

THE OPEN SOURCE SIREN SONG

Caroline Atkins discusses how Australian Government Agencies can gain the commercial solutions they need in ICT procurement while avoiding the pitfalls of Open Source licence risks

With Government Agencies trying to implement savings in innovative ICT procurement, the increased utilisation of Open Source, or indeed, replacing proprietary software with Open Source, is a significant opportunity for customers.

The opportunity to use Open Source software also offers leverage in the context of technology procurement.

In November 2003, the Brazilian government issued a policy encouraging the use of Open Source. By 2005, 300,000 government computers had switched from Microsoft to the Open Source operating system: Linux. Three years later, 73% of large companies in Brazil were using Open Source.¹

The UK caught on in 2004, when the UK's Office of Government Commerce described Open Source Software as "a viable and credible alternative to proprietary software for infrastructure implementations and for meeting the requirements of the majority of desktop users..."² Now, in 2013, British Government CTO Liam Maxwell expressed the Government's preference for the use of Open Source.³

"In digital public services, open source software is clearly the way forward"

– Liam Maxwell CTO HM Government

In Brussels, similar to the Brazilian government, Open Source is already being relied upon for essential IT functions. For instance, the EU Commission runs IT solutions on more than 350 Linux servers, and uses Open

Source based solutions for authentication, performing more than 1 million authentications on a yearly basis with more than 17,000 different users every day.⁴

Following this trend, the Australian Government Information Management Office (AGIMO), in its 2011 Open Source Guide, suggested that Open Source software can "improve[e] interoperability and possible cost savings."⁵ Under current federal government Open Source procurement policy all FMA Agencies need to consider Open Source as a future solution to preventing ICT Lock-In.⁶ More recently, the Commonwealth's CTO John Sheridan has been quoted as stating that in many cases, Open Source is better value to the government than proprietary software thanks to, in large part, the better tech-support now available for mature Open Source solutions.⁷

But is this a case of succumbing to a siren's song? What are the risks associated with Open Source software and what mitigation strategies can government agencies use to mitigate or avoid risks?

This article examines the risks and mitigation strategies from a Government ICT procurement perspective where an agency is considering procuring pure Open Source software.

WHAT IS OPEN SOURCE?

Open Source software (or to the initiated, OSS) is computer software where the source code⁸ is freely available to the community to view, modify, copy and distribute, subject to certain licensing conditions.⁹ Not be confused with “Public Domain Software” (PDS), Open Source is always released under a licence (unlike PDS, which can be used by anyone without restriction).¹⁰

Judge Jeffrey S White, in the US Federal Appeals Court decision of *Jacobsen v Katzer*¹¹ described how Open Source is developed in his judgment and it is worthwhile revisiting his description here. Open Source software is software that is developed through online community Open Source “projects”. These projects invite programmers from around the world to view the publicly available software code, and make changes/improvements. This communal group work makes the development much faster and cheaper. In exchange for the help received, the copyright holder permits users to copy modify and distribute the software code *provided* that the users keep the code accessible.¹² This accessibility requires users, in some instances (depending on the licence type), to make their improvements to the code publicly accessible through Open Source licensing. This can make commercial exploitation of the modifications difficult, but is an advantage to licensees who gain free access to the improvements.

Open Source is an alternative to “proprietary software” and is touted as a technology solution that can drive efficiency and can improve an agency’s economic and strategic chances in procurement.¹³

AGIMO OPEN SOURCE GUIDE

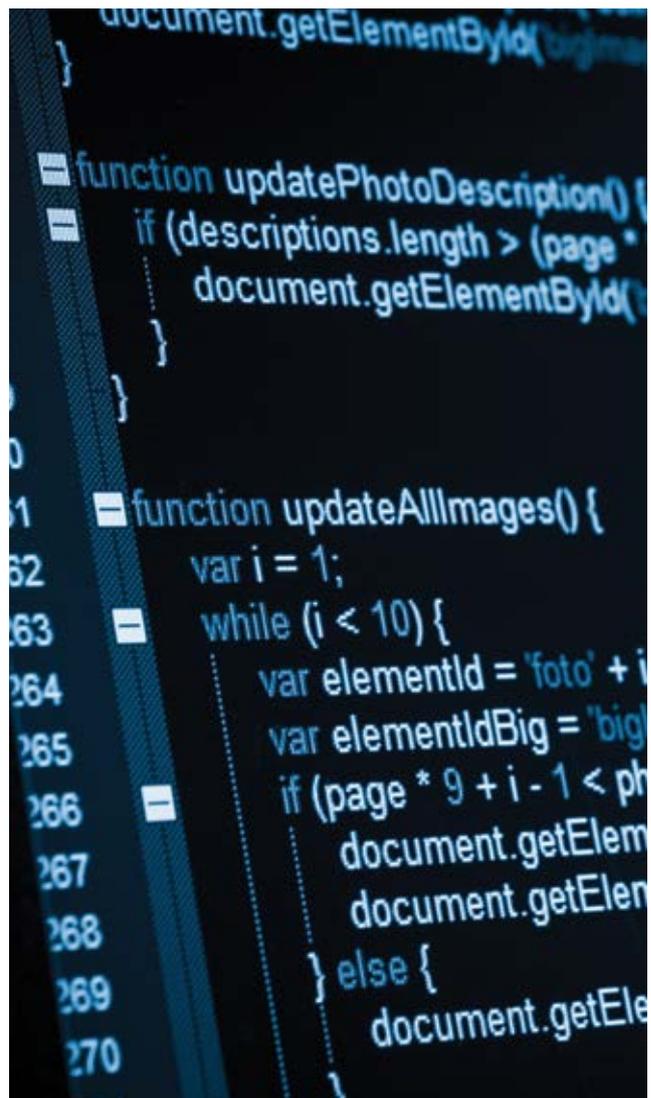
Most Open Source software fits into particular categories. Some prominent categories are database engines, scripting languages, application servers, content management systems, office suites and desktop groupware. Within any one category, there are sometimes several hundred products available.¹⁴

TYPES OF OPEN SOURCE SOFTWARE

AGIMO describes Open Source in its 2011 *Open Source Guide* as software falling into particular categories: (see bottom left hand corner).

Examples of Open Source include the Mozilla Firefox web browser, the Linux operating system, the Apache HTTP Server, the Android platform (used in Samsung’s Galaxy Tab 10.1) and the MySQL relational database system.¹⁵

Open Source software is available for many everyday applications for which agencies often use proprietary software.



OPEN SOURCE SOFTWARE LICENCES

Open Source does not simply mean that access to the source code is provided. Additional criteria must be complied with in order for software to meet the definition of “Open Source”.¹⁶ The Open Source Initiative¹⁷ (a not-for-profit advocacy group dedicated to promoting open source software) puts forward the following 10 points in an attempt to define Open Source:

- (i) **Free distribution:** no restrictions on sale or gifting the software, whether part of a whole or on its own;
- (ii) **Source code:** must be freely accessible and able to be distributed;
- (iii) **Derived works:** modifications must be allowed and such modifications must be able to be distributed (**reciprocity**);
- (iv) **Integrity of the author’s source code:** source code can only be restricted if the licence allows the distribution of “patch files” with the code for the purpose of modification at build time;
- (v) **No discrimination** against persons or groups;
- (vi) **No discrimination against fields of endeavour:** the licence cannot restrict the software being used in a particular industry like genetic research for example;
- (vii) **Distribution of licence:** the rights and conditions attached to the software must apply to all those to whom it is redistributed;
- (viii) **Licence must not be specific to a product:** the rights connected to the program cannot depend on the program being tied to a particular software distribution;
- (ix) **Licence must not restrict other software:** for instance, the licence cannot require that all other programs distributed on the same medium are also OSS; and
- (x) **Licence must be technology-neutral:** no part of the licence can be based on a particular individual technology or style of interface.¹⁸

Licences such as the [GNU GPLv2](#) and [GPLv3](#), the [Modified BSD licence](#), the [Apache 2.0 licence](#) and the [Mozilla Public Licence 2.0](#) have been certified as compliant with the Open Source Initiative definition and are good examples of Open Source licences.¹⁹

AGIMO LICENSING RISK FRAMEWORK SNAPSHOT

<input checked="" type="checkbox"/>	Put governance plans in place to track, monitor and evaluate all instances of Open Source software and train staff appropriately.
<input checked="" type="checkbox"/>	Whenever an agency creates a derived work, ensure compliance with reciprocity provisions in the Open Source licence.
<input checked="" type="checkbox"/>	Seek legal advice when considering modifying Open Source software.
<input checked="" type="checkbox"/>	Ensure the agency has copyright over any in-house code developed by agency staff/contractors.
<input checked="" type="checkbox"/>	Seek indemnification from software development vendors and check vendor compliance procedures.
<input checked="" type="checkbox"/>	Choose appropriate licences for releases of derived code ensuring compatibility with existing licences.
<input checked="" type="checkbox"/>	Undertake comprehensive risk assessments.

Points taken from AGIMO’s “[Guide to Open Source Software for Australian Government Agencies](#)” v.2.0 of June 2011 [available online](#)

THIRD PARTY INFRINGEMENT CLAIMS

The risk of third party IP infringement claims arising is not unique to Open Source, but the risk can be greater. This is because it allows users to freely modify and distribute the software. If a user modifies the source code by including third party proprietary code without obtaining the owner's permission, the modified software will infringe third party rights. This infringement will carry through subsequent versions of the software which contain the infringing code.²⁴

Open Source licences do not indemnify the end-user, and the innocent end-user is likely to have no idea whether the source code contains proprietary code until the user receives a strongly worded letter claiming third party infringement.

Suggestions

In order to minimise the risk of third party infringement claims, agencies should conduct due diligence into the software to ensure that the software is, at the very least, developed and documented in a well-controlled manner to provide confidence with respect to incorporated code from third parties.²⁵ A thorough investigation can help to highlight whether third party code has been incorporated and agencies will then need to consider if the risk outweighs the benefit.

INFRINGEMENT OF LICENCE OBLIGATIONS

While many Open Source licence models allow the modification of the source code for internal use without requiring the user to make the modified code publicly available, other licences (such as the GNU General Public Licence) do in fact oblige the user to distribute the modified code by making it publicly accessible.²⁶ If an agency's in-house developer or contractor used Open Source software to design an agency specific program, and that Open Source software was subject to the GNU General Public Licence, then the agency is required to upload the modified source code.

This could be undesirable if the agency did not wish to make the program publicly available, or if the agency wanted to exploit the program commercially.

If agencies fail to comply with the terms and conditions of a software licence, they risk being liable for infringement. While Open Source licences have not been tested in Australian Courts, in the EU and the US, legal action has been successful in prosecuting breaches of Open Source licences.²⁷ It is therefore very important that agencies fully understand the terms of a licence, and that agencies ensure continuous monitoring to avoid breaches of licence terms.

Suggestions

- Ensure that agencies have comprehensive governance procedures in place to track, monitor and evaluate all instances of Open Source software.²⁸
- Educate agency staff about the licensing obligations associated with Open Source solutions.
- Undertake risk assessments to determine the agency's individual "risk appetite" for programs that involve Open Source software.²⁹

A related issue is that any customisation or modification of Open Source software in-house may become subject to Open Source licensing terms. Suggestions to avoid this include:

- ensuring the licence conditions allow for derivation, and if they don't, agencies should have mechanisms in place to avoid customising the software and breaching the licence inadvertently by not making the customisation publicly available (in breach of the requirement for reciprocity);
- ensure in-house developers and end-users are aware of the legal boundaries of the agency and the software's intended use;³⁰ and
- consider the obligation of reciprocity i.e. the possibility of being required to republish all the newly developed source code to maintain compliance with Open Source licensing terms.

COMPATIBILITY AND INTEROPERABILITY

Open Source software packages frequently (although not always) use open standards, so they are generally more interoperable than proprietary software.³¹ However, while proprietary software is generally certified to be compatible with specified operating systems, often there is no similar guarantee for Open Source software. There is, therefore, a risk that a particular Open Source product will not be compatible with Australian Government Agency systems.

Suggestions

- Perform due diligence. Agencies should be careful to ensure that the proposed Open Source solution has a track record of compatibility for constituent software (i.e. there may be real world examples of the software in use by other agencies or by private corporations).
- Investigate any publicly available information relating to performance and test configuration. Ideally, these tests should be repeatable with publicly available results for analysis.³²

TOTAL COST OF OWNERSHIP

Proprietary software often comes with expert support, updates and usually, a helpdesk for end users who experience difficulties with the software. Open Source solutions are often criticised for being dependent on the general development community for support for software problems. While in many cases, the initial outlay of purchasing Open Source and keeping it updated is zero or low,³³ when problems arise, critics of Open Source adoption suggest that expenditure on repairing the problems can start to outweigh the initial benefit of obtaining an Open Source solution for free.

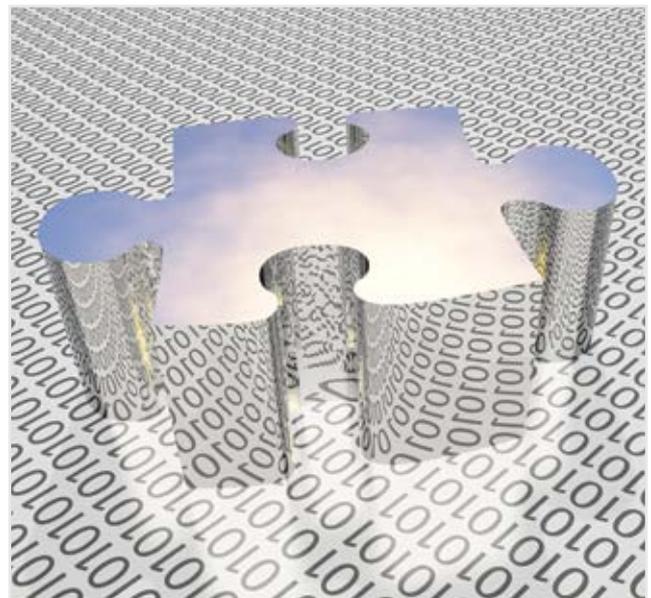
Total Cost of Ownership (**TCO**) is therefore an important consideration when agencies are looking towards Open Source as a cheaper alternative. The Open Source TCO could end up requiring tailored support, maintenance, exit costs, installation, system integration, data conversion, testing, and even employing an in-house developer.

However, in a data analysis³⁴ investigating Open Source

adoption by US Fortune-1000 companies conducted by Diomidis Spinellis and Vaggelis Giannikas in 2012, TCO was not seen as a financial disincentive for Open Source adoption. In fact, the study found³⁵ that companies using Open Source operating systems had “higher gross margins and profits than those using proprietary alternatives.”³⁶ The conclusion was that the long term adoption of Open Source by private enterprise was driven by its lower cost and higher operating efficiencies.³⁷ While cost analyses should be conducted on a case-by-case basis, the risk of TCO being greater in Open Source as compared to proprietary software may not be as significant as once thought.³⁸

Suggestions

- Agencies should consider using a mature, tried and tested Open Source product where “Value Added Resellers” (VARs) and independent support vendors offer services for external support.³⁹
- When investigating Open Source solutions, agencies should ensure that the exit costs from the software are known and minimal and that the software does not impose additional costs by creating or forcing dependencies on other software or technologies.⁴⁰



OPEN SOURCE IN THE SOFTWARE SUPPLY CONTRACT

In situations where agencies are procuring IT solutions and a tenderer purports to include Open Source code as one component of the total solution, it is essential to have appropriate liability arrangements.

Whilst Open Source comes with no warranties regarding performance, if a tenderer offers a combined Open Source and proprietary software solution, agencies should try to get the supplier to warrant, or take some responsibility, for the Open Source software's performance. In this way, the supplier takes this risk, rather than the Commonwealth. However, the tenderer may not also be prepared to take the risk of third party IP infringement.

Suggestions

In ICT purchase contracts that involve the use of Open Source, agencies should:

- require the tenderer to take some responsibility for the fitness for purpose and the performance of the Open Source software as part of the total offered solution;
- be prepared with a set of minimum required service levels that focus on agency specific risks and are measurable and enforceable, and which cover all

components of the solution. If the tenderer refuses to include any service levels or performance warranties in the contract, at the very least agencies should ensure that the software is rigorously tested before being accepted and deployed into the agency's operating environment;

- do a risk assessment of the total solution;
- ensure that any limits of liability are acceptable in the context;
- ensure the tenderer will also be obliged to comply with the Open Source licences;
- ensure that any technical support offerings extend to support for the Open Source components;
- require the Open Source solution to identify licences used, and require the developer to disclose when it does use third-party code;
- obtain an indemnity for third party breaches and IP;
- ensure that any limitations on remedies and/or liability under the licence are consistent with all relevant Commonwealth policies. In particular, agencies should ensure that any limitation on the developer's liability under the contract does not represent an unacceptable risk to the agency based on the agency's risk assessment.

CONCLUSION

Open Source is an excellent solution for reducing ICT spend and encouraging more competition in the ICT market. As Spinellis and Giannikas rightly point out: "[Open Source] is not an all or nothing proposition; it can be adopted in a gradual fashion testing the waters for benefits and unknown risks."⁴¹ Government agencies are required to consider Open Source as an ICT solution according to federal

IT procurement policy. Through comprehensive investigation and risk analysis, the financial benefits of Open Source may result in substantial ICT savings and economic efficiencies. Agencies can capitalise on the opportunities that Open Source software presents if they understand the advantages and risks (and the value for money) of using that software.

MORE INFORMATION

For more information on this topic, please contact:



Caroline Atkins, based in Canberra, is a partner in the Intellectual Property and Technology team of DLA Piper with extensive experience across all aspects of ICT/IT contracting for federal government. You can reach her at caroline.atkins@dlapiper.com

http://www.dlapiper.com/caroline_atkins/
au.linkedin.com/in/carolineatkinsdla



Jacob Smit, based in Canberra, is a graduate solicitor training in the Intellectual Property and Technology team with a keen interest in IT/ICT contracts and disputes. You can reach him at

jacob.smit@dlapiper.com
au.linkedin.com/in/jacobsmit

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- ¹² *Ibid.* 1379.
- ¹³ See the Open Source Initiative, *About the Open Source Initiative*, (16 July 2013) Open Source Initiative <<http://opensource.org/about>>.
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- ¹⁶ Open Source Initiative, above n 13.
- ¹⁷ *Ibid.*
- ¹⁸ *Ibid.*
- ¹⁹ Matthew Baldwin, "Open source software – what to look out for" (2011) 14 *Internet Law Bulletin*, 150.
- ²⁰ See AGIMO, above n 5 at Appendix I: Australian Government Open Source Software Licensing Risk Framework; and Federal Financial Institutions Examination Council, *Risk Management of Free and Open Source Software* (13 September 2010) FFIEC <<http://www.ffiec.gov/press/pr102104.htm>>.
- ²¹ Department of Finance and Administration, *Guidelines for Issuing and Managing Indemnities, Guarantees, Warranties and Letters of Comfort. Financial Management Guidance No. 6*, (Department of Finance and Administration, 2003), 7 <http://www.finance.gov.au/publications/finance-circulars/2003/docs/Contingent_Liabilities_Finance_Circular.pdf> .
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- ²⁷ See eg in the USA *Jacobsen v Katzer*, above n 12, and a list of successful enforcement actions (including both lawsuits and settlements) at *News of the Gpl-violations.org Project* at <<http://gpl-violations.org/news/>> cited in Heather Meeker. Meeker also discusses several other successful Open Source licence enforcement disputes in her article "Open Source and the Age of Enforcement" (2012) 4(2) *Hastings Science and Technology Law Journal* 267.
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- ³¹ *Ibid.* 7.
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- ³³ Diomidis Spinellis and Vaggelis Giannikas, above n 15, 669-670.
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- ³⁵ The study obtained its data by examining specific Open Source software systems t-tests analyses.
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KEY CONTACTS

Canberra



Caroline Atkins

Partner

T +61 2 6201 8789

caroline.atkins@dlapiper.com

Sydney



Melinda Upton

Partner

T +61 2 9286 8209

melinda.upton@dlapiper.com

Melbourne



Tim Lyons

Partner

T +61 3 9274 5857

tim.lyons@dlapiper.com

Brisbane



David Richardson

Partner

T +61 7 3246 4001

david.a.richardson@dlapiper.com

FOR MORE INFORMATION

Contact your nearest DLA Piper office:

BRISBANE

Level 28, Waterfront Place

1 Eagle Street

Brisbane QLD 4000

T +61 7 3246 4000

F +61 7 3229 4077

brisbane@dlapiper.com

CANBERRA

Level 3, 55 Wentworth Avenue

Kingston ACT 2604

T +61 2 6201 8787

F +61 2 6230 7848

canberra@dlapiper.com

MELBOURNE

Level 21, 140 William Street

Melbourne VIC 3000

T +61 3 9274 5000

F +61 3 9274 5111

melbourne@dlapiper.com

PERTH

Level 31, Central Park

152 – 158 St Georges Terrace

Perth WA 6000

T +61 8 6467 6000

F +61 8 6467 6001

perth@dlapiper.com

SYDNEY

Level 38, 201 Elizabeth Street

Sydney NSW 2000

T +61 2 9286 8000

F +61 2 9283 4144

sydney@dlapiper.com

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