are discovered by others before they lead to unnecessary additional costs or even recourse claims in a customer project. If it so happens that a community

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member provides the bug-fix or patch, it saves time in addition to cost.

2. Innovation due to easier information exchange. The open ecosystem also leads to a high degree of innovation because of open information exchange. If community members try an open source extension and find it valuable, then they may generate ideas to expand it or use it in other ways.

Partners acting within the open source community will benefit from continuous innovation, which also extends to in-house expertise and will increase the efficiency and quality of sales pitches and customer projects.

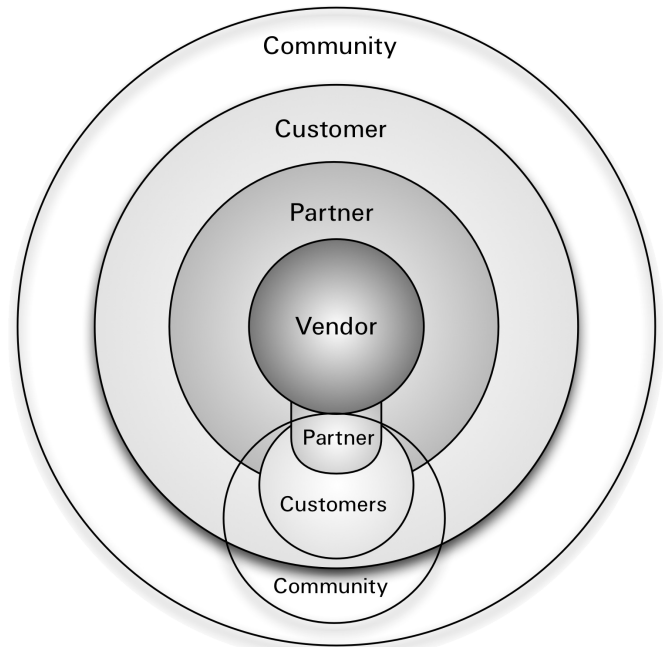
3. Lower project risk due to easy availability of community expertise. The community also serves partners as a pool of free or permanent employees. Community members can be used at relatively short notice in customer projects on a consulting or freelance basis and, after successfully completing several joint customer projects, may even be considered for a permanent position. For a partner, this reduces the risk of hiring employees who are not well qualified, which also saves costs.

Sustainable Growth

A properly designed vendor-driven ecosystem offers partners the ability to grow in a sustainable manner. This is mainly due to the transparency of public communications, which produces a higher level of confidence. Within such an ecosystem, small companies that are not official partners and that only use the open source edition of the product for customer projects also have the chance to participate in the ecosystem. These companies are well received within the ecosystem because it allows them to grow in a sustainable manner.

Partners can also easily build their own ecosystems within the vendor ecosystem and benefit

Figure 4. Partner Ecosystems



from it. Consider Figure 4, which illustrates how a partner can sustain and grow its business within the scope of a broader vendor-driven ecosystem.

As an example of the opportunities for growth, the OXID ecosystem includes firms that are not official partners, but that continue to use and deploy the CE product in client projects. The ecosystem sustains them and gives them the tools and support to transition from using only the CE product to eventually becoming an official OXID partner selling the PE and EE products along with vendor support. Apart from this, the OXID eShop ecosystem benefits from each user of the CE, because each user increases the overall product quality through feedback, and this in turn, is beneficial for the PE and the EE products.

Conclusion

This article has offered some insight into strategies that partners can use within a F/LOSS vendor's ecosystem and the benefits that will accrue to those partners. The most important point to remember is this: an open source community is not a state but a process. When you act

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as a partner to an F/LOSS vendor and build your own ecosystem within the vendor's ecosystem, you will be exposed to a diverse community and many new opportunities. Evolving your business to meet and exploit these opportunities is an exciting, ongoing process and one that, handled correctly, creates a foundation for long-term growth and sustainability.

Age of Peers co-founder Sandro Groganz is an expert in the field of open source marketing. He started Initmarketing, the Open Source Marketing Agency, which subsequently merged into Age of Peers. He served as Vice President of Marketing at Mindquarry, an open source startup financed by Hasso Plattner Ventures, and Vice President of Communication at eZ Systems, the creator of the open source content management system eZ Publish. Groganz also has a solid background as a PHP developer, consultant, and author, and he has contributed to a number of books on LAMP programming. For more information, visit www.ageofpeers.com or his weblog at <http://sandro.groganz.com>.

Anystone Technologies: Lessons from the First Year of a Mobile Applications Startup

Tony Wacheski

“If you don't get noticed, you don't have anything. You just have to be noticed, but the art is in getting noticed naturally, without screaming or without tricks.”

Leo Burnett

The astounding growth of the mobile sector has attracted the attention of many entrepreneurs, particularly when combined with its low market-entry cost for developers and growing list of enviable success stories. For anyone with a mobile application to sell, Apple's App Store and the Android Market provide easy access to the world market. However, this market accessibility and endless opportunities increase competition and challenge the entrepreneur to stay focused. This article presents some initial observations and experiences from the first year of Anystone Technologies, a mobile applications startup, as it faced the challenges of starting a new business in this attractive but highly competitive sector.

Introduction

Mobile opportunities abound. Every day a new “app” is created that solves a problem and every day another new problem is created for an app to solve. But, how can mobile application developers turn their talents into a successful business?

Many entrepreneurs are attracted to the mobile applications sector because it requires very little capital investment to get started. Pay Apple \$99 and you suddenly have access to a worldwide distribution channel, a platform that leverages cutting-edge hardware, and free quality assurance. With an abundance of open source applications and online services that are free of monetary cost to small companies, a studio can quickly (and cheaply) equip itself with software and services for documents, graphics, audio, issue tracking, file sharing, web page hosting, and more. Of course, an initial investment in mobile

hardware is required, but startups that are interested in mobile applications tend to have these already. Further, with a strong Internet presence and inexpensive phone services that provide 800 numbers and an automated receptionist, startups can appear to be a larger company long before the revenue begins to flow in.

However, with over 500,000 apps in Apple's App Store (<http://tinyurl.com/3z8ya68>), getting noticed is no small feat. For a bootstrapped startup that has little marketing budget, the challenge of generating substantial revenue is great.

In this article, we reflect upon the first year of Anystone Technologies (<http://anystonetech.com>), a mobile applications startup in the Lead to Win ecosystem (<http://leadtowin.ca>). Anystone Technologies was founded in 2010 by Tony Wacheski (CEO) and Sean Kormilo (CTO) to create a system of mobile applications that use speech recognition to make it fun for chil-

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Tony Wacheski

dren to learn and love to read. While the founding team had decades of combined research and development experience in corporate telecommunications, we were new to entrepreneurship and the mobile applications sector. Here, we share our experiences with our first releases and highlight key observations and lessons learned along the way.

Our First App

While our ultimate goal was to develop a line of educational applications using speech recognition technology, we recognized that this would not happen overnight. Our initial strategy was to develop a simple application through which we could learn the process of submitting to Apple's App Store and upon which we could begin to build our brand.

We knew that significant revenue would take time to develop, but we wanted to quickly familiarize ourselves with the existing revenue mechanisms that were provided through the App Store. At the time, "in-app" advertising was new and was showing great promise. We decided to create a simple game that would be quick to develop and would incorporate advertisements into the game play.

From this initial concept, further ideas flowed. We developed, played, and reworked until simple became complicated. However, we had not yet created a game that we wanted to play, despite enthusiastic interest in the concept from others. It was time to take a step back and re-evaluate our objectives.

Releasing our first application would provide invaluable experience and a revenue stream from advertising. However, we realized that this particular game concept did not align with our original company objectives of delivering products that make a positive difference in people's lives. Our skills had increased in mobile application development, we were now registered with all the advertising networks, and we proved to

ourselves that we could create a high-quality application, but we decided that this particular application would not be our first release.

Although our first application had been shelved, we learned that:

1. Great ideas may not translate into the application as expected. Mobile application development is an art. It can require many iterations of trial and error to transform a great idea into a great application. It is better to fail fast, learn, and move on quickly.
2. Refining game play is very time consuming. An additive game requires the right balance of challenge, reward, and fun, which can only be verified by hours and hours of play. We now know how important it is to build a team of testers who are interested in our project.
3. Counsel from our advisor to "stay focused on building your brand" was easily ignored. The excitement and enthusiasm in the early stages of design is very enticing.
4. The promise of mobile advertising was kept: it is now set to grow faster than web-based advertising on PCs and laptops (<http://tinyurl.com/3cynclh>).

Our First Released App

Our second attempt at a first release was much more successful. This time, it was five days from conception to submission to the App Store. The application was unique, it was cute, it helped people, and it was intended to start building the brand for our reading application. The application, Tuto's Nite Light (<http://www.anystone.tech.com/products/tutos-nite-light/>), helps parents transform their iPhones into night light sleep promoter for young children, who would watch the owl character (Tuto) gently fall asleep as the screen slowly dimmed in step with a timer set by a parent.

Lessons from the First Year of a Mobile App Startup

Tony Wacheski

Initially, we offered Tuto's Nite Light for 99 cents in the App Store. Surely, parents would gladly pay 99 cents for even one smooth bedtime! However, the predominant sales model in the App Store includes a free or "lite" edition of the application with limited capabilities. Consumers are reluctant to pay for an application without trying it first. As Chris Anderson indicates in his book, *Free* (<http://tinyurl.com/4ye98s5>), making an application free removes a powerful mental barrier from potential purchasers.

After limited success at the 99 cent price point and some experience from our second released application (described below), we later developed a free, or "lite" edition of Tuto's Nite Light that contained a subset of capabilities from a new and updated paid version. The free edition would point the consumer to the paid edition, but we decided not to include advertising or in-app purchase features in the free edition because it is intended for small children. This new sales model resulted in a steady download and increased sales.

We also released Tuto's Nite Light on the Android platform (<http://android.com>), an open source software stack for mobile devices, developed through the Android Open Source Project (AOSP), which is led by Google. Android runs on many hardware platforms, which means that developers have to cover many design and testing permutations. In contrast, the Apple ecosystem, where Apple controls the entire vertical slice, limits the hardware variants tremendously. However, we found that Android does provide some good mechanisms to handle the many platform configurations.

With Tuto's Nite Light, we stuck to our plan of keeping it simple and gained the experience that we sought. We also learned that:

1. There are differences between developing for Apple and Android. For example, Apple tests and accepts or rejects applications submitted to the

App Store based on their own criteria. (For example, our first free edition of Tuto's Nite Light was rejected because it included too many explicitly disabled features showing what was available in the paid edition.) There are no alternative markets. You must follow Apple's rules, but you receive free validation and some confidence your application will work for all users. The Android Market does not screen submissions. You can sell an application that crashes on launch. The Amazon Appstore is an alternative Android Market that does validate applications before releasing them. Another difference is that the App Store does not allow you to contact your customers and provides limited visibility of deployment details. The Google Market allows you to send customer email messages (through a proxy) and provide customers refunds. The Android Market provides some detailed statistics about users, including platform version, device, country, and language.

2. Price changes are another interesting tool that can influence download rates and sales. Setting Tuto's Nite Light free for a day resulted in hundreds of downloads. There are sites and applications dedicated to discovering price drops, which means that a price reduction can be more than just a means to convert potential customers; it becomes a publicity tool. Similarly, word of mouth and social networking are key marketing tools for mobile application startups. Giving away applications to seed these conversations is one of the few free marketing tools available. We received the following review from a customer who downloaded Tuto's Nite Light when it was free for a day: *"simply beautiful! - Beautifully simple very usable timer I love their other app so I had to check out this one. It was such a useful gift I decided to upgrade the other (free) app 'Anytune' to the paid version to give a little back!"*

3. Know when to say when. We have several more ideas for additional functionality and marketing campaigns for Tuto's Nite Light. However, while we had thousands of free down-

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loads, the additional revenue would not have justified significantly more effort even if we converted 100% of these users into paying customers. We needed to focus on our other projects that were already underway.

Our Second Released App

For our next application, we decided to focus on increasing our expertise with audio, which we knew we would need for our longer-term plans. Our second release was Anytune (<http://anytonetech.com/products/anytune/>), an audio application designed to help musicians learn to play or transcribe songs by allowing them to slow down the tempo, adjust the pitch, and repeat loops. Guitarists, for example, instantly loved the idea. We released Anytune as a free application with advertising and gave the user the option of removing advertising through in-app purchase.

We received a much better response with this application: steady downloads and low but steady sales. Releasing new versions proved to be our most effective way to increase sales. We have released new versions quickly and have added new capabilities in each one. The richness of Anytune's functionality is one of its competitive advantages, along with the elegance of its design.

Over time, we noticed that customers appear to be more comfortable purchasing a full edition outright than purchasing upgrading to a full edition through in-app purchase, as we described in a recent blog post, "Musings On In App Purchase" (<http://tinyurl.com/3u2jbs8>). We released Anytune Pro to allow customers to buy the full functionality directly as an alternative to the in-app purchase.

In a later version, we included support to share through Twitter, Facebook, email, and SMS. Allowing users to tweet their favourite pitch/tempo setting to their followers, for example, provides us with free advertising by en-

couraging users to tell others about Anytune. To reduce the effort of adding these features, we used ShareKit (<http://getsharekit.com>), an open source software package licensed under the MIT License (<http://opensource.org/licenses/mit-license.php>). Anytune also uses the SoundTouch open source libraries under the GNU Lesser General Public License (LGPL, v2.1; <http://gnu.org/licenses/old-licenses/lgpl-2.1.html>), with special dispensation since we could not dynamically link in iOS, Apple's mobile operating system.

In our most recent release, Anytune became "universal", meaning that it is optimized for the iPad as well as the iPhone and iPod. This update required us to rework and improve the user interface, but it now gives Anytune a better position in the App Store search results. There are several established applications in direct competition with Anytune but few are optimized for the iPad. We also raised our price from \$4.99 to \$7.99. The improved design and higher pricing has increased our revenue from this application.

From releases of our second application, we learned that:

1. Considering all form factors in the initial design will influence the development and avoid rework. When we optimized for the iPad, we reworked and improved the iPhone interface. Having an application that is optimized for the iPad has had a significant effect on sales.
2. Purchasing behaviour should be monitored closely. We have observed more sales through purchases of the separate, fully paid edition of Anytune Pro than through in-app purchases in the free edition, even though they are functionally equivalent and we expect most users download the free edition before buying.
3. Revenue from advertising is increasing but is mostly negligible. For this revenue stream to make a significant impact, we need to substan-

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tially increase our download rate. The advertising in the free edition is primarily to “encourage” users to buy the Pro upgrade, which removes advertising.

4. Good customer reviews encourage new downloads, but are somewhat beyond your control. We were delighted that our first ten reviews for Anytune were all five-stars. However, we later learned that reviews can be a double-edged sword when we received a one-star review and had no recourse to help the customer or gather information about the problem that prompted the poor review. For details, see our blog entry, entitled “There is a Support Button” (<http://tinyurl.com/3zb3uu6>).

Anystone Store Kit

Alongside the development of our first applications, we attempted to refine and improve upon our marketing strategy. Marketing an App Store application means trying to get noticed in a very saturated market. Startups depend on reviews of their applications on popular review sites or mentions on popular blogs and news sites. Anytune has been reviewed by several sites and was recently named one of the “Best new iPhone music apps: July 2011” by Product Reviews (<http://tinyurl.com/4xe886y>). We did notice an increase in downloads but no appreciable jump in sales corresponding to the time of this latest review.

Providing influencers (reviewers and bloggers) with early access to full functionality is essential to gain access to these essential marketing tools. Review sites welcome requests for reviews and always ask for a “promo code”. Promo codes can be used only once to download the paid version of an application for free. Although Apple allows promo codes for downloading applications, it does not provide this service for in-app purchases. Since our original release of Anytune only had a free download and in-app purchase feature, we could not provide promo codes to allow influencers to access the full functionality.

The lack of promo codes for in-app purchases and some challenges with Store Kit, Apple’s framework for handling in-app purchases, caused us to consider alternative modules. Apple’s Store Kit supports in-app purchases, but we found it to be overly complicated and difficult to provide a magical user experience due to lack of feedback mechanisms. After identifying a gap in the desired functionality, we decided to create our own Store Kit.

We decided to create an open source project to deliver the Anystone Store Kit, which is now available on GitHub under an MIT license (<https://github.com/anystone/AnystoneStoreKit>). We hoped an open source project would provide some visibility for our company. From what we learned developing our first application, we wanted to enlist the crowd to validate requirements and test our software.

In addition to enabling promo codes for in-app purchases, the Anystone Store Kit included general usability improvements, improved error handling, and added-value features. Also, the library could be used independently or in combination with server functionality. We used Google’s App Engine for the server side, with the possibility of providing this functionality as a service to other developers for a fee.

In our experience with Anytune, we have observed more sales through the purchase of the fully paid edition than upgrades from the lite edition to the Pro features through the in-app purchase mechanism, even though they are functionally equivalent. This does not remove the need for the Anystone StoreKit, which supports the full range of in-app purchase options used by the “freemium” model, including lite-edition upgrades (as used in Anytune), add-ons, gambling, pay-to-progress and subscription (<http://tinyurl.com/3p8sle2>).

The Anystone StoreKit project was funded in part by Coral CEA (<http://coralcea.ca>), a not-for-profit open innovation network (accelerator)

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that is based in Ottawa. Coral CEA agreed to fund part of the project because of its potential value to its members. Details of the research, references, and table stake requirements can be found in our blog entry, “Introducing the Anystone Store Kit” (<http://tinyurl.com/43oksxm>).

Shortly after releasing the Anystone Store Kit, other iOS developers with similar issues noticed our blog. The Anystone Store Kit had its first user and contributor. We were realizing the benefits of an open-source project. Early adopters were validating requirements, finding bugs, contributing to the code base, incorporating the code into their own applications, and asking for more. It was clear that others shared our pain, and our solution was needed.

The Anystone Store Kit is still under development, but the base capabilities have already been deployed in Anytune and Warp Plus (<http://tinyurl.com/4x2t6p3>). Through this project, we have learned that:

1. A useful open source project will quickly provide early requirement validation, testing, and contributions. We received some excellent feedback, bug catches, and a security module from our contributors – all from a single blog and the use of GitHub.
2. Example code sometimes becomes product. One of our first users incorporated the example storefront code into their product, including a prominent attribution in their application. This provided us some of the visibility we were seeking when we started the project.

Next Steps

While we learned through our initial releases how to operate in the mobile market, our original objective was still being worked on in the background. However, in the end, our research

revealed that our resources were insufficient to successfully compete against the large players in our domain and our vision of creating a system of mobile applications that use speech recognition to make it fun for children to learn and love to read was shelved. Nevertheless, simply having a longer-term strategy was important because it brought focus to our decision-making processes and forced us to constantly re-evaluate the steps we were taking to build our brand.

We have plans to continue development and marketing efforts for our existing applications, including:

1. Improving our applications in response to user requests, such as increasing the performance of Anytune’s time-stretching algorithm and adding further sharing capabilities.
2. Creating promotional videos to effectively communicate the value of our applications.
3. Connecting directly with the user communities of our products.

Also, we are now working towards an ambitious venture that uniquely leverages the latest mobile technologies to engage people around the world.

Conclusion

While we have had some commercial success with our first applications, the real value of the first year of Anystone has been the experiences gained through this exciting learning adventure that immersed us in the very dynamic and growing world of mobile applications and entrepreneurship. The more we learned, the more we discovered we did not know. The challenges are great, but the entrepreneur community in Ottawa is vibrant and willing to help. There is nothing we would rather be doing.

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Tony Wacheski

Tony Wacheski is CEO of Anystone Technologies, a mobile applications company based in Ottawa, Canada, which creates innovative and engaging mobile applications that make a positive difference in people's lives. Tony is an experienced technical leader with a unique combination of technical, business, and people savvy and experience in a diverse set of roles. He has built and led numerous successful product development teams at Nortel and Bell Northern Research. Tony holds a Bachelor of Applied Science in Electrical Engineering from the University of Windsor.

Reflecting on Fifty Issues of the OSBR

Chris McPhee

“Recently, a Carleton University student asked his professor “how do you make money from open source?” An excellent question for which there is no short answer. If anything, it appears to lead to a conundrum: aren't the motivators behind open source diametrically opposed to those that drive business? Dig deeper and you'll find that open source and business have much to gain from each other. The difficulty is finding accurate information from those who understand both the business and open source environments.”

Dru Lavigne

Editor-in-Chief (2007-2010)

Introducing the OSBR, July 2007

This is the last article to be published in the *Open Source Business Resource* (OSBR). In September 2011, the OSBR will become the *Technology Innovation Management Review*. In this article, we look back upon the changes in the landscape of open source business and in the OSBR itself from the time it was first published in July 2007 until its last issue in August 2011. Finally, we look ahead to the upcoming changes that will be embodied by the *Technology Innovation Management Review*.

Introduction

In July 2007, the OSBR was launched as “a resource for promoting an open dialog on the issues involved with making money from open source” (<http://tinyurl.com/3tk35lk>). In a recent conversation with Dru Lavigne, the Editor-in-Chief of the OSBR for its first three years of existence, she described 2007 as a time when few companies were making money from open source, largely because the strategic implications of open source were poorly understood. Even when companies had well-considered business reasons for using open source approaches, many encountered significant challenges in shifting their perspectives, adapting their processes, and understanding how to effectively interact with open source communities.

As a publication that drew upon expertise from business and academia, the OSBR was “an opportunity for those who wish to learn more about the business of open source to benefit from the experience of those who have already studied the success factors and from those who have successfully integrated open source into their business strategy.” (<http://tinyurl.com/3tk35lk>) From the beginning, the emphasis was on practical ideas that readers could apply within their own organizations.

While the motivation to create the OSBR was triggered by the question of how to make money with open source, the answer was not readily answered with the information available at the time, nor was this simple question likely to have a simple answer. Over the past four years, we

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have published the insights of over 300 experts and we hope we have helped readers better understand the question and find answers that apply to their own situations. In the next section, we will look more closely at the evolution of the OSBR and the articles and authors that have contributed to it.

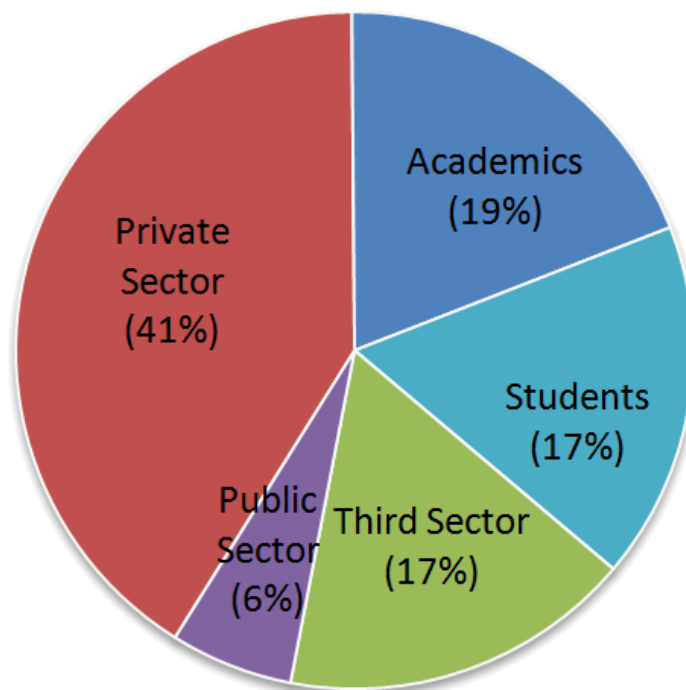
The Open Source Business Resource

The OSBR is a monthly publication of the Talent First Network and the Technology Innovation Management (TIM; <http://carleton.ca/tim>) program at Carleton University in Ottawa, Canada. The publication is free of charge; readers can access html or PDF versions of articles online. Authors do not pay to publish their work in the OSBR nor are they compensated for doing so, but they retain full copyright to their individual works under a Creative Commons Attribution 3.0 Unported license (<http://creativecommons.org/licenses/by/3.0/>).

We have adopted a journal format and all articles are peer reviewed by the OSBR advisory board (<http://tinyurl.com/3feb5rq>). The journal format lends itself to a scholarly approach, but the OSBR also publishes non-scholarly articles, which we believe also benefit from the formality and in-depth analysis the format demands. Regardless of their background, we encourage all authors to thoroughly explore their topic and include practical insights gained from experience, and we believe that readers benefit from the diversity of perspectives that this approach enables. Figure 1 shows the diversity of author perspectives in the OSBR in terms of the economic sector(s) that they represent.

Figure 1 shows one measure of diversity across all issues; however, we also try to maximize the diversity of perspectives along a number of dimensions within each issue. We believe there is great value in bringing multiple perspectives together to discuss a particular topic. This is why

Figure 1. OSBR Author Perspectives by Sector



Reflecting on Fifty Issues of the OSBR

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most issues of the OSBR have a theme. A theme gives both authors and readers the opportunity to collectively explore a topic in both depth and breadth.

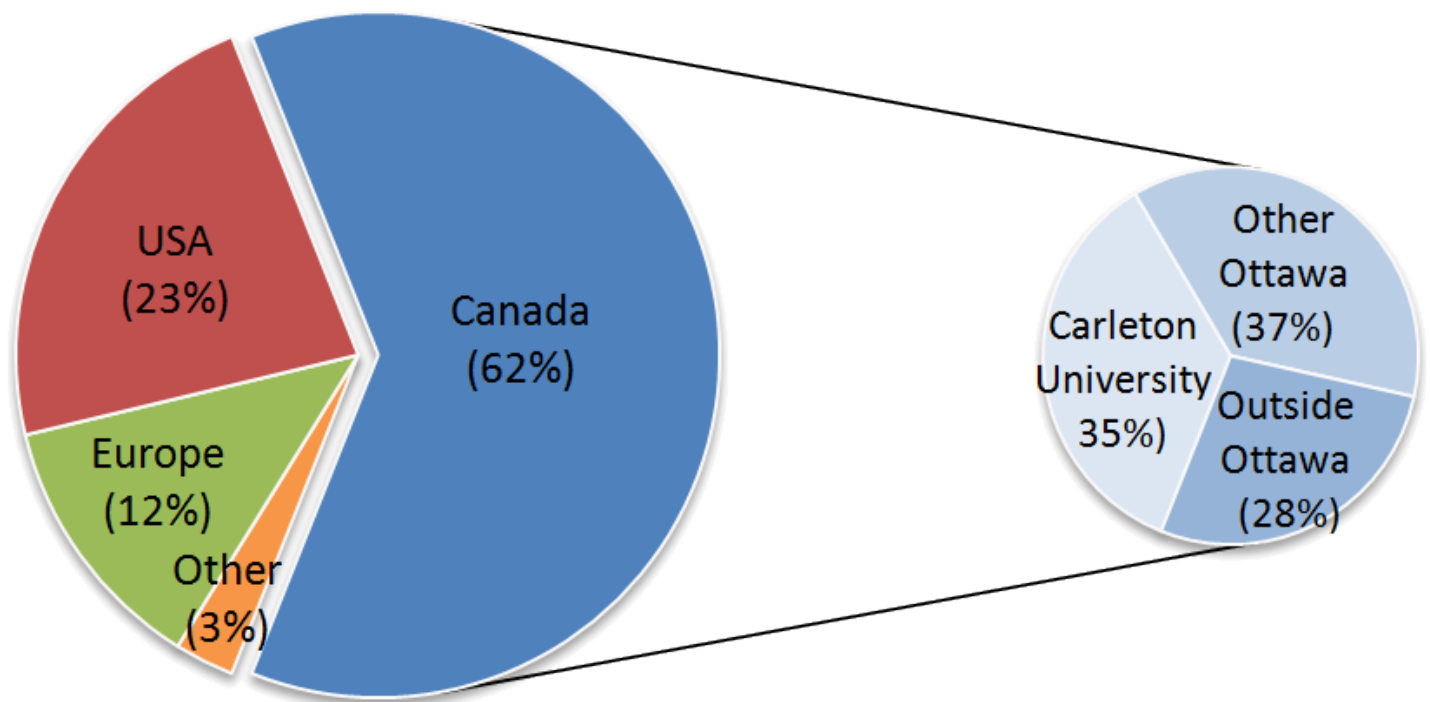
As might be expected from a technology business publication, there is a strong gender bias in the composition of authors: 78% of OSBR authors are male. However, some of the most popular issues of the OSBR have been the themes of “Women in Open Source” (June, 2009; <http://tinyurl.com/3hy7s49>) and “Women Entrepreneurs” (July, 2011; <http://tinyurl.com/3zyes9s>).

With its origin at Carleton University, many of the articles come from its professors and graduate students and from the local Ottawa community. However, we have actively encouraged perspectives that extend well beyond the city and Canada. In fact, more than half of all articles published in the OSBR have come from authors

based outside of Ottawa, as indicated by Figure 2. Similarly, web analytics have shown that approximately 45% of the visitors to the OSBR website are from outside Canada.

In addition to articles, the OSBR has featured Q&A pieces, recent reports, news, and upcoming events, and weekly columns from expert practitioners (<http://www.osbr.ca/ojs/columns.html>). In the four years that have passed since the launch of the OSBR, we have published 50 issues, which have been comprised of more than 300 contributions. All of these contributions are organized, formatted, and displayed using open source tools wherever possible, including Scribus (<http://scribus.net>) for the PDF layout, Open Journal Systems (<http://pkp.sfu.ca/?q=ojs>) for the website, and a LAMP stack (Linux, Apache, MySQL, and PHP; http://wikipedia.org/wiki/LAMP_%28software_bundle%29) underneath the hood.

Figure 2. OSBR Author Perspectives by Location



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The Technology Innovation Management Review

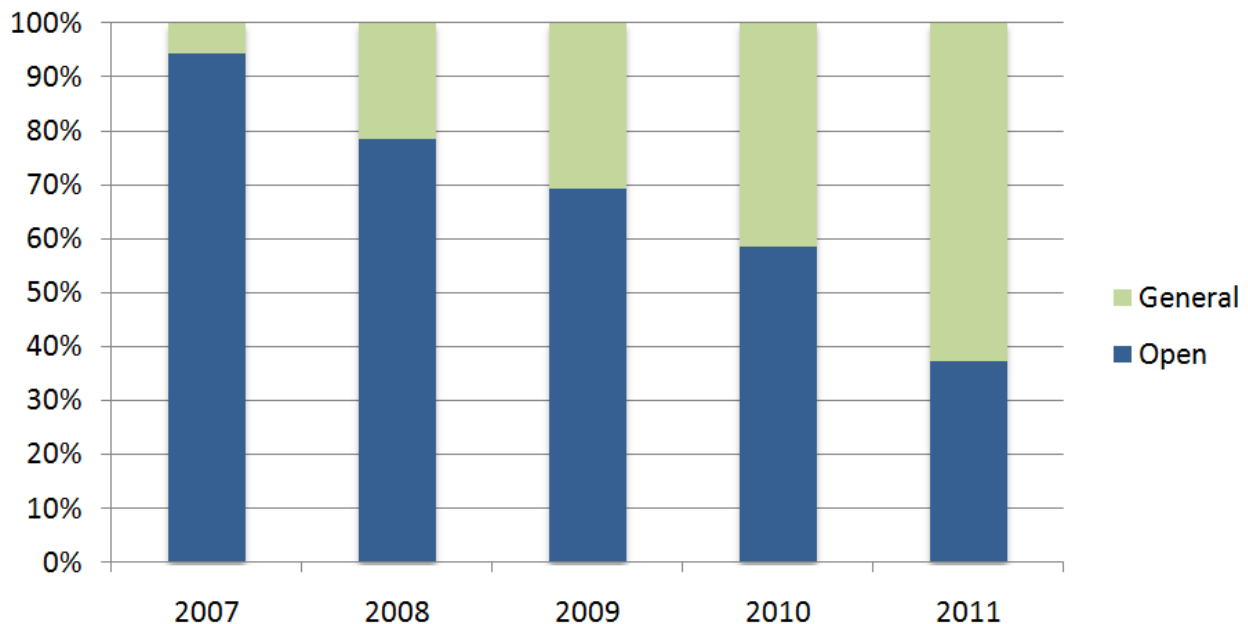
Carrying on the tradition of the OSBR, the *Technology Innovation Management Review* (TIM Review) will bring together diverse viewpoints from academics, entrepreneurs, companies of all sizes, the public sector, the third sector, and others to share insights and practical ideas that readers can apply to their own organizations. However, the scope will extend beyond open source, which we now consider a better-understood, mainstream tool for technology businesses.

The TIM Review will focus on the theories, strategies, and tools that help early-stage technology companies succeed. This change formalizes and continues a gradual scope shift that was already occurring in the OSBR. As Figure 3 shows, general articles that would appeal to anyone with an interest in the business aspects of early-stage technology have gradually taken an increasing share relative to articles on “open” topics (e.g., open source, open data, open government, open education) in the OSBR. Open

source business will remain a core focus, but it will share the spotlight with topics such as managing innovation, technology entrepreneurship, and economic development.

In addition to formalizing the expanding scope of the publication, we aim to substantially improve both the levels of collaboration the journal provides and the local and regional outcomes its contributors support. While the OSBR is primarily a dissemination vehicle for fully formed articles, with the TIM Review, we aim to increase opportunities for input before, during, and after ideas and insights are expressed in article form. We also hope to encourage recommendations for issue themes, authors, and guest editors and generally increase the opportunities for feedback and discussion. To help us achieve this goal – and to give the publication a much-needed facelift and richer feature set for collaboration and reader interaction – we are developing a new website based on Drupal (<http://drupal.org>), the open source content management platform. We intend to improve this site over time in response to feedback and changing needs.

Figure 3. OSBR Article Topics



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Conclusion

The OSBR began with the question, “How do you make money with open source?” and while there is no simple answer to this question, we have attempted to shed light on its various dimensions by asking experts in the worlds of business and open source to share their insights and experience. The OSBR has evolved over the course of its 50 issues and in the next issue, we will formalize shifts in its overall scope with the re-launch of the journal under the banner of the *Technology Innovation Management Review*.

Given that this is the last article to be published in the OSBR before it becomes the TIM Review, we wish to acknowledge the valuable contributions made by the authors, guest editors, columnists, advisory board members, sponsors, and administrative and technical staff over the past four years. In particular, we also would like to recognize the tremendous efforts of Dru Lavigne, the first Editor-in-Chief of the OSBR, and Tony Bailetti, the Director of the TIM program, who together lit the fire and kept it burning brightly. Finally, we wish to thank the readers of the OSBR; we hope you have found value in the insights contained within these pages and we look forward to your ongoing feedback and contributions as we continue to evolve this publication.

Chris McPhee has been the Editor-in-Chief of the Open Source Business Resource since July 2010. He is also in the Technology Innovation Management program at Carleton University in Ottawa. Chris received his BScH and MSc degrees in Biology from Queen's University in Kingston, following which he worked in a variety of management, design, and content development roles on science education software projects in Canada and Scotland.

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