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Government Procurement of Software: Provident Policies for Ensuring the Greatest Possible Return on Investment in Troubled Economic Times

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Government spending on information technology ("IT") continues to consume a large share of national budgets worldwide. Indeed, governments are such significant purchasers of IT products and services that their purchasing decisions have a substantial impact on the world's IT marketplace. As governments around the world struggle under the weight of flagging economic conditions, increasing budget constraints require policymakers to be evermore vigilant and efficient in the outlay of public funds for their IT and software needs. To ensure that governments and their constituents receive the most appropriate and effective solutions, at the lowest cost to taxpayers, it is imperative that government purchasers employ a neutral, market-driven approach to IT and software procurement.

Procurement decisions and policies based on choice and neutral, objective criteria are especially warranted in tough economic times because they:

- encourage vigorous competition among solutions providers vying for government spending, thereby securing the greatest possible return on investment;
- ensure that governments remain in tune with the broader IT marketplace, which is increasingly embracing "mixed-source" solutions that leverage the strengths of both open source software ("OSS") and proprietary software to deliver the highest value for their own needs, as well as those of their customers, at the lowest cost; and
- best respond to calls by President Obama and other world leaders for greater openness and transparency in government decision-making, the lack of which has contributed significantly to the current severe global economic crisis.

The Most Appropriate and Effective Solutions at the Lowest Cost to Taxpayers

The U.S. government is the world's largest consumer of IT and software products and services, spending an estimated $60 billion annually for IT infrastructure.[2] However, the recent financial crisis has exacerbated competing demands for increasingly scarce resources and made clear that—even for critical government needs like IT infrastructure—cost savings must be realized wherever possible. The U.S. is not alone in its pursuit of more efficient IT and software spending. A recent Gartner study estimates that global spending on IT products and services by governments and businesses will decline by nearly 4 percent in 2009.[3] In this environment, government approaches to procurement decisions that allow multiple vendors with various business and development models to compete aggressively for the government's business on fair and objective terms (including total cost of ownership, interoperability, transparency, security, reliability, privacy, ease of use, quality of maintenance and support, and the availability of warranties and indemnification for intellectual property ("IP") claims) are critical to securing the most appropriate technology solution at the lowest cost. Such market-driven procurement policies are the most effective because they dispel misconceptions, remove personal biases, and force a direct comparison of all competitors' proposed solutions, so that each can be judged on the basis of its relative abilities to meet the needs of government and its constituents in the most cost-effective manner possible. Notwithstanding the clear benefits of such a neutral, market-driven approach, the heightened budgetary scrutiny brought on by deteriorating economic conditions has renewed or intensified the efforts of some

OSS proponents to change public sector procurement laws either to outlaw the purchase of proprietary software or to include explicit "preferences" for OSS over proprietary software, often based on claims that OSS is free or less expensive. An example of this approach is found in a report by OSS advocacy group, tOSSad, which claims:

> Most F/OSS [free/OSS] can be downloaded without any cost. CD-ROMs normally can be ordered for a nominal fee. The important difference to PS [proprietary software] is that for F/OSS there are no licensing fees. Acquiring PS means licensing fees have to be paid for each user or computer. For big institutions such as public administrations this can be a substantial amount of money.[4]

The reality, however, is that, for "big institutions," network administration involves substantially more than simply finding and downloading free software from the Internet. Indeed, industry experts place the cost of software *acquisition* at less than 5 percent of the overall cost of an IT system.[5] As explained below, attempts to obfuscate the "total cost of ownership" (sometimes referred to as a product's "TCO") by comparing software options only on the basis of acquisition costs are highly misleading.

Bringing Total Cost of Ownership into Proper Focus

Claims that OSS should be preferred because it is free or less expensive than proprietary software ignore the real-world costs associated with the installation and administration of a product over its life-cycle, such as the costs to integrate it with legacy systems, annual maintenance costs, and costs for training, change management, code reviews and revisions, documentation, contingency planning, etc. These life-cycle costs must be considered together with the up-front software acquisition costs, in order to accurately determine the product's total cost of ownership.

In reality, all enterprise IT and software vendors, be they OSS or proprietary, are profit-driven. The principal differentiating factor is simply a matter of the respective business models employed by the vendors in pursuit of revenue. On the one hand, OSS companies generate revenue primarily by selling subscriptions for, or otherwise contracting to provide, the installation/integration of the OSS, as well as necessary updates and ongoing consulting, maintenance, training, and other services required to successfully deploy and maintain OSS. This approach, which is a key business model for companies such as IBM and Red Hat, inherently relies on making available free or low-cost software as a loss leader for these revenue-generating services. On the other hand, the business model of companies deploying proprietary software is typically based on generating revenue primarily through the licensing of software products with lower costs for installation, integration with legacy systems, ongoing maintenance and technical support, updates, or training services.[6]

For large software purchasers, total cost of ownership is a complex formula requiring an analysis that goes well beyond the generic distinctions between OSS and proprietary software. Governments, for example, are run by a multitude of disparate entities, each with its own unique legacy IT architectures, levels of in-house technical expertise, institutional (*i.e.*, personnel) aptitudes for adapting to technology changes, and requirements for technical integration with other governmental entities as well as the public. As such, the total cost of ownership calculus can vary greatly from one agency to another; and procurement officials require the flexibility to pick and choose from among all available IT and software options in order to fashion the best and most efficient solution for the mission at hand.[7]

Procurement policies that pre-ordain technology choices from the outset via preferences or mandates (*e.g.*, for OSS on the belief that it reduces costs), can actually serve to significantly *limit* return on investment in a number of ways. For example, the expense of integrating a mandated OSS offering may actually exceed that which the agency would have otherwise faced for the purchase of an off-the-shelf proprietary solution.

Various government and IT industry experts who have recently examined and compared the total cost of ownership of OSS and proprietary software solutions have confirmed that OSS carries costs that are often misunderstood and/or not fully accounted for in software procurement decisions. For example, a 2009 Gartner report concludes:

> In the coming years, open source will continue to expand its influence among Global 2000 IT enterprises; however, some of the myths of open-source economic advantages will fall away as many enterprises realize that they have simply shifted costs away from one area to another (for example, commercial operation support to internal employee support).[8]

Likewise, public IT and eGovernance scholar David Garson makes clear that:

> [The cost of] software acquisition is typically 3-5% of a new IT system and 'free software' savings may be outweighed by costs of support, training, project management, etc. These other cost dimensions may favor proprietary software. . . . In general, users have tended to find Linux software less user-friendly and more difficult to learn. Full cost accounting, taking training and other life-cycle costs into account, may very well change the cost-benefit equation for a proposal to switch to open source applications.[9]

At the state level, in recommending that Texas eschew statutory mandates for OSS, the state legislature emphasized the following:

> TCO needs to include the original cost of the computer hardware and software, as well as the hardware and software upgrades, the maintenance, technical support and training. . . . The money an agency may spend for technical service, support, training, customization and testing open-source applications may exceed its current known proprietary systems [expenses]. . . . The Legislature should not mandate in statute the use of any specific software or file format. It is not in the State's best interests to insert itself into any market battle between competing software architectures. Doing so could increase the state's *total cost of ownership* of electronic information, as technologies can easily become outdated.[10]

In sum, focusing solely on the acquisition cost of software is seriously flawed, particularly during tough economic times, during which it is imperative that government purchasers apply a more objective and robust analysis when considering their long-term investments such as IT purchases. A failure to focus on the total cost of ownership when making IT and software purchases is no less irresponsible or short-sighted than the high-risk, short-term profit seeking that led the nation's housing and financial markets into their current steep decline.

"Mixed-Source" Software Solutions: Drawing on the Strengths of Both OSS and Proprietary Software to Deliver the Highest Value at the Lowest Cost

A neutral, market-driven approach to IT and software procurement decisions is also compelled by the way the marketplace has embraced "mixed-source" software solutions. In the broader IT marketplace, the battle between OSS and proprietary software is basically over. Companies from the enterprise level on down are increasingly implementing solutions that *combine* OSS and proprietary software as an effective way to realize the highest value for their own networks and/or for their customers at the lowest cost. IT professionals, both within and outside the government, are increasingly working in mixed environments that include Windows, Linux, and UNIX. These users are looking for software providers to deliver greater business value and a broader array of interoperable solutions, *regardless* of the underlying software development, business, or licensing model. Both OSS and proprietary software developers are rising to the challenge and, as a result, applications being deployed today are often a mix of OSS and proprietary software. For example:

- Microsoft, the world's largest proprietary software vendor, has reportedly executed more than 500 commercial IP agreements with companies from a wide range of industries, including companies building their businesses around OSS.[11] The prime example is Microsoft's 2006 landmark collaboration with Novell.[12] Microsoft also launched its "Open Specification Promise" in 2006 to facilitate royalty-free access by OSS and other developers to Microsoft technologies and IP that support interoperability.[13]

- Novell has publicly described itself as a "mixed source company" and has noted that "most Novell customers run a mixed-source IT environment."[14] Novell recently created an application stack out of proprietary and open source software, explaining, "With this solution stack, Novell and its partners recognize that customers desire the flexibility to safely and securely mix open source applications with other commercial products to create the best solution for their environment."[15]

- Sun Microsystems, following its acquisition of MySQL AB, continued a dual-licensing practice of offering the MySQL database under a reciprocal OSS license and a traditional commercial license "designed to meet the development and distribution needs of commercial distributors."[16]

Technology analysis company, The 451 Group, succinctly described this evolution toward mixed-source solutions as follows:

> For the most part, vendors that build revenue streams around open source software do not choose between open source and proprietary development and licensing; they choose business strategies that attempt to make the best use of both open source and proprietary development and licensing models in order to maximize their opportunities for generating revenue and profit. . . . The line between closed and open source has blurred as FOSS [free and open source software] is embedded in proprietary products and commercial extensions have been added to FOSS.[17]

As the above developments show, the present and future are not about OSS *versus* proprietary software, but about how to *integrate* the best of what each has to offer. If governments are to realize the full potential of this mixed-source paradigm, they too must base their IT and software purchasing decisions on a healthy respect for the diverse and continually evolving ways that companies choose to build and market what they create. Such market-based policies also encourage greater innovation, which ensures that next-generation technologies will continue to be shaped by market participants through competition and collaboration, and not by government, which has proven to be ill-equipped at predicting the future of technology.[18] Arbitrary technology mandates or preferences, on the other hand, impede these important industry developments and lead to purchase decisions that are more reflective of the political influences favoring a particular software development ideology than of the best in class IT and software solutions enjoyed in the broader marketplace.

Heeding the Calls for Greater Openness and Transparency in Decision-Making

In the wake of the irresponsibility and lack of reasonable disclosure and scrutiny that led to the current global financial crisis, President Obama and many other world leaders have called for increased openness and transparency by government and industry in their decision-making, public disclosures, spending, and oversight. In just a few short months, for example, the Obama administration has issued a series of executive orders and memoranda establishing: (1) concrete principles to increase government transparency and openness to allow greater, more meaningful public participation in governmental policymaking, (2) unprecedented efforts to ensure that Recovery Act funds are distributed solely on the merits of proposed projects and not in response to improper influence or pressure, (3) strict transparency requirements on lobbyists, and (4) allowable disbursements in government contracting.[19]

Achieving these dual goals of openness and transparency in the context of public IT and software procurement requires reliance on the neutral, market-driven approach to decision-making described above. Instead of predetermining winners or favoring one technology or company over another, a procurement process rooted in "open government" principles treats all vendors equally and applies the same objective criteria to each of them. By contrast, a *lack* of such openness and transparency—both in terms of industry's failure to properly disclose certain aggressive practices, and in terms of government's failure to properly oversee, investigate, or warn the public—is now widely recognized as a key component that led to the current global economic crisis. That is a formula that governments and industry can ill afford to repeat. The openness and transparency inherent in neutral, market-driven procurement policies predicated on objective criteria and choice are a much-needed and appropriate antidote to such devastating market failures.

Conclusion

Procurement preferences or mandates are bad public policy and should be rejected because they: (1) deprive governments of the cost-reducing and innovation-enhancing benefits of market-based competition, (2) arbitrarily force product uniformity and vendor lock-in, and (3) discourage R&D investment, which is particularly harmful as economies are struggling to keep from shrinking further. Particularly during challenging economic times, starting the procurement process by excluding potential solutions simply does not make sense. Indeed, multinational organizations and governments around the world (*e.g.*, United Nations, European Union, Asia-Pacific Economic Cooperation, United States, Belgium, Canada, New Zealand, Malaysia, Peru, Chile, et al.), as well as leading scholars and institutions, such as the Harvard Berkman Center[20] and the International Chamber of Commerce,[21] have increasingly concluded that procurement preferences for specific technology solutions or software licensing/business models should be avoided for various reasons.[22]

Government IT and software purchase decisions predicated on a neutral, market-driven approach, using objective criteria such as a product's "Total Cost of Ownership," are required now more than ever before in light of the following key developments: (1) the current global economic crisis and the need for governments to be especially vigilant and efficient in their outlay of scarce public funds, (2) the industry's widespread and increasing acceptance and implementation of mixed-source software and IT solutions, and (3) the understandable calls by President Obama and other world leaders for greater openness and transparency in decision-making and spending both by the government and industry. This approach will best enable governments to lower their IT costs and deliver the highest value to their citizens and consumers.

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[2] *See* Gross, G., *Government IT Spending To Drop, New Firm Predicts*, InfoWorld.com (Oct. 27, 2006) (*available at* http://www.infoworld.com/t/business/government-it-spending-drop-new-firm-predicts-613).

[3] *See* Dubie, D., *Gartner: IT Spending Drop-off Worse Than After Dot.com Bust*, ITworld.com (Mar. 31, 2009) (*available at* http://www.itworld.com/business/65485/gartner-it-spending-drop-worse-after-dotcom-bust).

[4] *See* Kaan, E., Economical and Social Benefits of F/OSS Report, p. 11 (2006) (*available at* http://www.tossad.org/content/download/1054/5554/file/tOSSad_D09_V2.7.pdf).

[5] *See infra*, n. 9.

[6] *See Interim Report 2008*, House Committee on Government Reform, Texas House of Representatives, p. 10, *available at* http://www.house.state.tx.us/committees/reports/80interim/GovernmentReform80th.pdf) ("*Commercial software* is being developed by businesses which aim to make money from the use of both open and proprietary software. Microsoft is a software company that mutually develops proprietary and open source software. Open and proprietary software architectures should be viewed as competing business models. Open source software is a vision where software development and support is a service industry, not a product industry. For example, Red Hat is one of the premier Linux and open source providers. While the development process and technology offered by Red Hat is open and can be obtained for free, the company generates revenue and profit through a subscription model. The subscription business model is when a company sells periodic (monthly, yearly or seasonal) access or technical support to a product or service, rather than selling products individually at a one time upfront cost. Proprietary software commonly generates revenue by selling the customer the right to use the software product as opposed to selling them actual ownership of the product (as they might own a physical object) and in turn provides support and needed updates. In sum, both open and proprietary software are business models that have different ways of extracting value from a particular piece of software.") (emphasis in original) (footnotes omitted).

[7] *Id.* at p. 11.

[8] *See* Driver, M., *Predicts 2009: The Evolving Open-Source Software Model*, Gartner RAS Core Research Note G00164057 (*available at* http://mediaproducts.gartner.com/reprints/microsoft/164057.html).

[9] *See* Garson, G. David, *Public Information Technology and E-Governance: Managing the Virtual State*, pp. 233-34, Jones & Bartlett Publishers (2006).

[10] *See Interim Report 2008*, House Committee on Government Reform, Texas House of Representatives, p. 11-12 (*available at* http://www.house.state.tx.us/committees/reports/80interim/GovernmentReform80th.pdf) (emphasis in original).

[11] *See* Microsoft White Paper: "Participation in a World of Choice: Perspectives on Open Source and Microsoft," p. 10 (Mar. 2009) (*available at* http://www.microsoft.com/opensource/default.aspx).

[12] *See Microsoft and Novell Announce Broad Collaboration on Windows and Linux Interoperability and Support*, Press Release (Nov. 2, 2006) (*available at* http://www.microsoft.com/presspass/press/2006/nov06/11-02MSNovellPR.mspx); *Microsoft and Novell Two-Year Anniversary*, Customer Quotes and Customer List (Nov. 19, 2008) (*available at* http://www.microsoft.com/presspass/press/2008/nov08/MSNovellTwoYearQS.mspx). Other reported collaborations include agreements between Microsoft and other Linux-based platforms and OSS providers, such as JBoss, Samsung Electronics Co. Ltd., Turbolinux, Xandros, XenSource Inc., and Zend Technologies Inc. *See Microsoft's Collaboration Imperative, IAM Magazine* (April/May 2008) (*available at* http://www.microsoft.com/Presspass/ofnote/04-01-08GutierezIAMArticle.mspx).

[13] *See* http://www.microsoft.com/interop/osp/default.mspx. Likewise, Microsoft has shown its broad openness to non-commercial OSS development through its "Patent Pledge for Open Source Developers" (*available at* http://www.microsoft.com/interop/principles/osspatentpledge.mspx).

[14] *See Novell: We're a 'Mixed-Source' Company* (Dec. 28, 2006) (*available at* http://www.zdnetasia.com/news/software/0,39044164,61977995,00.htm).

[15] *See Novell Validates Mixed Source Solution Stack, Press Release* (May 31, 2005) (*available at* http://www.novell.com/news/press/novell_validates_mixed_source_solution_stack).

[16] *See Commercial License for OEMs, ISVs and VARs*, MySQL.com (Oct. 9, 2008) (*available at* http://www.mysql.com/
about/legal/licensing/oem/).

[17] *See Open Source is Not a Business Model: How Vendors Generate Revenue from Open Source Software*, The 451 Group (Oct. 2008) (*available at* http://download.microsoft.com/download/0/4/2/04246FB1-0BF6-44F4-BC44-4CCB220E1711/451_-_08_OCT_-_CAOS_Report_9_Open_Source_is_Not_a_Business_Model.pdf).

[18] Texas House Report, *supra* n. 10, p. 12 ("Any statute that would mandate a specific software or document standard would be out of date in a short period of time due to the rapid pace of change in technology. For example, the State of Texas adopted the OSI network protocol in 1990 and by 1993 had to drop OSI due to market forces that favored the now widely used communications protocol, The Internet Protocol Suite (commonly called TCP/IP)."). This policy approach is consistent with the U.S. position on the government's role in standards-setting: "In our view, the standard setting process should be voluntary and market-driven. Unnecessary government intervention can impair innovation, standards development, industry competitiveness, and consumer choice." *See Statement by the United States on Patents and Standards at WIPO Patent Committee* (Mar. 25, 2009) (*available at* http://www.keionline.org/blogs/2009/03/25/united-states-position-patents-standards/).

[19] *See* http://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment/ (Jan. 21, 2009),

http://www.whitehouse.gov/the_press_office/Memorandum-for-the-Heads-of-Executive-Departments-and-Agencies-3-20-09/ (Mar. 20, 2009),

http://www.whitehouse.gov/the_press_office/ExecutiveOrder-EthicsCommitments/ (Jan. 21, 2009),

and http://www.whitehouse.gov/the_press_office/economy_in_government_contracting/ (Jan. 30, 2009).

[20] A 2007 report on interoperability and innovation by the prestigious Harvard Berkman Center advocates choice, neutrality, and the avoidance of government mandates in the standards and technology areas, and highlights the pitfalls associated with such mandates. *See* Glasser, U. & Palfrey, J., Breaking Down Digital Barriers: When and How ICT Interoperability Drives Innovation (2007) (*available at* http://cyber.law.harvard.edu/interop/pdfs/interop-breaking-barriers.pdf); *see also* Berkman Center for Internet & Society, Harvard Law School, *Roadmap for Open ICT Ecosystems* (2005) (*available at* http://cyber.law.harvard.edu/epolicy) ("Technology and brand neutrality in procurement specifications (. . .) reduces the possibility of vendor or technology lock-in by emphasizing choices and procurement decisions based upon what works best. It will also reduce costs, increase competition and help smaller vendors to compete. Use metrics that focus on performance characteristics, business needs and contributions that help open the ICT ecosystem.").

[21] *See* International Chamber of Commerce, *Open Source Software, Policy Statement* (2005)

(*available at* http://www.iccwbo.org/uploadedFiles/ICC/policy/e-business/Statements/373-466_open_source_software.pdf) ("[The] ICC opposes government procurement preferences and mandates that favor one form of software development or licensing over others. Governments, like all potential and existing customers, should choose software on a technology neutral and vendor-neutral basis, examining the merits of the technology based upon the performance factors stated above. As a general rule, governments should not discriminate against or ban the procurement of software based on its licensing or development model. Such preferential policies prevent public authorities from effectively weighing all relevant factors in their procurement decisions.").

[22] *See* Sieverding, M., *Choice in Government Software Procurement: A Winning Strategy*, Journal of Public Procurement (Volume 8, Issue 1), pp. 70-97 (2008).