

Open in Europe - The importance of Open Source Software and Open Standards to Interoperability in Europe

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With thanks to the thousands of people worldwide who collaborate to contribute software, document systems, publish papers and otherwise advocate and support the Open Source Software movement.

Abstract

Interoperability is important to eGovernment and eBusiness. Open Standards support Interoperability for which there are a number of defined facets – technical, process, semantic. Open Source Software provides support and enablement to all aspects of interoperability. Open Source technologies promote enable the creation and use of open “verifiable” standards and file formats. Open Source applications facilitate ubiquitous access. Open Source methodology offer an interesting model for governance of large, disparate projects where consensus is vital. Open Source Software must not be marginalized by proprietary security mechanisms, intellectual property law or restrictive business models.

Keywords

Interoperability, open source software,

1 Proposition

If Open Source Software development could be viewed as a 'meritocracy' and Proprietary Software development as an 'autocracy', then, our proposition is that Open Source Software is a catalyst to bring 'democracy' to development and deployment of interoperability in eGovernment and eBusiness.

2 The Importance of Interoperability

Arguably the whole essence of the European Union is to maximise the effectiveness of the citizen and business, maximising the opportunity of operating in a cohesive environment. The integration issues of Europe dwarf the needs of the US. We talk of common processes, eGovernment, and a variety of programmes that at their core are fundamentally there to promote interoperability. This is a phrase that the ICT sector has seized on for many years to promote independence, avoidance of proprietary lock in, and maximisation of market competitiveness. But it is only recently that the potential pitfalls

have been fully recognised. These have largely been as a result of limited competition, caused by dominance in the market by a single highly successful supplier. So what can Europe do?

2.1 2004 Agenda

The Council of Europe, March 2004 meeting on Transport, Telecommunications and Energy, noted, among other things,:

- the important progress made, in particular in the areas of broadband and e-government, but also in the areas of e-learning, e-health and e-business as well as security;
- that the mid-term review identified areas of adjustment, such as:
 - the need to take into account **interoperability and multi-platform access** throughout the different areas of the eEurope 2005 Action Plan;
 - using existing data, greater monitoring and quantification of **e-inclusion**, including in terms of its socio-economic and geographical dimensions;

2.2 The Barriers to Interoperability

Regrettably in the past ICT, rather than being the vehicle of communication and information sharing, can be accused of being an inhibitor. Too many islands of information, too little sharing, with too many suppliers seeking to gain competitive advantage from customer lock in via proprietary solutions. Not any more! It is a brave supplier who suggests that his solution is anything other than fully conformant to the relevant “open standard”. Along the way they have also found that the only real method of protecting their market position long term is to provide customer value via the quality of their solution, not by seeking short term inhibitors to other competitors.

So, we contrast our position with a proprietary world of:[5]

- Monolithic architectures and product suites
- Concept of buying everything from one vendors
- Limited choice to customers
- Pseudo compliance to standards

Resulting in a vendor market characterised by

- Proprietary lock-in....
-at a premium price
- Limited flexibility, dependent on vendor roadmap
- lack of innovation.

2.3 Defining Interoperability

Interoperability is the means by which the inter-linking of systems, information and the ways of working, whether within or between administrations, nationally or across Europe, or with the enterprise sector, will occur.

European Interoperability Framework_[3]

Or, a more user centric definition

Interoperability is the fulfillment of users' expectations to exchange and use information among various devices and software products from multiple vendors or service.

Graham Taylor – OpenForum Europe

The IDA programme of the EC has published a very timely Working Paper on “Linking up Europe: the Importance of Interoperability for eGovernment Services”, which has drawn out some key conclusions, but also some vital pointers to success. I selectively quote, “ Interoperability is not simply a technical issue..... it goes beyond this to include the sharing of information.... and the reorganisation of administrative processes to support the seamless delivery....”. It does not stop at national or administrative boundaries, linking together organisations, administrations, enterprises or citizens. To be effective it has to cover the three aspects of,

Technical interoperability – Interconnection Services, Data Integration and Middleware, Data Presentation and Exchange, Accessibility and Security Services.

Semantic interoperability – meaning of exchanged information – Metadata, Data Models.

Organisational interoperability – aligning business processes, information architectures – Life Events, Business Episodes

2.3.1 Principles underlying the Interoperability Framework[2]

- It is interesting that the IDA settled on a set of 'Principles' – (rules and standards of good behavior) to guide the interpretation of the Interoperability Framework. *The following principles, of general nature, should be considered for any eGovernment services to be set-up at a pan-European level:*
 - Accessibility
 - Multilingualism
 - Security
 - Privacy
 - Use of open standards
 - Assess the benefits of Open Source Software
 - Use of multilateral solutions

2.4 Defining Open Source Software

Open Source Software (OSS) is a software distribution methodology that includes the following principles:

- **Free Redistribution.** Open Source products and projects forbid the distributor from imposing any restrictions on the re-distribution of their software, nor does it require the receiving party to pay a license or royalty for use of the software.
- **Source code included.** Source code for the distribution must be made available and there can be no restrictions on re-distributing the source code as well as the binary code.
- **Derived works.** All works derived from the initial distribution must follow the same license as the original distribution.
- **No discrimination against persons or groups.**
- **No discrimination against any field of endeavor.**

2.4.1 Defining Open Standards – an IDA definition

The word "open" is here meant in the sense of fulfilling the following requirements:

- the costs for the use of the standard are low and are not an obstacle to access to it;
- the standard has been published;
- the standard is adopted on the basis of an open decision-making procedure (consensus or majority decision etc.);
- the intellectual property rights to the standard are vested in a not-for-profit organisation, which operates a completely free access policy;
- there are no constraints on the re-use of the standard.

3 Enabling the quest for Interoperability through OSS

In making the case for Open Source support for interoperability we will use the IDA definition and principles. A principle of the IDA framework is the assessment of the benefits Open Source Software, which, though not prescriptive, recognises the value OSS can bring in general and to standards development in particular.

Open Source Software (OSS) tends to use, and often helps to define, open standards and publicly available specifications. OSS products are, by their nature, publicly available specifications, and the availability of their source code promotes open, democratic debate around the specifications, making them both more robust and interoperable. As such, OSS corresponds to the objectives of this Framework and should be assessed and considered favourably alongside proprietary alternatives.

3.1 Technical interoperability

Technical barriers to interoperability should only be those resulting from limitations in technology. They should not be intentionally introduced or sustained by vendors or service providers except in cases of and solely when used for overriding and legitimate interests (such as security) or provision of premium services (such as subscription value-added services). In these cases, the commercial or security rationale for the existence of barriers to access should be evident to the average user and should not appear as intentional barriers to technical interoperability for the purpose of promoting market advantage for a single vendor.

3.1.1 Interconnect Technologies

The Internet as we know it today was built on five Open Source technologies;

- BIND – The Berkeley Internet Naming Daemon – is responsible for resolving almost all name lookups on the World Wide Web.
- Sendmail – routes over 70% of all emails on the Internet.
- Apache – The Apache Web Server – over 60% of all websites are served from Apache.
- Perl/PHP – Most of the original CGI (Common Gateway Interface) scripting was written in Perl or PHP, both fully open source tools.
- MySQL – the other component of the LAMP acronym, a high performance relational database, available under a dual licensing scheme depending on the level of support demanded by the user. (Linux, Apache, PHP(Perl/Python), MySQL)

Also, Open Standard Protocol Stacks have prevailed over proprietary models

- TCP/IP, developed as a component of the Arpanet, by the US Department of Defense, and released as Request for Comment by the IETF, prevailed over IPX (Novel NetWare Protocol Stack), DECnet(from Digital Equipment Corporation) and XNS (Xerox Networking Services).
- HTTP was developed and released in the same way as TCP/IP but there was never a proprietary equivalent.

3.1.2 Data Integration and Middleware

Object middleware is a special kind of software. Its utility stems from its ability to ensure consistency and interoperability. The value middleware offers includes:

- The ability to provide a standard, stable, consistent interface to a wide variety of applications, on a broad set of platforms and enable their interoperability.
- It decouples service providers from service requesters.
- It protects the existing legacy systems, and yet future proofs what you develop today against language, platform and communications obsolescence tomorrow.

- Amongst others...

Vendors of proprietary products are typically under pressure to differentiate their product with extensions. These value-added features can often lead to incompatibility and confusion. Vendors must balance standards compliance with maintaining an edge. It is not an easy task. A product that is fully standards compliant can be more easily replaced. To protect market share, middleware vendors must selectively add proprietary new features along with standard ones to maintain a lock on their client-base.

Open source software has no such pressures. Often, as second-generation products, their value proposition is that they support the standard very closely. This is their way to differentiate themselves from the other products already present in the market place. They hope to use the consensus achieved in that standard and experiences from multiple product implementations, as a way to stabilize the technology domain, create a commodity item from that technology and thus create another stable building block in the technology layers that make up distributed systems. Users can then move on to other areas, higher up the ladder of abstraction, to advance technology and create new value.

Applications are the true value added software. Middleware should be "low impedance" software for enabling application interoperability and systems diversity. Software historically has moved towards a monopoly, as a way to achieve easy interoperability via uniformity. Within the middleware market there should be enough diversity to foster innovation and yet with sufficient uniformity to enable cooperation. Open source software can act as a break on the natural progression towards a single dominant vendor. A progression, some would say, towards a monopoly.

In open source the users contribute extensions that they want to see in the product. This might include extensions beyond the standard but they are created by a user's need to inter-operate, not a vendor's motivation to lock in. These activities can become the basis for a standards submission as they can prove the viability of an approach and enable many users to validate their utility, in real life situations.

Microsoft used the 'embrace and extend' model to define the usage some reserved fields in Kerberos for their own use, thereby ensuring that only Microsoft clients could authenticate to Microsoft Servers – hardly the intent of 'embrace and extend'.

3.1.3 Security Services.

Although Open Source does not offer a panacea for security issues, it gives access to the tools to analyse issues and proactively apply patches in a manner not possible with Proprietary or Commercial of the Shelf Technologies.(COTS).

Open source means what you see is what you get. You can inspect the code line by line to ensure that no disgruntled programmer has buried logic bombs, trapdoors, Trojan horses, viruses or any other nasty surprises in the code.

You do not have to worry that being late with that license fee might result in a locked up system. No worries, as with proprietary systems, that the code may contain the means to disable the software, and effectively your business. Open source is not UCITA!

No worry that the weak link in a security strategy might be some proprietary application with poor defensive measures. You can add security features to open source if you wish and ensure a consistent level of protection across all applications in the system.

3.2 Semantic and Organisational Interoperability

Technical aspects of interoperability are undoubtedly essential, but as the IDA document points out, they are not sufficient to achieve the interoperability which users are increasingly demanding in an increasingly knowledge dependent society. Given the rapid advance of technology and users' expectations, it is essential that policy makers avoid defining interoperability solely in technical terms, but should view it from the user's perspective.

Semantic interoperability deals with common definition and meaning of services, allowing information to be combined with other sources for some meaningful purpose. Semantic requirements are often catered for through Metadata and Data Model in the technology model.

Organisational interoperability making services available, findable by the user community, accessible and usable. Artifacts such as Life Event models, Business Episodes, Business Processes, Organisational Structures support Organisational Interoperability.

Rather than support each facet independently, we prefer to establish the support and impact of Open Source on the underlying principles that support interoperability. These are the principles identified in the IDA Interoperability Framework of Open Standards, Accessibility, Security, Privacy, Multilingualism, Benefits of Open Source and Multi-lateralism.

3.2.1 Use of open standards

To reach interoperability in the context of pan-European eGovernment services, guidance needs to focus on open standards – as defined above by the IDA.

“Open standards” describes interfaces or formats that are openly documented and

have been accepted in the industry through either a formal or de facto processes, and which are freely available for adoption by the industry. In the context of this paper, the term will be used to specifically refer to software interfaces. Some examples that many are familiar with include HTTP, HTML, WAP, TCP/IP, VoiceXML, XML, SQL, etc. They are typically built by software engineers from various IT/software companies that collaborate under the auspices of organizations such as W3C, OASIS, OMA, IETF, etc.

In contrast, “Proprietary” describes interfaces that are developed by and controlled by some company and have not been made freely available for adoption by the industry. Proprietary software uses non-public interfaces or formats. An interface is the means for one program to interact with another. When an interface is non-public, the owner of the proprietary interface controls the interface, including when and how the interface changes, and whether, how and who can adopt it.

Most major companies and governments have embraced the concept of “openness”. They purchase ICT goods and services from a variety of vendors and expect the technologies to work together or to “interoperate”. They wish to have the flexibility to deploy hardware and software from a variety of vendors in a specific way in order to address specific problems. They do not wish to be subjected to the priorities and schedules of any particular vendor or be obliged to use products and services from a single or restricted group of vendors for interoperable solutions. “Openness” provides them with a way to treat technology components as discrete modules that can be mixed and matched.

The common belief is that open ICT environments will maximise flexibility and consequently the ability of business and public administrations to respond to changing demands from citizens and customers. Environments built around open standards will allow business and public administrations to rapidly adopt technology innovations and to exploit technology cost reductions. Use of open standards will also provide a greater degree of vendor independence. Increasingly business and public administrations are using open source software as a means of accelerating the adoption of open standards which subsequently allows them to implement open computing.

So interoperability is now the common strand linking systems together, or is it? Well at the level of interworking of systems, and definition of common file formats, then yes it is, or at least the work is making substantial progress (as IDA reports). But ICT still has do more if we are to really allow the power of ICT to be fully exploited by the citizen, within business, across government, wherever in Europe you may be operating. Are we really in a position to encourage innovation and the growth in new economies? Will the Accession States be able to integrate and maximise their business opportunity as a result?

A word of caution, however, from Sean McGrath, CTO of Propylon and writer and speaker on XML related technologies -

In theory, ebXML, UBL and other emerging standards sound wonderful, McGrath said. "But the reality is that, if you standardize everything, you remove them from the equation of competitive advantage," he said.

McGrath also said that he believes the document-centric approach to XML is better for creating a level playing field for vendors than is agreeing on APIs" . APIs give the illusion of the ability to interoperate with other systems," McGrath said. "The reality is that an API will lock you into a particular vendor. APIs are used as competitive weapons all over the map."

In recognition of the importance of “documents” and a document-centric approach to interoperability, the EU has taken up the issue of document formats and a recent report that *“Around 25 representatives from Member States and Accession Countries joined together with Commission Officials to listen to and to discuss the need for open document formats with representatives of Sun and Microsoft. The basis for the discussions was a recent report commissioned by the IDA Programme which looks at issues related to document formats and interoperability in the context of the particular requirements put forward by Public Administrations in Europe. The purpose of the meeting was to give SUN and Microsoft, which the report had identified as the major providers of document formats used in public administrations, an opportunity to comment and clarify issues raised in the report and to discuss options for policy recommendations with national participants. Issues that were touched upon during the presentation were differences in the use of XML technology by the two companies, the openness of the formats, legal terms and questions related to standardisation”*

Of course, while probably true for eGovernment and probably also for eLearning and eHealth, it may be significantly different for the Global Travel or Financial Services sectors making great strides towards Straight Trough Processing with FinML, SwiftML et al.

3.2.2 Accessibility

There is a need to ensure that eGovernment is aimed at creating equal opportunities for all towards open, inclusive electronic services publicly accessible without discrimination

The World Bank commissioned a report, [4] Open Source Software - Perspectives for Development which noted the “Opportunity for local capacity development” and highlighted many cases where OSS has been used to gain access to to a level of IT infrastructure not affordable through the proprietary route.

Aspect of the Principle	OSS perspective
Open and inclusive	<p>By definition, the modus operandi of all OSS projects is to be</p> <ul style="list-style-type: none"> •Open – can mostly be subscribed to through open access mailing lists and Sourceforge like project repositories •Inclusive – contributions accepted from all willing players – contributions of source code, of course, but also administrative support, documentation, language files, localisation support
Publicly accessible	<p>Although examples cited by the World Bank from Tajikistan, Goa, Laos and Sao Paulo may seem a little extreme, they do make the point that OSS applications and technologies can enable the economically disadvantaged. This can very obviously be the case for an Irish Hospital, a Spanish Local Authority or a Polish school system.</p>
Without discrimination	<p>Again, from the OSS movement and as protected under it's many legal documents and licenses which take great care to be non-discriminatory.</p>
Standards	<p>Support for accessibility standards such as WAI, the Web Accessibility Initiative and Section 508 Accessibility Guidelines is widespread and most prominent projects such as Gnome, OpenOffice.org. Plone, Mozilla, PHPNuke have very active volunteers and initiatives to ensure compliance.</p>

3.2.3 Multilingualism

In Europe, a vast variety of languages are used extensively in services today.

An interesting aspect of many OSS projects is strength of the Multilingualism driven by the ease of participation in project development, particularly in creation of PO and POT files.

Plone, a leading OSS Content Management System based on Zope, is available, “out of the box”, in 15 languages and even has multilingual sites in Arabic, Chinese and Japanese (2 byte and right to left Unicode).

OpenOffice.org has released a new package for Multilingual word processing, the Tajikistan project converted KDE to Tadjik

3.2.4 Security

Overall, reliable exchange of information takes place within an agreed security policy;

A key aspect of Interoperability lies in secure intercommunication. A secure environment is not just about defining levels of encryption, nor just about a rigorous business architecture. It has to encompass a whole range of policies, legal processes and operational guidelines. Ability to share information or process in a secure environment is as much about support, maintenance and ownership as it is about publication and access.

Open Source Software is often spoken about in the same light as Open Standards, and sometimes the terms are interchanged – a mistake! Open, verifiable standards broadly cover the technical issues of interoperability, and for me at least should be mandated by every government. Failure to do so increases the dangers of lock in to a single supplier, limits choice, and restricts competition.

“An open source license safeguards the rights of anyone, anywhere, for any purpose whatsoever, to use, copy, modify and distribute (sell or give away) the software and to have the source code that makes those things possible” (note 2). This ability to modify OSS code makes OSS particularly well suited for interoperability with hardware and software from numerous vendors. The interoperability offered by OSS lies **firstly** in the way the software can be developed, **secondly** how it encourages sharing, and **thirdly** how it can be openly verified.

3.2.5 Use of multilateral solutions

In a multi-actors environment, one way to interoperability is to consider different solutions according to the exchange partner you have to communicate with; this leads to bi-lateral solutions and agreement; the net effect (and disadvantage) of such approach is the requirement to maintain as many different solutions to communicate as there are external partners which induces a high degree of inefficiency and high costs. On the other hand, if each of the interoperating partners adopts the same set of agreements for interoperability solutions, each of them can reap the benefits of a single solution that needs to be developed only once but fit all.

From a technology perspective, we might view document formats such as HTML or PDF as multilateral since the viewers are freely available, whereas we might view the usage of MSWord as bilateral as the Microsoft application is often

required to properly view the document.

3.2.6 Open Source methodology

Offering an interesting model for governance of large, disparate projects where consensus is vital.

In their paper “NEITHER MARKET NOR HIERARCHY OR NETWORK: THE EMERGING BAZAAR GOVERNANCE” Demil and Lacocq present the concept of Bazaar Governance (the name borrowed from the 'Cathedral and the Bazaar' by Eric S Raymond) and introduce a number of propositions, all of which might support development of Interoperability artifacts for eGovernment and eBusiness, especially in areas where broad consensus is required.

Propositions for Bazaar Governance	Potential benefits to Interoperability Governance
... can generate transaction costs that are lower than those of other governance structures	Lower cost from the distributed, low overhead method of developing collateral – production costs are lower.
... coordination depends more on the features of the copylefted product than on price, routines or relations between agents.	In OSS parlance – those with an itch tend to scratch it.
... the intensity of incentives to be effective in production is lower than under market or network forms of governance	Not driven by quarterly financials or product specific initiatives.
... control intensity is lower than under hierarchical or network forms of governance	More focused on the end result, focused more by practitioners than product managers.
... as more products are released under copyleft by agents within a community, the utility of each agent increases.	The good get better....
The diffusion of bazaar governance through an industry increases the number of new entrants into that industry.	Supporting inclusion and participation in process or standards development.

Propositions for Bazaar Governance	Potential benefits to Interoperability Governance
The diffusion of bazaar governance through an industry decreases the average size of firms in that industry.	Supporting multi-cultural over mono-culture models.

3.2.7 Share Applications

The most visible benefit, however, is the ability to share applications across boundaries. The OSS license not only creates a legal capability to share along with a potentially massive financial advantage, but importantly it creates a cultural environment for cooperation and *organizational interoperability*. This is undoubtedly why governments throughout Europe (the UK, France, Germany, Italy, Denmark, Spain and the Netherlands are but a few of the examples) are increasingly turning to OSS as an integral portion of their plans to ensure interoperability among e-government applications.

Projects like Koha, the first open source Integrated Library System, initiated in New Zealand, is an example of such a project, and Moodle or Claroline, course management and education support systems, also demonstrate the model.

4 Ensuring OSS can deliver Interoperability

Open Source Software must not be marginalised by proprietary security mechanisms, intellectual property law or restrictive business models.

The battle of “openness” is still being waged. For the most part businesses have embraced open standards as a means of ensuring degrees of flexibility and vendor independence. Many vendors have also embraced open standards, either because their role in the ecosystem as a provider of horizontal infrastructure or networking capability necessitates it, or because of their desire to participate in markets dominated by other players who use their market position to promote their proprietary interfaces. Some vendors have been successful in exploiting “network effects” and control over programming interfaces and document formats to protect their market positions.

Open Source Software (OSS) represents a new business model, arguably the most significant discontinuity in the ICT market since the internet itself. And like all market discontinuities, some organisations will see it as an opportunity, others as a threat. OpenForum Europe takes a very hard business approach to it and enthusiastically believes it has the opportunity to be more effective, lower cost, provide more choice.

But **not** to suggest that Government should mandate use of OSS in preference to commercial software. If the OSS model is so good then its advantages will be self evident. Governments should not forego the possibility to use commercial software

when it is the superior response to the needs of public administrations. But there is one important caveat: commercial software purchased by public administrations should conform with widely recognised open standards for interoperability.

The extent and applicability of OSS will continue to be much argued, but there can be little doubt it will grow. Proprietary software solutions (so long as they support open standards for interoperability), however, will continue to be valued alongside OSS – mix and match as appropriate: few organisations have the need or desire to make a single choice. But as an aid to interoperability for organisations across Europe it has massive advantages, and potentially massive benefits. This is a clear example where European Governments have the need to provide leadership and both declare the policy for interoperability based on the implementation of open standards. OSS will have an essential role to play in the move to enhanced interoperability. European governments should provide the coordinated advice and practical guidance on how to deliver.

The IDA European Interoperability Framework is a good start to ensuring that **Europe can be open**. The relevance and usefulness of Open Source Software and the OSS development methodology is key to making Interoperability a reality throughout the Union.

5 References

- [1] IDA Interchange of Data between administrations www.europa.eu.int/ISPO/ida
- [2] European Interoperability Framework – for pan-European eGovernment Services - IDA working document - Version 4.2 January 2004
<http://europa.eu.int/ISPO/ida/export/files/en/1674.pdf>
- [3] Neither Market nor Hierarchy or Network; The emerging Bazaar Governance - Benoit Demil University Lille 3 BP 149 59653 Villeneuve d'Ascq Cedex
<http://opensource.mit.edu/papers/demillecocq.pdf>
- [4] Open Source Software – Perspectives for Development by Paul Dravis and InfoDev
www.infodev.org/symp2003/publications/OpenSourceSoftware.pdf
- [5] From a presentation made by Boris Nalbach of Novel to OpenForum Europe Breakfast Briefing – 1st April 2004
- [6] From the OCI Consulting Web Site - <http://www.theaceorb.com/product/benefit.html>

OpenForum Europe was set up to accelerate, broaden and strengthen the use of OSS including Linux, within business - importantly within the context of open verifiable standards. 'Not for profit' and independent it draws its membership from both the supply and user communities. It does not seek to represent the OSS developer community nor present its opinions as being unanimously supported by its full membership.

[Wwww.openforumeurope.org](http://www.openforumeurope.org)

OpenIreland was formed in 2003 to "Support, broaden and accelerate the take-up of Open Source Software (OSS) by business and the public sector in Ireland.". OpenIreland have partnered with OpenForum Europe, and can be reached through www.openireland.com.

OpenApp is a Dublin, Ireland based Information Technology Company specialising in design, implementation, and support of IT solutions primarily based on Open Source Software. OpenApp are active in a number of OSS projects including OpenIreland, OpenOffice.org, Plone and the Open Computer Driving Licence www.openapp.biz