

Innovative and adaptive pan- European services for citizens in 2010 and beyond

Domain Mapping and
Impacts

(Deliverable
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Summary

This report is intended to inform and enable policy making, particularly in respect of decision-making concerning potential support for initiatives in the area of pan-European eGovernment services for citizens. The focus is first on the rationale for eGovernment services as a whole, then on expanding some key concepts (e.g. innovation and Pan-European-ness) of particular significance in relation to the existing policy agenda in eGovernment services for citizens. It should be noted that we do not propose hard and fast definitions of the key concepts (which might be an unhelpful limitation on the subsequent work of the study) but rather search for useful tools with which to illuminate them. This document is the first step of the further development of a useful vocabulary and analytical tools to support policy-making in the area of pan-European eGovernment in the project EUREGOV.

Policy making and decision making in this particular area does not, of course, exist in isolation from EU policy generally: the contribution which Innovative Pan European eGovernment services for citizens can make to achieving overarching EU policy aims is itself a core element in defining the extent of the domain. Pan-European-ness should be understood first and foremost in a political sense as a contribution to wider EU policy goals concerned with the creation of a coherent and cohesive Europe, and only secondary as a numerical or geographical measure of extent. Priority topics having been established by essentially political processes, ranking within and between topics by assessing potential impact is then proposed, using a step-wise approach in which the extent of the population being reached and the frequency of use of the service are key factors.

Many other criteria may also be relevant in decision making. These criteria may not always be readily comparable, so that there must also be some means of arbitration across this non-comparability if decision makers are to be enabled to make rational choices. Such means of decision making will be the subject of later work in the study.

The recommendation from this stage of the work is thus for a multi-level approach to deciding which potential eServices fall within the scope of support, and then for ranking them, thus:

Interventions in support of Pan-European eGovernment services for citizens should only be considered where three hurdles can be shown to be cleared:

- policy relevance should be demonstrated;

- some innovative element should be present, such as to have the potential to trigger further beneficial transformation; and
- inherent within both the proposed activity and the proposed team there should be the clear potential for diffusion (e.g. by resource allocation) sufficient to fulfil Pan-European potential.

Prioritisation within candidates for intervention which clear all of the above hurdles should be on the basis of Impact Assessment. The I PAT technique, in which impact (I) is explained in terms of P (population); A (is the policy importance level of the activity), and T (frequency of individual use), is recommended for this.

A list of topic areas which are currently the subject of policy focus is identified thus:

- Financial transactions with government and administration
- Personal documentation, I.D., and providing personal data
- Inclusion accessibility and integration
- Access to education and cultural heritage
- Health services
- Transport
- Sustainability
- Use and re-use of public data

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Preface

The report defines basic concepts: innovation and the adaptation of innovation; impact; and Pan-European-ness. It uses these concepts to create a basic framework for analysis to be used in selecting the initial case studies and throughout the study. These basic concepts will subsequently be expanded into an understanding of high-impact services (impact on citizens, financing, socio-economic benefits, European integration, and the internal market). This report lays the conceptual foundation for the rest of the project. It provides the selection criteria for the case studies in WP2; the building blocks for the Impact Assessment Framework of WP, and the definitions for some of the parameters of the WP4 decision making model.

Glossary

CIP

The first “Competitiveness and Innovation framework Programme (CIP)” is a coherent and integrated response to the objectives of the renewed Lisbon strategy. Running from 2007 to 2013, it has a budget of approximately EUR 3.6 billion. It represents a 60 % increase in annual spending on actions related to competitiveness and innovation by 2013 compared to 2006.

eGEP

Carried out under the European Commission’s Modinis programme, and managed by the eGovernment unit in DG Information Society and Media, the eGovernment Economics Project (eGEP) produced a measurement framework for the evaluation of e-government impacts and outcomes.

EHIC

European Health Insurance Card (EHIC). Giving full application to the facilities provided by the coordination of statutory health insurance schemes, the EHIC allows Europeans staying temporarily in another Member State to access “necessary care” under the same conditions as nationals of that country.

eTEN

The European Community eTEN programme helps to stimulate the deployment of innovative, trans-European e-services of social or economic interest. These services are intended to contribute to growth within the European Union, employment, social cohesion, and to help everyone participate in the new knowledge-based economy.

ICT

Information and Communication Technology

I PAT

Impact (I) on the natural environment equals the product of population (P), affluence (A) (or per capita income) and technology (T).

This describes how our growing population, affluence, and technological resources contribute toward our environment, both positively and negatively.

The equation is associated with Paul R. Ehrlich.

ICT-PSP

From 2007 onwards, support to electronic services in areas of public interest will be provided by the ICT Policy Support Programme (ICT PSP), a component of the Competitiveness and Innovation Framework Programme (CIP), which will run until 2013.

LCA

Life Cycle Analysis – an Impact Assessment technique much used in the field of sustainable development.

MS

Member States of the European Union

NHS Direct

National Health Service Direct is a 24-hour health care service in the UK - delivering telephone and e-health information services day and night direct to the public.

SEVESO

The Seveso directive included, inter alia, minimum standards for monitoring the storage of hazardous chemicals.

SD

Sustainable Development

SMEs

Small and Medium-sized Enterprises.

UK Citizen Portal

<http://www.direct.gov.uk/Homepage/fs/en>

VAT

Value Added Tax

1. Background – eGovernment Services for Citizens

We discuss here the scope of eGovernment services as a generality and place such services in the particular contexts of competitiveness and of the avoidance of market distortion. We thereby place the first limitations on the scope of a developing ‘domain map’ whose purpose is to identify the boundaries of support for, or intervention in, the topic, by DG INFSO and MEDIA.

The broad categorisation of ‘eGovernment’ we take (as a provisional initial scope for the purposes of this study) to cover the whole generality of ICT application development in the public sector. There are, of course, a number of narrower classifications of high significance (eHealth, for instance) under the e-Government umbrella. Nonetheless, eGovernment is thus used in a very broad sense in what follows subject to three *de facto* limitations. The first is that technical and professional e-tools which operate outside the scope of any possible public context are excluded. The second limitation is that eGovernment is understood in a citizen-facing context, so that eServices for business (e.g. public sector procurement aids to participation for SMEs) are not included in what follows. Finally, there should be some clear need for EU intervention – e.g. through some perceived market failure – for issues to be of interest to us. Some of the considerations leading to the creation of public services are discussed in the note on the following page.

In practice, such wide issues of the appropriate areas of action for eGovernment (e.g. in the areas of public goods or commons) tend to have been decided in advance by governments so that they will normally occur at a prior stage to the interests of this study. What may be more of an issue, however, is the question of the over-riding rationale for EU action in this area. This is linked in the Competitiveness and Innovation Programme to the perceived existence of some degree of market failure (which may include pre-emptive actions against the high likelihood of market failure in the future). One of the consistent characteristics of the development of the Information Society has been an apparent lag of development in the public sector behind that in the private sector. A number of authoritative reports highlighting this lag have been published, culminating at the Spring Council 2005 review of the Lisbon Strategy, in recognition of the need for measures to encourage the public sector in Europe to catch up¹, and in the incorporation of such measures in programmes (particularly in the ICT Policy Support Programme within the Competitiveness and Innovation framework Programme – hereafter the ICT-PSP within the CIP).

¹ Presidency Conclusions to the Spring Council 2005 Review of the Lisbon Strategy http://ue.eu.int/ueDocs/cms_Data/docs/pressData/en/ec/84335.pdf

A note about public services and public goods

Some services are traditionally provided by public bodies as a result of common-pool externalities (e.g. defence), the importance of non-monetised benefits (e.g. education, health), the inability of markets to give adequate 'voice' to all affected parties (e.g. the environment) or the presence of large fixed and low marginal costs (natural monopoly) combined with an 'essential facility' importance (e.g. roads or certain types of transport information). Over the course of time, some of these functions have migrated to the private sector through privatisation or contracting-out – this process is continuing. Still other public services are those intimately connected to the performance of other government functions. Some have to do with service provision (e.g. services supporting the provision of public housing) and some to do with citizen responsibilities (e.g. services supporting registration, taxes, etc.). In other words, the degree to which citizen users benefit directly or indirectly from the 'service' is variable. Among the services particularly connected to e-government, two other classes deserve mention. The first is the provision of intermediation services to overcome informational barriers without allowing undue power to commercial interests, such as employment information directed at disadvantaged groups or 'universal service' provision (usually under public contract or regulatory pressure). The second is the re-use of public assets for wider purposes. The compelling example is re-use of public information either singly or in novel (mash-up) combinations. The data were collected for public service purposes in the standard sense, but are of further use in other contexts – not least because they may be more complete, authoritative or reliable than competing proprietary data. There is a clear mandate to increase the value of data collection by pursuing such uses, and most Member States have initiatives of this form.

Public goods are generally provided by governments for one of two reasons. Their effect may be non-rivalrous (i.e. use by one does not diminish the amount available for others). This means that the optimal level of provision cannot be found by charging everyone the same price and seeing how much they demand in total, but rather by seeing what the total value is for any aggregate level of provision (the first adds up the quantities, the second adds up willingness-to-pay). This thinking also applies to universal goods that derive value from widespread availability (like network provision). As a result, the value to an individual does not capture the full social value of that person's inclusion. The second class of public goods arises when access cannot be efficiently or effectively rationed, so it is not possible to use prices to get people to reveal their willingness-to-pay. Thus information must be elicited and costs must be met in other - non-market - ways. We could deal with non-rivalrous goods through Lindahl prices' or other mechanisms if we could force people to pay for access or use. But this is often costly in itself or inherently inequitable. Likewise, we could deal with non-excludable (but rival) goods through creation of new property rights or through suitable 'congestion charging'. Over and above these two reasons, certain things like competitive markets and the rule of law may be regarded as public goods, which is the justification for economic, technical and societal regulation, but seems unlikely to figure in eGovernment in the foreseeable future.

The perceived lag in public sector take-up in the Information Society (which is discussed in more detail in Appendix I following) is, on the face of it, indicative of the possibility of market failure, but many other possibilities exist, for instance

- The public sector does not always lag (sometimes the lag is negative)
- There is scope for 'launching customer' and 'launching supplier' activities (getting ahead of the market, or moving in a different direction, on the demand and supply sides)
- There is also sometimes an advantage to 'hanging back' i.e. to avoiding committing to things that may be (either in themselves or specifically for delivering public services) mistakes. Part of this is risk aversion.
- Where there are network or interoperability externalities, the dynamics of development may show either excess volatility (as participants try not to be left behind) or excess inertia (through fear of stranded investment). To the extent that public and private bodies are differently responsive, their joint participation may have the potential to balance these opposing departures from optimality.
- There is the risk of market distortion - public initiatives tend to have (locally) large scale. But by the same token, an (for example) SME-friendly public initiative might counteract market 'tipping' towards large monopoly/oligopoly dominance.
- 'Rational Herding'; 'Informational Cascades'; and 'Product Differentiation' can also provide elements of motivation for intervention in certain specific circumstances.

There are thus a significant number of potential reasons for intervention, and also a significant number of potential pitfalls to avoid in that intervention. Decision making (e.g. on priorities for intervention; or at a more mundane level but with similar rationale, on choosing cases for study) could thus become daunting unless some firm ground is identified – and this is the purpose of the following sections. In succeeding sections we first will place further limitations on the domain map and then identify the means of prioritization amongst what remains after the limitations are applied.

2. Innovation and Pan-European Application in the e-Government Context

We discuss here the particular significance to be attached to innovation (including adaptive innovation) and to Pan-European-ness in the context of eGovernment services, and develop the significance of these concepts in the context of defining the boundaries of the domain.

If we take it as a given (for the purposes of this section) that eServices proposed in the eGovernment context are in pursuit of some appropriate aim of government, that they contribute to the achievement of EU policy initiatives and that some element of existing or expected market failure is associated with them, then we can move on to the central issues of this study – the significance of being innovative (and/or adaptive) and Pan-European.

2.1. Innovation and the Transformation Agenda

Innovation, is not a single undifferentiated whole, nor is it necessarily an unalloyed good. There are a number of different types of innovation, and not all innovations are equally, or even necessarily at all, beneficial. What constitutes a benefit may itself be controversial: as an example, reduction of employment together with costs is likely to produce a wide divergence of opinion between those who now pay less for the service and those who are made unemployed. We should naturally concern ourselves only with innovations that are (at least potentially) beneficial – but in order to work within these limits we must recognise and distinguish different classes of innovation and recognise and distinguish the particularly valuable (the ‘signal’, as it were) from the less valuable (the ‘noise’). The purpose of this section is to develop these distinctions into a useable taxonomy for the discussion of innovative e-Government services that will be of help in policy formulation and in decision making.

Citizen awareness of innovation is in many ways strikingly high, and nowhere more so than in the ‘e-world’. There is little need these days to reproduce the well-known graphics showing the staggering rate at which new ICT artefacts penetrate markets – it is enough here to observe that there can now be only relatively few European citizens entirely innocent of contact with innovative e-services, albeit that such services are more likely to be commercial than to be in the public sector. Among economically active citizens (admittedly a narrower group than the whole population) most will have substantial experience of a number of ICT innovations and of their trajectories of development. The citizen viewpoint is thus not one of innocence but is very clearly one of experience. It is thus possible to illustrate different classes of innovation, by reference to commonplace examples familiar to citizens, notwithstanding that

experiences of the early phases/classes of innovation will naturally be more common than of later and more radical phases/classes.

The four- stage innovative model of Millard², Ducatel³, Aichholzer⁴ etc. used below may be summarised broadly thus

1. do existing things cheaper, faster, better (increase efficiency) = process innovation
2. do new things but without changing structures (increase effectiveness) = product/service innovation
3. create new structures as well as do new things (structural transformation) = organisational/ structural innovation
4. change mindsets and socio-economic norms (socio-economic transformation) = societal transformation

Citizen experience of these classes of innovation might include examples thus:

Table 1: Examples of innovation types

Classes of Innovation	Examples
I Doing the old things in the old way, but more efficiently.	The use of simple computer-based accounting systems e.g. in SMEs or in local administrations.
II Doing the old things in quite new (and better) ways.	Shopping on-line for e.g. books and movies (Amazon) or travel (Expedia) or medical advice (NHS Direct).
III Doing altogether new things but still in recognisable old organisational systems.	Text messaging and video messaging (which are still clearly telephone services but no longer audio based).
IV Doing new things within new organisational structures e.g. new financial models.	Few examples exist, but blogging as a political campaigning tool is of this type.

There are of course other models; particularly the distinction between ‘sustaining’ and ‘disruptive’ innovation made by Christensen⁵ in which classes I and III above are ‘sustaining’ and II and IV ‘disruptive’. This has significance in understanding the developing interplay between RTD and deployment activities. RTD in general, and the IST-RTD Framework Programmes in particular, include substantial reference to the adaptation of existing innovations from ‘leading’ regions to ‘lagging’ regions (in the

² Millard, J (1996) “The future of work in the Information Society”, paper commissioned by the High Level Group on the Information Society, the European Commission, DGV, 1996.

³ Ducatel, K, Millard, J, (1996) “Employment and innovation in advanced communications technologies: strategies for growth and the growth of employment”, *Futures*, Volume 28, No. 2, pp. 121-138, 1996.

⁴ Aichholzer, G, Cas, J, Ducatel, J, Miles, I, Jensen-Butler, C, Millard, J (1995) "AD-EMPLOY: employment trends related to the use of advanced communications", published by DG XIII, EC, under the Telework '94/'95 Programme, 1995.

⁵ Christensen, C.M. (1997) ‘The Innovators Dilemma’ Harvard Business School Press.

particular context of ICT technologies). Although not of immediate importance in this particular discussion, Verspagen (2000) uses the distinction between ‘sustaining’ and ‘disruptive’ (in his terms, ‘incremental’ and ‘basic/radical’) innovation, and the distinction between ‘innovation’ and ‘imitation/adaptation’ in the creation of impact indicators which may well be of interest in later stages of this study. Adaptation in one location of innovations made in another can be innovative – and hence the expression ‘innovative and adaptive’ in the title of this study – as part of the transition from disruption to sustaining. (Christensen’s discussion is in a private sector context where there are significant differences in innovation processes). However, most models would lead us to broadly similar conclusions, albeit that terminology may differ.

In the table above the simple early stage innovation (i.e. doing old things, in old ways, but more efficiently) is now ubiquitous, and has very strong economic and social drivers. It is important in current implementations but there are already fully developed programmes of support in operation and this is not, in our view, what is meant by e-government but is merely the use of e-tools in government. In addition to this activity in Class I, much current activity seems to be in Classes II and III with (perhaps inevitably) very little in Class IV. Allowing that we are looking to the (near) future, rather than the present, we might reasonably deduce from this that the main focus of consideration for our current purpose should be Class III, with backward and forward glances at Classes II and IV⁶. Class IV accords well with the recognition that eGovernment is not simply a delivery channel but it is increasingly a catalyst for organisational innovation and rationalisation, as well as for human resources revitalisation and empowerment. Besides increasing speed and accuracy of service delivery, eGovernment can contribute to radical change in how governments go about their business as usual, including long ingrained cultural attitudes toward services delivery. Therefore it is strategically important to recognise such potential, so to trigger emulation in all sectors of the public administration (positive ‘institutional isomorphism’). The policy debate around eGovernment often refers to this as the Transformation Agenda. In the context of this study, it offers the potential for very great leverage in terms of long term benefits (‘outcomes’), so that eServices likely to produce subsequent transformation should normally be the most preferred options.

2.2. Pan-European Applicability

Many eGovernment services will have potentially near-universal applicability (for example, personal health recording); others will have applicability in most European states given only some degree of localisation (local property taxation services would fall into this class). European in this context is not solely a geographical term and neither is Pan-European. European-ness should also be seen as a policy objective concerned with the fulfilment of the long term aim of a united Europe. A Pan-European eService might thus be one which operates to facilitate compliance with (e.g.) a particular Directive – the SEVESO Directive for instance – whose applicability is

⁶ In principle, there seems to be no fundamental reason for these classes to develop chronologically – there is no necessity for Class I to exist before Class IV – but there seems to be a tendency for chronological development to apply. Many of the features of eServices that are recognised as innovative are likely to be the adoption or adaptation of innovations made elsewhere: for the purposes of this study there seems to be no reason to distinguish ‘adaptive’ innovation from ‘primary’ innovation – low mileage is as good as new in this context. Many (perhaps most) innovative eServices are likely to involve pre-existing components (e.g. ‘shrink-wrap’ software); this does not necessarily imply lack of innovation.

definitively Pan-European. Here the principle of being Pan-European is clear – but its practical operation equally clearly depends (among other things) on issues of interoperability, which are thus intimately concerned with Pan-European-ness. Interoperability is not treated in this report – not because it is not important, but simply because the problem is well understood and actively addressed elsewhere within DG INFSO and MEDIA⁷ already⁸. The core element in ‘Pan-European’ is taken here to be wide (rather than universal) applicability of broadly comparable (rather than identical) services, so that a pilot or exemplar should have the potential to be applied in many states or regions by only limited localisation efforts. In this context, it is essential to respect and accommodate Europe’s multi-culturality and multi-linguality for both principled and practical reasons. As a result, compatibility of governance and societal organisation and international standards/regulations in e.g. accounting or procurement all play their part in Pan-European applicability.

There are thus two elements of significance in considering Pan-European potential. At one level, it is merely a multiplier of the population to be reached albeit a large multiplier – in quantifying the criteria for decision making as in Section 4 below. However, from the alternative viewpoint, some services may be the subject of political aims and/or Directives which will significantly moderate perceptions of their importance – and hence, of their impact as perceived by the e-government sector. There is thus not just a quantitative multiplier to the applicable population, but also as a potentially increase in political significance where e.g. an EU Directive identifies an activity as being of exceptional importance. There may also be some topics (in health and safety issues, for instance) where the whole topic is meaningless unless widely applied.

A strong distinction is thus made at this stage between endogenous motivations for Pan-European extension (i.e. that the proposed service, by its very nature, would be enhanced by Pan-European-ness) and exogenous motivations (i.e. that Pan-European extension is seen as desirable for some wider political reason). Normally, endogenous

⁷ There is a hidden issue here, which cuts through many existing policy support and analysis projects. I am not sure what (if anything) to say about it. There are two main issues: appropriateness and organisation.

Some aspects of interoperability are essential to hoped-for efficiency savings. Others enable the delivery of types II-III innovation. The latter raise issues of competence and consent – is it appropriate to take advantage of all the possibilities that interoperability offers (e.g. exchange of personal data)?

As for structure, it is well-known that interoperability, like other network externalities, can lead to a variety of problematic side effects. Chief among these are: i) ‘tipping’ in which one technology, practice or organisation comes to dominate a field by the sheer weight of first-mover advantage, regardless of merit or performance; ii) excess volatility, in which new approaches are adopted in haste to avoid being left behind; and iii) excess inertia, in which the installed base slows or prevents adoption by those who fear stranded investments. (ref. Katz and Shapiro)

⁸ It is worth noting, however, that interoperability has resonance in technical, cultural and political senses; each of which can be extremely difficult to achieve in practice even when (as is generally the case) the subject is well understood.

motivations would be the more expected to generate good service adaptation but exogenous policy issues are always likely to have the ability to override any more local consideration. Policy agendas are discussed in more detail in Section 3 below.

Finally, it is clear that the achievement of Pan-European-ness necessitates some strong mode of diffusion of the eService and/or dissemination of the results of piloting the eService. (This is discussed in some detail in Appendix I following). A number of mechanisms have been invoked in the past, and in proposals for future programmes, which might, inter alia, ensure the sufficiency of dissemination potential in eServices proposals, for instance: focus on involvement of the full value chain (as in eTEN); utilising 'Top-down' development process based on the prior recruitment of members providing a 'critical mass' of support (as under development for the ICT-PSP element of the CIP); and (in similar vein) placing emphasis on 'mobilising top level commitment' (as in the eGovernment Action Plan).

2.3. Recommendations

The clear invocation of one (or more) such mechanisms should be a go/no go evaluation criterion, in decisions on support for proposals. In other words, any e-service initiative should include a coherent dissemination and exploitation plan directed towards the broader e-government community.

- Those eServices offering the likelihood of generating subsequent transformation should be prioritised
- Pan-European-ness should be understood as the wide (rather than universal) applicability of broadly comparable (rather than identical) services.
- Pilots or exemplars should have the potential to be applied in many states or regions by the application of only limited localisation efforts
- Clear evidence of the intended implementation of one or more dissemination/diffusion mechanism(s) compatible with Pan-European deployment should be mandatory in supported activities.
- Evidence of (as data permit) dissemination activities, awareness, relevance, and 'third-party' uptake should be used to create explicit selection criteria.

3. Services in the e-Government context – The Existing Policy Agenda

Policy is a key component in domain mapping for eGovernment Services. It is (or should be) strongly formative in its overarching sense (mobility of people within Europe for instance); it is, however not necessarily appropriate or necessary to use primary policy sources (e.g. Treaties) to develop the policy requirements. There are policy agendas at a more detailed level available for use for this purpose. In this section we use existing agendas to produce a single consolidated list of topics delineating (at this stage) the extent of the domain.

There is a tradition in many EU states of describing the employees of governments and of administrations as ‘public servants’ or as ‘civil servants’; they are frequently referred to as being ‘in the public service’ or some such term. It is not unreasonable to define ‘Service’ for this study as whatever governments and administrations do, and to define our domain of activity as the facilitation of transactions in this context.

For the purposes of this study we therefore define ‘Services’ in such a way as to include transactions with citizens (the provision of passports, for instance), but so as to exclude the internal business of governments (policy, legislation and management of the public sector) and also to exclude services provided to non-citizens (e.g. to SMEs and/or industry). We do not exclude services provided in exchange for user fees or services for which private sector alternatives may be available, as this would exclude many services capable of stimulating ‘bottom-up’ innovation, areas where service provision by government is justified on grounds other than the need for universal access or areas where public provision offers other benefits (e.g. applications where universal access is important or e.g. information-based services where authoritative public information may be superior to proprietary alternatives).

Within this broad definition of e-Government Services for Citizens there is considerable policy interest evidenced by, in particular, the eGovernment Action Plan⁹ of 2006 which identifies five major objectives thus:-

⁹ i2010 eGovernment Action Plan: Accelerating eGovernment in Europe for the Benefit of All, 2006. http://europa.eu.int/information_society/activities/egovernment_research/doc/highlights/comm_pdf_com_2006_0173_f_en_acte.pdf

- **No citizen left behind:** advancing inclusion through eGovernment so that by 2010 all citizens benefit from trusted, innovative services and easy access to all;
- **Making efficiency and effectiveness a reality-** significantly contributing, by 2010, to high user satisfaction, transparency and accountability, a lighter administrative burden and efficiency gains;
- **Implementing high-impact key services** for citizens and businesses – by 2010, 100% of public procurement will be available electronically, with 50% actual usage, with agreement on cooperation on further high-impact online citizen services:
- **Strengthening participation and democratic decision-making** – demonstrating, by 2010, tools for effective public debate and participation in democratic decision-making.

These objectives extend across the whole domain of public services, potentially including (among others): Tax; Health; Social Security; Crime, Justice, Law; Education; Science and Research; Customs; Culture and Media; Travel, Transport and Motoring; Communication (infrastructure); Electricity/Gas; Water; Environment; Employment; Fire Services

Not all of these public service domains (and not all activities within them) can be considered as ‘services for citizens’, at least in any direct sense. However, it is possible to see at least the outlines of what types of services for citizens are currently under discussion as having the potential to become eGovernment services, and thus to create a broad categorisation into which the wide spread of existing and proposed services for citizens may be fitted thus

Financial transactions with government and administration
Personal documentation, I.D., and providing personal data
Inclusion accessibility and integration
Access to education and cultural heritage
Health services
Transport
Sustainability
Use and re-use of public data

It should be noted that encouraging mobility of goods and services, people and capital is an additional cross-cutting theme applying to many of the above.

This and other comparable lists serve primarily to indicate the preferences and time allocation of their authors and thus give strong indication of political priorities, albeit

mediated through the filter of perceived technological tractability. They are necessarily time-delineated and can thus only give a partial view of the domain mapping of this study. At this stage the list therefore remains open ended, at least for the study *per se*. It should also be noted that this listing is predominantly supply-led. A demand-led listing would be less based on traditional Government ‘ministries’ and more on functional objectives such as less time wasted in form filling; on-demand services, tailored service provision etc. The very dominance of supply-led proposed activities may slow adoption relative to the (arguably more demand-led) private sector and thus be significant in identifying actions to reduce the lag. Later in the study we will review this in the context of creating feedback to the policy creation process. This should enable us to address the feedback loop from policy to action and back again. It should also be recognised that the innovation loop may well run through third parties, in the form of induced innovation in the supply sector and ‘bottom-up’ or emergent innovation by citizens. This is particularly likely (and already evident to some degree) in use and re-use of public data.

3.1. Recommendations

It is recommended that the eService domain under consideration should be limited to the sectors shown in the table above and that encouragement of the mobility of goods, services, people and capital should be a cross cutting theme.

4. Impacts as a Means of Prioritisation

The final stage in our analysis concerns impacts (long term socio-economic and/or environmental outcomes). We note first that impacts only arise if a project succeeds, so that normal considerations of (e.g.) the evaluation of proposals apply. We then propose a simple tool, I PAT (a modification of an existing widely used method in sustainable development work) to capture key outcomes of impact. This allows us also to see impact; policy objectives; Pan-European-ness and Innovation in an interlinked relationship which we will (in later stages of the study) develop through scenarios. Finally we combine all these interlinked elements in a proposal for a first pass at a step-wise approach to decisions on support.

Whatever actions are to be considered in order to encourage the development of e-government, and whoever the actors, it is inevitable that there will be a call for prioritising those actions which will have the highest impact. We may take it as read that what is intended is the highest *beneficial*¹⁰ impact, of course, but that still leaves many more questions unanswered – beneficial to whom? (e.g. to governments, to citizens, to industry, etc.); in the short term or the long?; to standard of living or to quality of life?; economically or culturally?; assured or potential? and so on. High impact, although an attractive concept, thus stands in need of clarification and, ideally, of quantification. Otherwise, there is an obvious risk that ‘high impact’ could become no more than a general term of approbation.

The difficulty of making *ex ante* judgements about likely impact is increased by the fact that the use of some existing tools for detailed impact measurement (such as the eGEP measurement framework¹¹), notwithstanding their high degree of development, accuracy and detail, tends to produce measurements that operate at too great a level of granularity to simplify and improve decision making. This problem arises because the criteria on which measurements are made are disparate and thus not always comparable one with another. In such circumstances even the best detailed technical tools can tend to become little more than the means of *ex post* rationalisation of decisions made by personal preference. There is thus a need for a simpler *ex ante* impact assessment technique, not necessarily of great accuracy but better suited for use in early stage decision making (i.e. to operate prior to the eventual use of those more detailed tools such as the eGEP measurement framework which are more appropriate when operated

¹⁰ The potential for adverse and/or unanticipated impacts is discussed in Appendix II – Risk Analysis.

¹¹ <http://www.egep.com/>

ex post). Impact Assessment is a well trodden field: the EC Guidelines for IA provide a useful policy planning approach which we will discuss further in our work on scenarios later in this study. There seems little need, therefore, to develop yet further tools. We propose instead to utilise for this particular phase of work a modification of a tool already in use for dealing with analogous problems in Sustainable Development, the I PAT tool, discussed in 4.1. below.

Impacts will only arise at all if activities (projects etc) succeed: factors that tend to influence success are well understood in the context of evaluating proposals for funding and need not be rehearsed further other than to point up some specifics about efficiency and to recall the discussion in Section 2 concerning the leverage potential of transformative innovation and the essential role of strong diffusion mechanisms in achieving Pan-European-ness. Aspects of efficiency to be included at this stage should include

- technical efficiency - are services provided at minimum unit cost?
- allocational efficiency - could some other pattern of service provision and access make everyone better off?
- dynamic efficiency - does service provision provide appropriate incentives for improvement over time and in the face of uncertainty?

Practical questions are:

- what mechanisms are likely to attain these sorts of efficiency?
- if none is fully efficient, how can we choose among the 'second best' options?
- do these mechanisms help us to identify efficient services, etc. (learning about preferences, costs, and so on)?

4.1. The I PAT Tool

Comparable issues of clarification and complexity exist in the field of Sustainable Development, where (in contrast) 'low impact' is the usual desired characteristic and where there are also tools such as Life Cycle Analysis (LCA) that operate at a level of granularity which is highly detailed and confidence inspiring but not always supportive of easy decision making. Given the extensive history and sophistication of SD studies it seems likely that we may be able to draw some useful pointers from that field.

In Sustainable Development the concept of 'impact' is conventionally expanded by the well-known equation

$$I = PAT$$

(impact = population x activity x time).¹²

The expression is in fact tautological, being based on a circle of interlinked definitions (activity, for instance, is effectively defined as impact divided by population x time) but it has nonetheless proved in the past to be of great heuristic value¹³ in unpacking impact

12 Variously ascribed but most commonly to Holden and Ehrlich (1974) 'Human Population and the Global Environment' (in) American Scientist v62 282-92.

13 See, for instance, the work of Malaska at the Finland Future Research Centre, Turku http://www.tukkk.fi/tutu/default_eng.asp

issues in SD, and seems likely, therefore, to offer the potential for correspondingly valuable insights in unpacking the meaning of impact in e-government. It should further be noted that the expression is intended as a ‘dominant relations’ model or ‘master equation’¹⁴. In other words, the linearity should not be taken literally, but rather as an expression of the conceptual separation of key drivers of impact. The units in which components are measured and second-order relationships among them are intended to result from further– ‘drilling down’ analysis into e.g. the operational meaning of ‘Activity’.

In the long period (30 years plus) during which I PAT has been in use it has had many changes and variants: in the circumstance that a further variant is proposed to meet the needs of impact analysis of eServices, it is probably more useful to consider I PAT as a starting point for development. Waggoner and Ausubel¹⁵ (2002) do just this. Although this is in quite different circumstances, their mode of procedure (in which they take full and imaginative advantage of the heuristic aspects of I PAT without allowing themselves to be hampered by unduly tight definitions of the terms) is highly relevant and their paper makes a good introduction to the topic.

On the ‘I PAT’ view, impact is proportional to the affected population; to the intensity of the activity concerned, and to the duration or frequency of operation. ‘High impact’ thus necessarily implies large numbers in the affected population; substantial activities, and significant time spans or frequencies of operation.

- How many people are affected? (P)
- In connection with what activity? (A)
- For how long, or how often? (T)¹⁶

The I PAT framework identifies domains for separate analysis, but is not intended to assert that the domains themselves are separate. For instance, there the activities of distinct population groups may differ systematically in intensity and over time – in other words, P, A, T (and thus I) are jointly distributed. In addition, the simplicity of the relation might be taken as indicating that the effects are separable and driven by ‘mere’ numbers. This is somewhat misleading – a mathematician might prefer $I = f(P, A, T)$ in recognition of the non-linearities and dependencies that should be considered once the population, activity and time domains are clearly understood. In terms of numbers, the point is simply that some population groups are more ‘impact-relevant’ than others – for instance, a service available to all may be particularly important or essential to only a particular sub-group. Similarly, a service can be used for various activities (e.g. taxes, registrations, obtaining information, etc.) that are not all of equal importance. Finally, some ‘windows’ in time may be particularly important. These considerations should, however, influence the (P) way IPAT is used, rather than

14 This approach emerged with the early Club of Rome analysis of global sustainability. See e.g. Meadows D.H. et al., *The limits to growth* Universe Books, 1972; and Meadows D.H. et al., *Beyond the limits Earthscan*, 1991; and Mestrovic M., Pestle E., *Mankind at the turning point: the Second Report to the Club of Rome*. Agon Elsevier, 1974.

15 P. E. Waggoner* and J. H. Ausubel ‘A framework for sustainability science: A renovated IPAT identity’. The Connecticut Agricultural Experiment Station, New Haven, CT 06504-1106; and Program for the Human Environment, The Rockefeller University, New York, NY 10021-6399 April 19, 2002.

16 This also introduces the ‘growth’ dynamics of developing or emerging impact.

whether or not it is used. The population term needs little discussion, but the ‘intensity of activity’ term (A) is inherently difficult to assess and even more so to quantify.

The impact measure (I) has a particular set of interpretations. As mentioned, it can be used in a variety of ways, including:

- to screen out dominated initiatives
- to structure a particular pilot (say) to augment weak elements and
- to assemble a portfolio of interventions that complement one another

To identify appropriate uses, it is also necessary to consider various mechanisms for creating impact. These include:

- Impacts derived directly from deployment itself:
 - learning from experience and copying from others
 - the stimulating effect of a novel approach to a specific service and the possibility of ‘disruptive change’¹⁷
- Impacts derived from utilisation and/or adoption:
 - the ‘weight of numbers’ – represented by the number or proportion of the population to whom the service is relevant who actually use the service (direct impact) the % of potentially affected services actually provided in this way (an indirect impact) or a population-weighted proportion¹⁸
 - Incremental or additional benefits of use to the individuals using it, to a specific target group¹⁹ or to society at large;
 - Subsequent consequences following this utilisation:
 - further innovations or service changes (either at the original agency or by ‘imitators’);
 - changes to benchmarks or standards enforcing improved performance; and
 - building or improving the general acceptance or understanding of eGovernment.

¹⁷ This is analogous to the well-known concept of ‘disruptive technologies’ but the innovation that sparks the disruption is not limited to new technology.

¹⁸ This impact measure weights each service by the number using it via the innovative mechanism and averages over corresponding potential users * uses. A complication arises from the fact that the new channel may bring in new users (so the proportion could exceed 100% of the baseline) or may result in the discontinuation of some services.

¹⁹ The point here is that the use of an innovative service by one group may benefit others as well – for instance if an e-enabled service deals with routine (but frequent) cases, available human resources are freed up to provide better services for less-frequent but more complex cases.

This decomposition is necessary to pick up different channels through which impact is (or might be) developed. Each 'channel' (aspect of impact) may entail a different set of relevant PAT. These different PATs are, correlated, of course, which introduces a dependence between one initiative's impact and that achieved by others (i.e. to set an example for eGovernment as a whole, to transfer and apply something already working or to fix a specific problem with a given service). This explicit linking of initiatives to the context allows the user of the framework to sidestep political problems – the framework does not say what political priorities should be, but only that in order to further any such priority certain initiatives outrank others and that certain combinations are naturally complementary. It can thus be used to design sets of initiatives or to coordinate participation among various Member States.

The time factor 'T' can be framed in terms of intrusion into consciousness (or 'attention-grabbing' in a more marketing-oriented language), by considering how frequently a service intrudes into the citizen's consciousness. Is it daily (e.g. mature deployment of an e-ID card); weekly (as might be the case with say a library service); monthly (as with the making or receiving of regular payments – taxes or benefits), or is it annually or less as might be the case with passport services or the new European Health Identity card. Frequency of intrusion must then be moderated by intensity of intrusion – and that is likely to be reduced by habituation (we might suggest an inverse square law for this reduction). This assessment must also take into account the predictability of the intrusion (high with benefits, low with health entitlement). Finally, the difference between the adjustment costs of learning to use the new service and those of ongoing use may be significant and should be separately considered, if only because the former drives acceptance (and thus P at a minimum).

It is thus apparent that we can readily utilise, and to a large extent quantify, the terms P and T in the I PAT method, but that the A term poses some difficulties of interpretation and is not readily capable of quantification. Remembering that the purpose of the I PAT approach is essentially heuristic, we find that I PAT thus focuses our attention on the 'salience' of activity – that is, on some measure of relative value of and attention paid to the activity. This highlights the essential difficulty of comparing the value of one activity with that of another of a completely different type²⁰. In some cases, impact reflects the current importance of the service in question to recipients or service providers – thus, attention. In effect, A is a residual, covering everything that is not obviously P or T. But it varies in different contexts:

- For example, providing consistent and reliable access to e.g. health care services is obviously very important to those concerned.
- In other cases, it is the weight of activity that determines importance – people may not pay a lot of attention to using a road, for instance, but ANPRS systems might 'elevate' the matter – for example if connected to a road use charging scheme.

²⁰ There are methods for quantifying and comparing specific types of activity – stated- or revealed-preference approaches or agency cost approaches to evaluate transfer of activity. However, they are highly context-specific and it is important to ensure that quantification does not drive out qualitative assessment, especially where market or policy discourse mechanisms cannot be relied on to eliminate differences of opinion – and thus to allow numerical aggregation.

- In the case of brand new services, the question is rather whether people will come to pay a lot of attention to it, or will devote a lot of activity to it.

Note that P and T can be estimated from first principles, while A comes by way of comparison to what is already there.

Finally, the spirit, if not the mathematical form of different ways of combining P, A and T should be actively considered when employing the framework. For instance, there is relatively little ambiguity in dismissing projects whose impact components are “Pareto-dominated” by those of other projects (i.e. where a different activity or approach offers better P, A *and* T. This can often be established (e.g. by Delphi or other qualitative techniques) even in the absence of agreed quantification. Beyond this, there may be some areas where trade-offs are possible (suggesting a continuous way of combining P, A and T such as a weighted average or product) and others where impact depends on the “weakest-link” ($\min\{P, A, T\}$) or “best-effort” ($\max\{P, A, T\}$) principle.

To illustrate the concept of different populations for different impact mechanisms, consider the case of the European Health Identity Card. We can distinguish:

- The travelling population. They derive trans-European benefit and pay a lot of attention, being 'out of their support network' and typically needing a quick and non-intrusive 'fix', etc. This group therefore has a high A on its own account, and gets a moderate policy score for A because travellers are often businessmen or at least keenly aware of trans-European differences²¹ (as the workshop showed). T is infrequent but prolonged and is thus valued not for actual services but as an *option* or capability.
- The non-travelling population These people use the card at home for access to 'their own' health services. Here, the key salience (A) comes via cost reduction accruing at national level. The incremental improvement over current provision is smaller, so the individual A score is smaller for the users involved - but probably much higher for governments, because the affected P and T are larger.
- In other words, the political decision depends on the audience addressed

A second illustration is provided by the electronic job portal. P lies somewhere between:

- Those already working across borders, for whom benefits are incremental and A may be relatively low; and
- Those who might work across borders for whom the benefits are probably high.

The national or policy score for A is largely driven by P – in particular any improved labour productivity associated with better job matching or reduced transactions costs for the first group, increased overall labour market efficiency associated with labour mobility (the second group) and spillover effects arising from increased competition for jobs currently held by domestic workers. The key observation here is that this third

²¹ The workshop held to validate these findings clearly identified perceived differences in levels or quality of service provision as key drivers of convergence, with the clear implication that improved 'roaming' access would make this mechanism much more effective.

population is not directly considered when assessing P, but is certainly relevant as a key 'third party' stakeholder group. Another population whose needs are important are the employers who provide job vacancies, provide alternative jobs for those attracted to cross-border work by the portal and/or those who compete with firms directly affected.

T is likely to be low for two reasons:

- Most individuals will not need to use the service very often and it takes time to mobilise content (job offers) via the portal and institute transactional arrangements. A simple list of vacancies won't be very effective - no matter how frequently updated - if there are delays in nailing down a job associated with travelling to the country where the job is located, negotiating the contract, taking down the notice, etc.
- Similarly, if jobs thus offered are regarded as systematically different from those available at the factory gate there may be strategic or adverse selection issues on both the labour and employer side.

A is potentially high for directly affected individuals, low for Member States (many of which already have something similar²²) but higher at the EU level.

4.2. Policy and Priorities

This task of assigning priorities between one class of activity and another is essentially that of policy making. Policy questions often come down to asking, in a world of finite resources, where our priorities lie? For the time being we rely on the discussion in Section 3 above for this. It is assumed there that priorities are set by defined policy as evidenced by, e.g., the eGovernment Action Plan. In the longer term this is not a sufficient response. Policy can not indefinitely be treated as exogenous, and we must quite quickly find ways of (at least in part) creating the required prioritisation endogenously. This is partly addressed in Section 2 above by focussing on the large multiplier effect on impact offered where eServices contain within them the inherent drivers for further change in directions conformable with broad policy objectives (cohesion, convergence etc) through transformative innovation. This route to solution of the problem necessarily invokes a concept of Pan-European-ness (also discussed in Section 2 above) which is not so much dependant on numerical completeness (i.e. 99% of P) as on contribution to broad policy objectives (i.e. the active participation of Member States).

The I PAT heuristic helps to illuminate the links between the salience of activity (A); policy making; Pan-European eServices, and particular types of innovation. However, although I PAT may be used to introduce some element of impact-based prioritisation *within* the topic areas identified in Section 3 above, it will only be a partial solution to prioritising *between* the topic areas. In order to develop such inter-domain relationships it will be necessary to use more narrative based tools than I PAT. In particular it will be

²² like JobCentre+ in the UK

necessary to use scenarios and case studies as heuristics and then to propose sets of indicators to encapsulate them. This work will follow in the subsequent work of the study.

4.3. Plan versus Actual

There is, of course, a big difference between things intended or *expected* to be high-impact and those that *turned out* to have high impacts: but we can't simply recycle the same proven exemplars indefinitely. There are two possible practical approaches to dealing with this:

One approach is to look at major pilot projects with high expectations of impact and check to see how they turned out in reality, discussing the uses of 'impact' *ex ante* (to pick or design initiatives to pursue or to track) and *ex post* to demonstrate success, and build more general support for e-government. There may be useful lessons in the disappointments, and in initiatives that worked in one setting but not in another. Another approach is to look for initiatives that have high impact in that they got a lot of attention or made a big difference, to see whether this was foreseen and (looking across them) whether this could have been predicted - did they have anything in common, etc. There is a significant body of work of this type for large high-tech procurement initiatives, covering *inter alia*:

- Expectations;
- Willingness to act;
- Implementation;
- Interpretation of results;
- Dissemination by:
 - Copying
 - Adaptation
 - Refinement
- Compensation for adverse by-products or rebounds
- Re-engineering
- Adequacy of Funding

Each approach effectively looks at the conditionality of impact: the right internal factors seem to have been in place to create High Impact – but what external conditions needed to be met to achieve that Impact, and were they in place?

The approaches also need to take account of the broader context: what is the contribution of the specific initiatives to the aggregate benefit from e-services, what are the 'portfolio' effects (in terms of risk diversification and exploring a range of possibilities) and what are the 'critical mass' contributions. Beyond this, both initiatives with high expectations and those achieving substantial results must take account of uncertainty and discounting in assessing the expected present value of a pilot initiative or the generaliseability of results already achieved. These uncertainties and delays involve technology, service quality, political support and financial viability.

4.4. Perceived Impacts differ from Differing Viewpoints

It seems likely, in the light of the above, that the criteria for high impact as perceived by citizens will differ markedly from those perceived by the e-government 'sector' itself. Decision making will require a resolution of these two different strands.

A user-orientated perspective on impact would be one where the potential for big gains and/or losses in citizen functionality is very high - i.e. where the initiative could make things a lot better for users, or carries the risk of making them a lot worse ('A' is large). This would be moderated by: number of people affected ('P' is large), availability of alternative channels, (offsets 'A') 'dependence'/skill/awareness of users, (offsets 'P') etc. **A government-orientated perspective on impact** could be based on realisable potential cost savings, inter/intra governmental coordination, clarity of auditing/accountability or 'fit' with policy. In the **sector oriented perspective** the impact criteria are very well aligned with the criteria identified in the eGEP Measurement Framework (op cit). It should be noted, however, that in general these will need 'P' to be large. One particular instance of the latter would be an interaction between policy and an initiative:

- where an initiative led to a change in policy to make use of 'extra' or discovered functionality (e.g. subsequent re-use of say a 'benefit' card as an 'identity' card)
- where an initiative was central to or required by a change in policy (e.g. health services automation)

Pan-European perspective on impact would emphasise the potential or actual degree to which initiatives link up or trigger parallel actions in many member states (large 'P') and/or were required for consistency with EU-level policies and competences (e.g. driving licences, exchange of laws and eProcurement). A further point is that the impact may be indirect - through savings of other resources, transfers of power, organisational change, etc. and may be, as a result, less 'visible.'

It is thus necessary to avoid falling into the trap of adopting a single perspective when considering prioritisation/decision making about interventions.

4.5. A Step-Wise Approach to Decisions about Support

It is thus possible to begin to construct a matrix of criteria applicable to the concept of 'high impact' as in the table below, and to put alongside them their means of assessment (qualitative or quantitative).

Table 2: A Step-Wise Approach to Decisions about Support

Step 1	Policy basis	Does the service proposed further some element of EU policy?
Step 2	Innovation	Is the class of innovation proposed of a type to produce beneficial transformation? Is it just noise? Or is it likely to produce significant costs offsetting any potential impact?
Step 3	Pan-European diffusion potential	Does the proposed activity contain within it the needed potential for diffusion or dissemination (by membership or by resource provision) sufficient to fulfil Pan-European potential
Step 4	Intensity of Activity	Generally to be decided by existing policy i.e. is this topic to be found stated in a public policy agenda.
Step 5	Population Affected	Number – how many directly affected modified by a Multiplier for Adaptation potential – how many more might be affected in similar services, factored for probability – and against a Multiplier for Pan-European potential – how many more might be affected by extension in reach, factored for probability
Step 6	Time Interval / Frequency of Use	Instances of use (or intrusion into consciousness) e.g. #/per annum – factored down by a suitable Reducer for Habituation and used as a multiplier for the P (population) factor.

The first four steps are yes/no questions in which a ‘no’ is fatal to support for the activity being considered. The final two steps are quantitative assessments allowing some assistance in choice between the list of candidates surviving steps 1 to 4.

This first pass summary will doubtless prove too reductive in its treatment of the issues involved in the creation of eGovernment services. In particular policy decisions are not wholly exogenous factors and, indeed, this study is intended in part to contribute to such policy formulation – but existing policy must necessarily be taken as the baseline. Within that policy framework we have therefore mapped the domain of the study by expanding what we mean by ‘Innovative’; and by ‘pan-European’, in the context of EU policy before going on to consider how to identify those services with the highest potential impact on citizens. The principle of maximising impact is rather obvious, and very easy to express – but it needs very careful development if it is to mean anything in practice and not just fall into the cliché zone of motherhood and apple pie. Much remains to be done in this study. However, there are practical needs to be fulfilled now without waiting for the study to be completed, particularly in coming to some means of prioritising areas for support. It is recommended that this should be handled as below:-

4.6. An Alternative Formulation

The workshop held to explore and validate the results considered a proposal to expand the indicator set. The intent was to clearly delineate some aspects that cloud the interpretation or measurement of I PAT in its simplest form. More specifically, the aim was to expand and reinterpret the I PAT framework as a device for *ex ante* evaluation of initiatives in their broader socio-political context. While further development and implementation remain to be done, the broad shape involves $I = MPACT$, where

- M = mobility, mutability and modifiability to fit other contexts and needs;

- P = population affected in terms of numbers, distribution, representativeness, and inclusion of disadvantaged groups
- A = attention, combining activity with salience along the lines illustrated above. The concrete implementation is to identify types of impact and associated channels. For each, impact will depend on the activities of key decision makers. These pay attention to a range of affected groups (beneficiaries and victims). The overall score is obtained by assessing, for each group, a banded (e.g. high, medium, low) score for the attention paid by the decision maker to their interests. It is worth noting that this complexity is essential. First, the responses of decision makers clearly will have an effect on implementation, dissemination, etc. Second, the interests of other groups beyond those who use the service may (as in the above examples, be or overriding importance. Finally. Those affected may have their own possible activities that can mitigate or complement the impact of the new service.
- C = complementarity (with other services and modes of engagement) and convergence
- T = timing, comprising frequency, duration (sustainability) and the (positive or negative) lag relative to other public and private sector developments

The functional form of the relationship is understood to be explicitly non-linear.

4.7. Recommendations

Interventions in support of Pan-European eGovernment services for citizens should only be considered where three hurdles can be shown to be cleared:

- policy relevance should be demonstrated;
- some innovative element should be present, such as to have the potential to trigger further beneficial transformation; and
- clear potential for diffusion (e.g. by resource allocation) sufficient to fulfil Pan-European potential should be inherent within both the proposed activity and the proposed team.

Prioritisation within candidates for intervention which clear all of the above hurdles should be the basis of Impact Assessment. The I PAT technique, in which impact (I) is explained in terms of P (population); A (sentience of activity), and T (frequency of individual use), is recommended for this.

Appendix I: The Perceived Lag in Public Sector Take-up

It is often claimed that the public sector lags significantly behind the private sector in the deployment, uptake and exploitation of new technologies – and thus of e-services. This is perhaps not as prevalent as generally believed, but the specific implications of both the reality and the perception must be addressed.

With regard to the perception, the implications of a lag are that some services best provided by the public sector might be pre-empted by private parties, for instance the possibility that exploitation of accurate and authoritative public information might be foreclosed by private sector products based on lower-quality information which nevertheless come ‘first to market.’ A further implication is that public sector risk can be minimised by relying on private market success to identify the ‘best’ technologies, service architectures, etc. To the extent that the criteria for market success match those for success in public services, this argument is sound – but not all areas of e-government are well-served by the private sector business models, relationships and quality standards embedded in commercial off-the-shelf ‘e-solutions.’

Both the possibility of foreclosure, and the disjunction between commercial and public criteria for successful e-services can be mitigated by reducing the perceived lag. In some cases, the lag may even become negative (government’s role as a ‘launching customer’ to stimulate RTD, investment and the ‘education’ of demand for e-services). It follows that reducing the lag is a priority for actions in this area.

Diffusion of new technological developments is widely accepted to follow what is often referred to as Ray’s S-Curve or Diffusion Curve thus

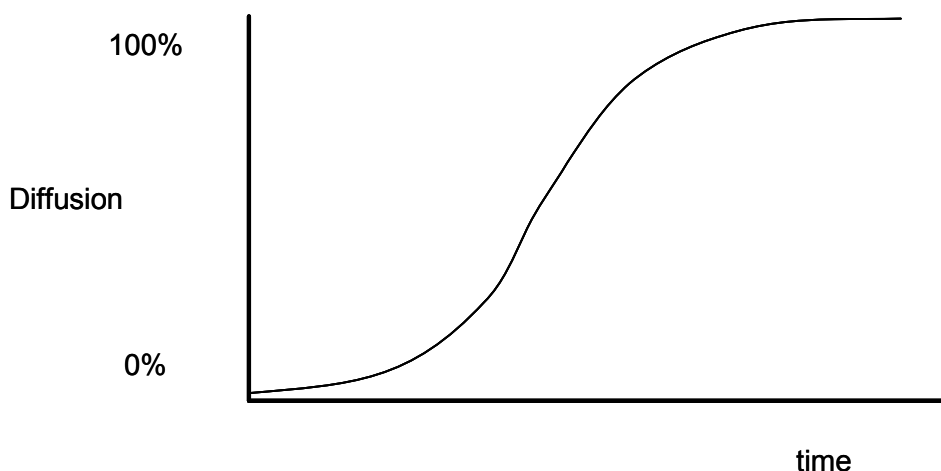


Figure 1: Idealised Diffusion Curve

Measurement of the lag in diffusion is conventionally achieved by comparing diffusion in different location at the same time (i.e. in a given year). Since the focus of interest shifts significantly from one sector to another over middle term (say 5 year) periods, it is conventional to represent graphs of improving trajectories thus

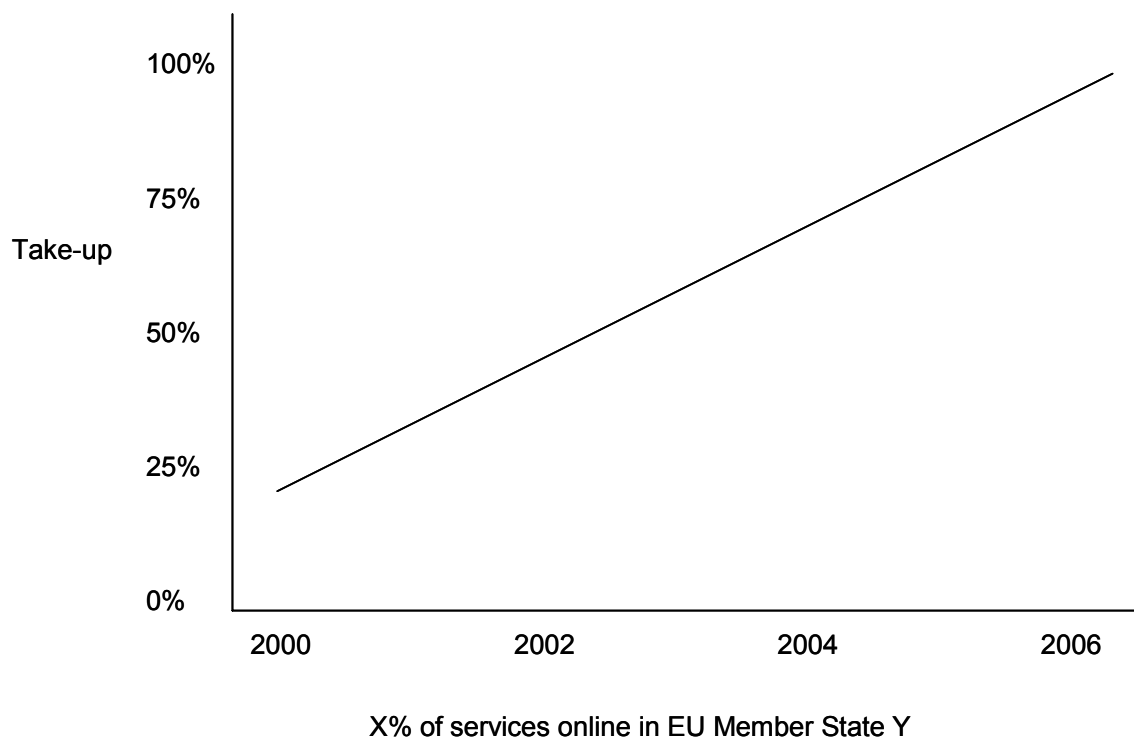


Figure 2: : Idealised detail of Take-up Trajectory

This conventional mode of expression is informative and encouraging, but it deals essentially with the absolutes of take-up (the vertical scale of Ray’s Diffusion Curve) and not at all with the relativities (the horizontal scale). The hypothetical example above could very probably be one component of a wider picture thus:-

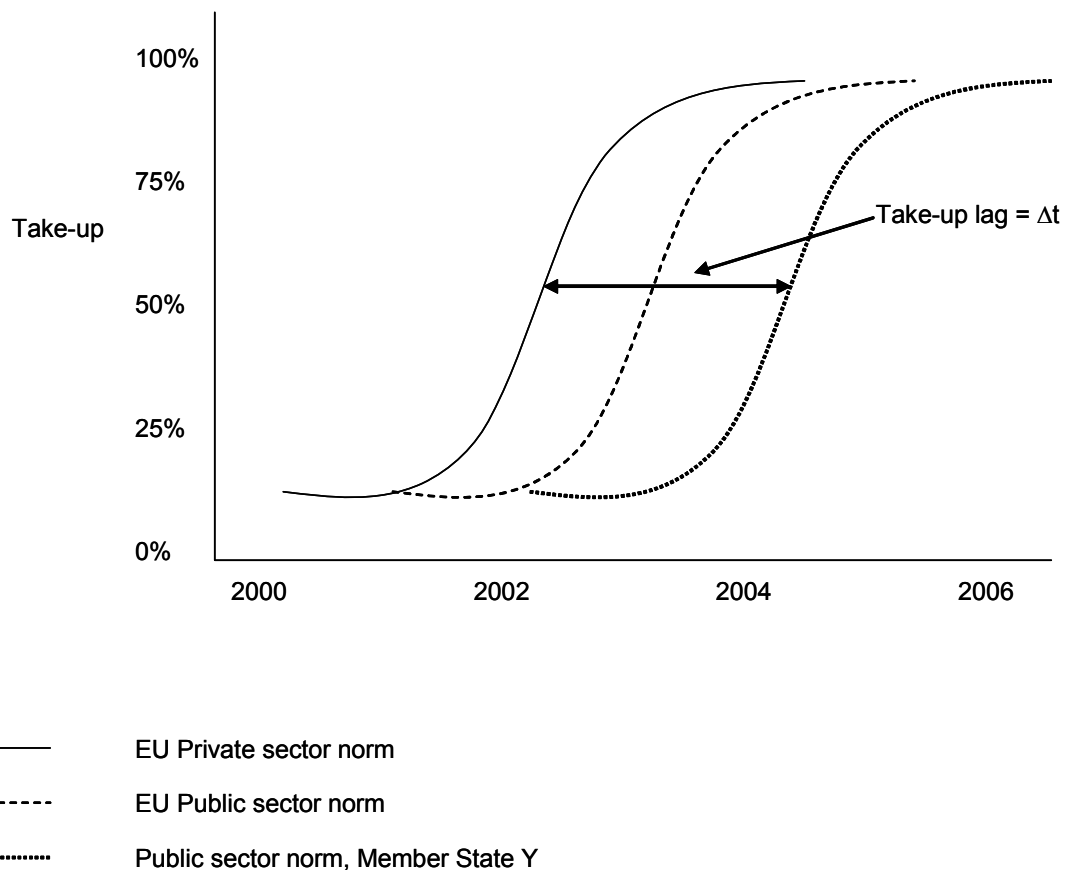


Figure 3: The Lag in Take-up

If it is indeed the case that the lag (Δt) is a conservative property, not readily susceptible to change, (and there is, at the least, no strong evidence to think that it is not the case) then the specific types of Impact to be sought will be those associated primarily with inducing behavioural change in administrations – that is, they will be essentially concerned with the prior issues of dissemination of knowledge and with promoting education and training in administrations, rather than with the outcomes of activity per se.

The conclusion here is that dissemination is a central issue in any discussion of the potential for ‘High Impact’ in interventions; if the conclusions of the Lisbon Review are taken at face value, it is the over-riding consideration in the whole topic area of impact. We should therefore place the potential for dissemination first in any list of impact criteria.

In comparing the public and private uptake curves, it may also be important to take into account the possibility of ‘overtaking’ – that the lagging sector may surpass its rival. This is a distinct possibility in both the private sector (where it is driven by network externalities and ‘herd behaviour’) and the public sector (where it is driven by the very large scale and concentration of much government service provision). The importance of this lies both the measurement of impact (technically, in identifying the appropriately-discounted present value of benefits) and in the mechanics of diffusion.

The linkage between progress in one sector and uptake in another is facilitated by *readiness* which is itself a subject of measurement.

A second observation concerns the value of speed. Lags can be reduced by initiating actions earlier - responding more pro-actively to weak signals from the private sector or anticipating areas where private sector RTD, investment and demand growth might 'follow' a public sector lead. Lags can also be reduced by speeding up response through complementary support for diffusion, adaptation and dissemination – to accelerate the pace of learning and exchange. But these carry various sorts of risk that should be factored into the evaluation of lags. These include the possibility of 'backing losers' (e.g. getting out ahead of market validation of specific technologies and services), distorting the market (especially where large public initiatives create dominant private sector suppliers with overly large installed base) and – particularly in the case of innovative services – getting ahead of the ability of users of systems and users of services to learn about and respond to the new opportunities afforded²³.

Finally, the simplicity of the diffusion curve is complicated by the impact of interoperability, standardisation and other network effects. In particular, it has been argued that these effects can lead to either excess volatility (in which users adopt at more-than-efficient pace in order to avoid being left behind) or excess inertia (in which potential users hang back for fear of 'stranded investments')²⁴. Indeed, in some cases²⁵ the adoption curve can bend back on itself, leading to abrupt jumps and consequent disruptive effects throughout the system. Beyond this, many e-services have a 'general purpose' character – they can accumulate functions (as in the UK Citizen Portal) or validate technologies suitable for use in other areas (e.g. data mashing²⁶). This is analogous to the endogenous growth literature²⁷, orientated towards impact rather than Gross Domestic Product, which increasingly finds that diffusion produces pauses or even temporary reversals in productivity growth.

²³ This is analogous to the well-known hardware/software/application 'leapfrog' phenomena that can disrupt high-technology markets.

²⁴ See e.g. Katz and Shapiro (1989)

²⁵ Cabral (2005)

²⁶ RAND Europe (2006)

²⁷ Aghion and Howitt (2003)

Appendix II: Risk Analysis and Undesirable or Unexpected Impacts

The consideration of uncertainties and discounting brings us back to the lag of the public sector behind the private sector in ICT implementation. This is not necessarily a bad thing – there may be sound reasons for it, for instance:

- private sector motivations may differ;
- different priorities may apply in different MS, regions etc;
- greater risk aversion in government may be appropriate; or
- balance of advantage may not lie with leaders.

The very existence of the lag itself offers some useful insights, particularly in that it offers a historical precedent to guide us. We should be careful to recall that not all of that precedent experience was unqualifiedly beneficial: great social upheaval accompanied (and indeed still accompanies) some of the economic benefits, particularly in the creation of redundancy on a massive scale in some sectors of the economy – junior bank staff, for instance. Very many individuals would see only ‘bad’ impacts from the ‘creative destruction’ of their jobs. Given that many existing government processes involve the employment of large numbers of clerical staff, the opportunity for a further round of ‘creative destruction’ still exists in the e-government context²⁸. There are more subtle ‘bad impact’ effects to be considered, however. These are increasingly being observed in the literature on e-implementation in the private sector, in particular the effects arising from implementations which produce the effect of continuous revolution rather than merely of evolution. Here the effects are clearly relevant to e-government proposals. *In service and knowledge businesses, the continual introduction of new, information-rich offerings can have even more destructive consequences. It can leave virtually every employee struggling to make sense of a complex service portfolio, undermining both productivity and customer*

²⁸ This issue relates also to classes of innovation and particularly of classes of innovation that may not be appropriate subjects for support from intervention programmes. We don’t know much about how initial priorities (to reduce cost, errors or headcount, or to increase service quality or visibility) get translated into actual results – are they merely *ex ante* justification or actual benchmarks? Evidence from other areas suggests that initiatives that ‘free up’ government personnel result in their redeployment and not in reductions in force. In this respect public/private and international differences are critical.

*responsiveness*²⁹. Of course, changes in skills, headcount, job security and career trajectories implied by these initiatives will play out differently in the public sector, and this may, in turn, affect decisions regarding outsourcing and public-private partnership. We must then consider ‘bad’ impacts as well as ‘good’, notwithstanding that our aim is to maximise beneficial impact. In the context of initiatives or interventions, this should be obvious, but the corollary may not be: that the impact of initiative "C" may depend on what is or should have been known about prior initiatives "A" and "B."

- If you copy someone else's (or your own) prior failures, you probably get (rightly) a big negative impact
- If you try something wild, you get a big impact if you win – but you have to be prepared to accept many failures to achieve success this way.
- If you do a cross-over innovation (transplant something from another government or from a private-sector context), the impact is solely driven as much by how well the transition applies as by the impact of the original or pilot action.
- If you copy someone else's success, you may reduce risk through learning by others' experience, through having a political justification for the choices made, and through the assurance provided to other stakeholders but you may face weakened incentives (no points for originality) and even limit the extent to which others are engaged by novelty. This route (copying) also creates the possibility for ‘yardstick’ competition in place of market competition and is, in any case, an essential concomitant to the impact of the original initiative.

In all of these respects there are pointers to the need for some element of risk analysis in the decision making process.

Items of risk in need of such analysis should include, inter alia,

- Availability of skills in the procurement process
- Potential conflict between areas of achieving impact and aims of inclusion policy
- Opportunity costs – particularly whether support will ‘stand in the light’ of natural evolutionary development in the sector
- Potential conflict between Pan-European unified services and regional or decentralisation agendas
- Delay through the ‘middle management bind’ – decision makers are in favour, workers are in favour, whilst middle management will not benefit from success but will be blamed for failure.
- Highly innovative proposals (e.g. for an eService version of the EHIC) may carry such clear implications for consequent transformation in the sector that this generates opposition from within the sector (e.g. where citizens are facilitated in

²⁹ Aspinall K and Gottfredson M (2005) Innovation versus Complexity (in) Harvard Business Review, November 2005.

using 'voting with their feet' by moving to the locations offering the best health care and/or the lowest costs).

Throughout, the perspective is one of 'real options' analysis – the value of a project lies in the subsequent activities and decisions to which it gives rise, and the risk analysis should take account of the resulting 'selection bias' – the degree to which the projects actually chosen over-represent the 'safe' or the 'flashy' possibilities.

Appendix III: Modalities of eGovernment Procurement

Although e-Procurement is often cited as a high impact government service, our concentration on citizen-facing services largely rules it out of the domain. However, there is a substantial overlap between the challenges faced by e-Procurement and the more general and fundamental challenges of procurement of ICT goods and services, particularly those entering uncharted waters. These have particular implications for key terms: e-Government services, impact, innovation and the pan-European aspect.

The fundamental point is that procurement influences Public e-Services by affecting the choice among potential alternatives and the delivered pattern of costs and benefits. In addition, procurement is itself a channel of impact. This can come from stimulating supply-side RTD and investment, from direct economic stimulus to market niches capable of supporting trans-European public e-services, from opening up geographically or functionally restricted markets and from driving re-use of existing public sector assets and capabilities. To simplify the discussion of these aspects of the procurement function, we separate direct procurement of ICT goods and services for use by public sector service providers; contracted-out or privatised ‘export’ of service provision and procurement and exchange of informational assets (esp. publicly-held data). We exclude procurement of research and procurement of ICT assets for use by others as beyond current scope. The contribution of procurement to meeting the challenges can best be understood in terms of the phases of the procurement process.

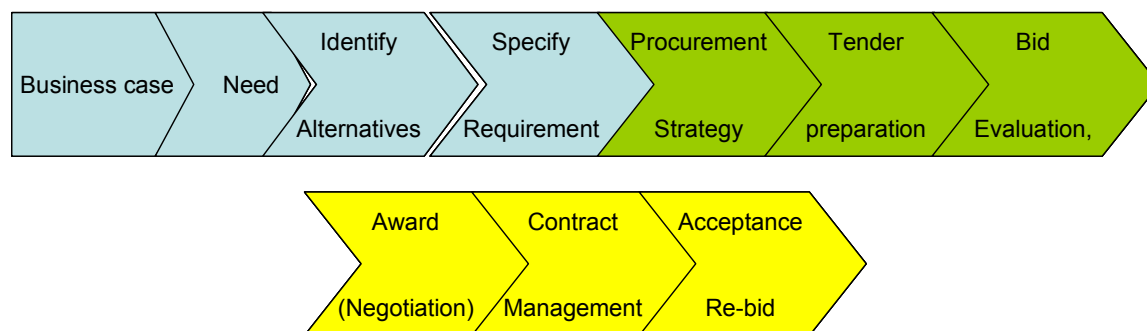


Figure 4: Procurement life-cycle

With regard to the initial (green) stages, the key observation is that the supply side generally does not know what the contracting office wishes to accomplish, while the public body may not know what is feasible (let alone details of cost, timing and

quality). In addition, both sides must work together to identify e.g. staffing and skills requirements, tradeoffs among performance characteristics and the best way to stimulate and capture continuous improvement. Even the make-or-buy decision (whether to follow the procurement or the partnership route) is hard to make on first principles. The necessary exchange of information cannot always take place through conventional arm's length competitive procurement processes. Public bodies tend to protect themselves by drawing up specifications in technical terms, which restricts competition and may discourage innovative entrants or rule out 'bottom-up' innovation. Another risk-reducing strategy is to stick close to commercial off-the-shelf 'solutions.' This not only reinforces existing patterns of market power, but may prejudice the special character of public services. Conventional interface and accounting systems are built around standard private sector roles and responsibilities, so the adoption of ICT tools may imply adoption of the accompanying business model. For example, use of a private customer relations tool works well for customer-supplier relations, but may have undesirable effects when used in a citizen-public servant relationship, or in mediating three-way service provision when the provider, the payer and the recipient are separate entities (e.g. eHealth). With regard to e-services, a further specific issue is the degree to which initiatives are built upon existing ICT provision. This is not simply a matter of the re-use of hardware and software, but covers the consistency of new and existing ways of dividing responsibilities, configuring and staffing tasks, etc.

The procurement phase itself raises a range of further issues bearing on the likely impact of e-service initiatives. These are touched on in an extensive external literature³⁰ - for now, the main observation is that large-scale initiatives may well produce concentration among a few suppliers, who will as a result accumulate a large installed base, control of key intellectual property rights, long-term partnership relations with leading government entities and other incumbent advantages. This may limit innovation and dissemination, but may also encourage it³¹ - the point here is that the structure and market impacts of the procurement phase of e-service development is part of the overall impact. A further consideration is the degree to which the ultimate public sector users of the goods and services procured are engaged in the tendering process, since this may be the most effective place to rebalance considerations of e.g. cost, speed and quality in relation to viable alternatives.

The negotiation and fulfilment phases are important chiefly as a platform for continuing innovation and adaptation. Good practice in public procurement emphasises the value of active partnership between suppliers and public-sector service providers. Moreover, the actual use of public contracting has been shown to have a strong influence on the engagement of private sector stakeholders with public or mixed markets, and thus on the extent to which RTD and investment respond to e-government needs.

Finally, it is worth recording that the rules surrounding public procurement are explicitly focused on opening tendering to bidders from across the European economic space. There is thus enormous potential to encourage both better solutions (by including more serious bidders, many of whom will have experience of other

³⁰ Cave, Georghious and Wilkinson (2005), Aho (2006)

³¹ See extensive literature on monopoly and innovation (refs to add).

initiatives) and 'better problems' through the exchanges and co-ordination that accompany demand pooling.