Linking up Europe:
the Importance of Interoperability for *e*Government Services

Commission Staff Working Paper

COMMISSION OF THE EUROPEAN COMMUNITIES

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iDA
Interchange of Data
between Administrations

Contents

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Interoperability: enabling seamless *e*Government in Europe

The objective of this Commission services working document is to emphasise the importance of interoperability in delivering *e*Government services in Europe. 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 re-organisation of administrative processes to support the seamless delivery of *e*Government services.

However, *e*Government services do not stop at administrative or even national boundaries. For *e*Government services to support the single market and its associated four freedoms 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. In addition, it will involve interoperability with the enterprise sector.

This working paper seeks to achieve acceptance from key policy and decision-makers on the need for interoperability in Europe, both within and between public administrations and with enterprises; to obtain the necessary commitments for this to happen at all levels (i.e. European, national, regional and local); and to ensure that any consequential adjustments of European or national policies occur.

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1. Introduction

1.1. *e*Government

*e*Government is not 'old government' plus the Internet. *e*Government is the use of new technologies to transform Europe's public administrations and to improve radically the way they work with their customers, be they citizens, enterprises, or other administrations.

Furthermore, *e*Government is now a key vehicle for the implementation and achievement of higher policy objectives. It is unlikely that European policy objectives on, for example, the single market freedoms, industrial policy, sustainable development and security across Europe, can be achieved unless interoperable *e*Government services are swiftly implemented.

*e*Government is built on two main but inter-related developments. The first is the business models adopted in the recent past by the enterprise sector. These are largely concerned with obtaining competitive advantage by activities such as continuous process improvement, a focus on core competencies and the re-organisation of their internal processes. The second is the use of a wide range of information and communications technologies (ICTs), of which the Internet is the most visible, in supporting organisational change, more productive ways of working and the improved provision of information and interactive services to customers.

Barriers to efficient service provision arising from the way government is organised are no longer acceptable. The public and their political representatives now expect public administration to be as efficient and effective in achieving its

goals as the enterprise sector. To do this entails both new ways of working, back-office transformation and better use of ICTs. Furthermore, just as the public can transact business with enterprises over the Internet (e.g. reserve airline tickets, purchase books, etc.) they now expect to be able to carry out similar transactions as seamlessly and as easily with public administration. This requires government to provide both information and services that are developed from a 'customer-centric' viewpoint.

This combination of the use of advanced ICTs, especially the Internet, in the support of new ways of working in public administration, together with the enhanced provision of information and interactive services accessible over different channels, is the foundation of *e*Government. The challenge here is to 're-write the rules' for how public administration works internally, interacts with its customers, and uses ICTs, not only to increase productivity by making business transactions easier to carry out, but also to address issues of social inclusion and the digital divide. For this to happen, not only should technology ensure the communication and sharing of information, but also administrative processes should be re-organised and be able to co-operate.

However, the reality today is the emergence of 'islands' of *e*Government that are frequently unable to interoperate due to fragmentation resulting from uncoordinated efforts in developing the services, at all levels of public administration.

By joining up administrative processes, everyone, whether in the public or enterprise sectors, could achieve a significant increase in efficiency and lower the cost of operations. Interoperability is essential for this 'joining up' of public

administration, to share and re-use administrative information and to provide services and information over multiple channels.

In essence, interoperability is a fundamental requirement, from both economic and technical perspectives, for the development of efficient and effective eGovernment services at both the national and pan-European levels, including the regional and local ones.

1.2. eEurope

The European Council's special meeting in Lisbon[1] (March 2000) agreed a strategic goal for the European Union (EU) to become the most competitive and dynamic knowledge-based economy in the world, capable of sustainable economic growth with more and better jobs and greater social cohesion, by 2010. Key to the achievement of the Lisbon goals is the eEurope initiative, aimed at stimulating the provision of interactive services by government and increasing productivity throughout the economy, as approved at the European Council in Seville (June 2002).

The steps to achieve eEurope are set out in the eEurope 2005 Action Plan[2], which, inter alia, sets the target for the European Commission, by 2003, to issue an agreed interoperability framework to support the delivery of pan-European eGovernment services to citizens and enterprises. This interoperability framework, which can be defined as the set of policies, standards and guidelines describing the way in which organisations have agreed, or should agree,

to do business with each other, is to provide the specifications for joining up the information systems of public administrations across the EU. It will be based on open standards and encourage the use of open source software. The Action Plan also envisages that the enterprise sector should, by the end of 2003 and with appropriate support from the Commission and the Member States, develop interoperable ebusiness solutions. Interoperability, therefore, for both the public and enterprise sectors, is at the heart of the eEurope 2005 Action Plan and the achievement of the Lisbon goals.

1.3. Why a Working Paper on interoperability and eGovernment

It goes without saying that Europe's governments, whether at the local, regional or national/federal level, and the European institutions and agencies must work together to achieve the goals of the Lisbon Summit. But 'government' is a complex process and it will be a significant challenge to get all the parts and all the levels to work together, both nationally and across Europe, in the pursuit of common goals.

Interoperability is the means by which this inter-linking of systems, information and ways of working, whether within or between administrations, nationally or across Europe, or with the enterprise sector, will occur.

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This working paper highlights the critical issue of interoperability in achieving the Lisbon goals and in helping Europe's public administrations work together more effectively to achieve shared policy objectives and to work as effectively with the enterprise sector. Simply put, without interoperability, both within and between the public and enterprise sectors, electronic ways of working are bound to fail.

The paper seeks to achieve acceptance from key policy and decision-makers on the need for interoperability in Europe, both within and between public administrations and with enterprises, to obtain the necessary commitments for this to happen at all levels (i.e. European,

national, regional and local) and to ensure that any consequential adjustments of European or national policies occur.

It is developed from the conclusions of the *e*Government conferences held under the auspices of the Swedish[3] and Belgian[4] Presidencies of the European Council, for submission as a working paper to the *e*Government conference[5] of 7th – 8th July 2003, jointly organised by the Italian Presidency and the European Commission. In parallel, opinions were also collected from administrations, enterprises and research communities in fora such as the IST workshop on *e*Government interoperability[6].

1. The Lisbon Strategy for Economic, Social and Environmental Renewal
    http://europa.eu.int/comm/lisbon_strategy/index_en.html

2. *e*Europe 2005 Action Plan
    http://europa.eu.int/information_society/eeurope/action_plan/index_en.htm

3. *e*Government in the Service of European Citizens and Enterprises, Sandhamn, Sweden, June 2001
    http://europa.eu.int/ida/315

4. *e*Government: From Policy to Practice, Brussels, Belgium, November 2001
    http://europa.eu.int/information_society/eeurope/egovconf/2001/index_en.htm

5. *e*Government Conference 2003, 7-8 July 2003, Villa Erba, Como (Italy)
    http://europa.eu.int/information_society/eeurope/egovconf/index_en.htm

6. http://www.cordis.lu/ist/so/business-govt/events/interoperability-present.htm

2. The key role of interoperability

2.1. Interoperability

Interoperability is like a chain that allows information and computer systems to be joined up both within organisations and then across organisational boundaries with other organisations, administrations, enterprises or citizens.

It has three aspects:

➔ *Technical interoperability*, which is concerned with the technical issues of linking up computer systems, the definition of open interfaces, data formats and protocols, including telecommunications;

➔ *Semantic interoperability*, which is concerned with ensuring that the precise meaning of exchanged information is understandable by any other application not initially developed for this purpose; and

➔ *Organisational interoperability*, which is concerned with modelling business processes, aligning information architectures with organisational goals and helping business processes to co-operate.

While interoperability seems so logical and the requirement for interoperability so obvious, it is a fact that information systems today are not interoperable in the way that, for example, telephones or postal systems are. It is only with the recent development and ubiquity of 'Internet-type' technologies, based on universally agreed open standards and specifications, that it has been possible to achieve a high degree of technical interoperability. The Internet is a good example of this, where computers and information resources all over the world can link up, present data in a universally readable format and exchange e-mails

by simply respecting protocols such as TCP/IP, HTTP and S/MIME.

The Internet works because of this compliance to agreed standards for linking computers and for information presentation. To move from simply presenting information to a situation where computer programs can exchange it, combine it with other information resources and subsequently process it in a meaningful manner, requires agreement on a wide variety of more complex issues that relate to the context within which information is created and used. This is the subject of semantic interoperability. It entails agreement on, for example, ways to discover, represent and give context to information. This will allow automated tools to share and process information, even when they have been designed independently. The objective is not only to allow information resources to be linked up, as they are in today's Internet, but also to allow information to be automatically understandable, and, consequently, reusable by computer applications that were not involved in its creation[7].

The automated processing and re-usability of information across systems and platforms also gives rise to organisational issues. Traditionally, organisations have developed hierarchical organisational structures to serve well-defined user communities, each with their unique ways of processing information. This hierarchical framework has resulted in closed, vertical, unscaleable and frequently proprietary information systems that mimic their paper-based predecessors and cannot share information across internal structures, let alone with other organisations.

However, these traditional systems are not suitable for organisations that wish to extend their business processes to include suppliers, business partners and

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customers (e.g. as in supply chain management). The objective here is to obtain real business benefit and more effective ways of working by co-ordinating business processes that span not only intra-organisational boundaries, but also co-operate with the business processes of partner organisations that may well have different internal organisation and operations.

This is the domain of organisational interoperability. It is the third aspect of interoperability and without it *e*business solutions, designed to enable anyone, anywhere, to do business with anyone else over the Internet, with little or no need for human intervention, will be difficult, if not impossible, to achieve.

Interoperability, therefore, allows organisations to share and re-use information both internally and with their business partners, and for their business processes to co-operate in achieving agreed objectives, thus helping organisations, in both the public and enterprise sectors, to be more effective in the achievement of their goals.

2.2. Interoperability requirements between administrations

A key aspect of *e*Government is to bring public administration closer to citizens and enterprises. To do this many Member States are aggregating their *e*Government services around "life events[8]" and "business episodes[9]". Simply put,

this means that the service is organised around an event that makes sense to the customer, be they a citizen or an enterprise, and that the customer need not be aware of the various public administration bodies that co-operate in seamlessly delivering the service.

It is clear that agreement on common standards and specifications is essential to support life events and information sharing *e*Government services. But agreement on common technical standards is not, in itself, sufficient. The joining up of administrative processes is also required for the development of seamless and integrated *e*services. It is this combination of agreed rules on standards and on processes, coupled with well-defined agreements on the roles, duties and responsibilities of all parties involved (whether at the European, national, regional or local levels) that provides the foundation for the successful realisation of *e*Government.

The ultimate goal is, of course, to provide transparent and seamless access to *e*Government services even if this requires access to services from more than one administrative body, the sharing of information possibly stored in multiple formats and the subsequent managing of this information by different administrative processes. This requires interoperability at different levels both within administrative bodies, across administrative boundaries and, where necessary, with the private sector.

*e*Government services frequently need to link and combine content from multiple and diverse information resources. Interoperability of databases, for example, is a key requirement for the development of new added-value services and for cross-border government infor-

mation services. However, unless databases are interoperable and conventions for the description of information are agreed it will be impossible to combine content resources at the national level, let alone across Europe's borders.

Furthermore, the interoperability of databases and the information they contain would allow public administration to implement 'value added' client-centric services that cannot be implemented on disaggregated information. These would typically involve the provision of client-specific services that can only be determined when client data from multiple sources is aggregated and evaluated as a whole[10].

But the sharing and exchange of information raise important data protection and privacy issues. These must be suitably addressed if *e*Government services based on information sharing and aggregation are to gain acceptance and usage. This in turn may well have serious implications for interoperability policy to ensure that privacy concerns can be met while providing such *e*Government services.

Furthermore, open interfaces and specifications are required for the 'common components' of *e*Government services. These include electronic payment systems, open and non-proprietary document formats, ways of cataloguing and classification, security and privacy issues, electronic signatures and the means of communicating with supporting back-office processes, etc.

Failure to put in place interoperable *e*Government systems will have both economic and social costs. These include: static unresponsive public administrations that are expensive to run and are unable to implement policy in an effective and timely manner; the inability to develop value added *e*Government

services based on sharing information from multiple heterogeneous resources; and higher costs and a greater administrative burden for Europe's enterprises.

Interoperability, therefore, is vital if *e*Government services are to be rolled-out in a shorter time, at a lower cost, with more flexibility to adapt to new requirements, to work in an ever-changing environment and be delivered in a seamless way across Europe's borders to all of Europe's citizens and enterprises.

2.3. Interoperability between the public and enterprise sectors

Today enterprises in Europe work within a regulatory regime that includes frequent and mandatory dealings with government. This places a high administrative burden on enterprises. Furthermore government services, which seen from the perspective of the customer relate to a single business event, may involve multiple dealings with separate administrative bodies. This places Europe's enterprises at a competitive disadvantage relative to those operating in more benign administrative regimes, while to complete simple transactions enterprises incur costs and may waste time by having to deal with different ministries and agencies.

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Government services and requirements have a major impact on the EU economies. They include public procurement, taxation returns, financial transactions, licences, planning permissions, import and export services, patents, etc. The extension of commercial B2B (business to business) and B2C (business to citizen) models to public administration services could be a major untapped driver of economic growth that could give a further much-needed boost to growth in productivity[11].

The provision of *e*Government A2B (administration to business) services in Europe will also act as a powerful stimulus for enterprises, notably for small and medium sized enterprises (SMEs), to adopt electronic ways of working in their dealings with public administra-

tion. Ideally, this should facilitate the integration of public administration requirements into the work processes of enterprises. This would be similar to the way many major private sector companies expect their suppliers to interact electronically with them. It would thus contribute to building a European business environment that would help SMEs 'go digital[12]', and encourage and support entrepreneurs and competitiveness.

If standards-based, interoperable, B2B and B2C solutions with market acceptance are developed to the extent expected, their adoption for A2B and A2C (administration to citizen) services should be assessed and, where appropriate, encouraged[13]. Examples of relevant interoperability initiatives in the private sector are outlined in Annex 1.

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7. In *e*Government this would, for example, allow a computer application in one Member State's administration to access an information resource of another Member State's administration to validate the taxation status of an enterprise from that Member State or to check the eligibility for social welfare of a citizen from another Member State. It could do this with the same ease as it could check the taxation status of nationally registered enterprises or the eligibility of its own citizens, without any foreknowledge of the way the information is created or used by the other national administration. Similarly, the technical and semantic interoperability of geographic information, for example, would enhance trans-border intra-agency co-operation, environmental monitoring and the co-ordination of disaster relief

8. The term 'life events' refers to the government services needed at specific stages in life. Typical examples of life events include: having a baby; starting / leaving school; changing employment status; being a victim of crime; moving home; becoming disabled; retiring; dealing with bereavement. An example of *e*Government services based on life events that are currently provided at the national level is the UK government's 'UK Online' web site   http://www.ukonline.gov.uk/lifeepisodes/

9. The term 'business episodes' refers to the components of the business life cycle. They are, in effect, life events for enterprises. Typical examples of business episodes include starting a business, employing staff, acquiring a licence, statutory returns, taxation, closing/selling a business. An example of *e*Government services based on business episodes that are currently provided at the national level is the Irish government's 'Basis - Business Access to State Information and Services' web site   http://www.basis.ie/

10. For example, a family intending to change locality could, if they so desired, have their aggregated data profile analysed by local public administration bodies. Based on this analysis, they could be informed of educational and health facilities, housing entitlements, job opportunities, etc. specific to their family circumstances. While the response might come from multiple agencies the family would initiate a one 'life event' transaction, and would not have to re-supply, to each agency involved, information already provided to public administration. The response from public administration agencies would be based on authorised access to aggregate data on the family and not on individual responses to agency-specific sub-sets

11. The Intangible Economy: Impact and Policy Issues, Report of the European High Level Expert Group on the Intangible Economy, European Commission
    http://europa.eu.int/comm/enterprise/services/business_services/documents/studies/intangible_economy_hleg_report.pdf

12. http://europa.eu.int/information_society/topics/ebusiness/godigital/index_en.htm

13. For example, the proposed CEN/ISSS project to promote and facilitate the use of standards-based interoperable private and public e-procurement solutions in Europe
    http://www.cenorm.be/isss/News/eProcurement/eProcurementAH.htm

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3. The need for interoperability at the European level

For the successful development of pan-European eGovernment services, a policy should be developed that specifically addresses the European dimension.

This is in addition to what is being achieved at the national level. Ideally, such a policy should specify the requirement for Europe's public administrations to make it easy for citizens and enterprises to transact business at the European level, i.e. to carry out cross-border transactions with public administrations in Member States other than their own. Simply put, for national eGovernment services to support fully the single market will require that they are open, where required, to citizens and enterprises throughout Europe, and that the interoperability efforts, currently taking place nationally, be scaled up to work at the pan-European level.

The increase in mobility across borders, both for citizens and enterprises, will entail that greater attention be paid by administrations to the needs of all of Europe's citizens and enterprises[14].

A key element for success, therefore, will be the inclusion of the pan-European dimension in national eGovernment strategies to ensure that all citizens, enterprises and administrations will have access, where needed, to eservices of any EU public administration in a seamless way, regardless of whether the service is under the responsibility of a local, regional or national public administration, or a European institution or agency. This will also involve new eGovernance declarations that should tell Europe's citizens and enterprises how public administrations will now deal electronically with cross-border users.

Furthermore, the development of the single market and its associated freedoms will require that national eGovernment systems are interoperable. Citizens that work and re-locate within and enterprises that trade across the Union will need to interact electronically with public administrations in many Member States. They should be able to do this with the same ease as local citizens and enterprises. For this to occur, not only should national eGovernment services be open to cross-border users, but also the supporting back-office systems of Europe's public administrations should be interoperable to facilitate any supporting information exchanges[15]. Support for such activities will be an integral part of the new programme IDABC (Interoperable Delivery of pan-European eGovernment Services to Public Administrations, Businesses and Citizens), currently in preparation.

To address these policy issues, strategies as well as business models and associated interoperability frameworks are required. Because interoperability is essential at both the national and pan-European levels, the Member States' administrations, the Commission and the European institutions and agencies could well achieve synergies by collaborating in interoperability initiatives, and by improved co-ordination between Community programmes in the field of interoperability. In addition, as envisaged in the eEurope 2005 Action Plan, close co-operation with standards-based interoperability initiatives in the enterprise sector and with the European standardisation organisations should be encouraged.

Finally, interoperability can play a key role in assisting the enlargement of the Union. The accession of a Candidate Country to EU membership entails the adoption, enforcement and development of the EU's 'acquis communitaire'

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(i.e. all the necessary legislation as well as the policies and organisations required to apply and enforce this legislation). This frequently involves the exchange of administrative and related data not only with the European Commission but also with other Member States' public administrations.

Here, interoperability is essential to ensure the speedy and efficient integration of the Acceding and Candidate Countries' administrative systems with those of the Commission, the European Institutions and Agencies, and the other Member States.

14. In the report "Public eServices within the European Union Today", prepared by the European Institute of Public Administration for the Swedish presidency of the European Council, and presented at the 36th Conference of the Directors-General of the Public Service of the Member States of the European Union, Uppsala Sweden, 17th and 18th May 2001, it was noted that national *e*services aimed at facilitating free movement were poorly, if at all, developed

15. An example of a such a trans-border service is the European Commission-supported Transcards initiative that enables citizens in the Thiérache region to use the most suitable health facilities, regardless of whether they live on the Belgian or French side of the border
http://www.sesam-vitale.fr/html/projets/transcards/tcd_accueil.htm

4. The European Interoperability Framework

The interoperability framework in support of the delivery of pan-European *e*Government services to citizens and enterprises, which is to be agreed and issued as described in the *e*Europe 2005 Action Plan, is presently being developed under the IDA (Interchange of Data between Administrations) Programme, in close collaboration with Member States, Acceding and Candidate Countries, as well as EU Institutions and Agencies.

Based on the premise that each Member State has, or is in the process of developing, its national Government Interoperability Framework, as illustrated in Annex 2, the European Interoperability Framework focuses on supple-menting, rather than replacing, national interoperability frameworks by adding the pan-European dimension. It provides guidance of a general and conceptual nature and is complemented by the IDA Architecture Guidelines describing technical issues involved.

Successive versions of this Framework, appearing on a regular basis, will be needed to cover the developments in the field of organisational, semantic and technical interoperability. This process will ultimately lead to a sophisticated set of solutions for interoperability at the pan-European level and will, as such, be a major contribution to other current and future Community activities in support of interoperability, as illustrated in Annex 3. The first version of the Framework is planned to be available for comments on the IDA web site[16].

16. http://europe.eu.int/ida

5. Conclusions

This working paper is aimed at highlighting to key policy and decision-makers the importance of interoperability in reaching both *e*Europe and Lisbon goals and seeks to foster the necessary commitments for interoperability to be achieved at all levels (i.e. European, national, regional, local) as well as with the enterprise sector. In particular, it emphasises the need for interoperability, not only in and between national, regional and local public administrations, but also across Europe's borders with public administrations in other Member States and also with the enterprise sector. To conclude:

➔ The provision of world class *e*Government services, underpinning the achievement of key European policy objectives like single market freedoms and enlargement, requires interoperability between the IT systems of Europe's public administrations, as well as between their information holdings and administrative processes.

➔ Government services and requirements have a major impact on EU economies, and *e*Government services, particularly if interoperable with the enterprise sector, could be a major untapped driver of economic growth that could give a further much-needed boost to growth in productivity.

➔ No significant productivity gain will be achieved by implementing *e*Government services that simply replicate existing paper-based systems. The interoperability of ICT systems, sharing and re-use of information and joining up administrative processes, both within and between public sector organisations, is essential for the provision of high quality, innovative, seamless and customer-centric *e*Government services.

➔ *e*Business models developed in the enterprise sector should be assessed and, where appropriate, their use by public administration encouraged. In addition, as envisaged in the *e*Europe 2005 Action Plan, close co-operation with standards-based interoperability initiatives in the enterprise sector for the development of open platforms, and with the European standardisation organisations should be encouraged.

➔ The needs of trans-border users of *e*Government services, be they citizens, enterprises or other administrations, are not generally taken into account when implementing *e*Government services nationally. Greater awareness is required at the national level of the fact that potential users of the services exist not only nationally but also potentially across Europe. The administrators' interoperability efforts should be accordingly scaled up, to enable the development of pan-European *e*Government services. A key role in this context will be played by the European Interoperability Framework currently under development, and by the new IDABC programme.

➔ The use and development of new technologies and new paradigms should be explored in order to start creating mid and longer-term interoperability solutions for the future. The IST priority of Framework Programme 6 is particularly well placed to perform research and technological development (RTD) activities addressing this key topic[17].

➔ It is also essential to build cooperation mechanisms between Member States administrations, relevant national and European Union initiatives, standardisation and market initiatives, as well as research activities. These mechanisms should be instrumental in exploiting synergies and reaching agreements on a voluntary basis.

17. http://europa.eu.int/comm/research/index_en.cfm

ANNEX I
Interoperability activities in the enterprise sector

The development of e-commerce has resulted in several initiatives taking place in the enterprise sector to develop interoperability frameworks[18] that will allow enterprises, of any size, in any industry and in any location to participate in *e*business. These frameworks provide the technical foundation for the use of modern ICTs and the Internet to carry out business electronically. Examples include ebXML[19], OASIS[20], RosettaNet[21] and the Web Services[22] set of technology standards.

There is also a range of other interoperability initiatives, aimed at standardising the exchange of business information in particular sectors and other frameworks, frequently of a proprietary nature, provided by ICT vendors.

In this context, the *e*Europe 2005 Action Plan clearly states (sec. 3.1.2) that it is the enterprise sector, supported by the Commission and Member States, that should develop interoperable *e*-business solutions for transactions, security, electronic signatures, procurement and payments to facilitate seamless, secure and easy cross-border electronic business and mobile commerce.

In response, the European standardisation organisations (CEN[23] and ETSI[24]) have developed a Rolling Standardisation Action Plan[25] in support of the *e*Europe initiative. The objective of this market-driven initiative is to better streamline the European ICT standardisation work towards the targets of the *e*Europe initiative, to accelerate the implementation of the standardisation work programmes and to ensure the involvement of all relevant stakeholders in the standardisation process. This should allow for the development of a consistent standardisation strategy in support of *e*Europe 2005.

ANNEX II
Interoperability activities in Europe's public administrations

Member States' governments are currently defining standards-based interoperability frameworks for their public sector bodies. The goal of these frameworks is to empower joined up and web-enabled government, and to improve its flexibility and efficiency. Typically, the interoperability frameworks reference market driven and open standards and specifications.

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18. Details of generic e-commerce architectures are provided on the Diffuse web site
http://www.diffuse.org/architectures.html

19. ebXML is a set of specifications to enable enterprises of any size and in any geographical location to conduct business over the Internet. ebXML provides enterprises with a standard way of exchanging business messages, and to conduct business relationships over the Internet   http://www.ebxml.org/

20. OASIS is a not-for-profit global consortium that drives the development, convergence and adoption of e-business standards   http://www.oasis-open.org/

21. RosettaNet which is a set of specifications for e-business with a focus on supply chain management
http://www.rosettanet.org/

22. Web Services can be described as a set of standard protocols and technologies that allow businesses to develop their own *e*services and to publish them in a directory so that any other business with access to those technologies will be able to use them   http://www.w3.org/2002/ws/

23. European Committee for Standardisation   http://www.cenorm.be/isss/

24. European Telecommunications Standards Institute   http://www.etsi.org/

25. Standardisation Action Plan in support of *e*Europe
http://europa.eu.int/comm/enterprise/ict/projects/esap.htm

Examples include the:

➜ UK government's *e*Government Interoperability Framework (*e*Gif)[26] that prescribes the policies and technical specifications that will act as the foundation of the UK's *e*Government strategy;

➜ French government's 'Cadre commun d'interopérabilité[27]', which is designed to support partnership between central administration and the local authorities, in particular in the field of on-line services to citizens and enterprises;

➜ German government's SAGA[28] framework that specifies the standards and architecture for the Federal Government's *e*Government initiative. This has the goal of offering by 2005 over three hundred and fifty government services on-line;

➜ Danish Ministry of Science, Technology and Innovation's national white paper on enterprise architecture which recommends the adoption of a service-oriented architecture model, in which IT solutions are modularly designed services that have well-defined interfaces to each other and to legacy systems;

➜ Finland's Advisory Committee on Information Management in Public Administration, JUHTA's[29] recommendations on the common identification of objects, classifications, data exchange standards and information content and structures. The Ministry of Finance[30] has produced recommendations on information systems architecture, technical interfaces and an XML strategy;

➜ Netherlands's government catalogue 'Open Standaarden en Open Source Software voor de overheid (OSOSS)'[31], which lists approved open standards for use in government applications;

➜ Spanish government's Criteria for security, standardization and preservation of information of applications used by the Administration for the exercise of its competences[32], that includes both legal requirements and the corresponding technical and organisational recommendations.

Equivalent activities are taking place in other Member States that are either developing similar frameworks or are adopting the above to their national needs. Also, within the European Commission, as part of the *e*Commission[33] process, an interoperability action plan has been drawn up to pursue the objective of establishing seamless systems for its management processes in internal administration.

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26. *e*Gif
   http://www.govtalk.gov.uk/interoperability/egif.asp
27. ADAE (l'Agence pour le développement de l'administration électronique): Cadre commun d'interopérabilité des systèmes d'information publics à l'usage des administrations et de leurs partenaires
   http://www.atica.pm.gouv.fr/pages/documents/fiche.php?id=1572&id_chapitre=8&id_theme=12&letype=0
28. Standards und Architekturen in *e*Government Anwendungen
   http://www.bund.de/BundOnline-2005/SAGA-.6341.htm
29. Julkisen hallinnon tietohallinnon neuvottelukunta
   http://www.intermin.fi/intermin/hankkeet/juhta/home.nsf
30. Valtiovarainministeriö
   http://www.vm.fi/vm/liston/page.lsp?r=2678&l=fi
31. Programme for Open Standards and Open Source Software in Government (OSOSS)
   http://www.ictu.nl/download/OSOSS_English.pdf
32. ORDENPRE/1551/2003, June 10th 2003,OD 13.06.03, which develops Royal Decree 209/2003, February 21st. and Resolution of May 26th 2003, OD 13.06.03
   http://www.csi.map.es/csi/pg5c10.htm
33. Towards the *e*Commission : Implementation Strategy 2001-2005
   http://europa.eu.int/comm/di/pubs/e-comm/sec_2001_0924_en.pdf

ANNEX III

Contribution to interoperability of Community policies and programmes

Examples of current Community activities that contribute to either solving interoperability problems or provide interoperable services include:

Research and Technological Development (RTD) / Information Society Technologies (IST 6 and 7)[34]

European Union research programmes have addressed the use of electronic data exchange and telematics by public administrations since 1992. The research actions have addressed the technology infrastructure to enable interoperability and integrate government applications with other service delivery platforms.

Interoperability has been an intrinsic feature that has been addressed by IST projects. Among them, it is worth mentioning some topics and projects below.

➔ Projects such as INFOCITIZEN and VISUAL ADMIN have provided the interoperability support to ensure the delivery of such transparent one-stop-shop services.

➔ EU-PUBLI.COM have made an innovative use of Web Services and Semantic Web to enable the online cooperation of multiple administrations, faced with the difficulties of both different organisation and procedures as well as the different design of their eservices.

➔ The Governmental Markup Language (GovML) has been developed in the context of the eGOV project[35] that addresses interoperability by the establishment of common vocabularies for governmental data.

➔ ePOWER has created a European standard for describing and exchanging legal sources (Metalex[36]) as well as a standard for formally describing juridical knowledge.

➔ In a more general context, eBusiness and eCommerce interoperability has also been addressed by a large set of projects. A particular dissemination effort to bring forward key innovation topics has been made by the DIFFUSE[37] project.

eGovernment IST activities in the Sixth Framework Programme (FP6) will be focused around transactional services, infrastructure integration and transformation. It will contribute to the longer-term emergence of eGovernment 2010 as well as eEurope 2005 by addressing both the achievements of long-term research and mid-term impact. This new generation eGovernment will make services interoperable and address the increasingly complex issue of systems integration, data lifecycle, identity and storage and will include an eGovernment interoperability infrastructure that will cover applications, service platforms and technologies for service provision.

*e*TEN

Interoperability is a fundamental requirement for preparing, validating and deploying TransEuropean services and is to be addressed as an integral part of all projects taking account of the specific context of the envisaged service. Clearly it makes no sense to set up a TransEuropean service in total isolation from the general context.

Thus the *e*TEN[38] work programme 2003 identifies interoperability as one of a set of "common" objectives to be addressed by all proposers responding to the 2003. This contrasts to earlier work programmes where interoperability was addressed as a generic, stand-alone programme level topic.

Consequently, *e*TEN is imposing interoperability by making it part of one of the award criteria for proposals during evaluation. In general, the use of open standards and where applicable, the use of open source will be asked for.

This approach is entirely compatible with the re-orientation of *e*TEN that shifts the focus of the programme away from infrastructure issues and highlights, and positions *e*TEN to support the deployment of services aligned to the *e*Europe 2005 objectives.

*e*Content

Among the contributions to interoperability of the *e*Content[39] programme, the EULIS[40] project brings together a number of national land-survey organisations that will together design the prototype for an electronic European Land Information Service. Interoperability is an important aspect of the project. The service will facilitate international transactions in the real property financial market. It will give online access to up-to-date and reliable information on land real property across national borders. Re-use of the information into broader information products will be facilitated through a clear and transparent pricing system.

IDA (Interchange of Data between Administrations) programme:

IDA's legal basis[41] mandates the programme to put in place actions and measures to ensure the interoperability of networks for the electronic interchange of data between administrations at the European level. Apart from the European Interoperability Framework described in chapter 4, IDA deliverables include:

➔ IDA architecture guidelines[42] for the technical convergence of European network infrastructures for administrations, to achieve interoperability through harmonisation of design.

➔ IDA *e*Link, a project to develop a communication middleware for application to application communication, comprising the identification of remote services through a services directory and the provision of reliable and secure transport services over proper network infrastructure.

➔ Bridge CA (Certification Authority) which delivers a study on a mechanism whereby trust can be established between the national Certification Authorities to allow the use of the

electronic certificates they deliver, in a trans-European context, mainly to support secure cross-border data exchange.

→ TESTA, the IDA communications platform, provides the Member States' administrations with a way to connect easily to trans-European data exchange services.

IDA II expires in 2004. To build on the achievements of IDA, a new programme IDABC (Interoperable Delivery of pan-European eGovernment Services to Administrations, Businesses and Citizens) is being prepared. While still centered on the implementation of community legislation, the new programme will provide a more comprehensive coverage of eGovernment services (including the delivery of interactive pan-European services to citizens and enterprises) than IDA does now. IDABC will be a key factor for the achievement of inter-operable eGovernment in Europe, particularly in its trans-border aspects. It will also be ideal-ly positioned to meet the challenge of achieving the eGovernment priorities identified in the eEurope 2005 Action Plan, as well as policy priorities like single market freedoms and securi-ty in Europe.

Through a close co-operation with R&D and other EU programmes (notably IST, eTEN, MODINIS, eContent,) the new IDABC Programme should contribute to exploiting synergies between the different programmes and facilitating the development of effective solutions to administrations', citizens' and enterprises' real needs.

Standardisation Action Plan

To support the private sector in the development of interoperable ebusiness solutions, the European Commission has invited CEN/ISSS to identify requirements in this area, as high-lighted in the eEurope 2005 Action Plan. This action will contain a thorough definition of interoperability and identify possible needs and opportunities for standardisation, and pre-pare a consistent strategy in support of the eEurope 2005 Action Plan for implementation by the European Standards Bodies in the coming years.

34. European research activities are structured around consecutive five-year programmes – the Framework Programmes. The Sixth Framework Programme (FP6) sets out the priorities - including the Information Society Technologies (IST) priority - for the period 2002-2006   http://www.cordis.lu/ist/home.html

35. eGov: An integrated platform for realising online one-stop Government   http://www.egov-project.org

36. XML standard for the mark-up of legal sources   http://www.metalex.nl

37. The objective of the Diffuse project is to provide a single, value-added, entry point to up-to-date reference and guidance information on available and emerging standards and specifications that facilitate the elec-tronic exchange of information   http://www.diffuse.org

38. Interoperability has always been incorporated in the eTEN Guidelines and was retained in the Guidelines revision (Annex.1) that was adopted in July 2002 (Decision No 1376/2002/EC of the European Parliament and of the Council of 12 July 2002 amending Decision No 1336/97/EC on a series of Guidelines for Trans-European Telecommunications Networks)

39. http://www.cordis.lu/econtent/

40. http://www.eulis.org/

41. The IDA Decisions   http://europa.eu.int/ida/6

42. IDA Architecture Guidelines   http://europa.eu.int/ida/242