Paying for Free

Security, Privacy, and Sustainability Costs for "Free" Software

Braden Cox & Nora von Ingersleben
Association for Competitive Technology

Executive Summary

Traditional total cost of ownership analysis does not consider the unique costs and benefits of free software and services, particularly if delivered through the Internet.

"Understanding the costs as well as benefits of 'free' software will avoid creating the expectation that there is such a thing as a 'free lunch' in IT—a benchmark that no IT business model can meet."

Today's tough economy creates fiscal pressures for state and federal government budgets. Resourceful policymakers are increasingly looking for ways to reduce or at least maximize their information technology (IT) spending—and relying on free software and services is one possible direction. But what does "free" really mean?

Some solutions are "free" in the sense that software and services have zero dollar license fees. Free software can include open source software that companies give away to help sell hardware or generate service revenue. Free solutions also include software and services delivered through the "cloud" of the Internet that are supported by advertisements. Often companies offering these services will collect user data to better target ads to users.

Free software and services can be part of a larger enterprise geared toward expanding market penetration and increasing revenues. Consequently, "free" does not mean that software is without cost. Normal cost/benefit analysis still applies to software that is open source or ad-based, because license fees represent only a small portion of ownership costs. By now, most IT decision-makers are aware that while there may not be licensing fees paid at the time of purchase or acquisition, all software has costs.

As a way to better ascertain costs, software buyers have traditionally analyzed their systems using a total cost of ownership (TCO) methodology. This analysis evaluates the lifecycle costs of IT systems, and factors in initial acquisition and ongoing cost considerations. Upfront acquisition costs include not just license fees, but also integration and training costs. Ongoing costs include maintenance, support and updates—the sort of costs associated with any kind of IT system.

Yet, traditional total cost of ownership analysis is incomplete for considering the unique costs and benefits of free software and services, particularly if delivered through the Internet. Privacy, security, and sustainability rank as three main concerns for ad-based software. These are non-monetary costs and perhaps harder to quantify, but from a buyer or consumer perspective, they are still very real.

A decision-making process that incorporates privacy, security and sustainability considerations will result in a truer assessment—by procurement officers and policymakers—of the cost of software alternatives. Understanding the costs as well as benefits of free software will avoid creating the expectation that there is such a thing as a "free lunch" in IT—a benchmark that no IT business model can meet.

Introduction

Our goal in this paper is to initiate a discussion that will lead to a better understanding of the potential benefits and costs of free software and services, and the sustainability of business models

On the campaign trail before being elected, President Obama said his government would "harness technology to confront the biggest challenges that America faces."[1] But while governments are looking to the information technology industry to help solve health care and environmental challenges, tight budgets have them focusing more than ever on the *cost* of software and services.

With this in mind, decision-makers are looking more closely at software and services that are marketed as being "free"—meaning no licensing fees—as one way to reduce costs.[2]

It is a wise move. The IT industry is undergoing a transformation not seen since the dot com era. Companies are experimenting with new business models and offering software for free as a way to sell hardware, services, or display advertising. A lot of exciting new applications have been developed – and there is big money to be made.

According to Chris Anderson, editor of *Wired* magazine and author of *Free: The Future of a Radical Price*:

> "Free is not quite as simple—or as stupid—as it sounds. Just because products are free doesn't mean that someone, somewhere, isn't making huge gobs of money."[3]

Anderson also describes how from a consumer perspective, the psychology of "free" is a powerful force.[4] Indeed, "free" in the IT context has become a term with an allure similar to "green" in the environmental context. However, while we continue to learn more about the environmental benefits and costs of certain actions for achieving energy efficiency and long-term viability, we lack this discussion for free software. A single-minded focus on "free" risks short-circuiting our understanding of the full range of costs and benefits involved in a product's acquisition and use.

Our goal in this paper is to initiate a discussion that will lead to a better understanding of the potential benefits and costs of free software and services, and the sustainability of business models based on "free." There are numerous advantages to using free software and services, but being upfront about the costs behind the burgeoning free models will make it less likely that policymakers will perceive software as either under- or over-delivering based solely on being "free."

Free as a Business Model

There are at least four major business models around software in the IT industry, and three of them are built around monetizing free software.

There are at least four major business models around software in the IT industry, and three of them are built around monetizing free software.[5] Software that is "free" removes the license fee from the sales equation. Therefore, companies must charge customers in other ways.

Give Away Software to Help Sell Hardware or Generate Service Revenue

Hardware vendors often bundle free software to enhance the value of their hardware. IBM offers Linux on its web servers, giving customers a Unix-compatible operating system at no cost. Apple gives away iTunes music software, both to attract users to its iTunes website and to enhance the value of its iPod portable music players.

Software companies such as Red Hat and Novell give away software for free in order to make money from support, software maintenance, and integration and customization services. Under this business model, the software that is "given away" is often under an open source license.

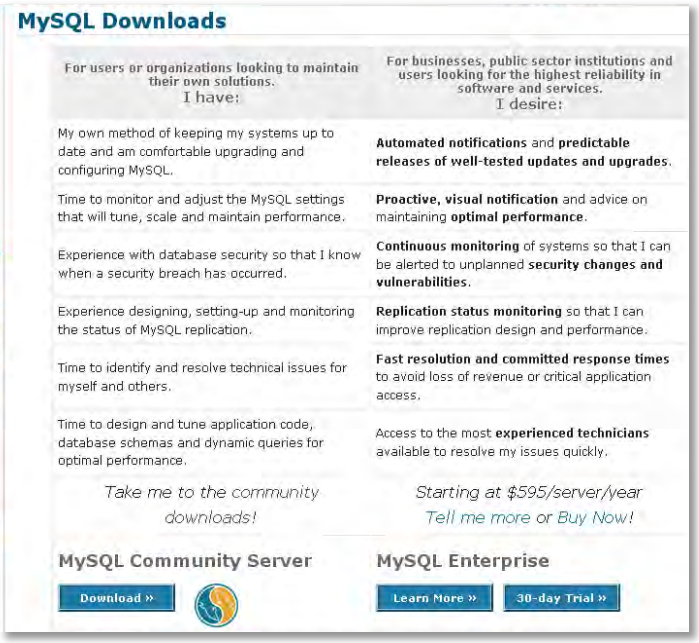
Open source software has become part of the mainstream computing environment.[6] A defining feature of open source software is that all users have access to its source code, allowing them to suggest bug fixes as well as enhancements and changes to the code.[7]

Another aspect of open source software is that sometimes it is free—meaning there are no license fees. Some open source vendors charge for the use of their software, while others will give away software and make money on implementation and support. Discussions about open source software can be confusing, because it is often assumed that the software is always free of charge.

Business Model	Product/Service	Price	Promotion	Placement/Distribution
License Software or Sell Subscriptions (Adobe, Microsoft)	Shrink-wrap Software	License Fees	Advertising	Direct Sales
Give Away Software to Sell Hardware (Apple, IBM)	Server hardware, iPhones, etc.	Sales, Lease Contracts	Free Software Development	Deliver & Install
Give Away Software to Sell Services (IBM, Red Hat, Sun)	Systems Integration	Follow-up Service Fees	Free Software Development	Direct Sales
Give Away Software to Sell Ads and Collect User Data (Google)	Content & Services	Advertisements	Public Relations	Downloads & OEM Bundling

There are at least four major business models around software in the IT industry, and three of them are built around monetizing free software.

A good example of offering both "free" and "fee" software is MySQL, a leading database management system that offers a "community" download (left column) and a paid enterprise annual license (right column):[8]



When differentiating between its free and fee offerings, MySQL warns users of its free community software that they should have:

- A method for keeping systems updated
- Time to tune, scale and maintain performance
- Experience with database security
- Experience designing, setting-up and monitoring MySQL replication
- Time to identify and resolve technical issues
- Time to design and tune application code, database schemas and dynamic queries for optimal performance

Potential customers who do not have the above resources are referred to the enterprise edition—which comes with an annual fee starting at $599 per server.

Give Away Software to Sell Ads and Collect User Data

Some software companies rely on an ad-based model similar to newspapers and television. In this model, businesses provide content (search results, travel information) and software services (email, instant messaging, office productivity suites) and infuse these with advertising to the consumer. By collecting data on their users, companies such as AOL, Google, and Yahoo can better target advertising to their user base.

This model has grown quickly based on the rapid adoption of "cloud computing." Definitions vary, but cloud computing can generally be described as accessing applications, platforms, data processing and storage through the Internet. There are many pricing schemes, but these applications are often "free" to consumers, enterprise, and government users in the sense that they are free of licensing fees.

Web-based services range from email (such as Hotmail and Gmail) and digital photo storage (such as Flickr and Picasa) to applications for documents and spreadsheets (such as Google Apps). Applications delivered through the "cloud" of the Internet that can work with or even replace desktop applications are referred to as Software as a Service (SaaS) or software plus services. The concept is further extended to platforms as a service (PaaS) that can deliver full desktop environments or application bundles through a browser (examples are Intuit's QuickBase, SAPVentures, and Salesforce.com's Force.com).

Free Applications	Fee-Based Applications
Google Apps	Google Apps Premier Edition
Fedora	Red Hat Enterprise Linux
Windows Live	Microsoft Office

Free "Cloud"	Fee "Cloud"
Picasa Web Albums (up to 1GB)	Picasa Paid Storage (up to 400 GB)
Windows Live SkyDrive (up to 25 GB)	Amazon Elastic Compute Cloud (Amazon EC2)
	Verizon Computing as a Service (CaaS)

Assessing the Costs

Some software and services initially come with a $0 price tag. Are they really free?

Because free and some open source software initially come with a $0 price tag, they have been touted as a prime way for government agencies and enterprises to cut costs during an economic downturn. However, IT decision makers must analyze the total cost of ownership of all potential solutions before making judgments about which ones will save them money.

Traditional TCO analysis attempts to quantify all of the various factors that play a role in acquiring and owning software. For instance, a recent report by Gartner warns that users should not see cost savings as a given when switching to open source—through 2013, 50 percent of mainstream IT projects using open source software will not achieve cost savings over closed-source alternatives.[9] The study suggests that companies or governments thinking about adopting open source solutions focus on other considerations, such as possible innovation advantages or the robust communities behind open source software.[10]

Ad-based software and services throw a new wrinkle into a cost-based analysis. Traditional methods do not explicitly account for the non-monetary costs of Internet-based software and services.

In this section we first discuss the traditional cost of ownership analysis, which is still relevant for most forms of software. We then attempt to update and improve upon it, and describe three additional cost considerations related to the security, privacy and sustainability of ad-based business models.

Traditional Total Cost of Ownership Analysis

Total Cost of Ownership was popularized in the late 1980s by Bill Kirwin and the Gartner Group.[11] TCO is generally defined as a holistic assessment of IT costs over time, an all-encompassing collection of the costs associated with IT investments.[12]

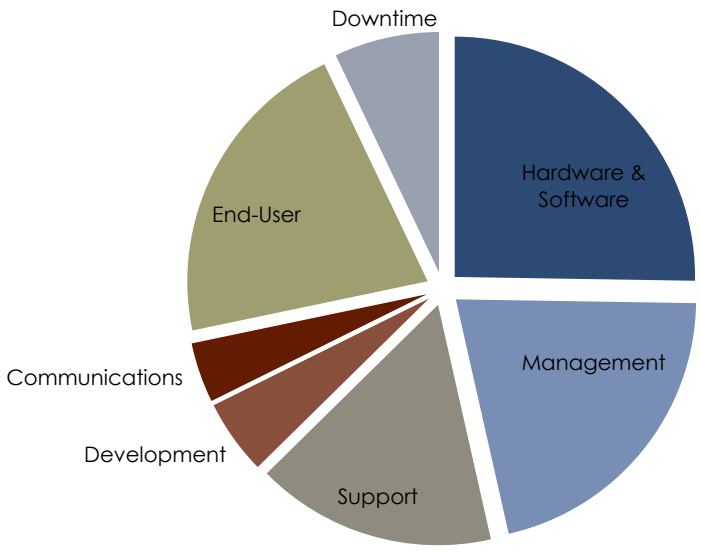
Like any model, TCO analysis is not perfect, and has been criticized for being able to only measure costs and not benefits. However, for governments looking to measure cost reductions in lean budgetary times, TCO analysis is a valuable tool.

The cost of acquiring a product can differ dramatically from the total cost of *owning* a product. Cost of ownership analysis takes into account the initial sales price of the software, implementation, management, maintenance and technical support, and staff training (or re-training).

In a study published in 2000, Erik W. Marke breaks down total costs of ownership according to the pie chart below.[13] Software acquisition, updates and disposal account for only a portion of costs of ownership. License fees for the initial acquisition make up an even smaller portion.[14]

Training, data conversion, and integration costs can be significant for organizations acquiring new software. These upfront costs associated with making the transition to a new software environment include the integration with existing software platforms and applications. These costs apply to all software—free or fee.

Traditional Total Cost of Ownership



There are also ongoing costs that must be factored into purchase decisions pertaining to any software, including costs associated with maintenance, support and updates. All software requires some level of support and maintenance; however, companies that do not charge license fees often rely more heavily on these services for revenue. For example, Oracle reported in December 2008 that its second-quarter net income was about flat compared with a year ago, while license revenue was down 3%. Maintenance revenue, however, which makes up 51% of its total revenue, was up 14%.[15]

Organizations seeking to rationalize IT spending should look closely at IT service costs because they can represent one of the largest opportunities for cost savings and optimization, according to a Gartner report.[16] "During the last five years, spending on external services has accounted for more than hardware and software spending combined," according to Frances Karamouzis, research vice president at Gartner.[17] In addition, external services may be more costly for free software. A Forrester report from 2007 found that IT decision-makers were steadily adopting open source software, but that their largest concern was where to find appropriate support services.[18]

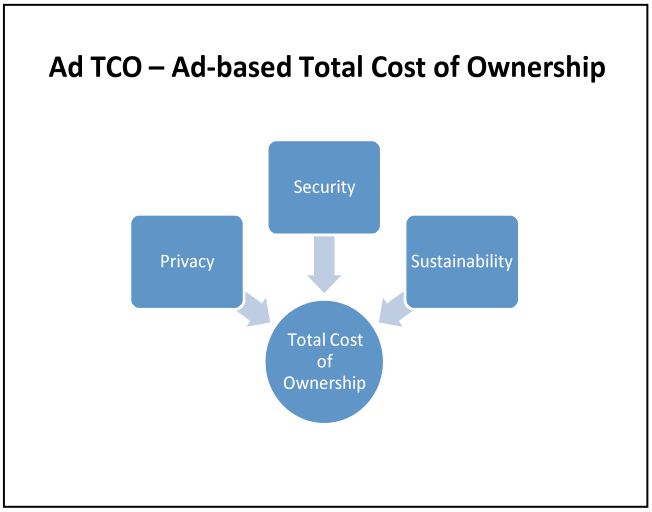
Companies that give away their software for free depend largely on maintenance and support revenue. These ongoing costs cut into and defeat some of the benefits of a no-charge license. According to Laurie Wurster of Gartner, "[a]s you deploy open source in more mission-critical situations, your costs will increase because you want to make sure those systems never take the company down. Those costs will be similar to proprietary systems."[19]

In the next section, we discuss a different set of potential costs—security, privacy, and sustainability—that traditional cost of ownership analysis does not fully consider. Internet-based software and services that depend on advertising for revenue have brought these costs to the forefront of what government CIOs and policymakers should consider when procuring new software.

Updating TCO for Ad-based Online Software: *Security, Privacy and Sustainability*

Software applications and services that are based on the Internet and deliver ads to users have their own distinct cost considerations.

Security is a cost consideration for all software, wherever it resides. This risk is not new. Before the emergence of the Internet, there were security concerns for software development that was outsourced to outside developers. The fear was that code would somehow be "infected" from the outside. Moreover, when data was co-located, there was a persistent threat that one organization's trade secrets would be accidentally or intentionally placed into another entity's domain.



Today, companies and users routinely store massive amounts of data in the "cloud" of the Internet. Storing information outside of a company or government firewall creates unique exposure points for security breaches, placing sensitive data at risk and increasing the possibility that information falls into the wrong hands.

Besides security, there are other new forms of costs that go along with software that is free of charge. Importantly, applications and services that are paid for through advertisements raise privacy considerations. Ads can be triggered by a user's browsing history, search terms, content of emails, and even documents. There are privacy concerns regarding how user data is collected, stored, and disseminated, and privacy policies can be opaque and can change frequently. Therefore, privacy can be a cost of ad-based applications.

Finally, whether a software company and its products are sustainable should be a consideration. Ad-based models are still being tested in the marketplace, and it may be that some software tools will not be free in the future if a company is to make money and stay in business.

Security

Security is always a consideration and potential cost for any kind of software implementation, but particularly when software is free or resides in the cloud.

Cloud-based applications and storage have many positive

security aspects. Providers of online software can apply patches more quickly than many enterprises to plug holes in software security. In addition, data stored in the cloud can be just as or even more secure as if it were locally stored. Most data theft occurs when someone authorized to access the data does so improperly or carelessly mishandles the data.[20] Cloud-based services leave nothing on the desktop to be lost or stolen, and logs can show who did what to certain data.

Yet, because cloud services are relatively new, there are still a lot of questions to be answered about security in the cloud. "What happens to the data? Is it persistently encrypted? Are there access controls in place? Do you get to monitor who they hire?"[21]

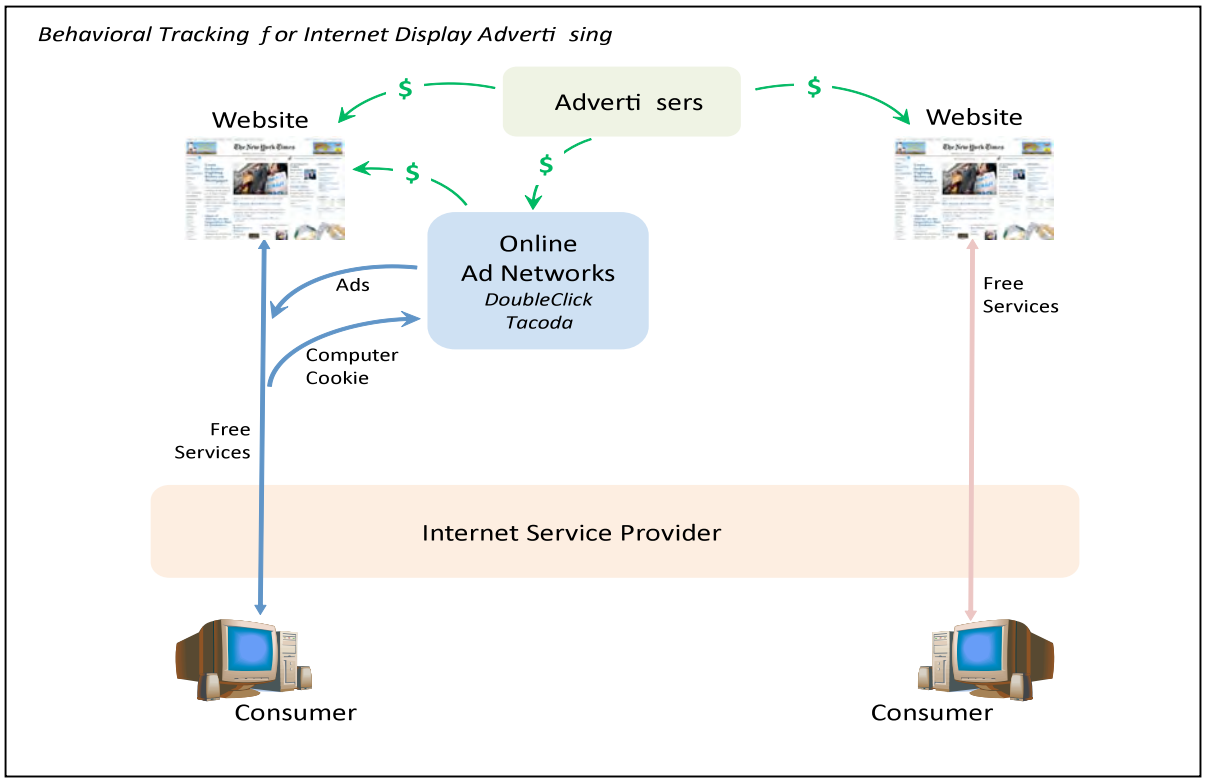
An article in *InformationWeek* describes the concerns of business technology professionals:

> [A]vailability, performance management, accessibility, auditing, and monitoring are far from nonissues, especially for those subject to restrictive regulations such as Payment Card Industry standards or the Health Insurance Portability and Accountability Act.[22]

In a June 2008 report, Gartner highlights cloud computing's "unique attributes that require risk assessment in areas such as data integrity, recovery, and privacy, and an evaluation of legal issues in areas such as e-discovery, regulatory compliance, and auditing" security risks.[23] Smart customers will ask tough questions and consider getting a security assessment from a neutral third party before committing to a cloud vendor, Gartner says.[24]

Less sophisticated than IT professionals, consumers nevertheless should have similar concerns about cloud computing. As consumers, we will gladly sign up for a "free" email service and use it to communicate our deepest secrets to friends and family. We will choose a service based on its user interface and the amount of free storage we have. But how many users have considered the security of Gmail, Hotmail or Yahoo mail?[25] We do not mean to single-out free email services as less secure, but rather to point out that for these services, security is a cost—or at least a non-feature that is absent from promotional marketing.

State and Federal data security laws highlight the magnitude of security issues when third parties have user information. Over forty states have passed security breach laws that require companies to implement security safeguards and to notify consumers when their data has been breached and it is likely that they will be harmed. The type of data stored in cloud services may have significant regulatory and legal ramifications, according to Carolyn Lawson, CIO for the California Public Utilities Commission.[26] As a result of these lingering security fears, Gartner predicts that it could be up to seven years before cloud services reach "mainstream critical mass and commoditization."[27]



Privacy

Software can be free (from a monetary standpoint) in the same way that television shows are free—both can rely on advertisements to generate revenue. Yet, Internet advertisements are the new, and potentially more powerful, kid on the block as they can be customized to target individual users in a number of ways.

Some online companies rely on an ad-based model similar to newspapers and television. In this model, online companies provide content (search results, travel information) and services (email, instant messaging) and infuse these with advertising to the consumer. Websites and ad networks will often collect data on their users to better target advertising to their user base.

Websites collect and display ads in a number of ways. Ads can be triggered based on a user's search terms and search history and previous websites visited. Ads can also be contextual and triggered by the content of communications. For instance, Google scans emails to display ads that are relevant to the content of the email communications. Websites and ad networks use "cookies"—files stored on a user's own computer that help with authenticating, session tracking, and maintaining specific information about users. These cookies can communicate user information to ad networks and online publishers.

As the collection, storage, and dissemination of information to display targeted advertisements proliferates, consumers are becoming more aware of the privacy costs involved. In response, industry standards for online ads have been or are currently being developed,[28] but there has not been widespread adoption of best practices. The National Advertising (NAI) Initiative offers an opportunity for users to opt-out of behavioral tracking and download a cookie that tells NAI member sites to not collect information.[29] However, this is a crude measure that is easily defeated when a user's cookies are deleted. The Federal Trade Commission (FTC) has been leading an initiative to create a set of "voluntary" behavioral advertising principles for industry to follow.[30]

In the meantime, users must rely on the individual terms of service and privacy policies of each website. Unfortunately, privacy policies are often unclear and written in legalese. Without a standard format it is difficult for users to shop around and compare privacy policies, and without a common body of law to interpret and enforce policy terms, there may be little legal teeth to them.[31] The United States does not have a general privacy law, but there is privacy-related legislation pending in Congress.[32] In addition, state legislation has been introduced that would regulate how Internet sites collect user data and when websites must allow users to "opt-in" (instead of opt-out) as a default arrangement.[33]

Sustainability

Advertising-based models for software and services are still being tested in the marketplace. In the future, some software tools might no longer be free if a company is to make money and stay in business. That is why buyers of software should be aware of and include a sustainability factor into a total cost of ownership equation.

In the Web 2.0 world of the Internet, there is an intermediate version of a business model—acquire lots of eyeballs that eventually can be monetized through advertising or fee-based services. In this context, free software and services are the journey and not the destination. They are a means to the end of creating a return for investors and paying employees—and not the end itself.

FeedBurner is just one of many examples—beginning in the late 1990s—where companies were formed with the goal of first creating a user base, and then figuring out how to make money later. In the early years, FeedBurner offered a free syndication and analysis service for blogs and did not insert any ads. The company innovated and added interesting features, and relied on viral marketing to build awareness. Within a year there were a million subscribers/users with excellent demographics. Yet FeedBurner was unable to take full advantage of its popularity. In 2007, FeedBurner sold to Google, a company who has better expertise and ability to monetize the subscriber base.[34]

What if FeedBurner has been unable to sell to a larger company? Would it still exist, and if so, would its services be free? It is likely that FeedBurner would have pursued a fee-based or ad-based business model, imposing new costs for users of its service.

The main point is one of perspective. An overemphasis on "free" from users of FeedBurner—or any free software or service—is misplaced in early-stage businesses built on eyeball (but not necessarily revenue) growth. If audience monetization brings in only enough revenue to cover the costs of acquiring new users, there is no money to pay for maintenance and continued innovation of the service. Customers can be left in limbo as the company learns how to increase revenues or an acquiring company figures out how to integrate and improve the service. What was once free is free no longer.

Conclusion

There are no free lunches. IT procurement should be goals-based and take a holistic approach to calculating the total cost of ownership for any solution.

The longer this economic recession continues, the more tempting "free" alternatives will look. Because free software initially comes with a $0 price tag, it has been touted as a prime way for government agencies and enterprises to cut costs.

State CIOs and public policymakers should carefully consider the costs and benefits of software on a case-by-case basis. For IT-related procurement decisions, the reliability, lifecycle costs, productivity, and accessibility of all IT solutions should be carefully considered. These are traditional considerations of any cost of ownership analysis.

There are also newer factors that should be taken into account. Privacy, security, and sustainability are potential cost areas, particularly for ad-based software and services.

Policymakers will be confronted with a range of technology options, but for the most part, the choice is not between either "free" software or software with license fees. It is a decision about what the goal of the project is and what solution will enable reaching that goal—and knowing that whatever the route, there are benefits and there are costs.

A decision-making process that incorporates privacy, security and sustainability considerations will result in a truer assessment—by procurement officers and policymakers—of the cost of software alternatives. Understanding these costs will avoid creating unrealistic expectations.

End Notes

1. Karl Flinders (2008), "US election promises universal internet access," ComputerWeekly.com, November 4, 2008, available at http://www.computerweekly.com/Articles/2008/11/04/233208/us-election-promises-universal-internet-access.htm.
2. "Free" has three possible meanings: (a) no license fees, (b) greater access to source code, often associated with "open source" software, or (c) a legal duty to abide by license terms and reciprocate changes made to source code.
3. Chris Anderson (2008), "Free! Why $0.00 Is the Future of Business," Wired, February 2008, available at http://www.wired.com/techbiz/it/magazine/16-03/ff_free?currentPage=1.
4. Ibid.
5. Jonathan Zuck and Braden Cox (2008), Understanding the IT Lobby: An Insider's Guide, available at http://www.actonline.org/library/insiders-guide-to-it-lobby.html.
6. Dan Woods (2008), "The Commercial Bear Hug of Open Source," Forbes, August 18, 2008, available at http://www.forbes.com/2008/08/17/cio-open-source-tech-cio-cx_dw_0818open.html.
7. Companies that do not "give back" will be criticized by open source proponents. An example is Google, which has been chastised for not disclosing and making public the source code of modifications it has made to software that is kept internal but is still available for use through the Internet. Ryan Paul (2007), "GPL 3 author wants companies like Google to open up internal use patches" Ars Technica, May 25, 2007, available at http://arstechnica.com/old/content/2007/05/gpl-3-author-wants-companies-like-google-to-open-up-internal-use-patches.ars.
8. MySQL, MySQL Downloads, visited on March 1, 2009, available at http://dev.mysql.com/downloads/.
9. Mark Driver (2008), Predicts 2009: The Evolving Open-Source Software Model, December 8, 2008, available at http://www.gartner.com/DisplayDocument?doc_cd=164057.
10. Ibid.
11. Ferdie Lochner (2006), "A Cost Maturity Model for Community Informatics Projects in the Developing World," The Journal of Community Informatics, Vol. 2, No. 2, available at http://ci-journal.net/index.php/ciej/article/viewArticle/277/228.
12. Andris Ozols (2003), Business Case Basics and Beyond: A Primer on State Government IT Business Cases, available at http://www.nascio.org/publications/documents/NASCIO-BusinessCasePrimer2003.pdf.
13. Erik W. Marke (2000), A guide to Total Cost of Ownership Analysis (TCO) – 2000, available at http://www.scribd.com/doc/3925278/A-guide-to-Total-Cost-of-Ownership-Analysis-TCO-2000.
14. Ibid.
15. Mary Hayes Weier (2009), "Software Maintenance Fees: Time For This Model To Change?" InformationWeek Business Technology Network, January 24, 2009, available at http://www.informationweek.com/cloud-computing/article/showArticle.jhtml;jsessionid=0OGJYA3LJLIKMQSNDLPCKH0CJUNN2JVN?articleID=212902014&pgno=2&queryText.
16. Gartner (2009), "Gartner Says IT Services Investments Represent One of the Largest Opportunities for Cost Savings and Optimization," Gartner Newsroom Press Releases, February 26, 2009, available at http://www.gartner.com/it/page.jsp?id=899013.
17. Ibid.
18. Forrester Consulting (2007), Open Source Software's Expanding Role in the Enterprise: Companies Adopt Open Source as Standard, March 2007, available at http://www.unisys.com/eprise/main/admin/corporate/doc/Forrester_research-

open_source_buying_behaviors.pdf.

19. Jeff Meisner (2009), “Open Source, the Recession and the Lower-TCO Promise,” Linux Insider, February 27, 2009, available at http://www.linuxinsider.com/story/Open-Source-the-Recession-and-the-Lower-TCO-Promise-66323.html?wlc=1235924844.

20. Elinor Mills (2009), “Cloud computing security forecast: Clear skies,” ZDNet, January 27, 2009, available at http://news.zdnet.com/2100-9595_22-264312.html

21. Ibid. Phil Dunkelberger, chief executive of PGP Corp., relays the concerns about cloud computing when he asks, "What are they doing to the data? Is it persistently encrypted? Are there access controls in place? Do you get to monitor who they hire and who cleans the data centers at night?"

22. Mike Fratto (2009), “Cloud Control,” Internet Evolution, January 24, 2009, available at http://www.internetevolution.com/document.asp?doc_id=170782&.

23. Jay Heiser and Mark Nicolett (2008), “Assessing the Security Risks of Cloud Computing,” June 3, 2008, available at http://www.gartner.com/DisplayDocument?id=685308. See also Jon Brodkin (2008), “Gartner: Seven cloud-computing security risks,” Network World, July 2, 2008, available at http://www.infoworld.com/d/security-central/gartner-seven-cloud-computing-security-risks-853.

24. Ibid.

25. All of which are subject to Palin-style password hacks according to Gregg Keizer (2008), “Yahoo, Hotmail, Gmail all vulnerable to Palin-style password-reset hack,” Computerworld, September 19, 2008, available at http://www.computerworld.com/action/article.do?command=viewArticleBasic&articleId=9115187.

26. Mike Fratto (2009), “Cloud Control,” Internet Evolution, January 24, 2009, available at http://www.internetevolution.com/document.asp?doc_id=170782&.

27. Mark Driver (2009), “Cloud Application Infrastructure Technologies Need Seven Years to Mature,” February 2, 2009, available at http://www.gartner.com/DisplayDocument?ref=g_search&id=835742&subref=simplesearch. See also Gartner (2009), “Gartner Says Cloud Application Infrastructure Technologies Need Seven Years to Mature,” Gartner Newsroom Press Releases, February 2, 2009, available at http://www.gartner.com/it/page.jsp?id=871113.

28. Network Advertising Initiative (undated), The NAI Principles: How they help protect your privacy, available at http://www.networkadvertising.org/managing/principles.asp. See also Interactive Advertising Bureau (undated), Standards, Guidelines, and Best Practices, available at http://www.iab.net/iab_products_and_industry_services/508676.

29. Network Advertising Initiative (undated), Opt Out of Behavioral Advertising, available at http://www.networkadvertising.org/managing/opt_out.asp.

30. Federal Trade Commission (2009), FTC Staff Report: Self-Regulatory Principles For Online Behavioral Advertising – Tracking, Targeting, and Technology, February 2009, available at http://www.ftc.gov/os/2009/02/P085400behavadreport.pdf.

31. Pinero v. Jackson Hewitt Tax Service, Inc., No. 08-3535 (E.D. La. Jan. 7, 2009). Plaintiff sued the defendant for dumping her tax returns in a public dumpster in violation of defendant’s own privacy policy, and asserted seven causes of action including fraud, breach of contract, negligence, invasion of privacy, as well as violation of Louisiana laws related to database security and unfair trade practices. The court dismissed all of plaintiff’s claims except invasion of privacy.

32. Credit Agencies Identity Theft Responsibilities Act of 2009 [H.R.123] (to amend the Fair Credit Reporting Act to establish additional reporting requirements to enhance the detection of identity theft); Identity Theft Prevention Act of 2009 [H. R.220] (to amend title II of the Social Security Act and the Internal Revenue Code of 1986 to protect the integrity and confidentiality of Social Security account numbers issued under such title, to prohibit the establishment in the Federal Government of any uniform national identifying number, and to prohibit Federal agencies from imposing standards for identification of individuals on other agencies or persons); Notify Americans Before Outsourcing Personal Information Act [H. R.427] (to prohibit the transfer of personal information to any person or business outside the United States, without notice).

33. A bill in New York, AB 1393 (introduced January 7, 2009, by Assemblyman Brodsky), would establish stringent regulations regarding the collection of non-personally identifiable information, such as IP addresses, which are used in serving advertisements over the Internet.

34. Michael Arrington (2009), “Feedburner Needs to Get it Together,” TechCrunch, January 22, 2009, available at http://www.techcrunch.com/2009/01/22/feedburner-needs-to-get-it-together/. The article discusses ongoing problems with FeedBurner and Google’s failure to use its superior resources to improve the service.