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Determining relevance of "best practice" based on interoperability in European eGovernment initiatives

eGovernment is one of Europe's big challenges, and interoperability is a necessary condition encouraged by the European Commission. Interoperability is believed to ensure effective service to citizens and to perform governmental functions effectively as well as efficiently. Day-to-day commitment as well as demonstrated successes are needed to promote requirements and facilitation for the three main aspects of interoperability: Technical, Semantic and Organisational.

This paper examines samples of European eGovernment initiatives submitted between January 2006 and October 2007 to the EC's ePractice.eu website for evaluation as "best practice" and seeks to determine to what extent a requirement for interoperability is addressed. It is hoped that this study will contribute to emphasizing how interoperability, particularly through open system standards for eGovernment, is under-utilized as an enabler of more effective government services - within national boundaries as well as across other European nations.

By offering examples that display clear applications of interoperability, the EU through its ePractice program can demonstrate clear long-term vision toward goals identified and re-emphasized through the series of planning documents stating such requirements.

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Keywords

Interoperability, eGovernment, open source, efficiency, European Commission

> "Initiatives ranked as one-way service should anticipate customer needs and structure provisions for accommodating them through transactional capabilities"

1 Introduction

Investigation for this paper was based on models for interoperability approaches suggested by various private sector service companies and as prescribed by guidance documentation prepared by the European Commission. Categorizing and evaluating documented eGovernment initiatives against prescriptive models can reveal if measurable progress is being made toward achieving interoperability objectives of the European Commission for improved government service through eGovernment initiatives. Definitions of eGovernment and interoperability based on the literature facilitate the evaluation. Recommendation for incorporating interoperability in eGovernment (as well as other) initiatives are offered.

A case-study approach based on content analysis was followed, but results of analysis were summarized according to type of interoperability requirements and not specific to initiatives reviewed. Content analysis as a research tool focuses on the actual content of the documentation describing an initiative. The methodology for this investigation followed these steps. A literature search was conducted to show relationship between interoperability and eGovernment and to provide a basis for evaluation. Review of eGovernment initiatives submitted to the European Commission as examples of "best practice" was performed. In order to categorize the examples based on interoperability, content analysis techniques based on justifying documentation for each initiative was followed. Data tables were built for interoperability requirement analysis. Determination was made for reviewed systems as to what is appropriate to suggested prescriptive standards and what is unreasonable in an eGovernment application. Synthesis followed. Guidance was offered to eGovernment program developers, and to the community of evaluators which collectively determines relevance to improved government and specifically as examples of "best practice."

2 Literature review

To avoid a limited definition of eGovernment which restricts its meaning to information and services available through the Internet, broader application was used in this paper to include value to government and its customers. A useful definition is found in a Vinnova report published in Sweden. This report discusses an impact not only on public administration but also on the public, on companies and on civil society at large (Nordfors and al 2006).

"Interoperability is not simply a technical issue concerned with linking up computer networks. It goes beyond this to include the sharing of information between networks and the reorganisation of administrative processes to support the seamless delivery of eGovernment services." (European Commission, 2003, p. 3)

Scholl & Klischewski's (2007) article reveals that most integration and interoperation efforts meet serious challenges and constraints. The authors contribute to the development of a research framework on integration and system interoperation in eGovernment initiatives.

One constraint often noted, as presented in the Millard paper (2003), is that a requirement for trust in interoperable systems is lacking due to concerns for data protection, and privacy. Such protections draw particular attention from attempts to balance trust issues with international demands by authorities combating criminality and terrorism. Millard identifies the problem that, "The biggest challenge to interoperability and open technology platforms across Europe is that legal systems between countries are highly incompatible." (p.43)

Marques dos Santos and Reinhard (2006) discuss how governments seek to improve their stages of electronic government by concentrating efforts on the establishment of interoperability standards which facilitate the integration of their systems and information sharing between their federal, state and local agencies. United Kingdom, Germany and France among the European nations cited are countries already implementing such standards. In France for example, the DGME (ex ADAE) has been promoting an RGI *Referentiel Général d'Interoperabilité*.[1]

[1] http://www.thematiques.modernisation.gouv.fr/sommaire.php?id=23

A layered approach to attain semantic interoperability of public sector initiatives available, providing linkage and dependency among types of interoperability, particularly business and technological layers also, is discussed. (van Overeem, Witters and Peristeras, 2006)

Scope of interoperability can be international. "For eGovernment services to support the single market … will require not only interoperability both within and across organisational and administrative boundaries but also across national boundaries with public administrations in other Member States." (European Commission, 2003, p. 3)

In evaluating progress in European country initiatives to improve processes, Capgemini states in its 2006 report a requirement to put "… key enablers in place—enabling citizens and businesses to benefit, by 2010, from convenient, secure and interoperable authenticated access across Europe to public services." (Capgemini, pp. C4, 99)

In a 2004 report, the EC provides guidance on a European interoperability framework, stating that participating nations should, "Address the pan-European dimension of interoperability and provide an answer for the following questions: What is interoperability? Why is interoperability needed at the pan-European level? What are the implications of interoperability from pan-European and national perspectives? (European Commission, 2004, p. 6)

The European Commission report on interoperability explains further that successful interoperability "…will be based on open standards and encourage the use of open source software." (European Commission, 2003, p. 5) Furthermore, to attain interoperability in the context of pan-European eGovernment services, guidance needs to focus on open standards." (European Commission, 2004, p.9)

Westholm notes in his study of twenty government back office service functions that different strategies for governance affect their interoperability. He shows that agreement about interoperability standards is easier within services defined for common user groups that are stakeholders. (Westholm, 2005, p. 127, 131)

3 Interoperability

As figure 1 shows, interoperability has three aspects (also described in European Commission, 2003, p. 7)

- *Technical interoperability* is concerned with technological issues of linking up computer systems, the definition of open interfaces, data formats and protocols, including telecommunications. Implicit is a requirement that integration of data content extends beyond the scope of the immediate initiative;

- *Semantic interoperability* is concerned with ensuring that the precise meaning of exchanged information is understandable and acceptable by any other application not initially developed for this purpose. EC documentation specifies this relevance at the European level; and

- *Organisational interoperability* is concerned with modelling business processes, aligning information architectures with organisational goals and helping business processes co-operate. Mere reference to business does not constitute support to the business of the government entity. Business could also refer to customers or partners of government. This latter use does not in itself qualify as support to the business of the government entity.

Results of interoperability, incorporating the three important infrastructures described in EC documentation, support three different communities: governance, or the administration of government; citizen services; and international coordination. Support to these three communities is the subject of investigation for this study.

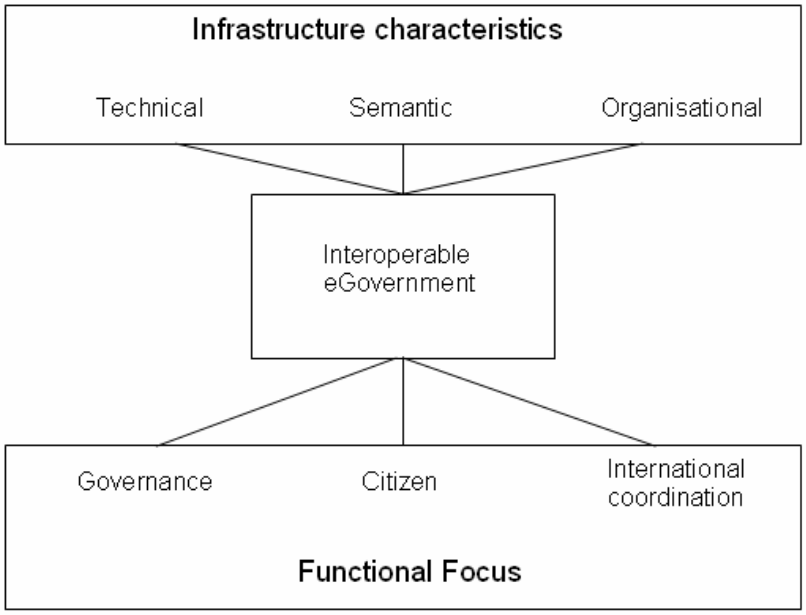

Figure 1. Infrastructure aspects of Interoperability

In its annual assessment of eGovernment maturity plateaus among nations of the world, Accenture (2003) identifies a useful guide for examining interactive accomplishment between agency and customer. Accenture provides five levels which distinguish maturity of eGovernment programs. As maturity levels progress from online description of agency services progressively through one-way and two-way transfer of data, a value for interoperability among agencies and between agencies of different nations can be anticipated.

Level 1. Online Presence: publishing information on the Internet to identify agencies and their respective programs.

Level 2. Basic Capability: delivery of information or documents through customer access.

Level 3. Service Availability: Customers use the Internet to submit information to the agency for processing.

Level 4. Interactive Service: Transaction based processing involving two-way communication between agency and customers.

Level 5. Transformational: eGovernment and customers become equal agents in changing government processes to conform to different requirements and evolving service delivery.

4 Analysis

4.1 The data

The samples of applications are taken from the European Commission's database of best practice eGovernment initiatives. According to the rubric on the ePractice website[2], conditions under which initiatives are accepted for inclusion specify that examples should be real life eGovernment cases, submitted by the ePractice members. Consequently, a " … constantly increasing knowledge base of good practice (containing) hundreds of real-life cases …" could support the community of eGovernment developers. Building tables based on actual and potential interoperability expressed by these initiatives provides the basis for analysis for this paper.

[2] www.epractice.eu

These initiatives are voluntarily submitted by individuals with working knowledge of the applications. The initiatives receive an initial screening to certify their relevance as best practices. Of the 802 examples in the ePractice collection at the time of collection, the most recent 150 were selected for review and analysis.

Interoperability can be viewed from a holistic perspective as emulating the Seven-layer Open Systems Interconnect model. (OSI was officially adopted as an international standard by the International Organisation of Standards (ISO) Currently, it is Recommendation X.200 of the ITU-TS.) Therefore, open systems architectures are further justified as an enabler of interoperability.

4.2 Examples of Initiatives

A data record containing the following data elements was constructed for each initiative to support analysis.

- Name of program
- Brief functional statement containing the basis for analyzing content. This statement from a description of the initiative is justified for analysis because it appears to have been used by EC's ePractice officials to determine if the program should be included as an example of "best practice."
- Classification of the three types of interoperability taken from the literature. The examples of eGovernment from the referenced collection do not contain convenient nor consistent categories to support this evaluation. Therefore, both keywords and key phrases were used to determine the type of interoperability and degree to which open source solutions were used. Five levels were developed to measure the degree an initiative demonstrates each type of interoperability.
- Use of Open Source as a requirement. Five levels were used to represent the extent to which a program includes a requirement for open source solutions.
- Level of maturity for eGovernment applications.
- Most recent date for the submission of the initiative. The most recent date may have been an update to an earlier submission, or the date the initiative was implemented. A date for updating may be assumed to make current the justification used for "best practice" determination. No program was suggested with a date more than two years old.
- Any other descriptive qualification added by the ePractice host to indicate relevance as "best practice".

Limitations of the data: Evaluations depend on extent of documentation provided by initiative sponsors for the ePractice website. Although a suggested structure for submissions was provided by the ePractice host, many sponsors chose less rigorous descriptions to document their best practice examples. Therefore, confidence in the analysis process cannot be strong. Nonetheless, this approach to determine extent of interoperability has not been documented previously, and benefits from careful groupings of the information can be anticipated.

4.3 Demographics

The online database provided at ePractice.eu provides identification and description of eGovernment initiatives. As of 12 February 2008 there were 802 initiatives in the database. At that time, 150 most recently submitted initiatives were selected for investigation. No further criteria for acceptance of best practice examples was used.

The number of European government entities represented by the sample database is 27, plus one Asian country. No country is represented by more than 15 entries. (Spain had the most at 15. Two program entries were submitted for Singapore.) Eight initiatives were identified as European-wide.

The initiatives represented by the sample were clustered in the following categories. No analysis was performed on functional characteristics of the initiatives. The categories are listed here for interest only to demonstrate first how broadly eGovernment is treated in the European community, and secondly, how interoperability easily applies to the three categories represented in Figure 1 as "Functional Applications".

- Citizen participation in government processes (Citizen focus)
- Registration of citizens and businesses (Citizen and Governance focuses)
- Improve financial processing (Governance focus)
- Modernize procurement activities (Governance focus)
- Reporting systems (Governance focus)
- Inter-governmental improvement (International Coordination focus)

In addition to the distinction of being submitted to and accepted by the European Commission as examples of best practice, fifteen of the initiatives were honored by the ePractice host for special accomplishment in supporting eGovernment. These fifteen are also reviewed in this paper as a sub-group.

4.4 Types of interoperability

Following review of the documentation accompanying each of the sample initiatives, figure 2 was developed to show to what degree they described technical interoperability. Based on the accompanying documentation, approximately one in four (28 percent) lack any description of technical interoperability. In only 12.7 percent (10.7+2.0) of the initiatives was there an obvious or explicitly described requirement. The remaining 131 initiatives might involve technical interoperability, but documentation is inadequate to make this determination.

Figure 2. Technical/technological interoperability (n=150)

	%
5 – Explicit requirement	2.0
4 – Obvious requirement	10.7
3 – Probable requirement	30.0
2 – Possible requirement	29.3
1 – No obvious requirement	28.0

Semantic interoperability requires that stakeholders and business partners of an initiative share in the expectation that the program scope is beyond that of the local community. Based on EC guidance, multiple countries within Europe should be committed to successful operation in this broader scope. Figure 3 shows that based on documentation accompanying initiative submissions, more than three-fourths (76.7 percent) lack any requirement for semantic interoperability, that is to say the functionality of the initiative is limited to the sponsoring government program entity. A very low 7.4 percent (2.7+4.7) describe explicit or obvious requirements for semantic interoperability.

Figure 3. Semantic interoperability (n=150)

	%
5 – Explicit requirement	4.7
4 – Obvious requirement	2.7
3 – Probable requirement	5.3
2 – Possible requirement	10.7
1 – No obvious requirement	76.7

(rounding error)

Business interoperability means that performance of a program contributes to improved business functions of the sponsoring government program entity. Merely improving the way information moves between government and its customer does not in itself constitute business interoperability. Effectiveness is a better determinant of business interoperability than efficiency. Figure 4 indicates that 8.0 percent (2.7+5.3) of the initiatives cite at least obvious or explicit intent to improve business functions. Almost half (43.3 percent) of the initiatives provide no documentation to indicate business interoperability.

Figure 4. Business or organisational interoperability (n=150)

	%
5 – Explicit requirement	5.3
4 – Obvious requirement	2.7
3 – Probable requirement	10.7
2 – Possible requirement	38.0
1 – No obvious requirement	43.3

Initiatives could have been classified as interoperable based on any one of the three aspects in order to qualify under the European Commission's definition for effective eGovernment. By classifying each initiative by the highest degree attained in any of the three types, as shown in figure 5, fewer than twenty-five percent (12.0+10.7) of the initiatives demonstrate at least obvious interoperability of any kind. A full fifty percent (21.3+28.7) demonstrated less than a probable requirement for interoperability.

Figure 5. Highest level of interoperability of any type (n=150)

	%
5 – Explicit requirement	10.7
4 – Obvious requirement	12.0
3 – Probable requirement	16.7
2 – Possible requirement	28.7
1 – No obvious requirement	21.3

Of the 150 initiatives in the study database, 15 were cited with a special award for demonstrating best practice. Figure 6 shows how this sub-group reflects the importance of interoperability for eGovernment. As in figure 5, each initiative was assigned the highest degree assigned for any of the three types of interoperability. The criteria for supporting a special award clearly justifies, even if only implicitly, a requirement to attain interoperability in at least one of the three types. Fully two of three (40.0%+26.7%) of the specially awarded initiatives are documented as characterizing interoperability.

Figure 6. Highest level of interoperability from any type of special award

	n = 15	%
5 – Explicit requirement	6	40.0
4 – Obvious requirement	4	26.7
3 – Probable requirement	2	13.3
2 – Possible requirement	3	20.0
1 – No obvious requirement	0	0

Investigation within interoperability aspects for the sampled initiatives. A different perspective on the nature of interoperability is gained by viewing each aspect within an other. Figure 7 shows a mapping of the organisational aspect within the semantic aspect within the technical aspect. By examining this figure it can be seen that while 19 initiatives state explicit (3) or obvious (16) requirements for technical interoperability, only five of these initiatives identify either explicit (2) or probable (3) semantic interoperability; and all five of those which demonstrate both technical and semantic interoperability, all demonstrate organisational interoperability. Only one initiative which demonstrates explicit technical interoperability also demonstrates explicit organisational interoperability.

Figure 7. Semantic and organisational aspects within the technical aspect of interoperability (n=150)

Technical Aspect	Semantic Aspect	Organisational Aspect
Explicit requirement (3)	Other (3)	Explicit requirement (1)

		Other (2)
Obvious requirement (16)	Explicit requirement (2)	Probable requirement (2)
	Probable requirement (3)	Explicit requirement (2)
		Probable requirement (1)
	Other (11)	Other (13)

In figure 8 organisational interoperability is mapped within technical interoperability within semantic interoperability. Within the eleven initiatives demonstrating semantic interoperability (seven explicit and four obvious) only five represent technical interoperability, and within these only two demonstrate organisational interoperability. Of the four initiatives demonstrating obvious semantic interoperability (but no technical operability) only one initiative demonstrates organisational interoperability.

Figure 8. Technical and organisational aspects within the semantic aspect of interoperability

Semantic Aspect	Technical Aspect	Organisational Aspect
Explicit requirement (7)	Obvious requirement (2)	Probable requirement (1)
		Other (1)
	Probable requirement (3)	Explicit requirement (1)
		Other (2)
	Other (2)	
Obvious requirement (4)	Other (4)	Obvious requirement (1)
		Other (3)

In figure 9 semantic interoperability is mapped within technical interoperability within organisational interoperability. Within the 12 initiatives demonstrating organisational interoperability 11 also demonstrate technical interoperability, and within those only four initiatives demonstrate semantic interoperability.

Figure 9. Technical and semantic aspects within the organisational aspect of interoperability

Organisational Aspect	Technical Aspect	Semantic Aspect
Explicit requirement (8)	Explicit requirement (1)	Other (1)
	Obvious requirement (2)	Probable requirement (2)
	Probable requirement (5)	Explicit requirement (1)
		Other (4)
Obvious requirement (4)	Obvious requirement (1)	Other (1)
	Probable requirement (2)	Other (2)
	Other (1)	Obvious requirement (1)

In examining figures 7-9, it can be seen that very rarely do two different aspects of interoperability appear in the same initiative. In no initiative do all three aspects appear simultaneously as interoperable. Figure 10 shows how frequently the three aspects appear in the same initiative. Of the 19 initiatives which demonstrate technical interoperability (from figure 2), only five initiatives demonstrate semantic interoperable and only six demonstrate organisational interoperability. Of the 11 initiatives which demonstrate semantic interoperability (from figure 3), only five demonstrate technical interoperability and only three demonstrate organisational interoperability. Of the 12 initiatives which demonstrate organisational interoperability (from figure 4) , eleven demonstrate technical interoperability and only four demonstrate semantic interoperability.

Figure 10. Simultaneous occurrence in multiple aspects of interoperability

	Technical	Semantic	Organisational
Explicit or obvious	19	5	6
	5	11	3

	11	4	12

4.5 Open Source architecture

As a related condition to interoperability, the sampled initiatives were investigated to see to what extent open source solutions supported interoperable functionality. This investigation follows assertions of the European Commission report on interoperability that open source solutions are necessary to assure interoperability. [European Commission, 2003, p. 5] Figure 11 shows that open source did not play a large role in the sample of initiatives taken from the ePractice website. Fully 84 percent (126 of 150 for levels 1-3) of initiatives provided no indication that open source solutions were involved. Fewer than 10 percent (6.0%) stated explicitly that open source solutions were part of the initiative.

Figure 11. Presence of open source solutions in best practice initiatives

	N = 150	%
5 – Explicit requirement for open systems	9	6.0
4 – Probable open architectures	15	10.0
3 – Open source only for its value	1	0.7
2 – Proprietary but with potential	29	19.3
1 – No potential stated	96	64.0

In only a few initiatives were open source solutions stated explicitly as an enabler of interoperability. As figure 12 shows, only 24 of the 150 initiatives reviewed demonstrate explicit or obvious interoperability. Of these, 25 percent (6 of 24) were described as proprietary in design. However, interoperability was considered to be at least possible in 29 of the 150 initiatives in spite of there being no open design specified explicitly. The balanced distribution of interoperability across proprietary and open architectures suggests the likelihood that open source was not a significant factor in determining interoperability for the reviewed initiatives. Open source architectures does not appear as a determinant in selecting initiatives as best practices.

Figure 12. Comparison between open source and proprietary design (n=150)

Technology for interoperability	Potential for Interoperability	
	Possible or Probable (30)	Obvious or Explicit (24)
Open source	3 initiatives	18 initiatives
Proprietary	8 initiatives	6 initiatives
J2EE, XML, Web Tools	9 initiatives	
Unspecified	10 initiatives	

4.6 eGovernment Program Maturity

By utilizing the five-level maturity plateaus presented by Accenture (Accenture 2003) as another method for measuring interoperability potential for the sample of eGovernment initiatives, one can appreciate a need for further development of these initiatives before benefits of full operability can be realized. In figure 13, the state of eGovernment maturity, as measured by Accenture, can be seen across the three aspects of interoperability shown above in figure 1. Initiatives demonstrating basic access for eGovernment customers on average also demonstrate possible interoperability (score of 2). Those initiatives demonstrating interactive participation between government and customers on average also demonstrate probable interoperability (score of 3).

Figure 13. Mean Scores (rounded) for ePractice initiatives by measuring interoperability aspects within plateaus of eGovernment maturity

		Interoperability Aspects		
		Technological	**Semantic**	**Organisational**
Maturity Plateau Attained	Basic Access	2	1	1
	One-way service	2	1	2
	Interactive	3	2	2
	Transformation	2	3	3

Notes: Interoperability aspects are shown in figures 2-4.
No initiative attained only plateau level 1 (on-line presence)
Only one initiative attained the transformational plateau

5 Synthesis and explanation

Interoperability does not appear to be a significant factor among eGovernment initiatives characterized by the ePractice host as best practice, in spite of guidance published by the European Commission encouraging otherwise. As Scholl & Klischewski pointed out, serious challenges exist which might discourage interoperability accommodation by eGovernment initiatives. One deterrent results from inadequate standards, as suggested in EC guidance. Even as recently as 2006, according to the Marques dos Santos and Reinhard findings, standards as fundamental elements in eGovernment system design were absent.

Does this study show that interoperability is not present in e-practice initiatives? Or does it mean that best practice evaluations do not focus on interoperability? We cannot answer these questions scientifically. However, in avoiding future difficulties in qualifying eGovernment initiatives as "best practices," we could recommend that sponsors provide descriptions more relevant to interoperability definitions found in EC literature. One example of structure would be based on the three dimensions (interoperability, functions, national/supranational) provided in Figure 14.

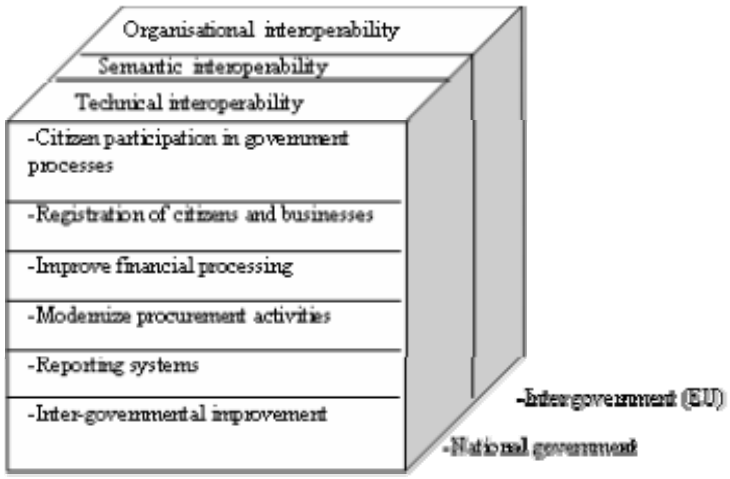

Figure 14: Characteristics of interoperable systems in terms of scope

If it can be assumed with high confidence that documentation adequately described each respective initiative, one should wonder why inter-governmental interoperability is not more significant in best practice examples of eGovernment.

One explanation for lack of inter-governmental interoperability is that initiatives are more likely funded by individual nations rather than through a central European body. Thus their scopes would be restricted to requirements local to the governments they serve and who pay for development. Consistent with Westholm's

findings for back office applications, an initiative based on requirements in one government entity is likely to differ from another's due to non-standard methods of governance between the two entities.

Additionally, the nature of the best practice award process is such that single nations are ranked implicitly in competition against one another. In demonstrating achievement in order to receive a high ranking, an individual nation's accomplishment toward its own mission becomes key. Also, effort toward interoperability is only recently encouraged (since 2004), but competition for acknowledgment as best practice has been in place since 2002, or earlier.

Another possible reason for lack of focus on interoperability is that nationalism plays a strong role in the e-practice examples. Nations do not appear to be positioning themselves for Internet-based interaction. Any interaction between nations implies a need for human involvement rather than Internet-based system interaction (the latter providing the interoperability). Language differences may also play a role in national rather than European focus on interoperability. It is acknowledged however that attaining any level of interoperability does not imply a measure of quality nor even relevance to another nation's government for the application. Nor does it imply that initiatives lacking interoperability are not effective within their respective scopes.

A final observation relates to a question of significance for open source architectures. As one of the characteristics encouraged by the EC, open source software applicability across nations is important. The use of proprietary software in eGovernment applications renders interoperability extremely doubtful, unless a single vendor product were common to multiple national eGovernment systems. Based on data in this study, the most under-represented characteristic of interoperable systems is the use of open source software solutions.

6 Next steps

The eGovernment 2005 Action Plan for EU showed renewed emphasis that eGovernment is one of Europe's big challenges. Based on past experiences in developing eGovernment programs - influenced no doubt by long term visions - day-to-day commitment as well as demonstrated successes are needed to promote requirements and facilitation for interoperability.

Capgemini states that following guidance developed at country and European levels would improve interoperability - with other EU information systems - and thus improve services in the public sector. [Capgemini, Annex, p. 27] Additionally, following existing frameworks within countries would enable interoperability between distinct government functions and departments. [Capgemini, Annex P. 41]

In terms of eGovernment maturity of the e-practice samples, further development could improve utility through various actions. [Accenture, 2003] Initiatives ranked as basic access could identify clearer targets for interoperability and build frameworks for service provision. As Millard pointed out in his paper (draft) addressing ePublic services in Europe, cooperation between agencies across national borders should be encouraged to go beyond the first generation of Internet-based provision of information to fully interactive services that ensure interoperability and dependability. In this manner, initiatives ranked as one-way service should anticipate customer needs and structure provisions for accommodating them through transactional capabilities. Initiatives ranked as transactional should develop standard processes which could be accepted across other agencies in different nations. Services should be marketed to gain maximal participation.

It is hoped that this study will contribute to emphasizing how interoperability, particularly through open system standards for eGovernment, is under-utilized as an enabler of more effective government services - within national boundaries as well as across other European nations. By offering examples that display clear applications of interoperability, the EU through its ePractice program can demonstrate clear long-term vision toward goals identified and re-emphasized through the series of planning documents stating such requirements. One application clearly visible in EU-wide publications is the development of national identities used for automobile and driving registrations, then expanded to other international travel documents. Perhaps as part of such demonstration the need for common compatible legal structures can also be emphasized.

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