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At the close of the 20th century, Tim O'Reilly wrote The Ten Myths About Open Source Software:
http://www.oreillynet.com/pub/a/oreilly/opensource/news/myths_1199.html

Do any of these still sound familiar?

1. It's all about Linux versus Windows

2. Open source software isn't reliable or supported

3. Big companies don't use open source software

4. Open source is hostile to intellectual property

5. Open source is all about licenses

6. If I give away my software to the open source community, thousands of developers will suddenly start working for me for nothing

7. Open source only matters to programmers; most users never look under the hood anyway

8. There's no money to be made on free software

9. The open source movement isn't sustainable; people will stop developing free software once they see others making lots of money from their efforts

10. Open source is playing catch up to Microsoft and the commercial world

If I were to expand this list to a baker's dozen, I'd add these myths:

11. Executives of Canadian technology companies are not interested in making money from open source

12. Only big companies such as IBM and Sun can effectively use open source

13. There are few viable business models around open source

It obviously takes more than the passage of time to dispel such uninformed myths. Companies need to experience new business models and market disruptors. Theorists need to dissect and analyze the predictions of visionaries. Both theory and experience need to filter down through the mainstream media. And until the new knowledge becomes commonplace, myths continue to pass as truths.

The August issue of the OSBR contains resources designed to provoke thought around open source business models and to add to the knowledge surrounding this topic. As you read through this issue, see if you can identify which myths we are trying to dispel.

This issue includes articles submitted by three Ottawa-based open source companies. These companies vary in size, business model, stage in the Open Source Maturity Model, and role in their respective ecosystems. This issue also includes two articles that summarize research results from two master theses completed as part of a joint research program between Nortel and Carleton University, an article on the role of the Talent First Network as the keystone organization of Ontario's open source company ecosystem, a description of a new lead project on open source patterns, and a Q&A section with answers to questions about open source business models.

This issue is successful if it promotes discussion--both at your company's water cooler and within the OSBR community. Let us know what you think.

Dru Lavigne is a technical writer and IT consultant who has been active with open source communities since the mid-1990s. She writes regularly for O'Reilly and DNSStuff.com and is author of the books BSD Hacks and The Best of FreeBSD Basics.

"Open source is a force that can't be stopped. When it picks a market it eats it out from the bottom up."

Chris Lyman, CEO, Fonality

Little is known about companies whose core business is selling telecommunications products that lever open source projects. Open source telecommunications (OST) companies operate in markets that are very different from typical software product markets. The telecommunications market is regulated, vertically integrated, and proprietary designs and special chips are widely used. For a telecommunications product to be useful, it must interact with both access network products and core network products. Due to specifications in Service Agreements Levels, penalties for failures of telecommunications products are very high.

This article shares information that is not widely known, including a list of OST companies and the open source projects on which they depend, the size and diversity of venture capital investment in OST companies, the nature of the commercial product-open source software and company-project relationships, ways in which OST companies make money, benefits and risks of OST companies, and competition between OST companies. Analysis of this information provides insights into the ways in which companies can build business models around open source software. These findings will be of interest to entrepreneurs, top management teams of incumbent companies that sell telecommunications products, and those who care about Ontario's ability to compete globally.

Key findings and conclusions are:

–Twelve OST companies were identified and organized into three categories: IP telephony, network monitoring, and router equipment.

–OST companies are starting to show signs that they are capable of disrupting the telecommunications market.

–No OST company has its headquarters in Canada, a country that in the past led in the field of telecommunications.

–A large proportion of OST companies have raised venture capital (75%) and filed for patents in the system architecture domain (33%).

–OST companies generate revenue in six different ways.

–OST companies derive significant benefits from open source projects.

–OST companies compete against vendors of proprietary product and each other.

Open Source Telecommunications Companies

Table 1 shows twelve OST companies; ten of these companies are located in the United States, one is located in Australia, and one is located in the United Kingdom. Nine have raised venture capital (75%) and four have filed patents (33%). The patents filed by OST companies tend to be in the system architecture domain.

Table 1: Open Source Telecommunication Companies

Company	Headquarters	VC investment	Patents	OSS project	Product
Digium	Huntsville, Alabama	Yes	Yes	Asterisk	IP PBX and 2PC cards
Fonality	Los Angeles, California	Yes	Yes	Asterisk	IP PBX and phones
Groundwork OpenSource	San Francisco, California	Yes	No	Nagios	IT and network monitoring
Hyperic	San Francisco, California	Yes	No	Hyperic HQ	Systems management
OpenNMS Group	Pittsboro, North Carolina	No	No	OpenNMS	Enterprise-Wide Network Management
Pingtel	Burlington, Massachusetts	Yes	Yes	sipX	IP PBX
Smoothwall	Leeds, United Kingdom	No	No	Smoothwall	Firewall
SourceFire	Columbia, Maryland	Yes	Yes	Snort	Intrusion detection and determination
Tenable Network Security	Columbia, Maryland	Yes	No	Nessus	Vulnerability discovery and compromise detection
VoiceTronix	Adelaide, South Australia	No	No	Asterisk	PC cards
Vyatta	San Mateo, California	Yes	No	XORP	Router
Zenoss	Annapolis, Maryland	Yes	No	Zenoss Core	Systems management

OST companies can be organized into three categories. IP telephony, network monitoring, and router equipment. IP telephony companies develop and market products that deliver VoIP functionality to customers and include Digium, Fonality, Pingtel, and VoiceTronix. Network monitoring companies provide products that either monitor a customer's network and report abnormal situations or provide a firewall to protect a customer's network. Network monitoring companies include Groundwork Open Source, Hyperic, OpenNMS Group, Smoothwall Ltd, SourceFire, Tenable, and Zenoss.

Router companies develop and market devices or software that determine the next network point to which a packet should be forwarded toward its destination. Routers are connected to at least two networks and decides which way to send each information packet based on its current understanding of the state of the networks to which it is connected. Vyatta is a router company.

Venture Capital Investment in OST Companies

The proportion of OST companies that have successfully attracted venture capital funding is high. Nine of the twelve companies shown in Table 1 are supported by venture capital.

The diversity of venture capital providers that invest in OST companies is also high. The following seven types of venture capital providers have invested in OST companies:

1. Corporate venture capital: Intel Capital invested in Fonality, SAP Venture in Groundwork Open Source, SAIC Venture Capital in Pingtel, and Comcast Interactive Capital in Vyatta

2. Investors experienced in open source investments: Matrix Partners invested in Digium as well as JBoss, an open source company with no telecommunications products

3. Early stage investors: Vesbridge Partners invested in Pingtel

4. Late stage investors: Meritech Capital Partners invested in SourceFire

5. Institutional investors: Cross Creek Capital invested in SourceFire

6. Leading venture capital firms: Sequoia Capital invested in SourceFire

7. Venture capital branches of government departments: Maryland Department of Business and Economic Development's venture capital fund invested in Tenable Network Security

Commercial Product-Open Source Software Relationships

OST companies' commercial products and the open source software upon which they depend relate to one another in at least three different ways:

1. Updates to the commercial product are first released to paying customers and subsequently released to the open source project. SourceFire releases security updates to Snort, the open source project upon which it depends, five days after releasing it to paying customers. Tenable releases its update to the open source project seven days after it releases it to paying customers. Smoothwall Ltd. progressively releases commercially developed features back into the open source project. Fonality releases patches and updates to its open source version every six months.

2. The commercial product has more features than the open source software on which it depends. Tenable releases only certain features of its commercial product. Pingtel supports toll-quality features in its commercial offering but not on the open source version. Groundwork Open Source released its Groundwork Monitor Open Source as an entry level product, and offers commercial versions of its high-end products, Groundwork Monitor Professional and Groundwork Monitor Small Business.

3. The commercial product and the open source software have the same functionality, however, the commercial product has been tested rigorously (e.g., Digium's Business Edition).

Company-Open Source Project Relationship

An OST company and an open source project can relate to each other in one of two ways.

First, an OST company can be the care giver of the open source project. In this type of relationship, the company may be the opportunistic result of an unexpected or unplanned success of an open source project. The company was either created or re-focused to provide commercial offers anchored around the open source software. This type of relationship includes the instances in which a company released its proprietary code to an open source project and becomes an open source company. Examples of this type of company-project relationship include Digium with Asterisk, SourceFire with Snort, Pingtel with sipX, and Smoothwall Ltd. with Smoothwall.

Second, an OST company could develop around an open source project that the company did not initiate or previously maintain. Examples of this type of company-project relationship include Vyatta with XORP, Fonality with Asterisk, and Groundwork Open Source with Nagios.

Ways OST Companies Make Money

OST companies generate revenue in one or more of the following six ways:

1. The company sells hardware that is complementary to the open source software. Digium sells the TC400B, B410P, TE412P, TE120P, and TDM2400P cards; VoiceTronix sells OpenPCI-4L, OpenLine4, OpenSwitch12, and OpenPri.

2. The company sells an appliance that integrates a PC with open source software. Vyatta markets their Open Flexible Router (OFR) appliance, Pingtel the SIPxchange ECS 50, Smoothwall Ltd. the SmoothGuard 1000-UTM and Fonality the PBXtra Standard and PBXtra Professional.

3. The company sells add-ons to the open source software. Sourcefire provides the Sourcefire Intrusion Agent for Snort, Tenable Network Security the Nessus Vulnerability Scanner, and Groundwork Open Source provides Groundwork Monitor Small Business and Groundwork Monitor Professional.

4. The company charges subscriptions for software maintenance and support. This is the model used by Pingtel's Jump Start Program, Technical Assistance Center (TAC) Support, and Specialized TAC Support. Fonality charges $65 per user per year for 1-4 phones and $38 per user per year for 500+ phones. Vyatta offers the OFR Enterprise Subscription and the OFR Professional Subscription. Digium has the 5x8xNBD Maintenance Plan and the 7x24xNBD Maintenance Plan. Tenable Network Security offers Nessus Direct Feed.

5. The company charges for customization and consulting for open source software. Pingtel provides application support and consulting, Digium provides a configuration package, customer development and consulting, and Vyatta provides a remote consulting service.

6. The company charges for commercial licenses. Asterisk is available from Digium under a commercial license.

Benefits OST Companies Derive from Open Source Projects

Open source projects are known to provide important benefits to OST companies. OST companies reported that they derived the following six benefits from using open source to make money:

1. Open source enables OST companies to enter global markets quickly: Pingtel

2. Open source enables small companies to enter niche markets dominated by large companies: SourceFire, Vyatta, Groundwork Open Source

3. Open source decreases time to market: Fonality and Vyatta released commercial products in less than one year after they were founded

4. Open source attracts a very large user base that includes potential customers: Snort and Smoothwall had 3 million and 1 million downloads of their open source software respectively

5. Open source pulls sales for commercial hardware products: VoiceTronix's hardware supports Asterisk, an open source software with private branch exchange functionality

6. Open source lowers the price of commercial products that are derived from it: Fonality's product sells for half the price of a similar Cisco proprietary product

Risks to Which OST Companies are Exposed

OST companies that initiate open source projects are exposed to the following four risks:

1. A competitor can use the open source code developed by the company to increase its market share. Digium initiated Asterisk while Fonality has the world's largest Asterisk-based commercial deployment.

2. A competitor can fork the open source project initiated by the company and launch a competing community. OpenPBX was forked from Asterisk and TrixBox was based on Asterisk. TrixBox became the world's largest Asterisk-based community, and was then acquired by Fonality.

3. A competitor can package open source software into an appliance without revealing that the code was developed by the open source project the company initiated. Many security product companies generate revenue by inserting Nessus into an appliance, writing a Web interface for it, and branding it as their own solution.

4. Some customers (existing or potential) may have policies in place that prevent them from buying products that have open source. Tenable's customers could not buy the company's products while the code was open source.

Competition

It is well known that open source companies compete against proprietary vendors. It may be less known that open source telecommunications companies, projects and communities also aggressively compete with each other.

Consider, for example, the competition between sipX and Asterisk, both open source IP-PBXs. The sipX approach to development is top-down and standards-based, with support from the standards committees. The Asterisk approach is strictly bottom-up, based on users' preferences rather than standards committee recommendations.

Insights

The information in Table 1 provides evidence that OST companies (i) are addressing the needs of two access markets (VoIP and network monitoring), and (ii) have started to move into the core network with the introduction of a wide area router.

OST companies are starting to show signs that they are capable of disrupting the telecommunications market. While OST companies have not shaken up the existing status quo yet, evidence does exist that suggests that open source IP telephony is a low market disruptive innovation and that open source network monitoring is a new-market disruptive innovation.

With open source companies in general, and OST companies in particular, managing the relationship between assets that the company does not own and assets it does own is very important. OSTs need to manage more relationships than their proprietary rivals; for example, the relationship between the company's priorities and the open source project's priorities.

OST companies provide new opportunities to create wealth to entrepreneurs and income for employees.

Building a company around an open source project is a new way for tech-savvy entrepreneurs to start a business venture. They can either start an open source project or use an existing one.

Recommended Reading

Christensen, C.M., The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail (Boston: Harvard Business School Press, 1997).

Christensen, C.M., and Raynor, M.E., The Innovator's Solution: Creating and Sustaining Successful Growth (Boston: Harvard Business School Press, 2003).

Haijun (Peter) Liu is a software manager with DragonWave Inc., an innovative Ottawa company that designs, develops, markets and sells carrier-grade microwave equipment offering high capacity broadband wireless systems for network operators and service providers. Peter joined DragonWave the first year of its incorporation, and has experienced first hand how a startup secures venture capital investment, diversifies its product portfolio, carries out trials with industry giants, and lives through tough times. Peter received his Master degree in Computer Science, from the Institute of Computing Technology, China Academy of Science, a very prestigious graduate school which designed the very first Chinese computer. His research topic was Machine Translation, a branch of Artificial Intelligence. Prior to Peter's research, machine translation systems depended solely on syntax information. He designed and built a translation system which used semantic and context information to improve translation accuracy. Peter has published in Chinese computer journals. Peter is about to complete his master's degree in Carleton University's Technology Innovation Management program.

"There is a hidden revolution going on: geography is moving from niche to the mainstream."

Scott Davis, Author and Consultant

In this time of excitement over the emergence of mapping technologies like Google Earth, Personal Navigation Devices, GPS technologies for tracking vehicles, and so much more, a little known phenomenon has also been taking place: the explosive growth of open source mapping technologies.

Leading the way in this area is DM Solutions Group (DMSG) - a small company based in Ottawa, Canada who is working closely with customers and partners from around the world to incorporate mapping into their web environments.

Web Mapping is a highly specialized niche market that can be applied to almost every conceivable industry. It is this peculiar combination that is at the heart of why the open source software development approach has been so successful in this area.

Customization v.s. Technology

Web Mapping is used today in many different markets including real estate, forestry, health care, search engines, and vehicle tracking. In each of these markets, web mapping alone is not sufficient to solve a particular problem; it is the custom application of this technology to meet a specific need that creates value. The net effect is that value is highly skewed to the end solution and not the underlying technology. Combine this with the unique skills required to develop web mapping applications, and the value this places on services, and you have the perfect breeding ground for successful open source projects.

DMSG began to realize this power in 2000 when the software company struck the hurdles of applying proprietary technologies to deliver solutions for customers. The specific requirements of these customers pushed the limits of the underlying technology in ways that could best be accommodated by enhancing or modifying the core technology. At the same time it was apparent that customers were valuing the services delivered by DMSG, not the software. This set of events led to DMSG taking the plunge with an emerging open source project from the University of Minnesota called MapServer. Neither DMSG nor their customers have looked back since.

DMSG committed to moving all of their customers to MapServer and began to contribute technology enhancements such as supporting a Microsoft Windows installation (only Linux was supported previously), adding scripting environments such as PHP, and implementing support for emerging standards from the Open Geospatial Consortium (OGC).

Between 2000 and today, a number of startling developments have taken place:

–DMSG has been responsible for close to 50% of the code in the current MapServer codebase, almost all directly supported through commercial business

–The MapServer project has grown from a small community of approximately 200 installations to estimates of over 100,000, representing a significant portion of the market share for these technologies

–In 2005, Autodesk became the first major vendor of GIS technologies to release the code base for their web mapping platform through an open source license

–In 2006, with the growing success of open source mapping, the Open Source Geospatial (OSGeo) Foundation was formed with the mandate to be the home for the most important open source geospatial projects in the industry

–In 2006, FOSS4G, the annual open source geospatial conference had 550 attendees, significant growth from the 100 who attended in 2003

–By the end of early bird registration, the 2007 edition already had 450 registrations, with the total expected to exceed 800

In addition to MapServer, at least two other critical open source projects have emerged as foundation technologies in the industry: MapGuide Open Source (contributed by Autodesk) and OpenLayers, a JavaScript library for interfacing with various mapping servers.

All three of these projects share one thing in common: they provide highly generic web mapping capabilities that form the starting point for solutions delivery to customers. This combination has attracted business to participate in their advancement and application for customer needs.

The Open Source Advantage

Looking back at the fundamentals of web mapping technologies, we begin to see why the open source development process has been so powerful. A couple of critical characteristics:

–Web mapping is and will likely remain a niche specialization, yet demand for the technology comes from virtually every definable industry

–Core web mapping technology is rapidly becoming a commodity, yet the combination of skills required by an organization to deploy web mapping are unique.

These characteristics define the central reasons why web mapping technology has seen so much success as open source projects. Although these characteristics favour the development of core open source web mapping technologies, they also demand breadth in terms of skills, knowledge and organizational structure that are not conducive to having all of these activities take place within one or a few organizations. Some examples of this diversity include:

–Diversity of skills: C/C++ software development, GIS analysis, cartography, web application developers, web designers

–Diversity of knowledge: Understanding of software development, geospatial information, web mapping plus domain knowledge from every unique community requiring web mapping technologies

–Diversity of organizational structure: These include all levels of government, enterprise solutions, software as a service, and software providers

Developing an organization that can contain any one of these groups of skills, knowledge or organizational structure is extremely difficult if not impossible. However, delivering any one solution around web mapping requires the right combination of characteristics from each of these areas.

In order to meet this demand, solutions are being developed through business partnerships and the emergence of a flexible and dynamic ecosystem around open source web mapping technologies.

Today, the open source web mapping ecosystem is in its infancy; however its characteristics are already quite clear. It is functional, growing, and maturing daily. Coming out of it are an interesting array of business stakeholders who collectively are the ecosystem.

These businesses can loosely be classified as:

–**Caretakers**: Developers who build and support the core open source web mapping technologies

–**Professionals**: Power users and web mapping experts who deploy solutions for others

–**Specialists**: Domain experts who strive to incorporate spatial components for a specific industry, domain or market segment

Together these groups bring together in dynamic ways their services, skills, market presence and understanding to deliver the right solutions from customers. These solutions are often on the surface very commercial and very proprietary. However, underpinning all of them is the common open source web mapping technologies that are servicing over 100,000 installations around the world.

Open Source: More than just Maps

DMSG may be a world leader in open source web mapping technologies, but that's not the only open source technology that influences the company. DMSG has always taken a best-of-breed approach to technology. The experience gained from collaborating with open source web mapping projects has helped the company make better decisions when deciding whether or not to adopt open source technology for other parts of the company's business.

DMSG's development team is our largest consumer of open source technologies, for both operating system needs (in particular Linux) and web server (Apache). DMSG also makes extensive use of open source scripting languages, in particular PHP along with some work in Python. Most of the company's database work is completed with Postgresql and MySQL for both consulting activities and internal systems.

Open source technologies are also finding their way into the company's business activities through some adoption of Open Office, Mozilla Firefox, and Mac OSX which runs on top of a modified FreeBSD operating system.

DMSG and Open Source in the Marketplace

DMSG has established its presence as a leading caretaker of open source technologies around the world which in turn has driven much of the company's growth, marketing and sales activities.

Taking a leadership role and establishing a track record for developing high quality web mapping technologies has driven demand for the company's services. Unlike a conventional model of developing a product and striving to get the product to market, open source brings the core technology to the market instantaneously around the world. By positioning itself as a leading expert in these technologies, and continuing to advance the commercial priorities for the company around the core open source technologies, DMSG is now reaping the rewards of significant demand for services which is driving a new round of growth for the company.

Check out that Map!

The geography industry is exploding especially where that information is delivered to the web. Open source technologies are at the forefront of this explosion with demand for the technology and for commercial services growing with blazing speed.

Just like the invisible world of servers and the 70% of them that run Apache, next time you see a map, remember there's a good chance open source technology is making it possible.

Dave McIlhagga is the president and founder of DM Solutions Group Inc., (http://www.dmsolutions.ca) a leader in web mapping solutions delivery since 1998. Dave has positioned DM Solutions Group as a leading provider of commercial products and services to the open source web mapping community, and premiere web mapping solutions provider to select vertical markets such as healthcare and real estate. As the president of DM Solutions Group, one of Dave's key roles is fostering alliances and key partnerships both in North America and internationally. Dave is a Board member of the newly formed Open Source GeoSpatial Foundation and an active contributor to the open source geospatial movement. Prior to founding DM Solutions Group, Dave was a leading developer of one of the industry's first web mapping technologies at TYDAC Research. Dave graduated from Carleton University with an Honours Bachelor's degree in Geography, concentrating in Geographic Information Processing.

"CanIt-PRO and Roaring Penguin Software are stellar examples of what first-rate value-added programming and support around an open source core can do!"
Alan Belanger, Soundview Technology Group

Roaring Penguin Software Inc. started as a one-person consulting company in 1999. A year later, David F. Skoll, the company's President and CTO, was asked to develop an e-mail filtering tool. David developed MIMEDefang, an e-mail filter that used Sendmail's Milter facilities. David donated the code to the open source community, and kept developing MIMEDefang as a free tool for system administrators. Today, the MIMEDefang code is available at http://www.mimedefang.org.

By 2002, it was obvious that there was a need for a packaged mail-filtering solution suitable for end-users. David decided to go ahead and write what became CanIt-PRO. Whereas MIMEDefang is suited to system administrators who are familiar with Perl and comfortable with writing their filtering policies in Perl, the CanIt product line allows end-users to control their filtering through a simple web-based interface.

The company transformed itself from a consulting company to a product development company. This transformation required significant changes.

Business Model

There are a number of open source business models touted by open source supporters. Roaring Penguin chose the "free core, value-add on top" model. The core scanning software, MIMEDefang, is free and released under the terms of the GNU General Public License.

All the MIMEDefang code is contributed by Roaring Penguin, which has made minor patches and regular releases based on community feedback; MIMEDefang is estimated to have between 6,500 and 10,000 users.

The commercial products are built on top of MIMEDefang and have a more traditional proprietary software license. However, even the commercial products ship with source code and permission for end-users to modify it. They just can't redistribute the commercial products.

The commercial software extends MIMEDefang by hooking into strategic points in its filter file. MIMEDefang was designed to be extended in this way by system administrators and it proved a natural way to develop CanIt.

Although some businesses offer only free software and generate revenue strictly from support or contract customizations, we did not feel this would generate sufficient revenue to make the company viable. We based this feeling on a number of observations:

1. Having released several applications under the GPL license in the past, we found that people were very reluctant to pay for support. For example, we have over 500 paying customers for CanIt. There are probably more than 20 times that many using MIMEDefang, but we have only sold two MIMEDefang support contracts.

2. An application released under the GPL licence can be supported by anyone. Thus, you run the risk of someone else offering paid support for your application. This is perfectly legal under the GPL.

3. Very few companies have made a viable business out of free software with paid support whereas there are tens of thousands of successful proprietary software companies.

4. Contract work and consulting is labour-intensive. Selling the actual software lets you obtain revenues again and again for the same original work.

Venture Capital or Not?

A major decision for a small company is whether or not to seek venture capital. We investigated venture capital investment and decided not to pursue it for a number of reasons:

1. Venture capitalists demand a significant share of the company and considerable control over its direction.

2. Venture capitalists have a short-to-medium time-frame. Their goal is to sell their investment for a profit after a few years. They tend not to plan for the long term.

3. Obtaining venture capital demands a significant investment in time and energy. We felt this time and energy was better spent developing our products and growing our business.

In retrospect, it was a very easy decision not to seek venture capital. After spending a few weeks examining the issue, we concluded that the amount of capital we could realistically raise would be far too low to compensate for the time, energy and equity we'd have to spend to secure it.

Bootstrapping

Once the decision was made not to seek venture capital, the key to a viable company was getting the product to market as quickly and cheaply as possible and securing a few well-regarded reference customers. We began developing CanIt in April 2002 and the first copy was sold by July 2002. By December 2002, we had our CanIt-PRO product in production. By the end of 2002, we had about 12 customers, including a few well-known organizations. This set the foundation for future growth.

During the bootstrapping phase, it is critical to keep expenses down. We ran completely on free and open source software and worked mostly out of home offices. In early 2003, we expanded into a small three person office and by late 2003 had moved to our current location.

Business Tools

Roaring Penguin started out as an open source company and we are still heavily involved in the Free Software community. As part of that philosophy, we run completely on Free Software. For example, we use SugarCRM for contact management. We use RT for ticket-tracking, Asterisk for our phone system, Ledger-SMB for accounting, and Linux, Firefox, Thunderbird and OpenOffice on the desktop. Our Web site is powered by Drupal, an advanced content-management system.

Remarkably, our annual software licensing budget is zero. A rough calculation shows that based on 10 servers and 12 desktops, we have saved over $27,000 in software licensing fees by using Free Software instead of the analogous Microsoft software. In addition, SugarCRM saves us something like $12,000 per year compared to a solution like Salesforce. The additional savings due to increased reliability of open source software and immunity to Windows viruses are considerable.

Saving many thousands of dollars in software licensing fees has allowed us to spend the money on more important things like marketing and development.

Marketing

Roaring Penguin's long history of participation in the open source community has paid off tremendously. Because of our established history and the fact that our open source products are widely used, many web sites link to our site. This has kept us ranking relatively high on Google searches. This was important because many of our early reference customers found us through Google.

Paid online advertising is important, but expensive. Maintaining a good position in organic search results is critical to success. Unfortunately, there's no quick and easy way to do this. You need to actively participate in the open source community and provide valuable products that people like. Only then can you build up your mesh of interconnectivity that boosts your Google ranking.

The Story So Far

In 2002, Roaring Penguin consisted of one person with a few open source applications. Five years later, we have grown to 10 employees and have hundreds of customers and hundreds of thousands of end-users for our commercial products. Feedback from users of our free products has improved their quality and also that of our commercial products.

We compete in a world where our competitors are an order of magnitude larger than we are with the commensurate marketing budgets, and we're winning our fair share of the anti-spam business. Open source software is a critical part of that success.

Bill White is VP Marketing and Sales for Roaring Penguin Software (http://www.roaringpenguin.com), an Ottawa based company which specializes in e-mail filtering software and anti-spam solutions. He is a key member of the team responsible for setting the strategic direction of the company, its products and markets, as well as for building and leading the Sales and Marketing teams. Bill has managed sales and marketing activities in the high-technology arena for more than 20 years. He has been fortunate to work at and learn from some of the best software development companies in Ottawa including Beyond 20/20, Plaintree, KOM, Gallium and ELSID Software Systems.

"An ecosystem is an economic community supported by a foundation of interacting organizations and individuals--the organisms of the business world. This economic community produces goods and services of value to customers, who are themselves members of the ecosystem. The member organizations also include suppliers, lead producers, competitors, and other stakeholders."

James Moore, Harvard Business Review, May/June, 1993, winner of the McKinsey Award for article of the year

Many companies, individuals and organizations in Ontario produce and use open source assets and processes to provide unique value to their customers, clients, and themselves. To better enable these companies, individuals and organizations to (i) co-evolve capabilities and roles, (ii) align themselves with companies holding leadership roles, and (iii) invest in shared visions, the Talent First Network (TFN) has become the keystone organization of Ontario's open source ecosystem. This article introduces the TFN and identifies the steps it is taking to better support the Ontario Open Source Ecosystem.

The mission of the TFN (http://www.talentfirstnetwork.org) is to create an environment for Ontario to be a global leader in the development and commercialization of open source assets such as software, integrated circuits, printed circuit boards, content, scientific knowledge, and open source processes. Today, the TFN interacts with 40 companies located across Ontario. These companies operate in different product markets (e.g., modelling tools, online mapping, security, gaming, databases, knowledge management and small business services) and rely on different business models. Small and mid-size companies, as well as spin outs from academic institutions, produce and use open source assets to generate revenue, reduce their customers' costs, and carry out strategies that are not possible with proprietary products.

KEYSTONE ORGANIZATION

The TFN wishes to do much more than just interact with a group of Ontario companies that produce and use open source assets. We intend to build a province wide ecosystem that accelerates the investment in, and adoption of, open source assets and becomes a showcase to the world of what Ontario can accomplish.

The TFN intends to be the keystone organization in Ontario's Open Source Ecosystem. As a keystone, the TFN will:

–provide services to Ontario companies and organizations that produce and use open source assets

–improve the health of the Open Source Ecosystem

–advocate issues that are important to Ontario companies that rely on open source assets to compete

Services

The TFN currently provides the following high quality services to benefit the Ontario companies that are part of the Open Source Ecosystem:

1. Talented students

The TFN finds and pays suitable undergraduate and graduate students to work with companies that rely on open source assets to compete. For students, this provides first hand experience in the development and commercialization of open source products and services. For companies, this reduces development costs and accelerates time to market.

During the summer of 2007, the TFN placed 20 undergraduate students in Ontario companies.

2. Lead projects

TFN works with companies and academic institutions in the design and launch of lead projects that integrate off the shelf components and open source stacks for the purpose of creating a new market or entering an existing market dominated by proprietary vendors.

Today three TFN lead projects exist:

i. TFN 100**:** Advancing an open source communications platform to benefit Ontario charities, undergraduate and graduate students, and companies. The TFN 100 project stands at the centre of a move towards the deployment of an open platform for unified communications to benefit Ontarians.

ii. Corporate Directory Platform: Developing a Web 2.0 platform for corporate directories across Ontario.

iii. Open Source Patterns: Capturing experiences with open source adoption and value creation from open source, and sharing them in an easily understood format through a pattern repository.

3. Open source professional development program

TFN provides a series of professional development programs to ensure companies realize the full potential of open source and are good open source citizens. To date, the TFN has delivered four partnership conferences.

4. Open Source Business Resource (OSBR)

The OSBR is a knowledge transfer resource which provides accurate, high quality, and relevant information to companies and organizations that produce and use open source worldwide.

The July 2007 issue of the OSBR was the inaugural issue. To date, 1,386 unique visitors from 76 countries retrieved the July issue from http://www.osbr.ca . Of the 1,386, 38% came from Canada, 19% from the United States, and 43% from 74 other countries. Ontario visitors accounted for 25% of the total unique visitors. You are reading the second issue of the OSBR.

5. Low cost, state of the art communications

Companies and organizations that are part of the Open Source Ecosystem as well as Ontario charities and non-profits can use the TFN-100 to communicate at a very low cost.

6. Business plans

The TFN team reviews business plans and provides forums for dry runs of business plan presentations. To date, business plans for ten companies have been reviewed by TFN personnel.

7. Contacts

The TFN acts as a virtual business development office for companies that are part of the Open Source Ecosystem. It refers people and opportunities to companies and connects like minded individuals and companies within the ecosystem. This is an ongoing activity which has benefited many Ottawa companies and entrepreneurs seeking to start their companies.

The following services will be introduced in the near future:

1. Experienced and talented individuals

TFN will help companies find experienced individuals to carry out development and commercialization work. The output of the development work allows companies to better satisfy their customers' needs and concurrently contribute to open source projects.

2. Social and technical innovation competitions

To encourage the adoption of open source, the TFN will sponsor competitions where college professors, students and companies contribute to social and technology innovations.

3. Capital

The TFN will help companies that produce and use open source acquire capital.

4. Auction of innovative technologies

TFN will provide an on-line auction facility for open source projects where the companies working with TFN can place contracts for open source projects and showcase open source solutions for sale. The open source auction provides further opportunities for a company to collaborate and leverage external resources.

Determine Ecosystem Health

The health of the Open Source Ecosystem is central to the success of Ontario companies that rely on open source assets to compete. Like an individual species in a biological ecosystem, each company in an ecosystem ultimately shares the fate of the network as a whole, regardless of the company's apparent strength.

The TFN uses four dimensions to assess the health of the Open Source Ecosystem. These dimensions are:

–Number of companies in the ecosystem

–Diversity of the product markets in which companies in the ecosystem operate

–Number of new products or services introduced by the companies in the ecosystem

–Duration of the ecosystem

The TFN acts to increase the number of companies in the open source ecosystem, increase the diversity of the product markets served by these companies, increase the number of successful products and services that these companies introduce every year, and ensure the sustainability of the ecosystem.

Advocate Company Agenda

The TFN advocates the agenda of Ontario companies that produce and use open source assets to compete. The TFN identifies issues relevant to open source and shapes the agenda to overcome obstacles in the adoption of open source by Ontario companies.

Rowland Few is a member of the Talent First Network where he is responsible for the Company Affiliates program and aims to assemble an ecosystem comprised of 50 companies across Ontario with business models that benefit from Open Source to generate cash and reduce development costs. Rowland has 18 years Telecom experience across North America, Europe and China with 10 years management (covering Engineering, Program Management and Business Development) at Ottawa based start-ups. He graduated from the Queens' Executive MBA program in May 2004.

"*We're in the second wave of the Internet. The companies that will win will be those that define this next phase. Open source will define it.*"

Jonathan Schwartz, Sun CEO

The telecommunications industry is moving away from building communications and data service networks using proprietary platforms of specialized hardware, closed interfaces, and proprietary technologies. Increasingly, the industry is assembling new networks on open platforms comprised of both commercial-off-the-shelf (COTS) software and open source components. Carrier Grade Linux (CGL) stands at the center of the move to open architectures.

This article addresses three questions. 1) What motivates companies to incorporate CGL specifications into their products? 2) How do companies adopting CGL create and appropriate value? 3) What roles do these companies play in the ecosystem anchored around the CGL Working Group initiative? These questions are of interest to top management teams facing pivotal decisions of whether or not to incorporate open platforms into their products, and how to compete in a world where those same platforms are available to competitors.

To answer these questions, publicly available information on members of the CGL Working Group was collected and analyzed. The following nine companies comprised the research sample:

–Intel (Silicon provider)
–MontaVista, Wind River, and Red Hat (Linux providers)
–IBM, HP, and Sun (System suppliers)
–Ericsson (Network equipment supplier)
–NTT (Carrier)

The findings from this study provide new insights into the adoption of open platforms. This study is one component of an ongoing Carleton University research program investigating open platforms, open platform architectures, and open source ecosystems.

Carrier Grade Linux Working Group

Open Source Development Labs (OSDL) founded the Carrier Grade Linux (CGL) Working Group in 2002 to accelerate the adoption of Linux within the telecommunications industry. The CGL Working Group develops Linux specifications to satisfy carrier grade requirements. Members of the CGL Working Group include silicon providers, system suppliers, Linux distributors, telecom equipment manufacturers, network equipment providers, integration and service providers, application providers and carriers.

Companies that sell telecommunications products and services quickly adopted the specifications developed by the CGL Working Group. By 2006 when this study was conducted, the CGL Working Group had issued four major releases, seven companies had provided CGL 2.0 registered distributions, and dozens of companies had offered CGL products.

The CGL Working Group is a business ecosystem where member companies simultaneously cooperate and compete. They cooperate to increase the shared value that they mutually derive from the CGL initiative; they compete, sometimes fiercely, to increase the proportion of the total value that each can appropriate. In this business game of value creation and value appropriation, no single company owns the common platform that anchors the business ecosystem together.

Motives to Incorporate CGL

Analysis identified seven motives for incorporating CGL specifications into a company's products. Each company in the sample subscribed to one or more of the following motives:

1. Increase value for customers

2. Introduce differentiated products

3. Increase market share

4. Enter a new market

5. Sell complementary products and services

6. Reduce company's development or operating costs

7. Eliminate supplier lock-in

The first five motives are related to growing the business by expanding product lines, addressable markets, and customer value. The sixth motive is about reducing costs. The seventh motive is about supply chain management.

Actions to Create and Appropriate Value

Companies took one or more of the following four actions to create value using the CGL open platform:

1. Introduced new CGL products or incorporated CGL specifications in existing products

2. Established partnerships with customers and complementors

3. Released proprietary code into the CGL initiative and supported CGL projects

4. Decreased development or operating costs

Companies took one or more of the following five actions to appropriate value:

1. Provided differentiated products

2. Established partnerships with suppliers

3. Established partnerships with companies that are not members of the CGL Working Group but provide complementary products and services for CGL products

4. Provided migration programs for competitors' products

5. Provided a free CGL distribution

Company Roles in the CGL Ecosystem

According to previous research, companies in an ecosystem can take on one of three roles: keystone, dominator, or niche player.

Keystones are companies that actively improve the overall health of the ecosystem while maintaining a low physical presence. Keystones adopt strategies that create platforms and share the value with other players.

Dominators are companies that have physical presence and control a large part of their networks. Dominators take most of the value for themselves and leave little for other companies in the ecosystem.

Niche players are companies that specialize in capabilities differentiating themselves from others in the ecosystem. Niche players collectively create much of the value in a niche and capture the value they create.

Recommended Reading

Iansiti, M., and Levien, R., Strategy as Ecology, Harvard Business Review, March 2004.

Brandenburger, A.M., and Nalebuff, B.J., Co-opetition, New York: Doubleday, 1996.

The CGL ecosystem had three keystone companies: IBM, Intel and HP. These three companies developed the platforms on which other companies could develop products or provided solutions that benefit the entire ecosystem. No company had a dominator role. Sun, MontaVista, Wind River, Red Hat, Ericsson and NTT all took on the roles of niche players.

Insights

The CGL open platform enabled its two founders, Intel and MontaVista, to successfully enter the telecommunications market. Neither company had operated in the telecom market prior to founding the CGL Working Group. Intel transformed from a PC-centric chip maker to a versatile information technology company active in multiple industries including consumer electronics, wireless communication, and health care. It actively shaped the open platform based on the Intel architecture and Linux operating system with the aim to take the high-end server market away from Sun. To expand its market for Linux distributions, MontaVista worked closely with the leading telecommunications equipment makers to define the CGL specifications.

The two companies that were negatively affected by the CGL initiative, Sun and Wind River, subsequently adopted the CGL specifications. Prior to the formation of the CGL Working Group, Sun had dominated the telecommunications server market, but its position was weakened by the CGL initiative's Intel architecture and Linux operating system. Previously, Wind River had been a major supplier to the telecommunications industry providing the BSD-based VxWorks, a hard real-time operating system. Wind River later accepted the CGL specifications, and positions Linux as a complement to its VxWorks product lines.

The three keystone companies coexist in the CGL ecosystem. This is an unexpected finding. In much previous research on business ecosystems, the extended networks typically formed around a single central keystone company, such as Microsoft, Walmart, or eBay; the removal of a single keystone in these traditional business ecosystems would lead to the collapse of the entire system.

All keystone companies were system providers, but not all system providers were keystones. Sun, though a system provider, became a niche player in the CGL ecosystem. All three commercial Linux distributors, Red Hat, MontaVista and Wind River, were niche players. All three actively promoted CGL specifications; however, they lacked the capability to build platforms for other companies to develop their products on.

Summary

The CGL Working Group provides an example of the powerful effects of collaboration and open standards within an industry sector. In a sector which demands high quality and availability, open standards can decrease a company's costs while maintaining carrier class characteristics for mission critical applications. The resulting ecosystem is a powerful force which can act as a disruptor, forcing other companies to join the ecosystem or change their business strategy.

Tammy (Jiang) Yuan received her M. Eng. degree in Signal and Information Processing in 1999 from the South China University of Technology and a B.Eng. in Testing Techniques and Instruments in 1993 from the University of Electronic Science and Technology of China. She has published various articles in Chinese academic journals. Tammy is about to complete her master's degree in Carleton University's Technology Innovation Management program.

"We just wanted to get our work out there and get people to use it. It would have been very difficult otherwise for two university students in Israel to get millions of users without having millions of dollars behind us."

Andi Gutmans, co-creator of PHP

This article provides an example of how a graduate student in Ontario used open source software and freely available data to solve a technical dilemma, start and grow a business, and provide services which benefit many. It also illustrates how easily new features and customizations can be developed when an API is made available to its users.

Why a Geocoder.ca?

The API behind Geocoder.ca was first written in July 2004 to overcome the technical hurdles encountered when trying to organize business listings based on location and searches by proximity to a given place. At the time, Google Maps and Google Local were not available and mash-ups weren't mature enough to meet my needs.

Upon review of commercial applications it became evident that there was little choice and that the products available were expensive, incomplete or inaccurate. The least expensive of these commercial offerings came at a cost of $0.25 per query, becoming increasingly prohibitive as the amount of queries grows. Some of the functionality required was just not available. For example, there was no ability to enter a point in latitude/longitude and get back the description of the closest location to that point.

Commercialization efforts commenced in early 2006 when I realized the software had the potential to provide a much-needed income while studying for a graduate degree.

Geocoder.ca became the core product for many applications, the first being http://foodpages.ca, a searchable online database of Canadian restaurants.

From a technical standpoint, a geocoder is software which extracts named entities such as civic addresses, intersections, and city names from an input string, then matches these entities to an existing database of physical locations to provide a suitable answer in the form of a geographically encoded location. It is a crucial component of the local web 2.0 space as it is the location intelligence behind the content. The geocoder must map a location typed by a human into a cartographically defined point expressed in latitude and longitude.

Relevancy is what differentiates web 2.0 from web 1.0. There has been a lot of innovation by web 2.0 companies aimed at providing the most relevant information to their netizens, and since the amount of information in the global Internet has grown exponentially, information proximity to a geographical location is an important dimension of relevancy. Those web 2.0 sites that offer their visitors the capability to search for "What" (the content) as well as "Where" (the proximity context) are at a competitive advantage to attract back users seeking information, because the "Where" saves time.

For example, what's the use of finding the best restaurant to dine in, when it is very far from your location? The ideal scenario is for the user to get to their desired information with just one click. The sites providing the most relevant information with the least amount of user effort are the ones that will succeed in the long run.

To achieve these goals, it is important to extract and geocode geographical information from large amounts of content quickly and accurately, as well as to quickly and accurately geocode location queries in real time.

Open Data

The initial obstacle was obtaining accurate data. The government of Canada does offer free geographical information through the Geobase portal (http://www.geobase.ca) and the Statistics Canada website (http://www.statcan.ca). The same goes for the US government with their free tiger line dataset (http://www.census.gov/geo/www/tiger). However, the quality of the data received for free is not as user friendly as that sold by commercial providers like NavTeq. Free data wins, but at a cost of accuracy to the user.

Most of the free data available is provided in different non-standard formats as most government departments have different purposes for the data they gather. While the census personnel think of locations as blocks or polygons covering inhabited areas that can be processed to produce policy recommendations for tax collection, the postal service views locations as delivery paths. Unifying these datasets is no easy task. Statistical analysis was used to standardize and correct inconsistencies in the raw data sets, making the quality of the resulting geocoder comparable and in some cases better than the already established commercial players.

The remaining task was to build the software. The GML open specification already implemented the basic algorithms for building powerful natural language processing and a MySQL database was used to store the processed datasets.

Customer Value

Geocoder.ca was released on July 5th, 2005 as a free geocoder for the many non-profit and open source projects that require geocoding to build more powerful location based information retrieval systems. The original project which gave rise to the need for having a Geocoder.ca, (http://foodpages.ca), is still using this technology, and currently serves over a million pageviews a month to netizens seeking local information on food and dining. It is just one of the many examples of how to add value to web sites using geographical information.

The primary requirement for customers using a geocoder is accuracy, followed by the versatility of geocoding functions. Geocoder.ca has been able to quickly customize software and add unique features to serve the needs of very specific customers and markets. By collaborating with Geocoder.ca, customers gain competitive advantage by accessing information that is not currently available from competitors. For example, several asset tracking and management companies utilize the reverse Geocoder.ca feature to find the road that the asset is currently traveling on, as well as computing the speed of the asset using relative proximity functions.

Many other free projects have utilized the Geocoder.ca lightweight XML geocoding port to provide relevant and valuable information on a variety of topics. These include finding and mapping free wireless hot spots in Canadian cities (http://auth.ilesansfil.org) and gathering and analyzing data about pollution (http://www.pollutionwatch.org).

The list of users keeps growing and there is an increasing number of developers working on new projects with the aim of using better information to improve the quality of life in their local communities.

The next step for Geocoder.ca is to bring even more accurate and versatile location intelligence to the masses for free. This is to be followed by an expansion into other countries and languages starting with the European Union countries, and providing geocoding of physical landscape and landmarks.

This will require the development of a semantic location search. This field is a subcategory of the semantic web idea, and involves using location intelligence for highly structured search queries such as "How many people live within x distance of the Ottawa river?". The data for answering such questions is available; the tools, however, have not been developed yet.

Paying the Bills

The business model is simple:

1. if you are a non-for-profit you may use the lightweight XML geocoding port for free

2. if you are a for-profit entity, you can use the services for a fee. Commercial clients obtain credits for using the XML. Consulting services and support is also available to commercial clients.

This model provides several benefits:

–a good relationship with the community

–a good reputation for Geocoder.ca

–valuable customer feedback leading to new functionality

–funding of in house development

–100% word-of-mouth marketing

And how successful has this model proven? To date, there are in excess of 700 non-for-profit users and 390 commercial customers. In addition, volunteers have provided free software modules for using the Geocoder.ca XML port for nearly every major programming language available today. These modules allow users and customers to integrate Geocoder.ca into their own custom applications and can be found by searching CPAN (for Perl modules) and Google.

Geocoder.ca runs its services on the well established LAMP stack. To date, I have not spent any money on software licenses. The only cost for running the business is the hosting fees, hardware, and my time. Due to the open source ecosystem, a minimal investment has allowed Geocoder.ca to develop a tool that helps to improve the quality and relevancy of information accessed on the web.

Advances in processing and obtaining relevant information about our world and its physical environment has greatly improved our quality of life. This is partially due to the fact that people have been free to put their ideas at work for the common good. Geocoder.ca will continue to work towards the implementation of more algorithms that currently only exist in theory in the fields of natural language processing and computational geometry.

Ervin Ruci came to Canada from Albania in 1996 as an undergraduate. He graduated in 2001 with a degree in Mathematics and Computer Science. After graduation he moved to Ottawa, where he worked as Applications Developer for CIRA. Ervin is currently working on his masters degree in Computational Geometry at the Ottawa-Carleton Computer Science Institute. He has also been working on several local start up companies, including Geocoder.ca and Foodpages.ca.

Open Source Patterns

Lead: Michael Weiss

Open Source Patterns is a lead project initiated by the Talent First Network. Please contact Michael Weiss at weiss@sce.carleton.ca if you are interested in participating.

Background

The commercial use of open source is hindered by many factors, including a lack of integration with traditional requirements-driven product development approaches, licensing issues, a clash with existing corporate culture, and the perception that in order to benefit from open source you need to open your source to the outside world.

Open source software tends to be built from the bottom up, starting with a specific need felt by a user and extended over time as new needs arise. There is no systematic process by which customer requirements are collected. For open source to be more viable for commercial development, we need to better support the front-end: collecting requirements and creating customer value.

When developing open source software, you will invariably face licensing issues. Licenses are a powerful tool for business strategy, but ensuring that your software properly adheres to the licensing terms of open source components you build on can be challenging. We need to sort out license conflicts as they arise, while using licenses strategically, not as something you "have to do".

Open source development practices often clash with existing corporate culture. How do we create an environment conducive to the adoption of open source? How do we realize the benefits of open source?

Finally, using the open source model does not require that you release code to the outside world. Open source practices have been successfully used in internal product development.

Open Source Patterns

In this lead project, our goal is to capture experiences with open source adoption and value creation from open source, and share them in an easily understood format through a pattern repository.

Patterns document recurring solutions to common problems that practitioners repeatedly come across. They describe the situations in which the solutions arise. Patterns have been used successfully in software development, but they are also suitable for capturing organizational and business knowledge. A pattern repository provides an index to these solutions, where you can find solutions to apply to your specific problem and context.

We are particularly looking for contributions in four areas:

–Front-end (creating customer value)
–Licensing issues
–Open source adoption
–Use of open source development practices in internal projects

Michael Weiss holds a faculty appointment in the Department of Systems and Computer Engineering at Carleton University, Ottawa, Canada, and is a member of the Technology Innovation Management program. His research interests include open source ecosystems, services, business process models, social network analysis, and product architecture and design. Michael has published on the evolution of open source communities and licensing of open services.

Q. I just don't understand how one can develop a business model around open source--after all the resource is freely available.

A. Open source business models continue to be a source of great puzzlement, yet the situation is not so different from monetizing Natural Resources. With Natural Resources such as minerals, oil, wildlife, and water, the primary asset is some Natural Resource, which, historically, has and continues to be viewed as free. Similarly, open source software assets are generally and freely available.

To help in understanding open source business models, we appeal to a technology commercialization theory by David Teece. Teece's theory has several dimensions, and the dimension we wish to apply here is called Complementary Assets. In the development of his theory, Teece observed that it is very rare that a technological innovation (the primary asset) can be commercialized without the support of other assets known as complementary assets. Examples of complementary assets include marketing, human resource management, office space, information technology, transportation, manufacturing, and sales channels. Teece further observed that the role and importance of these complementary assets may be of considerable importance in the commercialization of the primary asset. This is particularly true when the provider of some necessary complementary asset has a monopoly.

To return to our parallel with Natural Resources: when the fish off the Grand Banks of Newfoundland and Labrador were viewed as a free asset, competition intensified around such necessary complementary assets as large factory ships that could spend months at sea harvesting and packaging fish.

And this is generally the case: when the primary asset is a commodity, competition intensifies around the necessary complementary assets.

Open source software turns a previously privileged primary asset into a commodity and instantly creates a commodity out of a new-to-the-world primary asset. The important insight surrounding turning a primary asset into a commodity is that the firms purchasing these primary assets do not typically experience savings. Rather, competitive pressures are such that the expenditures of these firms simply *shift* towards other competitive distinguishers. And commonly, some of these new expenditures are on complementary assets such as training, books and customizations that become affordable as a consequence of the primary asset being priced as a commodity. Also noteworthy is that such complementary assets may, or may not, be a competitive advantage to the purveyor of the primary asset.

In sum, the key to comprehending most open source business models is to distinguish between (i) the primary asset and (ii) the complementary assets that are necessary to support the commercialization and use of the primary asset. And to recognize that when the primary asset is a commodity, competitive pressures will likely increase spending on the complementary assets.

Recommended Reading

Teece, D. J., 1986. Profiting from Technological Innovation: Implications for Integration, Collaborations, Licensing and Public Policy. Research Policy, Vol.15, Issue 6, pp. 285-305.

Q. How do the motivations behind open source translate into business models?

A. Assorted explanations have been put forward that contribute to our understanding of the motivations behind publishing source code. These include:

-**Richard Stallman circa 1983**: The motivation is philosophically grounded in fundamental rights such as freedom and liberty. In particular, source code should be published because, like any other scientific theory, it should not belong exclusively to any one individual or group.

-**Linus Torvalds circa 1991**: The motivation is a means for achieving superior software programs. More specifically, by publishing the source code, the number of individuals examining the code is potentially increased which increases the likelihood of the code being improved.

-**Eric Raymond circa 1997**: The motivation resides in the superior software development methodology which is meritocracy based, highly visible, and superior to the traditional in-house, closed source development methodologies.

By 1999, increasing attention was directed towards better understanding business models and motivations. Such interest was partly fueled by the success of firms, notably Redhat, that were perceived as selling something that was generally and freely available. By 2001, interests had expanded to business strategies in search of explanations; for example why IBM was investing a whopping $1Billion to advance Linux. It is arguable that today, open source is fueled primarily by business motivations.

Recently, individuals have taken a keen interest in inventorying the business models of firms that use open source to compete. A re-occurring theme is providing value added services such as educational material and courses, professional services, and subscriptions. Individuals have also taken a keen interest in the utility of open source for developing competitive business strategies. For example:

-Firms providing services and customizations around given technologies may be incented to see those technologies open sourced as open source technologies are typically more affordable. More affordable technologies may lead to an increase in their use, and this will likely result in an increase in the demand for the firms' services and customizations.

-Firms competing in a market where there is an effective monopoly on some technology may be incented to see that technology open sourced. Such commoditization of the technology would likely remove the monopoly, change the competition dynamics in that marketplace, and possibly better position the firms to appropriate a greater market share.

-Firms that have an interest in sustaining the development of technologies that have little marketplace differentiation may elect to collaborate to advance these technologies as open source. By collaborating with an open source project, the firms may save money, generate good will, avoid anti-trust issues, and possibly create an industry standard that the firms effectively control, all while retaining each firm's independent interest in sustaining the technology.

Examples of selling models include:

1. Sell subscriptions: Used by RedHat

The software is free but additional features or services associated with commercial software are only available via a monthly, quarterly or annual subscription. Other examples include the use of a dual license, paid updates, indemnification, stack maintenance, maintenance and support, and content through knowledge portals.

2. Sell services: Used by Google, Yahoo and Mozilla

The software or an interface is made available to companies. This ultimately drives traffic to a host website where it is used to generate advertising dollars and business intelligence. Other examples include testing, hosting, training, and consulting.

3. Sell hardware products: Used by Digium

The software is provided for free but the customer pays for the hardware. This embedded approach uses the open source project as a platform. Other examples include hardware with embedded open source software (OSS) which is delivered on a cell phone, a system product that includes an open source asset and integrates with complementary products such as the Apple computer, and hardware with OSS running on top which is delivered as an out of the box solution such as TiVo.

4. Sell software products: Used by Oracle on Linux, Oracle9i Real Application Cluster (RAC)

The core software is free and additional features such as optimization and consulting are paid for by the customer. Other examples include a software fork for a closed software stack, certified stacks, and OEM products.

The above examples should suggest to the reader that the motivations behind publishing source code is varied, complex and evolving and that an authoritative and comprehensive understanding has multiple dimensions.

Peter Hoddinott has over 25 years of experience in the Information and Communications industry. Peter has a B.Sc. and a M.Sc. in Computer Science, and recently completed the Technology Innovation Management program at Carleton. He is currently employed by Carleton where he works full time on advancing the objectives of the Talent First Network.

Open Source Barometer

Published and Copyrighted by: Alfresco

From the Introduction:

Open source adoption is growing rapidly and is one of the major technology trends of this decade. But there is little public information on how open source is used in production environments. The analysis is too often based on very small sample sizes, is completely anonymous or is focused solely on the open source community. Modern software stacks are often mixed allowing a choice at each level between proprietary or open source components. Unlike most open source projects, Alfresco is predominantly deployed in large global 2000 organizations - financial services, media, professional services - and government. This enables Alfresco to offer a unique insight into mixed stack usage in modern evaluation and production environments within large organizations.

http://www.alfresco.com/community/barometer/

A Developers Bill of Rights: What Open Source Developers Want in a Software License

Authored and Copyrighted by: Alan MacCormack for the AEI-Brookings Joint Center for Regulatory Studies

From the Executive Summary:

In this paper, we study open source developers' perspectives on the nature and structure of software licenses as well as the processes through which these licenses are designed. Recent history has shown that software licensing approaches are critical to the dynamics of the software industry and the open source ecosystem, and thus of interest to the many policy makers and practitioners that follow this part of the global economy. We focused on how license choices impact the relationship that exists between open source and proprietary software. Our findings reveal that developers are primarily interested in flexibility and choice when considering a licensing approach. Most developers we interviewed used open source licenses to tap into the open source development approach. They chose this option for flexibility in developing a great product, without necessarily espousing any particular philosophy about how the software should be distributed. Developers also generally valued flexibility in the choice of business model for distributing software. The actions of the Free Software Foundation, which is revising the GPL, appear not to reflect the opinions of the broader community, but the agenda of a small minority that may represent as little as 10% of the open source developer community.

http://www.aei-brookings.org/admin/authorpdfs/page.php?id=1385&PHPSESSID=c57c9efc8495a1e2f1a48c1ac8422ab8

Study on the Effect on the Development of the Information Society of European Public Bodies Making their own Software Available as Open Source

Primary Authors: Rishab A. Ghosh, Rüdiger Glott, et al

From the Introduction:

The Lisbon European Council of March 2000 set the objective of making Europe the most competitive and dynamic knowledge-based economy in the world within 10 years. The goals of the Lisbon agenda include the provision of a favourable environment for investment, the modernization of public services, the creation of jobs, boosting productivity, and giving everyone the opportunity to participate in the Information Society. In recent times a debate has emerged on the issue of software fully developed with taxpayers' money and fully owned by public organisations. One of the main considerations in this debate is whether such software could be made available as Free/Libre/Open Source Software (FLOSS), giving equal and nondiscriminatory access to everyone for further use and/or modification and/or re-distribution. To the extent that business processes have sufficient similarity, publishing software fully owned by public bodies could facilitate re-use, adaptation and modification of the software by other public organisations, including administrations, agencies, research institutions, public companies, etc. More importantly, the availability of software owned by or fully paid for by public organisations could generate new business opportunities and increase the knowledge available in the public sphere.

http://www.publicsectoross.info/images/resources/15_154_file.pdf

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Open-Source Collaboration in the Public Sector: The Need for Leadership and Value

Authored and Copyrighted by: Michael P. Hamel

From the Executive Summary:

The open-source movement in information technology is largely based on the innovative licensing schemes that encourage collaboration and sharing and promise reduced cost of ownership, customizable software and the ability to extract data in a usable format. Government organizations are becoming increasingly intolerant of the forced migrations (upgrades) and closed data standards (or incompatible data standards) that typically come with the use of proprietary software. To combat the problems of interoperability and cost, governments around the globe are beginning to consider, and in some cases, even require the use of open-source software. While there are efforts to use pre-existing open-source software, and even develop new open-source software, it appears that there are very few efforts currently working to promote collaboration between organizations. To better understand how these collaborations get initiated and function, and to identify factors that contribute to their success or failure, I identified two such collaborations, the Government Open Code Collaborative (GOCC) and the Open Source Software Institute (OSSI), and performed a comparative case study analysis.

http://oss-institute.org/whitepapers/NCDG_Hamel_07-004.pdf

University of Ottawa Team Wins Voting Machine Competition

July 18, Ottawa, ON

The Punchscan voting system team (http://www.punchscan.org/) comprised of Aleks Essex and Jeremy Clark from the University of Ottawa, Stefan Popoveniuc from George Washington University, and Richard T. Carback III from the University of Maryland Baltimore County, received several awards at VoComp 2007 (http://www.vocomp.org/index.php) including the grand prize for best election system, best presentation, and best implementation. Aleks Essex describes the contest and the Punchscan system in his CBC Radio One As it Happens interview.

http://punchscan.org/press/cbc_aih_punchscan.mp3

OpenBSD Foundation Announced

July 25, Calgary, AB

The OpenBSD Foundation is a Canadian not-for-profit corporation which exists to support OpenBSD and related projects such as OpenSSH, OpenBGPD, OpenNTPD, and OpenCVS. Formally, the corporation's objectives are to support and further the development, advancement, and maintenance of free software based on the OpenBSD operating system, including the operating system itself and related free software projects. The foundation will issue receipts for all contributions, and may participate in press release activity relating to contributions from corporate sponsors.

http://www.openbsdfoundation.org/press/announce.txt

Global Software Freedom Day Announced

July 18

September 15th marks Software Freedom Day, the world's largest celebration and outreach effort about why transparent and sustainable technologies like Free & Open Source Software are so important. Community groups in more than 80 countries organize local activities and programs on Software Freedom Day to educate the wider public about free software: what it is, how it works and its relationship to human rights and sustainability. Support for this year's Software Freedom Day event is fantastic with Google, Mindtouch and the Free Software Foundation coming on board as sponsors as well as long term sponsors the Danish Unix User Group and Canonical. The event also has support from The Open CD, OsCommRes and the International Open Source Network.

http://softwarefreedomday.org/PressReleases/18072007

September 24-25

Connections 2007

Toronto, ON

NRC believes that creating globally competitive technology clusters is one of the best strategies for fostering a nation's economic growth. Our intention is to bring key players from communities across Canada together for two days of dialogue, exchange, problem-solving and networking. We hope you will leave NRC Connections 2007 armed with information and tools that will help your cluster move to the next level. Key themes will include: Innovating to Succeed, Working Together, Building Networks and Links, and Branding and Marketing Clusters.

http://connections-connexions2007.nrc-cnrc.gc.ca/welcome_e.html

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September 24-27

FOSS4G 2007

Victoria, B.C.

The 2007 Free and Open Source Software for Geospatial (FOSS4G) conference gathers developers and users of open source geo-spatial software from around the world to discuss new directions, exciting implementations, and growing business opportunities in the field of open source geo-spatial software. Focused on the practical "make it work, get it done" world of open source application development, this annual conference boasts a very high concentration of geo-spatial technical opinion leaders. Attendance at this event has grown at over 50% a year since its inception in 2003, paralleling the rapid growth and adoption curve of open source geo-spatial tools in the marketplace.

http://www.foss4g2007.org

September 27-28

ICEG 2007

Montreal, PQ

The International Conference on e-Government (ICEG 2007) invites researchers, practitioners and academics to present their research findings, work in progress and conceptual advances in any branch of e-Government. The meeting brings together varied groups of people with different perspectives together into one location, for the purposes of helping practitioners find ways to put research into practice, and for researchers to gain an understanding of additional real-world problems. The conference includes a mini-track on Software and Interoperability issues in e-Government (open source software).

http://www.academic-conferences.org/iceg/iceg2007/iceg07-home.htm

October 13

Ontario Linux Fest 2007

Toronto, ON

Ontario Linux Fest is a conference designed to present compelling topics of interest to users of Linux and open source software. These topics span a range of interests from technical to motivational, educational to organizational and social to legal. Attendees will find out what is happening in the open source world from the people directly involved. It's a great event to catch up with old friends, meet project contributors and develop new business relationships.

http://onlinux.ca/

October 15-17

GTEC2007

Ottawa, ON

The GTEC Conference attracts the senior vanguard of IT decision makers from across Canada and around the world. The GTEC conference tracks will be a unique forum for discussing Government Policy Initiatives, Trends in Program Management, for exploring Emerging Technologies and discussing the challenges governments face in Shared Infrastructure and Solutions. Over an engaging 3-day conference, we will explore the dynamic business environments that are being driven by web 2.0 internet applications and solutions. We will discuss how the evolution of internet-based technologies is driving the "business of government" from "government 1.0" to "government 2.0".

http://www.gtec.ca/conference/conference.html

October 21-23

WS2007

Montreal, QC

The 2007 International Symposium on Wikis brings together wiki researchers, practitioners, and users. The goal of the symposium is to explore and extend our growing community. The symposium has a rigorously reviewed research paper track as well as plenty of space for practitioner reports, demonstrations, and discussions. Anyone who is involved in using, researching, or developing wikis is invited to WikiSym 2007! We recognize the online world is always evolving, and we also welcome contributions which are about other online media consistent with the wiki philosophy of being open, organic and participatory.

http://www.wikisym.org/ws2007/index.html

October 22

Workshop on Integration of Open Source Components into Large Software Systems (Co--located with OOPSLA 2007)

Montreal, QC

Developing large software systems has largely become an exercise in integration. About 85% of code that goes into the software of a typical system is written by others, and the main role of businesses is to write the glue that holds the externally developed components together. While in the past, businesses were largely concerned with the integration of commercial off-the-shelf (COTS) components, many of these components will now come as free/open source software (F/OSS) components. The use of open source components provides new strategic options for reducing the exposure to risk and cost of development, while significantly increasing the available solutions. Models for the integration of COTS components do not necessarily apply to open source components. A particular focus in this workshop will be on the shift away from COTS to F/OSS components, and what new opportunities and issues are introduced by it.

http://www.carleton.ca/tim/oopsla

October 25-26

FSOSS07

Toronto, ON

FSOSS is a high-profile event that attracts leaders from industry and the open source community in order to discuss open source issues, learn new technologies, and promote the use of free and open source software. The Symposium is a two-day event aimed at bringing together educators, developers and other interested parties to discuss common free software and open source issues, learn new technologies and to promote the use of free and open source software. At Seneca College, we think free and open source software are real alternatives.

http://fsoss.senecac.on.ca/2007/

Chris from New Zealand writes: I thought you might be interested in a website that Catalyst IT launched a while ago: http://www.o4b.co.nz . Although the site has a New Zealand slant, much of the information about business-ready open source applications is of general value and aimed squarely at non-technical decision-makers in the business community. I'd be interested in any feedback you might have: there is certainly room for improvement. At the moment it tries simply to point people to information better presented elsewhere. Looking forward to receiving your newsletter.

Chris Daish

Business Development Manager

Catalyst IT Ltd
(http://www.catalyst.net.nz)

email: chris@catalyst.net.nz

Editor: Thanks, Chris for the reference and permission to include your contact information in the August edition of the OSBR.

Trevor from Ottawa writes: I expect there has been lots of discussion about the format of the monthly publication. Personally, I don't find the pdf format very appealing (too bulky and few pdfs are set up to be easily navigable). Most of the electronic media that I subscribe to sends an (html) email each time an issue is released. The email contains an annotated table of contents--each entry has a short teaser (usually the opening few sentences), and a link to the article. Each article is delivered as a web page. Increasingly, the web pages are interactive--often they allow readers to add comments, feedback and questions about the articles (this is really easy if the delivery mechanism is a wiki!). The OSBR website could easily have the issues dissected and presented as individual web-available articles (i.e. not packaged as a single pdf)--this would encourage visitors to be distracted by right/left sidebar links, and further explore Talent First Network.

Editor: Thanks for the feedback, Trevor. We received several emails from readers requesting that articles be made available in html format. Beginning with this issue, the OSBR website will provide the PDF of the entire magazine as well as a separate html page for each article and section of the magazine. Our goal is to provide a valuable resource (the R in OSBR) and part of that goal is providing content that is easily accessible in multiple formats. We're also exploring ways to provide more reader interaction.

Formatting Guidelines:

All contributions are to be submitted in .txt or .rtf format and match the following length guidelines. Formatting should be limited to bolded and italicized text. Formatting is optional and may be edited to match the rest of the publication. Include your email address and daytime phone number should the editor need to contact you regarding your submission. Indicate if your submission has been previously published elsewhere.

Articles: A magazine page of article text averages 500 words and most articles span 3-4 pages. Do not send articles shorter than 1500 words or longer than 3000 words. If this is your first article, include a 50-75 word biography introducing yourself. Articles should begin with a thought-provoking quotation that matches the spirit of the article. Research the source of your quotation in order to provide proper attribution.

Interviews: Interviews tend to be between 1-2 pages long or 500-1000 words. Include a 50-75 word biography for both the interviewer and each of the interviewee(s).

Newsbytes: Newsbytes should be short and pithy--providing enough information to gain the reader's interest as well as a reference to additional information such as a press release or website. 100-300 words is usually sufficient.

Events: Events should include the date, location, a short description, and the URL for further information. Due to the monthly publication schedule, events should be sent at least 6-8 weeks in advance.

Questions and Feedback: These can range anywhere between a one sentence question up to a 500 word letter to the editor style of feedback. Include a sentence or two introducing yourself.

Do you have an article idea for an upcoming issue?

Would you like to contribute an article, but don't know where to start?

Send an email to the Editor (dru@osbr.ca)

2007 Editorial Themes

September 2007	Defining Open Source
October 2007	Open Source Licensing
November 2007	Support
December 2007	Clean IP

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