

Challenges of Open Source for Business

Garrett Vogenbeck

CS 519, Oregon State University

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There are risks and advantages of using open source software in an enterprise situation. Open source software (OSS) has provided companies with better information systems, as shown by the fact that, according to Gartner analysts, Eighty-five percent of companies were already using open source software by 2008 (Meyer). However, before a company can utilize an OSS solution, management must evaluate and manage the risks involved. A useful tool for this evaluation is the book *Open Source for the Enterprise* by Dan Woods and Gautam Guliani. Woods and Guliani propose three important models: the *Open Source Maturity Model*, the *Open Source Skills and Risk Tolerance Model*, and the *Software Cost and Risk Model*. These models stress the importance of measuring an OSS solution's maturity as well as the skill sets required by the company, as well as making a case for the return on investment (ROI) of using an OSS solution. There are also legal implications that a company must consider. A company that utilizes OSS through a strong IT department may in fact create an economy of scale that allows it to create stronger information systems at lower cost. This paper presents an overview of these models and provides a very brief business narrative concerning OSS utilization.

Open Source Maturity

Linux, Apache, Firefox, OpenOffice, OpenBravo, MySQL, and Radmind, to name a few, are fairly mature open source programs. However, an SAP executive claimed that most OSS is too immature and won't survive, implying that immature OSS solutions are poor strategic choices for an enterprise. One of top management's major concern about OSS is its lack of maturity. Sharma and Adkins point out in their article *OSS in India* that India supports software with lower wages and lowers software costs because of piracy. They then note that one resistance to open source software is the perceived lack of maturity for OSS solutions (Sharma and Adkins). Top management of a company

may be averse to an OSS solution *specifically* because of this perception of low maturity. Wood and Guliani propose that measuring OSS maturity is more of an art than a science (p. 29), and list potential open source traps. These traps listed by Woods and Guliani are the following (p. 30):

- *It requires more work than expected.*
- *It does not work well with existing systems.*
- *It is harder to extend than anticipated.*
- *Getting answers from the open source development team is impossible.*

Woods and Guliani warn of these traps and caution IT managers to carefully evaluate an OSS solution's maturity before diving in. To provide a helpful management tool, Woods and Guliani developed the *Open Source Maturity Model*, which uses a scoring system to evaluate an OSS solution based on the following factors (pp. 41-44):

- Product criteria (the age of the solution, supported platforms, the project's momentum, its popularity, and its design quality).
- Use criteria (setup costs, usage costs, and end-user support).
- Integration criteria (modularity, collaboration with other projects, standards compliance, and developer support).

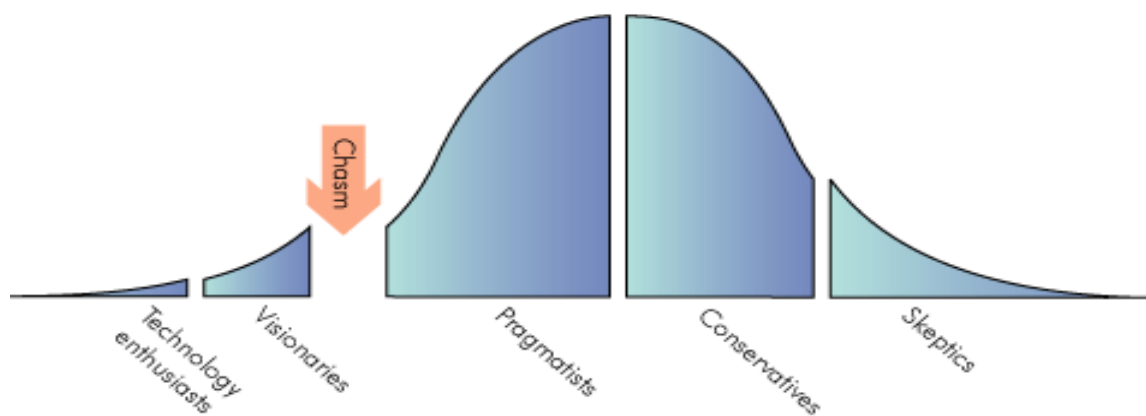
Using this model, an IT manager can score an OSS solution and rank each factor a score of 1 (immature), 2 (reasonably mature), and 3 (very mature). With this research, an IT manager can better evaluate OSS solutions and may help to make the case for or against a solution's utilization. Think about it, as an IT Manager, you just proved to the CEO that your favorite OSS tool is mature, and gave him a spreadsheet showing so.

Open Source Skill Sets

As a company utilizes more OSS solutions, the IT department must possess the appropriate skill sets necessary. Figure 1 shows the *Technology Adoption Model* proposed by Geoffrey Moore in his book *Crossing the Chasm: Marketing and Selling High Tech Products to Mainstream Customers*. Too many open source solutions currently have not crossed the chasm shown. Many of the largest enterprises still rely on outsourced proprietary solutions, proprietary enterprise resource planning

(ERP) systems, and closed-source development tools. Your manager may very much be averse to all open source solutions. However, this is changing as more OSS consulting firms emerge and developers see the benefits of wider adoption (Woods and Guliani, p. 49). Because open source software is mostly developed by a programmer *scratching an itch*, as proposed by ESR in *The Cathedral and The Bazaar*, the demand side economics that affect the development within Microsoft may not apply to OSS development. Woods and Guliani propose that, because many OSS solution have not crossed the chasm, companies must understand the skill sets needed to properly utilize OSS solutions. As a company adopts more unique and obscure OSS solutions, the skill sets required by its IT department goes up. This in turn will realize higher costs for the company. The more expert skill required by the company will mean salary costs will go up. The good news is that most OSS technologies are crossing the chasm and becoming more mainstream. A company can use OpenOffice with minimal risk. Consider the fact that in 2066 Belgium became the first country to require government departments to be able to read OpenOffice files (Orlowski).

Figure 1: Geoffrey Moore's Technology Adoption Model



To evaluate the skill sets needed, the company can utilize Woods and Guliani's *Open Source Skills and Risk Tolerance Model* as proposed in *Open Source for the Enterprise*, which takes into account the following abilities:

- Open source development tools
- Hosting

- System Administration
- Operations
- Open source infrastructure
- Programming languages
- Open source community skills

A company's IT department will have varying levels of skills in these departments depending on the necessities required to maintain stable OSS solutions. By evaluating the company's skill sets using the factors in this model, management can better understand its own human resource needs and capabilities. This resource can be presented to upper management when, as an IT project manager, you seek to hire another person.

Return on Investment

Woods and Guliani propose that “you must do ROI analysis for yourself, whether using commercial or open source solutions” (p. 75). The cost analysis for open source software will differ from that of commercial solutions, especially in the categories of (pp. 69 – 74):

- Evaluation costs
- License and maintenance costs
- Installation and configuration costs
- Integration and customization costs
- Operations and support costs
- The cost of narrowness (of the product's functionality and capabilities)

Utilizing open source software can in fact result in costs savings, as shown by Table 1 (Compiere, Inc.), but it is important for an IT manager to make an ROI spreadsheet so that tangible returns can be demonstrated in some way. ROI is difficult for IT expenditures because so much of the returns are intangible, and therefore an IT manager must be astute enough to communicate this to top management. Even if a company utilizes a commercial solution, it should still thank OSS for cost savings. In 2003, in a filing with the SEC, Microsoft warned that it would have to lower its software prices as a result of the growth of open source software (Galli).

Table 1 - Compiere TCO Analysis¹

This analysis compares the average 3-year total cost of ownership between investing in a new **20 user** traditional mid-market ERP system, a traditional enterprise ERP system, or a Compiere ERP system.

		Hardware & Software Provisioning	Implementation & Training (E)	Annual Operating Cost (F)	Total 3 Year Cost	Total 3 Year Savings	Total 3 Year % Savings
Existing Legacy Midmarket ERP	(A)			\$263,691	\$791,073		
Replacement Alternatives							
Average Traditional Midmarket	(B)	\$162,592	\$89,112	\$263,691	\$1,042,777	(\$251,704)	-32%
Average Traditional Enterprise	(C)	\$191,640	\$117,477	\$307,378	\$1,231,251	(\$440,178)	-56%
Compiere On-Premise ERP	(D)	\$22,000	\$37,908	\$99,051	\$357,061	\$434,012	55%

A) Average cost to maintain an existing legacy Enterprise ERP platform at these user levels, based on independent 3rd party benchmark results.

B) The average cost of acquiring, deploying and maintaining a new traditional Mid-market ERP solution.

C) The average cost of acquiring, deploying and maintaining a new traditional Enterprise ERP solution.

D) The average cost of acquiring, deploying and maintaining a new Compiere on-premise solution at these user levels, based on Compiere solution averages.

E) Implementation & Training cost refers to the consulting fees required to implement and train your users on the system.

F) Ongoing System Cost includes hardware and software support fees plus a fully burdened employee.

* The Total Cost of Ownership Analysis (TCO Analysis), the materials accessed through it, and results provided by it are provided by Compiere on an 'as-is' basis without warranty of any kind. The results shown by the TCO are for illustrative purposes only, without warranty as to accuracy or completeness, and are not an offer of terms under which Compiere or its Partners would do business.

¹ Compiere TCO Analysis. Compiere, Inc. 19 February 2009.

<http://www.compiere.com/products/erp-total-cost/>

Legal Issues

An IT manager must be legally astute enough to understand the implications of using OSS. A company may lose legal protection when combining OSS with its own in-house developed software. Consider for example that TomTom was forced by gpl-violations.org to publish its Linux kernel source under the GNU Public License (GPL) (Lugmayr).

In his article *Open source - is it a risk for your business?*, Paul Barton, technology partner at the law firm Field Fisher Waterhouse LLP, suggests the following steps for minimizing legal and other risks involved with a company's utilization of OSS:

- *Identify the commercial value of open source* (e.g. whether the OSS contributes to the core or peripheral of your software).
- *Consider your business model* (e.g. how OSS may affect the company's revenue generation).
- *Manage the risks* (e.g. formulate internal policies, properly train software developers, and even consider obtaining liability insurance).

Practical Implications

1. By doing in-house management of information systems (MIS), the company will incur a higher human resource cost.
2. This higher cost will cause an increase in IT assets on the balance sheet. Investors will ask the question "Why is IT such a big asset?" - Be prepared to answer this question.
3. Although this seems menial to someone who understands business, simply realize that increasing IT does in fact increase assets, and thus return on assets (ROA) does go down.
4. Also remember that without contractual agreements with proprietary companies, a certain risk is incurred when it comes to outsourcing software solutions.
5. Nestle paid \$2 million and spent six years developing an ERP. Many companies have failed in implementations of proprietary solutions. A company may begin implementing OSS solutions

without vendor lock-in and minimal capital expenditure.

6. Depending on the nature of the software solution, intangible benefits or drawbacks may affect the way the company pursues its business model.

If a company decides to invest more in their IT human resources and infrastructure in order to provide the skill sets necessary for open source utilization, the company will no doubt see an increase in its fixed overhead costs and a decrease in outsourcing costs. Take for example a medium sized enterprise that sells market research to clients and needs a solution for customer relationship management (CRM). Let's call this company Nonsoft. Rather than outsourcing their enterprise resource planning system (ERP) to a company such as Microsoft or SAP, Nonsoft relies instead on the popular streamlined open source solution SugarCRM. To do so, they hire on an additional employee who will be dedicated to the proper implementation and maintenance of such software. In this situation, the company can save money on outsourcing costs, but has increased its human resources costs. In this sense, Nonsoft's return on assets (ROA) is lower due to the changes in their balance sheet, but their liabilities will surely go down. Top management, in considering this option, will ask how using an OSS solution will affect the bottom line. In an effort to cut costs, the company may incur additional risk by taking on a task outside of their core competencies. This might also offset financial gains. Therefore, to provide additional flexibility, Nonsoft subscribes to a support service network. The company providing this support provides outsourced development that attempts to tailor the software to Nonsoft's needs. And since their company's survival relies purely on giving service and not so much on marketing, they provide better development than 'proprietary'. Subscribing to a service network, top management sees that outsourcing costs are going up, human resources have gone up, and although the solution still costs less than a proprietary alternative, certain executives continue to vocalize concerns about the risk involved with using this type of software. If the company is undergoing change or rapid growth, these concerns may be even stronger.

Let's take the example even further. Consider that Nonsoft suddenly wishes to do business with its client over the web, rather than its traditional methods of human interaction and POTS – plain old telephone service. A decision is made to hire an employee dedicated to this development. The company's IT costs go up even further. As IT overhead costs go up, top executives are concerned that the company is tackling something too far outside its core competencies. The burgeoning IT department proposes certain advantages, however. The Chief Information Officer (CIO) brings up a point that the company can begin to use even more OSS solutions. Using OpenOffice will cut costs in employee software costs. Rather than using solutions like Sharepoint, the CIO proposes using the open source enterprise content management platform made by Alfresco Software. And as the company begins to develop its website, it will use an open source content management system such as Drupal. The CIO stresses that the investments in IT assets will create an economy of scale within the business as the company utilizes more and more OSS.

An Economy of Scale

An economy of scale essentially implies that as a company grows bigger and expands, its variable costs go down. An economy of scale occurs when fixed overhead costs are spread over more units of production. If Nonsoft finds tangible and intangible value adding advantages from a strong information system, then they should seek to create an economy of scale within their IT department. More intangible returns on investment are realized as the skill sets of an IT department go up, and the company will be able to more effectively utilize less mature OSS solutions, in turn producing an actual tangible return on investment for the company that ultimately leads to a higher net income and stronger competitive advantage. The bottom line is that using OSS effectively actually can help a company generate profits, but only after many aspects are taken into consideration.

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