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Chapter 2: Using Teleworking for a Greener, More Efficient Government

In this chapter, we'll review some of the trends and business process changes that are driving the implementation of teleworking solutions in the government sector. Three specific areas of interest are noteworthy:

- Shrinking budgets
- Growth and acceptance of teleworking
- Environmental considerations

Government budgets are shrinking. Attention to fiscal responsibility is high. Accountability for investment is on the minds of everyone. The business case for telework is, first and foremost, a case for controlling operating expense and increasing productivity.

Teleworking has steadily grown as a popular business tool over the past 20 years. The business case for teleworking is well known and widespread. We'll review some areas of government wherein teleworking makes very specific sense as a tool for managing both the budget and the workforce.

Greenhouse gasses and the shrinking ozone layer have driven leaders everywhere to consider how to lower the impact we have on the planet. Implementing a telework program presents an opportunity for federal, state, and local agencies to reduce their carbon footprint and take a "green" approach to government business.

The passing of Public Law 107-347 in December of 2002 placed e-Government strategies at the top of government agencies' tactical and strategic plans. Since that time, networking and telecommunications technologies have advanced quickly. Mobile devices are abundant. Wireless has created new ways of working. Technology has created a new generation of teleworking tools that simply didn't work in 2002.

The Government Business Case for Teleworking

In the earliest stages, teleworking was a concession offered to a select few employees under special circumstances. That isn't the case today. It's an alternative approach to work that provides flexibility in meeting business objectives while resulting in other benefits to organizations, managers, and employees. Because of this proven success over time, senior executives and managers include teleworking or telecommuting plans as part of strategic planning.

Teleworking is not just for private-sector business and small groups. Fortune 100 enterprises and very large government agencies have integrated telework plans and policies to meet the needs of business as well. For some employers, budgetary requirements created a reason to consider teleworking. For other groups, factors such as employee morale or incentives are vital to success. Whatever the primary reason, there are many factors that warrant integration of teleworking into business workflows as part of daily operations.

Evolution of the Way We Work

Consider the evolution of mankind and how we've worked across the ages through which we've passed.

The Agricultural Age

In the agricultural age, we lived off the land. It doesn't matter whether mankind was living in small communities of hunter-gatherers or tilling the land as serfs around a noble's castle, our society was based around agricultural activity. We all worked during the daylight hours because that's when we had to work. Sunlight controlled our productivity. Although the actual work day may have varied in different parts of the world, our work was controlled by the sun.

The Industrial Age

Machinery came into play and changed how we live and work. Beginning as early as Gutenberg's mechanical printing press, which in some ways signaled a shift toward information and services, the industrial age took many years to come to fruition. As society became more attached to machinery, we invented incandescent lighting, creating virtual sunlight. Henry Ford's assembly line coupled with machines catapulted us into the full-blown industrial age. Work transitioned. It was no longer restricted by daylight hours with a daylight-only work shift. The work day became a cycle of virtual periods known as day, swing, and graveyard shifts. Man could now work around the clock.

The Pre-Information Age or Communications Age

Overlapping with the Industrial Age, technology progressed along a nearly parallel, often intersecting path. The variety and availability of communications media exploded: telegraph, telephone, radio, and television became widely available. Telecommunications grew from personal calling to large business systems and a vast network spanning the globe. In support of the transmission of data, technology-enhanced service industries grew as information became a more and more viable commodity.

The Information/Interactive Age

The information age is highly interactive. Communications technologies are a cornerstone of this service and information-oriented era. Technology has changed our work again. Today, virtual teams work around the world on a 24-hour clock. It doesn't matter whether there's a 3- or 4-hour time difference across the continent or a 12-hour difference around the world. Work can be *time-shifted* to any time. In the services and information sectors, work has become *asynchronous*. It isn't constrained by daylight or the clock.

Our work is also different in another way: With the widespread availability of voice and data network services, work is not commonly *place-shifted*. We don't just work any time. We work any place. From the headquarters building to satellite offices; from home to the local coffee shop; we work wherever we need to work in this interactive information age.

The global economy continues to value information and much of the economy's growth is due to information-based businesses. Some recent estimates indicate that for every 10% increase in wireless broadband deployment, the global economy grows by 1%. Although the actual number may be higher or lower in any given instance, this example shows that the actual numbers from one sector within the networking and telecommunications field have a large impact on our world. Coincidentally, the wireless sector is a sector that also empowers teleworking.

The global economy isn't just supported by technology. It's increasingly information based. As information can be accessed from anywhere, physical constraints of where we work are removed. Work has become portable. The need for a central base of work operations isn't necessary in information jobs or service jobs that rely on information.

Real estate cost has always been a telecommuting factor. Offices are shrinking. As computers shrink, even desktop space is diminishing. Remote access technologies are becoming more and more secure. Connectivity costs are decreasing. The computer and communications tools that make teleworking easy and affordable also enable communications with coworkers, supervisors, managers, customers, and suppliers. Factors continue to converge making teleworking more practical.

When building a business case for a teleworking program, there are several objectives most government organizations include:

- Can be a benefit for potential new staff at a time when government payrolls limit salaries
- Can increase the likelihood of retaining experienced, quality staff
- Can deliver better service to the public
- Often increases productivity and efficiency
- Solves staffing problems during peak periods and non-standard work hours
- Ensures continuity of operations in the events of a disaster or emergency

- Reduces square footage of office space
- Lowers operating expense (OpEx)
- Creates virtual networked organization for flexibility in workload handling
- Meets environmental obligations by reducing the number of employees who may be driving a car individually

Case Studies

The U.S. Patent and Trademark Office uses telework as a cost-effective way to manage human capital, boost productivity, and improve the quality of employee lives. See

http://findarticles.com/p/articles/mi_m0HTO/is_4_36/ai_n25019149/ for “Versatile Bureaucracy: A Telework Case Study.”

There are supportive initiatives in place in several Canadian municipalities. Calgary, Alberta is a leading example. Non-governmental organizations are also active in raising awareness of telework benefits and best practices among Canadian employers (See <http://www.tc.gc.ca/programs/environment/utsp/teleworkcanada.htm>).

Booz Allen compiled a comprehensive report for the US Federal Government entitled “Final Report on Technology Barriers to Home-Based Telework.” This report includes details describing the approach, logistics, and assessment of teleworking technologies, CIO interviews, coordinator focus groups, questionnaires, and case studies (See <http://www.telework.gov/Reports and Studies/IT Report/method.aspx>).

Practical gains experienced by government agencies adopting teleworking fall into three distinct areas: productivity gains, economic efficiency, and flexibility (see Table 2.1). Some of these gains are easily measured through standard business metrics for OpEx and Capital Expense (CapEx). They are a direct part of the Return on Investment (ROI) realized by adopters. Other gains indirectly impact OpEx or CapEx. Some are more challenging to directly measure, but the gains achieved are often significant.

Teleworking delivers benefits beyond the employer. Employees gain reduced commute times and costs, increased job satisfaction, increased productivity, balance of work and home life, better overall health, and increased sense of value and loyalty to the agency. The local community also benefits from reduced traffic congestion, conservation of gasoline, reduced air pollution, and increased job opportunities for previously untapped labor resources (for example, flexible work time available, stay at home mothers, disabled, part time, and retired).

Productivity Gains	Economic Efficiency	Flexibility
More work accomplished <ul style="list-style-type: none"> • Increased focus • Decreased distractions 	Reduced hiring/replacement costs <ul style="list-style-type: none"> • Relocation expense • Hiring costs • Training time & expense 	Less downtime <ul style="list-style-type: none"> • Work on snow days • Work during sick leave • Work remotely • Injured employees return to work more quickly • Reduce absenteeism <ul style="list-style-type: none"> ○ Ability to work without spreading infection ○ Ability to work outside normal business hours
Job satisfaction <ul style="list-style-type: none"> • Improved morale • Greater loyalty and commitment 	Reduced unscheduled absence <ul style="list-style-type: none"> • Less downtime • Reduced costs associated with unscheduled absences 	Retention and attraction <ul style="list-style-type: none"> • Retain key employees • Retain employees relocating • Attract employees seeking flex work arrangements
Increased Efficiency <ul style="list-style-type: none"> • Commute time savings • Reduced stress • Flex work schedules 	Real estate savings <ul style="list-style-type: none"> • Reduced office space • Increased parking efficiency • Shared work spacing • Lowered OpEx • Controlled expansion expense (CapEx) 	Increase labor pool size <ul style="list-style-type: none"> • Access to workers in larger geographic area • Attract and retain qualified persons with disabilities

Table 2.1: Teleworking program practical gains.

It’s important to point out the value of teleworking programs as an employee retention and satisfaction tool for government agencies in Table 2.1. Government employees often trade stability and other factors for higher salaries available in the private sector. When factoring the time and expense of commuting, teleworking programs can often close the gap in salary differences, providing incentive for both retaining talented staff and in recruiting new personnel.

The Future of Teleworking and Government

The potential for increased teleworking in government occupations will continue to grow. As baby boomers begin exiting the workforce, they are being replaced by a younger, technologically-oriented workforce from *GenX*, *GenY*, and the *Millennials*. These generations have been socialized by YouTube, Facebook, Twitter and mobile technology to expect to work anywhere, any time. They expect to telecommute and work in non-traditional ways.

Note

A recent study by CDW Government, an information-technology (IT) consulting firm, revealed that federal workers who are given the choice to telecommute are generally happier in their jobs (91 percent) than those who don't have the option to do so (80 percent). The survey also revealed that 84 percent of federal employees would telecommute if their agency gave them the option to do so.

The importance of government teleworking will increase in the coming years. It will grow in importance in helping agencies attract and retain a new generation of workers to government service and as a recruiting tool. Government agencies will continue to reduce operating expenses. Telework programs will also help government agencies at local, state, and federal levels reduce those costs while bettering worker productivity and creating a more family-friendly and flexible workplace that meets the missions of government agencies and those of government employees.

Resource

An excellent resource for federal agencies is Telework.Gov (<http://www.telework.gov/>), an interagency Web site sponsored by the Office of Personnel Management (OPM) and the General Services Administration (GSA) to ease locating information about teleworking in federal Executive Branch agencies.

The State of US Federal Government Teleworking

The current state of teleworking programs varies across government agencies in North America. In August of 2009, the US OPM released its "Status of Telework in the Federal Government" report to Congress. OPM has been tracking this information for federal agencies since 2001. For 2008, agencies reported that:

- 102,900 employees were teleworking
- 64% of these employees were teleworking relatively frequently (either 1 to 2 days a week or 3 or more days per week)
- Almost half of the agencies had not fully integrated telework into their Continuity of Operations (COOP) planning
- Office coverage and management resistance were considered the largest barriers to implementation

There are some other notable trends in the “Status of Telework in the Federal Government” report that add balance to the preceding bullet points:

- 78 agencies reported a total of 102,900 out of 1,962,975 employees teleworking
- 5.24% of the total population reported as teleworkers
- 8.67% of the eligible population reported as teleworkers
- 48 agencies (61%) reported an increase in their overall telework numbers
- 44 agencies have fully integrated telework into COOP (56.41%)
- 27 agencies reported cost savings/benefits as a result of telework

In comparison to the 5.24% of the reported population teleworking, Citrix, a provider of solutions that support teleworking, reported in a *PCWorld Magazine* survey (October 2007) that “23 percent of American workers regularly do their jobs from someplace besides the office.” This might seem to be a major discrepancy given fifteen percentage points difference between American private sector and government. The point easily overlooked is that as of August 2009 while 5.24% of the federal government worker population reported as workers, only 8.67% of the *eligible* worker population identified as such. That indicates that roughly 91% of the federal government agency employees who might be eligible to telework don’t at present.

The numbers reported are positive. Teleworking is increasing in adoption. Cost reductions and benefits are widely reported. Integration into COOP is a topic we’ll address at the end of this chapter. It’s clear that the US federal government has adopted teleworking and is in the process of implementing programs throughout federal agencies.

In state and local government, requirements may vary widely. Although some state government agencies rival federal agencies in size, local government and other organizations are very small. The workforce is smaller, the technology support staff is smaller, and budgets are smaller. Small size doesn’t negate the benefits of teleworking in these organizations, nor does it obviate the need to move forward with teleworking programs and other unified communications solutions. Size of an agency simply doesn’t eliminate the reality of significant benefits.

A two-pronged approach includes tactical plans for the near term and strategic plans for the long term. Planning for communications solutions that support the operation of the agency require attention to the best practices of business and sound fiscal planning. Organizations must investigate communications options to ensure they are meeting both present and future needs of the agency.

The IT Infrastructure Library

One initiative that plays a vital role in agency technology roadmap planning is the overall development plan for services and support. In many state and federal agencies, the Information Technology Infrastructure Library (ITIL at <http://www.itil-officialsite.com/home/home.asp>) framework is an integral part of developing the technology roadmap. It's included here to assist those agencies considering ITIL as part of their technology planning.

ITIL is a collection of suggested policies for managing services and operations. It describes important IT practices in detail and provides extensive task lists, check lists, and procedures that IT organizations can modify to meet specific needs. ITIL practices are published in a series of five books covering 26 processes.

Pieces of the ITIL framework agencies should review are the concepts and procedures for evaluating and assessing organizational maturity. This evaluation looks at how able an organization is to perform supporting and delivering both internal and external services. In particular, the Service Desk support provides a number of tools that can assist agencies in delivery of services to citizens. There are other maturity models in other frameworks, such as COBIT. ITIL, like most, describes five levels of organizational maturity through which an organization passes as competency increases. Each level indicates a higher degree of competency.

Repeatable practices are the norm for a mature organization. Procedures are known and documented. What we've all experienced as a "hair on fire" exercise is less common and is declining. In short, the more mature an organization, the more established its practices and procedures. A mature organization is more efficient, effective, and economical.

Organizations adopting the ITIL framework begin by assessing their maturity. These assessments begin with evaluations as to how the organization is using resources— personnel, workflows, tools, products, and management. These assessments show how an agency compares with other organizations. The maturity assessment is used to help an organization grow and evolve.

Assessment helps identify areas of improvement, standards that may be required, and new procedures and processes. They may also identify gaps in tools and technology. One high-value aspect of an ITIL maturity assessment is that organizations discover areas where they can evolve from following reactive processes to proactive ones. Organizations gain control over reactive processes. This assessment is the first step before ITIL implementation can begin. For government agencies, even though ITIL implementation may not be a goal, the process presents a useful tool in laying out strategic plans for organizational changes.

The system of maturity models is simple a way of measuring the process maturity of an organization. It's a way of applying metrics to evaluate effectiveness and efficiency of existing processes by comparing them with a known scale. Many organizations find, for example, that more workflow process is documented than anticipated. A common discovery is that this workflow documentation is simply spread throughout the organization and that there is no centralized repository. This is simply a characteristic of most organization's institutional knowledge and culture.

The five-layer maturity models range from 1 to 5. 1 normal signifies basic, initial, or minimal maturity. A 5 rating represents the highest level of an optimized and fully-mature organization. ITIL calls this the Process Maturity Framework (PMF—see Figure 2.1)

Level	PMF	Focus	Comments
1	Initial	Technology	Technology excellence and experts
2	Repeatable	Products and Services	Operational processes
3	Defined	Customer Focus	Proper service level management
4	Managed	Business Focus	Business and IT are aligned
5	Optimized	Value Chain	Seamless integration of IT into the business strategy

There are several dimensions that make up each level. ITIL includes the following factors:

- Vision and Strategy – “the overall direction as it relates to the role and position of IT within the business”
- Steering – “the objectives and goals of IT in relation to realizing the strategy”
- Processes – “the procedures needed to achieve the goals and objectives”
- People – “the skills and abilities needed to perform the processes”
- Technology – “the supporting infrastructure to enable the processes to be carried out”
- Culture – “the behavior and attitude required in relation to the role of IT within the business”

Figure 2.1: The ITIL PMF.

Organizational success depends upon high availability, dependability, security, and performance. All are impacted by where within the maturity model an organization sits. By using a tool such as ITIL to aid in process improvement, organizations are able to realize a number of benefits:

- Resource utilization is improved
- Rework can be reduced
- Redundant work is eliminated
- Availability and reliability of core services is improved
- Previous experiences are learning experiences

Agencies putting forth this effort are more in tune with their capabilities, making them better able to meet the demands of delivering government services to citizens.

The Cohesive Agency

Local government, particularly in smaller municipalities, may not face the problem of cohesiveness that plagues many state and federal agencies. These large agencies are often spread throughout a large geographic region, an entire state, or across the country. For example, the Washington state Department of Social and Health Services (DSHS) has thousands of employees. The majority of these workers do not work in the Olympia, WA headquarters location. They're in satellite offices and working from remote locations in towns and cities around the state. They're where the agency services are needed most—in the communities.

Blending HQ, Satellite Offices, and Teleworkers for a United Face to the Public

Government agencies can use unified communications solutions to integrate service across these widespread areas. Just as the Internet has eliminated geographic boundaries from the sharing and delivery of information of all kinds, telecommunications technology can eliminate the age-old problem of representatives in the field not being tightly integrated with the agency headquarters staff.

Existing telecommunications solutions also provide an opportunity to extend the workforce to remote locations in ways that increase value to the citizens receiving services. By enabling small agency work teams to spread across geographic distance, agencies can tightly couple the service power of the parent agency to remote workers. Resources can be extended into the community of citizens receiving services.

The reverse is also true. During peak hours of demand, remote workers in satellite offices and teleworkers can be easily integrated into the flow wherever the workload is peaking. By using technology, an agency can become a cohesive service delivery “organism,” applying resource attention wherever it is needed across the entire domain of responsibility.

This flexibility creates a more nimble and responsive agency, able to adapt and adjust to changes in demand throughout the work week or even the workday. Although that seems to be a reactive response, most agencies already possess a clear understanding of when peak demand periods are, based on historical trends. Fore-armed with this knowledge, agencies can anticipate these cyclical peaks and leverage telecommunications technology tools to proactively schedule appropriate workforce resources.

Unified communications tools and solutions help government agencies proactively use staff resources more effectively during routine workdays and planned-for peaks. They also make the agency more flexible to quickly respond and reallocate resources during an abnormal event or crisis.

The Teleworker vs. the Roaming Worker

We've reviewed many of the benefits of teleworking programs and how they can improve efficiency and reduce cost. Teleworking began many years ago and has changed with the evolution of wireless broadband technology. We've noted that with current technologies, it's now easy to work any time and any place.

Teleworkers typically work from a fixed location, whereas roaming workers do not. The same technologies support the requirements of both and integrate both types of workers into the agency's daily workflow.

In Figure 2.2, we see the typical fixed-location teleworker. Regular teleworkers routinely work from office space at home. The traditional teleworker has predefined workspace. This allows access to reference books and materials and a consistent working environment, stocked with regular office supplies.

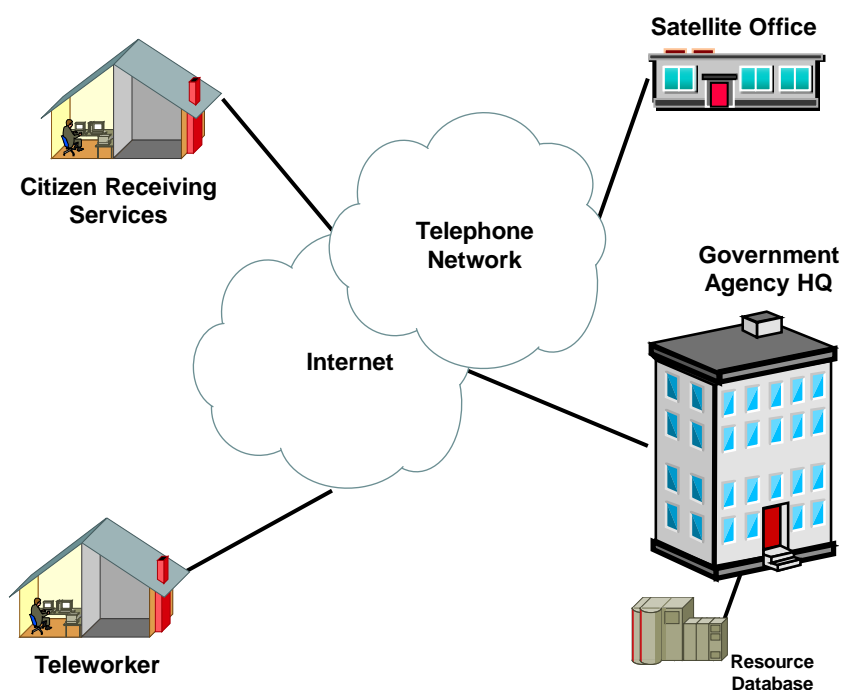


Figure 2.2: The teleworker—connecting the home with last-mile technologies.

These employees are routinely assigned as teleworkers attached to the agency headquarters or a satellite office, but they can be physically located anywhere. Because these employees work from home, their hours of work are scheduled and under some degree of agency control. If the work shift is from 9 to 5, the employee is able to work during those hours, excluding normal breaks and lunch.

The traditional teleworker can use Virtual Private Network (VPN) technologies to securely access data resources at the agency headquarters. Voice services can vary from a traditional telephone extension on a legacy PBX to a hard Voice over IP (VoIP) telephone to a softphone running in software on the worker's computer. The teleworker's telephone number is assigned by the agency as part of the agency telephone services and numbering plan. This extends the power of the agency telephone network into the employee's home office.

The predictable nature of this employee's time allows the agency to manage the teleworker's time by scheduling work tasks. Because the employee is "inside" the agency, he or she has inside access to all the resources of the agency. Telephone calls to citizens appear to come from the agency offices, and telephone records are included in agency logs. Email and other interactions are all performed as if the teleworker was sitting at a desk in an office inside the agency's physical building.

The teleworker is also a resource, through VPN and telephone connectivity, that can easily be assigned to a contact center environment or other internal agency project. This remote worker can use collaboration resources just like any other employee.

Cross Reference

We'll review contact centers in more detail in Chapter 3.

Working away from the office has evolved over time. At first, people took paperwork home in their briefcases. Home office phone lines were installed, but it remained cost-prohibitive for businesses with computerized systems to extend a data circuit to an employee's home. Dial-up networking allowed some simple connectivity.

The Integrated Services Digital Network (ISDN) offered a means for teleworkers to obtain lines that supported voice and data concurrently, with the benefit of bonding the two lines for data while not on a call. Many large enterprises experimented with remote work using ISDN technologies during the 1990s. This solution integrated seamlessly with the enterprise telephone system and provides a connection to the organization's data resources. In the late 90s, VPN technology appeared to enhance security and allow safe remote access to more proprietary information.

Internet technologies have progressed at a rapid pace. As the Internet incorporated more and more visual graphic elements, bandwidth requirements rose, but technology kept pace. Digital Subscriber Line (DSL) and cable modem technologies sustained teleworking with faster connections.

Teleworking proved viable and successful for many organizations, and government agencies were among the adopters benefiting from these programs. There was, however, one constraint: Teleworkers were inextricably tied to the "last-mile" technology. A physical, wired circuit was required in order to gain access to the resources of the agency network.

The technological tools used to deliver business and government services are many. These technologies have been on a path of convergence for several years. We saw voice and data networks converge onto a unified networking infrastructure based on the Internet Protocol (IP). Network voice and data services are now integrating tightly as user interfaces evolve. Devices to access the resources of the network are increasing in number. This trend in unifying communications technologies is commonly referred to as adoption of *Web 2.0* services.

McKinsey Global Survey: How Companies are Benefiting from Web 2.0

McKinsey & Company is a management consulting company providing advisory services to government, business, and other institutions. They publish the widely-read McKinsey Quarterly reports. In September 2009, "How Companies Are Benefiting from Web 2.0" was released ([http://www.mckinseyquarterly.com/Business Technology/BT Strategy/How companies are benefiting from Web 20 McKinsey Global Survey Results 2432#](http://www.mckinseyquarterly.com/Business_Technology/BT_Strategy/How_companies_are_benefiting_from_Web_20_McKinsey_Global_Survey_Results_2432#); registration required). This report addresses McKinsey's tracking of the adoption of Web 2.0 technologies over the past 3 years to evaluate the measurable benefits of investments in these communications tools.

69% of the 1700+ survey respondents report measurable business benefits, including improved access to knowledge and a reduction in the cost of doing business. The report examines the types of technologies different organizations are using, management practices, and contributing organizational characteristics. McKinsey found that successful organizations tightly integrate Web 2.0 technologies with the workflows of their employees.

Mobile work has comprised a segment of the workforce for many years. From traveling salesmen to business people traveling for customer meetings, we've often had the need to work away from our offices. The rise of broadband wireless technologies, coupled with the advancements in laptops, now netbooks, and handheld devices, has driven growth among mobile workers even higher as a percentage of agency staff.

Today's technologies enable working any place, any time, and using almost any device. For many working professionals, working in the field is far more productive than being confined to an office. For many, field work is a job requirement. The new ability to remain connected while working remotely is a tremendous value. Field engineers working on construction projects, social services workers meeting face-to-face with citizens, fish and game wardens in wildlife areas, and law enforcement agents in performance of their duties all require access to voice and data resources of the network. In the past, they had to return to the office at intervals throughout the day or work week, taking them out of their normal workflow.

Technology has removed this obstacle and transferred these workers into something akin to business road warriors. Broadband wireless technologies have created a class of workers that are *digital nomads*, carrying their work tools—laptop, mobile phone—from place to place as they take their work with them through a roaming day.

WiFi technology integration has become so common it's expected in both laptops and notebook computers. A new niche of portable computers, called netbooks are offered at subsidized pricing, paired with a service contract for 3G networking. Mobile phones, such as the popular iPhone and Blackberry, commonly include a WiFi capability. Tablet devices and tablet computers include WiFi to create powerful portable reference tools. eBook readers like the Kindle are also likely to gain widespread adoption as portable reference tools.

Wireless broadband Internet access is evolving quickly. Early implementations of slower speed networks deploying Cellular Digital Packet Data (CDPD) were replaced by General Radio Packet Service (GPRS), which is now viewed as a legacy technology. Enhanced Data Rates for GSM Evolution (EDGE) and EVolution Data Optimized (EVDO) became common broadband wireless tools that are now being superseded by 3rd Generation (3G) and High Speed Packet Access (HSPA). Wireless operators now offer unlimited broadband wireless plans across the continent. 3G may well be supplanted even as it is deployed by 4th Generation (4G) radio technologies: WiMax and Long Term Evolution (LTE) present the next step and are both deploying in public trials from all the major wireless operators.

In Figure 2.3, we see a new kind of teleworker; one that can connect from anywhere, any time. This worker might begin the workday at home, checking email and work orders for the day. They can then go visit a job site, a citizen group, or a primary care provider. They might stop in at their normal office or visit a satellite agency location. The roaming warrior carries the tools of the job along, and works from home, coffee shop, work site, car, commuter transportation, waiting rooms, and more.

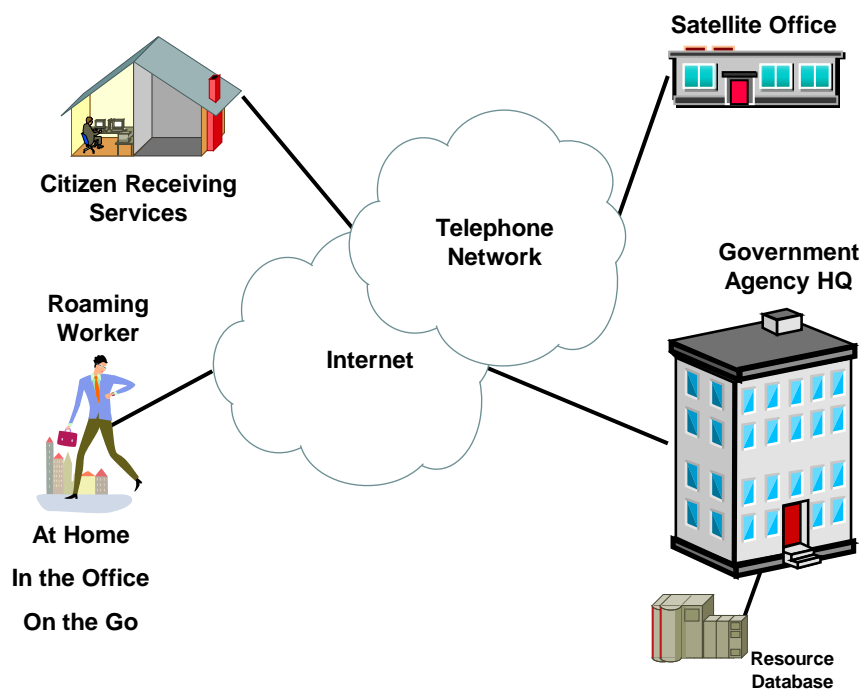


Figure 2.3: The roaming worker—connecting any time, any place.

The roaming worker is always connected, always on, always available. They are what we term *hyperconnected* through multiple technologies. They have WiFi/wired networks at home and tools to connect on the go. The roaming worker today has many more options than the mobile worker using dial-up had in the not-too-distant past.

Government agencies at every level must recognize the vast array of agency personnel that fit this pattern of work style:

- Agency managers at every level attend a variety of meetings at diverse locations and are mobile throughout the day.
- Charters for many agencies require staff to be present in the area or community where services are delivered. Many agency missions require staff work in the field:
 - Forestry, conservation, agriculture, fish and wildlife
 - Social and health services
 - Transportation, road construction, traffic services
 - Ecology, natural resources
 - Law enforcement, fire, and emergency services

The ubiquity of wireless services for voice and data is changing how government agencies can deliver services. This segment points to a continued rapid growth.

In Figure 2.4, we can see projections from a report by the widely respected analyst firm Frost & Sullivan. The projections shown focus on voice services alone. The data capability of devices such as iPhones and Blackberrys has been excluded. Given the option to connect to multiple networks and use alternate voice technologies (VoIP), the impact of these devices utilizing wireless broadband Internet drive the penetration rate even higher.



Figure 2.4: Frost & Sullivan report on wireless subscribers.

Many government agencies are so tightly constrained for funding they find themselves in furlough situations. Agencies have to reduce the workforce, eliminate overtime, and sometimes reduce salaries. Teleworking presents an opportunity for continued employment to some government employees. It can also provide the incentive to continue employment by working from home or in alternative arrangements. For some agencies, it can provide a transition approach for staff moving from full-time to part-time positions. Teleworking can be a powerful employee retention aid.

Satellite Offices and Teleworkers Extend the Reach of Government to the Community

Satellite offices are of particular interest in relation to teleworkers. As described earlier, the combination of satellite offices and telework programs allow a government agency to easily distribute its workforce into those areas where services are being delivered directly to citizens. In the past, connecting voice services alone often proved cost prohibitive.

Large government agencies, such as the US Department of Transportation, Los Angeles County, or the Washington Department of Social and Health Services, typify the sort of candidate for which a large, distributed telephone system might make sense. Connecting regional offices back to the agency headquarters allowed some distribution of the workforce. These large agencies typically used T1 circuits to connect a regional office node back to the agency headquarters' Private Branch Exchange (PBX).

Because these very large agencies were able to leverage economies of scale, these T1 lines proved cost effective at the time. Although a large government agency could leverage the purchasing power of size, smaller agencies weren't able to deliver the same distribution of staff resources. Smaller agencies and many local governments were precluded from "enterprise business caliber" solutions. They often deployed a key telephone system (KTS), much like a small or midsize business but weren't able to fully integrate a remote system with the main headquarters' PBX.

Today, IP-based solutions integrate voice and data services over shared circuits, at lower cost, with more features. Multi-site voice and data networks have become a common operating approach.

Satellite offices can be used to leverage technology for distribution of the telecommuter and roaming workforce in other ways. Several government agencies have established remote work sites; agency offices in a remote city. These satellites may only require three or four employees. Unified communications technologies enable these satellites to be fully integrated into the agency information network. From one viewpoint, they can provide "clustered teleworkers" in what's commonly referred to as a "hoteling" environment. This might be useful when an agency has other work space and houses a small workforce in shared space with other staff (that is, an office space in a motor pool location).

In state governments, satellite offices are often multi-agency locations, housing one representative from each of two or three different agencies, enabling more than one organization to distribute their workforce. This approach is very common as state agencies develop their Business Continuity (BC) or COOP strategies. We'll touch on BC/COOP briefly at the end of this chapter.

Large enterprise software and hardware solutions have an impact on smaller organizations that may consist of satellite offices. VoIP and unified communications technologies are still evolving, and the costs for solutions continue to drop. Enterprise-class solutions, once cost prohibitive, now have scaled-down options that fit all sizes of government agency.

The distribution of the workforce through the combination of telework, roaming workers, and satellite offices is neither the technical nor fiscal challenge it was just a few short years ago. Advances in personal computing and mobile communications technology have made advanced tools a common occurrence in many households. The hardware and software solutions available in unified communications have leveled the playing field with large enterprises for small and midsize organizations.

Early adopters of unified communications technologies have moved into newer areas of even further integration. We'll review some of these areas in the final chapter. These solutions are based on VoIP, Session Initiation Protocol (SIP), and SIP trunking and rely on IP-based networks. They are not new and emerging technologies but are instead a mature cornerstone of telecommunications services. The risks of being caught in the problems of early adoption are past. What matters to government agencies at every level is that the high-powered communications tools of today improve efficiency, increase productivity, and lower costs while meeting other government objectives in service delivery and the performance of the agency mission.

Telework as a Green Technology

Local, state, and federal agencies are implementing teleworking solutions to reduce their carbon footprint. Increasing services with decreased environmental impact and frequently reduced cost presents an example of responsible government making wise use of taxpayer dollars. Although emphasis on lighting costs, data centers, and "green buildings" has garnered a great deal of attention, teleworking solutions are a big part of the effort to build "green government." Beyond the many benefits already identified, telework programs offer a number of green benefits: Fewer automobiles bringing agency staff to a centralized work site reduces pollution. Fewer cubicles in the office reduce consumption.

At the Virginia Information Technologies Agency (VITA), 40% of the workforce teleworks at least one day per week. One factor driving participation in VITA's telework program is the relocation of the IT workforce to a site 20 miles from the previous building, increasing workers' commute. Telework became an attractive alternative for both the agency and the staff. Their primary technologies don't require risky purchases of unknown technology. The primary tools for teleworkers are email and a Blackberry.

A report by the Information Technology and Innovation Foundation entitled “Improving Quality of Life Through Telecommuting” (<http://www.itif.org/index.php?id=215>) predicts that telecommuting could quadruple in the US over the next 12 years. Findings include:

Telecommuting seems likely to emerge as second only to driving alone.

Telecommuting has surpassed walking in both numbers and percentage of workers as an alternative to traditional commuting. Current rates indicate that telecommuting will soon, if it has not already, exceed carpools that are not composed of household members. Current trends indicate that telecommuting will exceed mass transit’s market share by 2015 and the share of all carpools by 2030. Telecommuting exceeds the market shares of mass transit and walking in the overwhelming majority of metropolitan areas, including most large metropolitan areas.

Telecommuting assists in achieving public policy goals. The use of telecommuting is important in addressing public policy objectives, such as containing the growth of traffic congestion and reducing greenhouse gas emissions. Telecommuting has the potential to eliminate 136 billion miles of vehicle travel and 55 million metric tons of carbon dioxide emission per year by 2020. At virtually nil, the cost of greenhouse gas emissions through telecommuting is dramatically below the United Nations International Panel on Climate Change (IPCC) ceiling of \$50/ton.

Telecommuting needs to be a key transportation strategy. Telecommuting offers superior benefits in relation to public policy objectives. Telecommuting can reduce the number of work trips and thus help to contain the growth in traffic congestion. Moreover, telecommuting causes no work access-related greenhouse gas emissions, and overall leads to lower greenhouse gas emissions than other forms of commuting.

The report calls on government to pursue both policies and implement programs that maximize and accelerate teleworking.

The United Nations IPPC states that the cost of reducing greenhouse gas emissions needs to be between \$30/ton and \$50/ton to be cost effective to significantly reduce greenhouse gas concentrations in the next 20 to 40 years. Given that teleworking reduces costs and meets ROI requirements based on all the other benefits, agencies leveraging teleworking technologies can implement a “green technology” facet to their roadmap with no added cost.

The Telework Exchange

Telework Exchange (www.teleworkexchange.com/) is a public-private partnership focused on demonstrating the tangible value of telework and serving the emerging educational and communication requirements of the federal teleworker community. The organization facilitates communication among Federal teleworkers, telework managers, and IT professionals.

The Telework Exchange Online Telework Eligibility Gizmo is an online tool available to both government and non-government employees to assess eligibility to telework. It can be found at www.teleworkexchange.com/gizmo.

According to a research study by The Insight Research Corporation (<http://www.insight-corp.com/reports/green08.asp>), “Communicating GREEN: Telecommunications Value in Promoting Environmental Improvement, 2008 to 2013,” there are five key domain areas to consider when “going green:”

- Transportation demand management to improve gasoline consumption
- Demand-side management of electrical power
- Machine-to-machine communications to improve operational efficiencies
- The recycling of electronic devices
- Regulatory compliance and audits

Every government agency at each level of government is accountable for these domains and actively working to achieve continuous, sustainable improvement. Government agencies lead the way in the movement toward green. They lead through both legislation and example. Officials can leverage technology investments to deliver green initiatives, and leverage environmental funding and appropriations packages to benefit technology. The opportunity to create a greener government is a win-win proposition for government agencies, which take the initiative and deploy these cost-saving, efficiency-building programs.

Telework and Continuing Government Services during a Disaster

Disaster can strike at any time without warning. Disaster can be caused by nature—earthquake, flood, hurricane—accident, hazardous spill, fire, or a manmade act of malice. Disaster recovery and business continuity plans are a high concern for business leaders everywhere. In government, these efforts are called COOP.

The Federal Emergency Management Agency (FEMA) leads COOP efforts for the US federal government with a majority of state and local agencies following federal guidelines.

FEMA’s mission is to support our citizens and first responders to ensure that as a nation we work together to build, sustain, and improve our capability to prepare for, protect against, respond to, recover from, and mitigate all hazards.

Resource

Detailed information about FEMA's COOP programs, including a comprehensive Continuity Evaluation Tool, is available online at <http://www.fema.gov/government/coop/index.shtm>.

In government today, there's much discussion of how to respond to the next "Katrina-like event," yet, lacking funding, actionable change is a challenge. Telework solutions can and are being designed and deployed that minimize the disruptive impact of a natural or man-made disaster. It doesn't matter whether the event is an earthquake, flood, or flu pandemic, teleworking delivers a sustainable operations tool to continue government services uninterrupted if or when such an event should occur.

Teleworking as Real World Preparedness

Government agencies invest tremendous resources in planning for emergency situations. The threat of a flu pandemic presents a major concern. As agencies develop preparedness plans for continued delivery of services during events, teleworking programs build in a proactive approach that can reduce the impact should a pandemic occur.

Teleworking programs in government reduce the likelihood of building- and campus-wide spread of disease by enabling remote work prior to an outbreak. Should pandemic occur, the workplace isn't the only location where disease might spread. Public transportation, even carpools, will be impacted. Schools will close, requiring parents to stay home to care for children. Any unnecessary contact with people could present a health risk during a pandemic.

Agencies have the opportunity to leverage teleworking solutions for many benefits. As a side benefit, these programs provide a proactive approach to continued delivery of public services during a number of emergency situations.

FEMA defines COOP planning as follows:

...effective continuity planning and programs facilitate the performance of essential functions during all-hazards emergencies or other situations that may disrupt normal operations. The primary goal of continuity in the Executive branch is the continuation of essential functions.

COOP is intended to be short term; it must be functional within 12 hours and may last up to 30 days.

Government agencies are responsible for the public safety and the public trust. Uninterrupted government services are vital to citizens during an emergency. By implementing teleworking programs, government agencies can deploy a distributed workforce. Using a combination of teleworkers, roaming workers, and satellite offices, government agencies can scatter staff across a widespread area. When the workforce is widely dispersed, the impact of a localized event is reduced, decreasing the impact on that agencies capacity to deliver services.

Telework should be part of every agency's plans for emergency response. Telework plans that are in use during non-emergency times ensure that

- All systems and equipment have been tested and are functional
- Agency technical support processes are working
- Personnel are acclimated to the communications tools and technologies
- Managers are familiar with the operations of a distributed workgroup

Surviving an emergency or disaster requires government agencies to plan and ensure that telecommunications services are interoperable, resilient, and accessible. Part of planning for these contingencies must include arrangement for agency staff to work remotely during the event. Staff resources will be involved during and after the event conducting assessment and restoration of disrupted services.

Future requirements must expand the capability to use every possible communications channel:

- WiFi
- Broadband wireless
- Cellular services
- Satellite technology

Not every technology will fit into the tactical plan of every agency. Implementation of unified communications technologies such as VoIP services from a dedicated IP phone or softphone are becoming a baseline requirement for many agencies.

Deploying solutions such as teleworking not only utilize these services during normal operations but also extend agency-critical communications services into support for emergency response.

Summary

Teleworking is not a new concept. However, the tools for teleworkers and the capabilities they deliver have changed dramatically and continue advancing. For teleworking to be successful in government agencies, the solutions must integrate the remote worker into normal operational workflows. Interactions with co-workers, managers, other agencies, and the public at large must be seamless and transparent. The unified communications tools available today deliver this integration.

Government agencies are operating under tight budgets and stringent guidelines faced with increased demand. Telecommunications solutions must pass the litmus test of improving productivity, increasing efficiency, and reducing costs. The unified communications solutions available today meet these requirements.

Demonstrating a commitment to protecting the environment through green initiatives while preserving the public confidence in government services during emergency situations are expectations that agencies must meet. The unified communications technologies available today deliver the flexibility and resiliency to build a greener government that is always on, always connected, and always accessible.

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