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Diego D. Navarra

London School of Economics and Political Science, d.d.navarra@lse.ac.uk

Tony Cornford

London School of Economics and Political Science, t.cornford@lse.ac.uk

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ICT, Innovation and Public Management: Governance, Models & Alternatives for e-Government Infrastructures

Diego D. Navarra, Department of Information Systems, London School of Economics and Political Science, d.d.navarra@lse.ac.uk

Tony Cornford, Department of Information Systems, London School of Economics and Political Science, t.cornford@lse.ac.uk

Abstract

E-government and related Information and Communication Technology (ICT) are commonly understood to provide a great opportunity to innovate the business of government by fostering efficiency and reforming public management. This paper argues that the main approaches and methodologies used for the development of e-government applications, services and infrastructure overlook the potential to provide innovative mechanisms for the reshaping of government services, policy making and implementation. The aim of this paper is to highlight the potential reforms either needed for, or as a consequence of, the various innovations introduced to public management by e-government, to critically evaluate the dominant models underpinning the development of electronic services associated with such reforms, and ultimately to present an alternative approach – an alternative problematisation – one appropriate for the conceptualization of information infrastructures that serve the goals of governance. We suggest that focussing on well functioning policy enabling systems can offer a different point of departure.

***Keywords:** ICT, e-government, innovation, institutional reforms, New Public Management, governance, information infrastructure.*

1. Introduction

In recent reports of the International Council for Information Technology in Public Administration (ICA, 2001), a major forum and research body analysing e-government's status and efforts in a number of European, American and Asian countries, diverse approaches to e-government are noted. In the USA, for instance, they report the objective of e-government as to integrate islands of automation and to simplify business processes to maximise the benefits from technology; in Canada the aim is to redesign services in ways that 'make sense' to citizens, businesses and international clients; in Norway and Spain the emphasis is placed on the modernisation of public services and administrative procedures; while Singapore stresses the need to create a knowledge based work-place for technology experimentation. More generally we see e-government as a priority activity for reform of public management and for achieving better (or good) governance in many countries around the globe (CEC, 2002; ICA, 2001; OECD, 2003a).

Across the developed and developing world, these schemes can be conceptualised in terms of a *programme of government* (Rose and Miller, 1992), a problematisation of the question of the State and its legitimate spheres of action. Implicit in such a programme of government (a *programme of e-government*)

is a problematization of the nature of citizen/state interaction as well as a projection of one essential contemporary technology of government, ICT. Indeed, some fundamental change in the relationship between state and citizens would seem to be the minimum common denominator of the above projects; potentially increasing the importance of citizens' and other mediating bodies participation and feedback in service delivery, but also in policy formulation, its implementation and enforcement. E-government programmes, such as those noted above, also describe and project a distinct conceptualization of what ICT embodies as an actor within the realm of government, and how it is implicated in the shifting of the boundaries of the state and modalities of governance. Governments are highly complex institutions where the perceived role and relevance of their activities vis-à-vis the specific functions or policies they are called to implement as representatives of the collective dimension of society, will present a number of elements of variation across contexts.

An information architecture is central in the transition from pre-existing information systems, structures, procedures and infrastructure towards a fluid re-design of the flows and databases which will support the process of reform and innovation. Therefore, greater emphasis is placed on the organisational and procedural elements which raise not only awareness, but most importantly usage, acceptance and diffusion of the new ICT being implemented within and across different organisations. E-government is indicative of this transformation where the interplay of the 'old' and the 'new' is often considered more a technical exercise rather than the expression of contrasting and sometimes contradicting rationalities. Failure to recognise the problematising characteristics of e-government programmes, and an acceptance of the narrow functional efficiency view, may have negative consequences, for example, if it leads to ignoring or overlooking the potential of such programmes to create innovative mechanisms of governance or to support the exploitation (or enforcement) of government's informational capacity in ways that improve policy making and policy execution - though of course, what constitutes an improvement is not simple, as we discuss below. Such a perspective, while not directly oriented to a naïve exploitation ICT as a 'service' infrastructure, we believe can have broader, but equally positive consequences, by linking the question of e-government to the liberal state's essential role of increasing social welfare.

The aim of this paper is then to highlight the potential reforms either needed for, or as a consequence of, the various innovations introduced to public management by e-government, to critically evaluate the dominant models underpinning the development of electronic services associated with such reforms, and ultimately to present an alternative approach – an alternative problematization – one appropriate for the conceptualization of information infrastructures that serve the goals of governance, rather than government, and focus on social welfare.

The structure of the rest of the paper is as follows. Section 2 reviews the literature on ICT and public management reforms, highlighting the innovative potential of e-government. Section 3 assesses critically the rational assumptions behind current 'best practice' guidelines (the conventional programme) and related models for building the systems and the infrastructure for e-government. Section 4 compares the different governance models, policy and service's delivery focus for e-government infrastructures and evaluates them with respect to alternative models for their capacity to build sustainable information infrastructures that can enhance social welfare. Conclusions follow.

2. E-government and New Public Management

Since at least the 1970s public management has been attacked for its inefficiency and for the impossibility of measuring performance and holding accountable public officials. 'Old type' bureaucracy has been seen

as static, dysfunctional and unable to adapt to changing circumstances. Barton (1979, p. 28-29), commenting on the causes of the 'bureaucratic maladies' in the public sector, mentions the following problems: 1) the adoption of rigid rules and the lack of managerial discretion (preventing effective and innovative action); 2) the impossibility of firing incompetent workers and rewarding competent ones; 3) the perverse incentive system with reward being given for the expansion of budgets and staff regardless of benefit to the public; and 4) the 'irrational' decision processes not linked to any 'cost/benefit' type of analysis or material incentive compared with those of market oriented businesses. This broad analysis has created a large body of literature under the name of New Public Management (NPM) (Christensen & Laegreid, 2002; Ferlie et al., 2001; Fortin & Van Hassel, 2000; Lane, 2000; Larbi, 1999). Hood (1991) points out that NPM does not have a single intellectual provenance, with on one side the influence of the New Institutional Economics (NIE) while on the other the rise of Managerialism. But both advocate reform that works through the creation of appropriate incentive structures, and an increase in user choice through contestability as the solution to address the problems of the 'old' public management.

The ideas underlying NPM have certainly influenced many programmes of reform in western governments (Weiss & Barton, 1979; Flynn & Strehl, 1996; Hodge, 1996). Such reforms can be summarized under four broad headings: efficiency, marketisation, accountability and decentralization (see figure 1). *Efficiency* is to be reached by improving the input to output ratio, thus reducing unit costs, decreasing staff if appropriate, and adopting new methods of working. *Marketisation* prescribes the shift from vertical hierarchies of command and control to horizontal contractual relationships within (and beyond) the public sector, revolutionizing contractual relationships in procurement, tendering and delivery of services. *Accountability* makes public officials more accountable for their decisions, based on the effect that these have on social welfare, and controlled by performance measures and quality criteria under the same labour market legislation as private sector workers. Finally, *decentralisation* advocates the transfer of decision making to lower levels of the public sector and the creation of more autonomous units within and beyond government to stimulate initiative, increase local responsiveness and provide tailored local solutions. This includes the design of systems and institutions leading to stronger mechanisms of accountability and the possibility of participation by the citizen and other non-government organisations.

Drawing on such an analysis, Osborne & Gaebler's (1992) in their book 'Reinventing Government', present anecdotal evidence from the USA proclaiming the benefits of reforms proposed for the innovation of public governance when coupled with the use of ICT. The authors report also the creation of more efficient and information driven mechanisms for government, for example in training and adult education markets based on the use of such technologies as 'smart' credit cards, electronic information kiosks and a computer system holding the key data on the performance rating of providers. Heeks (1999) similarly parallels the appearance of e-government with a crisis of the public sector that can be addressed only in consideration of radical reforms, and asserts that the delivery of such reform depends critically on a more overt role for information and a greater use of ICT. An important element in this literature is the emphasis it places on the creation of more effective governance and organisational arrangements to increase the state's ability to offer services (if not itself provide them), using novel institutional arrangements, increasing the use of market-oriented mechanisms, and introducing the concept of 'partnership' between the public and the private sector, not only as a way to share risks and expenses of experimentation, but also to create an information infrastructure that is better able to provide efficient service delivery as well as innovation in policy. However, this requires more than simply introducing electronic versions of extant services; it is about designing information architectures able to be exploited across and within new service channels.

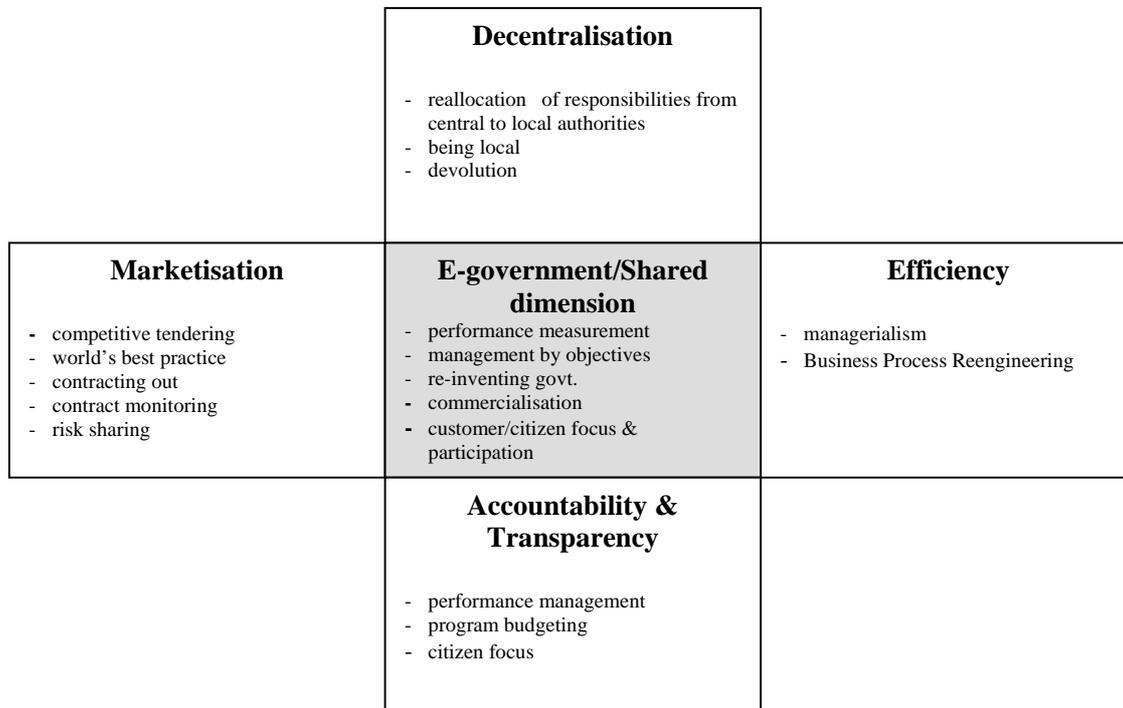


Figure 1: The four poles of NPM : reforms in government and the location of e-government .

From this perspective, e-government can be seen as a powerful translation and inscription of such ideas, embodied, for example, in the use of the Internet and associated ICTs for the provision of government services. However, we would suggest that it implies more; a deep structural transformation in the underlying rationale for administrative processes and procedures and a redrawing of the boundary between the state, the citizen and other actors in civil society. This suggests to us that new challenges lie ahead for the conceptualisation of ICT as an infrastructure for the state or technology of governance (Rose and Miller, 1992), one that links together a variety of actors in new and often tentative networks embodying various inter-institutional relationships and many creative interdependencies. Such a problematization of e-governance poses challenges to those who set out to develop software and systems, ICT platforms and infrastructures that can operate within and transform such varied organisational ecologies.

3. NPM: rational assumptions, best practice and organizational diversity

One of the key ideas that underpin e-government initiatives, drawing from NPM, is the assumption that models from the private sector can be transferred with benefit for the governance of governmental activity. In part this is presented in functional terms, with private sector administrative and managerial practices (as well as systems and software) seen as relevant and appropriate. But it goes further, and is often presented as a broader and more encompassing move to transfer a model of governance itself, embedded in technology, from one sector to the other. These assumptions can be seen as representing central elements of the Western tradition of planning, with decision-making processes of rational actors operating through a sequence of interrelated stages within a goal-seeking system (Flood & Jackson, 1991, Katz & Khan, 1966). In the information systems discipline this paradigm has strongly influenced the

engineering of information systems within organisations but is considered by some as part of that 'hard' systems thinking which, without considering the diversity of the organisations where plans are to be implemented, has led many large IT projects to fail. Just to mention some of the problems more often mentioned we find lack of flexibility, poor knowledge of organisational linkages and interdependencies, and lack of wide ownership in the planning and implementation process (Ciborra, 2000).

Still, many private sector organisations and leading consultancies, as they become drawn into e-government programmes, present best practice examples drawn from (translated from) the public sector as the way to facilitate decentralization of responsibilities and decision making and as able to drastically reduce the 'layers' of government. While this may be an outcome, if systems are carefully put in place (enacted) and used effectively, the usual prescription is for standard change management initiatives and the use of such business based schemes of reform such as Total Quality Management (TQM), Customer Relationship Management (CRM) and Business Process Reengineering (BPR) (Deloitte Research, 2001; Hammer & Champy, 1993; Richter, Cornford & McLoughlin 2004). ICTs are central in these methodologies for their ability in data collection and work flow structuring, and their ability to embed structure within the newly designed work processes. Others (HPG, 2000; CFID, 2002: 54-61) echo similar private sector wisdom, including the need for strong leadership, sound management skills and a clear vision, equally the conventional dogmas of management consultants. In their own ways, TQM, BRP and CRM each urge organisations to re-design following key managerial 'value drivers', identified ideally by relying on the participation of the internal users of the information infrastructure and the external users of the products or services provided, but all too often drawn from a narrower managerial base.

We must, however, acknowledge that private sector organisations are not democracies. In private sector contexts plans are usually made or endorsed at the top and then implemented down the hierarchy through the practices of command, consensus building, awareness training and change management, and we must be careful to consider the extent to which these models, practices and underlying assumptions alone can support the creation of an information infrastructure which serves policy and democratisation processes in government or which can support a richer interaction between citizens and policy makers so as to increase social welfare. For example, in the private sector, marketing activity, surveys or analysis of sales figures provides important input, but in the context of government organisations feedback means potentially more; for example, allowing more transparency and participatory interaction and involvement by citizens (Traunmuller & Wimmer, 2004) not just in the way in which government operates and provides its services, but in the nature of the services themselves.

Such consideration is not reflected much by NPM models (beyond a loose rhetoric), nor in actual experience so far, but it is of great importance particularly because of the natural monopoly status of many government services (such as passports and driving licences) and because citizens are not always voluntary customers of the services provided by the government (as in the case of income tax). As Margetts (1998), points out ICTs have a major role in reshaping how governments exercise their authority, defined as the 'ability to command and prohibit, commend and permit, through *recognised* procedures and identifying symbols' (our emphasis) (Hood 1983:54 in Margetts, 1997). Thus one of the key questions that emerge is that of the legitimacy or trust that is translated through such systems. Thus convincing citizens to welcome a switch to electronic services, with all the perceived risks related to the rebalancing of government's powers and the confidentiality and security of sensitive information, requires a cultivation of trust and careful attention in shaping services to meet citizens' individual and collective expectations of what government does, and how.

4. Governance Models and Alternatives for ICT infrastructures

The cases that are described in this section provide suggestive evidence that alternative theoretical perspectives to those embodied in the conventional e-government programme with its essentially managerial models are possible. We suggest that well functioning policy enabling systems can offer a different point of departure in establishing the e-government programme, and in order to contemplate e-government based reform, society needs more than faith in good technology, technical and managerial capacity, and compliance. What is sought is partnership and legitimacy in the way reforms are perceived as an explicit promotion of social welfare, linked to effective monitoring and accountability. The mainstream models of e-government as managerial/service infrastructures described so far *per se* do not provide this and may risk a backlash which could waste the high sunk costs of software, hardware and infrastructure, and leave government itself in a deeper crisis. The two indicative case studies reported here, and that we briefly discuss now, are intended to be illustrative of an alternative programme.

In Brazil for example, participatory budgeting, following the example of the city of Porto Alegre, offers a positive example and an alternative operationalisation of how ICTs might be effectively used in increasing social welfare. Based on an understanding that decisions regarding the use of resources are important for citizens, participatory budgeting has sought effective involvement of citizens leading to policy responsiveness, with special concern for the definition of priorities for the distribution of investment resources (De Sousa Santos, 1998). In this case, budget information can be accessed by the public, while 'citizens and civil society organisations directly participate in making budget decisions through a year-long cycle of mass citizens forums, [and] thematic assemblies addressing specific issues' (Heimans 2002, p. 6). The number of household with access to water increased from 80 to 98%; the number of children served by municipal sewerage systems increased from 46 to 85% and, perhaps most strikingly, tax revenue increased by nearly 50% (De Sousa Santos, 1998:477; Shneider & Goodfrank, 2001, in Heimans 2002:37).

The other example we consider comes from Ireland. Ireland was declared by the European Commission second only to Sweden for its success on the realisation of e-government for service delivery at a state level (Ranger, 2003) and was also nominated for three awards at the 2003 'eEurope Awards for eGovernment' (McLindon, 2003); for the Revenue On-Line Service, for the General Register Office e-enabling life event data, and for its contribution to intra-government cooperation by implementing a messaging infrastructure. The Revenue on Line Service (ROS) is perhaps the most interesting; not only it has a good record of development (see O'Donnell, Boyle and Timomen, 2003) and cut the time taken to prepare a tax assessment form, but it has also made a positive contribution to the environment (Cross, 2003). The ROS represents not only a useful system for filling income tax forms on-line, but an example of how governments can use such systems to enhance welfare and pursue new policies. Thus the open architecture of ROS was used to rapidly host a new system to make mandatory electronic payments to enforce a 15 cents levy on each plastic bag handed out by shops at the point of sale. The system allows retailers to charge the levy directly to their customers while facilitating the retailer to make its returns on the levy via the ROS (Revenue, 2004), enforcing the usage of the system for the payment of taxes. The result was immediate, 'one billion plastic bags vanished from Irish streets' (Cross, 2003) and today the ROS has delivered more than 31,000 returns and more than 1.2 billion pounds has been paid through it (The Irish Times, 2004).

These two brief studies suggest two key aspects of the e-government programme we outline; the participation of citizens in policy making, and the use of the state's powers in policy enforcement to increase social welfare. Chadwick & May (2003) address somewhat similar issues, focusing on a comparative analysis of the evolution of key policy statements on e-government reform in the USA,

Britain and European Union. Here we expand and adapt their proposed models to include the insights emerging from these cases. In table 1 below, we summarise e-government's governance models, actors, policy and service delivery focus based on the kind of services that are being developed and the implicit programme of e-government. The results are a pattern linking the nature of the services to be developed, the actors and interests that these serve and the type of governance implied.

Within the NPM/managerial model, the role of the state is regulatory, services and information are provided to the 'customers/users' as quickly and inexpensively as possible, and the focus of the services provided includes such transactional activities as tax filing, passports, driving licenses, etc. as well as on-line access to government information. The objective is to establish an ideal type minimal state under the assumption of efficient provision of services and information, which can hold accountable government and related actors and interests even without direct citizen participation. The consultative model of citizen state/interaction, suggests a difference in that the state regulates from the top, but responds also to the requests of business groups and civil society organizations, and expands the scope of e-government to encompass a wider interlinking and information architecture that extends beyond the traditional boundaries of state activity. As Chadwick and May state it, 'Information is regarded as a resource that can be used to provide "better" policy and administration'. Typically the services' focus would be on the development of e-voting applications, instant opinion polling and other electronically mediated inputs from voters and interests groups. E-government here is not considered only as a means to add information to the activities of governance and policy formulation, but to retain it within the established structures of the state within the 'vision' of liberal democracies and their 'contractual notions of mutual relations' (Rose & Miller, 1991:9).

The third participatory model aims to facilitate free speech and the right of expression for diverse social actors, by increasing the level of electronic mediation. Voluntary associations, interest groups and other deliberative autonomous groups are perceived as important as a means to increase citizens' engagement in the state through policy making. The appropriate example could be that of Porto Alegre in Brasil, in between the pluralist and the participatory model. Note also that in the example legitimacy and engagement has consequences not just in better policy formation and outcomes, but also in adherence to the state, e.g. increased tax returns. The fourth model can be identified with the creation of systems not essentially or only for service delivery but also to embed rules to discipline users and providers and enforce welfare increasing policies. We therefore call it 'disciplinary', though as we will show it can be more flexible than the name would suggest. Here the role of the government is primarily seen as the enforcer of welfare increasing policies. It is notable, that in most of the e-government literature such a strong model of e-government is seldom directly addressed, other than in the context of privacy and monitoring.

	Managerial	Consultative	Participatory	Disciplinary
<i>Governance Model</i>	Regulatory and responding to the needs of the new economy; efficient and fast delivery of government services and information to 'users'; increased transparency	Regulatory; responding to the needs of societal interests as expressed electronically; <i>better</i> policy provision to citizens as 'users'	Promotion of free speech and rights of expression; electronic mediation of citizens and civil society involvement	Enforcing of welfare increasing policies; better policy provision to citizens
<i>Actors and interests</i>	Government; 'customers'; business; mass media	Government; 'customers', business; interest groups	Voluntary associations; interest groups; deliberative autonomous groups	Government; business; citizens; non-government organisations
<i>Policy focus</i>	Marketisation, efficiency, accountability	Decentralisation, transparency; policy testing and innovation	Constitutive of democracy itself, legitimacy of the state, citizen involvement in policy making, feedback and definition of priorities.	Collective social welfare, surveillance and e-enforcement; accountability
<i>Service delivery focus</i>	On-line taxation; benefit claims; 'one-stop shops'; market research data; government information to the public	e-voting'; instant opinion polling and petitions; electronic input from voters and interest groups; 'electronic town meetings'	Autonomous mechanisms on the borders of the state, discussion lists; peer-to-peer technologies; cyber-political participation and representation, policy responsiveness, citizen adherence	Interoperable information infrastructures applicable beyond specific service focus

Table 2. Governance models, actors, policy and services' focus in e-government infrastructures (based on Chadwick and May 2003).

One example in the literature is in Koopmans-van Berlo and de Bruijn (2004), who discuss the concept of e-enforcement, in their case in the road transport industry, while the London congestion charge system suggests another. These authors point out that there are two styles of enforcement, in our own terms we would add of 'disciplinary enforcement'. One is based on compulsion and unilateral coercion, while the other is based on cooperation and interaction. The latter is better able to increase *willing* compliance to enforce welfare increasing policies, but relies on willing exchange between the disciplined and the disciplining party to engage in a transaction which is mutually beneficial. A main characteristic of this model is its reliance on flexible and responsive information architecture applicable beyond the narrow focus of any existing service provided, exemplified in the example of the Irish ROS.

The introduction of the four models of governance is not, of course, intended to suggest that they are mutually exclusive; indeed one of the issues we highlight is how new services can be designed so as to be participatory as well as disciplinary. In contrast with a pure managerial model, in both Brazil and Ireland, a combination of structured procedures (such as meetings, forums, policy initiatives and/or pre-existing infrastructures) with un-structured systems was accepted by the users. In each case citizens benefited (more water, less litter), while government provided effective mechanisms of policy enforcement. In each case social welfare has been increased and the information infrastructure has allowed not only for the distribution of the benefits, but also of the costs of specific policies (bag levy, taxes raised). In Brazil, the use of the Internet in participatory budgeting could facilitate the distribution of the monitoring costs on to the citizens of Porto Alegre. In Ireland, electronic mandatory payment systems allowed the levy to be passed on to the customers, reducing the number of plastic bags. Nevertheless, the possibility to produce such a result was possible thanks to the *ex ante* existence of an information infrastructure which constituted the basic architecture upon which the levy could be based.

5. Conclusion

This paper has reviewed the most debated issues linking e-government projects to reform efforts in Western governments. It is argued that e-government is usually associated with an expansion and deepening of NPM enriched by tools and methodologies such as BPR, TQM and CRM. We have, however questioned the general tendency to assume that private sector organisations provide the most appropriate direct models for e-government, given that they are primarily action oriented in delivering their products to identified markets as quickly and cheaply as possible, and thus strive to achieve a form of governance that enables an appropriate internal alignment.

Central to the alternative way of looking at e-government presented here is the appreciation that e-government involves the creation, development and interlinking of a variety of social, institutional and technological ecologies to deliver services which are perceived as legitimate, innovative, useful and welfare enhancing. Such understanding lead us to stress the high level of complexity involved in the creation of the large scale infrastructure implied, as well as the difficulty of planning organisational restructuring activities by following the managerial model alone. Whereas the former sees an information infrastructure only as a collection of different ICT, systems and applications, we rather argue for the inclusion of the dynamic and emergent elements during implementation and to the importance of designing for improvisation, openness and flexibility (Ciborra, 2000), ideas served through the participatory model. This in turn implies a further shift in the traditional programme of e-government, away from considering each application in isolation and to consider the design of a shared and flexible architecture. The cases presented above highlight the importance of seeing the process of infrastructure development not as static and narrowly outcome oriented, as the managerial model would suggest, but as in continuous flux as a result of changing standards, new and emergent needs and the dynamics arising during implementation.

Political organisations (organisations within the polity which include government itself as well as relevant private sector and civil society interests) are in this respect rather different. Their concern is with policy making and enforcement, and they operate by collecting and analyzing information from the interlinking of various sources, shaping and communicating it in a situation of imperfect information and uncertainty. Thus, the emphasis is not only or particularly on an internal alignment that delivers products to market, but on various levels of interactions, interdependencies and knowledge sharing within a diverse

community of governmental entities and the recipients of the services these organisations support (or their representatives).

Beyond the narrow NPM conjectural domain, e-government is (or should be) expected to benefit the community by drawing together the public sector, civil society and international actors, as well as by improving consultation with, and participation by, all spheres of society and achieving a more participatory process of governance and decision-making. In brief, the State, we argue, is different; it needs legitimacy and effective monitoring as much as compliance, and in the case of e-government participation is central. The issue for government is then who is allowed to participate, how and based on what governance arrangements. The example of participatory budgeting in Porto Alegre is presented as a relevant alternative model to the dominant paradigm, providing interesting empirical outcomes to justify e-government's potential for promoting social welfare. Similarly, the Irish ROS shows how a new service, when functioning well, can provide an effective policy enactment platform and deliver results which were un-intended or unplanned when the project started. Future research in this area would benefit by an exploration of which policies and institutional arrangements are better suited to create an architecture to enhance the potential of government's governance capacity not only of government as such, both by allowing enhanced participation in the policy process and in allowing for the delivery of new services.

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