Electronic Government - Anticipating the Tide of Change

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Electronic government will differ from traditional government mainly in closer cooperation and coordination in "people networks", suggested by the new "physical networks".

1. Introduction

My first anticipation is a technical one: "physical networks". By this I mean electronic networking, spanning all sectors of all societies on a global scale, enabled by: close to 100 percent PC oder Web-TV supply in offices and homes (at first in the industrial states), connection to "information highways", easy to handle GUIs, interoperability via internet technology and via standardization of building blocks such as processors, operating systems, middleware, and application systems, by security levels for information at will, and by ongoing improvements of the price/performance ratio for computer systems ("Moore's Law").

My second anticipation is based on the first one: "people networks". By this I mean personal and institutional networking which utilizes "physical networks". People networks will cause electronic government to be different from traditional government in a number of ways. They are the main subject of this paper.

2. Digital Nerves of Government

a) Electronic government can be described by characterizing three of its ingredients:

- people, inside and outside the public sector, with access to electronic networks
- digital data representing voice, writing, image, and video ("multimedia")
- digital processes (or procedures, transactions, and the like).

Given these ingredients, "the nerves of government" (a phrase coined by Karl W. Deutsch in his 1963 book on political cybernetics) more and more become digital. Similar to a "computer bus" which connects all computer parts, we can picture a "government bus" able to connect, on principle and with exceptions to be discussed and defined, every single office to all the others and to all the institutions and homes outside the public sector.

b) "Digital nerves of government" multiply the availability of people, data, and processes to others by magnitudes:

- People can be reached by others from anywhere and anytime. Traditional hurdles erected by space, time, and hierarchy erode.
- Data which used to be hidden in masses of paper or which we were not even aware of, can be located and accessed ("information on mouseclick").
- Processes of government and administration more and more become computer-supported (from day-to-day operations to unplanned events like emergency management). If suitable, digital processes can be started from anywhere and anytime, or they can become elements of other processes.

c) This quantum jump in availability is going to change the role and meaning severely, people, data, and processes are having in electronic government. Especially, these three ingredients become much more useful for others, and therefore they become more interesting for others. Their easy availability offers synergies through cooperation, however also coordination may become necessary.

- If it is easy to get in contact with people, it becomes more likely that we try to involve others in order to utilize their expertise or to inform them about things that might be of interest to them (only compare the trouble of getting someone at the phone to the ease of email communication).
- If it is easy to access data, it becomes more likely that we look them up, update them, analyze them, or re-use them. E.g., being aware that there might be data out there which could be useful for us, we make more efforts to locate and download them instead of collecting or producing them anew (a facet of the "make or buy" problem).
- If it es easy to access processes, it becomes more likely that we try to integrate them into our own programs and procedures (again the "make or buy" question), or to match our programs with them.

Therefore, part of the good news coming along with electronic government is that we can expect, under certain conditions to be discussed,

- more direct communication between people
- more harmonization and better utilization of data
- more harmonization and better utilization of processes and procedures.

And it should be noted that there is a big difference to former efforts of this kind: It is not central coercion trying to make this happen but the mutual self-interest of the people involved. Rather than central commands to "raise the treasure" of expertise, data, and processes hidden in the public sector, their own self-interest will induce people and institutions to look for better cooperation and coordination because of the new tools and benefits provided to them by electronic networking.

3. Heterarchy, Data Ubiquity, and a Breakdown of Boundaries

a) In view of the foregoing, we can expect more horizontal communication as compared to today's vertical communication, typical for the public sector. Hierarchy is going to be complemented by "heterarchy"; we will see more people solving problems by direct communication ("flat hierarchies", "autonomous groups", self-organization"). Vertical cooperation within vocational "roped parties" or program-specific "fraternities" is going to be complemented by cross-boundary communication; we will see more "open communication" (assisted by "groupware") between the people involved as compared to written communication through official channels only (joint acting implies joint knowledge).

Of course, these "heterarchical" networks of people need moderation in order to avoid disintegration and in order to bridge "cultural" gaps which have developed between the various vertical hierarchies.

Moreover, one must be aware of the fact that the concepts of electronic government (a "seamless world", "government bus", "digital nerves of government") are going to be confronted with an administrative culture characterized by the separation of powers and by other built-in "cracks", established exactly to limit the flow of information and, thus, to weaken the control of government over the people. Here, a new equilibrium must be found.

b1) We can expect more data sharing as well as faster diffusion of news and therefore a higher degree of accuracy, actuality, and reliability of data. This, in turn, will make data more useful ("informative") for more people. And with information costs tending towards zero, the cost/benefit ratios of most information systems can be calculated anew (take just-in-time training in remote locations as an example).

Of course, this requires efforts to establish data inventories ("yellow pages") which also contain "meta data" giving outsiders the possibility to judge the quality of data. Efforts for data matching cross jurisdictions of programs or institutions become urgent in order to make data compatible (e.g. what is the criterion applied in statistics of infant mortality: a life-span of one hour, of one day?).

Given the new availability and freedom of data we can expect new types of institutions acting as "custodians of data" (e.g. agencies accountable for the validity of certain data types like citizen, vehicle, zoning data etc.) or as "arbitrators" (for the evaluation or certification of data, e.g. digital signatures) or as "disseminators of data" (public agencies, libraries, or other intermediaries).

However, important prerequisits for all this to happen are that we obtain a general view of data which are important but can be hidden somewhere in PCs or LANs, and that we make sure that electronic government continues "to leave its footprints behind" as "paper government" used to do; this includes efforts for the preservation of digital records. Also, electronic government must remain verifiable by external institutions like courts or audit offices.

b2) Given the availability of more accurate, more timely, and more useful data and analysis on one hand and a demand by politicians and administrators for information along the lines of New Public Management (or other forms of public sector modernization) on the other, we also can expect a content shift in the data systems used by electronic government. Better knowledge about goals and effects of public action and about their distribution in society is becoming more important. How can we detect indicators that public activities are necessary?

Which programs are indispensible, which are "nice to have"? Which arguments are available to justify and explain posteriorities to interest groups? How can we avoid that a program is inconsistent with others? How can we track service utilization?

Data of this kind are going to characterize the information systems for every sector of public policy, and they are needed for both: hierarchical context control and heterarchical self-organization.

Consequently, our efforts for and our qualifications in information resource management (IRM) need to grow accordingly.

c) We can expect a breakdown of boundaries within the public sector (boundaries between agencies, programs, jurisdictions, or levels of government), resulting in more cross-boundary collaboration. Administrative processes, very often ending at the building walls of the agencies in charge, are going to be integrated, with a tendency to include entire business networks from start to completion. In electronic government, easy availability of processes will suggest or even urge the partners concerned to cooperate directly along "value chains" and to match their procedures. Thus, we likely will get over the traditional "stovepipe syndrom" indicating a preference for vertical communication hitherto.

We can expect more streamlining of processes, alleviation of duplication and inconsistencies, as well as better coordination of programs run by different agencies (e.g. it does not make sense to provide food stamps to persons sent to jail).

Digital value chains also will provide public servants more autonomy to decide where, when, and how much they want to work (telework, telecommuting, alternative offices, part-time work etc.).

Last but not least, better opportunities to integrate workflows will cause more "customer orientation". To look to one's right and to one's left may discover synergy benefits for oneself. This will bring about a higher concern for the output one is producing for one's clients.

One facet of this will be enhanced public access to government information and services. This includes a greater variety of entry points (e.g. front offices, located in the neighborhood of the clients and organized as one-stop agencies), teleadministration via kiosks or PCs at home and in the offices, self-service enabled by smart cards and the like) and higher service quality (e.g. service integration via simultaneous eligibility determination based on life situations like reaching a certain age or status, disabilities, marriage, start-up of a business, and so on, and crossing the boundaries of federal, state, and local administrations).

As public expectations regarding information access and service delivery raise, the removal of physical impediments by electronic government comes in handy. Of course, we must not forget to weigh out better service and personal privacy with care.

4. Electronic Government as Virtual Government

Based on more heterarchy and on better access to data and processes, we can expect electronic government to be a "virtual government" in the following sense: With many physical obstacles removed by digitalization and electronic networking, the public sector will

want to "strengthen its strong sides" and to "weaken its weak sides" in order to become "virtuous". Some aspects will be:

- faster innovation brought about by people directly engaged in public activities through both: business process redesign (BPR) and continuous process improvements (kaizen)
- higher concern for and better inclusion of citizens (with "citizen" understood as a metaphor for all sorts of clients of government such as private persons, businesses, communities, other public agencies, NGOs, NPOs, etc.) by citizen information (more transparency of the public sector; "freedom of information" will have a new meaning in electronic government) and by more citizen consultation and participation
- ·a greater variety of ways to conduct public affairs in addition to laws and hierarchical regulations, among others: moderation of networks of private and public institutions engaged in mastering a problem area cooperatively; concentration on core activities of government; utilization of market economy concepts like consumer choice, pricing, or competition (tendering, outsourcing, benchmarking etc.); or management of "fractal organizations" by delegating authority to fractals as units with self-control and by using contracts as informational interfaces between fractals
- and other aspects talked about more often like: better service, more evaluation based on feed-back information, faster transactions, higher productivity of the public sector, and cost reductions through substitution of paperwork, re-usability of data and procedures, less benefits fraud, and "lean administration" in general.

5. Outlook

In order to support the probable developments described, some promotion by state and administration seems to be appropriate.

A national information infrastructure must be built up which provides access to electronic networking on a broad scale and avoids gaps between "information rich" and "information poor". The qualifications to develop and use the systems of electronic government must be secured; this is very important because electronic government is enabled by technology but has to be shaped by people. The juridical requirements must be met, e.g. for privacy and consumer protection or for the handling and keeping of digital records. The benefits of improved ways of electronic government can be and should be demonstrated by pilot projects and in showcases of best practice.

Finally, politicians and government leaders personally must get involved in establishing electronic governments because much more is at stake here than just technical matters. But their involvement implies that their competences include the ability to control system development, information resource management, information technology management, project and risk management and other related fields. This knowledge is not always available on the higher echelons of government yet, however.

This provided, my anticipation is that the concepts of electronic government will be more than interimistic; rather, they will have a lasting impact on our understanding of "government".