

## **THE ARCHITECTURE OF GLOBAL ICT PROGRAMMES: A CASE STUDY OF E-GOVERNANCE IN JORDAN**

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**Abstract:** Global ICT Programmes introduce new and universal modes of organising centered on innovation and technology initiatives and implemented through a novel mix of policy instruments, international institutions, business interests and techno/managerial concepts. In eGovernment initiatives, for instance, which include portals and other mechanisms to provide a single point of access for a set of services and interactive applications, Global ICT Programmes bring together the government, the private sector and a plethora of international institutions situated across various boundaries, territories and organizational domains. Jordan is an interesting case study of such an attempted transformation in government and public/private relationships. However, Global ICT Programmes are not neutral. Rather, they constitute the scene of new political conflicts over the regulation, appropriation, access and management of sensitive information and knowledge resources as well as critical infrastructure. We conclude that casting these issues as Global ICT Programmes could cater for a much broader inter-disciplinary significance and outline a programme to address the issues involved in the creation of the large scale information infrastructures and organisational designs implied by such projects.

**Keywords:** e-government, organisation, governance, large scale information infrastructures, development, Jordan

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## 1. INTRODUCTION

The paper introduces Global ICT Programmes, defined as new and universal modes of organising centered on innovation and technology initiatives and implemented through a novel mix of policy instruments, international institutions, business interests and techno/managerial concepts<sup>1</sup>. Thus, global ICT programmes are large scale informatisation programmes involving various dimensions, including the interconnection and reengineering of government and non-government institutions, in turn constituting a *new* architecture of governance seen in relation to:

- the creation of new, networked and distributed modes of organising mediated by technology and operating in the area of government, policy making, regulation and infrastructure development;
- the application of a ‘toolbox’ of policy instruments and guidelines to build such systems and identified with the general goal of promoting better (or good) governance;
- the presence of an expanded ‘set’ of institutional actors and/or characteristics operating across various contexts and domains, not least beyond conventional state boundaries.

This is an area largely unexplored in studies of innovation, technology, governance and organisation, but such programmes are interesting, not least because of their projected ability to promote social and economic development and achieve new mechanisms of governance. The case study of e-governance in Jordan presented here is of interest because of Jordan’s advanced programs for the creation of an information society, including the launch of a world class software industry and the networking of the country. Jordan is also one of the rare countries in the Middle East with a history of commitment to good governance and ICT related initiatives and for its projected desire to implement and deploy powerful coordination technologies in its state and public administration. It is also a state where two of the most acute tensions of the present day Middle East converge: Palestine and Iraq. This research thus offers a unique perspective on the bringing into being of a new global architecture, which is redefining the nature of the state and driving its glocalisation<sup>2</sup>.

The case of e-governance in Jordan studied here is indicative of such transformations, and portrays well the issues involved in the re-adjustment of the functions of government and its transition towards a ‘networked state’ as advocated by the Monterrey Consensus (UN 2003). At Monterrey, International Development Agencies (IDAs), governments, civil society members and non-government organisations agreed on a set of aid policies guidelines and development priorities, stressing the importance of good governance for achieving

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<sup>1</sup> Although it is single authored this paper is heavily based on my PhD thesis, which benefited from the wise steering, encouragement and ongoing support of my supervisor: Tony Cornford, to whom I am immensely grateful.

<sup>2</sup> The term ‘glocalisation’ is used in this paper to account for the supra-national significance of global ICT programmes, which are constituted by networks from the international down to the national, the regional, the urban and the local where ‘the network’s globality can function as a political support and resource for the localities that constitute that network’ (Sassen, 2006: 339).

development, and this is concisely the primary statement of the contemporary global development agenda.

One of the key understandings reached by the consultations of the Monterrey Consensus was that poor governance is among the most important causes of state failure and underdevelopment. As a result e-government policy initiatives have gained international validity for the donor community as a catalyst of such reforms (Force 2001; DFID 2002; UNDP 2003; OECD 2003a). Hence innovations and reforms in the governmental and bureaucratic apparatus are seen as an important prerequisite for development (Ciborra & Navarra, 2005).

Various policy blueprints produced since the Monterrey Consensus argue that ICT is essential to increase transparency and accountability of government agencies, reduce transaction costs in service delivery and enhance participation of citizens, businesses and civil society in the workings of governments. Better accountability and improved transparency are the identified characteristics of good governance, and the latter becomes the *conditio sine qua non* for the rich states and international agencies to supply aid to developing states (UN 2001; UNDP 2001; UN 2002; UNDP 2002; UNDPEPA 2002; UN 2003; UNDP 2003; UNESA 2003; UNPAN 2004; UN 2005).

The Monterrey Consensus implies also the development of the organizational, managerial and technological capacities of less developed countries and introduces a new model of development finance and policy, as started by the creation of the Millennium Challenge Account in 2002<sup>3</sup>. The literature available about the social impact of such global programmes in the developing world is still in its origins and there are few comprehensive studies available on this subject (Mansell and Wehn 1998; Walsham 2000; Avgerou 2002; Braa, Monteiro et al. 2004; Sassen 2004; Sassen 2006).

The research questions motivating this paper therefore are: what are the assumptions upon which the evaluation of the recent trends of ICT for development (or e-development) initiatives should be based? What lessons can be learned from the experience of Jordan? And what are the alternatives for the conceptualization of analytical frameworks and policy direction for future related initiatives? The first section provides a literature review and a preliminary assessment of the cumulative body of knowledge in the area of e-governance and development. We then outline the methodology used for this research and present the case study. Discussion and conclusions follow.

## 2. LITERATURE REVIEW

Most countries, and in particular those with ambitions for development, see an imperative in the rapid diffusion and consolidation of ICT, a process that depends on a number of factors including establishing basic infrastructure, investment in research and development by the public and private sectors, sustaining centres of academic excellence, building local industrial and organisational capacity, and then intertwining each element to create dynamic and self-sustaining 'systems of innovation' (Nelson 1993). Such aspirations bring together a variety of diverse social and economic actors, including the governments of developed and less developed nations, powerful multinational corporations, international development agencies as well as transnational social movements (Held and McGrew, 1999).

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<sup>3</sup> This has proposed the largest increase in foreign assistance since the 1960s starting from 1.6 billion US\$ for 2004, ramping up to US\$ 5 billion by 2006 (Dobriansky 2003).

In such a context, the development objectives suggested by international organizations become the arena of great political struggles for the advancement of social well being and modernisation in the developing world. Since the Monterrey Consensus, development finance institutions are incentivising and supervising specific programs of government and government technologies across the developing world (Force 2001; DFID 2002; UNDP 2003). Similarly, the United Nations (UN) Millennium Development Goals and the good governance initiative of the Organisation for Economic Cooperation and Development (OECD) have set ambitious policy targets to deepen democracy, promote human development and economic growth among LDCs and both consider ICT as a facilitator for the achievement of these goals. These institutions not only stress the need to promote human development by increasing the level of education, reducing poverty and corruption and deepening democracy, but also embrace a political agenda which aims to restructure the role and functions of the state based on the minimal, service-delivery concepts inspired by the New Public Management approach.

In this spirit, a number of influential reports have been written by multi- and bilateral donor and international standard setting organisations, on the underlying rationale, effects and potential of ICT, information society and e-government initiatives to promote development and reform. These generally promote the *global* dimension of such programmes. For example, according to the First Annual Report of the Information and Communication Technologies Task Force of the United Nations: “while domestic policies are needed to harness ICT for development effectively, *international policies* forged in multilateral institutions will increasingly define the range of policy options available to developing countries” (UN 2003) [emphasis added]. Accordingly, “E-government initiatives should be measured by the degree to which they contribute to good governance” (UN 2002).

This rhetoric, which expresses global programmes, can be seen as recognition that policy and resource allocation processes need to be opened beyond the closed circles of elites at the state level. One aim is to devolve meaningful authority to local bodies, making them more accessible to citizens and to improve service provision, while channelling citizens’ and civil society’s voices and increasing the accountability of their representatives. Good governance, in this sense, involves the creation of effective institutions to smooth the operations of the market and allow free relationships of exchange to prosper.

This emergent architecture aims to decompose and distribute through networks what was previously monolithic or host-centric organisational designs for information and services provision (Foster, Kesselman et al. 2004). Examining such structures and assemblages is difficult without appreciating the role played by global networks, which is what gives texture to the innovative elements of global ICT programmes. We argue that the glocalisation of such flows of information, knowledge, people and resources involves various scales of interaction: local, regional and global.

As it was pointed out in the introduction, due to glocal character of global ICT programmes, the nation of Jordan taken alone represents a limited analytical category through which to understand the nature of the links between the various networks of actors involved in the deployment of global ICT programmes. Rather we need a network based understanding to encompass the nature of glocal institutional interactions. This requires us to move beyond the construct of the nation state as the main object of investigation and to analyse its networking with a set of commingled interests operating between the local and the global, what we can describe as networks, where the forces described above are reshaping its economic, demographic and cultural activities.

Following from this we argue that most of the contemporary research accounts in this area do not dwell on the challenges and difficulties of creating the synergy and dynamics needed for developing states to cope with the processes of political transition implied by global ICT programmes. It is thus possible to appreciate a movement towards, or at least many make a claim for, the introduction of programmes that shift from *government* as a characteristic of the unitary state, to *governance* by and through networks of institutions and individuals that extend well beyond any geographical boundary and act in partnerships held together by relations of trust (Bevir and Rhodes 2004). In this way, e-government can be considered in terms of government's definition and re-definition of traditional forms of authority, deciding which services should be provided electronically and how but also involving the restructuring of the relations defining the modes of provision of government's goods or services. The shift to the term 'governance' thus signifies that deep changes are taking place, and e-governance leads to "a changed condition of recorded rule, a new process of governing, or a new method by which society is governed" (Rhodes 2000).

Global ICT programmes, understood in these terms, are implicated in processes of transforming relationships previously politically negotiated within the state and bureaucracy into transnational public-private networks. This may involve, for example, the marketisation of various functions of the state and a move towards a new regime based on contractual agreements, outsourcing of government services and a more overt role for the private sector (not just in terms of models or best practices) for service delivery. However, it cannot be said that such moves are without friction. For instance, attempts at developing such powerful and encompassing frameworks of governance face a fragile political balance in most of the developing world today. This result in part from the territorial fragmentation which global ICT programmes seek to coordinate and manage, not just in terms of tasks, processes and activities, but also for the difficult decision as to which values and ideology should drive these efforts.

### 3. RESEARCH DESIGN AND ANALYSIS

The field work for this case study was conducted between 2002 and 2005. The first research trip in Jordan was carried out between June and July 2002. Primary sources of data came from interviews with key people responsible for major ongoing projects. A brief covering letter stating the intentions and objectives of the research project was sent to the Chief Information Officer of the MoICT to obtain access to study the e-government policy initiatives. During the first visit, the people interviewed were selected so as to encounter a diverse set of actors working in different institutions. The interviewees (about 20 on that occasion) included professionals and officials working in the government, the private sector, external consultants, non-governmental and both local and foreign donor organisations. The frequency of the meetings and interviewing activity was high. Moreover, a few conferences and unplanned meetings happened *in loco* during the stay and provided opportunities for more interactive information gathering.

Additional documentation, such as organisational policies and procedures, media and journal articles and information retrieved from the Internet, was also used as supplementary material. The use of multiple-data collection methods allowed for a more thorough examination of the perspective of each individual and to reflect it to the wider processes that the meetings with other relevant individuals were developing for the researchers' to understand the overall institutional setting of the observation. This enabled the researcher to become deeply knowledgeable about each institution, thus allowing new insights about the topic to emerge.

During the interviews, open-ended questions were asked aimed at gathering an understanding of visions, strategies, models and methods being used; expected and actual organisational impacts; the influence of cultural factors in adopting standard solutions; and the major risks and challenges facing e-government initiatives and specific projects. Various other qualitative materials were collected to describe both the vision and the plans of e-government in Jordan and to gather elements of the current state of implementation. Documentation used for this research includes the final report of 'Launching E-government in Jordan' from the Ministry of Information and Communication Technology (MoICT), the draft of "A Strategic Framework for 'e-learning'" from the Minister of Education, the 'Master Plan 2002' from the Ministry of Industry and Trade, the presentation slides of the 'Donor/Lender informal meeting with the Minister of Industry and Trade', and the 'Work Plan 2002 for Implementing Jordan's Information and Communication Technology Strategies' from the MoICT.

Following the first trip, the process of data collection was ongoing and unstructured via the means of voice and electronic communication. A second research trip was conducted in Amman in May 2004. Thanks to the hospitality of the delegation of the Italian Ministry of Innovation and Technology visiting Jordan, it was possible for the researcher to participate in the unfolding of the early phases of project planning and implementation in a 'real life' context. The opportunity for constant interaction with the delegation allowed intensive reflection during the process of research and was essential to gathering knowledge and insight about the processes and structures involved in the deployment of the e-government initiatives, with special consideration for their difficulties and perceived challenges. Finally, after the field visit in Amman and during various visits at the Italian Ministry of Innovation and Technology in Rome, it was possible to continue the process of reflection and elaboration of the research material accumulated over the years by engaging in a series of discussions with the key individuals responsible for Italian Government funded programmes in Jordan.

#### **4. THE CASE STUDY: GLOBAL ICT PROGRAMMES IN JORDAN**

The case of e-government in Jordan offers a valid setting to evaluate the extent to which the architecture of good governance, as proposed by the 'Monterrey Consensus', can contribute to the ambitious targets set by the Millennium Development Goals. The relevance of studying Jordan as an interesting e-governance policy initiative is also confirmed by C. Barrett, (REACH 2001), Intel's former Chief Executive Officer. During a meeting in the region he declared:

*"Jordan has set a precedent for change in the Middle East region. It has demonstrated the achievements that can result from strong cooperation between the public and private sectors, particularly in the field of information and communications technology."*

On the same occasion, the King (REACH 2001) declared:

*"It is time to widen the scope of our participation in the knowledge economy from being mere isolated islands on the periphery of progress, to becoming an oasis of technology that can offer the prospect of economies of scale for those who venture to invest in our young available talent."*

Finally, according to a recent declaration made by Bilal Abuzeid, [Int@j's](#)<sup>4</sup> chief executive (Abdelrahman 2004):

*“Strategic partnerships between countries are the obvious next step to competing effectively in the international marketplace”.*

Since 1999, Jordan has set a national strategy to be an active player in the global knowledge economy and society, broadening – among other things – access to ICT in rural communities, and introducing policies to support the aspiration of becoming the Singapore of the Middle East. E-government initiatives are ranked high in the country’s agenda for the realisation of such an ambition, and have given international visibility to Jordan’s efforts in such a direction. Typically, Jordan is ‘showcased’ as *the* best practice example on the implementation of reforms aimed at good governance and (more recently) also for e-governance and the information society (REACH 2001; Ciborra 2003; Int@j, 2003).

Among the most important steps made for the realisation of such a vision, in 1999 King Abdullah II launched the REACH initiative (Regulatory Framework; Estate; Advancement Programs; Capital; Human Resources Development), an all encompassing programme aimed at the creation of a knowledge economy based on an internationally competitive, Jordanian ICT industry. REACH also laid the basis for introducing reforms in relevant areas such as regulation and infrastructure development. Queen Rania is also supporting a number of initiatives sponsoring ‘e-villages’, working together with Cisco and UNIFEM, which aims to provide computer training and ICT awareness to women in rural villages.

ICT Program	Promoter	Partners	Objectives	Local Institutions	Status
REACH	<i>The King</i>	<a href="#">AMIR</a>	Bolster Jordan’s IT sector and maximise its ability to compete locally, regionally and globally	<a href="#">Int@j</a>	Started 1999
Connecting Jordanians		Microsoft, UNDP	Awareness campaign, development of unique intellectual property, capacity building, bringing education systems and related services on-line	Ministry of Education (MoE)	Started in 1999
Jordan Information Technology Community Centres		MoP	Provide public access, capable of covering their operating costs with revenue from training fees	MoE, MoP	Started 2000, by 2002 20 centres had been established able to cover costs, 41 out of 67 already operational by 2005

<sup>4</sup> [Int@j](#) is the trait d’union between the local private sector, the multinational companies involved at various levels in the e-government initiatives and the MoICT.

E-village	<i>The Queen</i>	Cisco, UNIFEM	Provide training and awareness of ICTs to women in rural villages	Local NGOs	Started 2003
Intel I-Lab	<i>Intel</i>	none	Serve as an incubator for internet and e-business start ups, evaluate new entrepreneurial business models and assist their technical realisation	Jordan's University King Abdullah II School of IT	Started 2002
business incubator	<i>Sun Microsystems</i>	none	Select potential ICT start-ups, provide necessary training and equipment for a 6 months period, make a 2 week e-commerce training programme	Princess Sumaya University for Technology	Started 1999

**Table 1: ICT Programs, promoters, goals, partners and status.**

In addition, direct involvement from major multinational companies in the IT industry is regarded as an important sign of the potential that the country might unleash in the future. For instance, Intel's I-Lab initiative (in co-operation with Jordan University's 'King Abdullah II School of IT') is serving as an incubator for Internet and e-business start ups, to promote innovative business models and ideas and to assist students in their technical education. Similarly, Sun Microsystems is working with the Princess Sumaya University of Technology to select potential start-ups in the area of ICT, also providing training and equipment for their development (see table 1 above).

The e-government programme in particular is expected to be a major contributor to Jordan's socio-economic development "by providing access to government services and information for everyone in the kingdom irrespective of location, economic status, IT ability and education" (MoICT 2003). Jordan's e-government strategy is aimed first at introducing new technologies to facilitate inter and intra-agency communication and cooperation, and consequently to provide information and services to its citizens more effectively. The program relies on four foundations: education and training, infrastructure development, legal change and the introduction of e-services.

The main objectives are the creation of a shared vision about e-government and a government wide network infrastructure to enable the government to introduce knowledge management, empower and connect government staff (MoICT 2000; MoICT 2001). Fast Track projects requiring immediate attention were launched in 2001 and are at the core of the present e-government efforts. These include motoring services (at the Department of Driving Licenses and Motor Vehicles), taxation (income and sales) services and land registry. Next will be the Government-to-Business and Government-to-Customer portals and a Government Personnel Directory. Various ministries are involved in supervising and monitoring the projects: the Ministry of Planning (MoP) oversees the initial selection phase, then the Ministry of Industry and Trade takes charge of the review and implementation stages together with the Ministry of Information and Communication Technologies (MoICT), the former Ministry of Posts and Telecommunications.

The MoICT has been designated as the focal point for co-ordinating the implementation of the e-government programme. The MoICT involvement with various other local and international stakeholders can be divided into three main areas of activity; the development and maintenance of the networking infrastructure, the creation of e-services and shared services and liaison with the private sector. The MoICT is the governmental entity in charge of monitoring e-government initiatives, and to manage network security and conduct quality checks and auditing. It provides technical expertise to the other Ministries and government entities involved in ICT programs. The MoICT's mission in respect of e-government is to provide support and the capability to coordinate the management, implementation, interoperability of the National e-Government Initiative.

These include the creation of a single point of access for citizens, businesses and other government agencies. Content managers have been identified in all the relevant government agencies and the goal is to provide services and information such as directories of government employees, collaborative tools and technical capacities across the various entities involved in the development of such services. Table 2 below summarises the partners, objectives and local interfaces for the three major objectives of the Jordanian e-government programme.

ICT Program	Partners	Objectives	Local Institutions	Status
Infrastructure Development (Secure Government Network)	Cisco, Oracle	Develop a secure government wide infrastructure for government-to-government operations	Ministries of: Finance, Industry and Trade, Planning; Municipality of Amman, Prime Minister's Office, National Information Technology Centre	Started in 2001: 6 Ministries connected by 2003, 12 more planned to be connected by 2005
E-services	Deloitte	Simplification of bureaucratic procedures, improve citizen convenience, decrease costs of providing services	Local Ministries, esp. Department for Motor Vehicles, Land Registry, Borders & Residency, Income Tax	Ongoing
Legal change	various IDAs	Promote a legal framework that is conducive to investment, taxation friendly, accessible to global markets and with an attractive environment for corporate investors	<a href="mailto:Int@j.REACH">Int@j. REACH</a>	Started in 2001 and ongoing

Education: Connecting Jordanians	Cisco, UNDP	Promote collaborative learning programmes, provide access, stimulating the development of a knowledge economy	Ministry of Education	Started 1999
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**Table 2: ICT Programs in government institutions, partners, goals and local institutions involved.**

Reviewing this variety of projects and their diverse set of stakeholders, we see no single or coherent view of the structures of governance that emerge out of the diversity, complexity, but strongly totalising character of these programmes. Rather, the legitimisation of Jordan’s aspirations, and their enactment through various international and transnational initiatives, is producing a variety of organisations, control structures, rules and codes of practice; in a sense a new (and not always fully coherent) architecture, which is itself constitutive of and constituted by global ICT programmes. Without exploring the political challenges that global ICT programmes confront, which are beyond the scope of this paper, it appears evident how governing in such circumstances renders progress difficult and slow rather than highly flexible, responsive, decentralised and pluralistic as IDAs, donors and leading consultancies often suggest.

**5. DISCUSSION: GLOCALISATION AND POLITICAL TRANSITION**

The deployment of global ICT programmes in e-Jordan and the expectations that these fuel for the country’s development agenda is a challenging object of study. The procedures for the establishment and development of such global programmes involve highly elaborate networks of agencies for the promotion of any specific initiative. These require also the development of a technological and organisational capacity, which is typically transferred and then redeveloped locally. This process is, however, fragile and non-linear and it is likely that a number of unexpected events can bring it to a halt. Because a late developing state is typically in the process of *transformation*, *contestation* and *political transition*, the costs of changing or introducing new institutions are inflated by the bargaining process between state-led reforms and other agents in the economy (Ciborra and Navarra 2005).

The informational and cross-organisational interdependencies between the networks of agencies reported in tables 1 and 2, span across distant geographical regions, organizational domains and last, but certainly not least, also political ideologies, all add to the costs of political transition. Thus, it is not enough to describe what the institutional environment presents for analysis of e-government in a developing country without also addressing the power bargaining mechanisms necessarily involved in programmes of informatisation and institutional restructuring. The greatest risks and challenges we identify from this case study rest on the number of integration points that are required for e-government systems to scale up, combined with the proliferation of existing systems with various technologies and platforms making integration with the core/legacy systems a very delicate issue (Navarra 2006).

These issues do not seem to be recognised in the development agenda advanced by the Monterrey Consensus, but they are crucial if the implementation of global ICT programmes is to bring any benefit. International institutions and global networks are important political forces that need to be reflected in such studies and as more countries pursue the ambition to develop by using ICT programs to link their economic and industrial structure to global markets and to the international circuit of trade, transport, banking and finance, which are

tightly coupled with these initiatives. It then becomes appropriate to frame the development of e-government within a wider agenda and as essentially associated with the implementation of global ICT programmes. To be sure, foreign donors and international development agencies exert considerable influence over the specifications and overall coordination of the development of global ICT programmes. In the words of a leading expert from MIT, said during an informal dinner conversation in Amman in the summer of 2004:

*“It is important to understand where the balance of power lies, and that is with the providers of development assistance more than within the local political constituencies.”*

It is therefore not surprising that the models adopted by Jordanian institutions with donor agencies focus on a standard set of applications aimed at transforming the state so as to increase its capacity as a minimal, efficient service delivery agency, and that the overall approach is well aligned with the current models of e-government in Western countries (Deloitte Research, 2001) and good governance. Nevertheless, the extent to which this conduct will be growth-enhancing, if compared with the exigencies of late developers, as opposed to a developed state, remains uncertain at this stage.

## **6. SUMMARY AND CONCLUSION**

In conclusion, our contribution to the study and research on innovation, technology, governance and organisation is threefold. The first is identified with the object of study itself. Global ICT Programmes offer for analysis a rather different set of issues with respect to the technology initiatives studied in the discipline and at large. As Walsham has written, ‘The mainstream IS community is notable for its almost total disregard of issues of technology transfer and implementation in Third World contexts’ (Walsham 2000:207).

Second, we have showed that existing research in this domain has not yet explored nor produced an account of the complex dynamics governing the early phases of infrastructure development in developing countries beyond the focus of a single application or project. This points our attention to the subtle dynamics taking place within global ICT programmes including the endogenous institutional forces situated in the context of Jordan. It is possible to appreciate from the issues that emerge from the case study vis-à-vis the vision of the Monterrey Consensus, that the assumptions upon which the compact pursuing e-government initiatives rests need an extensive update in light of the practical difficulties encountered even before full scale deployment of the technological systems meant to promote good governance.

Third, the lessons that can be learned from Jordan’s experience to date are then oriented towards a deeper understanding of the nature and role of technology for the design of organisations and institutions during the process of late development. Global ICT Programmes bring together the government, the private sector and a plethora of international institutional constellations, which are not situated only at the micro-institutional, national or regional level. Their environment is not delimited by clearly defined boundaries but by their global significance and effect, and institutional structures cannot be taken as given, but must be seen as in a very substantial process of change and transformation.

In conclusion, global ICT programmes imply a profound structural transformation to integrate technological platforms, information resources, expert systems, etc., and other fragmented infrastructures, across national boundaries with international institutions and business interests. Although the Monterrey Consensus suggestions are perhaps realistic, even

achievable, more attention should be paid to the organisational and governance challenges and to the costs of political transition that follow. Casting these issues as Global ICT Programmes can help to establish a much broader inter-disciplinary significance and interest in the issues involved in the governance of the large scale information infrastructures required for innovation and technology initiatives. This may also imply a useful shift in the traditional approach to the design of information infrastructures, away from considering each application in isolation, and towards a grid architecture which supports decentred concentration. In other words, the relocation, sharing and coordinated use of diverse resources (including organisational capacities) almost irrespective of their geographical, cultural or organisational context.

## 7. REFERENCES

- Abdelrahman, R. (2004). Int@j highlights ICT opportunities in Jordan, region at GITEX 2004. Jordan Times. Amman.
- Avgerou, C. (2002). Information Systems and Global Diversity. Oxford, Oxford University Press.
- Bevir, M. and W. R. Rhodes (2004). "Interpreting British Governance." British Journal of Politics and International Relations **6**: 129-164.
- Braa, J., E. Monteiro, et al. (2004). "Networks of action: sustainable health information systems across developing countries." MIS Quarterly **28**(3).
- Ciborra, C. (2003). Unveiling E-Government and Development: Governing at a distance in the new war. Department of Information Systems, Working Paper Series. London, London School of Economics and Political Science.
- Ciborra, C. and D. D. Navarra (2005). "Good Governance, Development Theory and Aid Policy: Risks and Challenges of E-Government in Jordan." Journal of Information Technology for International Development **11**(2).
- DFID (2002). The Significance of Information and Communication Technologies for Reducing Poverty. London, Department for International Development.
- Dobriansky, P. J. (2003). "Science, Technology, and Foreign Policy: The Essential Triangle: Remarks to the Council of Scientific Society Presidents." Retrieved 11 October, 2004, from [http://www.cfr.org/reg\\_issues.php?id=11111](http://www.cfr.org/reg_issues.php?id=11111).
- Force, D. (2001). Creating a Development Dynamic. New York, Digital Opportunity Task Force.
- Foster, I., C. Kesselman, et al. (2004). "The Physiology of the Grid: An Open Grid Services Architecture for Distributed System Integration." Retrieved 20th March, 2004, from <http://www.globus.org/research/papers/ogsa.pdf>.
- Int@j (2003). Jordan's Information Society: a fast growing sector for a transforming nation. Beirut, Economic and Social Commission for Western Asia.
- Mansell, R. and U. Wehn (1998). Knowledge Societies: Information Technology for Sustainable Development. Oxford, Oxford University Press.

- MoICT (2000). *Launching E-Government in Jordan: readiness and approach*. Amman, Ministry of Information and Communication Technologies.
- MoICT (2001). *Implementing Jordan's Information and Communications Technology Strategies - 2002 Work Plan*. Amman, Ministry of Information and Communication Technologies.
- MoICT (2003). *Jordan e-Government: Your government at your service*. Amman, Ministry of Information and Communication Technologies.
- Navarra, D. D. (2006). *The Governance Architecture of Global ICT Programmes: A Case Study of E-Government in Jordan*. Information Systems Group, Department of Management. London, London School of Economics and Political Science. **Ph.D.**
- Nelson, R. R. (1993). National innovation systems : a comparative analysis. New York, Oxford University Press.
- OECD (2003a). *The E-Government Imperative*. OECD Publications. Paris., Organisation for Economic Cooperation and Development.
- REACH (2001). *Launching Jordan's Software and IT Industry*. Amman.
- Rhodes, W. R. (2000). *Public Administration and Governance*. Debating Governance. J. Pierre. Oxford, Oxford University Press.
- Sassen, S. (2004). "Local Actors in Global Politics." Current Sociology **52**(4): 649-670.
- Sassen, S. (2006). Territory, Authority, Rights: From Medieval to Global Assemblages. Woodstock, Princeton University Press.
- UN (2001). *World Public Sector Report: Globalisation and the State*. New York, United Nations.
- UN (2002). *Final Communique of the International Conference on E-Government for Development*. E-Government for Development. Palermo.
- UN (2003). *First Annual Report of the Information and Communication Technologies Task Force, Economic and Social Council of the United Nations*.
- UN (2005). *Science, Technology and Innovation, United Nations Task Force on Science, Technology and Innovation*.
- UNDP (2001). *Making new technologies work for human development*. New York, UNDP.
- UNDP (2002). Human Development Report 2002: Deepening Democracy in a Fragmented World. New York, Oxford University Press.
- UNDP (2003). *Information and Communication Technologies for Development in Human Development Reports*. New York, United Nations Development Programme.
- UNDPEPA (2002). Benchmarking e-government: a global perspective: assessing the progress of the UN member states. [New York; NY] UNDPEPA;, American Society for Public Administration.

UNESA (2003). World Public Sector Report 2003: E-Government at the Crossroads. D. o. E. a. S. Affairs. New York, United Nations.

UNPAN. (2004). "Global E-Government Readiness Report

2004: Towards Access and Opportunity." Retrieved 20th Jan, 2004, from <http://www.unpan.org/e-government4.asp>.

Walsham, G. (2000). Globalisation and IT: Agenda For Research. Organizational and Social Perspectives on Information Technology. R. Baskerville, J. Stage and J. I. DeGross. Boston, Kluwer Academic Publishers.