

Interoperability at Local and Regional Level – A Logical Development in eGovernment

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Introduction

The digitisation of processes and services within public administrations has for some time been of increasing importance as a means to increase the efficiency and quality of services. It is therefore paramount that IT systems and databases can communicate with one another in a manner that ensures that data transfers can be interpreted by the recipient.

The importance of this is illustrated by the high priority placed on eGovernment actions in the eEurope 2005 Action Plan and the Ministerial Declaration following the high-level Ministerial eGovernment Conference (Como, Italy) in July 2003, which recognised that the "...cooperation required to develop pan-European services depends in part on the interoperability of information and communication systems used at all levels of government...". This, in addition to the 2003 eGovernment Communication¹ identifying the need for the development of an interoperability framework to support the delivery of eGovernment services to citizens and enterprises, led the European Commission to launch the Modinis² calls for tenders in 2004.

The Modinis programme

The Modinis projects form an integral part of the i2010 programme, the aim of which should be seen in the context of attaining the Lisbon (and eEurope) objectives and implementing Council Conclusions.³ Put more pragmatically, IT solutions must be interoperable in order to communicate in a productive manner and a number of questions can be outlined in this regard:

- What is eGovernment interoperability?
- Why is it so important?
- What does the Modinis "Study on Interoperability at Local and Regional Level" (Modinis 2) set out to do?

eGovernment interoperability

The Modinis 2 project defines eGovernment interoperability as the ability of public authorities' information communication technology (ICT) systems and business processes to share information and knowledge within and across organisational boundaries in order to better support the provision of public services as well as to strengthen support

to public policies and to democratic processes.⁴

In order to analyse eGovernment interoperability, Modinis 2 endorses the interoperability aspects introduced by the European Interoperability Framework (EIF),⁵ namely:

- Technical interoperability aspects
- Semantic interoperability aspects
- Organisational interoperability aspects.

However, organisational interoperability is defined in a broader sense than in EIF. Thus, the following understanding is:

- Technical interoperability "... covers the technical issues of linking computer systems and services" (as per the EIF).
- Semantic interoperability ensures that "...the precise meaning of exchanged information is understandable by any other application that was not initially developed for this purpose. Semantic interoperability enables systems to combine received information with other information resources and to process it in a meaningful manner" (as per the EIF).
- Organisational interoperability in EIF is concerned with "... defining business processes and bringing about the collaboration of administrations that wish to exchange information and may have different internal structures and processes, as well as aspects related to requirements of the user community." For the purpose of this study, we have broadened the scope of organisational interoperability to also cover the political, legal and structural conditions that are relevant to the development and use of interoperable applications. We call this additional set of aspects "Broader organisational interoperability aspects". To distinguish it from the narrower set included in EIF, we call the latter "Service/process-related interoperability aspects".⁶

In summary, in its analysis of key success factors, barriers and the provision of recommendations on eGovernment interoperability, Modinis 2 will consider the following categorisation:

- Interoperability is not an end in itself, but a tool to solve the problems of different stakeholders. The manner in which interoperability solves a given problem varies according to the type of eGovernment area and services. With respect to eGovernment online service provision, Modinis 2 has identified five different settings in which the advantages of interoperable ICT systems are evident:

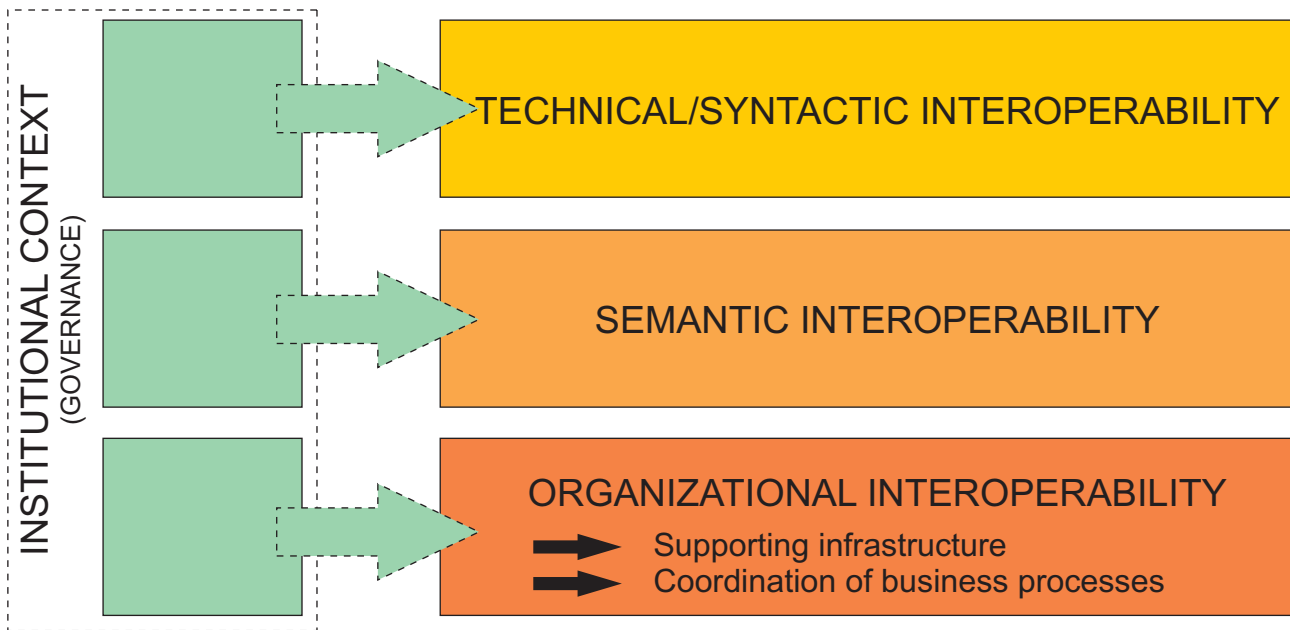


Figure 1:
Layers/Elements of an Interoperability Architecture (Modinis 2)

- Between different services referring to the same customer, namely bundling services (e.g. according to life events or problem scenarios) to save resources or to improve service quality (one-stop government).
- Between different stages of a supply chain that is producing one or more services, namely when a single service cannot be produced completely by one single agency, there is a need for interoperability between data and workflow contributions from other agencies/back offices.
- Between single agencies in different geographical areas, namely interoperability referring to the direct data transfer from the system of one administration to the system of another administration (mainly geographical).
- Between directories of services or documents, namely interoperability between local directories, common metadata about the services as well as algorithms for locating the right agency. One crucial issue concerns common descriptors for services and agencies.
- In auxiliary services (identity management, digital signature, etc.).⁷

These different settings require different approaches to achieve a high degree of integration via interoperability. Currently, there is insufficient knowledge to tell what is the best approach to achieve a high degree of interoperability. On the other hand, this is not a completely new field for action. A lot of relevant concepts have been discussed at various conferences, several projects are dealing with different aspects of interoperability, and important work is being done in projects and by standardisation committees. The big challenge is to provide both an overview of this complex landscape and guidance for the different stakeholders in achieving interoperability at the requested level. This is why the objectives and expected outcomes of Modinis 2 are of such interest.

Modinis “Study on interoperability at local and regional level”

The Modinis “Study on interoperability at local and regional level” (Modinis 2) commenced on 21 December 2004 as a result of the European Commissions call for tenders (Modinis Tender Number 2004/S 120-100788). The project runs for 26 months, ending on 20 February 2007. The Modinis study on interoperability forms part of the larger Modinis call for tenders, which includes the Modinis “Study and supply of services for the reinforcement of exchange of good practices in eGovernment” (Modinis 1) and the ‘Study on identity management in eGovernment; (Modinis 3).

Objectives and expected outcomes

The objectives of Modinis 2 are:

- To intensify the exchange of information on practical eGovernment interoperability experiences at the local and the regional level and to support further actions to improve cross-border and pan-European interoperability.
- To identify and analyse cases to be fed into a good practice framework supplied by the Modinis 1 consortium.

The expected outcomes can be grouped under three main areas:

- Exchange of experiences and case studies
- Local and regional interoperability study
- Dissemination and promoting progress and take-up of interoperability, including workshops.

To understand the interconnectivity of the methodology utilised by Modinis 2, one must pay particular attention to the different aspects of the project. These are (1) the method of information gathering – that is, stakeholder input and feedback through workshops, surveys and other interactive methods – and (2) that each of the three main components

– that is, the good practice cases, the study and the workshops (including other dissemination and feedback functions) – are interlinked and provide direction and content for one another. Modinis 2 in turn feeds its findings into the Good Practice Framework.

The consortium and other partners

The work of the Modinis 2 project is being carried out by a well-qualified partnership comprising two centres of technical excellence and another that acts as a focal point in Europe for the collection and dissemination of knowledge, and which supports and promotes the eEurope and the i2010 objectives. The Modinis 2 Consortium consists of the following partners:

- The Institute für Informationsmanagement Bremen (ifib), which is attached to the University of Bremen (DE). For many years, ifib has contributed to the eEurope agenda both through participating in projects and programmes and through writing technical papers.
- The Centre for Research and Technology Hellas and the Informatics and Telematics Institute (CERTH/ITI), which is attached to the University of Thessaloniki (GR). It also has a long history of being involved in projects and research in the eGovernment domain.
- The Maastricht (NL) based office of the European Institute of Public Administration (EIPA), which acts as coordinator and lead Consortium partner. In this, it applies its expertise, experienced staff and network of European public administrations.

In such a project as Modinis 2, Consortium partners and Modinis 1 and 3 are not the only parties with whom cooperation is actively sought. Synergies are also explored and exploited where such are mutually beneficial. Examples are the transfer of good practice cases from the eEurope Awards for eGovernment in 2003 and 2005, the BackOffice study, a cooperation agreement between Modinis 2 and the TerreGov Consortium for the mutual exchange of good practice cases, and the joint organisation of two sessions at the eGovInterop Conference '06 in Bordeaux (FR) on 22-24 March 2006. On a pan-European level, cooperation with the European Public Administrations Networks (EPAN) eGovernment Working Group is being cultivated for assistance in the identification of stakeholders, good practice cases and input for the study on the status of interoperability in EU Member States. To help make Modinis 2 a success, cooperation is continuously encouraged with the Austrian Presidency of the European Union, the Council of European Municipalities and Regions (CEMR), the organisers of the Eastern European eGovernment Days, the Italian Centro Nazionale per l'Informatica nella Pubblica Amministrazione (CNIPA), the Spanish region of Valencia, etc., plus the Consortium's network.

Exchange of experiences and case studies

In order to successfully exchange experiences and case studies, the project has identified stakeholders and multipliers in interoperability from the public, the private and the academic sector. So far, circa 430 stakeholders have been

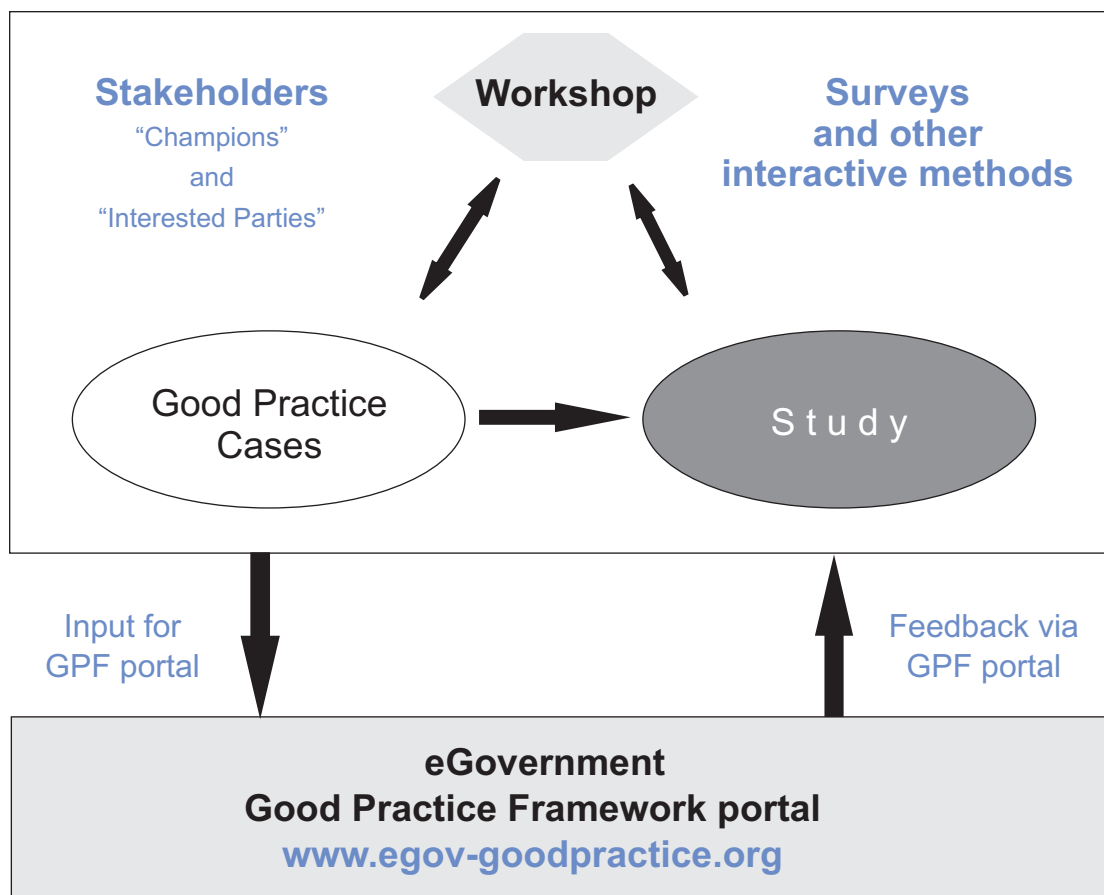


Figure 2:
Interconnectivity of Components

identified. These have been divided into three groups:⁸

- Champions – those who have successfully implemented interoperability in eGovernment services or infrastructures.
- Interested parties – people who are involved in eGovernment projects that need some kind of interoperability.
- Potential/dormant stakeholders – parties that, because of their current or forthcoming projects or skills requirement, should be interested in interoperability but are not yet aware of the relevance of interoperability matters, topics or themes.

These three groups of stakeholders form the core contact group in which the stakeholder needs analysis and other future activities will be carried out. The stakeholders have also been asked to collect, describe and analyse cases of practical relevance that have the potential to generate measurable benefits and that could be transferred to other organisations and settings. In return, the interoperability study and good practice case analysis as well as the other results of Modinis 2 – such as the stakeholder needs analysis – are fed into the Good Practice Framework portal (www.egov-goodpractice.org) provided by Modinis 1.

Several methods have been applied to assess the information needs of the target groups in order to match the case selection and presentation, as well as the study and the workshops, to these needs. The main method used for this assessment is a questionnaire that was sent to interested parties in government, IT business and academia, that is, to people who are or have been directly involved in an interoperability project. At the time of writing, over 70 questionnaires, indicating the preferences of the respondents for a number of subjects, have been returned and included in the interoperability study.

With regard to the three layers or functional aspects of interoperability (see previous section), almost all respondents prioritised semantic interoperability above organisational interoperability and technical interoperability. In relation to supporting measures, legal and security issues were ranked higher than cultural and social ones, thereby indicating the importance of these aspects. The survey on stakeholder information needs also showed that projects in which interoperability is to be established between different levels of government and/or several units on the same level of government are of greater interest than projects where interoperability has to be established on a single organisational level. With regard to the use of different organisational models for achieving and maintaining interoperability, the three models identified by Modinis 2 (i.e. standardised workflows, centralisation and clearing houses) received very similar rankings. Of the different modes of information and communication, respondents preferred a website, a study and a newsletter to workshops in their own country or Brussels (BE), and gave a lower priority to online forums and printed material.

The high level of interest in semantic interoperability was also articulated in a panel at the 4th International Conference on Electronic Government 2005 – EGOV '05 within DEXA in Copenhagen (DK), and during the discussions at the Modinis 2 Workshop on Semantic Interoperability held at the European Commissions premises in Brussels (BE) on 8 September 2005.

The survey provided a clear indication of the priorities to

be given to the case selection, workshop subjects and the interoperability study. It also indicated which priorities should be considered in performing the different tasks. The assessment of the first cases has confirmed the assessment methodology and the concept used for and in the case analysis, thereby providing Modinis 2 with valuable feedback. Although the feedback rate compared to the activation and consultation processes has so far been relatively low, the approach taken by the project has been positively accepted, and with the information from the needs assessment, the project findings can continue to be fine-tuned and improved. This will be a continuous process for the duration of the project.

More than 70 interesting cases related to interoperability has so far been collected, described and profiled by Modinis 2. These cases serve as a pool for the selection of cases that will be analysed in depth. This pool of interoperability cases is continuously updated and more cases are added as they are identified. The list of identified cases is stored in a database and is searchable by keywords, making it a valuable resource that can be used for further analysis and as an information pool for interested parties. The database can be accessed online via a web link in the Good Practice Framework portal (www.egov-goodpractice.org).

Local and regional interoperability study

One of the key tasks of Modinis 2 is to produce the interoperability study. The aim of the study is to cover the broad range of issues relating to interoperability across Europe examined in the project.

Interoperability is seen by many to be one of the most challenging issues in the provision of seamless eServices and joined-up government, and during the first year of Modinis 2 it has become clearer why this is so.

The interoperability study is being developed in an incremental manner and will include the status of local and regional interoperability in a number of EU Member States, key success factors of local and regional interoperability, key barriers to local and regional interoperability, and recommendations to different stakeholders. The interoperability study is updated and made available via the Good Practice Framework portal approximately every four months.

The Modinis 2 interoperability study is based on a relevant bibliography. It will take into account the good practice cases identified and analysed, the results of the stakeholder needs analysis and the comments expressed through the stakeholders' input and comments. The methodology itself is based on an approach that is both top-down and bottom-up. This means that the literature is searched for critical success barriers within the eGovernment environment and projects (top-down). In addition, input has been sought in an extensive eGovernment (one-stop government, joined-up government, service delivery models, etc.) and interoperability bibliography. To this is added input from the good practice cases and the case analysis (bottom-up).⁹

To date, the study has identified the following critical success factors (CSF) and barriers to successfully achieve interoperability:

	Project level	Environment level
CSF	External pressure Internal political desire Overall vision and strategy Effective project management Effective change management Effective design Requisite competencies Adequate technological infrastructure	<i>Vision/political will</i> - Awareness and commitment - Integration - Information society competencies <i>Common frameworks/collaboration</i> - Harmonisation - Avoiding external barriers - Encouraging collaboration <i>Customer focus</i> - Customer demand and engagement - Responsibility - Standards - Strengthening privacy and security
Barriers	Lack of internal drivers Lack of vision and strategy Poor project management Poor change management Dominance of politics and self-interest Poor/unrealistic design Lack of requisite competencies Inadequate technological infrastructure Technological incompatibilities	Legislative and regulatory barriers, Financial barriers, Technological barriers and the digital divide Differences in administrative structures and procedures Skills barriers Language including differences in terminology, and the use of jargon

Figure 3:
Critical success factors (CSF) and barriers¹⁰

Dissemination and promotion of the progress and take-up of interoperability

Another important aspect of the Modinis 2 work is the dissemination and promotion of the progress and take-up of interoperability. This includes, as mentioned, the contribution of good practice cases in interoperability to the Good Practice Framework (www.egov-goodpractice.org). These are used to set up and maintain the electronic discussion forums and other relevant information exchange facilities in collaboration with Modinis 1. In addition to the promotion of results and in order to encourage the take-up of interoperability, the aim of the dissemination activities is to provide feedback to the study on interoperability, the stakeholder needs analysis and good practice case analysis, including validating the methodology and preliminary results. The Good Practice Framework portal, together with the Consortium's extensive network, forms the core point for the dissemination, promotion and take-up activities of Modinis 2.

Since its launch in December 2004, Modinis 2 has achieved recognition throughout Europe as a coordination point for issues related to interoperability. It has done so through its active programme of dissemination and information sharing, which has been achieved, in part, through the workshops at which a number of cases and the results to date have been examined in depth.

Workshops have so far been held in Brussels (BE), in September 2005, together with the European Commission; in Vienna (AT), in February 2006, in close cooperation with the Austrian Presidency of the European Union; in Bordeaux (FR), in March 2006, at the eGovInterop Conference '06;

and in Prague (CZ), in April 2006, as part of the Eastern European eGovernment Days. Each of these workshops showcased good practice cases and presented the results of our findings, including those of the stakeholder needs analysis and the interoperability study.

Outlook and future activities

The benefits that local and regional authorities may derive from Modinis 2 include not only the opportunity to attend one of the eight workshops and to participate in the discussions at the event, but also the possibility to actively contribute to and learn from the findings of the project. Stakeholder feedback is essential to the quality and success of the Modinis 2 project. Whether input is received via the online discussion forums or other relevant information exchange facilities provided on the Good Practice Framework portal (www.egov-goodpractice.org) or through the surveys, questionnaires or participation in the workshops, the relevance and quality of the project's findings will be strengthened by input and validation by the interoperability Champions and Interested Parties. This is especially true for the interoperability study, which is addressing not only the status of local and regional interoperability in EU Member States, but also the key success factors of local and regional interoperability and the main barriers to be taken into account by local and regional authorities when striving for interoperability. The study is also outlining recommendations for the various stakeholder groups identified.

Modinis 2 will continue to contribute to the Good Practice Framework. Its contributions will of course include additional good practice cases in interoperability, updated

versions of the incremental interoperability study and workshop reports. Workshops will be held with CNIPA in Italy on 10 July 2006, and in Valencia (ES) on 22-24 November 2006 as part of the I European Summit. A dissemination workshop with the European Commission in Brussels (BE) is planned for early 2007.

NOTES

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¹ European Commission COM(2003)567.

² Modinis is an abbreviation for "Monitoring of eEurope, Action plan Dissemination of Good Practices, Improvement of Networks and Information Security".

³ European Commission, *LOT 2 Study on Interoperability at Local and Regional Level – Terms of Reference Tender Number 2004/S 120-100788*, Brussels, 22 June 2004, p. 2

⁴ Interoperability at Local and Regional Level, *Modinis Study on*

Interoperability, D2.3: Interoperability Study version 2, Thessaloniki, 17 November 2005.

⁵ IDABC (2004). European Interoperability Framework for pan-European eGovernment Services. Luxembourg, European Communities.

⁶ Interoperability at Local and Regional Level, *Modinis Study on Interoperability, D2.3: Interoperability Study version 2*, Thessaloniki, 17 November 2005, pp. 15-16.

⁷ Modinis Study on Interoperability at Local and Regional Level, Proposal, 30 July 2004, Maastricht, pp. 5-6.

⁸ Modinis Study on Interoperability at Local and Regional Level, *D1.1: List of experts on interoperability, stakeholders and multipliers*, Maastricht, 5 March 2005, pp. 4-6

⁹ E. Tambouris, V. Peristeras, K. Tarabanis, *Experiences from Conducting a European eGovernment Interoperability Study at Local and Regional Level*, in proceedings of eGovInterop '06 Conference, Bordeaux, 22-24 March 2006, pp. 1-7.

¹⁰ E. Tambouris, Modinis Study on Interoperability at Local and Regional Level, Presentation at the eGovInterop '06 Conference, 22 March 2006, Bordeaux.

Organized by the Consortium partners:

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