



Fostering a Culture of Innovation
and Entrepreneurship

The author acknowledges the insights from many participants, supporters, and mentors of the HHS IDEA Lab. This work is dedicated to the thousands of employees in the federal workforce who bring extraordinary passion, brilliance, and commitment in service to country - *everyday*. Thank you.

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Executive Summary

What are the critical ingredients that drive change and fuel a culture of innovation and entrepreneurship in large, complex organizations like the U.S. Department of Health and Human Services (HHS)? The Innovation Horizons Project examines the hypothesis that government can create this culture through the use of key strategies and strong leadership. Experience to date, across the public and private sectors has shown that strong and clear leadership, employee empowerment to solve problems, management practices to test, evaluate and scale innovation, enabling technologies and a system of accountability are critical to cultivate and sustain innovation. This experience is supported by theories underpinning change management and delivery science but also proven methods and practices in HHS's IDEA Lab under the direction of the Chief Technology Officer. These have included the effective demonstration of utility in crowd sourcing, design thinking, Agile, and Lean Startup methods, and employee recognition programs.

Fostering a culture of innovation, however, would not be possible if an innovation strategy, which is an integral component of building a culture of innovation, does not account for the impact on the people within the organization. Disruptive innovation can lead to more efficient alternative paths around existing complex business structures, but needs to be pursued without interrupting or compromising outcomes, such health care delivery or critical public health functions. The experience of the HHS IDEA Lab shows that learning and adapting through mentored experimental experiences allows for the responsive iteration of new concepts and process improvements that enable the scaling of valuable innovations. Business and management practices across most sectors are developing formal programs in innovation for competitive purposes to improve performance and achieve greater stakeholder value. Similar innovation practices have been adopted across all levels of government, but states and cities have more easily engaged end users of public programs than the federal government and have acted as test labs for larger governmental organizations.

What are the key lessons learned from the HHS innovation experience thus far? One is that a central locus of expertise and assistance is valued by the organization to allow for testing and sharing of ideas before they're fully scaled into programs or agency operations. The HHS IDEA lab has been a safe, effective, and efficient way for employees to incubate, test, refine and, when feasible, scale solutions that address HHS top priorities. From a management perspective, this approach diminishes aspects of risk (i.e., accountability, financial, and professional status) and enhances the value of the time and resources spent on exploring the new approach. Secondly, the approach taken to build the program activities has demonstrated merit in project outcomes and program performance. This is in part due to the responsiveness of the programs to customer needs. The current structure of programs and operations was conceived using the same approach as a business startup enterprise. HHS innovation programs were designed with user-centric input and not based on a Congressional mandate or specific operational blueprint from the executive branch. The projects were designed, tested, and iteratively remolded to meet program needs through user feedback. Despite leadership changes and political directives, the core operating principles were refined and ultimately served as a compass across government for bringing business concepts into operations with demonstrable results.

Looking forward, while there is strong evidence suggesting that HHS innovation programs should continue, there are opportunities to explore de-centralized innovation program offerings through collaborations with agencies. However, these growth efforts will need additional resources to support the training and set up of the remote operations. In addition, the value of these programs can be strengthened by establishing incentives and performance benchmarks for managers to embrace employee problem-solving as an important consideration for HHS.

Leadership is the most important variable in establishing a culture of innovation particularly in deciding where to take risk, and how to sustain innovation in normal work force operations (i.e., creating a 'protected space' for ideas to be tested). The public demonstration of commitment to innovation and provision of expectations on how risk and performance are managed as a result are critical elements of the leadership role to achieve positive culture change in the organization.

The next administration may wish to secure financial and staff resources to sustain an innovation portfolio that achieves measurable improvements in performance for critical HHS programs and processes in order to realize the goal of better health, smarter spending and healthier people. One to consider is to use alternative methods for capital and operational budget support of innovation operations that are performed-based, and more strongly encourage and enable HHS programs and private sector collaborations in emerging areas of mutual benefit. On the road ahead, a new look could be taken at the roles of the Chief Technology Officer and in particular, it is suggested that two distinct positions for a Chief Transformation Officer and Chief Data Officer would allow for a more effective innovation, data, and technology strategies to be tested and scaled.

Innovation within and across HHS programs will significantly enable accomplishment of key performance objectives for HHS including a successful transition to value-based health care payment, efficient regulation of medical products, improvements in clinical research, and responses to public health threats. As the next administration develops and implements its top policy priorities and faces new challenges to its infrastructure and operations, there is a significant opportunity to build on the existing innovation programs and capabilities to drive improvements in health and health care throughout the delivery system. Building on a strong foundation, it is strongly advised that the new Administration develop capacities for culture change, particularly by enhancing innovation and entrepreneurship as highly visible values by the organization's leaders, and reinforcing it through performance management practice policies.

Chapter 1

Innovation and Entrepreneurship in the U.S. Department of Health and Human Services

“I have an idea about a way to solve a problem that I know is important, but I don’t know where to start.” This is often how conversations about innovation begin within the U.S. Department of Health and Human Services (HHS). Such statements are also typically made by individuals who are not particularly familiar with the topic under discussion, and that may cause some to be reticent. Often, however, there is spark in the individual’s eye when the excitement builds and they realize the risk and courage that is necessary to enact change. Having an idea is the start of the quintessentially human pursuit of creation – which at HHS can be as simple as building new tools, training, or processes. But in the end, the pursuit requires autonomy to explore the new idea, and to do so outside the box.

This report is intended to shine a light on the opportunities at hand to further a culture of innovation within HHS. The hope is that implementing the ideas contained below may enable our mission of enhancing the health and well-being of Americans. Recognizing that HHS has applied policies and resources since 2009 to foster innovation, this report also reflects on some of the key initiatives that have underscored the Secretary’s innovation agenda and inspired entrepreneurship within the workforce.

The HHS Chief Technology Officer (CTO) has been the primary champion and executive sponsor for innovation across HHS agencies and offices by supporting efforts at the operations, policy, and staff levels. The innovation portfolio led by the HHS CTO is the main focus of this research and analysis. There has been substantial interest in how government agencies pursue national strategies for innovation in public programs. Given this interest, the details and examples are intended to demonstrate how some strategies may be successfully adopted in business and the private sector. Likewise, examples of promising innovation practices from the marketplace are highlighted with the intent of forecasting future opportunities for HHS.

The methodology used to develop this document included a review of the literature on innovation and management practices; a review of the history of the HHS programs on innovation; and interviews with leaders from organizations in other sectors, including education, technology, retail, finance and others. These interviews specifically sought to highlight how innovation is supported and sustained in other large and complex organizations. Startup ventures and small businesses were mostly excluded because the culture of these organizations is typically quite different because of their approach to risk and decision-making. Leadership itself is a key focus and is examined through extensive interviews and analyses of private-sector organizations’ innovation operations. Additional input into this work was derived from participation in two regional forums on innovation business and management practices. The Business Innovation Factory, led by Saul Kaplan of Providence, Rhode Island, was convened in September 2016 for intense discussions on innovation among 50 executives, business, and social leaders. The Berkeley Innovation Forum, sponsored by the Haas School of Business at the University of California-Berkeley and led by Henry Chesbrough, brought together world leaders on open innovation methodology in October 2016. In both cases, the inputs revealed that many private sector entities are

similarly challenged with innovation culture issues such as sustainability, resources to test new approaches, and leadership engagement in the importance of innovation.

Where feasible, this thesis draws connections and underscores differences in government innovation from those of the private sector. The traits, skills, experiences, and business methods of entrepreneurs in startup modes within non-startups and larger organizations are very much of interest and explored here. Although nascent and difficult to gauge, the internal efforts to measure and demonstrate the value of innovation programs are outlined and highlighted in the body of this report.

In developing the HHS innovation programs and conducting the research for this report, it was often asked “what is the role of government in promoting innovation and entrepreneurship?” Many leaders and authors have prominently expressed their views on the role and influences government has in promoting research, advancing knowledge, encouraging sociologic advances, promoting economic and business opportunities from a national competitive perspective and many other perspectives. HHS has previously authored analyses and prospective views on how HHS influences on many sectors of society and economy effect innovation practices.¹ The Office of Personnel Management addresses this topic from a performance management and for the most part, this report follows this direction.² Here, they cite the work of Sanford Borins who provides an in-depth analysis of innovation and entrepreneurship in government performance. (Borins, 2006). The design of innovation programs at HHS was based on theory, results from other federal agencies, and insights derived from subject matter experts and the HHS Innovation Council. It is beyond the scope of this endeavor to analyze this question from a broad societal impact, but rather this report takes a perspective on innovation and entrepreneurship in government performance to support the respective missions of the agencies.

In the private sector, innovation is recognized as the product of an invention and the commercialization of the invention. In government, recognizing that there is not a marketplace in the sense of the business world, innovation is the product of an invention and its effective exploitation in practice as either a technology, process, or policy. Innovation can be driven by any number of forces underpinning the organization’s aim to improve performance toward a particular goal. There are forces at play by the individual, in the case of this work, the federal employee, that serve as motivators to expand their horizons and seize opportunities for problem solving. The desire and ability to promote change by acting on new ideas is largely influenced by the current state of practices and norms within groups of people. We call that state our *culture* and define it as a way of thinking, behaving, or working that exists in a place or organization (such as a business).

For the purposes of this document, the *culture of innovation* is defined as:

“An accepted attitude or mindset of an organization that recognizes innovation as a novel and discontinuously different product, service, process, organizational structure, or business model that adds substantive value and its origin is based in a different way of seeing, understanding and thinking about something in the world” (Samet & Smith, 2016)

¹ https://archive.hhs.gov/deputysecretary/innovationconference/INNOVATION_REPORT.pdf

² <https://www.opm.gov/policy-data-oversight/performance-management/reference-materials/historical/promoting-innovation-in-government/>

This report also examines entrepreneurship practices that are nurtured and act as a driver of innovation. For the purposes of this examination, entrepreneurship is defined as the pursuit of opportunity beyond resources controlled (Stevenson & Gumpert, 1985). Throughout this document, the attraction of entrepreneurs to the federal government as a civic means of social entrepreneurship is examined as well as the efforts to bolster these skills and practices within the workforce as a valued characteristic.

It is noteworthy that many of the examples of innovation activities described here involve information technology (IT) and that digital government is a common component of government modernization and innovation. However, it is beyond the general scope of this document to explore in-depth the role of IT or health IT in innovation unless under a specific situation. Similarly, with regard to entrepreneurship practices, there has been ample discussion in other settings about the influences of Silicon Valley-type technology startup strategies and core business values. It's beyond the scope of this discussion to explore these save some select examples of particular companies or individuals.

This document is structured to build your knowledge base about innovation and entrepreneurship principles as well as practical applications relevant to HHS. Recommendations and viewpoints on future opportunities are offered at an organizational level. Those interested in building institutional capacities for innovation and entrepreneurship, and identifying leadership qualities that can help guide organizations on their journey will benefit most from this report.

Chapter 2 *Innovation Management Theory in Government Practice* strives to describe business and management theories about innovation and demonstrate that the underpinnings of these practices are used at HHS. Here, there is also an attempt to show how certain practices and specific teachings are modified for the unique applications within government systems.

In Chapter 3, *The Management Design and Evolution of the HHS Secretary's Innovation Programs*, the reader is presented with the developmental history of the activities and leading practices used within HHS.

For comparative purposes, Chapter 4, *Innovation and Entrepreneurship in Domestic State and City Governments*, provides insights into examples of how local governments' service components are being enhanced with front-line practices to promote new ideas and leverage opportunities for improving services.

In Chapter 5, *Models of Sustainable Innovation from Large Private Sector Organizations*, reflections from executive interviews identifies key characteristics of large, complex private-sector businesses in search of common themes and applicable options to government. It describes leadership models and innovation perspectives from large bureaucratic organizations and identifies the ways they value innovation and sustain it. This section also explores the attributes of strong organizational leaders and how they clarify commitment toward key values.

Finally, Chapter 6, *Strategies for the Future* lays out options, observations, and suggestions to enhance the HHS innovation programs going forward. Building on past program results, applying management

theory into practice, and drawing from experiences in other sectors, offers our successors a sense of where they may be able to start their own innovation story.

The topics explored in these chapters provide a management perspective and a business case for embracing a culture of innovation. It is recognized by many that HHS is a leader in federal government innovation due to its efforts to improve upon a wide range of program development and implementation activities—from cutting-edge research programs, massive efforts to transform health care delivery, to supporting social service programs nationwide. By looking at management culture within HHS through the lens of these roles, one can achieve a picture of the cultural adaptations at play. These cultural changes could have a profound impact on basic science research, development of novel medical technologies, health care delivery and financing, and public health. HHS, however, may be considered conservative in its approach to developing a balanced portfolio of risk on a government-wide scale of entrepreneurship and innovation, particularly when compared to NASA, and the defense and domestic security agencies.

Clearly, the ‘culture of innovation’ has important implications for the mission of HHS and the many stakeholders involved in our mission. There are many realities that present the Department with barriers to organizational change management strategies. These include the strain of new societal demands, changing workforce expectations, constrained resources, and a highly diverse workforce with widely divergent views on management approaches. In the realm of policy and decision-making, risk management is the issue that creates the most uncertainty when choosing new paths to explore.

These are not new challenges for HHS. In his seminal writing in the 1970s, Rufus Miles Jr. wrote this of HHS’s predecessor organization: “The fact must be faced that [the Department of Health Education and Welfare (HEW)] is not the kind of organization that is subject to ‘good management’ by a manager. It is, first and foremost, a political organization, not political in the invidious sense, but in the sense that the elected representatives of the people – the Congress – have intense interests in participating in the policy and management decisions of the Department. Politics, according to Harold Lasswell, is ‘who gets what, when and how. In those terms, HEW has an inseparable combination of political and management problems that make both General Motors and the Department of Defense look like simple enterprises.’” (Miles, 1974)

The past eight years of HHS experimentation with innovation and entrepreneurship has yielded a strong base of experience from which the next administration can build upon. This paper is a summary reflection from a management view of that work and provides a suggestive roadmap to guide those in the HHS workforce and help them explore new horizons of opportunity. It can help them condition their entrepreneurial muscles, so to speak, and enable them to build a culture of innovation for tomorrow.

Chapter 2

Innovation Management Theory in Government Practice

The evolution of the Secretary's HHS innovation portfolio since 2009 has coincided with a growth in interest in management models of innovation from a variety of authorities and organizations. Virtually every aspect of the business and consumer retail marketplace experience is encountering massive amounts of innovation and this is largely emboldened by revolutionary communication and information technology advances. Catapulted initially by the Internet, and now accelerated by the 'Internet-of-Things,' the idea of innovation is almost ubiquitous for most people in their daily lives. Some have referred to this as the "third wave" of the Internet'; a transition from the use of the Internet as something we interact with to a platform that interacts with everything around us. The result will be an incredible shift within industries and government. The role of entrepreneurs will evolve from just building profit to helping them purpose their mission to make a global impact (Case, 2016). Low cost, highly mobile, and widely accessible to almost all segments of American society, these incredibly advanced tools bring connectivity and usability to new audiences at a furious pace. These advances coupled with the vast amounts of data on almost anything are major factors that underpin the wide use of the 'innovation' term into the everyday lexicon of consumers and businesses.

With some exceptions, the lay and management literature has reflected increased interest in the modernization of business practices through uses of new technology platforms. This has resulted in rapidly expanding access to metrics and data, activities to design and optimize workflow processes, enhanced employee engagement strategies, and evolving social policies.

One simple example of optimized workflow that has rippled throughout the U.S. health care sector is Peter Pronovost's intensive care unit (ICU) checklist. Designed to reduce the incidence of central line infections that often lead to sepsis and the death of the patient, Dr. Pronovost had nurses track how often critical-care physicians washed their hands, cleaned the patients skin with chlorhexidine antiseptic, put sterile drapes over the entire patient, wore a sterile mask, hat, gown and gloves and, finally, put a sterile dressing over the catheter site once the line is placed. Over a month's period, the nurses found that doctors missed one of the steps on more than a third of the patients. Over a year's time, when the above central-line checklist was followed, Pronovost found that the ten-day line infection rate went from 11 percent to zero.

"Pronovost is hardly the first person in medicine to use a checklist. But he is among the first to recognize its power to save lives and take advantage of the breath of its possibilities," Atul Gawande wrote about Pronovost's innovations in the intensive care unit (which, by the way, were scaled up at eight Michigan hospitals saving \$175 million and – more importantly – more than 1,500 patients' lives). (Gawande, 2009)

There is widespread inconsistency in the use of the term 'innovation' and related concepts throughout sectors of our economy and society, which often makes comparing one sector, or business application to another, challenging. Government is primarily interested in the value of innovation from a societal perspective, e.g., does an innovation in a publicly financed health insurance enrollment process improve

access to health care in the low income population, whereas private industry would view market performance or return on investment as the outcome to change. Given that the intended outcomes of startup enterprises in the private sector are substantially different from government, the generalizability of innovation principles in HHS practices and programs is relatively unknown and complicated often by unclear value propositions.

Developing an informed perspective on innovation theory and organizational dynamics of change is helpful to those establishing a new approach to bringing innovation practices into their own environment. Being equipped with the historical basis for sociologic and business drivers of change management and related challenges can be extremely helpful in avoiding common pitfalls or roadblocks in establishing a plan and executing it. With almost any innovation agenda or particular initiative, success will be largely dependent on collaboration with trusted colleagues and establishing a community of users who in practice embrace and enable change. Particularly in developing new initiatives in government, a leader or change management team is often faced with a scarcity of resources and knowledge of a particular problem to be solved and is highly dependent on talent from within and outside the organization to establish an innovation activity. Further, the complexity of the challenges faced by executives today brings into scope concerns that involve a broad array of ethical, legal and social implications that innovators will encounter. Addressing the issues that arise over disruptive innovations requires transparent approaches for engaging all affected audiences in meaningful discussions about the innovations to enable successful adoption across an organization. This chapter will examine different aspects and tools to enable innovation in government including crowdsourcing, design thinking, delivery science, behavioral economics and lean start-up methodologies.

A working knowledge of the fundamentals of innovation theory, coupled with real world business examples can help government leaders establish new approaches to problem solving. Many of the processes for innovation and measures of progress in private industry are applicable to federal government. For example, Procter & Gamble has successfully crowdsourced ideas from outside the corporate structure in the design of new products. Their culture of engaging their customer base and entrepreneurs from outside the company enabled them to gain market share, move technologies not suitable to their product lines into other companies (i.e., outsourced), and expedite engineering solutions. In the early shaping of the HHS Open Government Initiative, HHS invited Bruce Brown, then head of Procter & Gamble's research and development team, to address the Innovation Council and explain how their open innovation business model worked. He pointed to the now famous example of how consumer input and engineering talent from outside the company underpinned the user design for their product, Swiffer, through an open innovation program called Connect. + Develop program (Huston, 2006). That program elicited thousands of concepts from outside the organization through a form of crowdsourcing and then used a stage-gate approach to manage the new ideas. Procter & Gamble's innovation strategy and related culture change within the company to manage new ideas was a significant one but led to a tripling of new products and impressive growth in the company (Brown, 2011) Corporate leaders from Procter & Gamble and other companies with open innovation programs have much to offer government, including ideas, experiences, inputs, and collaborations. Business leaders in highly innovative companies can participate in government-led innovation as judges for prize

competitions; they can share private sector expertise in entrepreneur-in-residence programs, and coach and mentor civil servants.

Google's People Innovation Lab (PiLab), is another private sector example of engaging the workforce in a culture of innovation. HHS invited Jennifer Kurkoski, who directs PiLab, an applied research and development lab in Google's People Operations (a.k.a., Human Resources) department to speak to Google's approach to creating a culture of innovation. She explained how her psychology research in the workplace is informing their corporate strategies on innovation. Google is well known for its unique approach to innovation - from its open culture and radical work environment in its Googleplex campus, to its methods for innovation. These innovation principles in engineering and marketing management were at the heart of their meteoric growth. From its formation in 1998, Google has grown to become a \$62 billion company. One of its best known innovation mechanisms was its policy of '20% time' which allowed its engineers to spend 20% of their time on personal projects. Since 2011, Google has backed away somewhat and 'evolved' in its innovative management approaches but has focused 20% time in areas such as workforce diversity initiatives. Regardless, Kurkoski identified that in the technology industry, there is pent up desire for committing value in social entrepreneurship and ways for employees to provide value for social good (Dekas, 2013). Kurkoski refers to these as organizational citizenship behaviors among employees and she also advocates for this as an active area of research to measure and track.

The corporate engineering design thinking approach for information technology devices and products sparked a revolution in engineering solutions. Dean Hovey, a frequent contributor to HHS' innovation team, participated in open innovation forums, recruitment of talent, and innovation strategy. Hovey co-founded with David Kelly the product design consulting firm now known as IDEO in Silicon Valley where he is credited with the design and commercialization of the computer mouse for Apple Computer. Design thinking strategies have been instrumental as a core capability for private sector research and development. The company has an open innovation forum, IDEO.org, which engages their design experts and engineers in serving civic needs outside their corporate business structure. HHS has engaged IDEO leadership in designing open innovation strategies for a wide array of programmatic needs including the development of a user interface for the health insurance marketplace, and low-cost, high impact, technologies used in developing countries health programs. Design thinking, and co-creation – the engagement of multiple entities in creating a product or service, are applicable to government practices in many ways. Some have referred to design thinking as practices that 'level out' cultural differences in community views. Adoption of the design thinking concept is relatively low in terms of cost and time and is increasingly becoming part of government application development. Another example of design thinking and its importance in creating solutions to complex programs is the media produced from TED (formerly Technology, Education and Design) the widely popular forum that attracts leading figures in business, technology, and entertainment. An excellent summary of the ways that design thinking is emerging as a powerful sociologic force for change is provided by Kimbrell (Kimbrell L. , 2011) (Kimbrell L. , 2012). There are many emerging new opportunities for research on the practices of design thinking in government.

What are some ways that innovation principles get translated into government programs and practice? From the outset of the Obama administration, the executive orders, guidances³, and principles that set in motion the HHS innovation activities originally were based in teachings, publications, and practices from several members of the senior leadership team. While establishing a base for innovation and modernization of government was a priority, these initiatives were not necessarily informed by academic teachings or philosophies. Most of the early stage programs at HHS were developed based on learned experiences and examples tried in other sectors. Similarly, many of the early initiatives were based on applications of low cost information technology platforms and the emergence of social media as a business platform for government. It is hard to appreciate this fact now, but as government started to embrace innovation, use of personal devices and social media were not allowed in government business practices at the beginning of this decade.

How, then, were these initiatives introduced into practice? On occasion, guest speakers or leaders from academia would present ideas and suggest targeted applications that would enable specific agencies' initiatives. In other cases, they served as evangelists by supporting communications, i.e., articles, blog posts, or Twitter to help set the stage for future work on innovation practices, such as open government. In other cases, entrepreneurs embed themselves in teams as advisors or mentors. As the theory and practice of open government and open innovation are applied at other levels of government, opportunities emerge for greater collaboration and partnership across federal, state, and local domains of government. Cross government collaboration on innovative practices in emergency preparedness and response have become experimental hotbeds for new technologies and business processes.

One common experience that government innovators often reference as a model of civic entrepreneurship is derived from the British government in the early years of the 21st century. During the second half of Prime Minister Tony Blair's administration, the government put into place the practices now known as the Barber-Blair model, which focused on the delivery of services and new management practices to execute measurable change in public services. Sir Michael Barber led the formation of the Prime Minister's Delivery Unit (PDMU) in 2001 as Chief Minister of Delivery aimed at securing the implementation and 'delivery' of the Prime Ministers domestic policy priorities. Delivery meant more than passing laws and writing speeches. It meant changing the facts on the ground and ensuring that citizens could see and feel the difference. The task of the PDMU was to translate reform policy into results.

In their work the PDMU addressed five relevant questions to their innovation endeavor:

1. What is it that you are trying to do? In this model, the question was "what is the target" of the problem? And how do we pair each priority with a clear definition of success.
2. How are you trying to do it? They asked the relevant departments to prepare delivery plans setting out how they intended to meet the targets.

³ Guidance documents represent the Agency's current thinking on a particular subject. They do not create or confer any rights for or on any person and do not operate to bind the Agency or the public. An alternative approach may be used if such approach satisfies the requirements of the applicable statute, regulations, or both.

3. How, at any given moment, will you know you are on track? Metrics are keenly important. The PMDU introduced quarterly monitoring meetings, which we called “stock takes,” between the relevant ministers and Prime Minister Blair.
4. If you are not on track, what are you going to do about it? In his experience, problems can always be solved. Some problems are relatively simple to fix; others are much harder. For the latter, what matters is that you try something—and if that doesn’t work, try something else, and keep trying until you get a result.
5. Can the PMDU help? The PMDU didn’t just monitor the performance of government. It also rolled up its sleeves and helped solve problems. When it succeeded, it congratulated the relevant department rather than taking credit for itself. The PMDU never yelled at people, West Wing style. Instead, it built trusting relationships and took the view that everyone in government shared responsibility for the outcomes. And it developed techniques that could help solve problems—rapid reviews and delivery-chain analysis, for example. Crucially, the unit was persistent; it wouldn’t go away until a problem was solved. It was ambitious, too, however tough the present might have looked.

The PMDU innovation activities were aimed at enabling Prime Minister Blair’s major initiatives in education, health, and transportation. The PMDU as a startup entity was functioning until October 2010 when it was closed by the Coalition Government. The PMDU is an excellent example of how government operations can focus around specific goals to yield breakthrough results. Details about the operations and business principles of the PMDU have recently been summarized in a report by Panchamia and Thomas.⁴ Many government organizations, and non-profit civic organizations such as the Bloomberg Philanthropies, have adapted the Barber-Blair model as a framework for disruptive innovation in a performance management, macro-government model.

In his recent book, Sir Michael Barber establishes 57 rules for success. He notes the combination of big data, a more sophisticated understanding of how to shape and scale reforms, and judicious use of markets make it “perfectly possible to run a government so that citizens benefit.” (Barber M. , 2015). After his departure from the Blair government, Barber applied this service innovation delivery model to global education, leading efforts with McKinsey & Co.’s Global Education Practice to improve education system reforms through advisory roles in over 40 countries, most notably co-chairing reforms in Pakistan. Among his most popular works was a comprehensive guide to education system reform and delivery, *Deliverology 101* (Barber, *Deliverology 101: A Field Guide For Educational Leaders.*, 2011). In this work, he defines *deliverology* as a systematic process for driving progress results improvement and the public sector. Barber’s innovative education delivery reform efforts are continuing to evolve at the global education company, Pearson, where he serves as Chief Education Advisor and leads efforts to establish open global education databanks focused on learning and efficacy. These efforts are closely

⁴ Panchamia, Nehal; Thomas, Peter (2014). Civil Service Reform in the Real World: Patterns of success in UK civil service reform (PDF) (Report). Institute for Government. p. 49. Retrieved 3 September 2016.

linked to innovations in education reform themes captured later in this report by Arizona State University President Michael C. Crow.⁵

World Bank President Jim Yong Kim calls the ‘science of delivery’ – the growing knowledge base about how governments can successfully deliver results - a new concept that evolved in the past decade. Governments across every time zone wrestle with the challenge of delivery on a daily basis. The challenge for the World Bank is to innovate in an effort to improve how things work on the ground. Kim refers to the uniqueness of integrating knowledge of problem solving with modern funding models to enhance the value and potential of success of publicly financed programs in the developing world. He noted that the work of innovative delivery is much different than clinical trials and other sorts of science. In doing so, Kim underscores his thinking that delivery of services can itself become a new science. As more governments recognize the urgency of delivering results that go beyond the incremental, we can learn quickly what works and what doesn’t and unleash the science that will change millions of lives for the better. Kim’s writings on the science of delivery were spurred by what he saw as the shortfalls of health care. He noted in 2010: “We cannot address the ever-increasing, unsustainable costs of health care without getting to the foundation of how care is provided. Nor can we achieve the social and moral goals we share – *care that is safe, appropriate, effective, and high quality for every patient, in every community* – without rethinking and redesigning delivery. Real improvements require a multidisciplinary approach that will bring the best minds to focus on the problem. Experts in management, systems thinking and engineering, sociology, anthropology, economics, medicine, health policy, and other fields must join together to fix the delivery system” (Kim, 2010) In his inaugural address to the World Bank Kim described his vision of a “science of delivery”, which is not as simple as just saying “this works, this doesn’t.” Effective delivery demands “context-specific knowledge. It requires constant adjustments, a willingness to take smart risks, and a relentless focus on the details of implementation.” Although this perspective was intended for his work at the World Bank, the pursuit of a knowledge delivery system, seems apropos for the work of HHS and its agencies and should be the centerpiece of what innovation and entrepreneurship are intended to accomplish. Kim also emphasized time and time again, the remarks made by John Sloan Dickey, a prior Dartmouth University president - "The world's troubles are your troubles...and there is nothing wrong with the world that better human beings cannot fix."⁶

The United States Department of State’s Global Entrepreneurship Program is another example of how government can play a key role in fostering innovation and entrepreneurship that creates massive social impact. In his recent book, Steven Koltai, shares a vision of how government-sponsored entrepreneurship activities in the developing world can catalyze enormous impact on the cultures of developing societies that are hampered by high unemployment and government instability. Koltai, the founder of the Global Entrepreneurship Program, makes a case for greater engagement of U.S. government leadership and setting a higher priority for these efforts through the creation of new

⁵ “Sir Michael Barber to Join Pearson as Chief Education Advisor”. <http://www.pearsoned.com/news/sir-michael-barber-join-pearson-chief-education-advisor/>. 26 May 2011. Accessed September 1, 2016.

⁶ John Sloan Dickey, 12th President of Dartmouth University. Commencement Speech, October 1946.

procurement methods and by engaging talent to promote strengthened global values through entrepreneurship. (Koltai, 2016)

The White House has advanced another trans-governmental innovation initiative involving the use of behavioral economics to positively impact public program beneficiaries (Thaler, 2008). In their book, *Nudge*, Thaler and Sunstein discuss how public and private organizations can help people make better choices in their daily lives. This work builds on fundamental psychology work established by Kahneman and Tversky who in their landmark research found that people consistently made mistakes in analyzing risk and paying excessive amounts to avoid dangers that are highly unlikely (Kahneman, 1979). Insights from behavioral economics suggest that a deeper understanding of decision-making and behavior could improve human services program design and outcomes. However, there has been relatively little exploration of the potential application of this science to complex, large-scale human services programs.

In 2014, the White House Office of Science and Technology Policy established a Social and Behavioral Sciences Team. In 2015, President Obama issued an executive order providing a directive to agencies to study and deploy behavioral insights best practices to benefit the public.⁷ For the last two years, the White House has published an annual report on the ongoing work for the behavioral insights at the team's website: <https://sbst.gov/>

HHS IDEA lab initiated work in this area in 2014 through a series of meetings to identify opportunity for engaging HHS programs in discussions about behavioral economics.⁸ In addition, a study conducted by the Assistant Secretary for Planning and Evaluation analyzed how behavioral economics could be applied in the implementation of the Affordable Care Act (ACA). This work examined the avoidance of fatigue in two aspects of the ACA; 1) the use of waivers that avoided the need for individualized income determinations to be made for providing Medicaid services to beneficiaries of the Supplemental Nutrition Assistance Program (SNAP) and 2) the application process for the Health Insurance marketplace and the SNAP program.

Further, the Office of Research, Planning and Evaluation at the Administration for Children and Families conducted a series of project reports on uses of behavioral economics in their Behavioral Interventions to Advance Self-Sufficiency (BIAS) program.⁹ The purpose of the project was to apply behavioral insights to issues related to the design and implementation of social service programs and policies. The project examined four tests of behavioral interventions intended to increase the percentage of parents who made child support payments in Cuyahoga County, Ohio and found that low-cost, low-effort behavioral interventions can improve child support outcomes.

Finally, the use of Lean Startup methodology is another business innovation practice that the government successfully applied to programs and processes. The notion of taking large complex problems and designing solutions for components of them in small conceivable elements has

⁷ <https://www.whitehouse.gov/the-press-office/2015/09/15/executive-order-using-behavioral-science-insights-better-serve-american>

⁸ <https://www.hhs.gov/idealab/2014/07/24/can-behavioral-economics-improve-human-services-programs-acfs-behavioral-interventions-to-advance-self-sufficiency-bias-project/>

⁹ <http://www.acf.hhs.gov/opre/research/project/behavioral-interventions-to-advance-self-sufficiency>

widespread interest, not only in business applications but also in government. Lean methodology was widely popularized by the author and entrepreneur, Eric Ries (Ries, 2011). Lean methods provide a scientific approach that enables problem solvers to create start-up projects or solutions that enhance the likelihood of success and bring users a higher degree of satisfaction. Behind the success of this approach in private sector startups is the immense importance of input from the prospective customer early and throughout the development process. The core enabler of this method is developing a minimum viable product (MVP) that can be applied by the entrepreneur to test the design by measuring the user experience with it and eliminating uncertainty through multiple small steps of improvement toward a final product. Increasingly the Lean Startup approach is applied in government to get better solutions for government processes (Teeuwen, 2011). An excellent composite of open data fueled innovations using Lean Startup methodologies in government, the work of Goldstein and Dyson emphasizes how civic services are improved and greater value achieved by government programs through Lean Startup methods (Goldstein, 2013).

A key element that any organization or leader must consider in their approach to problem solving and strategic approaches to change management is the notion of disruptive innovation. The theory of disruptive innovation originally described in the phenomena of commercial success of small, startup entrepreneurial companies is attributed to Clayton Christensen. The theory suggests that disruption is a process (not a technology or product) whereby a smaller company or organization with fewer resources is able to successfully challenge established incumbent businesses in a particular sector. The rationale underpinning the opportunity for the startups is that incumbent businesses focus on improving their products or services for their known customer base; they thereby exceed the needs of some segments and ignore other customers. The entrepreneurial startup successfully targets these overlooked customer segments and gains a strategic foothold by providing more functional and economical solutions. As a result of success in a defined market, the new startup seizes opportunity to improve and provides better performance than the incumbent, and yields market share moving from the incumbent, who has then been disrupted from outside competition (Christensen C. M., *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, 1997) (Christensen & Bowser, 1995) (Christiansen & Raynor, 2015). There is substantial debate in management literature about this theory in the context of commercial business success. Despite this, the term disruptive innovation has been swept into the lexicon of government innovation over the last decade (Weeks, 2015) (Christensen C. M., *The Innovator's Prescription: A Disruptive Solution for Health Care*, 2009).

Shaping the direction for new government innovation efforts can likely succeed by investing time and analysis into the landscape of the programs, processes, and communities affected by the transformation that is planned. The particular innovation method used to achieve successful change may be less important than the approach taken by leadership to convey the urgency, importance and specificity about how to achieve value to the mission's objective.

Much debate lies ahead on how to shape the experiences of an organization's culture so that innovation is embraced and not held hostage to conventional thinking and ineffective results. The field of government innovation can likely be strengthened by embracing transparency of its methods and results, including failures, and searching for new ways to empower individuals to practice innovative

methods in their work. The empowerment of staff, transparency in the innovation methods and results, and consistent communication by organization leadership about the value of performance improvement are crucial factors that should be designed into the innovation plan from the start.

Chapter 3

The Design, Management, and Evolution of the HHS Secretary's Innovation Programs

The one word that best describes the Secretary's innovation portfolio at HHS is 'experiment.' From the beginning, each innovation program has evolved through experimentation with program design and execution to achieve a specific goal. Organizationally, an innovation incubator was established within the Immediate Office of the Secretary dubbed the IDEA (innovation, design, entrepreneurship, and action) Lab. The goal was to build a community of innovators who were empowered to apply knowledge, skills and tools to improve their work. Over the years, more than 2,000 HHS employees have been engaged in some facet of innovation through the IDEA Lab programs. Inasmuch as IDEA Lab represents a set of programs and a physical space, its primary purpose is to support a community or network of interested members of the HHS workforce and its entrepreneurial private sector partners imbedded in HHS agencies.

The foundation for the HHS innovation activities beginning in 2009 were initiated with a White House Committee on Innovation and Information Technology that was led by the U.S. Chief Technology Officer, U.S. Chief Information Officer, and special advisors who provided key expertise in coordinating federal-wide activities. Among the leadership were:

- Aneesh Chopra, US CTO;
- Tom Kalil, Deputy Administrator of the Office of Science and Technology Policy;
- Susan Crawford, President's Special Assistant for Science, Technology, and Innovation Policy;
- Vivek Kundra US CIO;
- Beth Noveck, Deputy CTO and White House Open Government Initiative Director;
- Bob Kocher, Special Assistant to the President for Healthcare and Economic Policy on the National Economic Council;
- Greg Downing, Executive Director of Innovation, representing HHS.

Several dynamic social and organizational factors contributed to the need for innovation. Like many government agencies, HHS faces growing programmatic needs coupled with many components of outdated or poorly performing infrastructure, aging workforce, and management inefficiencies. The vastness of the Department's mission and reach into civil society contributed to its organizational design comprised of many large agencies that often struggled to work in tandem when responding to emerging needs. Functioning more as a 'holding organization' and less as an 'enterprise' form of central management, HHS operational structure presents many challenges to the Office of the Secretary leadership when emergency situations or new, large-scale projects involving multiple agencies were undertaken. Workforce and management adaptations in HHS environments are typically, but not always slow, and this lagging behind the private sector makes it difficult to compete with the corporate world in talent markets, which embrace new digital technologies, and transition to collaborative engagement styles in business decision making. These and other factors hampered our ability to mimic the technological advances and productivity improvements achieved in other sectors and by some other agencies. In addition, there was significant concern about how the public viewed the value of

government coupled with a lack of trust and confidence within the organization about maintaining high-quality public services.

In the early days of the Obama Administration at HHS, the Deputy Secretary requested information on innovation activities and asked that a devoted effort be undertaken to address and recognize the innovation capacity of HHS. On August 7, 2009, HHS announced the appointment of Todd Park as the agency's first Chief Technology Officer, and among his portfolio of activities were open government, innovation, and health care. A veteran tech entrepreneur and founder of Athenahealth, a health IT cloud-based startup, Park's approach to problem solving was associated with the private sector role of "entrepreneur-in-residence," although informally, it was the first time that title was used in HHS leadership ranks.¹⁰ The lack of role definition for the CTO was further complicated by an existing but separate administrative body designed to oversee IT: the Chief Technology Officers Council.¹¹ The CTO Council is a management authority under the Chief Information Officer, which was not a political appointment, and reports to the Assistant Secretary for Administration. The responsibilities under the "CTO" moniker and the eventual focus on innovation and entrepreneurship of this role, created some confusion and communication challenges over time.

On the first day of his presidency, President Obama announced a sweeping set of changes to modify procedures that would enable government processes to be more transparent, participatory and collaborative. This "Open Government Policy" was followed by Executive Orders from the Office of Management and Budget.¹² In his first act as CTO, Park undertook the development of the first Open Government Plan to respond to the Executive Order, with the Assistant Secretary for Financial Resources (ASFR).¹³ More detailed directives addressing the use of social media, technology adaptation, and policy frameworks to achieve open government practices and to modernize government services were provided in a December 2009 OMB directive that called for each agency to create Open Government plans.¹⁴ In one of the first management steps to address this directive, the HHS Deputy Secretary requested that a chartered Innovation Council be formed to advise the HHS leadership. The Council was created and led by the CTO and the Assistant Secretary for Administration. The role of the Council was used as a communication hub, adjudication process, and execution arm for innovation activities, many of which were linked to executive orders, new rules and regulations. The Innovation Council served the administration by providing a conduit for delivering on open government and innovation policies. Four staff members were assigned to support the Innovation Council, two from the Office of the Assistant Secretary for Planning and Evaluation and two from the Office of the Assistant Secretary for Administration. The staff from ASA represented the Office of Business Management Transformation (OBMT) that provides consulting services on business improvement processes across HHS on a fee-for-service basis. Their staff had extensive experience with logistics, operationalization of operations such as employee security controls, and supporting software design and operations. This

¹⁰ <http://www.theatlantic.com/technology/archive/2011/06/can-todd-park-revolutionize-the-health-care-industry/239708/> accessed on July 15, 2016.

¹¹ http://www.hhs.gov/ocio/policy/charter_2009-0001.001c_-_ocio.html

¹² https://www.whitehouse.gov/the_press_office/TransparencyandOpenGovernment

¹³ <https://www.whitehouse.gov/open/documents/open-government-directive>

¹⁴ <https://www.whitehouse.gov/open/documents/open-government-directive>

partnership with OBMT would take form over time with developing collaboration in several of the program areas where talent and mission complementarity were highly valuable and effective.

The HHS Innovation Council convened in the fall of 2009 to explore targeted ways to improve HHS performance and enable innovation practices. Among the first activities it undertook was the framing of broad barriers across the agency. [See Table 1.] The framework for governance of the council was addressed and a Charter was developed with the official roles reporting to the Deputy Secretary. The Charter was signed in September 2012 and provided an official channel for the Innovation Council’s work. The initial projects aimed to objectively test and pilot implementations of new social media platforms, such as Facebook, and Twitter, across agency data systems. A workgroup was set up to work with the security teams and tasked with reporting pilot evidence within 90 days. The goal was to achieve full deployment of these tools and offer guidance on their applications in the workplace. Similar efforts were undertaken to enable the use of personal digital electronic community applications (i.e., bring your own device (BYOD)) in the workplace.

Table 1. Top Institutional Barriers to Innovation Identified by HHS Innovation Council (2009)

1	Inability to identify start resources (funds and time) to test new ideas (< \$10,000 per project)
2	Lack of access to key data to support initial solution/concept to a critical problem
3	Risk averse perspective across HHS in the use or management of information (use of social media)
4	Conservative approach to managing conflicts of interest in partnerships with non-federal agencies that hampers collaboration
5	Lack of ability to support (with technology and human capital) collaborations across organizations
6	Barriers to enable workforce to participate in cross-agency projects (lack of ability for use of personnel time due to different appropriations policies on funding)
7	IT infrastructure to support tools and applications and poor interoperability across HHS agencies IT systems (inability to exchange data and information across systems)
8	Limited recognition of innovation as a measure of performance (e.g., innovation is not recognized as a factor in annual reviews, and program innovation is not a factor by which HHS performance is measured)
9	Human capital constraints placed on agencies in recruiting and hiring efforts for ‘non-traditional’ disciplines to complement existing skill bases and offering new solutions to problems
10	Legacy processes and programs that use paper rather than digital tools and information storage

One general principle that emerged was the aspect of pilot projects to inform policy changes. The strategy was to test how a new solution could solve a problem in a way that hadn’t been thought of before and use that experience to inform or influence operational policies. The added benefit of this approach was to give others a ‘playbook’ of instructions on what to expect and how to modify or ‘pivot’ ones approach based on user feedback. The CTO conducted a variety of projects that blended technology solutions with advances in policy. One example of this was the adaptation of text messaging to overcome barriers to deliver public health information to expectant mothers and caregivers. The Text-4-Baby project was designed to provide low-cost, unscheduled prompts via smart phones in vulnerable populations. The project involved many innovative components including partnerships with non-profit companies, wireless industry representatives, and a wide swath of supporting public service

organizations, and the federal government. One deliverable was a text-library of validated information for pregnant mothers from vulnerable populations. The CTO role placed prominence and purpose behind experimenting with the technology solutions, evangelizing organizations with the promotion of the user subscription campaigns, and emphasized an important role of government in overcoming barriers to collaboration. This demonstration project opened up new text messaging applications in other areas of public health such as physical activity, smoking cessation, and personal safety; and, evolved into broad areas of clinical care. As result of this pilot effort, internal policies were adapted and structured programs evolved in HHS agencies to further promote uses of technology and information in new ways. A strategic work team was assembled by the CTO to help promote early successes, build out policies to enable the approach to be scaled to other public health applications, and evaluate the impact of these solutions in various settings. Other demonstration projects of this type provided the CTO team with key experiences in startup practices inside a large federal bureaucracy, and when harnessed with the vantage point of the Secretary's communication vehicles, rapid awareness and dissemination of these innovations occurred.

A key programmatic area developed in response to a request from the Deputy Secretary was the creation of an employee recognition program acknowledging innovation. A prototype program was launched in 2009 that sought employee sponsored nomination and peer voting. The program's goals were to enhance the recognition elements of the Administration's programs and engage the Secretary and Deputy Secretary directly with winners of the contests. The project was initiated on a semi-annual basis that included cash awards to the top winning teams, and opportunities for meeting with the agency leadership at headquarters for a celebration that was video-cast throughout the organization. This program, named *HHS Innovates*, included the development of a low-cost application processing system and a multi-pronged communications effort to attract input. **After six years this program brought more than 600 applications from teams and recognized more than 450 innovators in the organization.** The primary goal of placing emphasis on innovation as core HHS value was achieved.

In the initial period, the CTO applied time and resources to consulting teams across HHS. Many of these consultations were aimed at enhancing applications of technology and working with the CIO or with teams at the Office of the National Coordinator for Health Information Technology (ONC). In the spirit of encouraging innovation, the CTO examined ways to inspire project management methods designed to test new concepts. The framework also included bringing in talent from outside government to present new ways of problem solving. The Innovation Council also heard from experts in the field on adapting Open Government principles by hosting key speakers at their meetings. The Innovation Council heard strategies to build on platforms of innovation from Steve Blank, Eric Reis, and Tim O'Reilly. The framework for the HHS plan was then described as "Government 2.0" and it emphasized the uses of technology as a means for public engagement.¹⁵ These features formed the foundation for building the innovation programs at HHS and IDEA Lab.

In 2011, the concepts for two additional programs were established. The first was to address several of the barriers to testing pilot concepts and solutions to problems identified by the workforce. Funding

¹⁵ https://ssir.org/articles/entry/government_2.0. Government 2.0.

was requested and established to create a seed funding program with mentoring and coaching. It was dubbed the Secretary's Ignite Accelerator program. This was a competition held across HHS agencies to sponsor funds and agreements for 20% time to work on projects for 90 days followed by a presentation of their findings and evidence in support of the presence of agency leadership. A key takeaway from the initial competition was the need for project support in the form of consultations with the CTO staff, as well as recommendations to modify the project's performance. These teams were encouraged to collect data and present successes and failures to their peers.

The second program activity presented to the Innovation Council was a modification of the Presidential Management Fellows program to enable short-term employment engagements for work on key initiatives in HHS agencies. A staff operational guide was developed and approved for the use of the Schedule A, Clause R hiring authority for temporary positions in highly innovative programs. HHS staff developed a process for soliciting projects that were reviewed to meet these criteria. These positions were designated as HHS Entrepreneurs-in-Residence (EIR) Program and were filled via extensive networking using technology and media. This was the first major program to use social media for recruiting purposes. The HHS EIR program initially hired for positions through a centralized program that then arranged details to the project home offices. However, this mechanism led to complexities with funding transfers and ultimately evolved to its current model of home agency hiring and placement.

A small staff of four full and part-time positions, and physical space was dedicated to the CTO in the 2011 budget for the Immediate Office of the Secretary to support the Innovation Council and the 3 internal innovation initiatives to advance the open government, innovation, and HHS health data. Also, 2011 marked the first time that CTO team-specific, quantifiable, annual program performance measures were instituted to reflect budget expenditures for the Immediate Office of the Secretary. In 2013, there was a formal designation of the IDEA Lab as an organizational unit and communications concept. An effort to formally appoint the HHS CTO with authorities and line reporting status in the Department's organization chart was unsuccessful. Further, the financial structuring of the program and the innovation team was derived from an operations budget the first several years, with capital investments for specific projects from a number of operating divisions and staff offices. In the initial years of operation, a cost recover model for services provided to agencies was developed and recommended to the HHS leadership but not implemented in the early years of operation. The IDEA Lab programs have frequently demonstrated proof of concept and feasibility but in a number of cases failed to scale the projects and find support from sustaining partners before retiring the efforts as technical 'wins' but management or marketplace 'failures.'

A primary role of the Office of the CTO has been to coordinate policies enabling variety of technology and innovation initiatives. Among the key activities in the early years included coordinating Department-wide planning and reporting on Open Government and Open Data initiatives; and implementation of the America COMPETES Act of 2010 that provided HHS with the authority to conduct challenge prize competition awards.

An Anthology of HHS CTO Priorities and Actions

Park's model for encouraging entrepreneurship within HHS and its sister agencies included five rules to guide successful innovations [See Table 2].¹⁶ He emphasized *downsizing your idea* from grand-sized concepts to achieve value, and by reducing the complexity of size that it would be more likely to design, code, build or test easily. Second, he emphasized the value of work through *forming small work teams* with no more than 5 teammates or 'ninjas' who are interchangeable and blend together in their mission. Third, he emphasized the importance of *spending time with your customers*. He noted that innovators are better served when they avoid expensive, formalized research and spend lots of time asking questions of users. The fourth rule is to *identify the minimum viable product* that the team can build that brings value to the customer. Noting that the likelihood of achieving success with the first solution out of the box is quite low, that teams will learn more by taking a basic model and getting users to provide feedback then iterate on it without building the entire concept. This has a greater probability of achieving a successful solution that the end users will like, we found. Finally, Park noted that timelines are important motivators and he recommends *imposing deadlines of 90 days or less*. These operational principles would later take form in guiding the HHS Entrepreneurs-in-Residence programs and Ignite Accelerator programs as basic components for enhancing workforce innovation.

The first CTO had influences on broad technology policy areas across HHS. In this role, the CTO advised and interacted with the National Coordinator of Health IT at ONC. In 2009, with the passage of the American Recovery and Reinvestment Act (ARRA)¹⁷, a major component of this was directed toward health IT implementation in hospitals and physician offices. The CTO served as a part-time advisor in policy roles to the National Coordinator, the CIO, and supported the Deputy Secretary on management issues that addressed information technology, open government, and innovation.

A year later, the Patient Protection and Affordable Care Act (ACA) was passed and among the broad range of associated activities was the engineering of a large scale public-facing platform for supporting consumers' access to health insurance (the healthcare exchanges). The CTO played a guiding role in the conceptual overview of how to create a small scale platform to support this activity and engaged on selected projects. The activities associated with design of the healthcare.gov user interface would evolve to be a domain of the CTO, while integrative work on the design of the integrated systems gradually were diminished as the project moved from the Office of the Secretary's domain to the Centers for Medicare & Medicaid Services (CMS).

Additional policy roles for the CTO included indirect advisory to agency-level Chief Information Officers (CIOs) with one of the major components to support the development of a governance structure. The "domain" concept allowed for shared decision-making at a Department-wide level to blend the improvements in internal IT infrastructure and individual agency needs in a forum for sharing and decision-making. The CTO and CIO supported three domain spaces for governance, administration and management, scientific research, and health and human services domain. These three steering

¹⁶ Government 2.0. Stanford Social Innovation Review. https://ssir.org/articles/entry/government_2.0 Accessed September 23, 2016.

¹⁷ <https://www.gpo.gov/fdsys/pkg/PLAW-111publ5/html/PLAW-111publ5.htm>

committees were functionally supported by the Domain Information Technology Program Management Office. The CTO provided strategic guidance to the CIOs through these organizations.¹⁸

Additional roles were directed internally to government operations and one key example is through ONC coordination. The Health Information Technology for Economic and Clinical Health (HITECH) Act (which was folded into the recovery act) created two Federal Advisory committees, the Health IT Policy Committee, which was co-chaired by the US Chief Technology officer, and the Health IT Standards Committee. The HHS CTO provided guidance to these committees through presentations, and technical input and to ONC staff. As the HITECH Act became law and program activities led to an expansion of ONC staff, an ONC innovation office was established and reported to the ONC Chief Science Officer. That innovation office worked closely with the CTO staff on developing technology profiles for engaging entrepreneurs and startups through a series of forums on technical assistance, and eventually, supporting the Department's challenge competition programs to promote innovation in electronic health record systems. A useful reference point for this is found at <https://www.healthit.gov/buzz-blog/meaningful-use/crowdsourcing-crowdvoting-codesigning-patients/>.

One of the cornerstone initiatives of the Administration was an effort to enhance transparency of health care costs and quality data. Initially framed under the President's Open Government activities, the Health Data Initiative gained greater perspective in 2010 with the passage of the ACA. In 2009, there were significant barriers to acquiring and using datasets derived from Medicare beneficiary data to enable researchers, policy makers and the public access to health care administrative and outcomes data.

At the same time, a National Bureau of Economics Research paper by David Cutler of Harvard University cast a bright light on the problem of lagging innovation in the health care sector by identifying that the lack of business efficiencies was due to two key factors (Cutler, 2011). Cutler noted a lack of access to high quality data on cost and quality, and a paucity of incentives to innovation. There were many other requests for data on costs of health care services from the Medicare program, and access to quality measures data for providers, hospitals, and other facilities.

In late 2009, Todd Park, and Bob Kocher, White House Special Advisor on Health Care, convened meetings to frame a strategy to release de-identified claims data and make it publicly available. In partnership with the Institute of Medicine, and advisory expertise from McKinsey & Co., a plan was devised to bring health data producers and data users together with technology leadership, to create value from Medicare data. At an initial meeting held at the Institute of Medicine in March 2010, it was proposed that two-dozen datasets be made available to the public and developers and engineers would create useful solutions with them within 90 days.

Recognizing that data access did not necessarily translate into action, the discussion included challenges to create solutions using data from 30 new data sets that were made available to the group. Three months later, a group of nearly 300 stakeholders gathered for a meeting at the National Academy of Sciences to see 21 apps that had been developed in response to the new datasets. Recognizing that the

¹⁸ <http://www.hhs.gov/ocio/domainitpmo/> Accessed September 15, 2016.

value of the data had been demonstrated to consumers, health care researchers, policy makers, and others at HHS then began an internal effort to enhance data access. Among the initiatives Park initiated was the development of a data office within CMS to create infrastructure and shape policies to enhance the access to data to those who needed it. In the next 6 months, the CTO led an effort to establish a data catalog for one-stop access to open data resources at HHS. Park then set out to enhance the uses of data by conducting a lengthy series of meetings with technology developers and health care systems officials across the nation with more than 50 events in 18 months. With the core virtues of open access and incentives to create value through applications and services, Park’s data ‘liberation’ efforts were widely embraced by many. Initially dubbed the “Community Health Data Initiative” with an initial focus on public health data, the broad set of activities around data release and support of an electronic data catalogue in 2011 known as healthdata.gov was then referred to as the Health Data Initiative. The hallmark of Park’s effort on open data is an annual engagement of data users and policy makers, known as the Health Datapalooza™, now in its eighth year serving to promote the value created from HHS data. Collectively, this open innovation approach was constructed with little fiscal and human capital resources and dependent on voluntary support from within the organization as well as financial and in-kind contributions from organizations such as the Institute of Medicine, California Health Care Foundation, and the Robert Wood Johnson Foundation.

Today, nearly 3,000 datasets have been published in the healthdata.gov catalog and these serve as a resource to a broad array of users. In addition to spurring on a vibrant health data ecosystem, the internal policy actions at HHS served as an important catalyst for business operations. Data science has become a rapidly growing part of many HHS Divisions and designated chief data officer positions are found in five divisions.

The first iteration of the HHS innovation program from 2009 through 2011 represented an alpha-phase characterized by its Lean Startup conditions, prototyping of concepts, and establishment of leadership buy-in and promotion of its principles. Then HHS Secretary Kathleen Sebelius and Deputy Secretary Bill Corr strongly promoted the concepts through internal and external communications and administrative support for capital investments and policy support. This era ended with the ascension of Todd Park to the role of US Chief Technology Officer as an advisor to the President following the departure of Aneesh Chopra as the first US CTO.

Table 2. Five Rules for Guiding Successful Innovation

1	Downsizing your idea
2	Spending time with your customers
3	Forming small work teams
4	Identifying the minimal viable product
5	Imposing deadlines of 90 days or less

Phase two of the HHS Innovation programs were highlighted by several major changes in operations. First, the scaling of the innovation rewards program, and Ignite Accelerator program was aimed at broadening the reach to Operating Divisions in more strategic directions along high impact program

areas. The Entrepreneurs-in-Residence program was expanded and more strategic outreach efforts using social media and targeted contacts to the technology community were made. Second, fixed capital budgets for staff and space were planned for in the 2013 budget with the intention of integrating the programs into a cohesive system of tools and programs for HHS programs to engage. Third, a greater proportion of time and talent was developed to programs to enhance internal operations. For instance, beginning with a team built out of the Entrepreneurs-in-Residence program, a substantial Lean process improvement program was developed beginning with CMS and expanding to other parts of HHS.

In January 2013, dedicated space was created with an open physical environment was established near the Secretary's office to support more effective project work, hosting of events, and team training programs. Bryan Sivak, formerly the Chief Innovation Officer in the Mayor's office of the District of Columbia and the Governor's Office in Maryland, became the second HHS Chief Technology Officer. He brought a series of program efforts to fruition aimed at empowering employees to experiment with their ideas. In late 2012, Sivak convened a series of strategic planning sessions focus on program enhancement, communications, and building staff capabilities. Sivak brought a series of new applications to enhance business processes, and overcome communication barriers across the organization.

The first organized web-presence was established in March 2013 under the name of HHS IDEA Lab representing the emphasis on ideation, design principles, entrepreneurialism, and action; as the acronym was envisioned. The early web design and communication approaches were designed to overcome an effort to reach employees more consistently with the programs and build a community of engaged innovators and supporters. **The HHS IDEA Lab's mission is to promote the use of innovation across HHS to better enhance and protect the health and well-being of the public.** Our initiatives empower internal innovation, tap into external talent and creativity, and build collaborative communities to tackle cross-cutting issues of strategic importance.

There were three major beliefs that formed a basis for IDEA Lab. The first was that every individual at HHS has the ability to improve the health and well-being of Americans. The second core belief was that people are more powerful when working together and this was an intentional approach to overcome organizational barriers and support cross-agency projects. The third belief established was that there is a solution to every problem.

The Secretary's team recognized that the value of this work organized by the IDEA Lab was to serve as a bridge between the old world and a vision of a new, networked world, where value is found in an individual's talents and ideas, as opposed to their position in a hierarchical structure. Later, an additional theme of "hacking red tape" was added to emphasize the organizational quest to work smarter, work better in service to the public.

During this time, using 'Schedule A, Clause R' hiring authority,¹⁹ the HHS IDEA Lab hired additional staff members with an eye toward internal applications and communications. Key strategy advice and on personnel was obtained from the Office of Personnel Management (OPM), including Administrator John

¹⁹ 5 CFR § 213.3101

Berry , who supported use of Schedule A and Intergovernmental Personnel Act authorities for innovation initiatives. Berry spoke publicly about these activities and referenced work OPM had undertaken to create an innovation focus in the workforce.²⁰ A bootstrapped website was developed using open source tools and Drupal. Additional web tools were built at low cost for program management, and data base development. The intention was to build IDEA Labs core competencies much in the same way that talent, resources, and communications would be assembled in a startup business enterprise. Strategic partnerships were developed with the CIO's office to build a developer's sandbox for supporting early stage products. Use licenses for file sharing and applications development were acquired, and the Department's first cloud service acquisition tool was used for supporting IDEA Lab developers. By the end of 2013, more than 20 innovators engaged in new product and service design, development and scaling were engaged. The first dedicated process for developing operations, budgeting and innovation talent were engaged with the support of the Deputy Secretary. A dedicated operations and capital budget plan with supporting performance measures were developed for the first time in fiscal year 2014.

Sivak's tenure emphasized the 'entrepreneur-in-residence' (EIR) role to a greater degree and promoted the development of a program to partner with private, non-profit organizations to jointly promote innovation strategies. The Innovator-in-Residence program was modeled off of the EIR program and the new staff was directly supported by the partner organizations. This 'externalization' of the HHS program yielded important leverage on key issues such as apps to support consumer uses of their own data, addressing key science and technology issues surrounding electronic health records, bringing user-centric design into communications programs, adoption of innovative tele-health applications, and more. The CTO also engaged in internal partnerships to develop a dedicated workspace for visualization and design concepts for entrepreneur teams with the Assistant Secretary for Preparedness and Response. Each of these technology development areas engaged new policy areas and pilots to help inform and shift policies within the organization were launched. For example, collection of data from end users in creating minimal viable products was hampered by constraints of the Paperwork Reduction Act (PRA). The IDEA Lab provided many innovators, design experts and project leads with a 'space' for advancing new concepts and acquiring expertise in navigating HHS policies on data collection, acquisition, data sharing, and partnerships with non-governmental organizations.

An enhanced approach to optimizing the value of the Ignite Accelerator was unveiled after working with leadership from the National Science Foundation's I-Corps program (I-Corps™)²¹, designed to mentor academic grantee scientists and engineers on business practices for commercializing technology. A partnership was developed with the Provost's Office at the University of Maryland for their innovation practices team to help train mentors and coaches working with internal teams. Increasingly, the IDEA Lab team sought and applied external expertise on user input, storytelling, design thinking, data collection, and customer input to optimize each team's project. The University of Maryland team adapted the methods for creating a canvas for project design in an intense 3-day boot camp throughout

²⁰ <https://www.opm.gov/news/speeches-remarks/diversity-inclusion-and-innovation-in-government-2012-national-conference/>

²¹ https://www.nsf.gov/news/special_reports/i-corps/. Accessed September 3, 2016.

the 90-day course to the closing ‘Innovation Day’ featuring Shark Tank demonstrations and feedback. The Ignite Accelerator model was scaled up to support two to three cycles per year with 12 to 15 teams supported in each cycle.

During 2014, the second phase of the Innovation Programs evolution, the HHS IDEA Lab focused on capturing the value of the program. HHS employee survey data was analyzed using program level data from the Office of Personnel Management Federal Employee Viewpoint Survey.²² The Survey includes four questions that ask about ideas and innovation in the workplace. By analyzing these variables over time at a program level, we conducted serial analyses to evaluate whether the scores were affected by specific IDEA lab programs. Each IDEA Lab initiative has conducted detailed evaluations and is performing semi-quantitative and qualitative longitudinal assessments of the innovation experiences of participating teams and their mentors.

During this phase of the IDEA Lab evolution, two White House-led initiatives were launched to focus on enhancing the government’s strength in technology development. The Director of the General Services Administration (GSA), Dan Tangherlini, in collaboration with the U.S. CTO, developed a new program to enhance government services with an emphasis on government digital services modelled off of government program in the United Kingdom.²³ GSA’s 18F became a technology start up to provide development services to government agencies. IDEA Lab worked with 18F staff on sharing concepts and ideas for enhancing IDEA Lab activities. In addition, GSA and the White House worked to modify the Presidential Innovation Fellows program to recruit talent from Silicon Valley to work on IT development. The IDEA Lab EIR and IIR program worked together on recruitment strategies to bring talent to work on some of the agencies’ most vexing problems. The development of 18F was in part related to the struggles with the development of the initial Healthcare.gov website that supports public acquisition of health insurance (the Marketplace exchanges). In 2016, The Center for Medicare and Medicaid Services Innovation Center established a digital services team using similar practices as GSA to create a small workforce to design software service infrastructure to accommodate new legislation for CMS to operate insurance programs more effectively.

One theme emphasized during this ‘beta-period’ was a sense of ‘failing fast’ as a virtue of experimentation. This concept noted that important lessons often emerge from testing ideas. We found value in testing multiple ideas and solutions. An example of an IDEA Lab project is useful in demonstrating this concept.

One of the problems identified by the Innovation Council was the inability to identify and match small scale jobs and opportunities with the workforce. A concept was developed by the IDEA Lab team to create a web-based platform that would allow agency officials to identify short-term business opportunities and match them with HHS talent that could potentially solve the problem. A design session was held and a minimal functional prototype, known as Fair Trade, was created and tested among a user group. Due to a lack of resources, the HHS team partnered with State Department staff

²² <https://www.fedview.opm.gov/> Accessed September 12, 2016.

²³ <http://www.theverge.com/2014/3/21/5533892/the-government-now-has-a-fast-moving-it-office-modeled-after-a-startup>

who had designed a prototype platform, Midas, with similar but distinct features from Fair Trade. The prototype was created in GitHub and allowed developers to customize the app for specific agency needs. The project did not meet end user functionality requirements in the HHS pilot testing and ultimately was shelved. However, the ideas that we gleaned from this project led to a new open website for government employees developed by the General Services Administration known as [Open Opportunities](#). Open Opportunities as a platform includes all kinds of tasks and projects available to federal employees. These are tasks and projects that will let employees gain more experience, contribute expertise and connect with other innovators across government.

Opportunities range from editing a press release or testing a feature on a website to researching and writing case studies or developing code. Some of these opportunities can be completed in just a few hours while others may take more time. The lessons taken from a 'failed' project, Fair Trade, were integrated into a larger federal framework emphasizing the collective nature of the community. Broadly, the early design and 'de-risking' of the projects financial and labor, coupled with the open sharing of learnings were key elements that have been built into the fabric of IDEA Lab operations.

In 2014, another new program emerged from the successful Ignite Accelerator program. The Secretary's Ventures Program became a shared investment program operated by a 'board' of representative HHS agencies that funded the program with an eye toward internal projects. The goal of this new initiative was to take pilot projects that were successful and represented key innovation concepts applicable across the Department and provide support staff with funding and time to scale them up. Similar to a private sector ventures funds, proposals were sought from HHS employees with demonstrable value propositions and commitment for a year-long project aimed at an exit strategy. Armed with significant resources and time, IDEA Lab managers would interact with development teams and facilitate development of exit strategies. The Ventures program supports 3 to 5 projects annually that maximize open innovation management by bringing in external expertise to help overcome barriers on technology and process. In some cases, the technologies and processes emerging from Ventures have commercial value or redeemable social value outside of the federal government.

The IDEA Lab extended its reach into the operations side of HHS in activities aimed at improving the success of acquisitions in information technology (IT). Initiated by the White House Office of Science and Technology Policy and Office of Federal Procurement Policy (OFPP), the IDEA Lab undertook a series of activities aimed at program officers and uses of procurement methods to gain greater value and better outcomes on IT spending. The project, HHS Buyers Club, sought to use open innovation methods to develop better statements of work, acquisition planning, and crowdsourcing capabilities to achieve technology solutions to meet program goals. In part influenced by the analysis of technology acquisition barriers and limitations that created challenges with building the healthcare.gov platform for supporting the Marketplace for health insurance by the public, Buyers Club was a pilot implementation of acquisition tools and a 'playbook' of options that program officials and contracting officers could use. One example of this application is using a staged acquisition competition where prototypes are used to demonstrate innovative concepts and the best ones are selected during second round of competition. This form of iterative design and evaluation has complemented the desire for greater Agile technology development and modular design to large IT systems in the agencies. The results from the 18-month-

long pilot phase contributed to broad White House policy development and educational sessions to provide rich contextual experiences for gaining practical insights into acquisition planning. The results of six HHS Buyers Club pilot acquisition projects contributed to a White House Office of Management and Budget memorandum in March 2016 from US CIO Tony Scott and the Administrator for Federal Procurement Policy Anne Rung that now guides agencies to drive changes in acquisition and encourage agency heads to use their leadership to support innovative acquisition practices.²⁴ The IDEA lab platform and its open innovation methods was a suitable home for the Administration's policy agenda to be further developed and tested. The project struggled in its effort to achieve scaling and sustainability for variety of reasons including lack of commitment of resources and competing interests related to implementing other federal policies and legislative mandates.

This second "beta-phase" of IDEA Lab culminated in continued iterations on improving the programs and using open innovation strategies in many aspects of program assistance to the workforce. Unfortunately, administrative efforts to provide definition to the CTO's role, management authorities to consistently integrate innovation principles and authorities into the organization chart and authorities failed. Similarly, in 2015, an attempt to integrate the IDEA Lab concept into the Federal Budget for multiple federal agencies was submitted by OMB to Congress but it was excluded from the agency's budget without explanation. The IDEA Lab remains an experimental project, which nonetheless has generated growing evidence of impact on workforce performance and organizational success.

In mid-2015, Susannah Fox was appointed as the third Chief Technology Officer at HHS. Fox had previously led the health and technology portfolio at the Pew Research Center and had served as the Entrepreneur-in-Residence at the Robert Wood Johnson Foundation. She brought a consumer focus to the data and innovation portfolio, including an initiative aimed at leveraging federal resources to support and encourage an ecosystem of inventors of medical and assistive devices. Similar to the pioneering work on new uses of data by her predecessor, Fox put in place early pilot projects to connect engineers and problem solvers from the 'maker' community with experts from health and wellness. Framed as a developmental set of activities to bring communities together, a core activity of the Invent Health initiative was aimed at exploring how federal laboratories and agencies can support open innovation and new manufacturing capabilities in creating devices to enhance the well-being, and independence of all Americans, including those living with age-related and other disabilities. Fox's prior experiences in the early stages of consumer uses of data and the internet provided key strategies for opening an emerging ecosystem of open innovation from a federal platform. Her tenure was also marked by a focus on the documentation of business practices, preparing the Office of the Chief Technology Officer for a smooth transmission to the next Administration.

In summary, after nearly 8 years of activities using open innovation methods and Lean Startup practices, the Office of the CTO demonstrated through its IDEA Lab operations that a focal point of modernization and employee engagement can achieve important mission-related milestones for improvement in operations. Using predominantly 'micro-level' innovation strategies aimed at the workforce, solving 'small problems' as part of bigger challenges was largely successful. Over 450 projects and an estimated

²⁴ https://www.whitehouse.gov/omb/procurement_index_memo. Accessed September 9, 2016.

2,000 employees were directly involved in some form of the Secretary's innovation agenda. The power of the Secretary's leadership and the imprimatur of that relationship were keys to achieving organizational buy in, broadening communication about purpose and effect, and garnering lean but important capital and human resources. Application of open innovation and entrepreneurship strategies toward larger policy matters and large scale organizational problems or "macro-level" innovation efforts through performance management or quality improvement were lagging indicators and resistance to institutional change and modernization. Although each of the programs and initiatives undertaken by the CTO and IDEA Lab were consistent with fundamental management approaches, these were practices learned, 'borrowed', or applied in the absence of an organizing theory or strategic management design.

The benefits to HHS and its sister organizations like CMS and ONC of the HHS IDEA Lab experiment were many, but a key takeaway is that creating environments that foster innovation and training staff not to fear failure, but to learn from it, are incalculable.

Chapter 4

Innovation and Entrepreneurship in Domestic State and City Governments

Innovation in public programs and services is arguably equally important across all levels of government including federal, state, city and local municipalities. In looking at innovation in government it is important to understand how the size or the role of government affects the ability to innovate and transform public programs. Many functions of government are similar to federal agencies, such as supporting education, public safety, public health, environmental services, regulatory oversight, etc. Conversely, local governments are closer to direct delivery of services in many cases and direct testing of new innovations offer quicker and more direct results. Experimentation with 311 information and emergency management systems, establishment of biking lanes, piloting of food, nutrition, and sheltering programs are operations that are more likely to be successful at the municipal or state level, as opposed to the federal. In many cases, state and city programs are test beds for national programs and often are subsidized or supported by federal agencies for this purpose, again, in large part because of their ability to manage projects that directly interact with the customers or consumers of the services. As noted earlier, a large part of the innovation success strategy is derived from early, frequent, and close engagement with the user community.

Studying models of innovation in local communities has another value for federal programs. Often, political leaders or program managers will come to federal agencies having already been an elected official (a mayor, for instance) to be leaders of an agency. Transfer of the success stories and advocacy for innovation and entrepreneurship can often be brought into an agency by leaders with experience and conviction to support an issues agenda that is bolstered by a strategy for innovation. The potential for local communities to partner and scale their innovations developed at city, state, and local government levels through federal government programs is also an effective way to leverage knowledge and experience to overcome challenges in scaling innovations. Some interesting examples have emerged in local communities developing smart systems for emergency notification of persons homebound with life support systems dependent on electricity after hurricanes and other disasters. The use of geospatial and wireless communication networks with customized solutions in adapting communities for emergency response coordination has occurred at the local government level and scaled nationally with federal support.

Similar to private sector and federal government experience, crowdsourcing of talent and resources has become an important driver in establishing a culture of innovation at state and local levels. The leveraging of non-governmental support for community innovation in partnership with local government has been opening up through innovative investment and management strategies.²⁵ Community-based innovations through the uses of digital technology, social media, and recent changes in investment regulations by the Security and Exchange Commission favoring individual investors are supporting the growth in crowdfunding capabilities to support startup projects. Several strategies for digital crowdsourcing are following in the path created by Kickstarter, which has continued to explore

²⁵ <https://www.philanthropy.com/article/Local-Governments-and/152005> Accessed September 17, 2016.

the horizons of public investment in civic projects. The New York City Council has adopted this platform for a variety of funding and social engagement processes. One open investment platform, Neighborly.com, supports public investors to make specific investment options in the municipal bond markets aimed toward the funders' civic interests with many of the projects conducted in partnership with local governments. Not only does this technology platform deliver an audience for funding initiatives such as light rail, low-income housing, urban bike sharing programs, etc. but it also supports building a level of open civic engagement that has long-term dividends for sustaining community growth and development programs. In some cases Kickstarter projects are used to establish matching funds for communities to compete for federal grants.

While the long-term impact of the crowdsourcing of funding is unknown, experience is growing with city governments using crowdsourcing platforms directly for citizen engagement and investment (Davies, 2015) (Hummel, 2016). The highly successful crowdsourcing platform has been used by the New York City Council for supporting a variety of civic projects. In addition to financial capital, cities are commonly turning to crowdsourcing to support participatory government (e.g., Government 2.0) activities via input on planning processes that use social and intellectual capital, and human capital for volunteers to assist in a wide array of community service needs. Other investment platforms are emerging to support civic projects in collaboration with city governments such as parks, public transportation, such as Citinvestor and lobby. The implications of these community-based crowdsourcing programs bear watching as the implications for federally-sponsored participation in them for co-funding and co-development purposes remains in its infancy. There remain a number of legal and technical questions pertaining to appropriated funds, for instance. Federal government programs, while sponsoring a wide array of crowdsourcing projects through its Challenge.gov platform, participation in community sponsored challenges as a funder of local programs has yet to occur.

The Robert Wood Johnson Program has sparked community-based innovative programs involving city governments by working with them to identify pathways to tackle key challenges in their communities. Their programs fund communities in a variety of ways, including their Healthy Communities program that focuses on the environment, disease prevention, and health disparities. The Knight Foundation supports innovation solutions through the uses of data and technologies through its Cities Challenges Program to strengthen cities by focusing on attracting and retaining talent, expanding opportunity and promoting civic engagement.

The Bloomberg Philanthropies engages in capacity building with civic leaders, namely mayors of cities through a number of competitive funding efforts. Building off some of the concepts of the Barber-Blair delivery unit model (See Chapter 2), their programs focus on civic leadership support for mayors who are working to enhance the use of data to guide strategic breakthroughs. The Bloomberg Philanthropies Mayors Challenge program is an ideation competition that encourages cities to generate innovative ideas that solve major challenges and improve city life – and that have the potential to spread to other cities. Cities are uniquely positioned to encourage and foster the innovation, creativity, ideas, and solutions needed to tackle the pressing social and economic issues facing the world today – as well as meet the challenges of tomorrow.

Beyond crowdsourcing and civic engagement, the governance and management structures of cities and states can be developed with limited resources to promote a culture of innovation. Data from the National Governors' Association identified a broad range of examples of how innovation activities in state governments are organized.²⁶ In some states these are formed through cooperative arrangements with non-profit support, others are centralized in economic offices, and in other cases, there are specific focal areas that are established within key agencies. For the latter, a number of states have focal innovation strategies in health, transportation, and education. Data from the Bloomberg Philanthropies have noted more than 100 cities that have a dedicated chief innovation officer or office staff devoted to business transformation or innovation.

Field research was conducted with detailed interviews and analyses from two states, Colorado and Rhode Island, and two cities, Louisville, Kentucky and Austin, Texas. These were chosen as representative of communities with sustained innovation programs that are more likely representative of other communities in the US, unlike the Silicon Valley region and Boston's Route 128 biotechnology corridor. For each community, conversations were held with the chief innovation officer, representatives from the governor or mayor leadership team, and an analysis of available planning documents and materials from the internet were also completed. These case studies are meant to show the diversity of strategies, compare and contrast management styles, and feature approaches to leadership that form strong cultures of innovation in their communities.

Select City Government Innovation Offices and Activities

Austin Texas

The City of Austin Texas (ATX) established a position of Chief Innovation Officer and the city's Innovation Office in 2014 for the purposes of organizing and implementing innovation and change management strategies.²⁷ In 2012, the city's Community Technology and Telecommunications Commission adopted an Open Government resolution and recommended that the city Mayor's office establish an Innovation Office. The Chief Innovation Officer position was established in 2014 to advance strategic initiatives, specifically: forge partnerships, enhance community engagement, establish an innovation incubator to serve as a "front door" for ideas; create problem-solving methodologies, increase transparency, and enhance the climate of innovation. The framework for this connects with the ATX Open Government mission. The Chief Technology Officer, Kerry O'Connor, previously worked in the federal government on innovation activities with State Department.

ATX is a community of over 880,000 people and is the nation's 11th most populated city and has an elected mayor and city council with a city manager form of operations. The city has a large technology base representing Fortune 500 information technology companies and is sometimes referred to as the "Silicon Hills", mainly due to the large number of technology companies who make their home here.

²⁶ Personal communication. National Governors Association, August 2, 2016.

²⁷ <http://www.austintexas.gov/innovation>. Accessed August 10, 2016.

The technology companies in Austin account for a large amount of all tech-related revenue in Texas – second only to the DFW area. The community is very civic-minded and applies open government and open innovation principles with the intention of improving the lives of citizens.

The Innovation Office has a staff of six and has several major programs including an ideation program, code-a-thons, training in experimentation, co-creation, and most recently a one-year fellowship program designed to recruit software developers to work on key city priority projects. The programs are all aligned with the goals of ATX Chief Information Officer and have a strong emphasis on data, and digital technology. The program maintains all of its public information on GitHub, enabling transparency and dissemination of their methods. The Innovation Office activities are administratively aligned under the ATX city manager with reporting functions to the city council and details about the structure and administrative functions are found in the public domain.²⁸

Although young in terms of years of operation, the Innovation Office is fast-moving and strategic in its initiative. In the first year, its leadership focused on internal processes, skills development, tools applications, and programs to spark city government open innovation. To facilitate the community engagement, innovative applications of tools to promote creative problem solving were applied. Using tools for opening up dialogue among the citizens enabled city offices to more effectively overcome biases in problem solving. A co-creation initiative was undertaken to help diverse teams come together and mutually create a value incoming using problem framing solution-framing, and solution implementation strategies. In its co-creation capacity, an Austin Innovation Zone was created as an academy of co-creators to provide structure and nurture community co-creation. One of the first innovation zone facilitation efforts was centered on the transformation of population health. The ATX Innovation Office also launched a crowdfunding ideation platform to promote an innovation fund as part of its portfolio. They have also taken steps to demonstrate the time and cost savings associated with internal innovation applications in city government operations, such as its 3-1-1 service area.

The ATX model of city government innovation has resemblances to innovation programs promoted by the White House open government and open innovation agendas. Similarities to HHS innovation programs include citizen engagement through uses of challenge competitions, strong focus on ideation for community services, uses of open IT, and engagement of entrepreneurs-in-residence programs. The strength of the programs is in their teaching and methods development within the city programs. There are impressive results in the uses of software to assist in managing and promoting co-creation and civic engagement. Their innovation programs are increasingly being linked to performance based assessments and their new entrepreneurs-in-residence program demonstrates the linking of the innovation offices activities toward city government strategic initiatives. At present, the Chief Innovation Officer is working to strengthen and redefine the business model for cost-recovery and support of operations, refining methods for decision-making around new practice areas, and continuing to enhance business capacity. Overall, the momentum for the ATX innovation program is strong, and results are impressive. The program clearly benefited from external guidance and partnerships from the non-profit

²⁸ <https://civicinnovation.bloomfire.com/posts/957984-city-of-austin-innovation-office>

and technology communities, strong local community engagement, and advanced applications of software solutions in guiding the innovation processes. Among the primary values of this city's programs are its transparency and engagement of the community. All of the artifacts of the ATX innovation programs are produced publicly on Github.²⁹ The operations, level of engagement, and performance are impressive demonstrations of city government innovation practices.

Louisville Kentucky

Louisville Kentucky is a progressively transforming former rust-belt city that is rapidly becoming a centerpiece for city-led innovation. The city has more than 750,000 residents with an additional 1 million in its surrounding communities. In 2003, the city and county government merged to form the Louisville Metro Government led by a strong mayor, Greg Fischer, a veteran business man and entrepreneur. The city government is comprised of 24 Departments and approximately 6,000 employees. The city is home to three Fortune 500 corporations and has national corporate leadership presence in food preparation, health care, manufacturing, and transportation. Higher education presence includes major universities with strong engineering and design presence. Fischer notes among his accomplishments establishing the first city government with a chief innovation officer.

The city's lead innovator is Ted Smith, chief of civic innovation, and formerly a government official at HHS and program director for the Sunlight Foundation. Beginning in 2011, he led the mayor's innovation team in taking on major new initiatives in health applications, transportation, and community engagement. The innovation office operates from a lean perspective with several project officers with design, project management, and IT expertise. He has led collaborations with partnering innovation hubs and accelerators in health and consumer manufacturing including General Electric's First Build and Humana's Innovation Center. As an example, Smith led a major demonstration project with a device manufacturer, local employers and schools to use geospatial technologies coupled with asthma inhalers to demonstrate the value of personal health data collection for patients suffering from asthma. The project was supported through the Robert Wood Johnson Pioneer program and included a novel approach using the test results to seek buy-in from health insurance plans.

The Innovation Office in Louisville has a key role in the Mayor's highly acclaimed city performance improvement and innovation program. The Innovate Office is linked to the Office of Performance Improvement and Innovation led by Theresa Reno-Weber, Chief of Performance and Technology.³⁰ The city approach to measuring the value of public program is tightly linked to their effort to create a world-class city through problem solving. The city's performance management team is aided by strategic planning liaisons across the departments and a data resource, LouieStat, which provides measures of performance across all aspects of city functions. The programs work together to bring breakthrough innovations to the communities along with continuous improvement projects, such as Lean Process Improvement and Six Sigma strategies. The continuous improvement and innovation programs use cross-functional teams, skills building in improvement and innovation methods, to address targeted

²⁹ <http://cityofaustin.github.io/innovation/> Accessed August 13, 2016.

³⁰ <https://louisvilleky.gov/government/performance-improvement-innovation> Accessed August 23, 2016

areas of performance developed through their planning processes. Performance management tracking is tightly linked to strategic operations, and budget processes creating a virtual loop of targeted innovation strategies to address underperforming areas of the portfolio. The programs use an impressive array of dashboards, scorecards, and applications to monitor data on key performance indicators at an enterprise and project level.

The Louisville Kentucky innovation agenda is driven by strong leadership and enabled by a strategic operations and management plan. This plan features a close connection to the innovation activities to its strategic planning and performance management programs. In contrast to other government innovation programs, Louisville's approach to government innovation can be characterized as top-down or macro-level in its operations for key initiatives. It does not currently feature employee-initiated ideation programs or entrepreneur-in-residence programs. There is a strong role for the city's efforts at democratizing data and encouraging civic discussion through community platforms.

The mayor plays a strong leadership role in the promotion of innovation and frequently fosters community collaborations toward improving city performance. He is well recognized nationally for his understanding of business and management principles and active engagement in use of government data as a centerpiece for targeting innovations in city services. Recently, Smith and Reno-Weber stepped down to assume new innovation roles in the community but will volunteer as co-chairs of the new Civic Innovation Advisory Council. New chief performance and innovation officers have been named and program sustainment has been committed to by the mayor.

The city is actively working to disseminate its innovation activities and recently hosted a national summit on government performance and innovation. Recently, the city's innovation efforts and use of data to facilitate understanding and promotion of entrepreneurial urbanism has been featured as a model of an existing smart city in practice. (Shelton, 2015) Overall, this city model demonstrates top-down innovation engagement of city government with strong leadership for program operations-based innovation and a clear vision of the direction of its work to improve the city's economic and social well-being.

Select State Government Innovation Offices and Activities

Commonwealth of Rhode Island and Providence Plantations

The state government of Rhode Island recently started a new innovation office. The state, known for its small size yet high level of integrated technology, is implementing several new initiatives with an emphasis on digital technologies in education. The state has slightly more than 1 million residents and is home to several Fortune 500 companies with a large innovation presence centered about its universities, insurance industry, and information technology companies. There are several business and technology incubators in the region, including the Business Innovation Factory that helps shape new business models using design thinking and user experiences. Digital Promise, a non-profit organization, is a key supporter of enhancing innovation in computer science training in Rhode Island schools. The program works to overcome gaps that exist between high-performing and under-performing schools

based on differences in access to funding and resources, community commitment, and the willingness of school leaders to innovate.

The Governor of Rhode Island, Gina Raimondo, established the innovation office within the Governor's Office in January 2016 for the purposes of enhancing government performance. The Office was formed as a partnership with Rhode Island College. The innovation activities were started by Richard Culatta who previously worked for Secretary of Education Arne Duncan and had established small startup activities within the intelligence and education communities. The approach he and the Governor are pursuing is as follows: "We need new approaches, both in the way government operates, and in the types of businesses we attract and nurture here. The role of the Chief Innovation Officer will be about opening up government and using data to solve problems." The Innovation Office is co-located with the Rhode Island College and supported through its Foundation. The governor brings to this innovation activity an extensive business background with prior experience as an entrepreneur manager of a venture capital firm.

Among the early achievements in the innovation portfolio is an initiative to establish a computer science program in every school in Rhode Island by the end of 2016. The work has been done in a variety of public private partnerships and challenge competitions. Some underpinnings include enhanced learning, civic engagement in government, and exploration of new ideas among government employees (e.g., Google 20 percent time). Some examples included working with the Department of Transportation in developing ways for citizens to report traffic problems, and establishing innovation infrastructure, such as bringing statewide 5G broadband. Of note, Google and General Electric announced new programs to bring new employees to the state in computer science and information technologies.

Their program's leadership is adamant about bringing in new people, including students to help shape the innovation agenda. Among the early steps has been the hiring of a game developer for applications, and hosting several community discussions that are shifting the way to think about the interface of computer science, education, and business. The state is also looking to leverage data resources in fueling innovation and building a community engagement culture within the state government. They have brought in chief learning officers from big companies, and brought in game designers from Disney to help with focusing particular areas of innovation. Limited by resources and project bandwidth, the Innovation Office considers the following factors in prioritizing their work: does the project use of a non-traditional approaches; can they apply rapid cycle interactions with their user community to create minimal viable products or services, and does the project have strong leadership to operate the projects as the innovation team supports them as their consulting capacity allows. The chief innovation officer emphasizes that the Innovation Office is not a policy office and that they make progress through developing market concepts, offering training and technical support, convening expert subject matter expertise, and sponsoring challenge competitions.

In summary, this startup Innovation Office leverages public-private partnerships with focused activities in the community built in large part on digital technologies applied to environmental and education activities. The focal areas are linked to key strategies of the organization, but not part of a top-down, performance management program, in general.

State of Colorado

Colorado has been widely acclaimed for its entrepreneurial culture and is increasing transitioning from a natural resources (oil and gas) centered economy to a regional technology hub based particularly in computer sciences and engineering but with many supporting business sectors, such as retail and commercial travel and recreation, healthcare, education, construction, and financial services. The main front-range region has a bustling emerging technologies culture with a strong workforce and economy. Colorado's governor, John Hickenlooper, is also the former mayor of Denver and a serial entrepreneur with a history of civic innovation. The Lieutenant Governor Donna Lynne is a former health care executive and health policy expert who serves as the Chief Operating Officer overseeing the operations of 12 state departments. The state's innovation leadership is headed by the Chief Innovation Officer, Erik Mitisek, and the Executive Director of the Colorado Innovation Network (COIN), Anna Ewing. There is widespread community engagement across the state on innovation building on several national laboratories and major universities with strong basic and applied research backgrounds. There are 10 Fortune 500 companies based in Colorado with strong national corporate leadership in electronics, agriculture, and healthcare.

There is exceptionally strong community based leadership that has bolstered the entrepreneurship strengths in the region. The approach to engage entrepreneurs in areas of interest for the state is promoted by COIN which features among its programs an annual StartUp week in Denver that is among the largest entrepreneurial engagements in the country. COIN is managed at the state level under the Colorado Office of Economic Development and International Trade.³¹

The chief innovation officer role is a partnership arrangement between the non-profit COIN and the state. Between the two organizations a small staff coordinates communications, planning, and strategy development to inform business leaders, academic institutions, and state. The role also serves as chair of the COIN board.

COIN recently conducted its first open innovation challenge competition with a nonprofit organization, LiveWellColorado, aimed at ideation for projects that promote teen health and wellness. COIN also conducts an annual summit of government, community, and business leaders to discuss and explore ways to further build on their successful innovation programs. A major component to COIN's function is to produce analyses of the business and economic climate in the community. In their recent annual report, they developed composites that frame issues such as education and development of STEM skills in schools, workforce issues such as the needs and interests of Millennials and generational issues in the workplace, affordable housing and regional infrastructure such as broadband and transportation.

The Colorado State Chief Innovation Officer also has a dual position with the University of Denver as the executive director of Project X-ITE, and will connect creative thinkers and doers in industry and government to faculty and students around the intersection of innovation, technology and entrepreneurship.³² The CIO helps create partnerships that forge new opportunities for the community

³¹ <http://choosecolorado.com/programs-initiatives/innovation/> Accessed September 15, 2016.

³² <http://www.projectxite.org/> Accessed on August 31, 2016.

across disciplines to connect to each other and to the broader innovation economy. The Project X-ITE initiative looks to position University of Denver as a global leader in innovation and entrepreneurship-related higher education and increase the university's profile as Denver's platform for innovation globally. The project is the first known formal collaboration between a college of engineering and computer science, law school, and business school, designed to leverage integrated experiences needed for successful entrepreneurial careers.

The region also has several technology accelerator organizations aiming to help startup entrepreneur's business ideas mature and enter a growth phase of development. Boomtown Accelerator is based in Boulder and features a health technology development track. The Boomtown HealthTech Accelerator is focused on bringing innovative technology solutions to healthcare. They have an exclusive partner, Colorado Permanente Medical Group (and the broader Kaiser Permanente system) that is widely recognized as being at the forefront of the healthcare reform, providing our teams with access to mentoring, resources and experts from one of the best health systems in the world in a live setting. Teams selected for each cohort receive \$20,000 in seed money and approximately \$700,000 in perks. In addition, companies taking part in the program gain invaluable connections to enthusiastic mentors and investors. Galvanize, based in Denver, features technology boot camps, temporary workspace, and career development for emerging data scientists, computer scientists and technology developers. They feature programs to enhance the skills, tools, and connections that emerging entrepreneurs need to acclimate in the region's technology industries.³³

Another collaborative effort to promote innovation in the community focused on health care is Prime Health, founded in 2012 by Denver South Economic Development Partnership, Innovation Pavilion and the Society of Physician Entrepreneurs. It is a business ecosystem of healthcare administrators, providers, technologists, academics, entrepreneurs and investors dedicated to improving healthcare delivery through digital health innovations. Prime serves as a Digital Health Integrator, accelerating the adoption and implementation of digital health technologies that enhance access to care, improve clinical outcomes and reduce costs. The organization operates an annual Innovation Summit bringing together hundreds from across the U.S. to explore the latest in digital health innovations, in addition to a three-month Digital Health Challenge program for companies seeking to pilot new health technologies. The Challenge has linked 46 companies to investors and over 20 leading healthcare organizations since its inception in 2014. A stand-alone non-profit organization since 2015, Prime Health is now sponsored by the founding organizations as well as the Colorado Health Foundation, Aetna, Kaiser Permanente, Ernst & Young, ViaWest, iTriage, 10.10.10, Catalyst HTI, Innosphere, Colorado Technology Association, Colorado BioScience Association and other community partners. Prime Health's goal is to create the leading health innovation state in the U.S.

Colorado has been among the leading states in developing data infrastructure in health care costs and quality. This state led effort has promoted advances in technology, policy, and has important

³³ <http://www.galvanize.com> Accessed September 3, 2016.

implications for economic development and health of the population.³⁴ The Colorado All-Payers Claims Database (CO APCD) is a secure database that includes claims data from commercial health plans (large group, small group, and individual), Medicare and Health First Colorado (Colorado's Medicaid Program).³⁵ Created by legislation in 2010 and administered by the Center for Improving Value in Health Care, making CO APCD a comprehensive source of health claims data from public and private payers in Colorado. The state supports a non-profit organization, the Center for Improving Value in Health Care (CIVHC) CIVHC that helps Colorado drive, deliver, and buy value in health care. This organization and its infrastructure are helping fuel innovative care design, health IT and data analytics startup companies, and promotes entrepreneurial incentives for improving care design.

In summary, these examples demonstrate some examples of methods used by non-federal government organizations to build a culture of innovation in their communities. Each of these efforts is led by strong leadership with innovation track records, conducts their work in a highly leveraged way largely with non-profit organizations and academic institutions, and is closely linked to leadership's organization strategies. The role of chief innovation officer and dedicated government staff for innovation is new in the last decade, in large part as an effort to use technology platforms to improve government performance. There has been a growth in dedicated chief innovation officers in government with many of these are in communities where regional economic development efforts or strong technology presence is already exists. Many of them emphasize the importance of talent development, convening cross-sector interests, and promoting incentives, such as tax incentives, challenge competitions, and infrastructure (i.e., data, broadband, etc.). These examples may serve as models to inform federal agencies in how they build upon their successes and achieve greater impact to enhance the culture of innovation and entrepreneurship.

³⁴ <http://www.civhc.org> Accessed September 3, 2016.

³⁵ <https://www.comedprice.org/> Accessed September 3, 2016.

Chapter 5

Models of Sustainable Innovation from Large Private Sector Organizations

Government agencies have clear differences in mission, operations, rules, and culture when compared to private sector organizations. Private sector organizations have either profit motives or specific key performance indicators that determine how they are rewarded and incentivized. The government model of workforce incentive or motive is prominently based in terms of public stewardship or civic-mindedness—there are no shareholders, only taxpayers and stakeholders. Oversight of performance differs as well. Private sector entities are overseen by boards of directors, investors, and regulatory agencies while government agencies are typically held accountable to executive and legislative branches and the public at large. Despite differences in accountability and mission, there are similarities in methods to create and sustain innovation in large organizations that transcend either sector.

To better understand ways to improve and sustain a culture of innovation an examination of leadership models from multiple business sectors was conducted. Leadership perspectives on organizational attitudes towards innovation were sought from a variety of large organizations with well-established business models and management practices as it was felt these would have common characteristics with a large federal bureaucracy. Start-up businesses and high growth companies were excluded from the analysis as their cultures are ready-made for innovation and lack constraints that are common in government agencies. In-person interviews with corporate executives were conducted from a cross section of regions, and business sectors. Business entities were sought through a small team of advisors who recommended entities that were thought to have “innovative cultures” and a website review was conducted to identify key areas of business activity that could be explored. The interviews were conducted over a four-month period and, with the consent of the interviewees, were tape recorded for future analysis. Each interviewee was asked a similar set of unstructured, open questions designed to explore the leadership and management approaches to sustain a culture of innovation in their organization. Interviewees were in their leadership position from one to 22 years and more than 50% had risen through their organization to lead. No comparative analysis was conducted and there were no data collected other than leadership perspectives. More than 100 interviews were conducted of prominent business executives who have thought deeply about innovation and have developed a supporting organizational culture.

These interviews should be instructive to policy makers and future HHS leaders as the next phase of the HHS innovation agenda and IDEA Lab is discussed and revisions planned.

Kenneth Samet, Chief Executive Officer, MedStar Health; and Mark D. Smith, Chief Innovation Officer, MedStar Health

Mr. Samet has been the Chief Executive Officer for this Maryland-based regional health system for nine years and preceding this role he was the Chief Operating Officer. Throughout those years he worked closely with the clinician and computer scientist Mark Smith, who has directed the MedStar Institute for

Innovation (MI2) since 2008.³⁶ MI2 is one of the first innovation centers in a health system in the U.S. and supports operational programs by testing new ideas and projects by their hospital employees and working with outside organizations to adapt solutions to common problems. Over the years, MI2 has formed a simulation center to test and train users of new medical devices, and established a human factors center to better understand and apply communication methods among staff and patients to improve care delivery. The tag line for their organization is “think differently” charging their teams to look in different directions for solutions. Among the functional elements of their mission is “innovate” for health. There is a symbiotic relationship between the two leaders that emits influential signals that enables ideas and a culture of innovation to grow throughout the organization of 30,000 employees and 12 hospitals composing an integrated care delivery system.

On the perspective of risk and change, Samet says “You have to create an environment for change, where you understand and respect what people need to change, and give them the extra resources, tools, and support to then go take those steps to begin that change. Leaders will be tested and will need to be resilient. Are you serious about this? It takes courage to change. I’ve used this ‘courage’ word a long time and then most importantly, you’ve got to stand up behind it. We will make mistakes.” Samet and Smith have built a vibrant and engaged community of workers who embrace change and new ideas. Says Samet, “I think you get a great opportunity as a leader. But, you have to own that courage. You have to back them up in terms of when you have those times, and I think you have to celebrate a ‘thoughtful failure.’ I use those words purposefully. We’re not talking about somebody randomly saying, ‘I’m just going to try it different today.’ Thoughtful failures mean we had an approach; we said we were executing against it; you followed the plan or at your local level made modifications to suite your needs. That approach builds confidence in innovation even when the results aren’t what we were looking for.”

The organizational concept that underpinned the establishment of an innovation center came at the beginning of Samet’s time as CEO. Here he captures some of the distinctions he used to his leadership in making the case for a separate organizational structure for innovation.

“In moving from COO, a position I had been in for ten years, I tried to get myself to think a little differently and not just think as a COO, but coming out of that, create a big organizational change. Structure, people, technology, etc., and that was the moment that created MI2. It tells you how far we’ve come. Mark will remember our classic organizational chart. It had all the nice rectangular boxes and the lines, and then off coming out of the office of the CEO there’s this oval, and it said, *MedStar Institute for Innovation*, and that was how we created it. I went to the MedStar board directors and I rolled out my structure. It was amazing how the oval upset management. Why is that an oval and I’m in a square? It was stunning as these were senior executives who asked ‘*what does that mean?*’ I did on purpose because there’s a difference.” When he was asked about what the resources in an innovation center would be applied for he replied, “If I knew what the Institute for Innovation was going to do, it wouldn’t be very innovative, would it?” It turned out that that humble perspective and yet truthfulness cemented the commitment for creating a culture of innovation.

³⁶ <http://www.mi2.medstarhealth.org>

Sustainability of an operation and building momentum are major obstacles for many innovation centers. When the Medstar duo was asked to share their perspectives on how to 'bake the culture into the organization's DNA' Smith said, "We've brought in world-class people, not just to be world-class thinkers, and given them this place where you can really get out of your head in ways that let all that good stuff happen. Bring people together, let them think great thoughts around four mountain tops away, and then we'll figure out how to apply it, but then it also has true structural, functional, contributing resource sections as well."

Bringing value to the organization by selecting top initiatives each year's objectives has created the space to grow. Smith notes some of the reasons for his success. "Part of it comes from the fact that I come 100% out of operations as chairman of emergency department. A key part is that you have got to do your day job well. You do that well, others will leave you alone and you can do these other things, but if you don't do it well ... I understood that, you won't have that opportunity. I also have this framework of a concept in theory and practice. I realized that we are very susceptible as we're not a revenue center. People are conscious of your resource needs and I am fortunate having grown up in the organization that I know lots of the people and I have made a very conscious effort to make sure that we are absolutely grounded and have operational impact and connection. That's been very, very, very conscious. We want to be doing stuff that is helpful and meaningful in serving our associates."

Medstar's innovation journey continues to gain strength as its programs increasingly are cited as examples of how to address common problems in quality improvement metrics, new service offerings such as primary based home care, wellness and nutrition activities, and much more. Nationally, their innovation programs are recognized for their leadership, connections to key mission objectives, and creativity in seeking solutions to vexing problems.

Kent Thiry, Chief Executive Officer, DaVita HealthCare; and Rebecca Griggs, Group Vice-President of Pioneer and Internal Audit Davita HealthCare.

DaVita HealthCare is a Denver, Colorado-based Fortune 500 global health services company. DaVita Kidney Care operated or provided administrative services at 2,293 outpatient dialysis centers located in the United States and 11 other countries. In recent years, the company acquired HealthCare Partners, now the DaVita Medical Group which manages and operates medical groups and affiliated physician networks in California, Nevada, New Mexico, Florida, Colorado and Washington. The company is widely acknowledged for its innovative services and promoting quality improvement; and its strong visionary leader, Kent Thiry, who has led the firm for nearly two decades. He speaks with immense clarity about his mission for the organization, referring frequently to the value of the services to the customer and desire to have the company recognized by patients for its quality. This case study was undertaken to identify how a large delivery system with the need for consistency in care could also promote new ideas and technologies in a systematic, structured way.

Thiry noted that they use several processes for getting ideas and generating new market paths.

"First, we have staff looking for and evaluating new technologies and companies as their job and they may integrate them to meet new service needs. Secondly, we allocate time periodically and having wide

open brainstorming sessions among their executive team members.” One of DaVita’s core strengths to fuel innovation is attracting, developing and retaining talent. “We develop substantial data on recruitment and invest substantially in organized coaching and quarterly reviewers to seek out high performing talent.”

Given DaVita’s core business (kidney dialysis) caters primarily to Medicaid and Medicare beneficiaries, the topic of value-based payment mechanisms of health care delivery reform was discussed in the context of innovation. DaVita systems participated in a pilot program of an accountable care organization (ACO) program for end-stage renal disease recently. The firm has promoted their clinical care outcomes through patient-centered care programs that have improved outcomes and diminished needs for some advanced services (Nissenson, 2016).

They noted that their innovations were constrained in this current model and that it isn’t scalable enough to justify investments for dramatic change. “The way to get private sector innovation involved is to provide reimbursement parameters with time horizons of five years and you could triple the amount of innovation. We would need to do extensive rebasing of our service structures to accommodate that, but it could be done,” he said.

In addressing the innovation space for a large multi-national company, DaVita created a Pioneer group that hones products and processes led by Rebecca Griggs. She explained how the company works system-wide on scaling and dissemination of their Pioneer projects that seek ways to drive better efficiency and clinical outcomes. Pioneer program is an enterprise function to serve all areas of the business starting with kidney care, and then administrative areas to address finance, legal, compliance, and associated. Griggs noted that a year ago, Joseph Mello returned to the role of Chief Operating Officer for the DaVita Medical Group. This expanded the application of their Pioneer space allowing it to scale the techniques and innovation culture from the kidney care to the medical group. “We also have Strategic Business Initiatives such as DaVita Rx and Labs that have been built through recognizing where new services were needed and creating them and scaling them out of the Pioneer program,” Griggs explained.

Both were asked “Where do ideas come from and can you reach out to the organization to get them?” “We use a multifaceted approach and get close to ground at centers and do focus groups where we ask the magic wand question – ‘What is your pain point and what would make it go away?’

In their approach, they triangulate with the management team to determine where risks and exposure and then examine their data (financial, productivity or performance) looking particularly for high variances in metrics where there are opportunities to address a change.

“To us, this is what represents future opportunity for achieving progress,” noted Griggs.

The innovation processes typically involves a small number of kidney centers and as the results are proven, they pivot and spool them out of their centers. Those sites are equipped with engineers, Six Sigma experts, Lean process professionals, user design experts, and others who iterate on the design and deploy it.

“Not only deploy the improvement, part of my job is to then have the results be sustained,” she said. In the Pioneer program, once the intervention is ready to be deployed, there is substantial training and measuring of its impact.

“It’s a well-established process and quite rewarding to the team further engaging the employees in our messages around quality,” Riggs said.

Reprioritization of projects is done through a quarterly evaluation and the process improvement or new technology adaptation is assessed to determine if pivots are needed or a decision made that it just may not work.

Griggs noted, “We celebrate our failures – and, if we’re not failing, we’re not learning fast enough. At any given point in time 20 – 25 projects are going on with five to seven large ones with substantial management process in place to monitor.” Thiry added, “we are big fans of transparency and clarity – and, even stretch goals – they bring excitement to the team to do something new to fix a problem.”

Michael Crow – President, Arizona State University

Michael Crow has been leading Arizona State University (ASU) since 2002 and is lauded as the most prominent innovator of higher education in America. The institution has undergone massive growth in enrollment and founded highly successful on-line education programs. He is a prolific writer on the concepts of education reform and innovation. In his book, *Designing the New American University*, Crow examines the imperative for a new education model, the tenets of which may be adapted by colleges and universities, both public and private.

As a knowledge enterprise, ASU is an organization that enables the great discovery and breakthrough. For ASU, the primary element of culture change involved a transition from faculty centrism to student centrism. The shift to student centrism changed the organizations orientation, measurement of success, and mission. Other elements of culture change included empowerment of academic administrators to redesign the organizational model to improve educational outcomes and leadership driving change for the greater good, not departmental or discipline specific resource interests. This culture change addressed design flaws in the university where the behavioral and social scientists were perceived as less important than biological sciences. In the shift from an academic culture to a leadership culture, the values become consistent across the organization and enable organizational change for the greater good vs. departmental infighting for resources.

Crow has distinct impressions about leadership character and the origins of ideas that influence education reform. He notes that no human being generates ideas from whole cloth and they come from what theories existed before. Consistent with Robert Merton’s views on the sociology of science, he believes that “our achievements stand upon the shoulders of others.” He was also influenced by Philip Kitcher who wrote “Science, Truth and Democracy” in which the author outlined that science without purpose is amoral – it has no moral basis. He believes that science in a democracy must have an outcome. He suggests that the single measure of success for a research enterprise is the extension of healthy lifespans across the society, regardless of social status. Historically, the approach to university

based research has been to float all boats, but it's been done unevenly without overall priorities driven by societal needs. He believes we need a new "social contract" that sets priorities for all higher education to pursue in order to address our most pressing societal problems. The argument should be about the ideas, the solutions, and outcomes and funding then follows.

So how do you change universities that are faculty governed institutions? Crow found the introduction of technology to be the most powerful thing for motivating ASU to change behavior. ASU also redefined who they were, what they were doing, and how they were doing all based on outcomes they were trying to achieve. Crow believes if you own the outcomes, then the culture will change.

He also thinks education can be socially transformative to address inequity in the allocation of public good and value. These are radical ideas for a design of a new kind of social construct. Academic leaders are realizing that evolving culture across universities based on common social priorities will result in rethinking the existing elitist approach to educating the best and brightest but leaving behind lower performers who won't graduate. A new model for American universities is being developed through a University Innovation Alliance, with 11 universities and with funding from six foundations.³⁷ The goal is to produce more graduates, expand access to students from lower income families, innovate together, and lower cost of education for the government and family. This effort is garnering a lot of interest and is expected to yield new ways to accomplish greater social value as a result of a shared cultural perspective and values across universities.

For the New American University model to be successful, there are many elements that have to come together and be backed by strong leadership. Admitting students regardless of financial barriers or disadvantaged backgrounds and getting them to succeed will require a rethinking of financial support and modes of education. ASU is advancing targeted technology learning platforms aimed at bringing students from where they are to where they need to be to succeed. ASU believes that the next wave of universities will need to be egalitarian to achieve excellence, access and impact as well as meet the social needs of the state. ASU fully recognizes that the way to achieve the social construct is through innovation.

Jack Dangermond – Chief Executive Officer, Esri

Based in Redlands, California, Esri is the nation's largest geographic information systems technology company founded in 1969 and led ever since by Jack Dangermond, a prominent entrepreneur. With its origins in helping understand the environment, this privately held company has offices in 41 countries and over \$1 billion dollars in annual global revenue. Their commercial platforms have the largest market share for geospatial mapping in the world and bring brilliant visual perspectives that add context to challenging problems.

Dangermond has led the company's growth by continuing to innovate while crossing through five major technology shifts in its lifespan, a remarkable feat. The prominence of his first principles of business has been instrumental in shaping innovation throughout the company. He describes the essence of Esri's

³⁷ <http://www.theuia.org/>

success: Always start with listening to customers and designing solutions for their needs. The company began as a true startup and got off the ground by doing work that customers were willing to pay for.

“You listen closely to the customer and continuously get the insight in what was needed and wanted and then design that solution,” Dangermond said.

The founder notes that he learned his business principles early on and coupled that with his experience from design school. Using these tools, he programmed maps to suit the needs of the customer rather than theorizing about what they might need (guessing).

In beginning as a startup, you really have to focus from the outset on delivering what the customer wants and that’s the only way you will get paid. He noted that the first 10 years were focused on solving people’s problems, and after 10 years they were able to build a platform or tool kit that enabled other people to solve problems using a generic method. As a startup, Esri took on work others didn’t want to engage in. Dangermond says the mantra at Esri is ‘do the basic work for other people and do it cheaper and better than they can for themselves.’ He says achievements inspire innovation and teamwork in an organization.

For emphasis, Dangermond noted it took a decade to realize that problem solving is about seeing the context of the customers’ problems. Seeing the context and the content together then allows the talent and experience of the innovator to be applied to the customer’s situation. He adds, “often the innovator can’t do anything about content but you can change the context of a situation and find solutions otherwise not thought practical.”

Dangermond said there are parts to running the organization. First, is the ‘selling’ the work that you do. You have to convince others that your product and services have value and that applies to government startup innovators also. Second, you have to be able to do the work to solve someone’s problem. Thirdly, you need to get paid for doing the work. So, it doesn’t matter if your organization has 10 or 10,000 people – someone has to sell, someone has to execute, and someone has to run the business and get paid. As an executive or a manager, typically one needs to spend one-third of the time on each.

Dangermond says he has a sense of how to take on problems and set them up with his staff. He notes that knowing the capabilities of the workforce to execute the mission is crucial. It can be harmful to the organization if you have visionary ideas but no one who can actually execute to achieve them. His method for achieving breakthroughs is through creating minimal viable products and taking small steps to solve the components of a problem. He notes that it is critical to calibrate your execution on a big idea to allow for the talent that you have. “I try a little bit and I try a little more. We take it step by step and provide nurturement to see how it develops. I let someone start it, and if I trust them, I can put a lot of resources on it, but it’s step by step,” says Dangermond.

In exploring the culture of Esri as an innovative organization, he notes that he fuels innovation by investing a lot in education of the employees and sponsoring about 14 to 20 fellows to achieve graduate degrees while they are working. He notes, “It brings tears to my eyes to see them achieving these goals they had no idea they could make. They know I invest in them and I know they invest in me.”

He explained that at Esri, the culture of innovation is always to be interested in problems that can be solved.

“For our employees’ innovation potential, I want to call on their core world belief that systems to do good and important things,” he said.

On large IT design projects in government, Dangermond doesn’t believe in big system engineering projects because most of them fail. He pointed to the initial design of the healthcare insurance marketplace platform, Healthcare.gov, as being a big waterfall design with lots at stake rather than incremental prototyping as a methodology to get started with something functional.

Dangermond noted, “at Esri we experiment with a solution in small ways and we scale down to workable problem. We also keep our customer close and we’re engineering a huge innovation to develop a new generation of network modeling for utilities. We’ve been involving our key customers and it will change the electrical utility business and we’re now in our seventh review of the product by utilities that will use it.”

“It’s important to success for you to stay close to the user and close to the mission and you evolve from it,” Dangermond said.

In offering advice to government designed technology projects, Esri’s CEO noted that leaders could do much better if they paid attention to rules about commercial off-the-shelf software. His opinion is that COTS is usually better than building a “home grown” system. Large contractors generally may not be interested in operating a system so you need to have the right set of incentives to make an internal customized project work to satisfy the customers work. He is a strong believer in open source software for sharing, however, institutions need to have reliable foundations with people to get high quality support in mission critical environments., Dangermond noted, however, that given the risks surrounding cybersecurity open source software may have issues.

The concept of risk and failure has not been a big issue for Esri.

“We don’t make a big deal about failure. Small or big failures, we make failures. We let them fade into the background and quietly learn from them and move on. That’s the story of innovation at Esri” noted Dangermond. As a privately held company, 27% of his company’s revenue goes into research and development and success is dependent on engaging the ‘stockholders’ - our users and customers. Esri holds intense user meetings to “show everything we do and they get to tell us all of the areas we need to work on. Questions from users come in and are used by the organization as a management tool and tell us where we have bugs in software or our customer services.”

In looking to the future for government innovation, he stressed the importance of working on real issues or priorities for the organization and not esoteric ideas with no direct application. He also suggested working closely with the people who are dealing with the issues or priorities you’re focused on and building the team who can develop solutions and execute to make the vision happen.

Donato Tramuto, Chairman and Chief Executive Officer, Healthways, Inc.

Healthways is a publicly-held information services company based in Franklin, Tennessee. It provides population health and wellness services to health plans and employers. Donato Tramuto, CEO, recently led the company through a major transformation aimed at strengthening the core corporate business models and expanding through a separate privately held company to continue its population health offerings. Prior to his arrival at Healthways, Tramuto led several health care industry companies, including Aphthis Health, focused on innovation technology and preventive health services. He's also authored a book on his career and the innovation strategies that he uses to engage employees. (Tramuto, 2016) Tramuto blends his personal life experiences and business acumen to guide decision-making by his senior leaders as they reshape the company to meet the needs of tomorrow. He emphasizes the needs to fail in order to make transformational change and he encourages people to make mistakes to learn and grow, noting this as a key step for innovators in all walks of life.

Tramuto sees two types of leadership models, transactional and transformational, that are important for sustaining innovation. Tramuto notes that you hire great people to transact on the content for the company but that's not sufficient to lead companies today. First and foremost, he thinks leaders have to establish a vision, but notes that it doesn't have to be correct the first time. As leader, you can be forgiven and pivot that vision but you need to be transparent. Transformative leadership requires a 'soul' that speaks to the employees in an organization to achieve the vision.

Secondly, transformational leaders are important in developing and evolving the management team that will deliver on the vision. He notes that it is very important for leaders to surround themselves in management roles with people who understand the values. It's the job of the CEO to be a transformational leader who establishes the values for organization to move the mindset of the people working for you. It's also important to hire and fire managers until you get to the team that will be able to embrace the vision and values to transform the organization. At his company, they now have 5 key values, including being customer-focused, establishing trust, striving for excellence, being provocative, and promoting empowerment with results. He articulates that he expects his senior leadership team to provide accountability, profitability and scalability, and each leader is asked to explain how they will achieve them. Tramuto sees his role as chief inspiration officer in noting that a strong executive team is what makes innovation happen. "You have to know whether your principal reports are the supporters of your leadership agenda or whether they are blockers. If your direct reports are as passionate in your vision as you are, your employees will see that and act on it."

Donato also observes that CEO's often just talk about strategy but they don't get the processes right that is needed to execute their vision. "You need your 'ambassadors' to move the organization but you also want to empower employees to lead, problem solve, and make good decisions." He gave the example of a top performer trying to win a contract when facing several obstacles. The conversation was "Is it profitable? No. Can we win on it? No. Can we service it in an unmatched manner and scale it? No. I wanted them to make the decision. That's not the answer long term – we need to seek out a solution – go and fix it." Two weeks later the employee came back with a profitable, scalable solution and we won the contract.

He also recognizes that success cannot occur without overcoming failure. He notes that he lost his hearing at age 8 and failed fifth grade. You have to be willing to tolerate that you are going to fail to succeed as an innovator. Transformational leadership requires self-assessment and reflection. This is relevant to both learning from failures and developing as a leader. “I remind myself often of Socrates maxim that the unexamined life isn't worth living. Self-assessment and attempts at self-improvement are essential aspects of ‘the good life.’” Beyond self-assessment, Healthways uses key enterprise scorecards to track organizational progress against their core values. They reward innovation and performance through bonuses.

Tramoto believes it's important to make your intentions and thinking out in the open for everyone to understand. He shared his personal story conveying the power of transparency, “I was a commencement speaker and I opened the speech by saying to the students, I was sitting in your seat and knew a person who graduated after they had lost their hearing, was bullied and ridiculed when he failed the fifth grade. And then I explained that young man was me. The parents afterwards came up to me and said that you gave my son hope today and my daughter too who was doubting whether or not to go to college – this was a wake-up call. You have a story, share your story. I'm hoping as a transparent CEO, I can help other CEOs realize that I would have been much better if I had been more transparent earlier.”

Conclusion

These brief case studies demonstrate the importance of strong leadership in large organizations to drive culture change. Each leader has set the stage for successful and sustained innovation through creating new cultures that inspire new ideas aimed at achieving well-defined goals. There are examples of how design thinking, intense focus on the outcomes and social value, and importance of a clear focus on the mission of organizations are combined into one force for changing the course of organizations. The culture created for innovation in each case demonstrates that there are multiple ways leaders see opportunities presented to them and set a course that inspires and empowers all around them to unlock their own potential for innovation.

Chapter 6

Strategies for the Future

Targeted and structured innovation initiatives within an organization are beneficial as a strategic way to advance performance toward the mission. A manifestation of a dedicated innovation strategy is the adoption of a mindset by the organization that places a high value and expectation for improvement. The business practices of the organization and the willingness to take risks are the defining elements that create a culture of innovation in a community.

In reflecting upon the progress of the innovation agenda for the HHS Secretary over the last eight years, a few important insights emerge. Building on an existing foundation, a new phase of program development and dissemination can sustain cultural shift and be perpetuated through workforce attitudes and expectations.

The HHS Chief Technology Officer built a firm base of established programs that has led to a framework that can now be used to improve upon the impact of the innovation portfolio. This section does not address specific areas of innovation to pursue, instead it points to particular types of initiatives to explore further. Our efforts are aimed at enhancing the delivery methods for innovation, and not describing detailed tactics or advocating specific domains of innovation going forward.

The ideas and suggestions presented here are from a manager's perspective and are meant to be considerations on how to optimize the value for the organization's investment of time, talent and budget.

A. The Role of Organizational Leadership

Although it is hard to quantify, the success or failure of an innovation strategic agenda is more dependent on the head of the organization and that leader's outward commitment and emphasis on innovation and entrepreneurship than any other factor. Strong leadership capabilities and the ability to rapidly communicate with organization leaders in order to share value is the best tactic to use in a large cabinet level organization. Anecdotally, the dominant voice of innovation should be the touchstone for the organization's leader, regardless of the type or sector of the entity. Culture, by its nature, is a perceived quality among the people who constitute an organization, and it is a valuable commodity when portrayed to stakeholders, customers, and employees and vital to future success. Harnessing an organization's capacity to embrace change management, innovation, and entrepreneurship, often requires changes in decision-making processes, priorities, and stated values. Empathy is another important virtue that leadership needs to impart to facilitate an innovation culture. Leaders can encourage innovators to appreciate the difficulties associated with change by others who may see situations differently and encourage the open reflection of appreciation and support of them when new methods are tried. Organization leaders should reward and support managers who encourage employees to rotate through varied positions to understand one another's roles and to learn new methods. These employee exchange efforts often cause challenges, especially when it comes to

managing ongoing duties, but managers should be acknowledged for supporting this important form of innovation dissemination.

Leadership vision about innovation is more effective if it is presented with specifics so that the audience (i.e., direct management reports, employees, or stakeholders), is able to accurately describe what is being asked of the workforce, and define what a vision of what success looks like for the organization. Leadership can also advocate for and encourage policy and legal reforms to remove obstacles for innovation such as the re-authorization of the Paperwork Reduction Act, direct hiring authority for select high demand areas, expand gift authorities across HHS agencies, and clarify rules of engagement and ethics guidelines for collaboration with non-federal agencies.

B. Defining the Role and Responsibilities of the Chief Technology Officer Related to the Innovation and Entrepreneurship Portfolio

One aspect of assisting the organization's engagement of innovation is the role of the Chief Technology Officer. To establish the office functions and staff responsibilities, the past efforts have relied upon evangelism and promotion of catalytic activities within the agencies. Enhancement of the definition of the reporting relationships and transparency of duties and scope of responsibilities as they relate to innovation and entrepreneurship, however, would yield greater stakeholder and employee engagement and understanding. While maintaining broad capacity for flexibility and accommodating new opportunities is important, formally establishing the Office of the Chief Technology Officer in the organization and delegating specific roles and authorities within the Office of the Secretary would be beneficial. Further specification of the relationship of the CTO to the Operating and Staff Divisions as well as to roles to the Executive Office of the President on behalf of the Secretary would add clarity and improve the likelihood of meaningful impact. The work of Sir Michael Barber on "the science of delivery" is a highly refined guide for government leaders and is recommended reading for HHS managers as a reference guide as new agendas and objectives are pursued.

Changing the title of the Chief Technology Officer to more accurately reflect the duties of the office could increase clarity about his or her role and enhance the effectiveness of the position. Technology acquisition and regulation are roles typically assigned to the Chief Information Officer and senior leaders of the CIOs office. A name that would reflect the activities such as Chief Innovation Officer, Chief Transformation Officer (retaining the CTO abbreviation), or Chief Strategy Officer would more accurately reflect the duties of the position.

In recognizing the historical role of the CTO in the liberation of government data for public use, coupled with the massive growth and importance of big data, there is great value to be achieved by establishing a defined Chief Data Officer (CDO) position at HHS. This position would assume the data policy and management functions from the CTO to support the emerging analytic and data needs of the agencies, such as uses of linked data, design data strategies to meet business needs, and coordination of data policies with other federal data scientists and chief data officers.

Among the responsibilities that the Secretary could formally delegate to the CTO would be policy management for technology and innovation at the Department (similar to the Secretary's Counselors). The CTO would also act as the organization's innovation leader in representing the Secretary, set the policy agenda for the innovation council, and further develop strategies to promote a culture of innovation and entrepreneurship at HHS.

Leadership from the CTO's perspective is enabled by the close proximity or perception of such in effecting policies and projects toward innovation. The imprimatur of the CTO's voice is supported with visibility to stakeholders within the Immediate Office of the Secretary. The constraints on resources in this administrative structure places extremely high value on partnerships and collaborations with the government to succeed.

Fundamentally, a culture of innovation requires clarity about mistakes, failures, and management of risk. It is important that the new leader engage with every level of management and to clearly and forcefully articulate their mission and how they intend to embrace opportunity and risk. The articulation of "smart" risk-taking and transparency around challenges are key aspects weaved throughout the fabric of an innovation culture. Embracing failure as the building blocks for success is critical. Acknowledging bold endeavors even when they don't succeed, and understanding why these endeavors failed, is not a comfortable situation for many in government. Establishing a frank, open, and practical communications strategy at the outset of new endeavors goes a long way to accommodate and assist the workforce in managing skeptical stakeholders and political challenges to change.

C. Defining Strategy: 'Micro-' versus 'Macro-level' Scale Innovation Activities and Projects

The HHS CTO and IDEA lab experiment address two categorical roles in the administration. The first is policy development and execution across HHS through convening, governance, piloting of concepts, and communications. Over the past eight years, the CTO was responsible for a large number of policy coordinating activities on technology and innovation from the executive branch. The CTO also handled programs and executed strategies to enable innovation and entrepreneurship across the organization. These two roles require distinct skill sets, experiences, and knowledge. For the latter, the vast majority of the efforts have been aimed at 'employee-initiated' grassroots level work at the 'micro-level' to establish and develop a culture of innovation. Other federal and other non-federal government organizations focus their attention toward innovation culture by tying their efforts closely to performance management where innovation practices are applied when key performance indicators are not being met, or innovations are needed to accomplish a new area or objective. These 'macro-level' approaches have specific targets for innovation practice, and although explored previously, have not been embraced thus far by HHS leadership and management. The CTO and Secretary's management team may wish to consider the merits of identify opportunities to engage the HHS innovation agenda and IDEA Lab capabilities early on for mission critical projects linked to the HHS strategic plan, Congressionally-mandated new programs, or executive initiatives. **The lack of a 'macro-level' strategy for innovation within budget and performance structures limits the overall impact and significance of meaningful transformation of innovation culture.** Building on past successes on 'micro-level' innovation; and its successful experiences on enterprise-wide policy development, HHS may wish to

consider beginning to accommodate 'macro-level' innovation strategies similar to NASA and the Department of Defense (i.e., DARPA). While these agencies have differing appropriation authorities allowing funding flexibilities that civilian agencies do not have, separately, their management methods for strategic approaches to encouraging more innovative approaches toward mission could be adopted without changes in authorities. The successful transformation to a balanced approach (i.e., macro- and micro-level innovation and entrepreneurship) is likely the most important factor that hinders HHS management and administration from becoming a true culture of innovation.

In addition, past efforts to include innovation objectives in performance management plans for senior managers has been avoided, but embracing this management tool should continue to be explored as an open and clear means of executing culture change. Further, the CTO could take on a role to assist management with defining parameters for innovation methods in performance management plans, including how to address diversity, hiring and retention of high quality talent, and to build adaptability and resilience capabilities into the workforce.

Further evaluation of the role of the CTO staff and resources to support new policy development and implementation could be re-examined. In the past, this function has been important for executive office level effector arm for the Administration's policies. Policy implementation, execution, and reporting are resource intensive from the standpoint of human capital, and have been under-resourced. While effective, the value to the organization's open innovation strategy diminishes when efforts to transition programs from the CTO's office to agencies fail for long-term management and sustainability. Given the assumption that lean resources will prevail, caution could be exercised when assigning or committing the CTO's staff to execution of non-resourced policy functions unless there is a clear mandate or partnership from other agencies with the intention of transitioning activities out of the CTO's office. From the standpoint of portfolio management, the CTO office has had difficulty executing several technology initiatives to more sustainable positions in the organization. Each new initiative would benefit from an agreed upon business management and transition plan prior to its initiation and the HHS Innovation Council could work to emphasize this responsibility within the HHS stakeholder community.

D. Establish an Effective Resource Plan for Conducting Core Innovation Program Activities

Several management approaches could be undertaken to expand capacity and increase the impact of the HHS innovation and entrepreneurship programs. Currently, the CTO's activities are dependent on a small staff of six full-time equivalent positions and a small operational budget drawn from general management funds for the Secretary's Office operations. While retaining its Lean Startup attitude and culture, **the CTO's staff and IDEA Lab would benefit from securing a new funding model to support the current service offerings and expand capabilities to meet growing demand by the HHS's agencies.** Capital funding approaches for HHS innovation programs, specific budget requests under specific initiatives such as PCOR and other funding approaches have been unsuccessful in the past. Prior administrative decisions would only allow for operational funds to support innovation activities which have constrained the ability to initiate new projects or scale existing projects into full deployment.

HHS could consider an approach that considers partial-cost recovery for staff in the Entrepreneurs-in-Residence, and Ignite Accelerator programs where highly valued time and resources could be allocated to scale successful innovations across the enterprise. Further refinement and definition to the HHS' work with US Digital Services and GSA's 18F resources would be helpful for knowing where assets for digital development are being applied. A recent project involving program management assistance by IDEA Lab demonstrating the value of a pilot cost recovery model that included reimbursement of staff time. The Office of Business and Management Transformation (OBMT) in the Office of the Assistant Secretary for Administration has used similar cost-recovery methods. **OBMT and the IDEA Lab could be more aligned to support innovation through shared financial resources and service capabilities.** A major challenge for scaling the IDEA Lab impact is the bandwidth available to support coaching and consultations that are among the most valued services it offers. Finally, the HHS CTO could continue to leverage internal partnerships with offices such as the Chief Information Officer's Office, the Office of the National Coordinator for Health IT, and the Office of Women's Health to apply creative, lean approaches to project management. **HHS may also continue to seek through the President's Budget authorization for innovation lab operating budget.**

E. Developing Tools and Resources to Help HHS Agencies Support Workforce Development

Among the most valued activities of the HHS innovation programs has been the establishment of new mechanisms and procedures, workforce development, and resources to support employee innovation strategies. There is value in providing content and mentoring on fundamental innovation principles and practices such as on open innovation and service delivery theory. These are emerging areas of science and organizational management practice that are growing in their applications in private and non-profit sectors. Another enabling step would be the development of tools for human resource management in the hiring and retention of highly competitive skill areas for HHS programs. The creation and classification of position descriptions capturing innovation parameters and salary comparison indicators particularly for entrepreneurs being recruited from non-traditional salary structures would be valued by many aspects of the organization.

The CTO and IDEA Lab have made major contributions to the organization's knowledge base by developing detailed project synopses and use cases of projects under each program. These serve as core learning materials for employees and managers and this work should continue to add value to the organization's 'culture bank' of resources to inspire others who follow. **The development of a lexicon of terms to describe methodologies would be useful and expanding upon the efforts to shape taxonomy of innovation activities and projects would be helpful in many ways.**

New partnerships for sharing innovation training in the government workplace can be developed to help establish new pathways for high demand positions. These include working with local universities and colleges through shared curriculum and experiential training experiences. Local incubators and accelerators are source of entrepreneurial talent and innovation training.

HHS would be well served to help establish and refine metrics of innovation activities, with a particular focus on organizational dynamics and networks. Social media has served as a driving force for changing

the nature of interactions among the workforce and uses of communication tools to break down institutional barriers and group decision-making have shown promise.

There are several domains of expertise that could bring substantial value to the organization. Although in and of itself, Lean process improvement is not considered an innovation, the opportunity it brings to streamline business processes and open up human capital opportunities and cost savings, can be applied back into operational innovations. Design thinking approaches have broad interest in project management and the development of experiential learnings through an IDEA lab mechanism could be streamlined and integrated into new projects or programs. Similarly, dedicated experiences with Agile technology development could bring program officers and designers experiences that are directly applicable to HHS operations. The NIH Program and Change Management Branch has created a suite of tools to assist managers in successfully redirecting programs and building confidence through use cases in business transformation processes. Partnering with them to make these tools and other capabilities that emerge from agency innovation activities available across HHS would be a logical next step.

The CTO could consider partnerships with universities or non-profit organizations to enhance the offerings in the workplace under cost-reimbursable agreements. The CTO's office, working with human resource offices, has demonstrated the value to the work force of establishing certificates of competency in innovation practices that are included in the employee's Official Personnel Form, the SF-50. Additional leveraging of that practice could be an enticement to an interested workforce for greater structured innovation programs.

The rising presence of the millennial generation in the workforce has been a substantial driver for change across many work sectors and spurred much discussion in management circles. The work of the IDEA Lab could be shaped as an entry point for career advancement and engaging in new workforce practices. **IDEA Lab has served as viable testing cite for new technologies in the OS and could be suitably adapted to initiate and test new management protocols for meeting the workplace needs of a new generation of federal employees.**

F. Accountability and Employee Stewardship to Sustain Innovation

An important benefit of institutionalizing a culture of innovation is employee stewardship. Empowering individuals and teams to test new ideas enhances employee morale, improves their sense of stewardship and underscores the rewards of public service. The association of innovation programs and initiatives to meet particular goals and objectives imbues employees and stakeholders with a strong sense of accountability and comprehension of effective risk management and tolerance. HHS can learn from successful approaches to performance improvement and accountability used by city and state governments (as described in Chapter 4), in developing a more robust performance measurement system with ties to the outcomes of innovations that can be scaled to reach all HHS employees.

In summary, **HHS may seek to actively and clearly engage innovation strategies in its budget and performance management strategies to achieve a blended micro- and macro-innovation strategy.**

G. Implications of the Innovation Culture beyond HHS

The early efforts of HHS innovation described within this report coincide with a major transformation of America's health care system that has until very recently lagged in its efforts to innovate and failed to show improvements in health outcomes and productivity. The use of innovation and entrepreneurship strategies in the federal workplace can serve as an important nexus of learning as program managers and agency leadership adapt what works inside government and disseminate these successes to systems beyond the program walls.

In shaping the next phase of the HHS Innovation Agenda and the role of the CTO, much could be gained by linking the concepts of internal innovation methods and practices, to those of health care transformation. The goal is to blend, the culture of innovation with the healthcare system itself, to improve health for patients and usability for providers. As CMS and other large operative divisions in HHS evolve their operations and programs to better meet policy priorities of the next administration, such as a shift to value based payment, the management tools to promote change and innovation will be crucial to success. Evolving the infrastructure and processes to administer value based payment in Medicare and Medicaid will require a complete transformation of CMS systems as well as the health IT and claims systems in the private sector that support health care providers. The nature and size of our entitlement programs have such a reach into the private sector that their transformation requires private sector partnerships that interact with a majority of the health care delivery system. To transition Medicare away from fee-for-service reimbursement to payment based on measures of total health care cost and health outcomes **will require a combination of disruptive innovation, delivery science, design thinking and other management tools to efficiently evolve the CMS payment operations and related infrastructure to ascertain the value of care delivered.**

A close partnership and collaboration between public and private health care organizations will be necessary to enable an overall transformation of the health care system. This partnership across sectors can leverage existing HHS approaches to entrepreneurship including the Innovators-in-Residence to foster the sharing of expertise and know-how in modernizing payment operations. It will also allow for user (health care provider) informed testing and scaling of improved approaches to measure and report the quality and cost of health care across payers. Delivery science can support continuous improvements to large scale program implementations such as the Medicare Quality Payment Program.

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Appendix A

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