E-Governance in Public Sector ICT Procurement: What is Shaping Practice in Sweden?

By Björn Lundell[71]

Is it reasonable to require any person or organisation to purchase specific software in order to be able to communicate with a governmental organisation? This question is at the heart of an ongoing debate in many countries within the EU, because of its implications for accessibility, transparency, democracy, and fairness in procurement and markets. In this paper we consider the inability of many Swedish governmental organisations to communicate in open formats, and report on an investigation into policy formulation which has led to this situation in one sector – local government. We conducted a survey of all municipalities in Sweden. The final response rate was 99%, after 4 months and a maximum of 7 reminders. We find that there is little or no evidence of consideration given to document formats when procuring software. And in a large majority of cases, there is no documentation of any decision process. Further, organisational adoption of application suites seems more influenced by tradition and a desire to upgrade existing IT

---

infrastructure than by any form of analysis and evaluation prior to purchase. In several municipalities specific applications are even named in procurements, which is in conflict with EU directives. There is also considerable confusion amongst respondents related to the difference between application and file format. We make a number of recommendations. Evaluation of document formats should always precede decisions on application and should include interoperability and lock-in considerations. Municipalities must take responsibility for the evaluation of both document formats and office applications before adoption. Further, when assessing the total cost of ownership the analysis should include consideration of exit costs in the procurement. The study highlights a lack of strategic decision making with respect to accessibility, and a resultant lack of transparency with respect to ICT procurement.

Introduction

In a public speech in Brussels, Neelie Kroes, then European Commissioner for Competition Policy, stated that

"No citizen or company should be forced or encouraged to use a particular company's technology to access government information." (Kroes, 2008)

In a strange twist to this statement, a report commissioned by the Swedish government (SOU, 2010) on access to public information states that:

"It is not reasonable to require an authority to purchase new software to be able to provide information in electronic form."

Does this represent a stand-off between the rights of an individual and the rights of government organisations? Or does it represent a natural tension which needs to be resolved technically? A clue is contained in the same report:

> *"Even if an agency discloses a public document in electronic form, it is irrelevant to the individual if that disclosure is made in such a way that he or she cannot access that information in readable form."* (SOU, 2010)

To resolve this tension, then, there is a need to separate out the issue of software purchase – with the reasonable concern about public authorities having to maintain many systems to allow provision of documents in any requested format – from the issue of accessibility of document content. In interoperability terms, this reduces to a need for agreed standard formats, which can be supported by many software products provided on many platforms. This chimes with the recommendation from the Swedish archiving association TAM-Arkiv (TAM, 2010) for long-term access to documents, namely:

> *"<u>Never</u> use vendor dependent formats for long term storage if you can avoid it, because they often are too unstable, too unstructured, and with dependencies to different suppliers' business strategies."* (stress as in the original)

The recommendation stresses the difficulty of assessing how long proprietary formats will be supported and finds them unsuitable for long-term storage. In fact, for decades organisations in the public sector have been concerned about the need for "avoiding vendor lock-in when procuring IT infrastructure." (Guijarro, 2007, p. 91)

With growing recognition of the problems associated with reliance on proprietary formats, there is a commensurate growth in calls for the use of open standard formats for document

interchange. An important principle underlying the idea of an open standard is that it ensures that data can be interpreted independently of the tool which generated it. This is one of the main reasons behind the recommendations of the FLOSSPOLS (2005) project that: "*open standards should be mandatory for eGovernment services and preferred for all other procurement of software and software services.*" In line with this, we note that policies on using open document formats in the public sector have been adopted in a number of European countries, including two of Sweden's neighbouring countries: Denmark (Denmark, 2010; ITST, 2010) and Norway (Regjeringen, 2009a; Regjeringen, 2009b).

With the adoption of such policies it is clear that there are European countries that expect software companies to adopt open standards "if they want their products to be used by the government." (Fairchild and de Vuyst, 2007, p. 150) One major justification for this is clear: when people want to "interact with government, in either their role as a citizen or a member of a business, they want to do so on their own terms." (Borras, 2004, p. 75)

Over the years, public sector organisations have used a range of different open and proprietary document formats. ODF (ISO/ IEC 26300:2006) and PDF/A (ISO 19005-1:2005) are two open standard formats, which have been recognised as international standards (by ISO) and as national standards in many countries. Both formats have been adopted and implemented by different providers of software systems. Two examples of proprietary file formats are IBM's RFT-format and Microsoft's doc-format.

Open standards have been discussed by researchers and policy makers for a long time (e.g. Bird, 1998; EU, 2004; SOU, 2009). An *open standard* (EU, 2004; SOU, 2009) is a *standard* which has certain *open* properties. Such standards can be used as a basis for

implementation in software systems under different (proprietary and open source) software licenses. A standard is "a published document that contains a technical specification or other precise criteria designed to be used consistently as a rule, guideline, or definition." (BSI, 2010) When a standard is published and its *technical specification* contains sufficiently detailed information it can be used as a basis for implementation in software applications. For example, the ODF document format has been implemented by several providers using different (proprietary and open source) software licenses (e.g. OpenDoc Society, 2011). On the other hand, the specification of the published Office Open XML standard (ISO/IEC 29500:2008) contains references to external web pages (referring to one specific company's own web site) which are not available. We note that these formats and standards have been extensively discussed (e.g. Brown, 2010; MacCarty and Updegrowe, 2009; Tsilas, 2008), but acknowledge that an analysis of this discussion is beyond the scope of this paper.

From a legal perspective, Swedish and European law for public procurement aims to achieve procurement practices that stimulate a fair and competitive market based on the important principles of transparency, non-discrimination and equal treatment (Directives 2004/17/EC and 2004/18/EC). These directives clarify the public procurement process and how technical specifications can and shall be used in such processes. An important basis is that technical specifications "shall afford equal access for tenderers and not have the effect of creating unjustified obstacles to the opening up of public procurement to competition". Further, a technical specification "shall not refer to a specific make or source, or to a particular process, or to trade marks, patents, types or a specific origin or production with the effect of favouring or eliminating certain undertakings or certain

products." (Directive 2004/17/EC (Article 34) and Directive 2004/18/EC (Article 23)). Only on an "exceptional basis" (e.g. when functional requirements cannot be described and for a subject-matter for which there is no international standard) public procurement may refer to specific trade marks and products, but procurement of document formats and office applications is not such an exception.

In this paper, we first consider the recorded situation with respect to support for open document formats in Swedish governmental organisations. We then report on a new study of policies on document formats and ICT procurement related to office document processing. The objective is to understand the influences behind established practice in decision making in Swedish municipalities, and hence help to explain earlier findings of a lack of engagement with the issue of document formats.

Background

An earlier study investigated the level to which Swedish local authorities, health regions and governmental organisations were unable or unwilling to process an ODF file sent to them (Lundell and Lings, 2009). ODF was chosen as an exemplar of an open document format which some European governments insist on being supported by their organisations.

Less than a quarter of local authorities responded to the ODF questionnaire; more than two thirds of respondents acknowledged that they were unable or unwilling to open the document sent to them in ODF. More than a third listed no open formats as preferred for receiving documents. However, a large majority endorsed proprietary formats for such communication.

A part of the investigation was into policies related to the document formats which were accepted. It was found that an

understanding of document formats as separate from products using those formats was very low, and there was a surprising and worrying lack of associated policies and strategies available. Only 4 percent claimed to have a policy on accepted document formats, and of these the majority simply endorsed a proprietary format.

Policy making was found not to be transparent, with practice left to the influences of managers and technicians. There is also an evident gap between what public organisations have stated publicly about receiving documents in open formats and what those same organisations do in practice. There were authorities which claimed to accept communications in ODF, but were amongst those failing to open the ODF document sent. The majority which did open the ODF document responded to the questions in a proprietary format.

A second investigation looked at practice in local government with respect to electronic records of important board minutes (Lundell and Lings, 2010). These are not legally required to be archived in electronic form; the only legal requirement is for each municipality to maintain paper copy of the minutes of that board. It was therefore considered to be a good indicator of practice in the absence of a legal requirement.

In the study, minutes were requested, in their electronic form, for the executive boards. It was emphasised that the documents should be supplied in their stored format. The following minutes were requested from each: the most recent board meeting; a meeting from ten years ago; the oldest stored electronically. This gave a perspective on availability and the document formats used. It was found that there are already significant gaps in the electronic archives.

No municipality was found to have a policy with respect to maintaining electronic copy of executive minutes. In the absence of a direct duty to preserve electronic copy, paper copy is still

overwhelmingly seen as the only archive medium. This is in spite of the fact that Sweden is considered amongst the most advanced countries in e-Government.

Where electronic copy is kept, it was found that proprietary and closed formats are overwhelmingly used for public documents. This was the case even though there was experience of losing access to documents because of formats which were no longer supported. Further, there was no evidence that the situation was changing. No municipality provided a document in a reusable, open standard document format, in stark contrast with stated central Government vision.

In fact, in its 2004 IT bill (2004/05:175), the Swedish government declared that the use of open standards should be promoted (Regeringen 2005; EU 2005). We also note that the responsible minister for Swedish municipalities has expressed support for open standards as defined in European Interoperability Framework version 1.0 (Odell, 2009), which has also been adopted in the Swedish e-Government strategy (SOU, 2009). Further, based on a legal analysis by the Swedish Association of Local Authorities and Health Regions, there is a recommendation that citizens should be allowed to communicate with members using the established open standard ODF (Lundell and Lings, 2009; SALAR, 2007; SALAR, 2008).

Research Method

The research question addressed through this study is the following. Given that certain document formats are preferred by municipalities in Sweden, to what extent are these preferences informed by policies, either related to document formats or to software procurement?

The question is made easier to answer in Sweden, which has a very strict policy on governmental responses to questions: all questions must be responded to. We sent an email in plain text to each municipality (290 in all), with follow-up reminders sent over a three month period. The email contained six requests.

In the first section, the municipalities were asked about document formats, specifically the format actually used by each municipality in their earlier communication with us. The first was a request to supply any policy or strategy document related to sending out documents in the specified format. The second was a request to inform us of any organisational decision behind the use of the specified format, and to supply any documentation. The third asked for information about any planned revisions to working practice.

The second section related to software procurement, and in particular that related to software for writing office documents. The first two requests were for factual information about the application primarily recommended within the municipality: what is it and when was it (or an earlier version of it) first introduced into the organisation? The third was a request for the documented decision (along with any other related documents) for the most recent procurement related to the application.

The study resulted in both quantitative and qualitative data. Quantitative data was analysed to gauge the overall position with respect to informed decision making about document formats and office applications. The text of responses, together with that of any supplied documents, was analysed qualitatively, to give some insight into the real state of practice.

Responsiveness To The Questionnaire

The request email was sent to the registered address of each municipality. A municipality is required to respond promptly (at least with an acknowledgement), usually interpreted to mean within 24 hours. If no response was received within a working week, then a reminder was sent. This continued with, after the second reminder, increased emphasis that the email included a request for public documents that they are required by law to respond to.

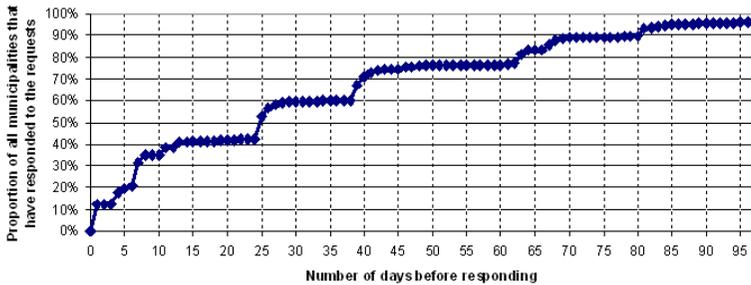This resulted in the response profile shown in Figure 1.

Figure 1: Evolution of response rate over time

As can be seen, 20% (59) of the municipalities responded to the initial request within 3 working days. A reminder elicited further responses, resulting in a 42% response rate (122) after 3 weeks. After a second reminder, the majority (59%) had responded. The final response rate after 4 months was 99%. Overall, a maximum of 7 reminders was used, although many further interactions were required to probe more deeply when initial responses were inadequate. Four municipalities failed to respond.

Some delays were evidently caused by confusion over who should respond, no individual feeling able to respond to all requests. This meant that the email was circulated within the organisation. In some cases this resulted in partial answers being given from different parts of an organisation – primarily a split between answers to the two sections of requests. The second section was often answered by the ICT department. This even resulted in different responses being made to the same request by different people within the same organisation. In a small number, one ICT department served several municipalities. This caused initial confusion over whether an individual response had been made on behalf of more than one municipality.

A few municipalities explicitly declined to respond and some provided partial responses, which were probed further. It is possible that some people interpreted the email as a survey and missed the fact that it contained explicit requests for public documents. A few spent time on a response refuting their obligation to respond. In these cases, a simpler request for the required documents was sent (with reminders) which did elicit some responses.

We estimate that, for a well organised authority, it should take less than ten minutes to respond to the email (we have anecdotal information which reinforces this), so it is unlikely that resource demand was a significant factor in a decision not to respond, or in an extreme delay in responding.

Observations From The Analysis

Few municipalities have a documented policy regarding the use of document formats (see Table 1).

Documented policy for document format exists?	Percentage of municipalities
Responded yes	2%
Responded no	95%
Decline to respond	3%

Table 1: Existence of a documented policy on document formats

Only 2% of all (290) Swedish municipalities claimed to have a documented policy for the practice of sending out documents in the specific formats used by their municipality. By far the majority (95%) specifically responded that there was a lack of documented policy/strategy. The remaining 3% declined to respond.

In total, 19% of all municipalities supplied documents in response to our request for evaluations and decisions related to document formats and office applications. However, only 8% of all municipalities supplied relevant documents. Among the documents considered not to be relevant were web publication policies; layout instructions; and instructions for how to write documents. It should be noted that no municipality provided a TCO analysis which considered exit costs related to a possible selection of a proprietary document format.

A clear majority (92%) of all municipalities recommend and support MS Office as the primary office application in their municipality for writing office documents; 5% of all municipalities did not mention any office application, or declined to respond on this point.

Most municipalities primarily recommend and support only one office suite for writing office documents. Overall, 86% of all municipalities only recommend and support MS Office in their administration, and 3% only recommend and support OpenOffice.org. A number of municipalities recommend a

combination for their own administration: 5% a combination of MS Office and OpenOffice.org, and 1% a combination of MS Office and StarOffice. Another 4% recommend MS Office for their administration, but OpenOffice.org for (some or all of) their schools (see Table 2).

Preferred office suite (tools) for writing office documents	Percentage of preference by respondents
MS Office	86%
OpenOffice.org	3%
MS Office & OpenOffice.org	5%
MS Office & StarOffice	1%
MS Office (for administration) & OpenOffice (for schools)	4%

Table 2: Preferences for office applications

With few exceptions, municipalities do not undertake any evaluation of either document formats or office applications before adoption. For example, one municipality responded:

> "*No formal, political decision exists; neither is there any documentation or evaluation.*"

Further, the lack of a documented decision related to the selection or procurement of an office application is common to most municipalities. In some, decisions are taken locally with roll-out throughout the organisation without any evaluation: "*The decision was taken by our IT advisory board; no direct evaluation was done. An organisation-wide adoption was made for all units.*"

In some municipalities, the lack of documented evaluations and decisions make the authority defensive, so that except for supplying a copy of the signed contract with their supplier they refuse to elaborate: "*Referring to the above, we report that the*

procurement of our office suite was done through the Select Agreement. We decided on Microsoft Office and attach the agreement with Microsoft. We decline to answer your questions."

Of the municipalities claiming to do some kind of evaluation, most seem totally dependent on processes for IT procurement provided by central agencies for public sector procurement in Sweden, such as Kommentus and Kammarkollegiet. For example, such dependency is clearly illustrated in this response from one municipality: "*There has been no local procurement as we participate in SKL Kommentus AB's and Microsoft's Select Agreement.*"

These central agencies are dedicated to supporting municipalities and other public sector organisations by establishing central contracts from which each municipality calls off licences for office applications. For example, one municipality cites the evaluation performed by the central agency in their response on evaluation, stating that they "*have used the coordinated procurement of software (Microsoft Select) by Kommentus since the mid-1990s. Common evaluation criteria include price, delivery times and other parameters.*" From their complete response it was made clear that the evaluation performed by Kommentus has been their only evaluation, which implies that they have been dependent upon this centrally performed evaluation for around fifteen years. Several municipalities gave similar responses. There is evidence of a common view that some form of evaluation of the office application itself (i.e. the product) is being performed in such central procurement activities.

However, the evaluation of office applications undertaken by Kammarkollegiet and Kommentus does *not* address functionality, licensing or pricing of office applications. Instead, their evaluation is entirely focused on evaluating the reseller. Hence,

even if a municipality signs such a central procurement agreement, there is still a need for them to undertake their own evaluation and analysis of document formats and office applications in order to assess the product before adoption.

Amongst the municipalities that actually have undertaken evaluations that consider file formats, one responded that a decision was made "*to standardise on file format, rather than product.*" A few municipalities report that they have initiated work on developing a policy for document formats: "*We are working on developing a policy document that describes how and in what format external document are communicated. We will certainly decide that documents that should not be edited must be in PDF format and others must be sent in a non-proprietary format, RTF or possibly ODF. Today we have .doc as the document default.*"

Overall, we found that a clear minority (1%) of all municipalities have considered format prior to purchasing office application.

Amongst municipalities that have evaluated applications there are mixed views on applications, and outcomes of evaluations differ. For example, a municipality that evaluated OpenOffice.org found that it fulfilled their needs: "*Since OpenOffice has all the required features and also implied a financial saving the choice has not been difficult.*" On the other hand, a municipality that introduced MS Office concluded differently and recommended MS Office 2007 after their evaluation: "*[Microsoft Office] was introduced in the mid-1990s and was evaluated in 2007, along with OpenOffice 2.4 ... Primarily we recommend MS Office 2007.*" This further reinforces the need for local evaluation.

From the responses it was clear that there is considerable confusion amongst respondents related to the difference between application and file format. Amongst the responses concerning application, respondents mentioned specific names of suppliers

and applications (in almost all such cases the responses included one or both of "Microsoft" and "Word"), whereas in other cases responses referred to specific versions of a specific office suite (e.g. "MS Office Word 2007"). Regarding responses for file formats, respondents mentioned suppliers (e.g. "Microsoft"), applications (e.g. "Word"), and formats (e.g. "Microsoft formats"), and in several cases initially gave incomplete, unclear, and confused responses. In general, from the number of requests for clarification (via email and over the telephone) we note that many respondents do not see a difference between applications and a file formats.

Most municipalities primarily focus their attention on adopting an office application; the file format issue is treated as a consequence of the application choice. For example, one municipality responded that they consider applications as standards and have decided to use these with their 'default' file formats: "*[The municipality] views Microsoft Word and Adobe (i.e. doc and pdf) as de facto standards and has chosen to use them without major evaluation.*" Several others acknowledge that they lack a policy on document formats, but respond that the choice of format is implicitly determined from the choice of application: "*We do not have any specific document that regulates document formats. Instead it is determined over time by monitoring the software version agreed within the municipal organization.*" Yet other municipalities report that, without a decision, they just use the 'default' format which is supported by their application: "*there is no written decision with regard to document formats, but in practice .docx is the default setting.*"

A number of municipalities have a practice of renewing licenses. Renewal of licences is usually being done without evaluation, perhaps over many years. In many cases, the procurement decision dates from a very long time ago. In other

cases, municipalities use centrally procured agreements for renewal of licenses (so it is not considered a new procurement). For example, one municipality responded: "*We have not bought the software, rather we have held licenses since 1992. These licenses have been extended since then and upgraded on a continuous basis. No procurement was done in 1992.*" A different municipality adopted a proprietary product and the office suite has not been evaluated since then: "*In 1997 it was decided that the municipality would use the zac-concept (zero management concept) which is a Microsoft-oriented approach. Since then, the Microsoft platform has not been evaluated. Procurements that we do therefore are for MS Office licenses.*"

Evaluation of file formats and office applications for a municipality cannot be undertaken in isolation of already adopted IT-systems due to various kinds of potential lock-in problems. Therefore, any evaluation and adoption of an office suite needs to consider other systems which have already been adopted. Several responses in the survey indicate that other systems already in use in the municipalities are perceived to dictate requirements on the document format and the office application. Hence, the responses indicate several examples of different kinds of lock-in scenarios, including format lock-in and vendor lock-in. Most such systems require the proprietary .doc format, which makes migration to the open document format (ODF) difficult. For example, one municipality responded that "*many of the IT systems that we already use, or that we intend to procure within the administrative sections, are integrated with, and in some cases totally dependent on, functionality and components in MS Office.*"

Interoperability is critical for municipalities, but several responses indicate that such vendor lock-in is problematic. As illustrated by one respondent: "*Today, suppliers of enterprise support systems to the municipalities are tightly tied to Microsoft*

software. This means that in practice it is very difficult to use open source software to break the hegemony that exists."

In many municipalities a different policy is adopted in schools since interoperability problems related to other legacy systems in the municipality is less of an issue. Overall, our responses indicate that in municipalities where there is less perceived lock-in they are more open to alternatives, as illustrated by this response from one municipality: "*Within administration, where application providers have selected the Microsoft track, we are forced to use their office suite. In schools, only OpenOffice is used.*" Other responses showed that evaluation for schools in some cases is based on other factors for office applications: "*the discussion at the time was that Microsoft had the largest market share amongst companies and municipalities and that it was a good platform for students to learn*"

The practice of sending out and receiving documents varies. Although several municipalities accept PDF there is a clear dominance of using proprietary document formats. For example, one municipality responded that: "*We send out documents in the format in which it is easiest to send them. In most cases, this is .pdf or .doc.*" Two municipalities go so far as to expose, on their public website, which formats they accept: "*[XXX] municipality can only receive files which are in one of the following formats: .doc, .txt, .pdf, .xls*"

There is evidence of a limited but increasing awareness of issues related to document format and application options, including archiving. Some municipalities are beginning to separate out the issue of application from format, and are looking towards archiving needs, as illustrated by this response: "*Open, platform independent, and archive secure file and document formats are important.*"

In addition to the vast majority of municipalities that use the proprietary .doc format for external and internal communication

there is also a small group using ODF as a format for internal communication. One municipality responded: "*If you are intending to send internally, it must be in ODF format.*" However, in this group .doc is still used for communication with citizens. Amongst municipalities that have adopted ODF, responses show an awareness of the need to be flexible and behave accordingly, as illustrated by the response from one municipality: "*Internally, we use ODF. In external contact with partners, we are flexible and can adapt to who we are corresponding with, such as using .doc, etc.*"

Recommendation For Practice

According to the results of the study, municipalities (or some other national public sector organisation) must take responsibility for the evaluation of both document formats and office applications before adoption. Evaluations should be conducted according to the specific needs of each municipality and its outcome should always be documented. A municipality cannot and should not solely rely on central purchasing organisations for setting policy and for analysis of their own requirements.

Any decision based on evaluation outcomes should be documented, and renewal of licenses should be treated in the same way as an initial procurement. Further, evaluation should be undertaken on a regular basis, and at least before each major adoption decision. Education policy should not be dictated by such things as current market share for office applications.

Evaluation of document formats should always precede decisions on application and should include interoperability and lock-in considerations. Enterprise support applications should not be procured if they dictate the use of a specific proprietary document format or office application. Further, when assessing

total cost of ownership the analysis should include consideration of exit costs in the procurement.

Long-term digital archiving is a significant issue for both municipalities and citizens. It is tightly coupled with formats, both for preservation and long-term accessibility. A decision on formats is a policy decision, and must not simply be considered as a 'technical' issue that follows from an adoption of a specific office application. Municipalities should standardise (and base their procurements) on open formats, not on specific office applications.

Citizens should not be expected to buy proprietary software in order to communicate with municipalities; any policy on format must specifically address this point, and also any implications of differences between external and internal communication practices. From this, we recommend that citizens must be able to communicate with municipalities using open formats.

Conclusions

This paper has reported on problems for many Swedish governmental organisations to communicate in open formats. It specifically reports from an investigation into current practice and policy formulation which has led to this situation in one sector – local government.

There are many reasons for the reported problems, including a lack of leadership, awareness and know-how amongst practitioners and those responsible at different levels in Swedish municipalities and other public sector organisations.

Most municipalities do not undertake (or even initiate) an evaluation before procurement of software and adoption of document formats. In responses, reference is often made to central procurement agencies, and a number of municipalities seem to

misinterpret both the scope and focus of evaluation undertaken by those agencies.

Further, it seems that purchasing of application suites is largely a matter of history rather than strategic decisions. In some municipalities specific applications are named in procurements, which is in conflict with EU directives. This implies that many municipalities have made themselves over-reliant upon central agencies.

Each policy/strategy document received from a municipality was analysed to reveal how policies and strategies related to document formats were considered. However, some municipalities provided documents which did not cover document formats, and some responses indicated considerable confusion.

In conclusion, we find that there is little or no evidence of consideration given to document formats when municipalities procure software. In a large majority of cases there is no formal evaluation underpinning procurement decisions and no documentation of decisions. The study highlights a lack of strategic decision making with respect to accessibility, and a resultant lack of transparency with respect to ICT procurement.

References

1. Bird, G. B. (1998). The Business Benefit of Standards, StandardView, 6 (2), 76-80.

2. Borras, J. (2004). International Technical Standards for e-Government. The Electronic Journal of e-Government, 2 (2), 75-80.

3. Brown, A. (2010). Microsoft Fails the Standards Test, March 31, 2010, http://www.adjb.net/post/Microsoft-Fails-the-Standards-Test.aspx.

4. Denmark (2010). Konklusionspapir om anvendelsen af åbne standarder for software i det offentlige. Ministry of Science Technology and Innovation, January 29, 2010, http://vtu.dk/filer/aabne-standarder/bilag58.html *(in Danish)*.

5. EU (2004). European Interoperability Framework for pan-European eGovernment Services, European Commission, Version 1.0, retrieved (22 January 2008) from http://ec.europa.eu/idabc/servlets/Doca2cd.pdf?id=19528.

6. EU (2005). From an IT policy for society to a policy for the information society, Näringsdepartementet, published by the Regeringskansliet, June 30, 2005, http://books.google.se/books?id=7BEzMQAACAAJ.

7. Fairchild, A. & de Vuyst, B. (2007). Governmental Collaboration and Infrastructural Standards in Belgium. The Electronic Journal of e-Government, 5 (2), 145-152.

8. FLOSSPOLS (2005). An Economic Basis for Open Standards, Deliverable D4, December 12, 2005, http://flosspols.org.

9. Guijarro, L. (2007). Interoperability frameworks and enterprise architectures in e-government initiatives in Europe and the United States. Government Information Quarterly, 24 (1), 89-101.

10. ITST (2010). Common understanding on the use of open standards for software in the public sector. National IT and Telecom Agency, Ministry of Science Technology and Innovation, January 29, 2010, http://www.digst.dk/Arkitektur-og-standarder/Standardisering/AAbne-standarder-politisk-baggrund/Konklusionspapir/Common-understanding-on-the-use-of-open-standards-for-software-in-the-public-sector.

11. Kroes, N. (2008). Being Open About Standards. Brussels, June 10, SPEECH/08/317, European Commissioner for Competition Policy.

12. Lundell, B. & Lings, B. (2009). Openness to Standard Document Formats in Swedish Public Sector Organisations. In Boldyreff, C. (Ed.) Open Source Ecosystems: Diverse Communities Interacting, IFIP Information Federation for Information Processing, Vol. 299, Berlin: Springer, 320-329.

13. Lundell, B. & Lings, B. (2010). How open are local government documents in Sweden? A case for open standards. In Agerfalk, P. et al. (Eds.) Open Source Software: New Horizons, Berlin: Springer, 177-187.

14. MacCarthy, M. & Updegrove, A. (2009). Competition in Office Suite Programs, Unpublished Manuscript, May 11, retrieved (12 January 2011) from: http://www18.georgetown.edu/data/people/maccartm/publication-43095.pdf.

15. Odell, M. (2009). Innovations for Europe: Increasing Public Value, European Public Sector Award, Public Speech, Maastricht 5 November, 2009, http://www.regeringen.se/sb/d/11678/a/134858.

16. OpenDoc Society (2011). OpenDoc Society, retrieved (12 January 2011) from http://www.opendocsociety.org/.

17. Regeringen (2005). Regeringens proposition 2004/05:175 – Från IT-politik för samhället till politik för IT-samhället, Prop. 2004/05:175, Stockholm, June 30, 2005, http://www.regeringen.se/sb/d/108/a/47411 *(in Swedish)*.

18. Regjeringen (2009a). Nye obligatoriske IT-standarder for staten vedtatt, Fornyings- og Administrasjonsdepartementet. Press release: July 2, 2009, http://www.regjeringen.no/nb/dep/fad/pressesenter/pressemeldinger/2009/nye-obligatoriske-it-standarder-for-stat.html?id=570650 *(in Norwegian)*.

19. Regjeringen (2009b). Referansekatalog for IT-standarder i offentlig sektor, Ministry of Government Administration, Reform and Church Affairs, Version 2.0, June 25, retrieved (22 December 2009) from http://www.regjeringen.no/nb/dokumentarkiv/stoltenberg-ii/fad_2006-2009/nyheter-og-pressemeldinger/pressemeldinger/2009/nye-obligatoriske-it-standarder-for-stat.html?id=570650 *(in Norwegian)*.

20. SALAR (2007). Digital sopsortering: Att hantera skräppost i kommuner och landsting, Swedish Association of Local Authorities and Health Regions, December, ISBN: 978-91-7164-296-7 *(in Swedish)*.

21. SALAR (2008). Lagrummet: Hantering av bifogade filer, Swedish Association of Local Authorities and Health Regions, 11 January, retrieved (8 February 2009) from http://www.skl.se/artikel.asp?A=50260& C=6621 *(in Swedish),* website now defunct.

22. SOU (2009). Strategi för myndigheternas arbete med e-förvaltning, Statens Offentliga Utredningar: SOU 2009:86, e-Delegationen, Finansdepartementet, Regeringskansliet, Stockholm, retrieved (19 October 2009) from http://www.sweden.gov.se/content/1/c6/13/38/13/1dc00905.pdf *(in Swedish).*

23. SOU (2010). Allmänna handlingar i elektronisk form - offentlighet och integritet. Statens Offentliga Utredningar, SOU 2010:4, Regeringskansliet, Stockholm, retrieved (13 April 2010) from http://www.sweden.gov.se/content/1/c6/13/90/17/0de3bc8e.pdf *(in Swedish).*

24. TAM (2010). Rekommendation - Format för långtidslagring. Version 1.0, March 11, Bromma:TAM-Arkiv, retrieved (16 April 2010) from http://www.tam-arkiv.se/pdf/TAM5-2010_FormatLangtidslagring_1_0.pdf

25. Tsilas, N.L. (2007). Enabling open innovation and interoperability: recommendations for policy-makers. In Janowski, T. and Pardo, T.A. (Eds.) Proceedings of the 1st international conference on Theory and practice of electronic governance (ICEGOV '07), New York: ACM, 53-56.

Dr. Björn Lundell has been researching the Open Source phenomenon for a number of years. He co-lead a work package in the EU FP6 CALIBRE project (2004-2006) and was the technical manager in the industrial (ITEA) research project COSI (2005-2008), involving analysis of the adoption of Open Source practices within companies. He is the project leader for the Open Source Action (OSA)-project (2008-2010), and the project leader for a Nordic (NordForsk) OSS Researchers Network (2009-2012). His research is reported in over 60 publications in a variety of international journals and conferences. He is a founding member of the IFIP Working Group 2.13 on Open Source Software, and the founding chair of Open Source Sweden, an industry association established by Swedish Open Source companies. He was the organiser of the Fifth International Conference of Open Source Systems (OSS 2009), which was held in Skövde, Sweden.