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## CHAPTER SIXTEEN

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### INFORMATION INTEROPERABILITY, GOVERNMENT AND OPEN STANDARDS

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#### INTRODUCTION

The activities of governments, by their very nature, involve interactions with a broad array of public and private sector entities, from other governments, to business, academia and individual citizens. In the current era, there is a growing expectation that government programs and services will be delivered in a ‘simple, seamless and connected’ manner,<sup>1</sup> leading to increased efficiency in government operations and improved service delivery.<sup>2</sup> Achieving ‘collaborative, effective and efficient government and the delivery of seamless government services’ requires the implementation of interoperable technologies and procedures.<sup>3</sup> Standards, which aim to enable organisations, platforms and systems to work with each other, are fundamental to interoperability.

In establishing connected and seamless systems and services, governments are concerned with the interoperability of technologies, processes<sup>4</sup> and information. Governments prescribe standards that must be adopted by government agencies, as well as non-government parties engaging with the public sector. The unique role of government demands that it should avoid becoming locked into particular technologies or systems and refrain from imposing requirements on those who engage with it to use specific technologies or systems. As non-government parties interacting with government will often need to adopt the same standards as those used or mandated by government, the goals of interoperability and ensuring democratic access to government information and systems will often only be achievable if open standards

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<sup>1</sup> Australian Government Information Management Office (AGIMO), *The Australian Government Business Process Interoperability Framework*, July 2007, p. 2, available at [www.finance.gov.au/publications/agimo/docs/Business\\_Process\\_Interoperability\\_Framework.pdf](http://www.finance.gov.au/publications/agimo/docs/Business_Process_Interoperability_Framework.pdf).

<sup>2</sup> See Queensland Government, Department of Public Works, *Queensland Government Enterprise Architecture Framework 2.0* (QGEA Framework 2.0), Queensland Department of Public Works, April 2009, p. ii, [www.qgcio.qld.gov.au/QGCIO/ARCHITECTUREANDSTANDARDS/GEA/Pages/index.aspx](http://www.qgcio.qld.gov.au/QGCIO/ARCHITECTUREANDSTANDARDS/GEA/Pages/index.aspx) and *ICT: building a better Queensland*, September 2009, available at [www.qgcio.qld.gov.au/SiteCollectionDocuments/Strategies/ICTbuildingabetterQueensland090909.pdf](http://www.qgcio.qld.gov.au/SiteCollectionDocuments/Strategies/ICTbuildingabetterQueensland090909.pdf).

<sup>3</sup> Australian Government Department of Finance and Administration, Australian Government Information Management Office (AGIMO), *Australian Government Information Interoperability Framework: Sharing Information Across Boundaries*, April 2006, p. 3, available for download at [www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html](http://www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html) at 13 July 2009.

<sup>4</sup> This aspect of interoperability is also referred to as business or enterprise interoperability.

are used.<sup>5</sup> If government information is published in document formats that impose licensing obligations on users (for example, the payment of royalties to use proprietary software), the information can no longer be regarded as openly available to the public.<sup>6</sup>

The interoperability frameworks developed by many governments in Australia and elsewhere are based on open standards. According to Neelie Kroes, (former) European Commissioner for Competition Policy, the rejection of closed standards by governments is justified as much on democratic considerations as it is by the need for sound economic management:

[T]here is more to this than ensuring our commercial decisions are taken in full knowledge of their long term effects. There is a democratic issue as well. When open alternatives are available, no citizen or company should be forced or encouraged to use a particular company's technology to access government information. No citizen or company should be forced or encouraged to choose a closed technology over an open one, through a government having made that choice first. These democratic principles are important. And an argument is particularly compelling when it is supported both by democratic principles and by sound economics.<sup>7</sup>

## DEVELOPMENT OF STANDARDS

Standards aim to ensure that systems can be harmonised within and among organisations, that different parties can independently develop technologies that work together, that consumers and users can be instantly familiar and comfortable with new systems, products and technologies and that new players can more easily enter the market. An extremely wide range of things is standardised, from the colour of traffic lights and the shape of electrical plugs to digital file formats such as mp3 and document formats such as PDF. The first standard for electronic data communications is International Morse Code which was standardised at the International Telegraphy Conference in Paris in 1865 and later adopted as a standard by the International Telecommunication Union.<sup>8</sup>

Standards Australia<sup>9</sup>- the peak body in the development, approval and management of standards in Australia – defines ‘standard’ as ‘a published document which sets out specifications and procedures designed to ensure that a material, product, method or service is

<sup>5</sup> See generally, Berkman Center for Internet and Society, Harvard Law School, *Roadmap for Open ICT Ecosystems*, undated (circa 2006), available at [cyber.law.harvard.edu/epolicy/roadmap.pdf](http://cyber.law.harvard.edu/epolicy/roadmap.pdf).

<sup>6</sup> See Joshua Tauberer, *Open Data is Civic Capital: Best Practices for ‘Open Government Data’*, version 1.1, 20 July 2009, available at [razor.occams.info/pubdocs/opendataciviccapital.html](http://razor.occams.info/pubdocs/opendataciviccapital.html).

<sup>7</sup> Ibid.

<sup>8</sup> See item on Morse Code in Wikipedia at [en.wikipedia.org/wiki/Morse\\_code](http://en.wikipedia.org/wiki/Morse_code).

<sup>9</sup> Standards Australia Ltd is an independent company limited by guarantee and has no direct association with the federal or State governments, although government bodies are represented among its membership. The organisation is managed by a Chief Executive and governed by a Board of Directors elected by the Standards Australia Council. The Council is comprised of representatives of the members of the company who are nominees of the State and federal governments, industry, professional and community organisations. Under a Memorandum of Understanding entered into with the federal government in 1988, Standards Australia is responsible for providing national leadership in establishing documentary Australian standards. In 2003, Standards Australia sold its commercial operations to its wholly owned subsidiary, SAI Global Ltd, which it licensed to publish, distribute and market its products. Standards Australia’s collection of more than 7,000 Australian Standards and associated publications are available in a variety of formats through SAI Global, see [infostore.saiglobal.com/store](http://infostore.saiglobal.com/store).

fit for its purpose and consistently performs in the way it was intended.<sup>10</sup> There are various kinds of standards, which can be broadly classified as de jure, de facto and proprietary, depending on how they come into existence.

- De jure (or formal) standards are developed by industry or sector participants, through a voluntary, consensus process facilitated by standards bodies operating at the national or international level (these are known as Standards Setting Organisations (SSOs) or Standards Setting Bodies (SSBs)). Examples of such bodies are the International Organization for Standardization (ISO) and the International Electrotechnical Commission (IEC). De jure standards typically include provisions requiring owners of intellectual property covered by the standard to make it available on a non-discriminatory, royalty-free or reasonable royalty basis to all users.
- De facto standards are standards that have acquired recognition as such by the relevant industry or sector through protocols and common practice, even though they have not gone through an accredited standards development process or been officially endorsed by a standards body. They are also known as ‘industry standards’, ‘non-consensus standards’ and ‘company standards’. In essence, de facto standards attain widespread market approval even though they have not been officially defined, researched and prescribed. Industry standards are commonly found in the information technology sector and most industry standard software is proprietary.<sup>11</sup>
- Proprietary standards are distinguished through ownership. As the term suggests, these standards are the property of a party (an individual or an organisation) that can exercise its rights to restrict access to and use of the standard. De facto standards are often proprietary, as exemplified by Microsoft’s FAT (File Allocation Table) format, a file storage system crucial to the operation of Windows. Microsoft has obtained a portfolio of patents around the FAT format, which was promoted and became accepted as a de facto industry standard before Microsoft began demanding royalty payments from users of the standard in 2003.<sup>12</sup>

Governments are very much involved in standardisation, through their roles as both a participant in the development of standards and as an implementer of standards. Some government agencies develop governmental standards for adoption on a whole-of-government or agency-specific basis or mandate standards by means of legislation or regulation. An example of whole-of-government standards is the suite of Information Standards developed by the Queensland Government,<sup>13</sup> while the detailed, mandatory specifications for plans of survey constitute a statutorily-defined standard which must be complied with strictly in order to produce a registrable land title.<sup>14</sup> Governments commonly adopt existing standards developed

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<sup>10</sup> Standards Australia (2008) *Submission to the Review of the National Innovation System*, [www.innovation.gov.au/innovationreview/Documents/427-Standards\\_Australia.pdf](http://www.innovation.gov.au/innovationreview/Documents/427-Standards_Australia.pdf).

<sup>11</sup> Brian Kahin explains: ‘IT standards are so critical, so time sensitive, so market-oriented and strategic that they do not fit well within the traditional institutional model [and] many IT standards are developed outside the formal international standards system...’; see Kahin, B (2007) *Common and Uncommon Knowledge: Reducing Conflict Between Standards and Patents*, Computer and Communications Industry Association, [www.cciainet.org/docs/papers/Kahin%20on%20Standards&Patents.pdf](http://www.cciainet.org/docs/papers/Kahin%20on%20Standards&Patents.pdf).

<sup>12</sup> See further, B Fitzgerald and A Fitzgerald, *Internet and E-Commerce Law: Technology, Law and Policy*, Chapter 5, Patents, at pp 382-283, Thomson, Sydney, 2007.

<sup>13</sup> Queensland Government, Department of Public Works, Chief Information Office, see [www.qgcio.qld.gov.au/qgcio/architectureandstandards/informationstandards/Pages/index.aspx](http://www.qgcio.qld.gov.au/qgcio/architectureandstandards/informationstandards/Pages/index.aspx).

<sup>14</sup> See *Land Act* 1994 (Qld), Chapter 6 – Registration and dealings.

external to government by SSBs, incorporating them by reference into the governments' practices or standards. With a view to encouraging interoperability and the more widespread adoption of internal standards or practices, government agencies actively engage as participants in the development of new, consensus-based standards, contributing knowledge and materials generated in the development of the government-specific standard. When governments adopt, or participate in the development of, an external standard it will typically be a de jure standard developed by a standards body operating at the national or international level, rather than a de facto or proprietary standard.

## STANDARDS AND GOVERNMENT

In carrying out their functions, Governments develop and use standards-based interoperable technologies and systems. Some of the standards adopted by governments are developed internally by government agencies but, more typically, are developed by non-government bodies. Government departments and agencies may develop their own internal standards to facilitate interoperability within or among departments and agencies.<sup>15</sup> There seems to be a widely held view, in Australia and elsewhere, that governments should use existing voluntary, consensus standards (such as those developed by SSOs) to the extent feasible in their procurement and regulatory activities and should only develop government-specific standards in the absence of equivalent voluntary consensus standards or if the use of such standards would be problematic. The *Australian Government Technical Interoperability Framework* requires Australian government agencies to deploy existing Australian and international standards.<sup>16</sup> It states that 'government interoperability draws on established standards' and that 'existing Australian and international standards will be adopted wherever available and appropriate'.<sup>17</sup> The *Australian Government Information Interoperability Framework* advises government agencies to 'identify and adopt appropriate existing standards wherever possible' and, where there is a specific requirement not adequately met by generic standards, proceed to develop specific-purpose standards on a whole-of-government basis.<sup>18</sup> The *National Government Information Sharing Strategy*<sup>19</sup> advises that the use of Australian standards should first be explored and, if none are available, international (ISO) standards should be used; if none of the existing standards apply, new

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<sup>15</sup> For example, the United States Federal Geographic Data Committee (FGDC) states that it develops geospatial data standards for implementing the National Spatial Data Infrastructure (NSDI), in consultation with State, local, and tribal governments, the private sector and academic community and, to the extent feasible, the international community: see [www.fgdc.gov/standards](http://www.fgdc.gov/standards). A list of FGDC-endorsed standards is at [www.fgdc.gov/standards/projects/FGDC-standards-projects/fgdc-endorsed-standards](http://www.fgdc.gov/standards/projects/FGDC-standards-projects/fgdc-endorsed-standards).

<sup>16</sup> Australian Government, *Australian Government Technical Interoperability Framework*, 2005, pp2a and 3c, available at [www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html](http://www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html).

<sup>17</sup> Australian Government, *Australian Government Technical Interoperability Framework*, 2005, p2a, para 2.1, available at [www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html](http://www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html).

<sup>18</sup> Australian Government, *Australian Government Information Interoperability Framework: Sharing Information Across Boundaries*, 2006, pp34 and 40, available for download at [www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html](http://www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html).

<sup>19</sup> Australian Government, Department of Finance and Deregulation, Australian Government Information Management Office (AGIMO), *National Government Information Sharing Strategy: Unlocking Government information assets to benefit the broader community*, (NGISS) August 2009, available at [www.finance.gov.au/publications/national-government-information-sharing-strategy/index.html](http://www.finance.gov.au/publications/national-government-information-sharing-strategy/index.html).

standards may be developed.<sup>20</sup> In the United States, Circular A-119 issued by the Office of Management and Budget<sup>21</sup> requires all federal government agencies to use de jure voluntary consensus standards (both domestic and international) rather than government-unique standards in their procurement and regulatory activities, unless doing so would be inconsistent with the law or otherwise impractical.<sup>22</sup>

It is commonplace for a government standard to incorporate existing standards, wholly or partially, as the basis of their own standards and guidelines. For example, the Canadian Government's Standard on Geospatial Data comprises two ISO standards (ISO 19115<sup>23</sup> and ISO 19128<sup>24</sup>) which had already been endorsed by the national GeoConnections program for use in the Canadian Geospatial Data Infrastructure.<sup>25</sup> Existing international standards have been incorporated into the Information Standards developed by the Queensland Government to 'assist Government agencies by defining and promoting best practice in the acquisition, development, management, support and use of the information systems and technology infrastructure which support Queensland Government business processes and service delivery.'<sup>26</sup> The Queensland Government Information Standards address topics including information security (IS18), intellectual property (IS25), the internet (IS26), the use of metadata (IS34) and recordkeeping (IS40).<sup>27</sup>

The guidelines for the development and management of Queensland Government Information Standards<sup>28</sup> expressly envisage that 'external' standards whether developed at the international,

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<sup>20</sup> *ibid.*, p. 21.

<sup>21</sup> Office of Management and Budget, *Memorandum for Heads of Executive Departments and Agencies: Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities*, Circular No. A-119, revised 10 February 1998, available at [www.whitehouse.gov/omb/circulars\\_a119/#3](http://www.whitehouse.gov/omb/circulars_a119/#3). This requirement is given legislative effect by the *National Technology Transfer and Advancement Act* of 1995.

<sup>22</sup> *ibid.*, para 6. If it is necessary to use a government-unique standard instead of a voluntary consensus standard, the government agency must submit a report describing the reason for doing so to the Office of Management and Budget through the National Institute of Standards and Technology (NIST). 'Impractical' is explained as including 'circumstances in which such use would fail to serve the agency's program needs; would be infeasible; would be inadequate, ineffectual, inefficient, or inconsistent with agency mission; or would impose more burdens, or would be less useful, than the use of another standard'.

<sup>23</sup> ISO 19115 (Geographic information – metadata). For an Australian implementations of ISO19115, see the Metadata Entry and Search Tool (MEST) developed for the Integrated Marine Observing System (IMOS) project at [imosmest.aodn.org.au/geonetwork/srv/en/main.home](http://imosmest.aodn.org.au/geonetwork/srv/en/main.home) and the ANZLIC Metadata Project at [www.anzlic.org.au/metadata/](http://www.anzlic.org.au/metadata/).

<sup>24</sup> ISO 19128 (Geographic information – web map server interface).

<sup>25</sup> Treasury Board of Canada Secretariat, *Standard on Geospatial Data for the Government of Canada*, 3 July 2009, at [www.geoconnections.org/en/newsmedia/whatsnew/getDoc=872](http://www.geoconnections.org/en/newsmedia/whatsnew/getDoc=872). For comment, see the EPSI Platform at [www.epsiplus.net/news/canada\\_adopts\\_geospatial\\_standard](http://www.epsiplus.net/news/canada_adopts_geospatial_standard).

<sup>26</sup> See

[www.qgcio.qld.gov.au/QGCIO/ARCHITECTUREANDSTANDARDS/INFORMATIONSTANDARD S/Pages/index.aspx](http://www.qgcio.qld.gov.au/QGCIO/ARCHITECTUREANDSTANDARDS/INFORMATIONSTANDARD S/Pages/index.aspx) as at 24 July 2009.

<sup>27</sup> For access to all Queensland Government Information Standards, see Queensland Government, Department of Public Works, Chief Information Office at [www.qgcio.qld.gov.au/qgcio/architectureandstandards/informationstandards/Pages/index.aspx](http://www.qgcio.qld.gov.au/qgcio/architectureandstandards/informationstandards/Pages/index.aspx).

<sup>28</sup> The *Queensland Government Enterprise Architecture Framework 2.0* (QGEA Framework 2.0), Queensland Department of Public Works, April 2009, is the collection of ICT policies and associated documents (including Information Standards) that guides government agency ICT initiatives and investment to improve the compatibility and cost-effectiveness of ICT across the government. See [www.qgcio.qld.gov.au/QGCIO/ARCHITECTUREANDSTANDARDS/GEA/Pages/index.aspx](http://www.qgcio.qld.gov.au/QGCIO/ARCHITECTUREANDSTANDARDS/GEA/Pages/index.aspx).

national or local level will be implemented to the fullest extent possible, as appropriately interpreted to suit the requirements of the Queensland Government:<sup>29</sup>

#### 7. Adoption of external Standards

A principle underpinning the development of the [Government Enterprise Architecture] GEA is one of not ‘reinventing the wheel’. International, national or local Standards will be adapted to the maximum extent feasible unless there are good reasons to the contrary. All external Standards must be interpreted within the environment of the Queensland Government and will need to conform to the format and development process of Information Standards.

It is not expected or recommended that an external Standard would simply be reproduced in full and used as a Government Information Standard. Rather, it would be normal practice to re-cast the external Standard, with permission, using the Queensland Government Information Standard format.<sup>30</sup>

To illustrate, Queensland’s Information Standard 34 (metadata) requires Queensland government agencies to facilitate seamless access to and interoperability of government information assets (including datasets, records and web-based information and web services), through the implementation of metadata schemes that are interoperable with Australian Standard 5044 (the Australian Government Locator Service (AGLS) Metadata Element Set, version 1.3).<sup>31</sup> Information Standard 18 (information security) refers agencies to ISO/IEC 17799 (2005)<sup>32</sup> while IS16 (internet) requires websites to be designed for maximum accessibility and usability for all groups in the community, including persons with physical or visual disabilities, in compliance with the W3C Web Content Accessibility Guidelines (v1.0).<sup>33</sup>

<sup>29</sup> The practice of taking a standard that has been developed by an SSO and adapting it for internal or specific use (called ‘profiling’) without prior permission from the SSO may give rise to copyright issues.

<sup>30</sup> See

[www.qgcio.qld.gov.au/qgcio/architectureandstandards/informationstandards/Pages/Development%20and%20management%20of%20standards.aspx](http://www.qgcio.qld.gov.au/qgcio/architectureandstandards/informationstandards/Pages/Development%20and%20management%20of%20standards.aspx) as at 24 July 2009.

<sup>31</sup> Information Standard 34, Metadata, version 2.01, last revised March 2008, Principle 1 – Metadata implementation, available at

[www.qgcio.qld.gov.au/qgcio/architectureandstandards/informationstandards/current/Pages/Metadata.aspx](http://www.qgcio.qld.gov.au/qgcio/architectureandstandards/informationstandards/current/Pages/Metadata.aspx) as at 24 July 2009. ‘AGLS Metadata Element Set’, Australian Standard 5044, based on the Dublin Core metadata element set, is designed to promote visibility and accessibility of information, consisting of 19 descriptive elements which government agencies can use to improve the visibility and accessibility of their services and information over the internet. See [www.naa.gov.au/records-management/publications/agls-element.aspx](http://www.naa.gov.au/records-management/publications/agls-element.aspx). The AGLS Metadata Element Set is the standard set of metadata elements for describing Australian government resources and has also been mandated for use by Australian Government agencies, as detailed in *Better Services, Better Government: The Federal Government’s e-Government Strategy*, 2002, AGIMO, available at [www.agimo.gov.au/publications/2002/11/bsbg/](http://www.agimo.gov.au/publications/2002/11/bsbg/).

<sup>32</sup> Information Standard 18, Information Security, version 3.0, last revised March 2008, Principle 1 – Agency security policy and planning, available at

[www.qgcio.qld.gov.au/qgcio/architectureandstandards/informationstandards/current/Pages/Information%20Security.aspx](http://www.qgcio.qld.gov.au/qgcio/architectureandstandards/informationstandards/current/Pages/Information%20Security.aspx).

<sup>33</sup> Information Standard 26, Internet, version 5.01, last revised April 2007, Principle 3 – Website accessibility, available at

[www.qgcio.qld.gov.au/qgcio/architectureandstandards/informationstandards/current/Pages/Internet.aspx](http://www.qgcio.qld.gov.au/qgcio/architectureandstandards/informationstandards/current/Pages/Internet.aspx). The W3C Web Content Accessibility Guidelines (v1.) are available at [www.w3.org/WAI/Resources/](http://www.w3.org/WAI/Resources/). Note that a new version of the W3C Web Content Accessibility Guidelines (version 2) (WCAG 2.0) was published in December 2008; see [www.w3.org/TR/WCAG20/](http://www.w3.org/TR/WCAG20/).

The *Australian Government Technical Interoperability Framework* contains an extensive catalogue of standards applicable to data management and exchange in use or being considered for use by Australian Government agencies.<sup>34</sup> Geoscience Australia has run an eXploration and Mining Markup Language (XMML) project which involves interoperability at the technical and information levels, using geochemistry databases from Geoscience Australia and the West Australian and South Australia Geological Surveys.<sup>35</sup> The technical implementation uses the Geographic Information System Web Map Service (GIS-WMS), a standard developed by the Open Geospatial Consortium (OGC) for serving geo-referenced map images over the internet.<sup>36</sup> In 2009 the European Space Agency (ESA) announced that it would use the OGC's geospatial standards in its interoperability framework for coordinated data discovery and access, to ensure interoperability between 40 different Earth Observation satellite missions.<sup>37</sup> Metadata registry aspects of METeOR, an online system developed by the Australian Institute of Health and Welfare, are based on the international standard for metadata registries (ISO/IEC 11179 (2003)).<sup>38</sup>

## INTELLECTUAL PROPERTY RIGHTS AND STANDARDS

There is a complex relationship between standards and intellectual property rights – particularly copyright and patents – which must be understood and managed by those involved in the development or implementation of standards, whether in the public or private sector. Standards (and directions as to how they should be implemented) are described in specification documents which will usually be protected by copyright, while the technologies embodied in a technical standard may be subject to patent rights. There is an inherent potential for conflict as implementation of the standard necessarily requires the exercise of intellectual property rights in the form of the copyright specifications and patented technologies embodied in the standard.

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<sup>34</sup> See *Australian Government Technical Interoperability Framework*, 2005 at pp 3e to 3o, available at [www.finance.gov.au/publications/australian-government-technical-interoperability-framework/docs/AGTIF\\_V2\\_-\\_FINAL.pdf](http://www.finance.gov.au/publications/australian-government-technical-interoperability-framework/docs/AGTIF_V2_-_FINAL.pdf).

<sup>35</sup> AGIMO, *Australian Government Information Interoperability Framework: Sharing Information Across Boundaries*, p.26, available at [www.finance.gov.au/publications/australian-government-information-interoperability-framework/docs/Information\\_Interoperability\\_Framework.pdf](http://www.finance.gov.au/publications/australian-government-information-interoperability-framework/docs/Information_Interoperability_Framework.pdf).

<sup>36</sup> For more information on the GIS-WMS standard, see [en.wikipedia.org/wiki/Web\\_Map\\_Service](http://en.wikipedia.org/wiki/Web_Map_Service). The main OGC standards used for web services are Web Map Service (WMS), Web Feature Service (WFS), Web Coverage Service (WCS) and Web Integrator Service (WIS). See the OGC website at [www.opengeospatial.org](http://www.opengeospatial.org) For an explanation of the use of OGC standards for geographic information see F Welle Donker, *Public Sector Geo Web Services: Which Business Model Will Pay for a Free Lunch?* in B. van Loenen, J.W.J. Besemer, J.A. Zevenbergen (eds), *SDI Convergence. Research, Emerging Trends, and Critical Assessment*, Delft, The Netherlands, June 2009, at p36, available at [www.gsdi.org/gsdi11/papers/pdf/143.pdf](http://www.gsdi.org/gsdi11/papers/pdf/143.pdf). For Geoscience Australia's use of the standard, see [www.ga.gov.au/map/broker/](http://www.ga.gov.au/map/broker/) at 27 July 2009.

<sup>37</sup> European Space Agency Implements OGC Standards in Major Program (23-07-2009) [www.opengeospatial.org/pressroom/pressreleases](http://www.opengeospatial.org/pressroom/pressreleases) at 27 July 2009.

<sup>38</sup> 'Information Technology – Metadata Registries', ISO/IEC Standard 11179, specifies the kind and quality of metadata necessary to describe data and the management of that metadata in a metadata registry (MDR). METeOR is a repository for national data standards for the health, community services and housing assistance sectors. As these national data standards are a form of metadata, METeOR operates as a metadata registry, which stores, manages and disseminates metadata. See [www.iso.org](http://www.iso.org).



## COPYRIGHT

Copyright has assumed importance in relation to standards because, as Professor Pam Samuelson observes, Standard Setting Organisations (SSOs) ‘increasingly claim copyright in standards and charge substantial fees for access to and rights to use standards such as International Organisation for Standardisation (ISO) country, currency and language codes’.<sup>39</sup>

When a standard is developed through an open and collaborative process, participants may contribute their time and materials - often in the form of textual or diagrammatic materials – to the process. Many SSOs require participants to assign to the SSO their copyright in materials contributed to the standard, while the SSO asserts ownership of copyright in the resulting standard specification documents. As owner of copyright in the documented standard, the SSO can exercise the full extent of the exclusive rights enjoyed by copyright owners, including the right to reproduce, adapt, publish and digitally communicate the document. Many SSOs charge fees to users for the right to use the specification documents. There are practical reasons for dealing with copyright in standards this way. It ensures that copyright ownership is vested in just one party, rather than being split among the multiple parties who have contributed to the development of the standard, enabling the SSO to control the licensing of the standard to the broader community.

A particular concern for governments participating in the development of standards by non-government bodies is that government-owned materials contributed to a standard may inadvertently be ‘locked up’ as a result of the standards body’s copyright policy and business model. SSOs’ copyright policies often seek to affect a full transfer of copyright in the contributed materials to the standards body, to remove any ambiguities about the SSO’s rights in the finalised standard. Further, SSOs may charge substantial fees for use of the standard documents. Users may be required to pay to access a standard specification, if only to read it and ascertain whether it is in fact appropriate for use in a particular situation. If the standard is not relevant, then the specification may never be used by that person again. A user may have to pay multiple times to access several different specifications before they find the one that suits their needs.

Concerns arise about the treatment of publicly-funded materials contributed to standards, which both the government and the general public could legitimately expect to be able to access and use without paying any fee. Objections may be raised to having to pay licence fees to access and use material for which the public has already paid through their taxes. Similar considerations arise as those that have been extensively discussed in the context of facilitating open access to publicly funded research outputs, whether in the form of academic publications or data.<sup>40</sup> Where SSOs charge licensing fees for the right to reproduce or communicate the standard specification, the exercise of copyright interests may conflict with the fundamental

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<sup>39</sup> Pamela Samuelson, ‘Questioning Copyright in Standards’, *Law and Technology Scholarship* (Selected by the Berkley Center for Law & Technology) University of California, Berkeley, Paper 22, 2006, p. 1, [repositories.cdlib.org/bclt/lts/22](http://repositories.cdlib.org/bclt/lts/22) at 9 March 2009. Professor Samuelson questions (at p 19) whether standards such as ISO country, currency and language codes and medical and dental procedure codes promulgated by the American Medical Association and the American Dental Association should be eligible for copyright protection at all, particularly where their use is mandated by government rules. She observes that public policy concerns are raised by private ownership of standards, particularly where the use of those standards is mandated by law.

<sup>40</sup> See work done by the Open Access to Knowledge (OAK) Law Project, including *OAK Law Project Report No. 1: Creating a legal framework for copyright management of open access within the Australian research and academic sectors* (2006) and *Building the Infrastructure for Data Access and Reuse in Collaborative Research: An Analysis of the Legal Context* (2007). These and other publications are available at [www.oaklaw.qut.edu.au/reports](http://www.oaklaw.qut.edu.au/reports).

objective of ensuring that standards are readily adopted and implemented by the wider community, particularly where the standard is one adopted or mandated by government to promote interoperability.

#### PATENTS<sup>41</sup>

Patented technologies may be incorporated into a standard as it is being developed, whether inadvertently (that is, without knowledge that technologies included in the standard are subject to patents) or intentionally (where the owners of patented technologies knowingly participate in the development process). The owners of patented technologies embodied in standards may exercise their exclusive right to exploit the patent by charging licence fees (or royalties) to those who implement the standard. However, since a refusal to license the technology, unduly high licensing fees or the need to negotiate licence fees with numerous patent owners would act as a barrier to the adoption of standards, many SSOs have patent policies which require the owners of patents in the standard to license their patents on a royalty-free basis or ‘reasonable and non-discriminatory’ (RAND) terms. Where several patents owned by different parties are relevant to a standard, a patent pool may be set up so that pooled patents can be used by participating patent owners and licensed to other parties under a standard licence.

For governments adopting or mandating the implementation of standards that include patented technologies, a clear understanding of the basis on which the patents will be licensed is essential. Where a standard is governed by the terms of a standards body’s intellectual property policy, the provisions of the policy relating to the exercise of patent rights need to be closely examined to ensure that they are appropriate for use of the standard in this context. Any requirement to pay a licensing fee – even on RAND terms – is likely to serve as a disincentive to the adoption of a standard and may directly counteract efforts to promote interoperability.<sup>42</sup>

#### INTEROPERABILITY

Interoperability refers to the ability of diverse systems and organizations to work together efficiently towards mutually beneficial common goals.<sup>43</sup> It assumes a heightened significance in democratic societies because of its role in facilitating communication.<sup>44</sup> The *Australian Government Interoperability Framework* defines ‘interoperability’ as:

[t]he ability to work together to deliver services in a seamless, uniform and efficient manner across multiple organisations and information technology systems.<sup>45</sup>

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<sup>41</sup> See generally, B Fitzgerald and A Fitzgerald, *Internet and E-Commerce Law: Technology, Law and Policy*, Chapter 5, *Patents*, at pp 374–376, Thomson, Sydney, 2007.

<sup>42</sup> See, for example, Kahin, B (2007) *Common and Uncommon Knowledge: Reducing Conflict Between Standards and Patents*, Computer and Communications Industry Association, [www.ccianet.org/docs/papers/Kahin%20on%20Standards&Patents.pdf](http://www.ccianet.org/docs/papers/Kahin%20on%20Standards&Patents.pdf); and Samuelson, P (2009) ‘Are Patents on Interfaces Impeding Interoperability?’ *Minnesota Law Review*, forthcoming, [ssrn.com/abstract=1323838](http://ssrn.com/abstract=1323838).

<sup>43</sup> [en.wikipedia.org/wiki/Interoperability](http://en.wikipedia.org/wiki/Interoperability).

<sup>44</sup> Perens, B (2007) *The Confusion of Tongues: EIF 2.0, Standards and Interoperability*, September 2007, [www.perens.com/works/articles/EIF2/](http://www.perens.com/works/articles/EIF2/).

<sup>45</sup> [www.finance.gov.au/e-government/service-improvement-and-delivery/interoperability-frameworks.html](http://www.finance.gov.au/e-government/service-improvement-and-delivery/interoperability-frameworks.html) at 13 July 2009.

The 2008 revision of the European Commission's *European Interoperability Framework for Pan-European eGovernment Services* defines 'interoperability' as:

[t]he ability of disparate and diverse organisations to interact towards mutually beneficial and agreed common goals, involving the sharing of information and knowledge between the organisations via the business processes they support, by means of the exchange of data between their respective information and communication technology systems.<sup>46</sup>

Many governments have developed interoperability frameworks, consisting of standards and guidelines that describe the way in which government agencies will interact with each other, business and citizens. These frameworks evolve as technologies, standards and administrative requirements change.<sup>47</sup> One of the earliest interoperability frameworks was the European Commission's *European Interoperability Framework for Pan-European eGovernment Services* (EIF), the first version of which was published in 2004.<sup>48</sup> The EIF addresses organisational, semantic and technical aspects of interoperability.<sup>49</sup> Many European Union member states have developed their own national interoperability frameworks to address interoperability issues arising within their own country, across internal borders between national agencies, departments and government bodies.<sup>50</sup> New Zealand has adopted an interoperability framework based on the United Kingdom's eGIF.<sup>51</sup>

The component documents of the *Australian Government Interoperability Framework* make it clear that interoperability is more than merely a technical matter of connecting computer networks, but also involves the sharing of information between networks and the re-design of business processes to deliver improved outcomes and support seamless service delivery.<sup>52</sup> It recognises that interoperability involves the flow of information between agencies, the connection of information technology systems and the development of arrangements that manage business processes across organisational boundaries.<sup>53</sup> The three components of the AGIF support each

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<sup>46</sup> European Commission, IDABC Program, *European Interoperability Framework for Pan-European eGovernment Services – draft document as basis for version 2.0*, 2008, at p 5. The definition of 'interoperability' in version 1.0 of the EIF in 2004 focused more strongly on the ability of ICT systems to exchange data, defining it as '[t]he ability of information and communication technology (ICT) systems and of the business processes they support to exchange of data and to enable the sharing of information and knowledge': European Commission, IDABC Program, *European Interoperability Framework for Pan-European eGovernment Services*, version 1.0, p5, 2004, available at [ec.europa.eu/idabc/en/document/7728](http://ec.europa.eu/idabc/en/document/7728).

<sup>47</sup> European Commission, IDABC Program, *European Interoperability Framework for Pan-European eGovernment Services*, version 1.0, 2004, available at [europa.eu.int/idabc](http://europa.eu.int/idabc). A draft EIF version 2.0 was circulated for comment in 2008; see European Commission, IDABC website at [ec.europa.eu/idabc/en/document/7728](http://ec.europa.eu/idabc/en/document/7728).

<sup>48</sup> European Commission, IDABC Program, *European Interoperability Framework for Pan-European eGovernment Services*, version 1.0, 2004, available at [europa.eu.int/idabc](http://europa.eu.int/idabc).

<sup>49</sup> *ibid.*, p. 16.

<sup>50</sup> A list of European Union countries with national interoperability frameworks can be found on the IDABC website at [ec.europa.eu/idabc/en/document/6227](http://ec.europa.eu/idabc/en/document/6227).

<sup>51</sup> See [www.e.govt.nz/standards/e-gif](http://www.e.govt.nz/standards/e-gif).

<sup>52</sup> Australian Government, Department of Finance and Administration, AGIMO, *The Australian Government Business Process Interoperability Framework*, July 2007, p7, available at [www.finance.gov.au/publications/agimo/docs/Business\\_Process\\_Interoperability\\_Framework.pdf](http://www.finance.gov.au/publications/agimo/docs/Business_Process_Interoperability_Framework.pdf).

<sup>53</sup> Australian Government, Department of Finance and Administration, AGIMO, *The Australian Government Business Process Interoperability Framework*, July 2007, at p2, available at [www.finance.gov.au/publications/agimo/docs/Business\\_Process\\_Interoperability\\_Framework.pdf](http://www.finance.gov.au/publications/agimo/docs/Business_Process_Interoperability_Framework.pdf).

other to facilitate delivery of government objectives, addressing the technical, information and business process aspects of interoperability. The *Australian Government Technical Interoperability Framework* sets out a common language, conceptual model and technical standards to be used by Australian government agencies in interoperating to deliver the government's policies and programs.<sup>54</sup> The *Australian Government Business Process Interoperability Framework* provides guidance to agencies on common methods, processes and shared services.<sup>55</sup> The *Australian Government Information Interoperability Framework* sets out information management standards and information lifecycle management protocols, to facilitate the sharing of information across government agencies, enabling the reuse of information, sharing of infrastructure and integration of service delivery.<sup>56</sup>

The benefits of interoperability in the context of information and communications technology (ICT) were considered in a 2007 study by Urs Gasser and John Palfrey of Harvard University's Berkman Center for Internet and Society. Their report, *Breaking Down Digital Barriers: When and How ICT Interoperability Drives Innovation* ('the Berkman Study')<sup>57</sup>, concluded that increased levels of ICT interoperability generally enhance innovation and result in other socially desirable outcomes such as providing consumers with greater choice and ease of use, and spurring competition in the field.<sup>58</sup>

## THE ROLE OF STANDARDS IN INTEROPERABILITY

Standardisation is essential for interoperability. One of the best examples of standards-based interoperability is the internet - described as 'the ultimate interoperable design'<sup>59</sup> - which is underpinned by open, royalty-free standards developed by the World Wide Web consortium (W3C). The role of standards in achieving interoperability is increasingly recognised by governments and international organisations. A 2005 report by Booz Allen Hamilton for NASA's Geospatial Interoperability Office explained the relationship between standards and interoperability in the context of geospatial information:

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<sup>54</sup> Australian Government, Department of Finance and Administration, AGIMO, *Australian Government Technical Interoperability Framework*, 2005, available at [www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html](http://www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html) and Australian Government, Department of Finance and Administration, AGIMO, *The Australian Government Business Process Interoperability Framework*, July 2007, at p8, available at [www.finance.gov.au/publications/agimo/docs/Business\\_Process\\_Interoperability\\_Framework.pdf](http://www.finance.gov.au/publications/agimo/docs/Business_Process_Interoperability_Framework.pdf).

<sup>55</sup> Australian Government, Department of Finance and Administration, AGIMO, *The Australian Government Business Process Interoperability Framework*, July 2007, available at [www.finance.gov.au/publications/agimo/docs/Business\\_Process\\_Interoperability\\_Framework.pdf](http://www.finance.gov.au/publications/agimo/docs/Business_Process_Interoperability_Framework.pdf).

<sup>56</sup> Australian Government, Department of Finance and Administration, AGIMO, *Australian Government Information Interoperability Framework: Sharing Information Across Boundaries*, April 2006, available at [www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html](http://www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html)

<sup>57</sup> Urs Gasser and John Palfrey, *Breaking Down Digital Barriers: When and How ICT Interoperability Drives Innovation*, October 2007, Berkman Research Center Publication 2007-8, Berkman Center for Internet and Society at Harvard University, available at [cyber.law.harvard.edu/publications/2007/Breaking\\_Down\\_Digital\\_Barriers](http://cyber.law.harvard.edu/publications/2007/Breaking_Down_Digital_Barriers) as at 4 September 2009.

<sup>58</sup> *ibid.*, p. 12.

<sup>59</sup> *ibid.*

*Geospatial Interoperability* is the ability for two different software systems to interact with geospatial information. Interoperability between heterogeneous computer systems is essential to providing geospatial data, maps, cartographic and decision support services, and analytical functions. Geospatial interoperability is dependent on voluntary, consensus-based standards, as set forth in OMB Circular A-119.<sup>60</sup> These *geospatial standards* are essential to advancing data access and collaborations in e-Government, natural hazards, weather and climate, exploration, and global earth observation.<sup>61</sup>

The recently established Global Earth Observation System of Systems (GEOSS)<sup>62</sup> is an international scientific collaboration which aims to build upon and add value to Earth observation systems by connecting them to each other is founded on a set of interoperability arrangements to enable the data and information produced by the disparate systems to be pooled and combined.<sup>63</sup> Interoperability of the systems and components is to be achieved by adopting appropriate standards for the interfaces through which the various GEOSS components exchange data and information.<sup>64</sup> The GEOSS system is to be based on non-proprietary standards and, where possible, formal international standards.

The interrelatedness of standards and interoperability is a recurring theme throughout the components of the *Australian Government Interoperability Framework*. The *Australian Government Business Process Interoperability Framework* (AGBPIF) is explicitly standards-based, with commitment to a standardised approach to the documentation of business processes as one of the nine foundation principles guiding collaboration on business processes across structural and agency boundaries.<sup>65</sup> Standards are expressly acknowledged as critical to interoperability at all levels, information, technical and business process modelling.<sup>66</sup> The AGBPIF explains that business process interoperability depends on a commitment to agreed standards:

Standards underpin the use of a common language, a common methodology and a common approach to improving business process management, all of which are critical to improving the ability of agencies to collaborate, develop and sustain interoperable processes and services. Standards also facilitate communication between agencies, and between agencies and users. An essential early step in

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<sup>60</sup> United States Office of Management and Budget (OMB), Circular No. A-119 Revised, Federal Participation in the Development and Use of Voluntary Consensus Standards and in Conformity Assessment Activities, 10 February 1998, available at [www.whitehouse.gov/omb/circulars/a119/a119.html](http://www.whitehouse.gov/omb/circulars/a119/a119.html) as at 8 May 2009.

<sup>61</sup> Booz Allen Hamilton, *Geospatial Interoperability Return on Investment Study*, Report for the National Aeronautics and Space Administration Geospatial Interoperability Office, April 2005, p.iii, [www.egy.org/files/ROI\\_Study.pdf](http://www.egy.org/files/ROI_Study.pdf) as at 8 May 2009.

<sup>62</sup> See generally [www.earthobservations.org/](http://www.earthobservations.org/).

<sup>63</sup> The GEOSS interoperability arrangements, which will focus on interfaces, defining how system components interface with each other, including technical specifications for collecting, processing, storing and disseminating shared data, metadata and products. See the GEOSS website at [wiki.ieee-earth.org/Societal\\_Benefit\\_Areas](http://wiki.ieee-earth.org/Societal_Benefit_Areas).

<sup>64</sup> See GEOSS Standards and Interoperability Registry at [www.earthobservations.org/gci\\_sr.shtml](http://www.earthobservations.org/gci_sr.shtml).

<sup>65</sup> Australian Government, Department of Finance and Administration, AGIMO, *The Australian Government Business Process Interoperability Framework*, July 2007, at p20, available at [www.finance.gov.au/publications/agimo/docs/Business\\_Process\\_Interoperability\\_Framework.pdf](http://www.finance.gov.au/publications/agimo/docs/Business_Process_Interoperability_Framework.pdf).

<sup>66</sup> *ibid.*, pp. 36, 37.

implementing business process interoperability in association with other agencies is to agree standards and identify relevant better practice guidelines.<sup>67</sup>

The *Australian Government Technical Interoperability Framework* acknowledges that ‘government interoperability draws on established standards’<sup>68</sup> The *Australian Government Information Interoperability Framework* (AGIIF) states that to achieve information interoperability across government, agencies need to adopt relevant standards and protocols for managing and sharing information.<sup>69</sup> Standardisation of information management practices across government is seen as an essential foundation for information interoperability and fostering a culture of reuse of information within government.<sup>70</sup> The adoption of ‘a common business language and standards’ and ‘understanding the policy and legal framework governing the exchange of information’ are among the six critical enablers identified in the AGIIF as underpinning the successful achievement of information interoperability.<sup>71</sup>

## INFORMATION INTEROPERABILITY

‘Information interoperability’ is defined in the *Australian Government Information Interoperability Framework*, a highly developed framework for semantic interoperability, as ‘the ability to transfer and use information in a uniform and efficient manner across multiple organisations and information technology systems’.<sup>72</sup> In the government context, information interoperability involves greater sharing and reuse of information between and within agencies to achieve whole-of-government or inter-agency business objectives.<sup>73</sup> Enabling government agencies to confidently manage, transfer and exchange information is seen as essential for a ‘connected’ government, in which agencies are able to reach across traditional portfolio boundaries to

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<sup>67</sup> *ibid.*, p. 22.

<sup>68</sup> Australian Government, Department of Finance and Administration, AGIMO, *Australian Government Technical Interoperability Framework*, 2005, p2a, available at [www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html](http://www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html).

<sup>69</sup> Australian Government, Department of Finance and Administration, AGIMO, *Australian Government Information Interoperability Framework: Sharing Information Across Boundaries*, April 2006, pp. 10 and 34, available at [www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html](http://www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html).

<sup>70</sup> *ibid.*, p. 17.

<sup>71</sup> *ibid.*, p. 25. The other critical enablers for information interoperability are: forming partnerships that work in a spirit of collaboration; using a ‘create once, use many’ approach, with authoritative sources of information; establishing appropriate governance arrangements; and developing and using tools that facilitate the transfer of reliable information across agency boundaries.

<sup>72</sup> Australian Government Department of Finance and Administration, AGIMO, *Australian Government Information Interoperability Framework: Sharing Information Across Boundaries*, April 2006, pp. 1 and 5 available at [www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html](http://www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html). Note that the *Australian Government Technical Interoperability Framework* also defines ‘interoperability’ in the same terms: ‘[Interoperability is] the ability to transfer and use information in a uniform and efficient manner across multiple organisations and information technology systems’: Australian Government, Department of Finance and Administration, AGIMO, *Australian Government Technical Interoperability Framework*, 2005, p1a, available at [www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html](http://www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html).

<sup>73</sup> *ibid.*, p. 18.

develop collaborative, networked approaches to delivering information and services.<sup>74</sup> The Australian Government Information Management Office (AGIMO)<sup>75</sup> has developed various strategies and frameworks for the collection, storage and exchange of information across government agencies and between jurisdictions.<sup>76</sup> Guidance on the technical and business requirements of information interoperability is contained in several documents, including the components of the *Australian Government Interoperability Framework*<sup>77</sup>, the *National Standards Governance Framework*<sup>78</sup>, the *National Collaboration Framework*<sup>79</sup> and the *Australian Government Architecture*.<sup>80</sup> In 2009, AGIMO published the *National Government Information Sharing Strategy* (NGISS)<sup>81</sup> which was commissioned by the Online and Communications Council (OCC) of the Council of Australian Governments (COAG) in 2007. The NGISS sets out a principles-based standardised approach to information sharing, to be used by ‘all portfolio areas at all levels of government’.<sup>82</sup>

The *Australian Government Information Interoperability Framework* strongly endorses information interoperability and identifies its benefits as including:

- reduced costs of information collection and management through streamlined collection, processing and storage;
- improved decision making for policy and business processes, resulting in more integrated planning and enhanced government service delivery;

<sup>74</sup> See Australian Government, Management Advisory Committee, *Connecting government: whole of government responses to Australia's priority challenges*, Fourth Management Advisory Committee Report (MAC4), 2004, available at [www.apsc.gov.au/mac/connectinggovernment.htm](http://www.apsc.gov.au/mac/connectinggovernment.htm).

<sup>75</sup> See Australian Government, Department of Finance and Deregulation, Australian Government Information Management Office at [www.finance.gov.au/agimo/index.html](http://www.finance.gov.au/agimo/index.html).

<sup>76</sup> For a summary of these AGIMO documents, see I Reinecke, *Information Policy and E-governance in the Australian Government: A report for the Department of the Prime Minister and Cabinet*, July 2009, p. 14, available at [www.dpmc.gov.au/publications/information\\_policy/docs/information\\_policy\\_e-governance.pdf](http://www.dpmc.gov.au/publications/information_policy/docs/information_policy_e-governance.pdf).

<sup>77</sup> See in particular *The Australian Government Business Process Interoperability Framework*, July 2007, available at [www.finance.gov.au/publications/agimo/docs/Business\\_Process\\_Interoperability\\_Framework.pdf](http://www.finance.gov.au/publications/agimo/docs/Business_Process_Interoperability_Framework.pdf), and the *Australian Government Information Interoperability Framework: Sharing Information Across Boundaries*, April 2006, available at [www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html](http://www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html).

<sup>78</sup> The *National Standards Governance Framework* is directed at developing standards that enable agencies to collaborate by exchanging information across portfolios and jurisdictions.

<sup>79</sup> The *National Collaboration Framework* seeks to develop greater standardisation of processes and promote higher levels of interoperability within and across jurisdictions. See AGIMO's website at [www.finance.gov.au/e-government/service-improvement-and-delivery/national-collaboration-framework/index.html](http://www.finance.gov.au/e-government/service-improvement-and-delivery/national-collaboration-framework/index.html).

<sup>80</sup> The *Australian Government Architecture* (AGA) is a repository of standards, principles and templates for use in the design and delivery of ICT capability by government agencies. See AGIMO's website at [www.finance.gov.au/e-government/strategy-and-governance/australian-government-architecture.html](http://www.finance.gov.au/e-government/strategy-and-governance/australian-government-architecture.html).

<sup>81</sup> Australian Government Information Management Office (AGIMO), *National Government Information Sharing Strategy: Unlocking Government information assets to benefit the broader community*, (NGISS) August 2009, available at [www.finance.gov.au/publications/national-government-information-sharing-strategy/index.html](http://www.finance.gov.au/publications/national-government-information-sharing-strategy/index.html). NGISS was developed by the Cross Jurisdictional Chief Information Office Committee (CJCIOC) through AGIMO.

<sup>82</sup> *ibid.*, pp. 5 and 14.

- improved timeliness, consistency and quality of government responses –information will be easily accessible, relevant, accurate, and complete;
- improved accountability and transparency for citizens;
- reduced costs and added value for government through reusing existing information, sharing infrastructure and designing integrated, collaborative methods of delivering services;
- improved national competitiveness; and
- improved national security.<sup>83</sup>

The potential impact of developing truly national arrangements for information sharing among Australian governments is now being recognised, with the NGISS observing that:

[t]imely, reliable and appropriate information sharing is the foundation for good government and has the capacity to deliver a better way of life for all Australians.<sup>84</sup>

The benefits of improved accessibility to and sharing of government data and information have also been a focus of attention in the Public Sphere consultations led by Senator Kate Lundy on government 2.0 policy and practice in Australia. The *Public Sphere 2: Government 2.0 Briefing Paper*, setting out the findings and recommendations of the Public Sphere consultations, highlights the important service and productivity benefits that may result from data sharing among government agencies and across jurisdictions.<sup>85</sup> Acknowledged benefits include providing a greatly enhanced evidence base to inform decision-making and policy development and evaluation, and improving delivery of government services. However, it was also recognised that sharing of government data requires standards and standards-based frameworks ‘to ensure that we are linking ‘apples with apples’ and that data is adequately described to enable it to be correctly used.<sup>86</sup> The *Public Sphere 2: Government 2.0 Briefing Paper* recommended that government agencies should adopt standards for informing and engaging with the community in an integrated and consistent manner.<sup>87</sup>

The adoption of relevant standards in the creation, storage and maintenance of information is seen as essential if information is to be shared efficiently and cost effectively.<sup>88</sup> The NGISS

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<sup>83</sup> Australian Government Information Management Office (AGIMO), *Australian Government Information Interoperability Framework: Sharing Information Across Boundaries*, April 2006, p. 9, available at [www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html](http://www.finance.gov.au/e-government/service-improvement-and-delivery/australian-government-information-interoperability-framework.html) at 13 July 2009.

<sup>84</sup> Australian Government Information Management Office (AGIMO), *National Government Information Sharing Strategy: Unlocking Government information assets to benefit the broader community*, (NGISS) August 2009, p.5, available at [www.finance.gov.au/publications/national-government-information-sharing-strategy/index.html](http://www.finance.gov.au/publications/national-government-information-sharing-strategy/index.html).

<sup>85</sup> Senator Kate Lundy, *Public Sphere 2: Government 2.0 Briefing Paper*, 28 July 2009, [www.katelundy.com.au/2009/07/29/briefing-paper-and-recommendation-endorsements-from-public-sphere-2-government-2-0/](http://www.katelundy.com.au/2009/07/29/briefing-paper-and-recommendation-endorsements-from-public-sphere-2-government-2-0/).

<sup>86</sup> *ibid.*, p. 20.

<sup>87</sup> *ibid.*, recommendation 3(e), p. 30.

<sup>88</sup> Australian Government, Department of Finance and Deregulation, Australian Government Information Management Office (AGIMO), *National Government Information Sharing Strategy: Unlocking Government information assets to benefit the broader community*, (NGISS) August 2009, at p21, available at [www.finance.gov.au/publications/national-government-information-sharing-strategy/index.html](http://www.finance.gov.au/publications/national-government-information-sharing-strategy/index.html).



includes the use of standards-based information among its key information sharing principles, explaining:

The consistent application of relevant standards gives assurance to users and providers that the information is 'fit for purpose' and implies a certain level of quality. The application of standards fosters an environment of trust and dependability across government, providing a reduction in duplication of effort and re-work.<sup>89</sup>

In any information sharing initiatives, the relevant standards should be investigated during the planning stages of the project and applied throughout the information lifecycle.<sup>90</sup> There are many different kinds of interoperability standards, with the consequence that different standards will be relevant to achieving information interoperability in particular areas of government activity, eg education or health.<sup>91</sup>

An area in which the role of standards for effective information sharing is increasingly appreciated e-health.<sup>92</sup> Standards, rules and protocols for information exchange and protection form part of the 'basic infrastructural building blocks' required to develop an effective system for delivering e-health services, along with the implementation of the underlying physical computing and networking infrastructure. The centrality of standards to data and information interoperability were considered in *The National E-Health Strategy*, prepared by Deloitte for the Australian government in 2008.<sup>93</sup> The report observed that the future health system will be 'powered by the smart use of data and enabled by the electronic flow of essential information between individuals and health professionals' and that central to this will be 'a structured, robust communication matrix that connects all participants with relevant, accurate and secure information, in real time'.<sup>94</sup> To develop such a communication matrix, national consistency of standards is required, to ensure that information can be effectively shared electronically across Australia.<sup>95</sup> The report stated:

Appropriate E-Health foundations, in the form of computing infrastructure and consistent information standards, rules and protocols, are crucial to effectively sharing information across geographic and health sector boundaries. In this regard E-Health foundations can be viewed as analogous to an 'information highway' – unless

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<sup>89</sup> *ibid.*

<sup>90</sup> *ibid.*

<sup>91</sup> *ibid.*, p. 22.

<sup>92</sup> Deloitte, National E-Health Strategy Summary, 2008, p10, available at [www.ahmac.gov.au/cms\\_documents/National%20E-Health%20Strategy.pdf](http://www.ahmac.gov.au/cms_documents/National%20E-Health%20Strategy.pdf).

<sup>93</sup> See [www.health.gov.au/internet/main/publishing.nsf/Content/National+Ehealth+Strategy](http://www.health.gov.au/internet/main/publishing.nsf/Content/National+Ehealth+Strategy) at 3 August 2009.

<sup>94</sup> The National E-Health Strategy, prepared by Deloitte in 2008 for the Australian Government was adopted at the Australian Health Ministers at the Council of Australian Governments (COAG) meeting in December 2008 but has not yet been released, although a summary is available at [www.ahmac.gov.au/cms\\_documents/National%20E-Health%20Strategy.pdf](http://www.ahmac.gov.au/cms_documents/National%20E-Health%20Strategy.pdf). Key findings in the National E-Health Strategy were accepted by the National Health and Hospitals Reform Commission in its final report, *A Healthier Future for All Australians – Final Report*, June 2009, available at [www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/nhhrc-report](http://www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/nhhrc-report).

<sup>95</sup> Deloitte, National E-Health Strategy Summary, 2008, p10, available at [www.ahmac.gov.au/cms\\_documents/National%20E-Health%20Strategy.pdf](http://www.ahmac.gov.au/cms_documents/National%20E-Health%20Strategy.pdf).

the system is connected up in some uniform and rules based way, then information cannot move across the network.<sup>96</sup>

The lack of interoperability standards was identified as presenting a risk to the seamless and secure exchange of health information which needs to be addressed as a matter of urgency.<sup>97</sup> The development of e-health information standards, by a proposed new national E-Health Entity, was seen as one of five key areas in which focused activity is required to establish the national foundations for e-health.<sup>98</sup> It emphasised the importance of developing an integrated but evolving national health system by ensuring that 'the national policy framework incorporates open technical standards which provide for interoperability, compliance, confidentiality and security ... developed with the participation and commitment of state governments, the ICT vendor industry, health professionals and consumers.'<sup>99</sup>

While many governments have developed interoperability frameworks, it is important to understand that the adoption of interoperability standards is not, in itself, any guarantee that the information and materials held in systems based on those standards will in fact be available for sharing and reuse. This observation is borne out by Australian experience. Notwithstanding the considerable attention given by governments to the implementation of interoperability frameworks (particularly the technical aspects), significant impediments to the flow of information continue to exist.<sup>100</sup> If information interoperability frameworks are to be effective in facilitating information access and reuse, it is also necessary to formulate an information policy and to develop practices to implement the policy. Lack of an appropriate information policy and failure to implement good information management practices – including

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<sup>96</sup> Deloittes, National E-Health Strategy Summary, 2008, p9, available at [www.ahmac.gov.au/cms\\_documents/National%20E-Health%20Strategy.pdf](http://www.ahmac.gov.au/cms_documents/National%20E-Health%20Strategy.pdf).

<sup>97</sup> National Health and Hospitals Reform Commission, *A Healthier Future for All Australians – Final Report*, June 2009, Chapter 5, 'Creating an Agile and Self-Improving Health System', at p129, available at [www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/1AFDEAF1FB76A1D8CA257600000B5BE2/\\$File/CHAPTER%205.pdf](http://www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/1AFDEAF1FB76A1D8CA257600000B5BE2/$File/CHAPTER%205.pdf).

<sup>98</sup> Deloittes, National E-Health Strategy Summary, 2008, pp10 and 20, available at [www.ahmac.gov.au/cms\\_documents/National%20E-Health%20Strategy.pdf](http://www.ahmac.gov.au/cms_documents/National%20E-Health%20Strategy.pdf). The *National E-Health Strategy* recommended that the E-Health Entity should be responsible for 'the definition, maintenance and enhancement of national E-Health standards and the implementation of a consistent process for undertaking this work'.

<sup>99</sup> National Health and Hospitals Reform Commission, *A Healthier Future for All Australians – Final Report*, June 2009, Chapter 5, 'Creating an Agile and Self-Improving Health System', p. 131, available at [www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/1AFDEAF1FB76A1D8CA257600000B5BE2/\\$File/CHAPTER%205.pdf](http://www.nhhrc.org.au/internet/nhhrc/publishing.nsf/Content/1AFDEAF1FB76A1D8CA257600000B5BE2/$File/CHAPTER%205.pdf).

<sup>100</sup> See Reinecke, *Information Policy and E-governance in the Australian Government: a report for the Department of the Prime Minister and Cabinet*, July 2009, p. 13, at [www.dpmmc.gov.au/publications/information\\_policy/docs/information\\_policy\\_e-governance.pdf](http://www.dpmmc.gov.au/publications/information_policy/docs/information_policy_e-governance.pdf); Queensland Government, Queensland Spatial Information Council, *Government Information and Open Content Licensing: An access and use strategy (Government Information Licensing Framework Project Stage 2 Report)* (October 2006), at [www.qsic.qld.gov.au/qsic/QSIC.nsf/CPByUNID/BFDC06236FADB6814A25727B0013C7EE](http://www.qsic.qld.gov.au/qsic/QSIC.nsf/CPByUNID/BFDC06236FADB6814A25727B0013C7EE); Cutler & Company, *Venturous Australia - Building Strength in Innovation*, report on the Review of the National Innovation System, for the Australian Government Department of Innovation, Industry, Science and Research, 29 August 2008, at [www.innovation.gov.au/innovationreview/Pages/home.aspx](http://www.innovation.gov.au/innovationreview/Pages/home.aspx); Victorian Parliament, Economic Development and Infrastructure Committee, *Inquiry into Improving Access to Victorian Public Sector Information and Data*, 27 June 2009, at [www.parliament.vic.gov.au/edic/inquiries/access\\_to\\_PSI/final\\_report.html](http://www.parliament.vic.gov.au/edic/inquiries/access_to_PSI/final_report.html). See also volume 2 of this book.

management of the legal interests in information, notably privacy and copyright – will act as barriers to the flow of government information that would otherwise be possible.<sup>101</sup> The importance of an appropriate governance framework for information sharing which clearly addresses ‘policy parameters’ as well as the basis on which information can be accessed and reused was highlighted by NGISS:

Appropriate governance arrangements for information sharing must be clearly defined and applied consistently across government. Users of data require appropriate authority and formal agreements to clarify the conditions of use covering access to information....Governance documentation should include, but not be limited to, accountabilities, responsibilities and processes associated with:

...

- policy parameters;

....

- Instructions regarding information conditions of use e.g. copyright, licensing etc;<sup>102</sup>

The W3C’s eGovernment Interest Group’s draft guide, *Publishing Open Government Data* (September 2009) emphasises the importance of clearly documenting any legal or regulatory restrictions imposed by government on the use of the data, using available standards to insert copyright or licensing information into the data itself.<sup>103</sup>

## OPEN STANDARDS

As governments implement strategies to enable their data and information to be more readily available for access and reuse, they have increasingly favoured the use of open standards. A report prepared by Booz Allen Hamilton for the United States National Aeronautics and Space Administration (NASA) Geospatial Interoperability Office in 2005 found that governments can achieve significant cost savings by using open standards for geospatial applications and recommended that government should adopt only open, collaboratively developed standards, and participate in and contribute to open standards development processes.<sup>104</sup> The European Union’s *European Interoperability Framework for pan-European eGovernment Services* (EIF)<sup>105</sup> states that one of the guiding principles for the introduction of eGovernment services on a Europe-wide

<sup>101</sup> On the importance of information management, see Australian Government, Department of Finance and Deregulation, Australian Government Information Management Office (AGIMO), *National Government Information Sharing Strategy: Unlocking Government information assets to benefit the broader community*, (NGISS) August 2009, pp. 7, 10 and 11, available at [www.finance.gov.au/publications/national-government-information-sharing-strategy/index.html](http://www.finance.gov.au/publications/national-government-information-sharing-strategy/index.html). NGISS p. 11 identifies various information management practices, including: the use of standards, discoverability, an understanding of intellectual property issues, and how licensing can help with the management and maintenance of valuable information assets.

<sup>102</sup> *ibid.*, p. 19. See also pp. 24 and 25.

<sup>103</sup> W3C eGovernment Interest Group, *Publishing Open Government Data: W3C Working Draft 8 September 2009*, available at [www.w3.org/TR/2009/WD-gov-data-20090908/#rights](http://www.w3.org/TR/2009/WD-gov-data-20090908/#rights).

<sup>104</sup> Booz Allen Hamilton, *Geospatial Interoperability Return on Investment Study*, Report for the National Aeronautics and Space Administration Geospatial Interoperability Office, April 2005, pp. 29–30 and 43, [www.egy.org/files/ROI\\_Study.pdf](http://www.egy.org/files/ROI_Study.pdf) as at 8 May 2009.

<sup>105</sup> European Union, Interoperable Delivery of European eGovernment Services to Public Administrations, Businesses and Citizens Division (IDABC), *European Interoperability Framework for pan-European Government Services*, version 1.0, 2004, available at [ec.europa.eu/idabc/en/document/3761](http://ec.europa.eu/idabc/en/document/3761).

basis is that open standards should be adopted to attain interoperability.<sup>106</sup> In 2007 the European Commission stated that it will promote the use of products that support open, well-documented standards in all future information technology developments, acknowledging interoperability is a critical issue for government.<sup>107</sup> The 2008 revision of the EIF advocates ‘a systematic migration towards the use of open standards ... in order to guarantee interoperability, to facilitate future reuse and long-term sustainability while minimising constraints’.<sup>108</sup> The United Kingdom Cabinet Office announced in 2009 that the UK government will use open standards in its procurement specifications and support the development of open standards and specifications.<sup>109</sup>

In Australia, the *Australian Government Technical Interoperability Framework* requires all standards and guidelines developed or adopted under it to conform to open standards principles.<sup>110</sup> Both open and proprietary standards are included in the catalogue appended to the AGTIF, although the AGTIF makes it clear that, where feasible, preference is to be given to the deployment of open standards.<sup>111</sup> The Australian Government Information Management Office (AGIMO) encourages agencies to use W3C open web standards<sup>112</sup> The *Public Sphere 2: Government 2.0 Briefing Paper* noted concerns about use by government of lock-in technologies and closed standards, and recommended the use of open standards<sup>113</sup>, open Application Programming Interfaces (APIs) and standardised cross-platform software (such as Firefox 3.5), to ensure that government web applications are accessible across government agencies and by their clients.<sup>114</sup> If government policies to provide better access to information and data are to be implemented in such a way as to maximise the potential for reuse, it will be necessary to use document formats that enable information to be linked, analysed and queried.<sup>115</sup> To ensure that

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<sup>106</sup> *ibid.*, p. 9.

<sup>107</sup> Neelie Kroes, European Commissioner for Competition Policy, *Being Open About Standards*, speech presented to OpenForum Europe, Brussels, 10 June 2008, Reference no: SPEECH/08/317, Date: 10/06/2008, available at [europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/08/317&format=HTML&aged=0&language=EN&guiLanguage=en](http://europa.eu/rapid/pressReleasesAction.do?reference=SPEECH/08/317&format=HTML&aged=0&language=EN&guiLanguage=en).

<sup>108</sup> European Union, Interoperable Delivery of European eGovernment Services to Public Administrations, Businesses and Citizens Division (IDABC), *European Interoperability Framework for pan-European Government Services*, draft version 2.0, 2008, p. 5.

<sup>109</sup> United Kingdom Cabinet Office, *Open Source, Open Standards and Re-Use: Government Action Plan*, [www.cabinetoffice.gov.uk/government\\_it/open\\_source/policy.aspx](http://www.cabinetoffice.gov.uk/government_it/open_source/policy.aspx).

<sup>110</sup> Australian Government, *Australian Government Technical Interoperability Framework*, 2005, p. 2a, available at [www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html](http://www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html).

<sup>111</sup> *ibid.*, p. 3c.

<sup>112</sup> I Reinecke, *Information Policy and E-governance in the Australian Government: a report for the Department of the Prime Minister and Cabinet*, July 2009, at p. 15, available at [www.dpmc.gov.au/publications/information\\_policy/docs/information\\_policy\\_e-governance.pdf](http://www.dpmc.gov.au/publications/information_policy/docs/information_policy_e-governance.pdf). See the ongoing work of the W3C’s eGovernment Interest Group, *Improving Access to Government through Better Use of the Web: W3C Interest Group Note 12 May 2009*, available at [www.w3.org/TR/egov-improving/](http://www.w3.org/TR/egov-improving/).

<sup>113</sup> Including W3C web standards.

<sup>114</sup> Senator Kate Lundy, *Public Sphere 2: Government 2.0 Briefing Paper*, 28 July 2009, recommendations 3(c) and 4(c) and pp. 22, 23, 30 and 32, available at [www.katelundy.com.au/2009/07/29/briefing-paper-and-recommendation-endorsements-from-public-sphere-2-government-2-0/](http://www.katelundy.com.au/2009/07/29/briefing-paper-and-recommendation-endorsements-from-public-sphere-2-government-2-0/).

<sup>115</sup> Cory Casanave, *Publish all government information using Open Linked Data standards*, comment posted to the Open Government Dialogue, June 2009, available at [opengov.ideascale.com/akira/dtd/5489-4049](http://opengov.ideascale.com/akira/dtd/5489-4049). See

government information can be analysed and reused, it should be published in appropriate formats that enable the information to be machine-processed, are not unduly subject to obsolescence and do not impose usage or licensing restrictions on users.<sup>116</sup> The *Public Sphere 2: Government 2.0 Briefing Paper* recommended that ‘all government data needs to be available in free and openly documented standards such that anyone is able to use the data, and use the data in a variety of software products’.<sup>117</sup> The ubiquitous Microsoft word .doc and Adobe’s PDF formats are proprietary, although their specifications are now openly available. Many governments have adopted the Open Document Format (ODF), an XML-based<sup>118</sup> file format for representing electronic documents.<sup>119</sup> The ODF specifications were originally developed by Sun Microsystems, while the standard was developed by the Organization for the Advancement of Structured Information Standards (OASIS) consortium and has been adopted as an international standard by ISO/IEC.<sup>120</sup> In March 2006, the National Archives of Australia announced that it had settled on ODF as its cross-platform/application document format.<sup>121</sup> The South African government has adopted ODF as its preferred standard for software interoperability,<sup>122</sup> and since April 2008 the use of ODF has been mandatory in the public sector in Malaysia.<sup>123</sup> The State of Massachusetts in the United States formally endorsed ODF for its public records in 2005, but in 2007 amended its approved technical standards lists to include Microsoft’s Office Open XML.<sup>124</sup> Since early 2009, ODF has been the standard for

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also Sir Tim Berners Lee, *Putting Government Data Online*, June 2009 at [www.w3.org/DesignIssues/GovData](http://www.w3.org/DesignIssues/GovData).

<sup>116</sup> For a useful explanation of the importance of using appropriate formats, see Joshua Tauberer, *Open Data is Civic Capital: Best Practices for ‘Open Government Data’*, version 1.1, 20 July 2009, available at [razor.occams.info/pubdocs/opendataciviccapital.html](http://razor.occams.info/pubdocs/opendataciviccapital.html).

<sup>117</sup> Senator Kate Lundy, *Public Sphere 2: Government 2.0 Briefing Paper*, 28 July 2009, recommendation 4(d), p32, available at [www.katelundy.com.au/2009/07/29/briefing-paper-and-recommendation-endorsements-from-public-sphere-2-government-2-0/](http://www.katelundy.com.au/2009/07/29/briefing-paper-and-recommendation-endorsements-from-public-sphere-2-government-2-0/).

<sup>118</sup> XML is an open standard for creating custom markup languages, see [en.wikipedia.org/wiki/XML](http://en.wikipedia.org/wiki/XML) at 27 July 2009. The World Wide Web Consortium (W3C) encourages the use by governments of formats such as XML, RDF and CSV: W3C eGovernment Interest Group, *Publishing Open Government Data: W3C Working Draft 8 September 2009*, available at [www.w3.org/TR/2009/WD-gov-data-20090908/#rights](http://www.w3.org/TR/2009/WD-gov-data-20090908/#rights) and *Improving Access to Government through Better Use of the Web: W3C Interest Group Note 12 May 2009*, available at [www.w3.org/TR/egov-improving/](http://www.w3.org/TR/egov-improving/).

<sup>119</sup> For the European Commission’s deliberations on the use of Open Document Format, see European Commission, IDABC Program, *Documentation on the Promotion of Open Document Exchange Format*, at [ec.europa.eu/idabc/en/document/3439](http://ec.europa.eu/idabc/en/document/3439). Another open document standard is Portable Document Format (PDF). PDF has been released as an open standard by Adobe, although the Adobe Acrobat reader application is proprietary software.

<sup>120</sup> ISO/IEC 26300:2006, Open Document Format for Office Applications (OpenDocument), v1.0.

<sup>121</sup> See [en.wikipedia.org/wiki/OpenDocument\\_adoption](http://en.wikipedia.org/wiki/OpenDocument_adoption) at 27 July 2009.

<sup>122</sup> Tom Espiner, ‘South African government adopts ODF’, *ZDNet Australia* (30 October 2007) [www.zdnet.com.au/news/software/soa/South-African-government-adopts-ODF/0,130061733,339283332,00.htm](http://www.zdnet.com.au/news/software/soa/South-African-government-adopts-ODF/0,130061733,339283332,00.htm) at 24 July 2009.

<sup>123</sup> In 2008, Office Open XML (OOXML) was adopted as an ISO standard, notwithstanding widely voiced concerns that OOXML would overwhelm ODF. See [en.wikipedia.org/wiki/OpenDocument\\_adoption](http://en.wikipedia.org/wiki/OpenDocument_adoption) at 27 July 2009. See also ‘MAMPU migrates to OpenOffice.org and ODF to increase freedom of choice and interoperability’ (19 March 2008) Open Malaysia, [www.openmalaysiablog.com/2008/03/mampu-migrates.html](http://www.openmalaysiablog.com/2008/03/mampu-migrates.html) at 27 July 2009.

<sup>124</sup> See [en.wikipedia.org/wiki/OpenDocument\\_adoption](http://en.wikipedia.org/wiki/OpenDocument_adoption) at 27 July 2009. See also [danbricklin.com/log/2005\\_09\\_07.htm#meetingphotos](http://danbricklin.com/log/2005_09_07.htm#meetingphotos); ‘Open Format Meeting September 2005’, [www.softwaregarden.com/cgi-bin/oss-sig/wiki.pl?OpenFormatMeetingSept2005](http://www.softwaregarden.com/cgi-bin/oss-sig/wiki.pl?OpenFormatMeetingSept2005); ‘Your Mail: Open

reading, publishing and the exchange of information in all government organisations in the Netherlands.<sup>125</sup>

However, while governments express support for the use of open standards, the picture is not quite so clear cut because different stakeholders interpret the openness requirement differently.<sup>126</sup> To some, the quality of openness resides in the processes are followed in developing the standard and the basis of eligibility to participate in that process. According to the American National Standards Institute (ANSI) an open standard is one that has been developed through an open, consensual process, in which stakeholders can review and comment on drafts, approved changes are incorporated into the draft standard and due process is ensured by means of a ballot and the availability of an appeals process.<sup>127</sup> ANSI also requires parties holding intellectual property rights to identify themselves and their proprietary interests during the process of standards development.<sup>128</sup>

For others, the focus on the standards development process to the exclusion of consideration as to how the standard can be implemented by users is considered as too narrow a basis on which to categorise a standard as open. Taking a more expansive view of the requirements for open standards, Lawrence Rosen comments that ‘while process is obviously important ... process alone does not necessarily an open standard make.’<sup>129</sup> According to Rosen, semi-public processes alone do not guarantee that users can implement standards without having to pay

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Debate about OpenDocument’ (12 October 2005) *Fox News*, [www.foxnews.com/story/0,2933,172063,00.html](http://www.foxnews.com/story/0,2933,172063,00.html) at 27 July 2009.

<sup>125</sup> See [en.wikipedia.org/wiki/OpenDocument\\_adoption](http://en.wikipedia.org/wiki/OpenDocument_adoption) at 27 July 2009. See also ‘Netherlands picks ODF’ at [gotze.eu/2007/09/netherlands-picks-odf.html](http://gotze.eu/2007/09/netherlands-picks-odf.html) at 27 July 2009.

<sup>126</sup> Perens, B (undated) *Open Standards: Principle and Practice*, [perens.com/OpenStandards/Definition.html](http://perens.com/OpenStandards/Definition.html); Wheeler, D (2006) *Is an Open Document an Open Standard? Yes!*, Groklaw, [www.groklaw.net/article.php?story=20060209093903413](http://www.groklaw.net/article.php?story=20060209093903413) and [www.dwheeler.com/essays/opendocument-open.html](http://www.dwheeler.com/essays/opendocument-open.html); and Krechmer, K (2006) ‘Open Standards Requirements’ *The International Journal of IT Standards and Standardization Research*, Vol 4, No. 1, January-June 2006, [www.csrstds.com/openstds.pdf](http://www.csrstds.com/openstds.pdf) and [www.csrstds.com/openstds.html](http://www.csrstds.com/openstds.html).

<sup>127</sup> American National Standards Institute (ANSI), *Critical Issues Paper on Open Standards*, May 2005, [publicaa.ansi.org/sites/apdl/Documents/Standards%20Activities/Critical%20Issues%20Papers/Open-Stds.pdf](http://publicaa.ansi.org/sites/apdl/Documents/Standards%20Activities/Critical%20Issues%20Papers/Open-Stds.pdf) as reproduced in ANSI’s comments to the European Commission’s one-day workshop on intellectual property rights and ICT standards on 19 November 2008 in Brussels, [ec.europa.eu/enterprise/ict/policy/standards/ws08ipr/contributions/20081106ANSI\\_en.pdf](http://ec.europa.eu/enterprise/ict/policy/standards/ws08ipr/contributions/20081106ANSI_en.pdf).

<sup>128</sup> See also Ken Krechmer, *Open Standards Requirements*, *The International Journal of IT Standards and Standardization Research*, Vol. 4 No. 1, January - June 2006, p 9 and pp14-28, available at [www.csrstds.com/openstds.pdf](http://www.csrstds.com/openstds.pdf). For example, Krechmer sets ten features that must be present in open standards: (1) Open Meeting - all may participate in the standards development process; (2) Consensus - all interests are discussed and agreement found, no domination; (3) Due Process - balloting and an appeals process may be used to find resolution; (4) Open Intellectual Property Rights (IPR) - how holders of IPR related to the standard make available their IPR; (5) One World - same standard for the same capability, world-wide; (6) Open Change - all changes are presented and agreed in a forum supporting the five requirements above; (7) Open Documents - committee drafts and completed standards documents are easily available for implementation and use; (8) Open Interface - supports proprietary advantage (implementation); each interface is not hidden or controlled (implementation); each interface of the implementation supports migration (use); (9) Open Access - objective conformance mechanisms for implementation testing and user evaluation; (10) On-going Support - standards are supported until user interest ceases rather than when implementer interest declines.

<sup>129</sup> Larry Rosen, *Defining Open Standards*, 2005 at p. 2, [www.rosenlaw.com/DefiningOpenStandards.pdf](http://www.rosenlaw.com/DefiningOpenStandards.pdf).

onerous patent royalties or experience undue burdens.<sup>130</sup> In this sense, an ‘open standard’ is one which is open at both the development stage and the implementation and use stage: not only has it been developed through an open process but it provides users with access to the specification documents and any technologies embodied in the standard.<sup>131</sup> From this perspective, the question of whether or not a standard is open centres on the basis on which patented technologies in standards and the standard documentation are available for use by those who implement the standard in their own products.

A question arises as to whether standards that incorporate patented technologies that are licensed on RAND terms requiring the payment of licence fees to the patent owners are, in fact, open standards given that they cannot be implemented without charge. The strongest definitions of open standard require the standard to be made available for use freely and unconditionally. According to the criteria for open standards listed by Perens,<sup>132</sup> open standards must be ‘free for all to implement, with no royalty or fee.’<sup>133</sup> In practice, this means that patents embodied in the standard must be licensed royalty-free and on non-discriminatory terms and that the standard documentation can be copied, modified and distributed by users.<sup>134</sup> The view that an open standard must be able to be implemented without payment of royalties has now been accepted by many standards organisations.

The requirement that intellectual property included in the standard be made available on a royalty-free basis is included in the definition proposed by the Digital Standards Organisation (Digistan.org) which defines an open standard as ‘a published specification that is immune to vendor capture at all stages in its life-cycle’, which means that it is possible to improve upon, trust and extend the standard over time. The Digistan definition is largely a re-statement, with some clarification, of the minimal characteristics of open standards identified in the European Union’s EIF which states that an open standard is one whose intellectual property is ‘irrevocably available on a royalty-free basis’, with ‘no constraints on the re-use of the standard’.<sup>135</sup> Digistan lists the following criteria for an open standard:

- [It] is immune to vendor capture at all stages in its life-cycle [which makes it] possible to freely use, improve upon, trust and extend a standard over time.

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<sup>130</sup> *ibid.*

<sup>131</sup> See *Executive Interviews: Bruce Sewell on the Role of Intellectual Property in Standards*, Intel (undated), available at [www.intel.com/standards/execqa/qa0405.htm](http://www.intel.com/standards/execqa/qa0405.htm).

<sup>132</sup> Bruce Perens identifies six principles which form the basis of open standards: Perens, B, *The Open Source Definition*, in C. DiBona, S. Ockman, & M. Stone (eds.), ‘Open Source voices from the Open Source revolution’ (1999), Sebastopol, O’Reilly & Associates, pp. 171–189; and Perens, B, *Open Standards Principles and Practice*, undated, at [perens.com/OpenStandards/Definition.html](http://perens.com/OpenStandards/Definition.html).

<sup>133</sup> Perens, B, *The Open Source Definition*, in C. DiBona, S. Ockman, & M. Stone (eds.), ‘Open Source voices from the Open Source revolution’ (1999), Sebastopol, O’Reilly & Associate, pp. 171–189; Perens, B, *Open Standards Principles and Practice*, undated, at [perens.com/OpenStandards/Definition.html](http://perens.com/OpenStandards/Definition.html).

<sup>134</sup> Bruce Perens describes a closed standard as one that is ‘encumbered by one or more form of restriction: trade secret, a patent royalty, overly restrictive or discriminatory licensing, a non-disclosure agreement, closed membership on the standards definition committee’. See Perens, B (2007) *The Confusion of Tongues: EIF 2.0, Standards and Interoperability*, September 2007, [perens.com/works/articles/EIF2/](http://perens.com/works/articles/EIF2/).

<sup>135</sup> European Union, Interoperable Delivery of European eGovernment Services to Public Administrations, Businesses and Citizens Division (IDABC), *European Interoperability Framework for pan-European Government Services*, version 1.0, 2004, p. 9, available at [ec.europa.eu/idabc/en/document/3761](http://ec.europa.eu/idabc/en/document/3761).

- The standard is adopted and will be maintained by a not-for-profit organisation, and its ongoing development occurs on the basis of an open decision-making procedure available to all interested parties.
- The standard has been published and the standard specification document is available freely. It must be permissible to copy, distribute and use it freely.
- The patents possibly present on (parts of) the standard are made irrevocably available on a royalty-free basis.
- There are no constraints on the re-use of the standard.<sup>136</sup>

Another example is the Open Geospatial Consortium, Inc. (OGC), a non-profit, international, voluntary consensus standards organization that has played a leading role in developing standards for geospatial and location based services.<sup>137</sup> The Open Geospatial Consortium (OGC) uses open in a similar sense, meaning that an open standard is one that:

- (1) Is created in an open, international, participatory industry process. The standard is thus non-proprietary, that is, owned in common. It will continue to be revised in that open process, in which any company, agency or organisation can participate.
- (2) Has free rights of distribution: An 'open' license shall not restrict any party from selling or giving away the specification as part of a software distribution. The 'open' license shall not require a royalty or other fee.
- (3) Has open specification access: An 'open' environment must include free, public, and open access to all interface specifications. Developers are allowed to distribute the specifications.
- (4) Does not discriminate against persons or groups: 'Open' specification licenses must not discriminate against any person or group of persons.
- (5) Ensures that the specification and the license must be technology neutral: No provision of the license may be predicated on any individual technology or style of interface.<sup>138</sup>

The same approach is strongly supported by the World Wide Web Consortium (W3C), which has developed a comprehensive patent policy with a view to ensuring that all W3C standards (called W3C Recommendations) can be implemented on a royalty-free basis.<sup>139</sup> W3C explains its licensing policy as follows:

In order to promote the widest adoption of Web standards, W3C seeks to issue Recommendations that can be implemented on a Royalty-Free (RF) basis. Subject to

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<sup>136</sup> See Digital Standards Organisation website, definition of 'free and open standard' at [www.digistan.org/open-standard:definition](http://www.digistan.org/open-standard:definition). Similar criteria are found in the *Roadmap for Open ICT Ecosystems*, Berkman Center for Internet and Society, Harvard Law School, circa 2006, p 6, available at [cyber.law.harvard.edu/epolicy/roadmap.pdf](http://cyber.law.harvard.edu/epolicy/roadmap.pdf), which states that a standard is 'open' if it: cannot be controlled by any single person or entity with any vested interests; evolved and is managed in a transparent process open to all interested parties; platform independent, vendor neutral and usable for multiple implementations; openly published (including availability of specifications and supporting material); available royalty free or at minimal cost, with other restrictions (such as field of use and defensive suspension) offered on reasonable and non-discriminatory terms; and approved through due process by rough consensus among participants.

<sup>137</sup> [www.opengeospatial.org/](http://www.opengeospatial.org/) at 6 July 2009.

<sup>138</sup> See Open Geospatial Consortium, *FAQs – OGC and Openness*, at [www.opengeospatial.org/ogc/faq/openness/](http://www.opengeospatial.org/ogc/faq/openness/).

<sup>139</sup> W3C Patent Policy, 5 February 2004, available at [www.w3.org/Consortium/Patent-Policy-20040205/](http://www.w3.org/Consortium/Patent-Policy-20040205/) as at 30 April 2009.



the conditions of this policy, W3C will not approve a Recommendation if it is aware that Essential Claims exist which are not available on Royalty-Free terms.<sup>140</sup>

Although there is currently no universally accepted definition or criteria for what constitutes an open standard, it is apparent that when governments talk about open standards they use the term to refer not only to openness in process and participation but also to mean that intellectual property in standards (whether patented technologies or copyright in the specification documents) should be made available on a royalty-free basis. This meaning is given to ‘open standards’ in the European Union’s EIF (see above) and is also adopted in the *Australian Government Technical Interoperability Framework*, which explains that open standards require ‘no royalty payment, do not discriminate on the basis of implementation, allow extension, promote reusability, and reduce the risk of technical lock-in and high switching costs’.<sup>141</sup> Similarly, the NZ Ministry of Justice’s *Open Source Adoption Paper* defines open standards as ‘technical standards that are publicly visible and implementable by anyone with the requisite skills and resources’.<sup>142</sup>

#### MANAGING INTELLECTUAL PROPERTY RIGHTS FOR INTEROPERABILITY

Governments increasingly support and seek to adopt open standards to achieve interoperability. However, even standards that are ‘open’ in the broad sense – in that they can be implemented by users without payment of a royalty or licence fee – involve intellectual property rights which must be understood and managed if interoperability is to be attained. Consequently, government agencies participating in the development of an external standard or adopting an existing standard must strategically manage their legal interests, in a manner consistent with the objective of promoting openness and interoperability. They should ensure they understand their legal position when participating in the development of standards and their rights in relation to the resulting standard and specification documents.

Governments need to carefully consider the standards body’s intellectual property policy to ensure that the standards body’s understanding of what is meant by an ‘open’ standard accords with their own and is not confined to the processes followed to develop the standard. Where patent rights are at issue, governments should make clear to SSOs that they favour approaches where patent owners are required or strongly encouraged to license their patented technologies on a royalty-free basis. If patent rights are not licensed for free but on RAND terms, a common understanding should be reached on what is meant by ‘reasonable’ licensing terms.

Government agencies participating in the development of external standards need to ensure that ownership of copyright in contributed materials is not transferred to the standards body, with the result that it can then only be used by government upon payment of a royalty. Where possible, public sector entities should seek to retain rights to use copyright materials contributed by them to a standard or, if a transfer of copyright is required, ensure that they are able to use the finished standard without restrictions. The use of open content licences such as Creative Commons licences on any contributions made by the organisation to the standard could be a potential solution to the problems associated with keeping standards ‘open’. For example,

<sup>140</sup> *ibid.*, clause 2.

<sup>141</sup> Australian Government, *Australian Government Technical Interoperability Framework*, 2005, p3c, available at [www.finance.gov.au/publications/australian-government-technical-interoperability-framework/docs/AGTIF\\_V2\\_-\\_FINAL.pdf](http://www.finance.gov.au/publications/australian-government-technical-interoperability-framework/docs/AGTIF_V2_-_FINAL.pdf)

<sup>142</sup> New Zealand, Ministry of Justice, *Open Source Adoption Paper*, version 1.3 (final), 28 February 2008.

imposing a 'share alike' condition through a Creative Commons licence would have the practical effect that the material covered by the licence must be used and shared on the same terms as set out in the original licence. The advantages of open content licences are that they allow broad reuse rights for users while still enabling the copyright owner to retain control over their material, and that they are clear and easy to understand and use. Creative Commons licences have already been successfully applied to standard specifications in practice. For example, the IEEE licensed its XSD Schema under a Creative Commons Attribution – Share Alike licence.<sup>143</sup> Microsoft has also released some of its standard specifications under Creative Commons licences. Notably, in June 2005, it released its RSS 'Longhorn' Simple List Extensions under a Creative Commons Attribution – Share Alike Licence.<sup>144</sup>

Additionally, agreement should be reached about the extent to which final standard specifications can be adapted for use in government. While a SSO may seek to exercise its copyright in a manner that ensures its standards do not become fragmented, the conditions imposed upon use of the standard should not be overly restrictive. Where it is necessary for the purposes and proper functioning of government to modify a standard slightly for internal uses, this should be permitted provided that the overall integrity of the standard is not lost.

## CONCLUSION

In establishing connected and seamless systems and services, governments are concerned with the interoperability of technical, business (or enterprise) and information systems based on standards. Governments may develop their own internal standards or, if there is an existing external standard developed by a standards body, simply adopt the established standard. If a relevant external standard has been developed by a recognised standards organisation through an open, consensus-driven process, governments will usually adopt that existing standard, incorporating it by reference in the governmental standard<sup>145</sup>, rather than developing its own specific standard. To foster interoperability between government and the private sector (whether the general community, business, or academia), governments may play an active role in the development of consensus-based standards, often contributing knowledge and materials generated in the development of internal, government-specific standards and systems. By contributing internally developed technology or knowledge to the development of a new de jure standard by a standards body, governments can promote interoperability by fostering the widespread adoption of a standard originally developed by the government for its internal purposes.

There are strong economic and democratic reasons why governments should, and do, adopt open standards and governments worldwide are increasingly committing to the use of open standards. However, there is no single accepted definition of what is meant by 'open' in this context. As governments move towards greater use of open standards, they will need to ensure that the standards they help to develop, or adopt, are open not only in the development

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<sup>143</sup> See [standards.ieee.org/reading/ieee/downloads/LOM/lomv1.0/](http://standards.ieee.org/reading/ieee/downloads/LOM/lomv1.0/) at 2 April 2009.

<sup>144</sup> Microsoft to Deliver RSS Support to End Users and Developers in Windows 'Longhorn', 24 June 2005, [www.microsoft.com/presspass/press/2005/jun05/06-24RSSIntegrationPR.msp](http://www.microsoft.com/presspass/press/2005/jun05/06-24RSSIntegrationPR.msp) at 2 April 2009.

<sup>145</sup> Australian Government, Department of Finance and Administration, AGIMO, *Australian Government Technical Interoperability Framework*, 2005, p2a, para 2.1 states that 'government interoperability draws on established standards' and 'existing Australian and international standards will be adopted wherever available and appropriate'; available at [www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html](http://www.finance.gov.au/publications/australian-government-technical-interoperability-framework/index.html).

process but are subject to no or minimal restrictions in implementation, if the objective of interoperability is to be achieved. Whether contributing to the development of an external standard or adopting an established standard, governments need to understand and manage the intellectual property rights involved to ensure that the standard is effective in promoting interoperability. This means that, in developing and adopting standards for interoperability, governments should, where possible, support those that permit the specification documents to be freely copied and distributed, license patented technologies in the standard on a royalty-free basis and do not impose constraints on reuse of the standard.

To achieve information interoperability, implementation of open standards-based interoperability frameworks will not, in itself, ensure that information is in fact shared among government agencies and between government and the private sector. Information interoperability demands not only frameworks that address interoperability at the technical, enterprise and semantic levels dealt with in the *Australian Government Interoperability Framework* but also requires the development and implementation of information policies and practices that support information access and reuse.