

# Interoperability of Identity and Identity Management Systems

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*Interoperability in Identity and Identity Management Systems is a mounting concern for European policymakers, governments and administrators. Plans are being discussed, for example, with respect to European eIDs. However, interoperability seems to be too focused on technical aspects at a time when privacy concerns are emerging as a major stumbling block. How can Europe achieve a more balanced approach? This article discusses the results of the current FIDIS research in the area of interoperability.*

## Introduction

As the integration of European society develops in line with the desires of the European community to facilitate mobility of capital and labour across the 25 countries that comprise the EU, the question of interoperability in respect of identity and identity management systems is one of increasing concern for policymakers, governments and administrators, as well as ordinary citizens. All computer-based systems that support the administration of public services and health are able to function on the basis of manipulating identities that relate the digital information they hold to real individuals who live and operate in the real world. Since electronic databases were invented, the need to use identifier information to manipulate and retrieve stored data has required investment in identities that convincingly bind the digital records to their flesh-and-blood referents. The problem has been that every database has had its own identifiers and this multiplicity obstructs the cross-matching and cross-referencing of the stored information. Identities used in one system may be useless in another.

The call for interoperability of identity and identity management systems has brought into question the value of stand-alone repositories of information of the kind held in public and health administrations. In the interests of greater efficiency and simplicity the push by the EU towards European eIDs has considerable merit. The idea of a mobile population moving to live, work, holiday and retire, in different states of Europe requires a concomitant adaptation of the administrative systems that support these movements and these activities. The eEurope Action Plan 2005 asked the European Commission „to issue an agreed interoperability framework to support the delivery of pan-European e-government services to citizens and enterprises”<sup>1</sup>. The IDABC is

a core source of information on interoperability in Europe. Its authors developed a European Interoperability Framework that „defines a set of recommendations and guidelines for e-government services so that public administrations, enterprises and citizens can interact across borders, in a pan-European context.”

## 1 FIDIS research on interoperability

Against this background FIDIS has set up its own Work Package to study interoperability. Its aim is to increase the understanding about what the various issues are in this question. The researchers do not seek to develop actual solutions but to extend knowledge about the issues involved.

Clearly the question of making interoperable identity information is not a straightforward one. On the one hand there are many situations where being able to cross-match identity information about citizens and consumers would be of enormous benefit to them. One can imagine occasions when medical details held in one system would greatly assist the work of health practitioners in another domain – such as in an emergency following an accident while working abroad. On the other hand, without the appropriate control in the hands of the data subjects, interoperability could be another weapon in the hands of the surveillance society, unwelcome in a world where privacy is still valued.

Finding a pan-European solution to this dilemma is not likely to be easy. There are countries such as the UK where massive opposition exists to any idea of an ID card, let alone an electronic one, while at the same time a country such as Portugal has an ID card, with fingerprint biometrics on it, enjoying considerable public support. Understanding more about the relative questions of technology, law and culture in the move towards interoperability of identity forms the core aim of this work.



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<sup>1</sup> <http://europa.eu.int/idabc/en/document/2524/330>

The following sections give an overview of early from the FIDIS Work Package on interoperability.

## 2 Approaches on Interoperability

The FIDIS report „A structured account of approaches on interoperability” [Ba06] prepares the ground for a lengthy study into interoperability in this area. It demonstrates the value of a relatively simple three level framework of technical, formal and informal aspects („TFI model”) for reviewing interoperability issues of different types of IMS.

The work of creating interoperability will certainly be aided by widespread adherence to common frameworks. It will be a recurring theme within the FIDIS Work Package to search for frameworks that can simplify the task of developing the interoperability of identity management systems (IMS). The framework will need to incorporate elements for assessing the degree to which a given IMS performs on each of the three levels in the TFI model.

The report concludes that although technical standards can remove much of the uncertainty surrounding the compatibility of such systems, developing and specifying such standards is but the first step in the process of interoperation. It recognises that further work lies in the task of reconciling the legislative and policy rules that govern the way that personal information is processed and exchanged. At this level there has been progress with the European Union developing its strategies to prepare the ground for electronic IDs for e-government and e-health. Of course there is uneven progress as different countries proceed at different rates – but this is nothing new.

At the social and cultural level, considerable importance lies in understanding the different normative contexts in which IMS are built and operated. Different perspectives on identity prevail in different national and regional environments and these need to be understood and addressed before progress towards interoperability may be made. Where there is resistance to the untrammelled transfer of identity and personal information, riding roughshod over deeply held views will not necessarily resolve the issue. It may be necessary to enter into dialogues about the benefits that ensue in return for access. This means policymakers

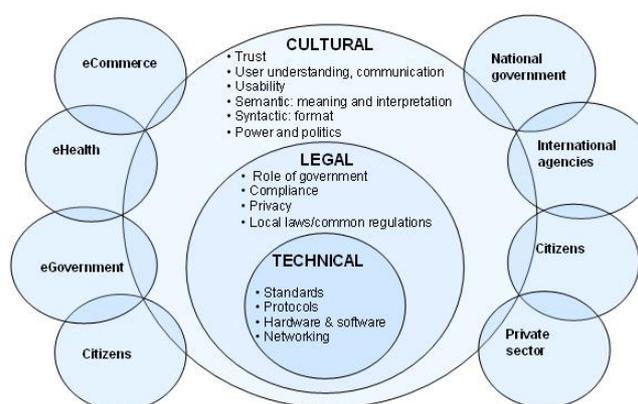


Figure 1: Main themes from interviews

must assess public sentiment and the privacy impact of the IMS and act accordingly before pitching headlong into implementations that may arouse deep suspicions and resentment.

In some contexts interoperability is seen as the enemy of privacy. Indeed, lack of interoperability may be seen as a bulwark against intrusion into the privacy of personal information. Privacy activists take comfort from the fact that different IMS may not be able to exchange identity information. In these contexts, regard must be had for the role and powers of the data subjects in consenting to their personal information being exchanged between systems.

The FIDIS report on approaches to interoperability produced a bibliographic database of the relevant literature, available on the FIDIS web site<sup>2</sup> and includes a number of case-study type contributions on different applications of identity management systems including credentials systems, driving licences, European passports and government to consumer applications.

A review of the interoperability issues in identity management in Ambient Intelligence contexts concludes that this matter will be an important one for determining how this technology will be shaped in the information society that is emerging.

## 3 Interop requirements for IMS

A second report „Set of requirements for interoperability of Identity Management Systems” [BaVe05] highlights the spread of opinion revealed from in-depth interviews of a group of European experts in applica-

tion areas of identity management on the issue of interoperability of such systems.

Figure 1 illustrates the main themes derived from the analysis of the interviews. This second report builds on the earlier report described in Section 2 that presented a literature review and an account of research in interoperability. It uses the three-part conceptual framework of technical, formal and informal dimensions through which to frame the questions posed and interpret the answers given.

The 23 interviewees drawn from 5 different European countries, while differing on details, display a remarkable consensus on many of the issues. Application areas from which the experts are drawn range from e-government, e-health and e-commerce, and while, given their specific nature, there may be many points on which such applications might diverge, the likelihood of interoperability was judged to turn on a small number of key questions, mostly non-technical.

Importance is given to building trust in the citizen and end-user through good communication, usability, compliance with data protection and privacy principles.

The main results from the expert interviews are:

- ◆ Despite the obvious importance of other elements to the information society, in terms of interoperability, this exercise has shown that the **social, institutional and political dimensions are seen as the most important** by all experts as opposed to the technical and the legal. Only one expert saw the technical to be more relevant. In particular, semantic issues of meaning and interpretation, and syntactic issues of format and rule in interoperability were seen as the most critical.

<sup>2</sup> <http://www.fidis.net/>

- ◆ The question of whether such systems will be used and adopted seems for most experts to be a critical issue of trust. In this regard, the **ability to communicate with citizens and end-users** alike in general about how the system works and its benefits is vital.
- ◆ **Privacy** of personal information and **compliance with data protection** legislation figures unsurprisingly as one of the main requirements for an interoperable system. There can be no interoperable systems that ignore the issue of protection of personal information. European regulation requires all the European states have legislation on this and it is a matter of how differing approaches may be reconciled.
- ◆ Of all the actors involved in interoperability, government were considered to play the decisive role in establishing interoperability technology standards and laws. The private sector was seen as a key partner for the implementation. **Government should create right environment** for fostering the interests of the private sector.
- ◆ In line with most systems development issues, **usability was seen as a vital factor**. If the end-user is able to cope with the interface to the system there is a better chance of the interoperable system being accepted and trusted. Systems may be rejected merely on the grounds of poor usability.
- ◆ **Opinion amongst the experts diverged as to the importance of technology**. Some said that all necessary standards are now available, others said standards have yet to be developed and implemented.

The report contains a selection of some 13 full interviews which were conducted by different FIDIS Partners. While the main focus in the report lies on analytical summaries of the responses in the three application areas, interested readers are also directed to review the interviews in the Appendix as they contain interesting and detailed reference to the current state of play in the respective countries and application areas.

## 4 Survey on user trust in ID systems

Currently the FIDIS Interoperability Work Package is near to completing a further

deliverable, a survey on interoperability. Given the findings of the previous reports, in this exercise the focus lies on examining citizen's trust in the authorities responsible for Identity Management Systems to exchange data in an appropriate manner across government departments, between governments and commerce and across European countries.

In order to develop a survey to analyse issues of user trust in ID systems and authorities, FIDIS research conducted an extensive study of the trust literature. The trust literature is vast and emanates from various disciplines. We chose to follow the theoretical underpinnings of institution-based trust (McKnight et al., 2002, Pavlou, 2002, Zucker, 1986) because it is suited to analysis of the type of trust that users experience with ID cards. This type of trust is different from other types of trust relationships, such as inter-personal or inter- and intra-organisational. User's trust in ID card systems resembles more „trust in the system“. The constructs for assessing this type of trust relate to the user's perceptions of the institutional environment surrounding the issuance and management of the ID cards.

Therefore, the constructs developed here are based both in the theoretical underpinning of institution-based trust theory and in the findings from the interviews of the experts in the second report (cf. Section 3). The constructs included professionalism, control, legal and policy, governance, monitoring, ease of use, technical security and so forth. For each construct, respondents were given a stimulus phrase and asked to rate the statements from 1-7 in line with their perceptions, e.g.:

Considering a government ID card, rate the following statements on a scale from 1-7:

### Professionalism

*I believe that the authorities that manage my ID data are professional and competent*

The underlying notion being examined is: User perception of competence in authorities is expected to lead to higher levels of trust in the system.

Currently the data from over 2000 respondents from Germany, UK, Hungary, Spain, Poland, the Czech Republic and Greece are being analysed and a final report will be ready and publicly available from the FIDIS web site in October 2006.

## Conclusion

The subject of interoperability is complex and covers the whole range of issues from technical, legal, policy, cultural dimensions. The approach taken by the FIDIS Interoperability Work Package participants has been to focus on developing a holistic framework to address the diverging issues and to deepen understanding especially of the social and cultural questions.

The reason behind this choice has been the feeling that many of the EU projects in the interoperability domain tend to privilege the engineering and legal perspectives for harmonising and inter-operating identity management systems, but that the place of the citizen's feelings and perceptions has not been sufficiently considered.

It is our hope that in a small way we have begun to redress the balance.

## Literature

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