Managing novelty and cooperation in E-Government projects

David Lazer
Kennedy School of Government / Harvard University
Maria Binz-Scharf
City College of New York

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There is nothing more difficult to take in hand, more perilous to conduct, or more uncertain in its success, than to take the lead in the introduction of a new order of things.

Niccolò Machiavelli, *The Prince*

How should the government *manage* the integration of the Internet into its many operations? The management of the Internet poses two extraordinary (but not unique) challenges. First, it is *novel*—as a medium it offers some fundamentally new possibilities for how government does business. The management of E-Government is, in significant part, the management of ideas, creativity, and knowledge. Second, it requires *cross-agency cooperation*. The reason for this is threefold: (1) the management of the technology and the conception process requires a certain minimum scale of effort and competence that would be difficult for many state agencies to attain; (2) at a minimum, there is an obvious need for some consistency in approach across agencies; and (3) at a maximum, there are likely to be great benefits to integration of systems across agencies.

In short, the traditional hierarchical, silo-based model of management would be doomed to failure with respect to managing E-Government. In this report, we examine how four governments that have adopted a project-based approach have coped with the challenges of novelty and cross-agency collaboration. We have selected two state governments in the United States, those of Massachusetts and Washington, and two cantonal governments in Switzerland, those of Basle and Zurich. In each of these four projects, we interviewed all of the members of the core project team, focusing on how these individuals shared knowledge and organized their efforts, how they dealt with the multiple types of expertise engaged in the project, and how they engaged the multitude of agencies affiliated with the project.

In examining these four projects, we find certain common struggles with novelty and cross-agency cooperation. Each involved a substantial effort at pulling in a loose array of agencies during the conceptual period and a subsequent struggle to achieve buy-in by those agencies at implementation. We derive seven lessons from their experiences as to how to manage first, a conceptual process which pulls in the visions and knowledge of the many actors that need to be involved in E-Government, and second, an implementation process that successfully garners the necessary participation of relevant state and local agencies.

Below, we first discuss why novelty and cross-agency cooperation present such challenges in the context of E-Government, and why, if those challenges are not surmounted, E-Government projects are doomed to failure.

Challenges of Novelty

"The technology is not the challenge. That's really pretty easy. It's the people, and it's the policy….People are going to have to undergo a fundamental change, a total change in the way that they think about their jobs and deliver service, to make this work." (a project manager)

Novelty—e.g., new and potentially transformational technology—is an enormous managerial challenge for four reasons. First, new technologies pose a problem-solving challenge due to the fact that *initially* the array of choices is vast. As one observer from the four E-Government projects stated, "[The state] was, 'Well, we've never been here before. Nobody's ever been here before, so we're gonna have to figure this out on our own.'" There are a finite number of "old ways" of doing things, but an infinite number of possibilities of new ways. This multitude of possibilities is typically forgotten after a choice has been made, but the initial points of decision are potentially paralyzing.

The second reason that novelty is a challenge that is—small p—political. One can view any organization as an amalgam of interests competing for resources having reached a tenuous accommodation with each other. A new technology potentially disrupts that equilibrium, increasing the importance of some, and reducing (or eliminating) the relevance of others. Often the incumbent coalition will resist that technology, a pattern seen from the use of information technology (IT) to facilitate knowledge sharing (McDermott 1999), to the development of nuclear submarines (Ambrose 1983), to the use of DNA in the criminal justice system (Lazer 2004).

The third reason, that often, but not always, goes hand-in-hand with politics is the cultural obstacles. Existing ways of doing business both shape the perceptions of how things can be done, as well as take on normative overtones (Weick 2001). A generation or more of an organization has been doing things a particular way. Those routines serve symbolic as well as functional needs. A new technology may render the functional needs obsolete, but be resisted because of value of the symbols to the organization. The experience of a project member illustrates some of these challenges:

"We see people wanting to create an online application that basically mimics the paper process, not taking advantage of what you can do electronically…, not rethinking how that business process can be re-architected….Take [for example] … environmental permits….There may be paper signatures that are required right now, ink signatures, that are not mandated by any statute or regulation, it's just that for the last hundred years we've done it this way, so they immediately think, 'Oh my god, I need an electronic signature'. So we go back and ask, 'Why do you think you need an electronic signature?' 'Because the paper is signed.' 'Well, where does it tell you that the paper has to be signed?' And when they go back and they look at their regulations and statutes, they say, 'You're right, there's nothing here that says that, so we don't need that, we need to authenticate where the paper's coming from, but we don't need a signature.' […]

The need for signatures was not a statutory requirement, but had become embedded within the belief systems of those in charge of the permitting system through years of doing business in that particular way.

Finally, new technologies may offer better ways of doing business in the long run, but may present substantial transition costs in the short run. In the public sector, funding for new endeavors depends on a—capital P—political process rather than capital markets. These political processes may not be responsive to the cyclical financial needs that technological developments sometimes require.

One of the organizational patterns that is most difficult to change is the lack of integration of activities across agencies. This poses a particular challenge for E-Government projects, as we discuss below.

Challenges of Cross-Agency Cooperation

Cross-agency cooperation is a huge challenge for E-Government projects. Studies of U.S. government are replete with case studies of agencies fighting for turf, budget, and, most importantly, autonomy (see for example, Bardach 1999; Brown 2001; Gupta, Dirsmith, and Fogarty 1994). In a world where problems can be placed into separate, fully insulated boxes, this is not so dysfunctional. In a world where there is spillover from one box to the next, however, the results can be disastrous (as, indeed, the information-sharing failures prior to September 11, 2001, painfully illuminate).

E-Government, as discussed below, in part, requires developing consistent systems across the silos that can talk to each other, consistent protocols for presentation and collection of information from the public, and pooling of resources and expertise across agencies in order to take advantage of economies of scale.

Cross-agency communication and consistency, in E-Government as in other domains, is enormously difficult because the agency-based structure of government is reflected not just in the organizational chart, but in the laws and the oversight institutions within both the legislative and executive branches. As one participant in one of the E-Government projects analyzed below states, "I think that one of the challenges with e-government from the very beginning … is that there are no mechanisms, there are no organizational structures that foster cross-agency collaboration and integration. Budgets are agency-specific, line-item specific, and statutes and regulations are agency-specific."

Further, the "small p" politics of bureaucracy also breeds resistance to E-Government. Consistency and information sharing across agencies necessarily threatens agency autonomy along certain dimensions, and agencies sometimes respond with substantial resistance. As one interviewee notes, "[The agencies] actively try to keep their own system running and fend everything that might challenge *their* hierarchy and *their* right to exist".

In the projects that we examined, there was little illusion that government could be instantly—or easily—transformed. One individual who had participated in the project since its early conceptual stages describes how the web portal may be an instrument for long-term change: "What the portal allows us to do is a nice little middle of the road compromise that says, 'government is still as messy behind the scenes as it has ever been', but what the portal and web applications allow you to do is make it seem to the end user as if things are a little more rational and a little less silo-ed. What we were hoping would happen over time is that people within government would then realize, 'this makes so much more sense than the way we've been doing it for the past however many years'. …That's left to be seen."

Below, we examine in detail these issues of novelty and cross-agency cooperation in four cases.

Methodology

This study combined a qualitative exploratory case study design and a grounded theory approach, with the aim of theory building through the comparative analysis of case studies. Grounded theory methodology consists of systematic inductive guidelines for collecting and analyzing data to build middle-range theoretical frameworks that explain these data.

The sample for this study consists of four cases. We selected the sample through theory-driven, progressive sampling; i.e., we chose the cases sequentially based on theoretical rather than statistical considerations. The cases needed to be comparable, which is why we applied a literal replication strategy for the sites, selecting them based on the same relevant characteristics over time. Our sampling parameters were: (1) state-level government agencies in economically advanced settings with comparable jurisdictions (Switzerland and the United States are both federally organized systems, whose states have

their own constitutions and are largely autonomous) and (2) a clearly identifiable E-Government project. We also, however, used a replication strategy by (1) selecting cases in two different countries, Switzerland and the United States, assuming an influence of the cultural context on knowledge-sharing processes and (2) by selecting cases in different stages of their project, in order to gain a better understanding of the processes. For the informants, we employed a reputational selection strategy: i.e., the instances were chosen on the recommendation of an "expert" or "key informant".

The data for this study were collected in the period May 2001–June 2002 during field research at the sites of the four E-Government projects and after a follow-up email survey sent to these sites in the beginning of 2003. In the field, we conducted open-ended, semi-structured one-on-one interviews with the key persons involved in each project, using an informal list of questions as interview guidelines. We were also allowed to observe several meetings and explore office buildings, and we took field notes on observations, spending between four and seven full working days at each site. Furthermore, we analyzed documents which we received from the interviewees or through official sources. All interviews were recorded on tape and transcribed, totaling over 700 pages of single-spaced interview transcripts.

Toward the conclusion of the study, we also conducted a follow-up network survey to gain a better understanding of the knowledge networks in E-Government projects in terms of relevant actors and task interdependence structures. We asked all interviewees in a questionnaire to whom they give information and from whom they receive information relating to their project, letting them choose from a list of names which had arisen during the interviews, in addition to all the interviewees from each project. Furthermore, they had the possibility to add names that we had not listed. The response rate was 93 percent. We entered the resulting matrices of communication links into UCINET, a software program for social network analysis, and created a visual representation of the members of project teams and their relationships, using NetDraw, a network drawing application.

The data interpretation process was carried out simultaneously with the data collection and a review of relevant literatures. This iterative process is a distinct feature of the grounded theory approach, and it continued until the completion of the project.

Case Studies

We examined how four governments that have adopted a project-based approach have coped with the challenges of novelty and cross-agency collaboration. We have selected two state governments in the United States, those of Massachusetts and Washington, and two cantonal governments in Switzerland, those of Basle and Zurich. The cases are outlined below in the order in which they were selected, and an overview is given in table 1. First, we describe the background of each case in terms of its project initiation, objectives of the project, current state, and composition of the project group. In order to initiate the project, it proved to be important for all cases not only to have a strategy, but also a roadmap, or action plan, outlining the concrete steps to take toward the fulfillment of objectives, particularly those which were more visionary. All roadmaps provided recommendations of what actually could be implemented; however, more audacious projects were envisioned in those cases that had stronger political support. All cases started out with a determined number of partial projects, ranging from sixteen to twenty-eight for each case, selected from a larger list of possible initiatives. Task forces and work groups played a crucial role in all four projects, as they determined the shape each project would take in strategic (vision, strategic plan) as well as in operational terms (definition of partial projects, organizational structure, etc.). The levels and diversity of stakeholders, however, varied across the projects (see table 1). Second, we discuss how each of the cases managed the novelty related to the project and how they handled the cross-agency issues that arose.

Insert table 1 about here

Canton Basle

The first case, located in the northern part of Switzerland, was launched in 2001, after the state government ordered the state chancellery (a supporting function to the state government) to explore the situation of E-Government and to draft a project proposal. The state chancellor appointed a project manager for this task, who then organized a government-wide retreat, inviting representatives from all agencies as well as other interested parties with previous E-Government experience to participate. The main result from this retreat was a report to the state government with an E-Government strategy and action plan, recommending (1) the launch of a portal organized around "life events" (e.g., going to school, getting married, setting up a business); (2) the integration of shared IT infrastructure into a platform; and (3) the incorporation of existing projects: a physical one-stop-shop, an ongoing governmental reform project, data logistics (a project aiming at the standardization of data handling across different databases), and the reengineering of business and document processes. The E-Government strategy recommended keeping a project manager, but did not recommend creating a designated team or otherwise assigning any staff to this position. Therefore, at its conceptual stage, the project consisted of loosely connected governmental officials across different agencies that participated in the project on a voluntary basis. A first version of the new portal was launched in October 2003, pushing forward the implementation of twenty-six partial projects, in particular fifteen services that are requested most frequently by citizens.

Managing novelty: Before the project manager was hired, various individuals and agencies had been advocating a state-wide introduction of information and communication technologies (ICT). The initiator of the project was the head of the Statistical Office: "[He] is somebody who took the initiative, who said, something needs to be done here. Technically, he would not be the one who's in charge, but he simply took the initiative." Other individuals and agencies had been very active in the past as well. The head of the GIS (Geographical information systems) office, a unit that had a long history of using technologies, explained this 'urge to innovate' by saying: "We have dealt with transferring the original analog information into digital format for the past 30 years. … Those who are technology-oriented have always been used to the fact that they can't stand still; they have to move on with the technology."

The newly hired project manager took up the idea of organizing a big retreat from the initiator of the project. This retreat was conceived as a kick-off event, its main purpose being that of exploring the possibilities and requirements of E-Government for the state. The exploratory character of this event became manifest in the rather random selection of participants, as recounted by the project manager: "On the one hand we knew about people who are doing something in that direction, who are active, and we invited these people to participate; then there are certain people who should be doing something, but don't, so we invited those, too, and finally we informed the departments about the people we had invited, and they said, [expletive], these are the wrong people, and they suggested a lot more people. … *They* had indicated the wrong people — either they wanted to have the people who were highest up in the hierarchy, or the ones who shouted out the loudest, then again the most competent, etc. etc. But I think that we managed to put together a good mix."

The composition of the task force and steering committee raised some criticism in Basle: a communications officer complained that information delegates had not been included in the list of invitation. She came to be part of the task force out of her own initiative as one of the "individuals with an active interest in e-government", because she believed that the project leader needed to be informed about the existing Internet projects in the state. Another individual who had joined the retreat out of his own interest criticized the selection as being biased toward IT: "I said, you couldn't simply do your own little competition — who is part of this jury? Are these the right people? At the moment there are politicians on the steering committee, which has to be that way; and the remaining people are pretty much all from the central IT services. That's not the right approach, that's a misconceived steering committee."

Managing boundaries: Basle followed an approach of "centralized decentralization". The central IT agency had been dissolved several years prior to the project. It had been decided to affiliate the Basle E-Government project with the respective state chancellery, a supporting (line) function to the cantonal government considered to be a neutral position within the government. According to one member of the GIS office, however, the government soon realized that this situation was problematic. To resolve the lack of technological coordination that arose, an IT board was created that consisted of representatives of all departments and was tasked with advising state government, but without formal powers. The project manager maintained close ties with the IT board, whose members he knew from his previous employment at the federal government, and especially with the IT board's secretary, who was also the head of the central IT services. Not surprisingly, these board members were very active in promoting the technical aspects of E-Government, convincing the new project manager of the preeminence of IT over strategic considerations.

Canton Zurich

To initiate the E-Government project in Zurich, the cantonal government appointed a cross-agency steering committee and hired a consulting firm to assess the potential of E-Government in a pre-project as part of ongoing governmental reforms. The E-Government strategy resulting from the consultant's report envisioned the following project objectives: (1) launch of a life events portal; (2) a centrally administered intranet as a backbone for electronic service delivery and internal knowledge management; (3) optimization of internal processes; and (4) the implementation of sixteen partial projects. The report also recommended the creation of a temporary organizational unit for managing the project. Six months into the project, the core project team consisted of five members with clearly defined tasks (coordination, strategy, content management, business models, partial projects, and harmonization). During the entire period of observation, the project setting had moved from a pre-project primarily administered by the steering committee to an autonomous project team (which also physically moved into a separate building). The project is currently in its implementation phase, having launched the new portal in June 2003 and having concluded eight partial projects at the time of writing, out of the sixteen partial projects initially passed by the state council.

Managing novelty: As in the Basle project, the cantonal IT agency had been outsourced, an action that provoked mixed feelings with the Zurich E-Government team members. One member complained about the fact that the outsourcing had not been prepared adequately, "leaving everybody to their own devices", but not providing the necessary conditions to guarantee a functioning exchange across the state government. Another member was more positive, seeing this freedom of action with respect to IT choices as an opportunity for exercising more influence on the infrastructure; however, she also criticized the preparatory work, forcing the project team to take care of "fundamental infrastructure issues" that apparently had been neglected, such as an emphasis on security. Nonetheless, being financed by the canton's governmental reform project, the project was clearly not dominated by IT. The conceptual phase was headed by the canton's communications director, who had explicitly excluded representatives from IT in the pre-project. The newly hired team took up the project with that same philosophy: the only encounters with IT were limited to periodical meetings with the project's steering committee, which included a representative from IT.

Managing boundaries: The communications officer in the Zurich project put a personal effort into bridging the boundaries between agencies by creating "internal information structures", convincing the government that each department should appoint an information delegate and arranging regular meetings with them. It was repeatedly stated, however, that the integration of agencies across government ran against the interest of many agencies. The idea in Zurich to create a fixed-term project team was very effective to that extent, since the members of this temporary team were not perceived as a threat by the agencies. The team developed a template on the basis of which any agency could suggest and realize its own partial projects. The highly professional climate permitted the definition of a clear task division

between central (team) and peripheral (agencies) actors, also reflected in the effort to document the project team's work for future reference, in order to facilitate the adoption process: "Our goal is to [document] the entire output that is related to IT systems, be it the intranet, the partial projects, or the portal; … to have created manuals which don't leave any questions unanswered regarding how they originated, who bears which responsibilities, and who administrates it. So, it is our goal to take this operational knowledge back into the government." The original idea of dissolving the project team after the successful implementation of the project is currently being revised, however, since the team members have grown to be an integral part of the state government, and there are some concerns that their departure may cause distress to the continuing process of E-Government implementation.

Commonwealth of Massachusetts

The first U.S.-based project was initiated by the then governor who had appointed a public-private task force to develop a strategic plan and implementation roadmap for E-Government. The report resulting from the joint work of the task force, a steering committee, and five policy work groups contained the following objectives: (1) the creation of an intentions-based portal (i.e., a portal that groups services by natural affiliation rather than by governmental agency); (2) a common IT infrastructure for "shared services", such as electronic payments and a customer relationship management (CRM) program; and (3) The implementation of twenty-seven partial projects. The recommended organizational structure envisaged the creation of an E-Government project group, which was formed that same year. After the initial planning phase, the steering committee became the portal's advisory board. In 2002, the project team consisted of a project manager and six core team members: a portal manager, a webmaster, and four "channel managers", each responsible for the relations with a specific group of stakeholders (citizens, government, business, visitors). The portal was launched in 2002, and the implementation of shared services and partial projects is ongoing.

Managing novelty: When the project initiator joined the IT department of Massachusetts in 1996, the Chief Information Officer (CIO) had just put together an online governmental task force since several agencies had expressed their interest and were starting to place content online. At that stage, "… really the motivation started from the agencies themselves, they were starting to explore this new medium of the internet and the web, and saw it as a good way to extend what they were doing. And if you look at agencies like the registry of motor vehicles, they're an agency that is very service-oriented, that deals a lot with the public, so I'm sure they saw it as a way to begin to push information out to people, and begin to have more interactions that would supplement what happens at the offices, at the branch offices," recounted the project initiator. One plausible explanation for this early adoption could reside in the fact that the state had been making significant investments in information technology through bond capital funding projects, making resources available for investing in the necessary infrastructure: "Other states I know always have the funding issue of having to fight in every budget to get IT recognized, and we've been lucky in that way because I think early on there was recognition that it's worth investing in this, as if it was any other part of infrastructure for government."

Out of personal interest in the topic, the project initiator convinced her superior that it was worthwhile spending more time on it ("Look, this is an area that I've got to focus on, this is happening, it's going to gain more momentum…") and started spending a considerable amount of time familiarizing herself with the policy issues involved with online government, as well as what other states and the federal government were doing in this area. Soon she was known to be the "expert" on online governmental issues, and interested individuals would refer to her for advice and information on trends and latest developments.

Managing boundaries: The bond capital funding proved to be of fundamental importance for overcoming barriers or, as one individual put it, the "entrenched interest in keeping the bureaucracy the way it is" and creating new structures, since the bonds were coordinated by a central agency and distributed according to the degree to which proposed projects had a cross-agency potential. This way,

the funding was used as a control mechanism by the project team: they encouraged agencies serving the same constituents and with similar project ideas to get together and discuss ways of collaborating, promising funds only to integrated applications.

As a consequence, opting for a centralized project management appeared to be the right approach in Massachusetts. One team member explains this choice by stating: "In order to achieve the goal of an intentions-based website, one face of government, it's not going to be done in a decentralized fashion. Basically, [the portal] is one big centralization effort, even though we like to talk about decentralized content management." A common platform was developed to enable the integration of the different systems that the agencies were using, allowing them to keep their own systems. This considerably facilitated the process of getting the agencies to accept the platform, therefore laying the ground for cross-agency collaboration.

State of Washington

The second U.S.-based case originated from various E-Government initiatives in different agencies when the state legislature appointed a board to explore and coordinate E-Government initiatives. The board formulated an overall objective of E-Government, namely the coordination of (decentralized) applications, infrastructure, and policy. Together with an external consultant and partners in various agencies, the state IT department subsequently developed a roadmap for creating a technology infrastructure to support the Internet. The roadmap was the basis for the development of an E-Government plan. A first portal was launched in 1998, focusing on the following areas: (1) the organization around life events; (2) e-democracy; and (3) an orientation for supporting businesses in the state. A significantly refreshed portal was re-launched in 2000, bringing together a number of new enhancements with the aim to better serve the state's citizens and businesses, including a natural language search, a state-of-the-art search engine, a 24x7 customer support function, and a secure gateway for businesses. A total of nine sub-teams worked together on the development of online services, under a coordinator project affiliated with the IT department. At the time of our field research, the project had been implemented for two years. The focus today is to continue expanding E-Government applications to state agencies, the hub of it being an E-Government applications training center, a live development environment where course participants from different agencies and organizations come together to learn how to build E-Government applications and how to accelerate the deployment of online services. Some parts of the original E-Government project have been institutionalized, in the meantime, becoming separate projects with separate project managers: other than the training center, these are (1) application implementation guidelines, (2) IT investment portfolio management, (3) security infrastructure, and (4) public key infrastructure.

Managing novelty: Washington State's E-Government project owes its existence mainly to a visionary and charismatic CIO, who put the provision of online services as his first priority. He hired two policy advisers and asked them to come up with a strategic plan for E-Government, the basis of which being a brainstorming exercise on the project manager's blackboard. Enthusiastically, the CIO was convinced that the whole vision had to be realized. He reportedly claimed, "We're gonna build all this. We're gonna write the policies. We're gonna build the applications and we're gonna build the infrastructure and we're gonna do all three of them simultaneously. And so we have to coordinate them as they're being [built]". As one project member recounted, she barely received any guidance on the exact contents or "how big this should be", therefore having to rely on her own judgment. When the report was published, it was well received, but it also provoked some negative sentiments, as she continues: "It scared a lot of the agencies. I mean, just really scared them because they're the ones that have to build the applications. They're the ones whose reputation and budget is on the line. And it was a new idea. … You know, government is very conservative and the rule is 'Thou shalt not fail.' You don't ever have to succeed, but, by God, don't fail! And [this state's] agencies were no exception to that. And so when [the CIO] came out saying, 'This is where we're going and we're gonna do it fast and everybody's coming along,' there was a

bit of resistance. Some of the agencies really could see, you know, that what he was saying was right. And a lot of them were just pretty terrified."

Managing boundaries: After the strategic plan had been published, the policy advisers of the Washington State project attended several meetings with agency representatives to deliver the main themes that the state was embarking on: "Here's where the state is going, and you're welcome to join the community, and we think it's important that the cities and counties be involved, and we want your input, and we have this infrastructure built and you're welcome to use it, and it's probably cheaper for you to get it from us than to develop it on your own, and all the various messages that are contained in here." At most of these meetings, there was a real consensus that the idea of providing easily accessible online services to citizens was important, and that it needed to be realized. There was a lack of consensus among the local agencies, however, mainly due to a missing "centralized leadership", as stated by one project member.

The training center, where individuals are brought together from different agencies to work on a problem that they have in common, plays a crucial role in fostering cross-agency collaboration: on the one hand, agencies are granted ownership of their ideas, but at the same time duplication of efforts and resources is prevented by sharing those ideas with other agencies through jointly developed application templates.

Comparing the cases

The interviews suggested the critical role that the informal structure of the E-Government teams played. As one member of the Massachusetts project observed, "The first thing you do when you're looking for something is get on the phone and start calling around. … It's just a matter of, once you got the right person, to get them to give you this information you're looking for." Cultivating a set of personal working relationships is the catalyst that makes these teams work. As she continues, "[H]aving built personal rapport really goes a long way, if they know you they're more likely to help you, …if you have personal relationships established, you're more likely to get results…."

We therefore sought to measure the configuration of these informal structures. Figures 1 through 4 summarize the responses of members of these E-Government teams to the question "Whom do you communicate with regarding E-Government?" These images offer a sense of the *emergent* organization of these E-Government teams.

Insert figures 1-4 about here

The first thing that strikes the viewer is that the informal structure only barely maps to the hierarchical reporting structures. In a textbook hierarchy, decisions are made top-down, and reporting is bottom-up. These teams have communication structures that hardly match that pyramidal image. Instead, in all of the projects, most team members extensively communicate with one another. The project manager does, of course, play a critical role in authoritatively delegating tasks. Further, in all of the projects, the project manager is an informational and coordinative hub. But it is clear, with the exception of the Basle project, where the project manager is not uniquely central, that an important modality of management of these projects is one of bottom-up mutual adjustment, rather than top-down authority.

The second notable thing is that where there are well-bounded project teams— their boundaries are amorphous. In each case, every team member talks extensively to individuals off of the team about the project. Particularly noteworthy in the Zurich and Massachusetts cases are the highly connected positions of non-team members 9 and 1, respectively. In both of these cases, these individuals were the original conceivers of the E-Government projects who had moved to new positions within the government, but

remained substantially engaged in the conceptual aspects of these projects. Another striking example of this is team member 15 in the Washington State project, who was a core participant in this effort early on, but subsequently left for the private sector. Despite this, they continued to have regular communication with the key participants in the process within the government.

The third thing that we would highlight is the relative sparseness of ties in the Basle project. This sparseness in part reflects the manner in which it was put together, as an initial loose coalition of the interested. It also reflects, we would argue, the fact that it was the only one of the projects that we examined that was still primarily in its initial, conceptual phase. The functional needs of the conceptual phase, we would argue, actually require a relatively sparse network. Research on creative groups suggests that heterogeneity and conflict can actually result in improved performance (see for example, Ancona and Caldwell 1992; Mumford, Feldman, Hein, and Nagao 2001; West 2002). A team of previously-connected individuals, oddly, can be dysfunctional in this setting because those prior connections may result in and reflect prior homogeneity and may stymie productive disagreement.

In the implementation phase, the knowledge networks of E-Government projects gain in density. As one individual states, "if you have personal relationships established, you're more likely to get results." This reflects a different notion of outcomes at the conception as compared to implementation phases. In the former, the outcomes that the team is aiming for is production of a menu of palatable alternatives. In the latter, the outcomes that the team is aiming for is "getting the work done". Given a complex task, this requires a dense and decentralized network, where team members mutually adjust and anticipate each others' actions and know who to call to answer which questions. This denser pattern of ties is clear in the Zurich and Massachusetts cases, but becomes most visible in the Washington State case, which is also the most advanced project.

Lessons learned: Managing E-Government Projects Successfully

The cases that were studied in this report contain a wealth of insights from which important lessons can be drawn for how to successfully manage E-Government projects. We model these lessons along two fundamental dimensions of E-Government projects, each of them subdivided into two phases: (1) the project stage (conception and implementation) and (2) the nature of the informal structure in terms of knowledge sharing (exploration and exploitation). Below we describe these dimensions in greater detail.

A first dimension refers to the stage of a project. As is the case with most projects, the projects subject to this study can be subdivided into two major phases; conception and implementation. The tasks that need to be accomplished during these two phases have different degrees of decomposability, or the extent to which large tasks can be decomposed into smaller, specialized tasks. It can be argued that the degree of decomposability is low during the conception phase, requiring the collaboration of different agencies and stakeholders; and it is high in the implementation phase—once the necessary tasks have been defined, they can be carried out almost autonomously by different individuals.

The second dimension describes the variation in the informal structure (or emerging organization) of a project, moving from discovery to retrieval of knowledge. In other words, the first phase is dedicated to the exploration of knowledge, which includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, and innovation, while the second phase involves the exploitation of knowledge, which can be described as refinement, choice, production, efficiency, selection, implementation, and execution (March 1991). Exploration and exploitation demand certain types of organization: whereas there is a greater reliance on networks during the exploration phase, a hierarchical structure is more efficient in the exploitation phase. From a governance perspective, this is equivalent to asserting that collaboration among individuals in a network prevails during the exploration phase; the coordination and control of individuals is more important during the exploitation phase. Since exploration and exploitation are content-driven and therefore do not necessarily occur in temporal sequence, it should

be noted, however, that a combination of exploration and exploitation must be present at all times. Therefore, the management of E-Government projects requires a balanced mix of exploration and exploitation, where exploration is more important in the conceptual phase, and exploitation becomes more fruitful in the implementation phase. The informal networks are sparse in the exploration phase and dense in the exploitation phase, corresponding to weak ties during exploration and strong ties during exploitation (see figure 5).

Insert figure 5 about here

The presented model of knowledge sharing in E-Government projects assists public managers in understanding how to conceive and implement an E-Government project more effectively by emphasizing the crucial importance of knowledge sharing in inter-agency collaboration. Along the core categories of the model, exploration and exploitation, some specific practical recommendations for the conception and implementation are the following:

CONCEPTION

1. Getting started: Bring lots of people to the table.

In the conceptual stage, it is important to draw on groups of all possible stakeholders, bringing them together in task forces, focus groups, or work groups. Effective brainstorming requires many perspectives. This process also helps break down the silos, by eliminating false perceptions of exceptionalism. As a member of the Massachusetts project states, "[It is] very important to create these opportunities for people and agencies to come together and talk to each other, and find out where their commonalities are. It's amazing in some of these workgroups, when you sit there and you find agencies that are just figuring out that they are in fact serving the same constituencies, or that they have different pieces of the same continuum of service."

This process of inclusiveness also creates a sense of ownership in agencies. As the manager of the Washington State project states, "If people contribute to anything, whether it's to building an application or whether it's developing a policy, if they contribute to it and they see their own ideas and they saw the idea emerge and they know why it's this way and not that way, they'll own it. But if you just serve it up and say, 'Here you go!' it's not going to go anywhere." By having an open door at the conception phase, it makes the job much easier at the implementation phase.

2. Build a network of discourse.

The brainstorming process is not simply a one-off. It is an ongoing process of building networks that continue to be active between events. In fact, one of the primary goals of events (meetings of workgroups, etc.) should be to nurture the creation and maintenance of informal networks. As one observer stated, "From that whole process of those … workgroups, I got to know more people, and became more familiar with their content, information on their sites and things like that. So now that the workgroup period is completed, …I talk to and follow up with people, and kind of check in with them, take requests, follow up on requests."

3. Don't prematurely eliminate avenues of brainstorming.

It is critical not to prematurely eliminate potential directions of innovation. It is in fact desirable to initially minimize the role of "technical constraints" in the conception phase, because technology is rarely the decisive constraint. The role of IT people should therefore be minimized in the initial discussions. In the Zurich, Massachusetts, and Washington State cases, the role of the IT people was minimized. One

member of the Zurich project explains the logic: "The IT people in particular, they felt excluded in the pre-project; and I told them, please don't feel rebuffed, but I don't want you in the pre-project, because with all our ideas…they have to float freely first, and if you immediately intervene by saying, 'that's impossible to implement', you'll nip it in the bud."

IMPLEMENTATION

4. Centralize *and* decentralize.

There needs to be an appropriate balance of functions performed at the center of the E-Government project and at the periphery. The basic IT infrastructure clearly has to be maintained centrally. Further, certain standards need to be set at the center—both to guarantee interoperability, as well as to eliminate redundant investments. As one member of the Washington State project stated: "[T]here's no point having each agency go through the learning curve, and duplicate effort. Let's have everybody go through the learning curve once, build these templates, and then they can start from the template and avoid that effort and time and resource...."

Centralization efforts, of course, will likely encounter enormous resistance. A member of the Massachusetts project summarizes the challenge: "Every agency has their own systems. That's the way things have always been, not even stovepipe, but little islands that see themselves as being the core of everything that state government is all about. And oh, even with things like [our common platform], we'd get agencies going, 'Yes, that's an excellent idea. Everybody should use it, except us. We're special.' You'd hear that over and over again. … So that's the kind of stuff you'd have to keep pushing back on all the time."

Centralization of some of the functions of E-Government does not mean that all functions of government need to be centralized. As she continues, "We didn't have to go out and say, everybody is going to run Oracle or IBM. Everybody gets to continue running exactly what they want. We only ask that they use [the platform] when they want to talk to somebody else."

These battles over centralization are at the core of all of the implementation issues in E-Government. This is, in part, why the conceptual process needs to be inclusive, in order to incorporate the circumstances of all of the key players (see lesson 1).

The management of E-Government also needs to be sensitive to the psychological investments individuals make in the status quo. As one member of the Massachusetts project states, "[Y]ou have to be sure of how they perceive [centralization]. Are you taking it away because you think I'm incompetent? Or because you're trying to take over my territory?" The implementation process, as a result, involves "a lot of ego stroking activities." As the same individual states, " [A] lot of it is saying, 'Oh, I know you're special. But you know if you do it this way, it means that you will be able to devote your energies to this thing that you do that nobody else in the world does.'"

Of course, ego-stroking and inclusive processes are far from enough when dealing with the turf challenges that E-Government entails. Implementation will also involve extensive use of carrots (lessons 6 and 7) and sticks (lesson 5).

5. Obtain top-level buy-in.

Centralization must, in part, be an exercise in raw power. Two fundamental sources of power are (1) authority and (2) funding.

It is the ultimate irony that the transformation of government into a networked form requires the support of "old-fashioned" hierarchic structure of the state. As a member of the Massachusetts project states, "The problem… is that government is still… very hierarchical, so that if you don't get buy-in at the top level, where the agency heads are talking to each other and say, 'yes, our teams are going to work together and are going to share this application', it's not going to happen." The support of the top rungs of the hierarchy thus does trickle down to the grassroots, as the individual continues, "[W]hen you have the governor or you have the [secretary of a department] at a cabinet meeting talk about, 'this secretary and this secretary need to work together to create this e-government application,' that's as important as the worker bee level is, because that gives the legitimacy to those worker bee people to work with each other."

The second source of power is money. Funding is the lifeblood of any organization. Tying the adoption of standards to the funding of an agency IT system can prove an effective tool, as a member of the Massachusetts project observes, "So when there's no money and you say, 'You can't afford to do that, unless you use the shared service that we're putting in, and if you follow our rules,' well then they follow the rules so they can get the money."

Funding is both a carrot and a stick, of course, and the potential of E-Government projects is to offer agencies the possibility of doing more with the same resources. As a policy adviser of the Washington State project observes, "The locals' problem was primarily financial… so without being obnoxious or obvious about it we were saying, 'here's our model, and we'd be happy if you used it, it's your decision, but here are all the benefits if your model matches our model, and if you use the infrastructure that we've already built, it's much cheaper for you and makes the consistency uniform across the various agencies.'"

The funding issues also mean that there has to be some move away from silo-based funding. Within the executive branch of most states, this means that finance offices need to place a value on cross-agency initiatives. A member of the Washington State project offers an example from her state: "[R]ight now, our [Office of Finance] [is] just about to finalize a set of criteria that will be used in the next budget cycle…. [T]his set of criteria makes it clear so that agencies know that as they bring forward new projects that they want to venture into, here are the criteria against which it will be evaluated. And one of those that's a new one is this area of collaboration, or cross-agency work."

This recommendation comes with a huge caveat, however. A pure top-down, power-based strategy is not always an option, is rarely sustainable, by itself would result in "guerilla warfare" resistance to E-Government projects in agencies, and does not leverage the knowledge and experiences distributed within government. It is essential to create a sense of ownership at the grassroots.

6. Building grassroots support: Become a knowledge hub.

The Washington State project offers important lessons about how create bottom up pressures for change in agencies, where its training center was a critical tool. Clearly, one important barrier to change within agencies is that change, in the short run, is typically costly. The training center thus subsidizes change by providing a requisite resource—knowledge. The training center is more than simply providing subsidy to agencies, however, it is also about managing cultural change. The training center temporarily pulls IT people out of their cultural milieu, offering exposure to new ways of doing business. As a project member states, "I think pulling people out of their environments and putting them into a new environment where they're encouraged to take risks, and fail, and be innovative and creative… works very, very well."

Acting as a knowledge hub also implies a continued "listening" to the concerns of people in the agencies and adapting accordingly. The training center thus plays the role of explaining/training, as well as a mechanism for continued innovation. Both will facilitate adoption of technologies by agencies. As a member of the Washington State project observed, "If people contribute to anything, whether it's to building an application or whether it's developing a policy, if they contribute to it and they see their own ideas and they saw the idea emerge and they know why it's this way and not that way, they'll own it."

The training center thus empowers agents of change within agencies, creating bottom-up pressure for change. As a member of the Washington State project describes the effects of the training center on its participants, "[Y]ou would see people coming out of the training center and bouncing down the halls with smiles on their faces, going, 'this is great, I can't wait to get back to my department to try this out, or tell people what we're going to do!'"

7. Facilitate peer-to-peer exchange among agencies.

Part of the challenge of implementation, as noted repeatedly above, is the silo-based nature of government. As stated above, in the conception phase it is important to create an ongoing dialog among the affected agencies. This process needs to continue in the implementation phase, through actively facilitating exchange among agencies by giving incentives such as shared services and by helping them partner up with like-minded individuals and agencies. As a member of the Washington State project affirmed, it was important to get "people… working together and getting cross-fertilization from other agencies, to actually get this stuff built and have it work."

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	Project 1	Project 2	Project 3	Project 4
Location	Basle, CH	Zurich, CH	Massachusetts, US	Washington, US
Project objectives	Life events portal Integration of IT infrastructure Incorporation of existing projects	Life events portal Intranet Optimization of internal processes Implementation of partial projects	Intentions-based portal Common IT infrastructure Implementation of partial projects	Coordination of applications, infrastructure, and policy
Project start	2001	2000	2000	1998
Portal launch	2003	2003	2002	1998
Project initiation	State government appointed the state secretary to explore the situation of e-gov in the state and draft a project proposal	State government hired consultant to assess the potential of DG as part of the ongoing government reform	Governor appointed a public-private task force to develop a strategic plan and implementation roadmap	Legislature appointed a board to explore and coordinate e-gov initiatives, resulting in a roadmap and a strategic plan
Initiator	Head of statistical office	Head of government reform project	Governor	Governor
Initiative [first steps]	Organized a retreat for government officials, which resulted in a strategy approved by state government	Commissioned a consulting firm to carry out a "pre-project" to test the feasibility of e-gov initiatives and develop a strategy	Created an e-gov task force and steering committee and commissioned a consulting firm to develop a strategy and roadmap	Hired a senior policy adviser to craft an e-gov plan
Stakeholders represented in task forces/ work groups	- Department directors - Individuals with active interest in e-government - Agencies considered important for e-government - IT department	- Delegates of 3 departments - HR directors - Communications officers - Executive assistants of state secretaries	- Agency representatives - Parliament - Academia - Private sector - Citizens - Local government	- Deputy directors across agencies - CIOs - Parliament - Academia - Private sector
Description of project group	Project manager, many loosely connected project members Affiliation: State chancellery	Project manager, core team of four Affiliation: State chancellery	Project manager, core team of five Affiliation: State IT department	Various project managers, members of project group loosely connected Affiliation: State IT department
Role of IT department	IT dominates strategy	Strategy dominates IT	Balanced	Balanced
Status (2002)	Expanding (conception)	Ongoing (implementation)	Ongoing (implementation)	Established (running)

Table 1: Case overview

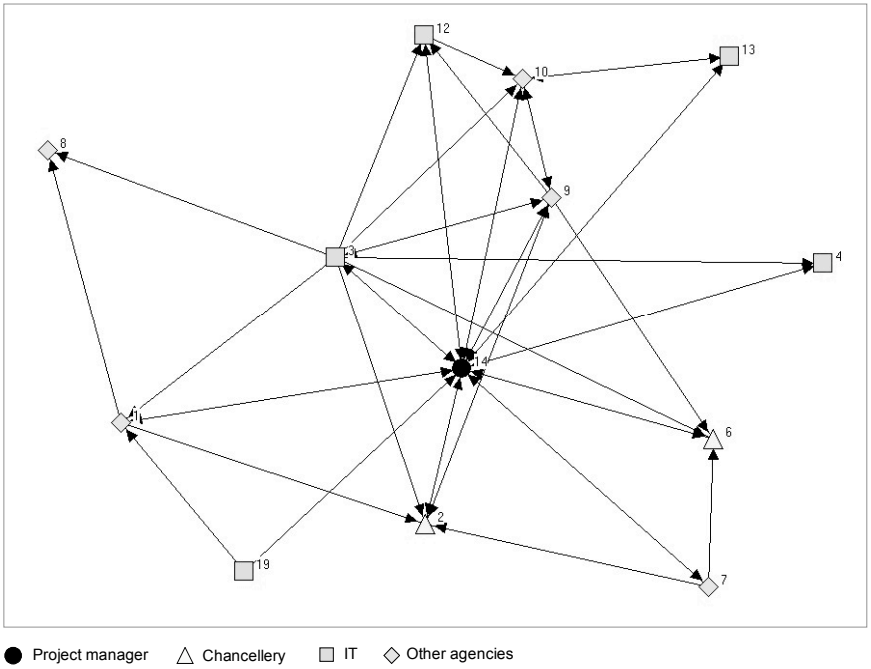

Figure 1: Basle

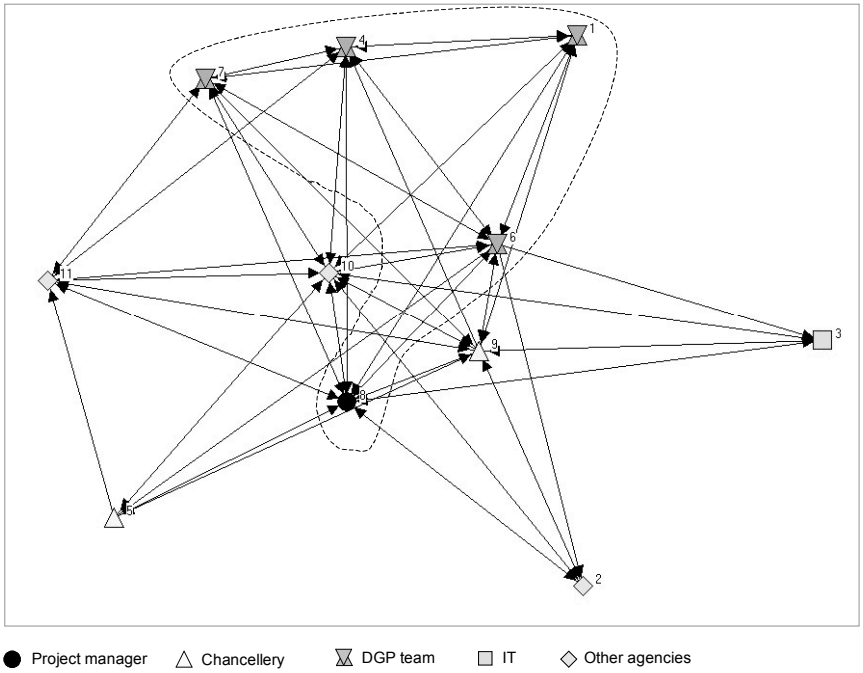

Figure 2: Zurich

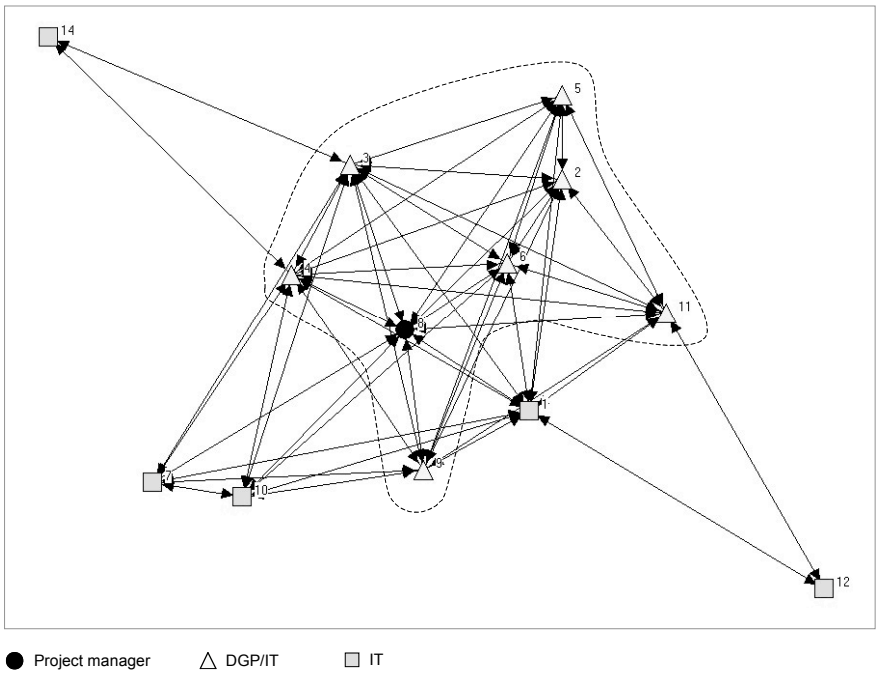

Figure 3: Massachusetts

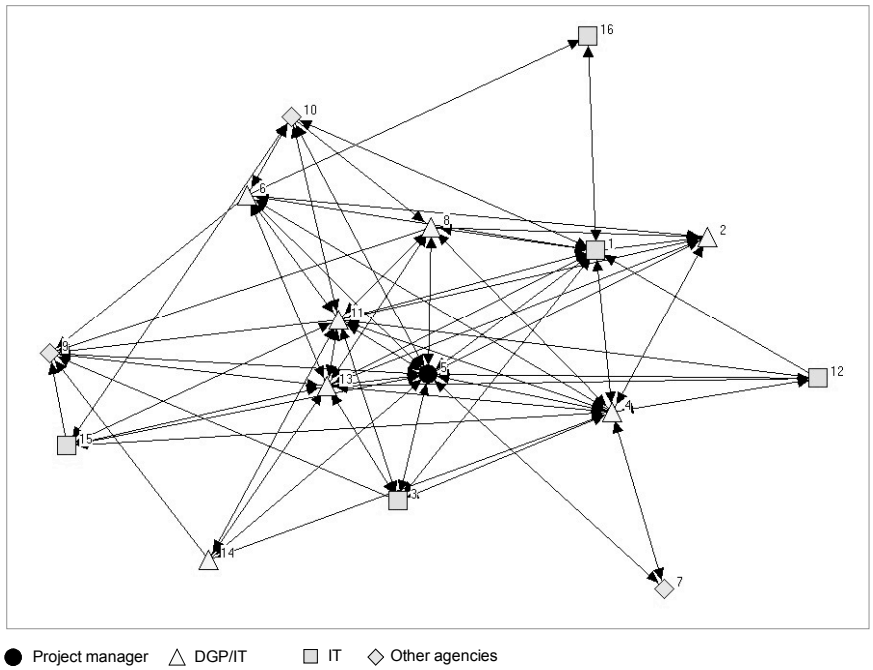

Figure 4:

Washington

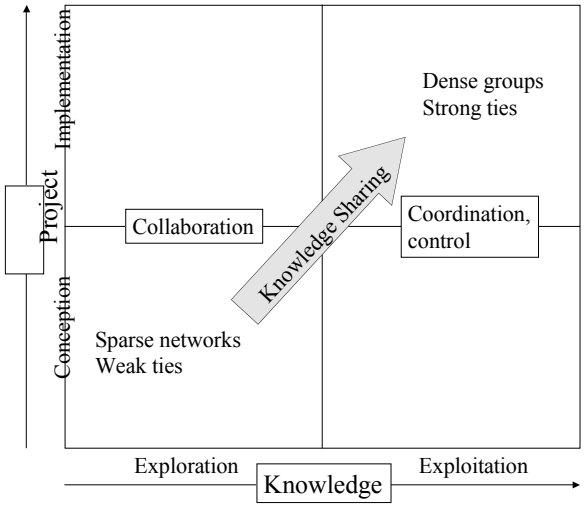

Figure 5: Knowledge sharing processes in the evolution of the project