What Does Openness Mean To The Museum Community?

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Abstract

In the provision of networked services for museums the term 'openness' frequently crops up in a variety of contexts including *open standards* and *open source* software. In addition the Web 2.0 environment has led to increased interest in *open content* and in use of freely available networked applications which may be regarded as *open services*. This focus on openness for the developer or service provider can be complemented with a *culture of openness* which encourages the user to actively engage with services and generate their own content.

It can be difficult to argue against the benefits which openness seeks to provide. But will a commitment to openness guarantee the deployment of effective and sustainable services? This paper explores in more detail the potential benefits of openness, but also acknowledges associated limitations. The authors argue that a more sophisticated approach is needed which seeks to make use of open standards, open source and open content if these can help to deliver sustainable services, but is prepared to take a more flexible approach if the perceived difficulties are felt to outweigh possible benefits.

Keywords: open standards, open source, open content.

1. Aspects Of Openness

Open standards

The potential benefits of open standards in a networked development work are well understood. Use of open standards can help to:

- **Maximise access**: Cultural heritage services normally seek to maximise access to their resources and services. Ideally, access will not be limited by constraints such as the device used by the end user; their physical location; their location on the network, etc. or personal factors such as disabilities.
- **Provide application- and device-independence**: The dangers of lock-in to particular applications or hardware platforms are widely acknowledged.
- **Provide long-term access to resources and services**: Long term access to scholarly resources and cultural heritage resources is of particular importance for public sector organisations.

- **Support interoperability**: There will be a need to ensure that services and data can be used not only within its own environment, but also across other digital services and across other application areas. A prime purpose of open standards is to provide such interoperability.

Such benefits explain why lists of relevant open standards have been developed for several national and international digital library development programmes including, in the UK, JISC's Information Environment programme (JISC, 2001) and the NOF-digitise programme (NOF, 2001) and, in Europe, the Minerva programme (Minerva, 2004).

Open source

Free, Libre, and Open Source Software (FLOSS) is software that, amongst other things, ensures the recipient of that software is able to use it for whatever purpose they desire. Unlike closed source software the user is provided with everything they need to modify and customise the software according to their needs. This customisation can be carried out by anyone with the required skills, such as the user themselves, an IT department or a third party contractor.

This freedom to use, modify and redistribute software is fundamental to the Free and Open Source software movements. It is these freedoms that differentiate open source software from closed source software. However, open source software is not free as in beer, it is free as in speech. Although open source software does not carry licence fees, there are costs involved with implementing it in your organisation – costs which are often greater than purchasing closed source software.

Software rarely works as needed out of the box. Usually it requires customisation to integrate with existing systems and processes. The freedom to access the source code and modify it accordingly ensures that these customisations can be done in the most cost-efficient way available to your organisation. That is, you can use your own internal IT staff or you can engage an appropriate third party contractor. With closed source software only the software vendor has access to the source code in order to make these modifications.

This introduction of competition into the marketplace can increase the quality, satisfaction and flexibility of any solution. Furthermore, the availability of the source code for the application helps to ensure that the software remains valuable to the organisation regardless of the changing strategic objectives of any single software development or support organisation.

Finally, since the full source code of an application is available there is no incentive to attempt to lock-in a customer by using proprietary extensions to file formats or data standards. Thus, the adoption of FLOSS will usually result in a more complete adoption of open standards, that is, open source software will often enhance the benefits identified in the open standards section above.

Open content

The notion of providing access to content in an open way is a core part of what has been labelled "Web 2.0". Although this term has become part of the ecosystem in which we now work, the subtleties have in many areas yet to be worked out. For many people (and in many contexts) "Open Content = Free Content". For organisations such as museums where exploitation of IPR is a core part of their business, this is understandably very hard to come to terms with.

The Creative Commons (CC) licence set [http://creativecommons.org/] was first published in 2002 and provides the means for authors to share their creative work under a set of terms which are relevant and easy to use in the age of the networked world. Creative Commons was set up to counter what is seen as an increasingly restrictive set of copyright laws among large media distributors. More recently Creative Commons licences have been extended to include database rights (Nodalities, 2007).

Unlike watermarking or DRM (digital rights management), which enforce the use (or non-use) of content in particular ways, Creative Commons relies heavily on the trust of the individual who is using the derived work. As such it fits well with individuals who are licensing their work but is viewed with more caution by institutions. For many museums, it is images which are of most interest: these continue to be an important source of income generation: to date institutions have posted smaller images or watermarked large versions rather than full-size and full-access.

At the core of the debate about the open access to content are a series of questions which go beyond the initial monetary value of a particular image or asset and instead start to focus on what value can be had to *opening* access to content rather than restricting it. The "Google Effect" - particularly around images, but also around other content types, means that content is often used and re-used in ways which don't match the original intention. Users consistently embed images from Google image searches on their MySpace pages or blogs: traffic is no longer necessarily the direct result of movement through a site. From a purely financial aspect, traditionalists would argue that this distills the financial impact of assets. From a marketing perspective however the benefits of allowing - or even encouraging - this approach are huge. The *long tail* of niche content particularly echoes the open approach.

Open services

Any notion of open content requires the means of getting to the content. In the past this access was purely via the institutional Web site. Now, however, the content is being opened up: initially by search engines and better search engine optimisation. This simple form of "openness" made on-site content available to off-site tools such as Google images.

Open services take this openness a step further. Simple data feeds (such as RSS) provide access to content without requiring the user to visit the content-hosting site. A conventional application of RSS is for news and other rapidly changing content, but the premise is the same for any kind of content - for example the feed at http://feeds.technorati.com/search/mw2008 enables users to subscribe to a particular search term on Technorati. In essence, this is not an RSS feed, as most users understand it, but a programmatic means of remotely querying the Technorati site - the beginnings of a very simple API. Extending this notion, that content can and should be exposed programmatically, moves us into the realms of SOAP and REST (or possibly SOAP).

Increasingly, content rich sites are beginning to implement RESTful approaches to open content. Flickr, Google, Yahoo, Amazon, for example, all allow users to query their respective content databases and return results for use in third party applications.

Many of these approaches are proprietary and sometimes commercial, but all have business models to ensure some level of sustainability and hence reliability. Most ensure that the original service isn't usurped by the third party application by having terms of service to ensure scales of use aren't abused.

Open services extend to *hosted Web applications* such as Google Maps, Simile Timeline, widgets, etc. In such cases data may be passed to and from these applications and end users are given the means to embed the interface on their own Web site.

Open culture

Openness is a core component of Web 2.0. At the heart of Web 2.0 are core notions of putting users first: user-centricity and openness are therefore intrinsically linked. Web development companies and end users alike find that this humanising of institutions is an incredibly powerful driver for marketing. Companies like Microsoft actively encourage blogging, some of it critical of the company, by employees. This is a world apart from the traditional marketing approach where all comment and content about a company is carefully moderated. Users are increasingly welcoming an open debate rather than a closed, sanitised one.

This open culture encourages companies to be honest about mistakes, to take a modest and open approach to listening to users. From a user perspective, user generated content has of course become a cornerstone of Web 2.0, and with it there is a drive to trust your users, allow them to self-moderate or even speak their mind about you and the service you as an institution offers in comments, blog posts and forums.

Open culture is also challenging: the authors have themselves focussed on this in the past with papers (Ellis, 2007) looking at the issues which appear when openness is at the core of what you do online. Of particular interest to museums and other cultural institutions is always the question of authority: how to move from an environment in which curatorial voice is absolute to one where the end users begin to curate - or at least to *prosume* - themselves.

2. Complexities Of Openness

Open standards

Despite widespread acceptance of the importance of open standards and the feeling among some that use of open standards should be mandatory in the development of networked services in practice, organisations may fail to implement open standards in their provision of access to digital resources. This may be due to several factors:

- **Disagreements Over The Meaning**: There are confusion over the definition of 'open standard'. For example Java and Flash are considered by some to be open standards, although they are, in fact, owned by Sun and Macromedia, who, have the rights to change the licence conditions governing their use (perhaps due to changes in the business environment, company takeovers, etc.) Similarly, there are questions regarding the governance of apparent open standards, with the control of RSS 1.0 and RSS 2.0 providing an interesting example; this lightweight syndication format has a complex history plagued by disagreements over governance and the roadmap for future developments.
- **Difficulties In Mandating And Enforcing Compliance**: There are also issues with the mandating of open standards. For example: What exactly does '**must**' mean? When told you must comply with HTML standards, a developer working on a project might first ask, 'What if I don't?' Then what if nobody does? There is a need to clarify the meaning of must and for an understandable, realistic and reasonable compliance regime.

- **Failure In The Market Place**: It also needs to be recognised that open standards do not always succeed in gaining acceptance in the market place: they may be too complex to be deployed, and the user community may be content to use existing closed solutions and reluctant to make the investment needed to make changes to existing working practices.
- **Failure To Satisfy User Needs And Expectations**: There is a danger that a development approach may over-emphasise the importance of open standards to the detriment of the end user's needs and expectations.

Despite such reservations, in reality many IT development programmes are successful. The success may be based on the deployment of agreed-upon and well-defined open standards. However in other cases, development work may adopt a more pragmatic approach, making use of mature open standards but having a more flexible approach to newer standards when there has been no time to reflect on the strengths and weaknesses and the experiences gained in their use.

Open source

Open source software is not a panacea: when procuring open source it should be evaluated just like any other software solution. Consider, for example:

- **Inactive development of the software:** It is important to look at the level of active development in a project before adopting it within your organisation. In the absence of active development is your organisation willing to take responsibility for the project?
- **Incomplete software:** Open source projects are encouraged to release early and often. This can result in software releases that are not yet ready for production use. Does the current release implement the critical features in your requirements? Can you find similar organisations which have implemented the software and are happy with it? Does the software work as it is supposed to?
- **Lack of community support:** A healthy open source project will have an active support structure for new users. Such support is usually provided by volunteers who have an interest in the ongoing success of the project. A lack of such community support may be an indicator that there is little or no community development work and thus the project may struggle with medium term sustainability issues.
- **Lack of commercial support:** Whilst a healthy community support structure can be enough for those organisations with suitably skilled IT staff, other organisations will want to purchase support for the product. The presence of one or more commercial support organisations is often a strong sign that the project is healthy and viable.
- **Incomplete documentation:** Documentation in open source projects is perhaps the most commonly cited problem with open source. Look for published books and for up to date tutorials published on third party Web sites. The existence of such materials may demonstrate that technical writers feel they can make a living by providing such documentation.
- **Lack of adequate internal or contracted skills:** If your organisation chooses to train internal staff to support open source products can you survive the

departure of those staff? Similarly, any contracted support company should be sufficiently staffed to be able to provide uninterrupted support.

- **Unmanaged development model:** Open source development should not be chaotic and unmanaged. There should be a very clear development process that describes how contributions are made and how they are evaluated for inclusion. It should also describe how contributors investing considerable resource in customisations can become a part of the project management. This is to reassure significant contributors that their work will remain available to them in the future. Some projects have a formal structure governing this kind of development, others have a more fluid structure. In both cases the rules of engagement need to be clear.
- **Internal open source policy:** An organisation that adopts an open source software solution should have a clear policy about how staff (either internal or contracted) engage with the open source project. It is important that, wherever possible, local modifications are shared with the central project. This helps to ensure the ongoing sustainability of the core project and reduce the cost of maintenance for the organisation.

It is possible to bypass these concerns by contracting a company to provide your solutions. The company can insulate the organisation from the open source projects used in the final solution. In this case it is the contractor who considers the above issues. However, it is recommended that the organisation takes, as a minimum, an observing role within the open source development communities. This will ensure that the contractor is looking after the interests of its clients within the community and, should there be a need to switch contractors or bring the solution in house, there is an understanding of how to do so. Engaging with open source communities is alien to most IT staff; however, it is not difficult.

Open content

As outlined above, access to content has in the past been strictly controlled. Scarcity has historically been the definer of monetisation: by limiting access to a particular resource or asset, it becomes sought after, and therefore gains financial or social value.

Online, this access is much more fluid. Text and image content that is published on the web is available to all; technologies that attempt to prevent or limit usage (watermarking or DRM software, for example) have met with limited success. DRM gets very bad press online: many of the recent drives by the music industry for instance have been around removing DRM limitations and giving people free access to music they have downloaded. Visually watermarked images are often seen as tainted images, made useless - or at very least less attractive - by the technology which is supposed to retain their value. Electronic watermarking is considered by most to be expensive to implement.

Users will often go to Google Images first to find a picture for their screensaver, blog or MySpace page. Watermarked images will most likely be ignored in favour of un-watermarked. In this and other contexts, the question that the content owners now need to ask themselves is:

"*..do we limit access to this content as we have done in the past, knowing that users are fickle enough to go elsewhere - or do we increase and encourage access, knowing that far more people will see and use our material if we do so..?*"

Overall, many industry commentators see the importance of scarcity being usurped by scale in this new world order - instead of limiting access, use the scale of the web as the key driver in creating value. This may mean creating openness around assets and giving "free" access to them, and then building business models on the back of this, for instance capitalising on the advertising value of an "asset" page with a high traffic throughput, or using this page to derive value with on-context linking ("you liked this image, how about this exhibition?").

In the museum context the “long-tail” or “lifetime” value of assets become crucial, and a question which is still yet to be answered adequately. If your institution doesn't make money from selling the image rights directly then value has to be ascribed to the long tail of, for instance, marketing exposure, advertising exposure, brand, virality, etc. This is complex and subjective. Often, understandably, institutions instead choose to lock down their assets and sell rights as they always have: it has a more obviously positive financial impact.

Open services

Although there are many popular Web 2.0 services which are available for free their use with a business context may cause concerns over the sustainability of the service, especially if it is used to support important business processes. The lack of agreed contracts and the difficulties in engaging in negotiations over the terms and conditions are likely to be alien to those involved in procuring software services and the negotiation of contracts, terms and conditions. In addition to the concerns organisations may have over the long term sustainability of services with whom there may be no formal financial agreements, there may also be concerns over possible changes to terms and conditions (such as the introduction of charges or withdrawal of services) as well as concerns related to data lock-in - how easy, for example, will it be to migrate data to alternative services? It should be noted, though, that in addition to such concerns which are likely to be openly articulated there may also be fears regarding possible down-sizing of a department or individual concerns over redundancies or deskilling.

Open culture

Organisations may also have worries regarding user-generated content (UGC), such as the provision of blogs and wikis, encouraging individuals to comment on articles produced by museum professionals or in providing communication channels to facilitate more open discussions. Such concerns may be exacerbated in the services are hosted by third party services as the legal responsibilities in such circumstances may be unclear. No matter where the service is hosted the concerns are likely to include flaming and inappropriate language; copyright infringements; spamming and inappropriate or irrelevant materials; etc. There will also be concerns over the resource implications in providing and managing such services, which will include the costs of moderating inappropriate content.

3. Addressing The Complexities

Open standards

How should museums respond to the limitations of open standards described above? The authors feel strongly that such limitations need not mean an abandonment of a commitment to seek to exploit the benefits of open standards. Nor should it necessarily mean imposing a stricter regime for ensuring compliance. As described in (Kelly, 2007a) experience has made it clear that there is a need to adopt a culture which is supportive of use of open standards

but provides flexibility to cater to the difficulties in achieving this. This culture and approach is based on:

- A contextual model which recognizes the diversity and complexities of the technical, development and funding environments;
- A process of learning and refinement from patterns of successful and unsuccessful experiences;
- A support infrastructure based on openness, such as use of Creative Commons to encourage take-up of support materials and address the maintenance and sustainability of such resources.

There is a need to recognise the contextual nature to this problem; i.e. there is not a universal solution, but we should try to recognise local, regional and cultural factors which will inform the selection and use of open standards.

Over time, in response to the problems outlined, the authors and others have developed a layered approach intended for used in development work (Kelly, 2005).

This contextual approach uses the following layers:

- **Contextual Layer**: This reflects the context in which the standards are used. Large organisations may choose to mandate strict use of open standards in order to build large, well-integrated systems intended for long term use. For a smaller organisation, perhaps reliant on volunteer effort with uncertain long-term viability, a simpler approach may be more appropriate, perhaps making use of proprietary solutions.
- **Policy Layer**: This provides an annotated description (or catalogue) of relevant policies in a range of areas. The areas will include descriptions of standards, ownership, maturity, risk assessment, etc. It summarises the strengths and weaknesses of the standards.
- **Compliance Layer**: This describes mechanisms to ensure that development work complies with the requirements defined within the particular context. For large, public funded programmes there could be a formal monitoring process carried out by external auditors. In other contexts, projects may be expected to carry out their own self-assessment. In such cases, the findings could be simply used internally within the project, or, alternatively, reported (if deviations are significant) to the funding body.

It should be noted that, although it is possible to deploy this three-layered approach within a funding programme or community, there will be a need to recognise external factors over which there may be no direct control. This may include legal factors, wider organisational factors (for example, there are differences between higher and further education, museums, libraries and archives), cultural factors, and available funding and resources etc.

It is also important to note that the contextual approach is not intended to provide an excuse to continue to make use of proprietary solutions which may fail to provide the required interoperability. Rather, the approach seeks to ensure that a pragmatic approach is taken and that lessons can be learnt from the experiences gained. In order to ensure that the experiences are shared across the development community (and more widely), it will be important to ensure that systematic procedures are in place to ensure that the experiences are properly recorded and widely disseminated.

Open source

As described in (Kelly, 2007b) the contextual model developed to support the selection of open standards can be extended to include decision making for the use of open source software. Although this approach can help in the selection of open source software it does not address approaches which can help to ensure the sustainability of software which is developed under an open source licence.

Sustainable software, whether open source or not, is software that will generate profit or cost savings which consistently outstrip the development and maintenance costs of that software. In terms of cost savings from open source, it is important to note that such savings are spread across all active users of the software since all users of the software are able to contribute to the ongoing development of the product. Additionally, for open source, there may be companies providing profit driven services based on the open source product. It is in their interests to ensure that the software remains viable, otherwise a vital part of their product will be lost. Thus such companies will contribute towards the ongoing viability of the software as part of their business plan.

Conversely, for closed source software a single vendor must be able to maximise returns from the software. Such a vendor creates a monopoly on licence fees and support, customisation and maintenance contracts. By creating a monopoly for these additional services the closed source company restricts competition and can therefore set support prices as high as the market will bear.

However, making source code available under an open source licence is not sufficient to ensure the software becomes sustainable. There must also be a vibrant and active community of users who, either directly or indirectly, contribute to the ongoing development and support of the project. In this sense open source is more than a licensing model, it is also a way of developing software.

To create sustainable open source software it is necessary for someone to foster this collaborative community. They must lead and coordinate that community's effort. And they must ensure that anyone who wants to contribute in a way compatible with the projects goals can do so with ease. Failure to foster this community will usually result in the software being abandoned (the originator has lost interest) or the code will be closed (the sponsoring commercial party is fed up with giving whilst receiving nothing in return).

That is, the success of open source software is dependant on the existence of enough users to make the product viable and the existence of a leader able to bring together those users in a collaborative support structure. Such support can be internal IT staff time or financial payments to third parties willing to support the software.

Open content

Addressing the complexities of open content is likely to be more problematic than is the case for open standards and open source, as this will directly impinge on an organisation's business models. It seems likely than organisations will initially be reluctant to make changes which might appear to undermine well-established business models.

In many respects there are parallels with the growth on the Web in the mid-1990s. At that time there were conflicting pressures between enthusiasts who encouraged the establishment of a Web presence and uncertainties of the reasons for doing this and concerns over the costs. There may be lessons to be learnt in drawing these parallels including changes in the users' expectations, the development of new business opportunities

and also unexpected benefits which may be gained. There is also the need to assess the risks in failing to provide open content, which could include the traditional audience migrating to new services and competing services exploiting failures to innovate.

It is worth noting the Library of Congress recent announcement of a partnership with Flickr which aims to provide users with "*a taste of the hidden treasures in the huge Library of Congress collection*" (LOC, 2008). Such initiatives from high profile organisations such as the Library of Congress may help to encourage greater engagement with commercial providers.

Open services

It is undoubtedly true that Web 2.0 companies may go out of business or change their terms and conditions. On the other hand, this is equally true of traditional commercially-provided software or services, with an agreed contract providing no guarantee of the long term sustainability of the services provided. But such risks occur in many walks of life: banks, for example, can (and do) go out of business, but this does not mean that one should ignore the banking profession and store one's savings under the mattress. Rather in both our personal and professional lives we measures the risks associated with decisions we make and make judgements based on those risks and the plans we formulate for addressing problems if the risks are realised.

UKOLN has published a briefing document on Risk Assessment For Use Of Third Party Web 2.0 Services (UKOLN, 2007) which summarises various risks associated with use of externally-hosted Web 2.0 services. An example of how this risk assessment approach could be applied within the context of use of Web 2.0 services to support a conference is available (UKOLN, 2006a).

It should be noted that when carrying out the risk assessment one should also document the risks of doing nothing (which might include the missed opportunity costs) and the risks associated with replicating well-established services - Google, for example, could go out of business or change the terms and conditions for its search engine, but would it be sensible to attempt to replicate this service? This exercise can also provide an opportunity to document the risks associated with continuing to make use of existing in-house services: for example is the company which provides or supports the software and services you current use in a financially stable position.

Open culture

Allowing end users to comment on your services will entail the risks of inappropriate content being published on your Web site. One response to such risks would be to deploy a publishing regime which requires comments to be approved. However this approach can acts as a barrier which may deter users from engaging with the service. A number of services, such as The National Archives' wiki (TNO, 2007) has taken a decision to allow unmoderated updates to their wiki, but will remove entries if they are inappropriate. A similar pragmatic approach is being taken by Brooklyn Museum (Caruth, 2007) where use of a variety of Web 2.0 services, such as Flickr and Twitter are being used.

Another potential danger is the risk of automated spam. Blog postings which are full of comments which advertise services will act as a barrier to the user of the service, as well as detracting from the service provider. However spam filters such as Akismet seem to be successful in preventing a large proportion of automated spam.

The policy decisions which organisations need to make will be based on the perceptions of the likelihood of inappropriate content, the willingness to take such risks and the

mechanisms used to manage such risks. Organisations such as The National Archive have chosen to accept the possibility of inappropriate content being added to their wiki, but will have 'just-in-time' policies for deleting such content and have documented guidelines for identifying inappropriate content (non-English language resources, for example, are not permitted, to avoid the dangers of inappropriate content being published in a language which the site owners do not understand).

4. Conclusions

Although the benefits of openness are increasingly being appreciated by and exploited by a variety of sectors, including cultural heritage, education, other public sector bodies as well as the commercial sector, the authors would argue that the cultural heritage sector, in particular, should be pro-active in its engagement in this area. Such engagement needs to be aware of the limitations. The paper has provided suggestions as to how such limitations can be addressed. However, in a spirit of openness which is in keeping with the theme of this paper, the authors invite readers to contribute to the discussion by sharing their experiences, positive and negative, of exploiting openness within their services.

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