Chapter 1

E-GOVERNMENT – A ROADMAP FOR PROGRESS

Roland Traunmüller, Maria Wimmer

Abstract: E-government can transform and improve the entire scope of administrative action and the political processes. So e-government is both, vision of a future government and the reality we have to live with today. Sketching a roadmap may give us indications where we are heading. To begin with, e-government is not an objective per se; more it has to be seen as means in organizing public governance for better serving citizens and enterprises. This makes service provision essential. Reflecting the viewpoints of individual citizens (or of companies) is an obligation. When looking from outside, portals and forms of service delivery become key success factors. Moving ahead implies having an integrated view, clear strategies and concepts that are both innovative and feasible. Two guiding visions will have strong impacts on developments. First, a holistic approach is necessary to create work-processes and work-situations, as they are highly knowledge-intensive and rely on close forms of interaction between individual persons and IT. Next, knowledge enhanced government is a leading idea and management of legal/administrative domain knowledge becomes a decisive driver in governance. Designing for governmental applications touches several vital issues: transferring concepts and systems from the private to the public sector; making use of standards; safeguarding trust and security; enhancing usability. These lines have to be blended with an adequate management for change.

Key words: E-government, roadmap for e-government, knowledge enhanced government, holistic view

1. ADVANCEMENTS TOWARDS E-GOVERNMENT

1.1 A Comprehensive View of Modernization

Both, e-government and e-commerce are largely driven by the hopes and perspectives which the new wave of technology has prompted and the desire

to renew national economies is another important driver of developments. E-government can transform and improve the entire scope of administrative action and the political processes. So e-government is both, vision of a future Government and the reality we have to live in today. Sketching a roadmap may give us indications where we are heading.

E-government is more than a new wave of administrative modernization. It means a permanent e-transformation opening up entirely new ways for public governance:

- Electronic Government concerns the whole scope of administrative action and the connected political processes. IT as an enabling force will enhance effectiveness, quality and efficiency of public action as well as its legitimacy.
- Thus legislature, executive and judiciary should be called to mind.
- The task of sustaining democratic deliberations (e-democracy and e-voting) becomes important.
- As governance is a vast concept one may discriminate different spheres: so according to the Speyerer definitions [4], [8] an inner sphere aims at novel organization and a thorough rethinking of the machinery of Government; an outer realm considers the changing roles of the state as well as a new balancing of public and private activities.

1.2 Systemic Features Distinguishing the Governmental Realm

When looking from afar striking correspondences appear between e-government and e-commerce. Both involve reengineering and integrating flows of information, of money and of goods, and they exhibit a trend toward spatially distributed organization. And both started with customer interface problems but soon came to dig deeper in an effort to overhaul the businesses in question completely. Not to forget that both are only successful if there exists a vision and a novel business model as matrix for shaping reality.

There is an expression coined by Wallace Sayre “public and private management are fundamentally alike in all unimportant respects”. Therefore, no wonder that on closer inspection more differences appear: the specific tasks of government, the role of law and negotiation, the special significance of knowledge (see next paragraphs). Accordingly, feasibility needs attention for each individual case when transferring concepts and systems. Often even minor distinctions may exert essential influence on design. Reproducing concepts and systems from the commercial domain has to be done with thoughtfulness and sensitivity.

The ways in which branches of Government work are manifold. Often, they differ from what can be found in the private sector. The variety and diversity of policy fields and of forms of action in state, politics and administration is high. Legal and political preconditions vary and the context and situational factors are influential. Thus a mere replication of commercial concepts and systems will not suffice. Moreover, systems have to cope with distinctiveness of the governmental realm. Here some demarcations are shortly outlined [11]:

- An extraordinarily complex goal structure distinguishes the public sector from private business.
- Legal norms are a standard vehicle of communication; yet they have to be supplemented by legal interpretation, negotiation and consensus building.
- Equality before the law calls for social inclusion; e-identity is needed in nearly all administrative transactions.
- Legal norms give particular meaning to administrative structures posing several limitations on process reengineering (protecting privacy, safeguarding legality etc.)
- Public Administration mostly works via a complex tissue of cooperation involving quite many acting entities (which is rather contrary to the private sector).

This contribution concerns the topic of e-government in general and as view on the state of the art. As basic reference, the reader is referred to some recent collective volumes and conference proceedings [1], [2], [7], [4], [8], [10]. Chapter 2 describes e-government as the novel paradigm. Following, chapter 3 details some routes to pass through: portals, processes, cooperation and knowledge. Finally, chapter 4 sketches a plan for moving ahead.

2. A ROADMAP FOR SUCCESS

The alarm bells ring as take-up of e-services remains low. As a result, defining strategies for e-government is an urgent task. Since e-government is a new paradigm, strategies will be distinct from previous ones.

New Public Management [5] that dominated the last decade had brought considerable change to many branches of public administration. Now e-government has emerged as a paradigm that builds on NPM, however goes far beyond. Especially e-government deals directly with the administrative processes themselves. To say it with other words: NPM focuses primarily on better ways of managing processes; in e-government, the processes themselves are reengineered. Changing paradigms means changing strategies and criteria - a new roadmap for achieving success is needed.

Recognizing the way to success needs above all a point of view that offers global perspectives. From such a vista a roadmap for success can be sketched:

- Considerations have to start with taking a holistic approach. This means integrating several aspects: users, technology, organization, law, knowledge, culture, society and politics.
- Next the whole machinery of Government comes under scrutiny: providing administrative services, running work processes, and modes of cooperative work have to be defined in a new way.
- In addition, future Government will be knowledge enhanced and innovative solutions have to mirror that fact.
- All these redesign efforts - public services, processes, cooperation and knowledge management – will lead up to rethinking the institutional structures of government.
- For such changes a sound engineering approach is essential. This is a broad claim so let us mention just some key requests: building a secure and reliable infrastructure, developing standards, adequate interface design.
- Competent change management and improving the innovative capacity of the public sector is a must.

3. ROUTES TO PASS THROUGH: PORTALS, PROCESS, COOPERATION, KNOWLEDGE

3.1 Portals Open the Way to Service Provision

Portals for delivering services to business, individual citizens and communities reflect a view from outside. Portals are of prime concern, however as Reinermann stated already years ago (IFIP World Conference 1998) “This is only the tip of the iceberg”. Hence design has to aim at the entire scope of administrative action. So in designing electronic service delivery one has to regard processes from two sides: from the standpoint of the citizen and from the view of the producer of the service. There are typically five stages (with some parallel to commercial services) which have to be looked at. Seen from the citizen point of view these are: information, intention, contracting, settlement, aftercare.

Low user take-up of e-Services has become a main problem. It shows that resistance to change includes many stakeholders and one has to answer the question: What has gone wrong with e-government projects? Hence low uptake is a key issue and in the language of the users the culprit has a name: measly usability. In terms of user-friendliness many existing portals are far

off from being satisfactory. Many examinations and assessments have revealed deficiencies. Long is the list of shortcomings: a general lack in targeting the audience; an inadequate and inconsistent design lacking of comments and adequate examples; a sloppiness in maintenance showing unreliable and outdated pieces of information. It is a distressing picture that comes out from in-depth analyses of typical interaction processes: users cannot cope with the logic of administrative thinking, other users do not comprehend the administrative jargon and some other clients who pilot helplessly through the jungle of information.

3.2 Redefining Governmental Processes

Online One-stop Government means that external service structures are adequately mapped to the internal process structures of public authorities [11]. Therefore, the addressee's perspectives have to be complemented by a restructuring of the business processes. Process design has to break new ground by taking into account several aspects:

- Different locations of service production and delivery
- Organizational front office / back office connection
- Combining processes according to life situations
- Including distinct processes from strict workflows to collaborative decision-making

Process reorganization in the public sector may often have to stop short of established structures; but finally they will lead to rethinking the institutional structures of Government. In many respects the legal framework of these processes has to be changed. Also new institutions may emerge which fit the new ways of producing and delivering public services.

A further point is that design has to consider the very different ways of administrative processes. For each of them, IT support will rather be different:

- Recurrent and well-structured processes
- Processing of cases: individualized decision-making
- Negotiation processes and consensus finding
- Weakly structured processes in the field of policy-making

Process structure is not the only perspective when discussing the changes. Two complementary perspectives are of equal importance: cooperation and knowledge. This leads to the next two sections.

3.3 Strengthening a Broad Cooperation View

The cooperation view is of special importance to those activities that are related to higher order administrative work. They include e.g. negotiation,

consensus finding, planning and policy formulation. Especially for the higher ranks of bureaucrats such mode of work becomes prevalent. However, not only intra-governmental activities need extensive cooperation, when communicating with citizens such modes of work occur as well. Examples are plentiful: negotiating with citizens, giving advice in complex questions, mediation – they all have to be seen as cooperative settings.

So, what has to be sustained is cooperation in the broad. Support of computer-mediated cooperation in a comprehensive sense means sophisticated tools, multiple media for these contacts become a must. To give a flavor of the capabilities, some illustrations are added:

- Meeting as well as related activities take hold of a substantial part of administrative work. Many occurring activities are cooperative in nature and claim for IT-support.
- First, the meeting activity per se may be performed via video techniques – so economizing on travel costs and time.
- Next, many activities associated with meetings can be largely improved by tools using multimedia. Examples are plentiful: clarifying procedural questions; scheduling of meetings and implied sub-activities; supporting the agenda setting and spotting experts, supporting brainstorming sessions, structuring issues etc.
- For the illustration of advanced systems using multimedia, we regard a future scenario “citizen advice for solving complex questions”. A citizen may go to mediating persons at the counter of public one-stop service shops. The mediators will use the system with its diverse repositories. In case the issue is too complex it is possible to invoke further expertise from distant experts via a multimedia link between the service outlet and back-offices: dialogue becomes trialogue.
- As the accessed expert himself may use knowledge repositories, finally, human and machine expertise become intensely interwoven. So this example leads to the next issue: knowledge enhanced government.

3.4 Knowledge Enhanced Government

In a novel concept of governance the role of knowledge becomes dominant. Building a modern administration with novel patterns of cooperation is tantamount to changing the distribution of knowledge. Redistribution of knowledge has to be designed and orchestrated carefully. Managing knowledge becomes a major responsibility for officials. All these facts point to the concept “knowledge enhanced Government”.

Prospects for knowledge management in Government are remarkable from the point of demand: nearly all administrative tasks are informational in nature, decision making is a public official’s daily bread, and for any

agency its particular domain knowledge is an asset of key importance. Such a new direction will engender considerable progress:

- The focus of attention is shifted away from a discussion of structures and processes towards issues of content. It reaches the very heart of administrative work: making decisions.
- In some aspect, a regained focus on decision-making will help to propagate comprehensive systems thinking.
- Eventually, a better management of knowledge will lead to forms of “smart government”. Knowledge derived from previous action or gained through policy evaluation will be fed back to policymaking in an effort to better target policies.
- Management of legal and administrative domain knowledge is a critical factor in governance. In addition, a deeper understanding of the connections between processes and knowledge will improve design. In the public agencies of the future, human and software expertise will become intensely interwoven – knowledge enhancement at its best.

4. A PLAN FOR MOVING AHEAD

4.1 Building on a Sound Engineering Approach

A sound engineering approach is indispensable to bring about an IT-induced modernization of public administration and public governance. At the bottom level this means a suitable IT infrastructure for unimpeded communication and cooperation meeting high demands on availability and security as well. At the application level objectives are smooth cooperation, high usability and a design integrating all these before mentioned aspects: citizen service, process reorganization, cooperation and knowledge enhancement.

4.2 Interoperability and Standards

If one compares the public and the commercial domain one can see both, communalities as well as differences. The former ones occur at the technical level; the later ones at the application level [13]. Standards for applications become an issue in its complexity significantly surmounting the private sector. Further on, standardization has to be seen with a broad focus including several issues: establishing a common understanding of processes, building on widespread administrative concepts, ensuring interoperable platforms, having a workable administrative domain ontology, defining formats for data interchange. Standardization is a huge task. Yet in the long

run, all partners involved (public agencies, software industry, private companies) will gain. There are already some advanced fields such as e-procurement, however, the core administrative processes are still far away from that.

A common governmental mark-up language has to be developed acting as a means for defining governance-specific content. Among others, this is a prerequisite for the transport of data from back offices and from the distributed information repositories serving them, to both (virtual and physical) front offices which deliver the services produced elsewhere. Especially for cross-border e-government having such definitions is a must! These standards will be built on XML combined with domain ontologies. For domain ontologies a rich kit of methods for knowledge representation already exists (taxonomies, semantic nets, semantic data models, hyperlinks etc.). Present deficiencies in this field are a problem of praxis often caused by lack of commitment.

4.3 *A conditio sine qua non: Safeguarding Trust, Security and Privacy*

Quite similar to last issues, differences occur at the higher level. Requests are more strict since the e-identity is needed in all administrative transactions and since wrong passports may have more serious consequences than bouncing checks. In addition, taking the point of the users, informational guarantees and the trust in the system becomes crucial. Delivering electronic services will largely depend upon the trust and confidence of citizens. For this aim, means have to be developed covering a sole purpose: achieving the same quality and trustworthiness of public services as provided by the traditional way. Regarding the level of systems design, fundamental requests have to be met:

- Identification of the sender of a digital message
- Authenticity of a message and its verification
- Non-repudiation of a message or a data-processing act
- Avoiding risks related to the availability and reliability
- Confidentiality of the existence and content of a message.

4.4 Don't Forget the User – Enhance Usability

Speaking on portals a long catalogue of shortcomings has been listed. Usability is a main concern and it can be improved in several ways. One is building on past experience (and common sense as well). Some examples that even plain rules will benefit are below:

- The prime obligation is: “Stress usability - not alone visibility”.

- “Less is more” and “Keep it straight and simple” are sayings that can be applied to design. They will match because overloaded or too complicated presentations are a nuisance.
- Further on it may be wise neglecting a drive to perfection. Designers have to avoid the widespread mistake of shifting too much burden to the client.
- In addition design will be successful when using more analogies.

Nothing against folks wisdom and common sense, but there are complicated interaction processes needing a deeper analysis. Citizen contacting agencies for advice in complex cases is such an issue needing closer inspection. Often the concrete situation is so that design has to resolve rather conflicting demands:

- the citizen’s requests are commonly posed in a rather urgent situation,
- there may occur need for an in-depth explanation in an unambiguous way,
- the explanatory capabilities of the system are limited,
- interactions are connected with a high translation effort (i.e. transforming demands of the everyday world in the legal-administrative jargon and vice versa).

In case of the example of giving advise to citizens, design has to use several means. One would construct program clarifying dialogues, and describe illustrative scenarios. Also detailed knowledge (on both, on the field in question and on the interaction) can be embodied in software agents. All this works in actively helping users in accomplishing their tasks. Finally, very advanced future design will result in intelligent multi-lingual and multi-cultural personal assistants being integrated in electronic public services portals.

4.5 Change Management – The Key to Success

Change management is the key to success urging for cooperative efforts of a wide range of actors from administration and software industry. Particularly for the public sector, a quantum leap in the innovative capacity is asked. It starts on the political level with a strategic thinking and creating advanced infrastructures. Other critical success factors include best practice-evaluations and guidelines derived from ground-breaking projects. Competent change management means empowerment of staff and starting a remarkable qualification initiative. Cultural change and dissemination of know-how become crucial as well: the old egotistic behavior of shielding information, knowledge and process know-how has to be cast off. Eventually a new way of thinking will emerge with information sharing and cooperation as guiding stars.

5. THE ROADS AHEAD ARE FAR AWAY FROM BEING SMOOTH

Those who travel the road have to overcome many obstacles: bureaucratic attitudes and historical legacies, inertial institutions and impeding regulations, time and budget constraints. Yet those traveling the roads will be rewarded when they closely perceive the impending e-transformation of society. For them, the journey might become an overwhelming experience. There is chance and opportunity – we have to take advantage of the *kairos* of the moment.

REFERENCES

1. Galindo, F., Quirchmayr, G. (eds.). *Advances in Electronic Government. Proceedings of the Working Conference of the IFIP WG 8.5*, Univ. of Zaragoza, 2000
2. Grönlund, A. (ed.), *Electronic Government - Design, Applications and Management*, Idea Group Publishing, 2002
3. Leitner, C. (ed.), *eGovernment in Europe: The State of Affairs*, Report of the European Institute of Public Administration, Maastricht, 2003 (to appear)
4. Reinermann, H., von Lucke, J. *Speyerer Definition von electronic Governance*. Forschungsinstitut für Öffentliche Verwaltung Speyer, Online Publikation, 2002, <http://foev.dhv-speyer.de/ruvii/SP-EGvce.pdf>
5. Schedler, K., Proeller, I., *New Public Management*, Verlag Haupt, Bern, 2000
6. Traunmüller, R. (ed.), *Electronic Government. Second International Conference EGOV 2003*. Springer, LNCS # 2739, Heidelberg et al, 2003 (to appear)
7. Traunmüller, R., Lenk, K. (eds.), *Electronic Government. First International Conference EGOV 2002*. Aix-en-Provence. France. September 2002. Springer, Heidelberg 2002
8. von Lucke, J., Reinermann, H., *Speyerer Definition von Electronic Government*, Forschungsinstitut für öffentliche Verwaltung, Speyer, 2000, <http://foev.dhv-speyer.de/ruvii/Sp-EGov.pdf>
9. Wimmer, M. (ed.), *Knowledge Management in e-Government. Proceedings of the 3rd International Workshop of the IFIP WG 8.5*, Schriftenreihe Informatik 7, Trauner Verlag, Linz, 2002
10. Wimmer, M. (ed.), *Knowledge Management in Electronic Government. 4th IFIP WG 8.5 International Working Conference Proceedings*, Springer LNAI # 2645, Heidelberg et al, 2003
11. Wimmer, M., Tambouris, E. *Online One-Stop Government: A working framework and requirements*. In Traunmüller (ed.), *Information Systems: The e-Business Challenge. Proceedings of the 17th World Computer Congress of IFIP in Montreal*, Kluwer Academic Publishers, Boston et al, 2002, pp 117 - 130
12. Wimmer, M., Traunmüller, R., Lenk, K. *Electronic Business Invading the Public Sector: Considerations on Change and Design*. In *Proceedings of the 34th Hawaii International Conference on System Sciences (HICSS-34)*, 2001
13. Wimmer, M., von Bredow, B. *A Holistic Approach for Providing Security Solutions in e-Government*. In *Proceedings of the 35th Hawaii International Conference on System Sciences (HICSS-35)*, Hawaii, 2002