Information Technology, Government and Development

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This reports the outcome of a workshop on 'IT, government and development' held jointly on Nov. 26th 1998 by the UK Development Studies Association and the British Computer Society. A consistent - if downbeat - theme of the workshop was the limitations and failures of information technology in helping governments contribute to the development process.

Information Technology's Potential

This is all the more frustrating given the undoubted potential that new technology has to offer. David Newman, for example, outlined the use of IT - especially the Internet - to support and develop community networks in Northern Ireland. Jean Hartley summarised the contribution that IT can make to the relationship between local governments and the communities they serve: in 'grassrooting' government; in building social, political and economic coalitions; in building representation upwards and outwards; and in mobilising the bureaucracy.

The Reality of IT in Government: Barriers and Failures

However, the potential of IT frequently remains just that: a potential that is not actualised. The application of IT in government is beset by both barriers and problematic outcomes.

Vic Munro described the barriers that particularly affect the application of IT in African governments, but many of the issues he raised are almost universal within the public sector: financial constraints, politicisation of decision-making, and cultural clashes between existing values and those demanded by IT-based government. This was illustrated by Chrisanthi Avgerou in her description of the barriers to effective implementation of an IT-based system in a Greek social security organisation. Again, systemic cultural and political barriers were to the fore.

We can, appropriately, summarise these barriers to IT implementation in the form of a 'DEPREST' framework:

- **D**ata and information barriers, such as those which prevent data being shared between different government departments.

- **E**mergencies, such as the current need to divert substantial efforts and resources into the 'millenium bug' problem; something that, once solved, will have cost billions and yet generally left government systems exactly where they started in functional terms.

- **P**olitical and legal barriers, such as the lack of an adequate legal infrastructure to deal with electronic commerce, trans-border data flows, electronic records keeping, and other issues of information age government.

- **R**esource barriers, particularly the barriers of human resources, since the absence of adequate numbers of capable staff has long beset the public sector.

- **E**conomic barriers, which have pushed themselves further up the agenda of late with the reality of national and regional recession and the threat of global recession.

- **S**ocio-cultural barriers, such as the 'bureaucratic mindset' that may see IT as a tool for government automation, but not as a tool for government transformation.

- **T**echnological barriers, such as the difficulties of internetworking.

These barriers also contribute to negative outcomes when IT is applied in government. Richard Heeks provided a guesstimate that up to 80% of public sector IT applications can be regarded as failures, particularly if one extends failure to encompass not merely the total failure when no workable information system is produced, but also:

- *Partial failures*: when goals are unattained or there are undesirable outcomes.

- *Sustainability failures*: when a system works for a short while but is then abandoned, for example, when the donor agencies, organisational champions or consultants move on to fresh pastures.

- *Replication failures*: when a successful pilot system cannot be reproduced on a larger scale.

Piers Cain provided an example of such failure in describing the impact of automated systems on accountability and records keeping in government. This has, at times, led to a diminution of accountability since intangible computer-based records are far more malleable and less durable than paper-based records.

This was but one instance of three archetypes of IT, government and development failure that Richard Heeks described:

- *Rationality-reality gaps*: failures that arise from the formal, rational way in which information systems are conceived, which mismatches the informal, subjective, self-interested realities of many public sector organisations.

- *Private-public sector gaps*: failures that arise from application in public sector contexts of information systems developed for the private sector.

- *Country context gaps*: failures that arise from application in developing countries of information systems developed in Western nations.

The Way Forward for IT, Government and Development

In seeking to realise the potential of IT to support government's contribution to the development process, the starting point must be to look beyond the technology. At the workshop, four integrated starting points were identified in harnessing IT:

- *Aims and objectives*: IT is a means to achieving organisational aims and objectives, not an end in itself. Therefore recognition of those aims and objectives must be a starting point for IT application. David Newman therefore described a necessary focus in developing community networks in bridging the 'how to' gap: the gap between community/project objectives and the issue of how to apply IT to support those objectives.

- *Processes*: the organisational processes that achieve the organisation's objectives. Philip Veasey described the importance of processes and process models in application of IT. Indeed, there were suggestions from the presentations of both Piers Cain and Chipo Kanjo that a precursor to introduction of IT might well be the re-engineering of organisational processes. The danger, otherwise, is that automation of ineffective processes will leave the organisation with still-ineffective processes; only processes that are now more quickly, more expensively, and more voluminously ineffective than before.

- *People*: the human component of all organisational systems, including information systems, that is the key to performance. Any application of IT must comprehend this 'human component', building in a consideration of, for example, political/personal objectives and cultural values.

- *Information*: the foundation of all information systems, yet one that seems often ignored in the idolisation of technology. Shirin Madon described the value of focusing on information as a vital way to understand the relationship between citizens and government in development of the growing numbers of 'megacities' worldwide. Chipo Kanjo and her co-author David Mundy have been putting these ideas into operation in Malawi, through a learning-based approach that encourages public managers to think systemically, to identify their information needs, and to identify strategies to meet those information needs.

In summing up these ways forward, and as an antidote to the earlier DEPREST model, one may conclude that effective application of IT in government to support development must be HAPPI because it puts at its **H**eart: **A**ims, **P**rocesses, **P**eople, and **I**nformation.

Papers and Contacts

- '*Process architectures in public organisations*: a political issue', Philip Veasey, Axum Ltd (pwveasey@compuserve.com)
- '*Accountability and automation in government*', Piers Cain, International Records Management Trust (pcain@irmt.btinternet.com)

- '***The barriers to effective implementation of government IT systems in Africa***', Vic Munro, Logica (munrov@logica.com) Abstract
- '***Chaos, information and the public sector***: some thoughts from Malawi', Chipo Kanjo, University of Malawi & David Mundy, University of Manchester (david.mundy@man.ac.uk)
- '***Beyond access and awareness***: getting benefits from Internet-based community networks in Belfast', David Newman, Queen's University Belfast (d.r.newman@qub.ac.uk) Abstract
- '***Community governance, ICTs and local government***', Jean Hartley & John Benington, Warwick Business School (lgcjfh@razor.wbs.warwick.ac.uk)
- '***Information management and local governance in megacities*** the case of Bangalore', Shirin Madon, London School of Economics (s.madon@lse.ac.uk) Abstract
- '***IT and the modernisation of public administration***: lessons from social security in Greece', Chrisanthi Avgerou, London School of Economics (c.avgerou@lse.ac.uk)
- '***Why do most IT-based systems in government fail?***', Richard Heeks, University of Manchester (richard.heeks@man.ac.uk) Abstract

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The barriers to effective implementation of government IT systems in Africa, Vic Munro, Logica UK Ltd

The speaker has over 10 years experience of managing and observing IT projects in both the private and public sector in Africa, mainly in the finance area. He draws on this experience to examine the specific problems facing implementation of government IT projects in the region. He concentrates mainly on high technology externally resourced infrastructure projects.

He compares frequently successful, privately financed initiatives, with the problems faced in implementing government projects, usually supported by multilateral agency funding which are often unsuccessful, both for the client and the external supplier.

He examines the specific issues facing each stage of the development cycle from the bidding process through to ongoing support. Amongst other issues he questions: the approach taken by the multilateral agencies, specifically in funding, defining the requirement, and in the bidding process; the supply side thinking still evident in government circles; and weaknesses in project planning and different cultural approaches.

Finally, he looks at the future, and proposes some thoughts on improving the success rate, including the implications of new technology in supporting infrastructural development in the area.

Beyond Access and Awareness: Evaluating Electronic Community Networks, C. Talbot and D. R. Newman, Queen's University Belfast

In many parts of the UK, many people are setting up community networks that provide Internet services aimed at the community and voluntary sector. In Northern Ireland, there are over 5000 community and voluntary groups serving 1.25 million people. Electronic community networks here do not have to take on the double burden of organising community activities as well providing support through Information and Communications Technologies (ICT). So Northern Ireland is a good place to study how electronic community networks can deliver benefits to communities, through their own groups.

We evaluated two community networks at an early stage in their development. Community Information Network Northern Ireland (CINNI) was, at the time, providing Internet access to a little more than 100 groups. It was running on a trial basis sharing dial-up facilities with the NI Civil Service, while seeking funds for a full-scale launch. Since this research was completed, it has achieved funding and been launched with the aim of connecting thousands of groups in Northern Ireland to the Internet. A smaller network has been set up to connect rural communities, the North Antrim Community Network (NACN). They have provided one computer and modem to each village, for use in local community development.

Much of the literature on community networks makes little attempt to evaluate their benefits. What evaluation there is has mostly been written from the viewpoint of the network organisers, not the people and organisations that use the network (with the notable exceptions of NewNet in Newcastle-upon-Tyne and the Dublin Inner City Community Network). We based our evaluation on the self-identified needs and wishes of the participating community and voluntary groups. We studied their goals, the constraints under which they were working, their current experiences, and their hopes for future uses of the Internet, using a range of research techniques (focus groups, a questionnaire, a combined training and evaluation event, and case study interviews).

We found quite a difference between what groups hoped to achieve by using the Internet, and the benefits they had achieved, with a corresponding lack of use of the community networks by many of the members (both in NI and Dublin). In most cases, this was not because of any problems in access or Internet awareness. The problem was that staff or volunteers in the groups did not know how to use the software and services to support their organisation's aims or their project's objectives-the "how-to

gap". This has important implications for both users and providers of community networks.

Information flows to support urban governance in Bangalore, Shirin Madon, London School of Economics & Political Science, UK.

The rapid urbanisation that is transforming the developing world is creating cities which on the one hand offer opportunities for global economic activity, but on the other hand are beset with serious local social problems such as the growth of slums and automobile pollution. This phenomenon of rapid urbanisation is posing challenges to planners in developing countries. As it becomes harder and harder for planners to disentangle the global from the local, it is increasingly recognised that without a solid local base, city governments will not have the strength that is needed to participate in global economic activity. We argue that the establishment of a solid local base requires democratised political mechanisms based on administrative decentralisation and the participation of citizens in municipal management. At the heart of these new management processes are activities concerned with information provision.

Why Do Most IT-Based Systems in Government Fail?, Richard Heeks, Institute for Development Policy and Management, University of Manchester

Some computerised information systems (IS) do succeed in the public sector, but the vast majority - quite possibly at least 80% - fail in some way. To explain why this happens, and how failure rates may be reduced, this paper describes an 'ITPOSMO' model of conception-reality gaps. This argues that the greater the gap between current realities and the design conceptions (i.e. requirements and assumptions) of a new information system, the greater the risk of IS failure.

Three archetypal large design-reality gaps affect the 'government and development' domain:

- *Rationality-reality gaps*: failures that arise from the formal, rational way in which IS are conceived, which mismatches the informal, subjective, self-interested realities of many public sector organisations.
- *Private-public sector gaps*: failures that arise from application in public sector contexts of IS developed for the private sector.
- *Country context gaps*: failures that arise from application in developing countries of IS developed in Western nations.

Some generic conclusions can be drawn about successful approaches to IS development, such as the need for context-specific customisation, and the need for information technology professionals to act as more broadly-based change agents. More specifically, techniques can be identified for each of the seven ITPOSMO dimensions that will help close the gap between conception and reality. This can include the freezing of one or more dimensions of change. Further details can be found in "Reinventing Government in the Information Age" (Routledge, 1999).