Innovative State

How New Technologies Can Transform Government

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Chapter 3

The Virginia Model

Back in 1999, the Virginia legislature was seeking to make someone accountable for nurturing entirely new industries throughout the state, while making sure the government's internal use of information technology was effective and efficient. Virginia became the first state in the nation to create a cabinet position for a Secretary of Technology. Three men would fill that role over the next six years, and their work over that time contributed to *Governing* magazine's 2005 selection of Virginia as the "Best Managed State."

In 2006, Tim Kaine, the successor to outgoing Governor Mark Warner, chose me to be the fourth Secretary of Technology. He had a different spin on the position, one in tune with the times. By 2006, the Internet had transformed the way consumers accessed information and conducted commerce. Yet, though it had improved some services such as e-filing tax returns and renewing professional licenses, it had not meaningfully transformed the relationship between citizens and their government. Kaine assigned me to prioritize the improvement of that interface. I realized that one of the most important things government can do is remove restrictions that exist for really no good reason. On a visit to Google, for example, I learned two things: one, most people get to government websites through search engines, not by typing in their URLs

or bookmarking them; and second, government, perhaps unintentionally, made it difficult for search engines to index information that the public had the right to know. Within 90 days, we initiated a no-cost collaboration to simplify and standardize the interface between search engines and government websites, making it easier for the public to find what they need. We formed a coalition of four states, two led by Republican governors (Utah, California) and two by Democratic ones (Arizona, Virginia), whereby Google, Yahoo, and Ask.com agreed on a standard sitemap protocol that the states agreed to adopt.[1] Those states then assigned their webmasters to implement the new protocol, a task that took about an hour per site. By the launch in April 2007, Virginia had tagged about 80,000 of our own web pages (URLs) for addition to the participating search engines. In the first year of the initiative, we observed a 40 percent spike in site visitors, at no cost other than the modest incremental staff effort.

One of the promising aspects of that initiative was its bipartisan backing. Before my term even started, and as it progressed, I made a point to reach out to members of the Republican-led legislature. Through those conversations, I became convinced that many in both parties viewed technology, data, and innovation initiatives from a more pragmatic prism, beyond the usual, inflexible left-right division. That was evident when those Republicans invited me, a Democrat, to partner as a nonvoting participant on the Joint Committee of Technology and Science (JCOTS), which organized small working groups that included members from the executive and legislative branches, as well as concerned citizens. More than a dozen bills endorsed by JCOTS passed through the legislature with overwhelming bipartisan support and were signed into law by Governor Kaine, including Republican-sponsored legislation to expand rural broadband access, adopt health IT standards, and permit school boards to purchase open source education resources.[2]

Democrats, while a minority in the legislature, also attempted to put their signature on the smarter government movement, with the endorsement of the executive branch. Consider the way that Business One Stop came together. Governor Kaine, wanting to buoy the state's reputation as business friendly, sought to offer every Virginia entrepreneur a single destination to complete all the forms required to start a new enterprise—a task that otherwise might involve as many as seven state agencies, such as the State Corporation Commission, the Virginia Department of Taxation, and the Virginia Employment Commission. Governor Kaine, inspired by South Carolina's presentation at a National Governors Association meeting, gave me the assignment of creating something similar.

Upon digging in, our team estimated that implementing the South Carolina model—which not only improved the user experience but also connected the existing systems within each impacted agency—would require an investment of roughly $7 million. That estimate far exceeded our available funds. So I improvised, borrowing a page from the playbooks of Pitroda and Halamka. Each reimagined seemingly insurmountable problems, abandoned the conventional costly stabs at solutions, and used the latest technologies in an effort to get most of the way, if not all of the way, there. Pitroda didn't get a phone into every house in India, but he got one into every village. Halamka didn't consolidate all of the records from the newly merged health systems in Boston, but he created a web page that appeared fully integrated to the clinician.

In the same vein, Virginia wouldn't attempt to fully integrate all of the records at agencies that interacted with businesses, but it could still make the experience less aggravating for entrepreneurs. After we agreed upon this more modest enterprise, we realized that we had sufficient resources to launch the service and pilot it for the first couple of years. That economical approach helped a Democratic Delegate, Brian Moran, make a successful

case for codifying Business One Stop into law. Its bipartisan passage gave us a mandate to launch the initiative as quickly as possible—and, for that, we turned to an emerging technology called software as a service, which offered remote access to software applications that were already developed and running over the Internet, without needing to rebuild them within our government data centers. Such "on demand" software, part of a new generation of services that would be known as cloud computing, had been made possible by the declining cost of information processing, and the increasing speed and capacity of information transmission.[3] On account of procurement hassles, it took us longer to select one of those firms, Salesforce.com, to support our Business One Stop application then it would take for our small team to build the newer, smarter forms on its service.

The team created a web-based questionnaire that was absent the typical annoying, duplicate queries, because it had eliminated 75 percent of the redundant data fields from other forms. And it was able to tailor the questionnaire based on the entrepreneur's initial answers; if a user indicated an intention to sell alcohol, for example, he or she would receive additional questions from the Alcohol and Beverage Control agency.

Our version of the Business One Stop stopped short of what South Carolina had implemented. In South Carolina, the online forms were automatically routed to all the appropriate agencies. In Virginia, an entrepreneur was still required to print out his or her completed form, and mail a copy to each corresponding agency. Still, that seemed a small inconvenience, considering how close we came to the overriding objective. After all, it cost us $150,000, not $7 million, and we still delivered significant time savings (an average of three to five business days) to the customer.

Early in my tenure as Secretary of Technology, I was confident we were on course to repeat as Best Managed State, due to the

Governor's commitment to improved government performance. For some of our actions, we used the newer technologies, such as cloud computing, which played a role not only in the Business One Stop, but also in our rapid deployment of a dashboard to track progress on agency expenditures related to contracting with minority and female-owned small businesses. For other actions, we relied simply on more prudent and frugal management; for instance, the Governor had operational reviews to confront costs related to printing, travel, energy, communications, water, mail, and so forth. In many cases, we would spend a nickel to save a dime, and we did generate tangible savings.

But I also became convinced it wasn't sufficient to become slightly more efficient. We needed to progress from reactive to proactive government. For that, we needed an innovation mindset and strategy, every bit as much as private sector companies did.

In a 2006 *Businessweek* survey, 72 percent of senior executives named innovation as one of their top three priorities. And for good reason. Historically, companies that failed to innovate tended to fall apart—or, at the very least, stall.

That was the finding of my former colleagues at the Corporate Executive Board, in their study of 600 large corporations ($1 billion to $5 billion in revenue) that operated during the period of 1950 through 2005.[4] The study defined "stall" as the moment when a firm's revenue growth across a 10-year period flips to a decline over the next 10 years. By that definition, 90 percent of the surveyed companies had experienced a stall, and those stalls were as powerful as they were prevalent, marked by an average 13 percent decline in revenue growth within the first year and much steeper stock market losses. By digging deeper into the data and interviewing key corporate leaders, the CEB found that, in spite of the seeming suddenness and unpredictability of the outcomes, the most common root causes were actually identifiable,

and several were clearly preventable. More specifically, the overwhelming culprit was management failure, and one of the top reasons for such failure was the inability to innovate. In other words, management could do something to alter an organization's fortunes before it went down the same dark hole as Eastman Kodak, one of the closely studied corporations.

For nearly a century following its founding in 1880, Eastman Kodak had represented the best of American business, a transformational company admired worldwide for its innovations in still photography as well as motion pictures. Kodak had adjusted so often, remaining relevant in so many generations, that it was expected to thrive forever. This was especially true in the 1960s and early 1970s, as Kodak enjoyed dramatic sales growth due to the revolutionary Instamatic camera. In 1976, according to *The Economist*, Kodak accounted for 90 percent of film and 85 percent of camera sales in America.[5]

Yet, even at that time, Kodak wasn't nearly as healthy as it seemed on the surface. Behind the scenes, the company was setting itself up for failure, with its inability to manage its innovation pipeline. It chose not to license patents for Xerox-like photocopying technology. It chose not to sell the VCR—after inventing the device for recording and replaying television shows—because it didn't believe people would pay an estimated retail cost of $500. Then, as it began to stall, Kodak made its worst choice of all, blowing a golden opportunity to revitalize the company. After inventing digital photography within its labs and prototyping this revolutionary product, Kodak chose not to invest in further commercialization, due to the fear of cannibalizing its established traditional film photography business. It made a decision to go with what got it to the top, at the risk of going nowhere from there, even as some of its executives warned of irreversible shifts in the industry. It took a while, with Kodak's revenues peaking as late as 1996. But eventually, the stall became a free fall. A

firm that had once employed well over 100,000 men and women would dwindle to a sliver of that workforce. Former peers, such as Canon and Fuji, darted ahead; software companies such as Adobe emerged, exploiting the very sort of technology Kodak had shunned.

Kodak's demise, while regrettable, did little damage to photography enthusiasts. Customers simply chose from among the long list of companies that provided them with the products they desired. That's how a capitalistic marketplace functions.

But what if the institution that failed to innovate, and thus suffered a similar slow-speed crash, was in the public sector, where customers could not choose another option without picking up and moving somewhere else? After all, citizens can't decline government, at least not legally. The late economist Albert Hirschman outlined this distinction in his landmark work, *Exit, Voice and Loyalty*, noting that, in their relationship to government, citizens' opportunities for "exit" are limited, leaving them to exercise their "voice," often through grassroots movements to advocate for change. But too often the impossibility of "exit" has led to poor services or a lack of accountability, with government sticking to business as usual because that's the way things have generally been done.

Whether the objective was to avoid customer defection in the private sector, or constituent disaffection in the public sector, the prescription was clear. Organizations seeking to prevent a stall needed not only to establish an innovation pipeline, they would have to manage it in a way that would equip the entity to address long-term structural challenges in advance. This was what Virginia needed. And, for that, it needed leadership, which Kaine provided at the start of his second year as Governor.

To address a common public sector blind spot—self-assessment—he established Virginia Performs. That interactive website allowed citizens to examine strategic long-term plans and performance

indicators in seven key areas—Economy, Education, Health and Family, Public Safety, Natural Resources, Government and Citizens, and Transportation. Over time, this would evolve to include productivity measures, to inform the public how much money it costs the government to process run-of-the-mill services like automobile registration renewals or hunting license purchases. Simple as it sounds, this program would actually represent a pioneering effort for the public sector, since few at any level of government had done this since the federal government stopped tracking productivity in 1994.

This data platform was an enabling ingredient for another vehicle, announced simultaneously, that was designed to institutionalize a permanent culture of achieving more with less. The Productivity Investment Fund (PIF) was initially seeded with $3 million and primarily focused on raising productivity by lowering operating costs and increasing efficiency, while improving customer service. It served as the Commonwealth's venture accelerator, capable of making investment decisions in just months, rather than waiting out the government's two-year budget cycle. The PIF could surface ideas, develop prototypes, and funnel the best concepts to the legislature for consideration for scaling.

With funding in place and the Governor's full endorsement, we established a process to allocate the $3 million toward the most promising projects, many of which arrived in raw form. Through a collaborative, consultative model, we searched for the underlying merits of each idea, and worked with the applicants to put their best case forward. Then, once the PIF board approved a project and funded its testing, the process would move to the next frontier: expanding even the most narrowly targeted pilot program into a sustainable statewide success. We amassed an eclectic portfolio.

Take PluggedInVA. That initiative started with Dr. Mark Emblidge, exactly the sort of entrepreneur whom the PIF was

conceived to empower. Emblidge served as the president of the Virginia Board of Education and the executive director of the Virginia Literacy Foundation. Those roles acquainted him with the roadblocks that adults face without a high school diploma. Two-thirds of all new jobs require a postsecondary degree. So, long after many declare an economic downturn over and a recovery in bloom, an alarming number of these adults are doomed to remain unemployed.

As the PIF chair, I met Emblidge while making my rounds of Commonwealth leaders with whom we hoped to collaborate. At that time, he briefed me on Race to the GED, a program initiated two years earlier under then-Governor Warner in an effort to double GED recipients year over year. Emblidge shared the story of country music legend Waylon Jennings, who earned his GED by watching recordings of preparation videos on Kentucky Public Television at the urging of his mother and sister. Those GED preparation videos would be made available to participants in the Race to the GED program via the Virginia Department of Education, which had freely acquired the rights to distribute those tapes, and was making them available to those who requested it.

One part of Dr. Emblidge's story struck me as strange enough to stop the conversation.

VHS tapes?

Weren't we well into the twenty-first century? Couldn't we make it even easier for Virginians to prepare, and do so according to their own schedules? Couldn't we convince the cable companies to voluntarily upload the PBS tapes and offer free access through their on-demand platforms?

It turned out that we could, and the implementation of GED On Demand would be even easier than I expected, requiring a single phone call to two of the state's dominant cable companies, Comcast and Cox Communications. Within 90 days, each had uploaded all 39 tapes and was distributing them freely on

demand, and Governor Kaine filmed a 30-second public service announcement to unveil the initiative. Cable users watched the episodes more than 6,000 times in the first three months. No muss, no fuss, no taxpayer expense, just neighbors in the Virginia community leveraging their respective assets to create a difference-making public-private partnership. While no formal measurements on results were taken, it was heartening to note that, according to the Adult Learning Panel's 2008 Report to the Governor, over two-thirds of Virginia's test takers in the years 2006 and 2007 earned a GED without direct involvement in any of the state's official training programs, but by working and studying independently, aided by tools that included GED On Demand.[6]

Emblidge wasn't through, however. Completing the GED was, at best, a minimum requirement for competing in the ever-evolving job market, especially because the GED itself was in need of an update, with a revised, modernized exam not due until roughly 2014. This called for interim measures. He found inspiration in a model at the Alexandria Seaport Foundation, where young adults without a high school diploma were enrolling to earn a carpenter's license while simultaneously earning a GED. This "contextualized" GED program blended lesson plans on carpentry with the more traditional GED curriculum, so that students could learn faster and be better prepared for the real world.

Emblidge wanted to know whether this model could work in the fast-growing software industry, so we met to brainstorm a "proof of concept." In the spring of 2008, we gathered with his research partners at the VCU Literacy Institute to contemplate a contextualized GED program, one designed to meet the unique needs of two technology firms (Northrop Grumman and CGI) that had recently announced the availability of nearly 700 jobs at two software development and data centers in the rural community of Lebanon. That was a coup for Lebanon, which had made the tough investments in broadband and other infrastructure

in the hope of luring jobs of the future to southwest Virginia. Emblidge called his initiative PluggedInVA (PIVA), and, by June, his project team consisted of stakeholders from the entire adult education market, including the local community colleges, the adult education programs within the school district, a college-based technical center, and the workforce system. They sought $127,000 to design a new curriculum and to recruit the first batch of students, whose tuition would be free. That summer, our PIF Board examined myriad applications and selected PIVA for a grant. By the fall, the new curriculum was in place and, by January, the first cohort of students was enrolled. They would graduate roughly one year after the project's inception.

I attended the opening ceremonies, along with Senator Jim Webb, and saw something in that community that hadn't been apparent on earlier visits: a palpable sense of hope. I met moms who had dropped out of high school to take care of young children. I met a young man who had become entangled in the criminal justice system, and wanted to leave that behind. I met countless other people with potential who just needed a path forward.

Emblidge's team delivered the initial version of its plan on time and on budget, and began designing new contextualized GED programs in other growth fields—for electricians, entrepreneurs, and other future-forward areas. Its story would have staying power and crossover appeal, even capturing the imagination of Bob McDonnell, who succeeded Tim Kaine as Governor in 2010. In an era of austerity, the Republican McDonnell would choose to scale PIVA—offering enough funds so that every educational region within the Commonwealth would have access to a PIVA program in 2012.[7] And the program earned a $2.5 million grant from the Department of Labor to expand the number of professions it served.

While PIVA was directed at adults trying to make up for what they may have missed educationally during childhood, another

PIF-fueled initiative, Virginia Star, would work toward filling in gaps for, and expanding the horizons of, kids still in school. Its origins were traceable to one of my interns, Brian Chiglinksy, who wondered what we would do with all the computers we were replacing as part of our IT modernization program in 2008. Typically, they would be trashed. But what if they could be refurbished? And what if students, rather than technicians, received that assignment, so they could get hands-on skill development as well as an industry credential to enter the technology job market.

Tom Morris, the Secretary of Education, and I went fishing, dropping a line in the Virginia school system to see if any district would take possession of the computers in exchange for developing a computer repair program for students. We weren't aware any schools in the nation had such a program, until Chuck Drake, a Career and Technical Education (CTE) instructor at Forest Park High in suburban Northern Virginia, reached out. Our proposal sounded familiar to a program he had encountered in Seattle, Washington, in 2004, called Bridging the Gap, a version of which he had brought back to Forest Park in 2007.

Drake's program was even more ambitious and impactful than our original intention—once the computers were refurbished, they were offered to needy families on a first-come first-served basis at the Bridging the Gap celebration night. After awarding him an initial delivery of 1,000 computers, we witnessed the program in action. Some benefits we expected: kids getting trained, families closing the digital divide. One was a bonus: his school district saved money, due to the reduced need to purchase additional computers. Eager to scale the idea beyond Forest Park, we sought funding to subsidize Drake's school visits across the state. We encouraged Drake to apply for PIF funding, while explaining that the PIF would assess his application with the same fiscal scrutiny as any other. That process forced him to carefully

consider return on investment, and argue that it was in the state's interests to cover the overhead costs associated with the program management. By digging into the numbers, he outlined the cost-savings potential of the venture, beyond its more obvious educational and social payoffs. After winning the grant, Drake hit the road, establishing the program in ten sites by August 2009, delivering every dollar of savings that he projected and attracting corporate partners. Microsoft even waived license fees to install up-to-date software on the refurbished PCs.

In 2010, Drake presented his first year of findings to Governor Bob McDonnell, demonstrating to the new governor that the initiative had more than met its aggressive milestones. It provided social good while doing a bit better than breaking even, producing a net return of $10,000 on the initial $245,000 of investment. The Governor was so impressed that he scaled up the program further, with an additional $425,000 to support a statewide rollout.[8]

While these accomplishments in education, at modest expense, certainly validated the model of the Productivity Investment Fund, health care was the much bigger beast, representing more than 20 percent of the state budget.[9] To be truly transformative, the PIF had to play some role not only in helping people with their health needs, but in helping to control costs in that segment of the economy.

Cost reduction had never been Dr. Karen Rheuban's overriding agenda. Her passion was ensuring that as many patients as possible, even in the most remote rural communities, got access to world-class care. We first met in 2006 when, as Secretary of Technology, I was touring the University of Virginia in Charlottesville. I dropped by her telemedicine clinic to learn more about her work in videoconferencing in health care, which was removing barriers

by allowing patients and doctors to communicate face-to-face from different locations, but which—to her frustration—was not compensated under the current fee-for-service health care system.

Minutes prior to our brief meeting, Rheuban fielded a call that adjusted our agenda. A baby had been born with a heart defect, the severity of which the hospital in Lynchburg was ill-equipped to treat. Rheuban diverted from her planned pitch to attend to this more urgent matter, engaging with the staff on the other end of the telemedicine call, reviewing the relevant lab values and medical data, and rendering her decision. The child needed surgery, without delay, or he might not survive.

Her intervention, through this technology, saved a life. No pitch necessary. I got the message.

Following the PIF launch a few months later, I thought of Rheuban, and how to connect her critical work to our young initiative. Certainly we could do some good by bolstering her existing programs, which were barely surviving on grant funding. But we wouldn't necessarily fulfill the PIF's mission of generating measurable savings and efficiencies for the Commonwealth. We needed an economic rationale to act, and we identified such a trigger in some troubling statistics. While Virginia ranked in the upper echelon in many categories, such as wealth per capita and workplace quality, it was in the bottom half in national infant mortality rates. The leading cause of infant mortality, according to the Centers for Disease Control (CDC), was preterm birth—defined as delivery prior to the 37th week.[10] According to the March of Dimes, Virginia graded a C in preterm birth rates, and some regions of the state were worse than that; the rural Shenandoah Valley had a rate more than twice the CDC target for the country. Rheuban had firsthand understanding of this problem, since many pregnant women from that part of the Commonwealth were delivering early at the University of Virginia Health System, often resulting in admissions to the Neonatal Intensive Care Unit.

While we were blessed to have a state university that supported such a world-class NICU, these admissions were extremely costly to Medicaid—and thus, by extension, taxpayers. Each week that a child remained in the mother's womb and avoided the NICU would save the state roughly $44,000.

We needed earlier intervention, so mothers at higher risk could take preventative measures to avoid early deliveries that strained the system—and in the worst case, led to infant death. In examination of the Shenandoah problem, Rheuban learned that many of the residents there lacked access to a "high-risk" OB/GYN specifically trained to treat those pregnancies that were most precarious. The typical political battle on this matter would likely come down to a fight over subsidies between those who deem health care a right and those who deem it a privilege. Those who deem it a right might argue that it was imperative to get a high-risk OB/GYN to set up shop in those communities; those who deem it a privilege might argue against the government essentially bankrolling the physician's salary.

Rheuban was positioned to argue for an alternative path that could achieve comparable outcomes at a much lower cost. It wouldn't require anyone moving anywhere, merely a modest investment in the telemedicine technology that she had championed, as well as fair compensation to the physician providing the virtual visit. Her hypothesis caught the attention of the PIF board, which approved a pilot study for $136,000. The early results were startling. Rheuban's interventions achieved a roughly 25 percent reduction in preterm birth rates in rural localities over a three-year period, largely because patients missed fewer appointments, down from 11 to 4.4 percent. That was enough evidence to convince Governor McDonnell to sign a law requiring insurers to reimburse doctors for telemedicine services.

We didn't need much more evidence that the PIF was serving its purpose, and yet the stories kept coming. In its first six years, and

over the course of two gubernatorial administrations, one Democratic and one Republican, it would sponsor more than forty projects, and deploy more than $4 million, including savings that were reinvested into new enterprises. It would simplify the Medicaid application form for seniors. It would lower the permitting costs for mining companies. It would allow the tax department to scan millions of checks rather than the old way of getting them to the bank for deposit (via an expensive courier service), saving hundreds of thousands of dollars. It would save thousands more by switching the software in a K–12 school system from Microsoft to Google. It would give parents web access to quality rankings on preschools—since passing third-grade reading was a known precursor to later success, and earlier childhood education was critical for getting students ready to learn.

All told, the Productivity Investment Fund would deliver a 4-to-1 return on taxpayer investment, and advance key outcomes through innovation.[11] The PIF had originated in a Democratic gubernatorial administration. But its ability to appeal to both sides of the political spectrum was again illustrated when Fred Malek—assistant to Republican Presidents Richard Nixon and George H. W. Bush—endorsed the fund in his report on reforming government, during McDonnell's Republican gubernatorial administration.

Smaller? Bigger? Rather, a sterling example of smarter. Our work had left Virginia better prepared to confront the challenges of its future. I believed that it had done the same for me.