

Seven E-Government Leadership Milestones

*Chapter in forthcoming book Vision and Revision,
Routledge Ltd, UK*



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As electronic government comes of age around the world, leadership remains at the core of success, beginning with the definition of e-government itself. Leaders who define e-government in a narrow sense -- simply moving services online -- miss larger opportunities which will determine competitive advantage in the long run. By the end of the decade, what will constitute competitive advantage? Certainly not renewing a license online. By then, online government services will be as commonplace as ATM machines are today. Online services will no longer be noteworthy, distinguishing one government from another, but will have become part of a baseline expectation of service delivery. Given that, governments today have no choice but to aggressively pursue an all-encompassing shift from traditional to online service delivery. To do otherwise places them in jeopardy of falling below minimally acceptable standards of service.

Therefore, if online service delivery is only the ante to get into e-government, what then will set governments apart, elevating e-government as a competitive advantage? What are leaders to do? A broader grasp of e-government is imperative for leaders to position their governments, citizens, businesses and communities for sustainable strategic advantage.

Seven leadership milestones are integral to both becoming an e-government and running an e-government. Achieving these milestones creates competitive advantage in both instances:

- Milestone One:** Integration
- Milestone Two:** Economic development
- Milestone Three:** E-democracy
- Milestone Four:** E-communities
- Milestone Five:** Intergovernmental
- Milestone Six:** Policy environment
- Milestone Seven:** Next Generation Internet

The milestones are neither discrete nor sequential in nature. Each milestone has equal priority, contributing to the cumulative attainment of the others. Concurrent activity among the seven areas are required from the beginning. So, how do you attain e-government? Think of a team of seven horses pulling a wagon. Each horse is connected to each other as well as to the wagon. Unless all seven horses are pulling, the wagon cannot pass the milestones necessary to reach its destination. For example, to achieve Milestone Seven, broadband application pilots should be set into motion now in order to be ready for "prime time" when high-speed access reaches critical mass. Collectively, these milestones require a common underlying management foundation and investment -- strategy, collaboration, governance structures, financial investment,

human resources, and partnerships. Without this leadership foundation, progress will be limited in overall impact and fragmented at best.

Milestone One: Integration

Process integration and technology integration mark achievement of Milestone One.

Most governments have already recognized the fact that effective citizen services are delivered independently of organizational structure. Some call it one-stop shopping, one window, or a portal. This approach is designed to let citizens access services without having to know which department handles the service. Simply, instead of a list of departments to click, citizens find a list of services to click. This is good. However, in the background, most of today's portals push the transaction to the individual agency and its technology systems for processing. Bottom line is each service still has a one-to-one relationship with the department that offers it - reserve a tennis court, renew a realtor's license, pay a fine, file taxes. This is not so good. That's not real process integration of government operations. What if the process involves several agencies? Governments can learn from dotcoms that launched flashy websites to sell things compared to companies that transformed into e-businesses. Clicking on something to buy is different from using the Internet to run a business. Clicking on a license renewal is different from using the Internet to run a government.

Everyone has been a victim of poorly integrated process and service -- in both public and private sectors. I have four policies with the same insurance company. This is one

of the largest insurance companies in the United States. Yet, the company mails me four different bills at four different times with four different payment configurations. And, worse, each bill is only identified with a policy number. Customers have better things to do than memorize four sixteen digit policy numbers.

The Texas Comptroller of Public Accounts office established the e-Texas Commission to find ways to reduce the number of touch points required to establish a business in Texas. They found to open a dry cleaning shop in Texas requires interaction with five state agencies - Department of Licensing and Regulation, the Texas Natural Resource Conservation Commission, the Comptroller of Public Accounts, the Texas Workforce Commission and the Texas Department of Transportation. Authorization from each department is required to do business in Texas. In addition, the dry cleaner must comply with regulations at the Federal level - Environmental Protection Agency, Department of Labor and Department of Transportation. A food retailer is subject to nine state regulatory agencies, seventeen different types of state licenses, and various statewide inspection processes.

Why is it so difficult to conduct simple business? This happens because cross-boundary operations, organizational structures, and information technology systems are not integrated. The car insurance division only cares about cars. The house insurance division only cares about houses. The company has a website where you can click on either car or house insurance. But from the policy owner's perspective - the customer - there is no integration for total insurance needs. Each division operates in isolation.

Each division has different technology platforms with databases and applications that are incompatible with other divisions. And, to top it all off, the company as a whole probably doesn't have the technology infrastructure to handle integration.

Integration is core to running either a business or a government in today's digital environment. E-business is a business model focusing on business relationships at the enterprise level powered by electronic interfaces among internal divisions, business partners, employees and customers. The combination of interfaces among individual legacy systems, enterprise level applications, and breakthrough Internet-based technologies for external customer and supplier use make e-business achievable, affordable, and mandatory for competitiveness. To achieve Milestone One, governments need to learn to use the Internet to run the government.

Does this mean we're starting backwards by moving discrete services online on a common portal? No. You have to start someplace. Portals are visible quick wins to garner support, cut time and costs, and improve citizen convenience. Be aggressive. Commit to moving the bulk of services online within a challenging time frame. But, don't stop there. Demand that each functional area develop the discipline to look at interactions from a 'total customer experience' perspective. You'll soon discover a networked organization that should have work flow linkages with other departments and information technology systems.

Manitoba, Canada discovered such linkages. Efforts are now underway to eliminate redundancies and bridge gaps in logical groupings of operations using technology as the intermediary - instead of at the expense of customer patience. Their Better Systems Initiative calls for a consolidated view for the citizens it serves, accessible from a broad range of electronic communications devices such as telephones, PCs, interactive TV, and electronic kiosks. Integration is the key. Family Services, in partnership with IBM Canada LTD, performed the necessary process re-engineering, system development, and infrastructure to integrate both provincial services and City of Winnipeg services into one common management system. Another effort integrates taxation, licensing, royalties and miscellaneous revenue services, for a common system to collect and record revenue, maintain customer receivables, and process refunds regardless of department.

For the same reasons, Ontario established a unique chief information officer structure to facilitate cross-boundary integration. The chief information officer for the province manages infrastructure, standards and strategy. Seven other chief information officers serve clusters of related ministries. These innovations help to break down the traditional department lines.

Integration requires both process integration and technical integration. The customer experience drives both. A business perceives the task "open a business" as a single objective with government, whereas government perceives it as multiple steps with multiple transactions. A customer perceives "pay my insurance bill" as a single

transaction, whereas the insurance company perceives it as "bill each policy type."

Those are process integration issues which demand management intervention.

Underneath process integration is technical infrastructure integration. What exactly does that mean? Yes, leaders need to understand the infrastructure integration side of the equation, at least from a high level, in order to lead. Your data center is likely professionally staffed, follows disciplined operating procedures around security, availability, reliability, scalability and performance standards. Web servers throughout your organization probably do not. Today's infrastructure is not up to the task of the tremendous growth that's coming soon -- ten times the number of people connected to the Internet; 100 times the current network speed; 1000 times the number of connected devices; and a million times the data. Calculate those numbers just for your jurisdiction. Can your technical infrastructure handle it? Not only do your databases and applications need to talk to each other, now the engines that drive them - the PCs, web servers, LANs, networks have to attain a new level of standards.

Today, most e-businesses are planning 99.9999% availability. That means systems are guaranteed to be up and handle the load 99.9999% all the time. When e-government comes of age, you cannot afford to have 90% availability. That's the equivalent of closing all your government offices a half day per week during normal business hours. What's more, in the e-government world, the workweek isn't 40 hours anymore. It's 168 hours -- 24 hours a day, seven days a week. Surveys show most e-government services are accessed between the hours of 8:00 PM and 2:00 AM. Your

data center may be open and staffed all night, but the web masters from the recreation or licensing department are probably home in bed asleep. E-government is a complete mindset change about how you run things.

Let's talk about loads and bottlenecks. Within the next 5 years, bandwidth will increase 150 times. When high speed access is commonplace the "Internet" won't be to blame for slow response or crashes because of seasonal peaks, uneven traffic, and increasing demand. All the stress will be transferred to your servers and your network. Now, think about the portal and all those transaction services pushed out to separate web sites, and the technical challenges become clear. The more agencies and servers involved, the less reliability you'll have if they are not part of a disciplined management structure. If just one server goes down in any one of the agencies at any step along the process, you can't complete that business permit application. It shouldn't be left up to the guy in the cubicle running today's web server. Hackers can find their way to any individual agency web server hosting a web site. Each web server needs to be integrated into the same standard IT operating procedures that you expect from the IT shop for security, availability, reliability and performance.

Another level of integration involves enterprise systems, such as finance, human resources, tax/revenue, and payroll. Countless organizations migrated to enterprise resource planning systems (ERP), or purchased package systems, to be Y2K compliant instead of rewriting twenty-year-old applications. Customer relationship management (CRM) has also come into the picture. CRM serves constituents through the phone, in

person and by mail with a single view to the customer using a variety of technologies. Database management has evolved to data warehousing (for data sharing) and to data mining. Most data mining initiatives (searching and comparing data from various sources) in government are for fraud and abuse prevention purposes. An example is cross checking tax bills and payments from various departments to see if taxes are refunded from one system, while outstanding balances are due in another. E-commerce applications (online renewal and payment for licenses, for example) came of age, extending legacy platforms and functionality without necessarily changing the legacy systems themselves. Now we have new technical silos. These need to be integrated. For example, e-commerce web sites should be part of overall customer relationship management. Right now, odds are they are handled separately. Data mining capability should extend across ERP systems and e-commerce sites so you have a grasp of how your enterprise is actually functioning as a whole. This capability is known as business intelligence or knowledge management. Integration provides a whole new management resource across government.

Expect to invest significant funding for integration. Hardware, software, security, scaleability, reliability, skilled personnel, integration of process and technical infrastructure -- that's what it takes to run an e-government. You can't get there with today's environment built for a physical government. We spent decades establishing processes and procedures to operate physical governments. Now we are shifting to a brand new paradigm. The good news is that the savings, rewards, and returns far outstrip the investment required.

Milestone Two: Economic Development

On the road to e-government, Digital Age economic development generally has five dimensions -- leveraging small and medium-sized businesses, education, attracting high tech industry, access to technology infrastructure, and a business-friendly government.

Economic development used to focus on attracting a few large corporations to build plants and bring jobs to a jurisdiction. Although still a building block, the tide has turned toward small and medium-sized businesses - the fastest growing economic sector worldwide. Jurisdictions may have from hundreds to potentially tens of thousands of small businesses within their boundaries. If each one has the opportunity to grow into a "clicks and mortar" enterprise, and adds just one new job per year, the result is overall healthy economic growth.

What do these small businesses need and how can government leaders help? To transform into e-business, small and medium sized companies need affordable expertise and technology - web development, e-commerce applications, hosting, and high-speed Internet access. Individually, small companies have little bargaining power. But together, through organized aggregation of demand, negotiated affordable packages for these capabilities can become a reality - perhaps a citywide or statewide

services contract for small businesses. Governments, in collaboration or working through private and nonprofit sectors can facilitate such bargaining power.

Helping small and medium sized companies become e-businesses is one thing. Establishing brand recognition is quite another. In the economic shift to e-business, small and medium businesses are losing customers to big, heavily-advertised Internet brands. Search engines are still primitive and frustrating. Chances are the local resident will go directly to a known Internet brand instead of searching for local e-businesses. When an out-of-state online transaction occurs, lost sales taxes are only one part of the problem. Those companies are also not paying state income taxes or business license fees. They don't employ your resident citizens. Their employees aren't shopping at your local malls. There is a lot of economic growth (or loss thereof) associated with an online purchase. The solution is not simply changing sales tax laws. It's helping businesses get online and then getting them connected with your citizens. One way to do this is building upon Milestone One - integrate from your citizens' perspectives. Provide easy citizen access from the government portal to reach local businesses. Feature a "small e-business of the week" on the website. Have a robust enough portal, and these small businesses will enjoy not only brand awareness of residents, but will enjoy access to new customers and business partners outside the jurisdiction. This effectively bridges "local" to "global" for business development and economic growth.

Building a competitive workforce to fill newly created jobs is the companion strategy to leveraging small businesses and attracting industry. The Information Technology Association of America estimates, in the United States alone, ten millions jobs are associated with the Internet; and, 850,000 vacancies exist. People no longer have to work where they live. A digital workforce is emerging where jobs can be filled anywhere in the world. The dramatic and growing shortage of skills affects every country, every state, every city. Jobs displaced in the digital economy are being replaced with new Internet-related jobs at much higher pay. Education, of course, is key and why it has become a number one priority of government leaders everywhere. An education system that produces a competitive workforce is undeniably core to economic growth. For example, governments are rethinking degree program caps to encourage more science, math, engineering, and technology graduates.

Governments also need strategies to attract new knowledge workers and high-tech businesses into their jurisdictions. The Commonwealth of Virginia has been particularly successful in attracting and growing a high-tech industry base. Today, nearly 50% of the world's Internet traffic flows through Northern Virginia. The area is home to America Online and thousands of other high-tech companies. Fortune magazine referred to Virginia's "netplex as a dense pattern of interaction and partnering among firms in a highly dynamic telecommunications industry, a rapidly emerging Internet industry and what is probably the most highly developed concentration of systems engineering capabilities in the world."

Leadership for this strategy has spanned nearly two decades and several governors' administrations. In 1984, the Center for Innovative Technology was established as a nonprofit organization designed to enhance the research and development capability of the state's major research universities. Ten years later the CIT adopted a new mission that measured success in terms of jobs created, companies created and competitiveness created for Virginia's businesses. Within three years of the new focus, Virginia businesses created 9854 new jobs, 222 new companies and \$278M in competitiveness. In 1998 another 10,609 jobs were created, 132 new companies and \$1.9B in competitiveness. Virginia has become a hot spot of technology because of its relentless focus on developing the workforce, creating the infrastructure, maintaining an entrepreneurial climate, and deploying technology. Governor Gilmore, elected in 1997, has made technology a top issue of his administration. In his first year in office he created the Commission on Information Technology, charged with developing a comprehensive technology policy for the Commonwealth. The governor issued an executive order creating the nation's first Secretary of Technology. In 1998, Donald Upson was appointed to that post, responsible for coordinating public sector information technology resources while also working with Virginia's fast growing information technology private sector. In 1999, the state's Internet Policy Act was signed into law, becoming a model for other states.

As a result of these leadership strategies, venture capital grew from \$400 million in 1997 to \$1.6 billion in 1999. Between 1992 and 1998, the number of technology firms increased an average of 10.2 percent annually. A 2000 report by *Technology in*

Virginia's Regions reported 4,324 technology firms in Virginia employing 386,241 people. *Virginia Economic Trends* reported in first quarter, 1999, the average earnings per technology employee was \$65,021, or almost two times the state's overall average. Two new task forces, created in 2000 by the Governor and Secretary of Technology, take the strategy even further. "From Main Street to E-Street" and the "E-Communities" task forces are exploring ways to engage every town, city, county, business and citizen in the Commonwealth - both rural and urban - to reap the benefits of economic growth in a global digital economy. By 2003, Virginia is expected to have nearly 423,000 technology workers, earning \$26.4 billion. Leadership is clearly working in Virginia.

Creating a business friendly climate extends to traditional government-to-business interaction. How easy is it to research traditional economic development information -- available office space, transportation systems, air quality, crime rates, workforce statistics, school systems, residential housing costs? Is it in one convenient place?

Businesses typically have many more interactions with their governments each year than the average citizen. Therefore, another new decision criterion for deciding where to locate a business is whether a government demonstrates it can move at the speed of business. E-businesses operate in compressed time. If it takes 120 days for a government to approve a building permit when the business has to be operational within one web year (90 days), logic dictates the business will decide to locate in another jurisdiction that is more business friendly.

Milestone Three: E-Democracy

The manifestation of e-democracy stretches across the spectrum of democratic process. No e-government vision is complete without attention to digital democracy.

The spectrum ranges from voter registration, voting, public opinion polling, communication among elected representatives and their constituencies, universal access to technology, wired legislative bodies, and legislative processes that encourage greater citizen participation. Online hearings, submitting expert testimony online, opinion polling and open communication and information provide opportunities for real-time participation throughout the democratic process - not simply disseminating information after the fact. There's a big difference.

From John Locke to Thomas Jefferson, the foundation of democracy is an informed and engaged citizenry. Governments receive high marks for making information accessible online. But, much more needs to be done. Improved two-way communication between constituents and representatives and better ways for citizens to engage in legislative process are part of becoming an e-government. The following "Top Ten E-Democracy To Do List," is good advice about how to integrate digital democracy into e-government strategies:

Top Ten E-Democracy To Do List

Steven Clift, Democracies Online, www.e-democracy.org/do

1. Announce all public meetings online in a systematic and reliable way. Include the time, place, agenda, and information on citizen testimony, participation, or observation options. Use the Internet to build trust in in-person democracy.
2. Put a "Democracy Button" on your site's top page which brings them to a special section detailing the agencies/government units purpose and mission, top decision-makers, links to enabling laws, budget details and other accountability information. Share real information that help a citizen better understand the legitimacy of your government agency and powers and how to best influence the policy course of the agency. This could include links to the appropriate parliamentary or local council committees and bodies.
3. Implement "Service Democracy." Yes, most citizens simply want better, more efficient access to service transactions and information products your agency produces. Learn from these relationships. Actively use comment forms, online surveys, citizen focus groups to garner the input required to be a responsive e-government. Don't automate services that people no longer want or need. Use the Internet to learn about what you can do better and not just as a one-way self-service tool designed to limit public interaction and input.
4. End the "Representative Democracy Online Deficit." With the vast majority of government information technology spending focused on the administrative side of government, the representative institutions from the local level on up to the Federal government are growing increasingly weak. Invest in the technology and communications infrastructure of those institutions designed to represent the people.
5. Internet-enable existing representative and advisory processes. Create "Virtual Committee Rooms" and public hearings that allow in-person events to be available in totality via the Internet. Require in-person handouts and testimony to be submitted in HTML for immediate online availability to those watching or listening on the Internet or via broadcasting. Get ready to datacast such items via digital television. Encourage citizens to also testify via the Internet over video conferencing and allow online submission of written testimony. The most sustainable "e-democracy" activities will be those incorporated into existing and legitimate governance processes.
6. Embrace the two-way nature of the Internet. Create the tools required to respond to e-mail in an effective and timely manner. E-mail is the most personal and cherished Internet tool used by the average citizen. How a government deals with incoming e-mail and enables access to automatic informational

notices based on citizen preferences will differentiate popular governments from those that are viewed as out of touch. Have a clear e-mail response policy and start by auto-responding with the time and date received, the estimated time for a response, what to do if none is received, and a copy of their original message. Give people the tools to help hold you accountable.

7. Hold government sponsored online consultations. Complement in-person consultations with time-based, asynchronous online events (one to three weeks) that allow people to become educated on public policy issues and interact with agency staff, decision-makers, and each other. Online consultations must be highly structured events designed to have a real impact on the policy process. Don't do this for show. The biggest plus with these kinds of events is that people may participate on their own time from homes, schools, libraries and workplaces and greater diversity of opinions, perspectives, and geography can increase the richness of the policy process. Make clear the government staff response permissions to allow quick responses to informational queries. Have a set process to deal with more controversial topics in a very timely (24-48 hours) fashion with direct responses from decision-makers and top agency staff. Do this right and your agency will want to do this at least quarterly every year,, do it wrong the first time and it will take quarter of a century to build the internal support for another try. Check on the work in Canada, The Netherlands, Sweden and United Kingdom in particular and you'll discover governments are up to some exciting work.

8. Develop e-democracy legislation. Tweak laws and seek the budgetary investments required to support governance in information age. Not everything can be left voluntary – some government entities need a push. What is so important that government must be required to comply? There is a limit to what can be squeezed out of existing budgets. Even with the infrastructure in place the investment in the online writers, communicators, designers, programmers, and facilitators must be increased to make Internet-enhanced democracy something of real value to most citizens and governments alike.

9. Educate elected officials on the use of the Internet in their representative work. Get them setup technologically and encourage national and international peer-to-peer policy exchanges among representatives and staff. Be careful to prevent use of this technology infrastructure for incumbency protection. Have well designed laws or rules to prevent use of technology and information assets in unknown ways. Don't be overly restrictive, but e-mail gathered by an elected official's office shouldn't suddenly be added to a campaign e-mail list.

10. Create open source democracy online applications. Don't waste tax dollars on unique tools required for common governmental IT and democracy needs. Share your best in-house technology with other governments around the world. Leverage your service infrastructure, be it proprietary or open source, for democratic purposes. With vast resources being spent on making administrative

government more efficient, a bit of these resources should be used "inefficiently." Democracy is the inefficiency in decision-making and the exercise of power required for the best public choices and outcomes.

Legislative bodies are beginning to understand how technology can transform themselves as members gather to debate and vote in floor sessions. In most cases, the predominant use of any technology inside legislative bodies is limited to electronic systems to tabulate floor votes. Even then, output from these aging systems many times must be manually entered into other systems for reporting purposes and then translated into a different format for posting to websites. New technologies allow legislators - during formal sessions - to communicate silently with staff back in their offices, conduct real-time research on issues on the Internet, negotiate terms with members of their own or opposing parties while debate continues. Wisconsin and other governments have begun to outfit all legislators with laptop computers.

Components of the electoral process - campaigning, communication with constituents and the media, coordination of volunteers, solicitation and collection of campaign contributions, voter registration and voting -- are also facets of the e-democracy milestone. According to a September, 2000, Council for Excellence in Government report, "E-Government: The Next American Revolution," nearly 59 % of Americans oppose voting online. However, given the experiences during the November, 2000, United States' Presidential election, clearly voting reform is an issue.

In the United States, over three thousand counties currently deploy voting at over 200,000 polling sites. Technologies range from punchcard, optical scanning, lever, direct recording electronics to paper ballots. Many of these are aging or obsolete

systems. Few, if any, standards exist, even within states. Security, privacy and sheer infrastructure issues will delay widespread "i-voting," or voting over the Internet. Voting systems will likely evolve first to "e-voting" solutions, or more reliable electronic voting systems located at the polling place. Upgrading voting systems, requires a leadership commitment to funding and standards.

The collection and counting of votes is only one part of the challenge. Many times, changes made to traditional voter registration systems (such as address changes) are not processed in time for election day. Redundant voter data may exist in several locations within a state (if voter moves). These are straightforward database design and integration issues, relatively easy and inexpensive to correct. Many jurisdictions also overlook the importance of human interface design. This step is critical whether the interface is between a voter and a paper ballot, a machine, or a computer screen.

Milestone Four: E-Communities

Government is intrinsic to community in fundamental ways. Public safety, public health, parks and recreation, elderly and youth services are tangible examples. But, government is also integral to the very basic quality of life including equal opportunity, education, diversity, and even seasonal celebrations. Who doesn't appreciate the community camaraderie of a "County Fair" and its social importance? Any commitment to e-government should extend to enriching the communities government serves. People are not just citizens of a government. They are parents, families,

volunteers, neighbors, consumers, students, sports enthusiasts, senior citizens, children, and members of religious and social institutions - forming communities of interest within a geographic community. Together they weave the rich tapestry of geo-community, the cornerstone of society. The definition of community at the local government level is different from a state, provincial or national community, but each has important sociological implications. Regardless of government level, facilitating e-communities is a strategic ingredient of e-government.

Internet technologies offer unparalleled opportunities for government to enhance communities. Once the e-government technology infrastructure is in place to offer online services through a website portal, the marginal cost of adding additional components becomes very small.

In February, 1999, the Government of Canada announced a nationwide Smart Communities initiative. Sixty million dollars over three years are earmarked for one Smart Community demonstration project in each province, one in the North, and one in an Aboriginal community. These projects are designed to pilot how information and communication technologies can be harnessed by communities across Canada to support economic development and to enrich community life for Canadians.

Canada defines a smart community as follows:

A Smart Community is a community with a vision of the future that involves the use of information and communication technologies in new and innovative ways to empower its residents, institutions and regions as a whole. Communities around the world are responding to the needs of their citizens

by discovering new ways of using information and communication technologies for economic, social and cultural development. Communities and countries that take advantage of these new technologies will create jobs and economic growth as well as improve the overall quality of life within their communities.

Since 1992, Naestved, Denmark has launched an impressive series of integrated e-community initiatives -- spanning government, private, and commercial interests -- to would attract investment, bring the information society one step closer to reality, and plug into the heart of the emerging digital economy. Beginning in 1992, with a new mayor and a new vision, an e-community groundwork was laid with an intranet. A Lotus Notes platform (collaboration software) for employees citywide was installed in 1994. In 1995, CityNet was created -- a joint venture with Naestved, Cable TV, TeleDenmark -- which provided cheap, high-speed Internet access to any household or business within city limits. In 1996, NaestvedNet (a semiprivate company owned by the regional newspaper, telecompany and municipality) drove the creation of the NaestvedNet Business Council to stimulate growth of local businesses. The Business Council offering education, technical support, and affordable web services for small and medium buisnesses to get online. In 1997, the city website (www.naekom.dk) was designed to provide self-services. "New Pathway" centers were established to serve the physically impaired, senior citizens and the unemployed. PCs were installed in all libraries and youth data centers opened. In 1999, Naestved was approved as an EU pilot -- Open Digital Administration -- to implement digital signatures using Tivoli public key infrastructure giving citizens secure access to case processing applications, including intelligent forms (data automatically filled in). In 2000, Naestved created interactive virtual classrooms using Learning Village technology offering distance

learning to technical, trade and business schools in surrounding cities. With sustained leadership over nearly a decade, Naestved has become a model e-government.

Access or "digital divide" issues are paramount issues for government leaders. The digital divide has many facets. There are geographical, income, social, age, language, and gender aspects to the digital divide. Governments need to understand the manifestations and implications of each within their particular jurisdictions and take corrective measures.

Infrastructure is perhaps the single most important overall e-community enabler for residents, businesses, healthcare facilities and educational institutions to thrive in a digital economy and society. As the next generation Internet unfolds, rural communities, in particular, face significant access challenges. Like their small business counterparts, individual rural communities with small populations have little bargaining power with high-speed providers. Governments are exploring ways to facilitate aggregation of demand by region to attract providers. Canada's Alberta Province has embarked on a SuperNet project, a public/private partnership to extend high-speed access to the far corners of the province -- part of a larger community and economic development strategy.

The Computer Systems Policy Project (CSPP) is a public policy advocacy group comprised of chairmen and chief executive officers from America's leading information technology companies. Their "Readiness Guide for Living in the Networked World" is a

self-assessment guide to assist communities in achieving "connectedness" in today's networked world (www.cspp.org). The CSPP characterizes four stages of e-community development across a variety of criteria including network infrastructure (residential, commercial, wired/fixed/wireless, mobile wireless), access and applications (business, government, K-12, higher ed, health, home), networked economy (innovation, workforce, consumer) and enablers (ubiquity, security, privacy, policy).

Milestone Five: Intergovernmental

The intergovernmental phenomenon is just beginning and is a core ingredient of e-government. As boundaries of all sorts blur, those between and among governments are perhaps the fuzziest. When this topic arises, I'm reminded of a family trip from Virginia to Florida with an unusually chatty pilot. As we flew down the east coast, he would announce the flight's progress over each state along the way. Looking out the window, my six year old son asked me "How does he know? Where are the lines?" I realized he meant the outlines of the states as they appear on a map. In many respects, the "lines" are truly transparent. Physical world problems of disease, insects, global warming, and pollution know no boundaries. Couple that with technology that knows no boundaries and the effect on governance is profound.

At the global level, quasi-governmental bodies are emerging to pool knowledge and resources to combat global problems. Within countries, there are growing needs to integrate national, state/provincial and local government operations, services and

technologies. Citizens and businesses need to interact with all levels of government. Therefore, any robust e-government agenda must address intergovernmental linkages.

Now is the time to launch the first pilots and begin meaningful intergovernmental deliberations around common processes and services. Within numerous states in the United States, such dialogue has already begun in the form of intergovernmental committees that meet to identify e-government opportunities, and address issues, infrastructure and integration. Some states offer city services on their websites. Others help the citizen or business navigate to the right place through personalization techniques such as zip code identifiers. Intergovernmental topics are on the conference agendas of nearly every national association. For example, in 2000, the National Association of State Information Resource Executives (NASIRE) held roundtable discussions with representatives from other national associations serving municipal levels of government. Regardless of the government level, these initiatives need to be encouraged and supported with new funding mechanisms for intergovernmental initiatives.

The stakes inherent in intergovernmental integration include not only citizen convenience, but also leveraging businesses. As economic competition heats up, reducing the time and financial burdens of complying with multiple levels of government regulation is a distinct advantage. The sheer weight of government can be lifted from businesses to make them faster to market, to open new international markets, and to enable higher performance in ongoing operations.

Milestone Six: Policy Environment

Creating the legal framework is another pillar of e-government success. Old laws have to change. New laws are needed. And perhaps, more importantly, legislative restraint is sometimes the best course of action in these still-early stages of a global networked economy. Members of oversight bodies need education and guidance on Internet-related policy issues. A flurry of fundamental issues, including taxation, digital signatures, authentication, privacy, the digital divide, international trade, consumer protection, intellectual property rights, and telecommunications deregulation have appeared on the legislative agenda of virtually every country, state/province and local governing body. Yet, a 1996 study commissioned by IBM's Institute for Electronic Government and conducted by the Strategic Computing and Telecommunications in the Public Sector program at Harvard's John F. Kennedy School of Government found that fewer than seven percent of legislators felt personally knowledgeable to consider such decisions. Although this figure has likely improved since 1996, it remains a challenge and, in many cases, a barrier to progress.

National associations, public/private institutions, public policy organizations, and think tanks have become core resources studying and advising lawmakers on policy issues. One successful model is the public-private United States Internet Council (USIC) initiative. Funded by the private sector, the nonprofit USIC not only educates elected officials, but forms a network of legislators among the fifty U.S. states to share model

legislation and best practices. Specific committees and caucuses were established in state legislatures to be the center of gravity for all Internet related bills. Technology is no longer subjugated as an afterthought to a standing committee whose main purpose and member expertise is in some other domain. The USIC also bridges state legislatures with the United States Congress for intergovernmental coordination of Internet-related legislation.

According to "E-Government: The Next American Revolution," prepared by Hart-Teeter for the Council for Excellence in Government in September, 2000, 66% of Americans are concerned about the possibility of hackers breaking into government computers, making this the number one public concern about e-government. Fifty-three percent are concerned about potential for less personal privacy. Managing 'security' is the first challenge. But even more important will be coming to grips with privacy policy issues and maintaining public trust. Workable solutions can be found. Poorly crafted privacy legislation will limit individual choice and restrict data flow that is critical to a robust information-based economy. Targeted privacy initiatives can preserve choice, boost consumer confidence and educate consumers.

Milestone Seven: Next Generation Internet

Milestone Seven is the capstone of a competitive e-government strategy. It not only depends on progress toward other milestones, it's the one that will set governments

apart in the future. Keep an eye on the horizon. If you define e-government in today's environment, your government will never be a leader. High-speed connectivity is opening wide the doors to the next generation Internet. Imagine a billion people connected to the Internet - all by dozens of devices and video as ubiquitous as the fax is today. Satellites and wireless interconnecting everyone and everything.

In this new environment, imagine a road crew in the field linked by video conference - on the screen of a handheld wireless device - both with the supervisor back in the government office and the contractor two states away. By streaming live video of the construction site, and sharing engineering drawings, on-the-spot design changes can be made. Citizens will no longer just click on a form. They'll click an icon and a live government service representative will appear on the screen to help. That's the future of e-government.

Most people still confuse the Internet with the World Wide Web. Today, 95% of people view the Web through their PC browsers. That will drop to 40% in five years. Japan is the first country to have broken through that barrier. By March, 2000, more than 50% of Internet access in Japan was through devices other than the PC. Pagers, TVs, personal data assistants, and phones are now browsers. McKinsey predicts sixty percent of homes in the United States will have access to high-speed Internet by 2003. Based on waiting lists for DSL installation, evidence points that it will likely happen sooner.

The printing press cut the cost of information distribution by 99 percent. Likewise, the Internet cut the cost of disseminating information by 99 percent. And, the Next Generation Internet will do that again -- it will cut the cost of information by another 99%. IBM's research team predicts a million-fold increase in the number of bytes of data available on the Internet in the next 10 years. The pace of change is unlike anything we have encountered before, and is accelerating. The Next Generation Internet is characterized by seven trends: Fast, Always On, Everywhere, Natural, Intelligent, Easy, and Trusted.

Fast

"Today, most users of the Internet spend a large percentage of their time online waiting - waiting to get connected to a web site, waiting for pages to load, waiting for software to download. In contrast, the Next Generation Internet (NGI) will provide the necessary speed - in other words, eliminate the "World Wide Wait".' (John Patrick, IBM)

It took roughly 15 years to increase bandwidth 10 times. Within the next 5 years, bandwidth will increase 150 times. The quality of video over the Internet will increase commensurately. Content management and distribution will be forever changed. When video over the Internet is as common as email and as crisp as TV reception is today, a major shift in applications will occur. Nearly every agency of the City of Vancouver already has an impressive archive of video stored on their website - even pets up for adoption at the animal shelter! From our studio in Washington, DC, the Institute for Electronic Government website features an array of video talk shows, speakers and panels at national conferences, and mini-series on a variety of e-government topics.

For example, today, citizens must passively watch hours of scheduled televised legislative proceedings just to see one portion that may be of interest. Already technology exists whereby citizens can search and retrieve (or translate to text) just that portion of a video stored on a website that is of interest to them and simultaneously view related reference material. IBM's Cue Video, for example, uses not just voice recognition software, but also domain knowledge and machine learning to create a high-level search, browsing, and retrieval capability - of both text and visual objects.

Always On.

Very soon, you'll access the Internet without an elaborate dial-up or log-on sequence. Websites and applications will always be on, instead of vanishing and reappearing depending on network load. This means that citizens and businesses will have continuous instant access to you and your services - no matter where they are or what time of day.

That affects how you staff your agencies, the definition of a workday, and where you locate staff. Face to face will have a new meaning - it just won't be over a counter anymore. Face-to-face will be over Internet videoconferencing. And, if your agency isn't yet fully available 24 hours a day, seven days a week -- it soon will be.

Everywhere.

"Sooner than you may think, almost everything you purchase that's worth more than \$10 or \$20 – a refrigerator, a shirt, or a bicycle – will contain a tiny chip that can communicate via a wireless link to the Internet. In such a world, connectivity is as common as air, and your watch, trees – even your dog – radiate data. Your watch

could serve as a pager. Sensors on trees around your house could tell you – or your sprinkler – that the trees need watering. Your dog's collar could tell you where he is. Best of all, your lost car keys will be able to tell you where they are.' (John Patrick, IBM)

This is pervasive computing, and it's a game-changing development. Computer scientists see it approaching a kind of mathematical extreme in which Internet-connected, microscopic chips will literally disappear into all the things around us. The signs are already here. Today, the electronics of a car cost more than the mechanical parts. And it's growing.

The New York State Division of Parole is already there. Using a small handheld device, parole officers can soon take pertinent information with them out into the field, and process information remotely. The information is accessible to the officers when and where they need it most, delivered in a way that is safe and convenient. Their hands are free. If you are a parole officer, that's important. And, there is no laptop to lug around.

Natural

Today, people adapt to technology. We accept that it is often difficult to use. Soon, technology will adapt to people and become much more intuitive and easier to use. In many cases, you won't even realize you are using it. It will be natural. Technology will learn how to interact and adapt to you. The content available to us will become richer and more meaningful, and the delivery of that content will mirror much more closely the interactions that we experience in everyday life.

Human interactions, that have largely been missing from technology, will start to emerge. E-meetings, in which people communicate and share information through real-time video connections on the Internet, are a good example. At IBM, e-meetings are becoming more and more frequent where employees can interact live, face-to-face with colleagues from around the world, and even share content -- documents, spreadsheets, web-pages -- in real time, while still honoring the very real need for security and privacy. In 2000, a worldwide e-meeting replaced a 4,000 person face-to-face meeting. The results received high marks on content delivery, convenience, and education modules. It saved over \$3 million in cost avoidance.

Think of implications for computer-based training and distance learning. One of the biggest challenges of computer-based training is that the person who would normally tailor material to your needs, interests and abilities -- the teacher -- has been largely removed from the equation. Imagine if a computer 'teacher' could sense your boredom -- either by a wandering mouse, or possibly even a reduced heart rate -- and speed up the material or make it more challenging? And on the other side, what if the computer could 'see' the anxiousness in your face -- possibly by monitoring galvanic responses -- and slow the material down, or go into a specific topic more in depth? Distance learning will be leveraged with high-speed video capabilities, bringing the professor, classmates, and live class interactions, right to your screen in conjunction with course content and reference material.

Intelligent.

Not far off, with an intelligent infrastructure, when I walk up to a device, it will register who I am, load my preferences, and customize the interface for me. It's like walking up to a bank ATM, and not having to tell it your language is English - or having to enter your PIN. It will already know that.

Today, information on the Internet is largely unstructured. New standards are emerging for encoding Web pages in a way that provides context to the pages. With that capability, web sites can begin to act on behalf of people to find solutions to problems. Organizations will be able to provide more targeted and higher quality services.

An intelligent infrastructure, coupled with increased computing power, will allow a much more personal vision of government to constituents. When a constituent interacts with an e-government, information that is relevant to them will be presented. The interface will be tailored to their needs and desires. And the interface will be intelligent enough to bring things to their attention that they might find relevant.

The ability to capture and retrieve nontraditional types of information will also be increasingly important to governments as the baby-boomers begin to retire. As more and more employees leave the workforce, knowledge management becomes critical to capture expertise built up over the years as an organizational asset..

Easy.

"In the future, when we communicate or transact business using the Internet, the whole experience will flow easily from one step to the next. Software and applications will be able to talk to one another and work across time and distance. There will be no need to reenter data repeatedly or worry about formats or reboot because your Web browser caused your e-mail software to crash. The seamless integration of applications will enable us to get things done quickly, effectively, completely – and in the most productive way possible." (John Patrick, IBM)

E-government is not just about creating portals. Complex legacy systems need to be modernized to take advantage of emerging technologies. Open standards and open systems will ensure that information flows seamlessly across departments and agencies -- as well as up and down the jurisdictional chain.

Trusted

The Internet is a public medium today, but will evolve into a public infrastructure serving public and private needs. The private needs will be met through enhanced understanding of personal preferences - even down to mood sensing and psychological profiling - and enhanced content delivery. The challenge is to protect both streams of data - personal collection and content delivery - over a public network.

Technology is rapidly moving toward finding solutions for security issues...ensuring that citizens identities can be unquestionably verified over the Internet (through Digital ID's), and that information that travels across networks can be secured beyond a reasonable doubt. Solutions for more complex issues associated with privacy, unfortunately, are lagging behind. When voice, video, and alphanumeric data all travel over the network, every online transaction has privacy implications - rights, control over collection,

dissemination, and publication of personal data. The issue facing everyone, and governments in particular, is trust. How do you establish not only security solutions, but also policy models that safeguard privacy as more and more information is collected and shared?

Conclusion

These seven milestones will take you to e-government. Guaranteed. But, make no mistake. It will take nothing less than enormous leadership effort. Consider the Commonwealth of Virginia and Naestved examples. Their successes resulted from sustained leadership over a ten-year period, spanning different political party administrations, and substantial financial investments. Based upon the returns and rewards they are reaping today, it was a very small price to pay.

Be wary of shortcuts and detours. New entrants into the public sector marketplace will come and go over the long run. While trendy quick-fixes may be enticing, nothing replaces taking the future into your own hands with steadfast determination and specific goals. How fast you progress toward e-government is directly proportionate to funding. Solid business cases can be made for that investment. And, finding the right partner is critical. Governments face an almost insurmountable resource gap. Even the private sector faces a critical worldwide shortage of skilled resources. To expect to affordably "own" the skilled resources needed to meet the coming challenges is unrealistic. In addition, governments cannot effectively keep pace with technological change and

meet those challenges alone. Therefore, solid technology partners are essential -those who can best help navigate unknown challenges ahead.

These are exciting times. With a little foresight, an aggressive approach toward each milestone, the right partner -- and maybe a little luck -- e-government is within grasp.