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Special Issue

Citizen Participation and engagement in the Design of e-Government Services: The Missing Link in Effective ICT Design and Delivery *

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Abstract:

Enid Mumford championed an ethical, socio-technical, and participatory approach to the design of ICT systems. In this paper, we focus on the development of e-government as an example of such a system. First, we present an extension of Mumford's ideas about the benefits and process of participation, based on an analysis of recent citizen engagement initiatives. We then examine the extent to which e-government reflects the principles she espoused. The evidence collated indicates that e-government development is currently characterised by a technocentric approach with minimal engagement of citizens. We discuss the implications arising from this analysis, and explore the benefits that governments could achieve from adoption of a socio-technical, participatory approach to e-government development. The crucial enabling role of capacity building is highlighted. Providing citizens with the necessary skills and capabilities to engage effectively offers the key to the successful development of systems such as e-government which impact our lives in the 21st century Information Society.

Keywords: socio-technical systems theory; participatory design; e-Government: citizen engagement; capacity building

** This is a part of the special issue on Enid Mumford's contribution to information systems theory and theoretical thinking. Jaana Porra and Rudy Hirschheim were the accepting guest editors.*

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Introduction

Enid Mumford recognised that work systems require the successful integration of the values, interests, and needs of different stakeholders if they are to function well and positively enhance human experience (Mumford, 1983, p.20). She championed an ethical, practical, and participatory approach to the design of computer-based systems, and developed a systems design methodology (ETHICS) that embodied these principles (Mumford, 1983). The authors endorse her approach and, in particular, share Mumford's strongly-held belief that computers should be used in all areas to enhance the quality of human life. We have applied this both to our past work in the former HUSAT Research Institute over more than 20 years (e.g., Damodaran, 2001) and to our current work relating to the design of information systems (IS) intended for use by the general public.

E-government is an example of such an information system. Governments in many countries, including the UK, are investing significant sums of money to develop e-government systems as part of their programmes to deliver public services. E-government systems offer a range of potential benefits both for governments and for citizens, for example improvements in information sharing between services and agencies; improved speed and efficiency of the processes that underpin services, and greater variety, choice, and convenience of access for customers (ODPM, 2004). Many governments are also hoping to exploit the potential for improved communication with citizens to enhance the democratic process, encourage wider citizen participation, and reduce social exclusion. Yet despite the significant investments made, and the new and improved services that have in many cases been delivered, citizens do not always understand the benefits and, in the UK at least, have been slow to take up e-government (Accenture, 2006).

In this paper, we provide an analysis of e-government development based on and extending Mumford's approach. We then consider the implications arising from this analysis, particularly focusing on the benefits that governments could achieve from adopting a socio-technical, participatory approach to e-government development. We begin by revisiting the two fundamental concepts that underpin her work, socio-technical systems theory and participatory design.

Key concepts in Enid Mumford's work

Socio-technical systems

Socio-technical theory, while influenced among other ideas by open systems theory (von Bertalanffy, 1968), arose originally out of the pioneering work of the Tavistock Institute of Human Relations in the 1940s and, in particular, out of a study of coal mining in County Durham, UK in the 1950s (Trist and Murray, 1993). Their research highlighted the interdependence of work (social and organizational) systems and technical systems, which means that if one component of a system is disturbed or changed, there will be ramifications throughout the system, often in unexpected ways and with outcomes that were not predicted. Relating this to the development of office automation systems in the 1970s and 80s, Mumford observed that computer systems design had become a structured and formalised technical process, directed at solving problems that were defined solely in technical terms (see Figure 1). She pointed out that when the mutual dependency between humans and machines is not recognised, and only the machine part of the system is consciously designed, the consequences for humans are not just unpredictable but also often undesirable (Mumford, 1983, p. 20). Mumford provided many examples of such situations, and her observations have been corroborated by other studies showing that developments that focus only on the technical elements of ICT systems are likely to lead to ineffective systems and even to costly failures (for example, Kearney, 1984).

Over the past decades, socio-technical theory has continued to evolve and develop through the work and insights of Enid Mumford and others, for example Cherns (1976), Pava (1986), Clegg (2000), and Klein (2005). Berniker (1996) states that "in the half century since the Durham coal mine experiences, socio-technical systems (STS) analysis practice has evolved into an effective technique for the design of innovative work organizations." There is now wide acknowledgement in academic and research communities that IS project outcomes are a product of the complex and inevitable interdependencies between the technical and social (i.e., human and organisational) components of systems – whether these are work organisations or entire societies. A number of system design methodologies, including Mumford's own

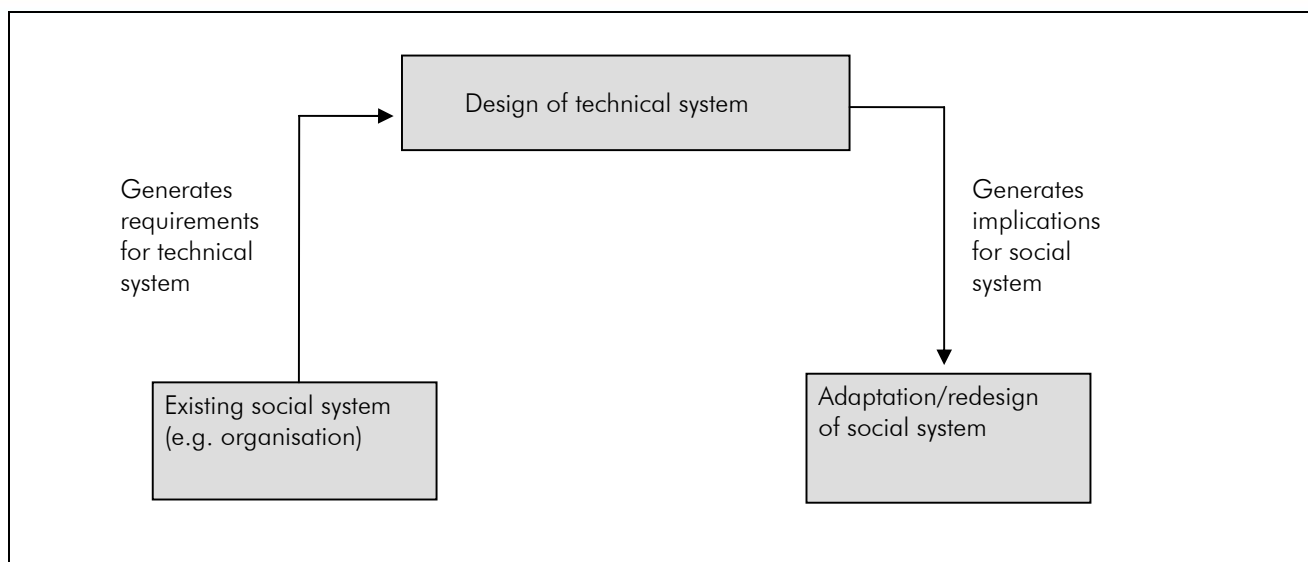


Figure 1. The Engineering Paradigm: A Technical Approach to IS Design

ETHICS (Effective Technical and Human Implementation of Computer-based Systems) methodology, have been developed that recognise the interdependence of the technical and human (organizational and social) aspects of a system and seek to ensure they are designed together (see Figure 2).

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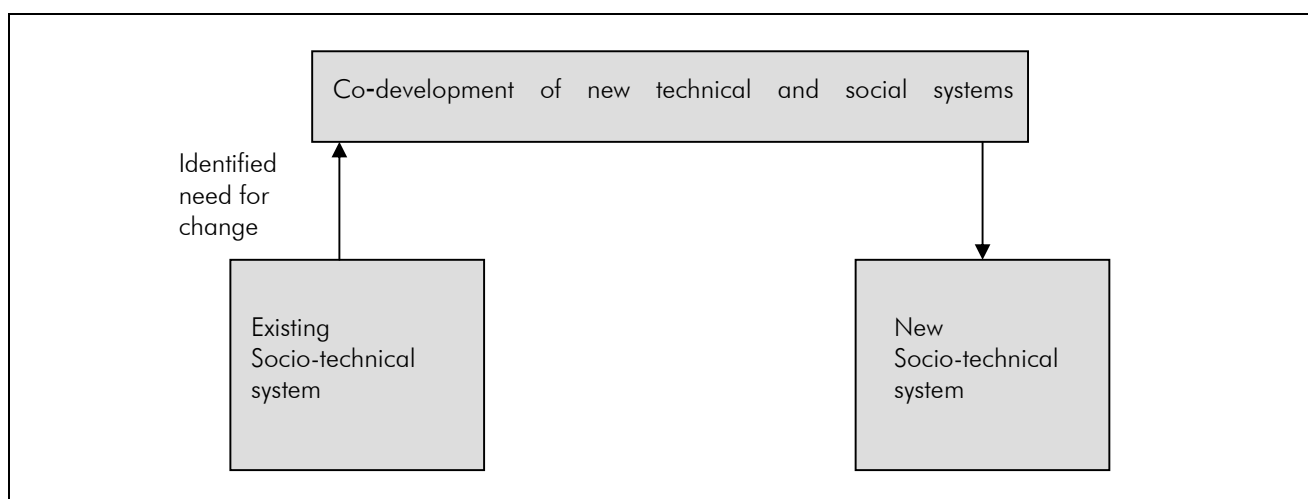


Figure 2. A Socio-technical Approach to IS Design

A participatory approach

Socio-technical systems theory is clearly important to Mumford’s thinking in showing the interdependence between the technical and the human, social, and organisational elements of work systems, and in highlighting the need for these aspects to be co-designed. However, Mumford asserts that the most important thing that the socio-technical approach to design can contribute is its value system. She highlights two aspects in particular. First, the rights and needs of the

employee must be given as high a priority in design as the technical parts of the system. Second, the principle of democracy: employees must be allowed and encouraged to participate in and influence decisions that concern them (2003, p.27).

Mumford acknowledges that, unlike socio-technical theory, "participation is not a new concept, although it may sometimes have been given other names, such as democracy, involvement, sharing, co-operation, etc. The Greeks used it to describe a certain kind of decision taking. For them a decision was participatively taken if the answer to the question 'Who takes it?' was 'More or less everybody'" (1983, p.21). In the 1970s, however, the Norwegian Computing Centre began to apply this approach to the design and development of work systems including new information technologies, and a discipline of participatory design (PD) began to emerge. Although there was growing awareness of the need to consult with users and other stakeholders during the ICT development process, such consultation was often limited and confined to particular points in development. Mumford saw clearly that design cannot be separated from the decision making that occurs at different stages in development. Indeed, her own definition of participation is that it is "a process in which two or more parties influence each other in making plans, policies or decisions. It is restricted to decisions that have future effects on all those making the decisions or on those represented by them" (p. 22). Therefore, she argues, participation must take place throughout the process, not just at specific points. She proposes that comprehensive participation in the total design process for a new system would involve the following (Mumford, 1983, p.28):

- Participating in the initiation of the project.
- Agreeing that it shall go ahead.
- Diagnosis and specification of existing problems and needs.
- Setting of business, human, and technical objectives.
- Design of alternative solutions.
- Feasibility study and evaluation of alternative solutions.
- Detailed design of human and technical work systems and procedures.
- Implementation of the system.
- Evaluation of the working system.

Mumford was a pioneer in defining the process of effective user participation in the design of computer-based work systems. She was also one of the first to recognise the need to provide help and guidance to designers and users wishing to adopt such a process. This led her to develop the ETHICS methodology, which she subsequently applied in numerous settings (Mumford, 1983).

Benefits of participation and citizen engagement

Enid Mumford championed a participatory approach to the development of computer-based work systems not only because it was morally and ethically "the right thing to do" i.e., an expression of democratic values, but also because, in her experience, it facilitated good design. A participatory design process enables users to contribute their expertise and knowledge, provides an opportunity for learning and skill sharing that benefits both designers and users, and encourages acceptance and uptake of new systems by giving users a sense of ownership and a good understanding of the system (Mumford, 1991, pp. 272-274).

The experiences of the authors and others working with participatory approaches to ICT development have confirmed the benefits for IS design, and indeed there is now an international standard for human-centred design (ISO 13407, 1999), which promotes and encourages user involvement at key stages in the design of ICT systems. It is recognised that direct engagement with potential users and stakeholders provides designers and developers with a sound and extensive knowledge base about their needs and characteristics. Furthermore, entering into genuine dialogue with stakeholders reveals the diverse objectives, aspirations, needs, and characteristics of different groups and enables definition and validation of requirements specifications to take place. At a later stage in the design lifecycle, design prototypes and simulations can be tested with relevant user groups, thus gaining early feedback on stakeholder responses. Feedback gained before a system is built can be used to make improvements that would be impossible or extremely expensive if flaws were to be discovered at a later stage of the design. There are the evident benefits for stakeholders associated with improved design of products, systems, and services. These advantages include, for example, a better match between the individual's needs and the services provided, improved usability, reliability, and security.

There is, however, now a wider body of evidence on which to draw when examining the benefits of participation. Many governments and government agencies have embraced the concept of 'citizen engagement'. Citizen engagement can be defined as the active participation of citizens, in partnership with government, in decision and policy making processes (OECD, 2001); this definition of engagement fits well with Mumford's definition of participation given in Section 2.2 above.

Numerous citizen engagement initiatives have been undertaken around the world, and there is a growing literature that documents these. For example, at an international conference on Engaging Communities held in Australia in August 2005, around 400 papers were presented by delegates from 26 countries.

This proliferation of citizen engagement initiatives has mainly occurred in the public sector and in relation to activities such as policy making and civic and community planning, rather than in relation to IS design. Nevertheless it has relevance to contemporary thinking about IS development. As ICT becomes more and more pervasive, the impact on society becomes ever greater. In today's information society, with the emergence of "e-everything"—i.e., the proliferation of electronic services delivered by commerce and by government for a wide variety of functions from Internet shopping to education, healthcare, and social security benefits—citizens in all their diversity are the target users. The authors believe that the lessons learned from experiences with engaging citizens in other domains may usefully be applied to the IS development context.

To extend and update the thinking of Mumford and others about the benefits of participation, we reviewed a sample of 20 case studies of participation/citizen engagement from countries across the globe (the case studies and the analysis are reported in detail in Damodaran and Olphert, 2006). These case studies were drawn from published reports of citizen engagement initiatives, and were selected to include initiatives of two kinds: i) those that focused primarily on engaging the public in policy making, and ii) those that focused primarily on engaging them in some aspect of technology development, in order to draw out similarities and differences between the two contexts. The case studies were also chosen to represent a range in terms of the scale of public participation, from pilot projects involving a small group of citizens to large scale public engagement initiatives involving many citizens.

The case studies selected reported a wide range of benefits of engagement. Using a framework based on concepts from systems theory, we examined the inputs, outputs, and the processes involved in citizen participation/engagement projects (see Figure 3). Our analysis identified a number of key inputs that citizens contributed to the design/decision making process—knowledge and understanding of needs, problems and priorities, local knowledge and experience (e.g. of community interests, context), aspirations and values. The results of the engagement process could be grouped into two distinct categories, which we have termed 'outputs' and 'outcomes'. Outputs are explicit, tangible products of the engagement process, such as problem definitions, requirements specifications, action plans or policy statements, prototypes/pilots and demonstrators. Outcomes, on the other hand, are less tangible; examples from the case studies include:

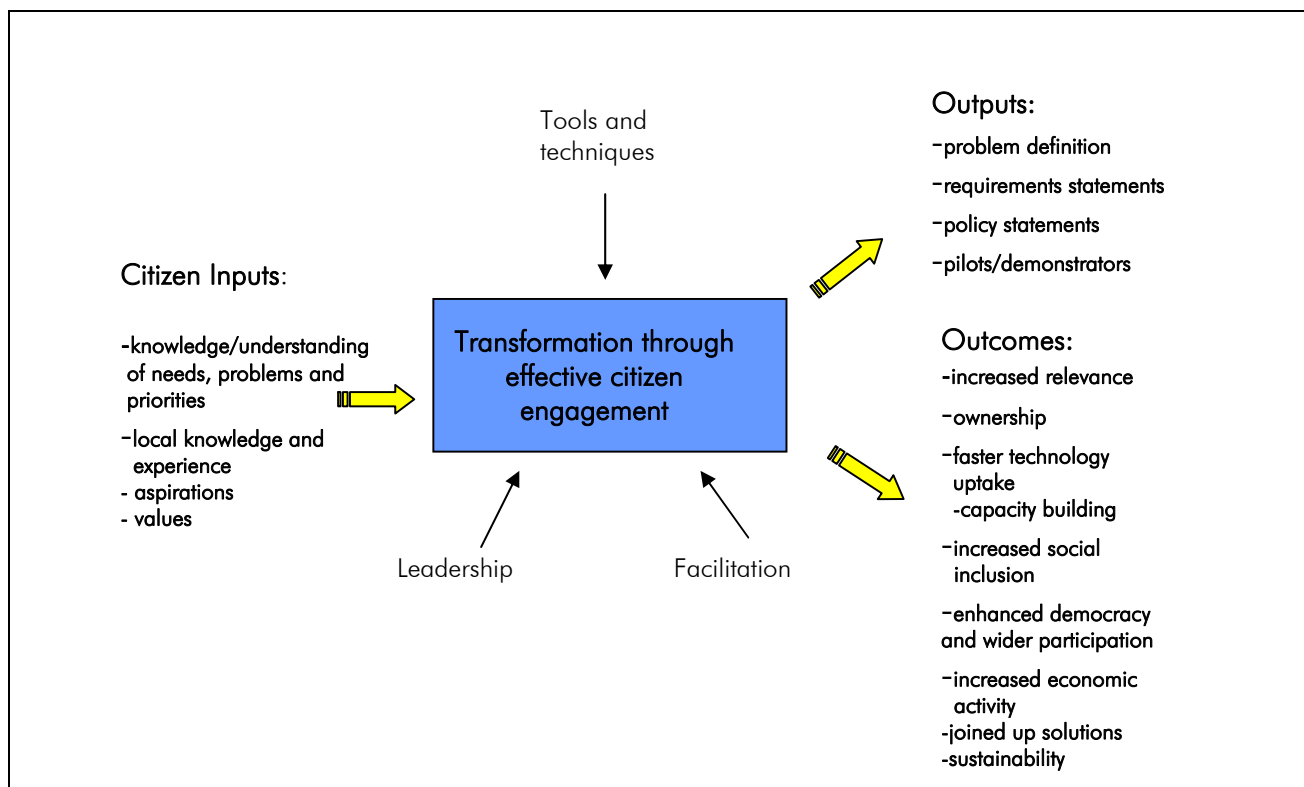


Figure 3. A Benefits Model of the Citizen Engagement Process

- increased relevance and value of solutions generated;
- ownership of solutions;
- faster technology diffusion;
- capacity building;
- enhanced democracy, social inclusion, and community cohesion;
- mutual respect and understanding;
- increased economic and commercial activity;
- increased innovation;
- increased social inclusion and community cohesion;
- joining up of policy, strategy, and ICT;
- sustainability.

While the *outputs* of an effective citizen engagement process can lead to improved quality and effectiveness of solutions, the authors believe that it is the *outcomes* that have profound significance for achieving the advantages that new information and communication technologies have the potential to deliver. In the UK, for example, government aspirations for e-government systems include not only improved (e.g., more efficient, more convenient, and more integrated) information systems, but also wider public participation in the political process and increased social inclusion. The review of the cases described above suggests that such objectives could indeed be met as the result of an effective citizen engagement process in the development of e-government systems.

The analysis also highlights the characteristics of effective citizen engagement, confirming and extending Mumford's views about the participation process. Engagement was most effective when citizens were engaged throughout and from the earliest stages of development, and when they were motivated and empowered to participate in relevant decision making. Factors that appeared to contribute to such empowerment included the use of tools and techniques to enhance communication between stakeholders, and effective leadership and facilitation of the process. (A fuller discussion of tools and techniques is outside the scope of this paper, but is provided in Damodaran and Olphert 2006.)

We shall now consider the extent to which the development of e-government in the UK reflects the socio-technical and participatory approach that Mumford championed and that our own experiences have led us to strongly endorse. We begin by briefly describing the delivery of e-government services at the local level in the UK.

Delivery of local e-government in the UK

The UK government, like many others, is pursuing ambitious targets for the delivery of e-government at both national and local levels. It is a core part of the government's agenda to reform and modernise all public services. The primary delivery method for e-government is the Internet. The UK government set itself ambitious targets to deliver its services online by the end of 2005, and to date billions of pounds have been invested in the development and implementation of infrastructure and initiatives, including a 6 billion pound investment in information technology, most notably broadband (ODPM, 2004).

Government is a major provider of housing, travel, leisure, health, education, and the social services needed to support the most vulnerable in society. In the UK, many of the public services required by citizens are delivered through a network of local authorities; it is estimated that around 80 percent of interaction between public service providers and the public is managed at the local or regional level, rather than at the national level (ODPM, 2003). Therefore, developing and delivering e-services at the local level has been a fundamental part of the e-government strategy. The primary requirement for implementing e-government at the local level was for each local authority in the UK to develop its own website and, by 2004, all of the 468 county, borough, and district authorities responsible for delivering government at the local level in England and Wales had an active website (Socitm, 2004). This means that all UK citizens (with access to the Internet) can now obtain some information about their own, or any other, local authority. Beyond this, local authorities are working to deliver additional functionality and new online services. However, regular annual surveys carried out by Socitm indicate that while progress is being made, this is happening slowly. For example, in its 2006 survey, Socitm found that only 13 percent of the 468 local authority websites offered transactional facilities, and that this represented only a small increase over the previous year (Socitm, 2006).

Comparative studies, such as those carried out by the consultancy organisation Accenture, show that e-government in the UK is regarded as being at a mature delivery stage. In a study by Accenture, the UK ties for 10th place out of 22 countries

surveyed (Accenture 2005, p.94) (no rankings were undertaken in the 2006 annual report¹). This represents a slight decline from Accenture's study in 2004, where the UK was in 8th place out of 22 countries surveyed (Accenture, 2004) and a further decline from 2003, when it was 6th (Accenture, 2003). Accenture rates the UK as one of the followers, rather than as a trendsetter or challenger in terms of comparative e-government performance (Accenture, 2006, p.10), but credits it as "verging on dramatic change," as a result of the UK's new and progressive "Transformational Government" strategy (Accenture, 2006, p.22).

Yet levels of usage of e-government services in the UK are low compared to other countries. Only 38 percent of the population has used online government services (Accenture, 2006, p.101) and increase in use over the year 2005-6 is also low, at only 3 percent (Accenture, 2006, p.36). In comparison with other countries, UK citizens are more likely to favour other methods of interacting with government; 77 percent use a landline telephone (the second highest percentage of telephone use in the survey) and 46 percent use the post (the highest percentage of postal use in the survey) (Accenture, 2006 p.101). Of those using online government services in 2003 (30 percent) only 11 percent had used them to download forms, and just 5 percent to send back completed forms. Meanwhile, in many other European countries (e.g., Denmark, Luxemburg, Spain, Hungary, and Germany) over 50 percent of the population has used e-government services, (Eurostat, 2004) and in Finland the figure is 73 percent (Accenture, 2006 p.73). Accenture points out that it is the provision of value-added services to the citizen that will supply the much needed impetus for e-government development. Only by increasing uptake of e-government services by citizens can sufficient momentum be achieved to restart the UK's stalled progress in the international arena of e-government development (Accenture, 2004).

The UK government also faces a further challenge related to the perception of its online services. In its 2006 study, Accenture assessed the perceptions of citizens about the online services of the private sector and the government. They found that UK citizens had a considerable 'perception gap', with almost a quarter of those surveyed believing that the private sector was performing much better than the public sector in terms of innovation and the quality of online services. This perception gap was second only to that found in the U.S. (Accenture, 2006 p.13). Initiatives such as UK Online, which aims to target social exclusion and encourage Internet take-up, Directgov, the new Local Directgov Programme, and the Transformational Government strategy are all ways in which the UK Government is attempting to meet these challenges (Accenture, 2006, p.101).

Therefore, while the UK has shown significant commitment to e-government, it appears that most citizens are not yet reaping the potential benefits. With continuing investment in the development and delivery of online government services, the challenge for the UK government is to ensure that the services developed are relevant and appropriate as well as usable and accessible by those people who need these services most.

E-Government as a socio-technical system

Many academics and researchers recognise that e-government systems inevitably encompass social and technical components – and are situated in a wider socioeconomic and political context, which influences, and is influenced by, citizen perceptions and experiences of e-government services. A number of empirically-based studies and academic analyses of their rich data have demonstrated powerfully the complex interactions of a multiplicity of factors that together influence the design, development, and delivery of e-government services.

A study by Irani et al. (2002) concluded in analyses of criteria used in investment appraisals of local e-government in the UK that IS projects continue to give inadequate attention to human and social considerations. Further, Sorrentino and Virili (2003) conducted a systematic examination of the evaluation criteria specified in the Italian e-government Action Plan for assessing e-government project proposals to explore the underlying model of IS projects that was implicitly reflected in the plan. The investigators examined each of the five evaluation criteria against two models – (i) the model conceptualised by Kling and Lamb as the Standard (Tool) Model and (ii) a Socio-technical model. The 'Standard Model' characterises the typical approach observed by Kling and Lamb in descriptions of IS development projects where ICTs are regarded principally as tools – albeit combined in complex configurations according to rule-based procedures and protocols. "Among other things, the Standard Model assumes that information systems are objective and rational, and thus capable of

¹ "...we have not conducted a country ranking for 2006. After years of rapid e-Government development, countries' maturity advances have slowed. As leadership in customer service became more difficult to achieve, the time it took for governments to make noticeable improvements grew. More visionary citizen-centric strategies and cross-cutting initiatives needed time to mature and take hold. We also noticed that certain countries had remained consistent leaders over time. While their positions in the absolute rankings might rise or fall slightly from year to year, these countries have consistently been among the top ranked." (Accenture 2006, p.3).

being evaluated through the use of objective tools and techniques" (Sorrentino and Virili, 2003). This approach equates to the technical approach to ICT design that Mumford describes (see Figure 1 above).

One of the key research questions the Italian study addressed was "To what extent have socio-technical considerations been taken into account by the Ministry of Innovation (the Department in the Italian Government responsible for e-Government) in its procedures for accepting e-government project proposals?" The findings of their exploration revealed that four of the five evaluation criteria were based primarily on parameters relating to the Standard Model for IS projects. In the words of Sorrentino and Virili (2003): "In such a conception, a range of fundamental flaws is dramatically evident. Perhaps the most important inadequacy is the total failure to take into consideration the crucial social factors inherent to any form of technological development... We have tried to demonstrate that this view is incomplete and have called for additional efforts to systematically consider social effects as suggested in the socio-technical model."

Similar conclusions regarding the relative neglect of social aspects in e-government projects were echoed by Parvez (2003). Based on his study of the role of ICT in promoting local democracy, Parvez proposes a theoretical framework "which suggests that the material technology cannot be understood in isolation from the way it is appropriated in social processes." Further, he suggests that the framework serves "to bring to the forefront technologically-enabled social practices rather than the technology itself or the actions of human actors and thus avoids technological or social determinism. It highlights the importance of the interplay of the context, social structures, and agency factors in the technologically enabled social practices" (Parvez, 2003).

A study commissioned by the UK Office of the Deputy Prime Minister (ODPM) from the Centre for Urban and Regional Development Studies (CURDS), University of Newcastle upon Tyne, (November 2003), explored the implications of socio-technical theory for the successful implementation of local e-government. In a particularly important and insightful report, the researchers identified four nested 'components' or elements that require simultaneous configuration, management or alignment. These are described below and their relationships illustrated in Figure 4.

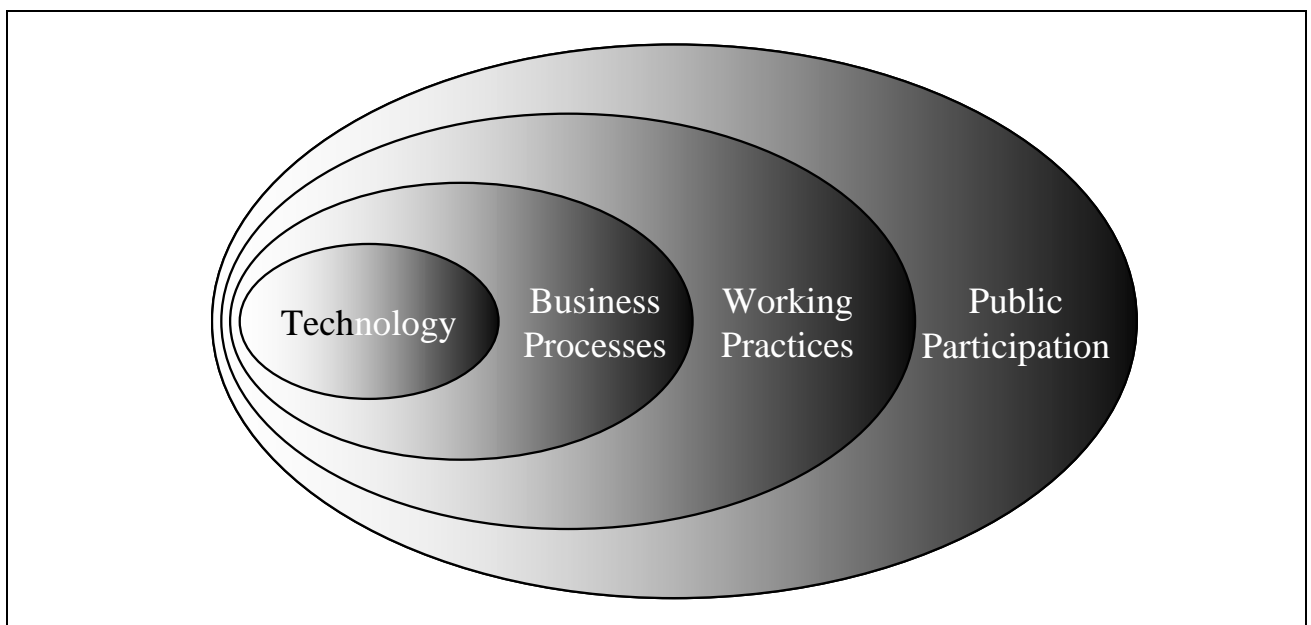


Figure 4. Elements of Socio-technical Configuration (from: ODPM, 2003)

The report presents the following conclusions:

- The technologies themselves need to be configured. Almost all local authorities now state in their 'Implementing E-Government' (IEG) statements that a purely technological approach to implementing e-government is inadequate. The importance of the need to tailor technologies to the needs and characteristics of the citizens who will use them is being recognised.
- Virtually all authorities now stress that e-government also requires a re-configuration or re-engineering of business processes. This is widely recognised and is seen by many authorities as the key challenge in implementing e-government.

- Many authorities have begun to engage with a third layer of change concerned with the detailed working practices of authority and partner staff. The focus on practices is concerned with the content of individual tasks and how they are undertaken. Critically, this is understood to be cultural change and in particular the development of a customer- or citizen-focused perspective among managers and staff in local authorities and their partners.
- Finally, and perhaps most importantly, for e-government to achieve its goals, active participation of individuals and businesses as customers, interlocutors, clients, and citizens needs to be configured. This includes issues of awareness of, and trust in, e-government systems and services (ODPM, 2003, p.16).

Members of the e-Democracy Study team of the British Computer Society Socio-technical Group undertook an initial scoping study in 2003-2004 to investigate the extent to which local e-government in the UK was being developed as an effective socio-technical system (Damodaran et al., 2005). Echoing the findings of the studies reported above, it concluded that although local authorities are making progress toward meeting the government's goals for the delivery of e-services, there appears to be far more emphasis on technological aspects of delivery than on engaging citizens in identifying real needs or involving them in decision making about perceived priorities and methods of service delivery.

The research findings reported above exemplify research into the design approaches that appear to be typical of IS projects for the development of e-Government. There appears to be a strong consensus emerging that e-government is developing primarily as a technical system without explicit attention to the human and organisational aspects, i.e., to the social system. Given the important conclusion reached in the report by CURDS that for such complex socio-technical systems as e-government systems to succeed, all four nested levels must be configured, the evidence suggests there is a widespread and significant shortfall in this respect.

Engaging citizens in e-government development: The evidence so far

Government-led citizen engagement exercises are proliferating in many countries in diverse areas of planning and policy-making, at both local and national levels. Furthermore, significant effort is being directed at engaging citizens in hard to reach categories such as disabled people, ethnic minority groups, young people, etc. However, while many of these initiatives are indeed harnessing and exploiting the capabilities of ICT for communication between government and citizens, an extensive review of the literature (Damodaran and Olphert, 2006) revealed only a small number of publications describing active citizen engagement in the development, shaping or selection of those technologies. In most cases where citizens have been involved in some aspect of technology development or evaluation in relation to e-government, the engagement has had a very specific and limited focus, such as the creation or evaluation of websites. This is illustrated with three examples described below, involving the creation or evaluation of websites.

The first example is the Surrey 50+ website project. As part of the UK government's local e-Democracy programme, the Surrey county council undertook a pilot project to engage older people. A primary aim was to create a website targeted at people over 50, which would enable the active engagement of older people in developing public services and supporting better government for older people. A further objective was to promote the use of ICTs amongst the over-50s through online participation and opportunities for learning about technology. Participation in developing the website was sought from older members of the local community. Other relevant stakeholders such as Age Concern (a charity supporting older people) and housing associations were also involved. The technology used for the project was an open source content management package, which had been designed specifically for local authority use in England. Based on the contributions from participants, it was adapted to build a web portal specifically aimed at the over 50-age group. The software was also specially adapted to offer usability for older people to conform to the W3C Web Accessibility Initiative for website standards. This pilot project ran for six months. About 2,000 people used the website, and Surrey county council considers that the project was successful in raising awareness and usage of ICT amongst older people (Allen, 2005).

The second example, at the other end of the age spectrum, is the Logged Off project carried out by the Carnegie Young People Initiative to establish whether new technologies could encourage greater participation in political life by young people (aged from 13-18). As part of this research, a special website was set up. Participants were able to read comments made by their peers and respond to different points of view. Researchers sought to establish how young people reacted to information presented on the website, how they interacted with websites, and whether the content of the sites changed their views. One of the recommendations from this project was that government should consider establishing a network of young people who could evaluate ICT initiatives aimed specifically at engaging young people (Carnegie Young People Initiative, 2003).

This type of engagement in a closely defined and narrow aspect of IS development is not confined to e-government initiatives in the UK. The third example is a consultation undertaken by the German parliament – the Bundestag – with the

aim of informing the design of the Bundestag website. Participants in this consultation were sourced from four mailing lists containing names of people who were interested in the work of the parliament and who wished to receive regular e-mails informing them about new developments. Development of the system took place in two phases, thus allowing feedback of findings from the first round to be given to participants in the second round, who then had the opportunity to participate in response to these. There were 493 participants in the first phase and 345 in the second phase.

"The intention with these methods is to prompt the target groups concerned into an active dialogue which then also helps shape the planning and implementation of processes in whose progress they are interested or even involved" (Fühles-Ubach, 2005).

This process of citizen engagement resulted in numerous new suggestions that would not have come from the previously-used methods of simple questionnaire surveys. It was regarded by the Bundestag as highly successful.

These three examples are fairly typical of many exercises in engaging citizens in aspects of IS developments. There are others, however, where extensive engagement took place, such as the FASME case study reported by Oostveen and van den Besselaar (2004). The FASME project was a European Union funded project aimed at providing Internet/smart card-based administrative services to support mobile Europeans. Oostveen and van den Besselaar first identified the multiple stakeholders involved in this initiative, including citizens as end users, clerical and administrative staff operating the new system and services, technical managers developing the infrastructure, management strategists, politicians, producers and providers of smart card technology, and providers of other public services. Over a period of 18 months, they conducted studies of user needs, established an interactive design process with the intended users, and carried out user evaluation of the first testable prototype of the new system. During the process of data collection, broad issues surfaced about the relationship of the new system with other aspects of national contexts, and further interviews were therefore carried out with specialists about political, legal, and administrative aspects. Although Oostveen and van den Besselaar note that the short duration of the project made it difficult to include all user needs as they emerged, they conclude that involving the multiple stakeholders was very useful for the project. In particular, it drew attention to crucial issues that would otherwise have gone unnoticed. Furthermore, "although the technical issues were more or less solved, the complex social and legal context asked for a radical rethinking of the strategies for facilitating mobile Europeans" (Oostveen and van den Besselaar, 2004, p. 181).

Through involving this wide range of stakeholders for an extended part of the development process (albeit still regarded as "too short" by the researchers), a range of significant issues was revealed that would not otherwise have surfaced until implementation of the system – and therefore too late to resolve without major wastage of resources. The benefits of participation and engagement for developing effective, workable systems that enhance the lives of European citizens were clearly demonstrated in this study.

This contrasts starkly with the limited value derived from the other projects described above. While they may be of interest to the individuals concerned, typically the impact of narrowly focussed ICT engagement projects on the lives of most citizens is marginal and does little to enhance democracy or the quality of life more widely in society. Furthermore, paradoxically, although an explicit objective of e-government is the enhancement of democracy, the design approach adopted in most cases has not been a democratic one. To genuinely influence the shaping of technology, as Mumford so clearly states (1983, p. 27), users— i.e., citizens—must be involved at all stages of decision making, from agenda setting, through the selection or development of technologies that serve those agendas, to the implementation and evaluation of the resulting (socio-technical) system.

Evidence from the exploratory research discussed above suggests that the participation and engagement of citizens in e-government developments has been superficial and limited to peripheral aspects of the lives of most people involved in the exercises. It also reveals that decision making in the design of local e-government is, in fact, generally carried out primarily by central government, with citizens having little opportunity or legitimate role to influence the design, development, or implementation of e-government services. Yet, paradoxically, as we have described, in areas other than IS development projects, governments are devoting significant effort to engaging with citizens in decision making to inform policy and planning decisions. In the following section we discuss how government could benefit from extending citizen engagement to the development of e-government systems.

Citizen engagement: the missing link in e-government development projects

In previous sections, we cite evidence that shows that current levels of uptake of e-government services in the UK are disappointing in view of the relative maturity of these services and the significant amounts invested in their development. We propose that engaging with citizens in the development of e-government systems and services offers the key to overcoming this situation, and to achieving the objectives of wider citizen participation and increased social inclusion.

Adoption of e-government services

From the perspective of many providers of electronic services, the return on investment in service delivery requires extensive uptake of the services by the public. Whether the providers are local councils implementing e-government, or e-commerce companies vying for business, they have in common the commercial imperative to attract citizens/consumers, sustain their interest in using the service, and win repeat business. The critical success factors for achieving this citizen/customer commitment and loyalty are well-researched and include perceived relevance of the services, accessibility, usability, good value for money, clear benefits, and value from using the service. To meet each of these criteria successfully demands good knowledge and understanding of the needs of prospective consumers in society. Direct engagement with relevant individuals or groups in society is the richest, most revealing and valid source of knowledge about them.

Enhanced democracy and wider participation

There is a perception amongst politicians and governments in many countries that the population has become more and more "disenchanted with the traditional institutions of representative government, detached from political parties, and disillusioned with older forms of civic engagement and participation" (Norris et al., 1999). Part of the UK government's rationale for implementing e-government at both national and local levels is to breathe new life into local democracy and transform local services (ODPM, 2004). To maintain integrity and to reflect the needs of the community, government organisations recognise the need to engage with citizens. Public engagement discussions enable people to weigh a variety of ideas and listen to each other in an attempt to build common understanding in their communities. From a democratic perspective, it is beneficial to have more citizens who understand potential choices and are informed about emerging opportunities and threats in the Information Society.

Effective, relevant and usable e-government systems offer the potential to enhance opportunities for citizens to debate with each other, to engage with their local services and councils, to access their political representatives and hold them to account. They can also support councillors in their executives' scrutiny and representative roles (ODPM, 2003). However to design systems to enhance democracy requires democratic values to be built into the whole design and development process; in such a process, citizen participation and engagement are fundamental components.

Increased social inclusion

A specifically stated aim for e-government in 2003 (Office of the E-Envoy, 2003) was reduced social exclusion. Social exclusion is a multi-dimensional phenomenon, but it is generally accepted that some groups of citizens are at risk of being prevented from participating fully in society due to factors such as age, disability, low income, low education, cultural or language differences, and geographical or social isolation (Percy-Smith, 2000). Government is a major provider of the services needed to support the most vulnerable in society, and it must therefore ensure that the people who need these services most are able to access and use them. There is widespread concern that, as investment in the development and delivery of online government services continues, rather than reducing social exclusion, new digital divides could be created between those who have access to the benefits of the new services and facilities and those who do not (e.g. Norris, 2001). Careful attention must be paid to the characteristics and needs of people and groups at risk of social exclusion if this is to be avoided. Engaging with these stakeholders is essential since, by definition, their characteristics and needs are likely to be different from those of other 'included' sectors of the population. Further, the engagement process itself draws participants into a social process, sharing knowledge and the generation of ideas, thus directly countering exclusion and isolation.

The benefits described above are inter-related and mutually reinforcing. For example, the increased uptake and faster diffusion of new technologies leads to economic benefits to providers and improved quality of life for users. Encouraging community groups to participate and develop ownership also serves to improve sustainability. Engagement in IS development may help individuals to feel more included, which may, in turn, enhance citizenship. User involvement develops the ICT skills of the citizens involved. This raises their confidence levels and encourages them to develop themselves further. There are well-documented examples of how older people being introduced to new technology develop the capability to participate constructively in ICT design and become more confident and active socially (e.g., Inglis et al., 2002; Eisma et al., 2003). In section 8 we discuss the importance of skills development for all participants in the engagement process.

The Role of Capacity Building for Effective Participation and Engagement

Mumford suggests a practical reason why citizen participation is still the exception rather than the rule in IS developments: "some would like to [adopt a participatory approach] but shy away because [it] seems difficult, complex and uncertain" (Mumford, 1991). Writing in 2003, Mumford further elaborates the inherent difficulties of the participatory process, and highlights the need for design groups to develop skills in communication and consultation, adding that in her experience, "it is more difficult to transfer such skills to a design group than it is to give them design expertise" (p. 40). Recent studies of e-

government implementations reveal that knowing how to initiate, facilitate, and manage participation is a key skill required of leaders in organisations and especially for those appointed to key roles such as formally designated 'e-champions' (e.g., Phippen and Lacohee, 2006). Perhaps a lack of relevant skills and expertise accounts for the fact that fewer than 40 percent of local authorities in the UK had consulted or engaged with local stakeholders in the planning and development of e-government (ODPM, 2003). There is certainly evidence that lack of expertise in the processes of engagement limits success even when there is commitment to the objectives or the values. For example, council staff collaborating in a study of the implementation of local e-government in the UK (Damodaran et al., 2004), reported real disappointment with the lack of any significant response to a web-based discussion forum that had been set up with the aim of increasing the participation of young people in the borough. It is highly likely that the application of some basic principles and good practice in communication techniques could have delivered a far more favourable outcome.

Yet it is not just those who are seeking to implement and manage participatory processes who may be lacking in relevant skills. In her early work, Mumford stresses that "if employees are to be able to exercise some control over (their work environment) then they need opportunity, confidence and competence" (1982, p. 36). By extension, this applies equally to citizens if they are to participate effectively in the development of systems such as e-government.

As observed in the section above, Mumford identified the importance (and the difficulty) of transferring skills in participation processes to design groups. Findings of international case studies have extended very considerably this awareness and understanding of the need for learning and transfer of knowledge to occur on a major scale. Lessons drawn from successful citizen engagement and participation projects strongly endorse the finding that learning is crucial. They also make it clear that this is not just important for the ICT designers targeted by Enid Mumford but for all stakeholders involved in the kind of wide-ranging organisational/social change associated with public sector IS implementations. Like most such IS projects, local e-government systems are characterised by their multiple stakeholders with a variety of learning needs. These include a wide array of business partners, senior managers in local government, council staff delivering a range of services into the community, elected councillors, citizen groups and—of course—individual citizens. Each of these stakeholders has to gain new concepts, skills, knowledge, and understanding to make citizen participation and engagement effective. In particular, those responsible for creating the infrastructure and conditions in which participation can be successfully achieved require a range of capabilities. For example, recent case studies of e-government implementations reveal that knowing how to initiate, facilitate and manage participation is a significant skill required of leaders in organisations and especially for those appointed to key roles such as formally designated e-champions, (e.g. Phippen and Lacohee, 2006).

Equally, the case studies show that for those whose participation is sought, knowing how to participate and engage in or inform decision making are essential skills to develop. Analyses of good practice in participatory exercises reveal the building of such capacities to be crucial in achieving the meaningful buy-in and effective engagement of citizens in participatory exercises. Capacity building has been defined in a number of different ways, depending on the context. The core and generic elements are the change and development that take place as individuals learn new skills and gain in confidence. There is considerable evidence to show that, in the right conditions, there is positive enthusiasm, commitment, and a surprising willingness on the part of citizens to invest time and effort to address issues of significance and relevance to participants. For example, Canadian experience with their National Forum on Health (National Forum on Health – Canada, Wyman et al., 1999) involved citizens in quite extensive preparation (reading documents, attending briefings, etc.) in order to participate in consultative exercises to inform national policy on health matters. In this case, the Canadian citizens involved were highly educated and particularly competent individuals who were well-equipped to absorb and analyse complex written material. In contrast, other successful participation projects such as the Macatowa project (Emery and Purser, 1996), the Chicago neighbourhood planning project (Al-Kodmany, 1999), the K-Net projects (Beaton, 2004), and the ActionAid *Reflect* ICTs Project (Beardon, 2005) had participants from diverse backgrounds with very different levels of skills and education. All report that the experience of engagement in the projects led to the growth in participants' confidence in articulating and sharing their views and experiences, their increased knowledge and understanding of issues under consideration, and their ability to contribute to debate and decision making.

Where participation is sought from groups with no formal education, capacity building is shown to be essential to enable them to participate. Indeed, this is an explicit objective in exciting and innovative community development projects in the developing world, e.g., the ActionAid *Reflect* ICTs Project (Beardon, 2005). In these projects, which often involve people who lack even basic literacy skills, there are facilitated opportunities for citizen learning through discussing and analysing local issues and using simple pictorial methods of communication and recording. For the communities involved, the possibilities for economic and social change are opened up through their learning of the rich potential of ICT and alternative ways of harnessing its capabilities in the community.

These and other successes in civic participation – whether in impoverished communities in the developing world or in leading, developed nations – reveal the enormous value and significance of capacity building in empowering individuals to

participate in the digital world. Confidence building among citizens emerges as a key component of capacity building in society. Convincing people that they really can participate usefully in domains such as e-government—which they are likely to see as a highly specialised IT application—is a significant challenge. Many citizens feel they have little to contribute – and, in any case, that any inputs they make are unlikely to be heard or accepted. Overcoming these reservations is a critical step in eliciting a willingness of citizens to participate and engage. Seeing the outcomes and impacts that are possible when they do participate is a powerful way of changing perceptions and expectations regarding the value of contributing.

The evidence suggests that a virtuous circle results when citizens begin to see that they do have a genuine contribution to make, and this positive experience, in turn, increases their willingness to engage, promoting participation and social inclusion. Citizens/users can and do inform design decisions in a variety of contexts (although not frequently in IS projects) through engaging in activities such as:

- using their imagination and creativity as well as their knowledge of their context and experience to envision the possibilities;
- considering the implications and the potential of emerging technologies for their lives;
- being demanding, informed, and willing to ‘co-create’ the systems, products, and services best suited to their lives;
- exerting their power and influence to significant effect by asking critical questions;
- engaging in considered reflection to pre-empt or reduce the negative unintended effects of new technologies;
- providing inputs to the design decision-making process that reflect the diversity and richness of their own experience.

Thus, enabling citizens to learn how to make such contributions is an essential part of capacity building for participation in the Information Society. Yet investment in such capacity building for e-government development projects is conspicuously absent. The available evidence suggests that typically, there is little planning or budgeted resource for learning, and any provision occurs only as an ad hoc response to developments. For example, pressures from the central government to implement local e-government in the UK has required local councils to find their own ways of developing structures and procedures to support the implementation. The trial and error involved has been an expensive process and has reportedly slowed down the delivery of e-services. In a small scale study of local e-government implementations in the UK, a number of people who are in job roles that require them to interact with citizens (e.g., gathering opinions, eliciting information needs, or seeking participation of the hard-to-hear), reported that they are handicapped by a lack of guidance and training in the necessary processes and methods (Damodaran et al., 2005). Such findings suggest a pressing need to set up organizational infrastructure (as part of the socio-technical system), to promote learning and thus to facilitate and enable citizen engagement processes in advance of IS development work. With regard to the balance of investment made in IS developments, the Moreno Institute recommends “that no more than one third of funding should go on the technology itself. At least two-thirds should go towards educating staff and developing programmes that help organisations tap into the technology’s true potential” (reported in Loader and Keeble, 2004). These recommendations to invest significantly in learning and development underscore the importance of building capacity in the population. They constitute excellent advice for governments concerned about seeing evidence of achievement of the goals of improved delivery of services, wider inclusion, and enhanced democracy.

In summary, the extensive evidence presented through the course of this paper has highlighted the critical role of capacity building. It is the crucial and essential precursor to active citizen engagement that is the missing link in current e-government systems development.

Conclusions

Using Enid Mumford’s socio-technical and participative approach as a framework, our review has examined (i) a sample of published case studies about public participation in decision making and policy making; (ii) current practice in e-government; and (iii) e-government as a socio-technical system. These are our conclusions:

1. Reported findings in international case studies provide evidence of widespread attempts (and varying degrees of success) to gain citizen participation and engagement in many areas of planning and policy making. However, there is scant evidence of any significant involvement of citizens in IS developments, including e-government systems.
2. There is overwhelming evidence from many studies worldwide to suggest that e-government systems, like many previous public sector information systems, are falling short of their targets for performance, effectiveness, and adoption by citizens –

their intended users. The evidence shows that achieving the goals of enhanced democracy, increased social inclusion, and faster adoption of technology continue to be elusive.

3. A growing number of scholars and analysts in this field agree that a major reason for this unsatisfactory outcome is the failure to see e-government systems as socio-technical systems – and therefore failure to give due attention to the participation of end users – i.e., members of the public.

4. Public participation is especially appropriate now since, with an ever-increasing array of technologies (wireless free Internet, PDAs, and 3-G mobile phones) and e-services, citizens may have little choice but to become users.

5. There is a great deal of knowledge and practical guidance on socio-technical systems design and participation developed by Enid Mumford, and extended by our research. This is available to assist in the development of e-government systems.

6. Capacity building (i.e. equipping people for participation and engagement in design and development processes by promoting learning and understanding) is emerging as key to the success of systems such as e-government, which are explicitly developed for use by the general public. This finding extends Enid Mumford's work in identifying the importance of developing the skills of multiple stakeholders in work organisations to the context of e-government, where all citizens are stakeholders.

7. Sharing knowledge and best practices in citizen participation/engagement is hampered by the paucity of documentation of the processes involved. Too often, outcomes are reported but not how these were achieved. For lessons to be learned, there must be detailed reporting of the approaches, philosophy, values, methods, tools, and techniques applied in pilot projects and successful initiatives.

8. There is also a great deal of knowledge and experience within the public sector about consulting and engaging with citizens. From this, it is possible to identify best practices in citizen participation/engagement, which has value and relevance for the development of e-government systems.

9. The development of systems to promote democracy must be underpinned by democratic values if these are to have credibility.

The above conclusions lead the authors to make the following recommendations to increase the likelihood of achieving the stated goals of e-Government:

- Promulgate understanding that for e-government systems to meet the goal of enhanced democracy requires democratic values to permeate IS development processes. In particular, these need to underpin a commitment to citizen engagement in the processes.
- Promote the adoption of a socio-technical approach to the design, development, delivery, and implementation of e-government systems.
- Formulate policy to achieve citizen participation and engagement by requiring these processes to become mainstream activities in e-government development projects.
- Empower citizens to engage effectively in design decision making about e-government services by providing learning opportunities as part of a capacity building programme for all stakeholders.
- Enable all stakeholders—including council staff and elected councillors—to participate in the development of e-government services and delivery.

In this paper, we have sought to consolidate the existing base of empirical evidence to support the case so energetically argued by Enid Mumford for information systems to be developed as socio-technical systems from the earliest stages. The concepts, methods, and values reflected in Mumford's work still offer important ways of creating effective information systems in the Digital Age—to promote the quality of life for all in the 21st century.

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