Digital government is both a research domain and a field of practice. As such, it needs both new knowledge and research-based problem solving and innovation. To achieve both ends, researchers need to bring their full array of theories, standards and methodologies to the actual needs of government, while practitioners’ deep knowledge of policy domains, and organizational and political environments can challenge and enrich how researchers frame questions, explore explanations, and convey results. Deeply-rooted differences in these two professional cultures make this kind of engagement difficult and prone to failure, but improvement is both needed and possible. This essay reflects on twenty years of experience with research-practice partnerships and offers strategies that individual researchers can use to make it more feasible and successful. The strategies address relationship building, choice of research methods, research management techniques, the timing of research, and realistic appreciation for costs, benefits and risks.

*Keywords: engaged research, research-practice partnerships, boundary-spanning*

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Avances en gobierno electrónico: La conexión entre práctica, conocimiento e investigación

El gobierno digital es tanto un área de investigación como un campo de práctica. Necesita, por lo tanto, nuevos conocimientos e investigación para la innovación y la resolución de problemas. Para alcanzar ambas metas, los investigadores necesitan desplegar todo su arsenal de teorías, estándares y metodologías al servicio de las necesidades reales del gobierno, mientras que el conocimiento profundo de las prácticas del ámbito político, organizacional y de política pública por parte de quienes las...
llevan a cabo, debe enriquecer la forma en que los investigadores enmarquen las preguntas, exploren las posibles explicaciones y entreguen los resultados. Hay diferencias profundamente enraizadas entre estas dos actividades profesionales, lo cual dificulta este compromiso y lo acerca al fracaso, pero la mejora es necesaria y posible. Este ensayo refleja la experiencia de veinte años de confluencia de investigación y práctica y ofrece estrategias que otros investigadores puedan usar para lograr resultados más viables y exitosos. Las estrategias abarcan la construcción de relaciones, selección de métodos de investigación, manejo de técnicas de investigación, acotar tiempos de investigación y una apreciación realista de costos, beneficios y riesgos.

_Palabras clave:_ investigación implicada, asociación entre usuario-investigador, abarcar las fronteras.

INTRODUCTION

_In October 1998, in the early days of the US National Science Foundation Digital Government Research Program, an agenda-setting workshop helped formulate the program’s fundamental research directions. The workshop included computer scientists, social scientists, and national, state, and local government officials in open discussions to share, compare, and synthesize the views and ideas of all three communities. One of the most important results of the workshop was a “wish list” of needs created by the government participants that became a research agenda for the academics (Dawes et al., 1999):_

- Interoperable systems that are trusted and secure, considering not only their potential but also their technological, organizational, and political limits.
- Models for electronic public service transactions and delivery systems including new methods of authentication, record keeping, security and access, as well as ways to measure costs and benefits.
- Better methods of information technology (IT) management to ensure more efficient, flexible, and affordable systems, effective design processes, project and contract management, leadership models, and strategies for managing and supporting the IT workforce.
- Methods and measures of citizen participation including questions
about the nature of citizenship, the role of political leadership, and the limits of change in democratic institutions.

• Models for public-private partnerships and other networked organizational forms to account for the legal, economic, ethical, political, and technological dimensions of shared responsibility and accountability.

• Intuitive decision support tools for public officials that emphasize information search, selection, analysis, and sharing, and that include meaningful public participation.

• Archiving and electronic records management frameworks and tools to address record definition and content, version control, public access, ongoing preservation, and the ability of government to maintain history and accountability.

• Matching research resources to government needs by overcoming the mismatched expectations and time frames of government practitioners and academic researchers to help produce readily usable knowledge.

Fifteen years later, this list is still germane. This is not to say that no progress has been made, but rather to acknowledge that the domain of digital government in both practical and academic terms is still young and highly dynamic. The needs and problems expressed in 1998 remain salient today but their form and substance have changed with their technological, organizational, and political contexts. For instance, the trust and security challenges of 1998 were forever altered after September 11, 2001. The interest expressed in public participation remains strong, but today, thanks to the emergence of social media, the means and possibilities for public participation are dramatically different—and largely out of the hands of government. At the turn of the 21st century, we were beginning to make real progress on managing and preserving electronic records, but we did not anticipate that by 2008 literally billions of records would need to be preserved.

Not only have these fundamental digital government problems changed in nature, size, and scope, but traditional information and communications technology (ICT) challenges persist. The failure rate of
investments in ICTs to meet governmental needs remains high and consumes both resources and credibility. In the US, for example, the seemingly never-ending reform of the back office systems of the Internal Revenue Service (IRS) and the decade-long effort to build a new air traffic control system for the Federal Aviation Administration have been costly continuing targets for scrutiny and criticism by overseers and public watchdogs. Even today, open government and open data initiatives still rely heavily on finding different ways to use ICTs and less on ways to create new forms of public value.

These difficulties illustrate the two main categories of risk for ICT-enabled innovation and change in government and governance. First is a strong general tendency to believe that technology can solve problems that are not technological, ironically coupled with weak appreciation for the possible ways that technology truly can improve the way we live, learn, and work. Consequently, technology advocates and administrators responsible for government performance too often apply technological solutions to problems that demand policy, organizational, or institutional attention. This technology-first path frequently leads to undesirable results: sunk investments (sometimes huge ones) in the wrong tools or in tools that do not work well, do not meet real needs, actually make things worse, damage credibility, and reduce rather than add public value.

The second category of risk is even more threatening. It comprises social, political, and organizational factors that include failure to understand context, reliance on untested assumptions about what is needed and by whom, a tendency to ignore variation and diversity in the implementation environment, inadequate or inappropriate communication among stakeholders, and lack of trust in the capability or intentions of other actors. The public sector environment itself embodies principles and practices that work against unified, predictable progress from point A to point B: divided authority over decisions and resources, the need to consider and consult multiple stakeholders with different and often conflicting views, institutional constraints on power that are meant to pre-
vent corruption but can also produce gridlock and add time and cost to most public processes. Organizational factors such as the need for coordination across program or organizational boundaries, inadequate capabilities or skills, insufficient or unpredictable funding, and stove-piped legal authority and funding streams all come into play. Finally, interdependencies among government programs and business processes contribute their own complexities to the “tangled problems” that make it so difficult to produce public value in the form of uniformly good schools, access to high quality health care, understandable and effective regulatory processes, or a healthy environment (Dawes, Cresswell, and Pardo, 2009).

Information-intensive and process-intensive public problems demand multi-faceted understanding and a fair amount of trial and error. They are good candidates for innovation, experimentation, learning, and adjustment that cut across domains of knowledge and action. However the unwillingness of the political system to tolerate failure can make these usual routes to innovation impossible (Kelman, 1998). A different approach is needed that mitigates the risks without preventing learning and creativity.

DIGITAL GOVERNMENT: AN OPPORTUNITY FOR CROSS-FERTILIZATION

The field of digital government encompasses—in fact, requires—both research and practice. However, as in other professional fields such as public administration, information systems, and organizational management, a kind of culture gap exists between the practitioners who work toward tangible outcomes in the noisy and immediate practice environment and the academics whose methods call for precision and control in order to produce scientifically acceptable results. In digital government, these two ways of approaching the world could clearly benefit from more interaction and mutual understanding. However, the

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1 I use the term “digital government” to encompass the whole array of ICT-enabled public sector activities including government operations, public services, public participation, policy making, and democratic processes.
culture gap creates differences and conflicts that keep the two communities working in parallel instead of in concert (Bolton and Stolcis, 2003).

Ospina and Dodge (2005) characterize these communities as separate, but interdependent social systems that have different expectations and incompatible problem-solving and presentation styles. Interactions between the two systems are often unsatisfactory to both, giving rise to stereotypes that make further interaction unlikely. According to the stereotypes, academics see practitioners as subjective and too concerned with control. They regard them as subjects of research and eventual consumers of research-generated knowledge. They see themselves as objective, neutral, and true to rigorous methods, and therefore able to produce superior knowledge (Coplin, Merget and Bourdeaux, 2002). On the other hand, for practitioners stereotypical researchers are disconnected from the real world. Their work may meet high academic standards but it tends to be abstract, narrowly focused, and mainly addressed to other academics. Practitioners see themselves as immersed in a complex daily reality, focused on results, and publicly accountable for what they do and do not achieve (Streib, Slotkin, and Rivera, 2001).

The stereotypes contain seeds of truth but they mask more complicated realities. Government professionals are immersed in complex dynamic environments that are open to influence and resistant to control. They deal simultaneously with multiple demands, but tend to give sharpest attention to the problems that need immediate action. Because they and their organizations are bound by detailed legal prescriptions and subject to intense public oversight, they work in an atmosphere that rewards traditional approaches and risk avoidance. They view public administration as a profession with an attendant set of skills, competencies, and responsibilities. Their work is generally organized into separately funded service, administrative, or regulatory programs that each use specialized vocabularies and demand specialized skills and knowledge. When government professionals confront problems or unknowns, they favor timely practical advice to guide action, often relying on the products already on the market and on readily available private sector consultants.
By contrast, researchers are trying to push the boundaries of knowledge, often in sharply defined areas of interest. They tend to take the long-range view and to accumulate knowledge and understanding over time. Researchers are rewarded by their institutions and their disciplines for generating new knowledge through rigorous methodologies and for communicating their results in highly-regarded academic publications. They organize themselves into fields or disciplines that have specialized vocabularies, traditions, methods, and bodies of knowledge. When they engage with government or government professionals, they usually regard them as research subjects or as venues for the investigation or evaluation of topics of the researcher’s own interest.

This gap between research and practice has been acknowledged and discussed for generations (Newland, 2000; Perry, 2012; Rynes, Bartunek and Daft, 2001). Major differences exist between the two communities regarding goals, the social systems in which they operate, the variables they care about, and the time frames that are acceptable for action (Thomas and Tymon, 1982). The positivist scientific tradition does not fit comfortably in the day to day dynamics of real world settings. These settings demand quick approximations designed to guide action; they involve many exogenous variables, uncontrolled situations, and intervening factors. These are not the easiest places to collect large quantities of well-defined, reliable data suitable for quantitative analysis (Buckley, Ferris, Bernardin and Harvey, 1998). However, they do offer an endless number of interesting and important problems that serious researchers could help elucidate and solve if they could collaborate as equals with the professionals who face them every day.

Having spent large portions of my own career as a member of each community, I have experienced both cultures. I fully acknowledge the barriers and the stereotypes, but I also strongly agree with Ranjay Gulati’s admonition that the traditional tension between the rigor of science and relevance of pressing problems need not demand a choice. Instead in digital government research, as in management research, “our goal should be to seek rigor and relevance through boundary-
spanning research focused squarely on phenomena of interest to managers” (Gulati, 2007, 775). Similar concerns are expressed in the information systems literature. Benbasat and Zmud, for example, argue that research relevant to practice must address current problems and challenges in a timely way, make implementable recommendations, synthesize a larger body of knowledge, prompt critical thinking that challenges the practitioner’s causal assumptions, and convey findings in a style and tone that uses everyday language in a direct and actionable way (Benbasat and Zmud, 1999). In other words, researchers can bring their full array of theories, standards and methodologies to the actual needs of government while practitioners’ deep knowledge of policy domains, and organizational and political environments can challenge and enrich how researchers frame questions, explore explanations, and convey results.

The obvious question is “How?” The final item on the 1998 digital government wish list at the top of this essay offers some guidance. It included specific recommendations for matching research resources to government needs including: 1) the need to understand what research-based products are useful to government, 2) to develop innovative methodologies that can speed the dissemination of useful knowledge, and 3) to experiment with new partnerships that benefit both researchers and government. We need to acknowledge that the fundamental nature of the two communities—their structures, processes, and reward systems—are unlikely to change much. Even so, if we can accept that “knowledge workers who are scholars and knowledge workers who are practitioners can engage in joint problem solving” (Harvey and Myers, 1995) we can build more fruitful digital government partnerships that emphasize joint creation of knowledge through careful attention to cross-fertilization of knowledge through boundary-spanning relationships.

The introductory article in a special research forum in the Academy of Management Journal (Rynes et al., 2001) traces the long history of the gap between organizational research and managerial practice and out-
lines the persistent chasm that results from researchers and practitioners belonging to separate communities with different values and ideologies (Boland et al., 2001). The forum emphasized the social nature of the knowledge transfer process and the importance of actual working relationships among the parties in generating, understanding and using knowledge (Mohrman, Gibson and Mohrman, Jr., 2001). Others have discussed the challenges of knowledge transfer (which they call the “lost in translation” problem or the inability to convey knowledge to different audiences) and knowledge production challenges (which they call the “lost before translation” problem, or the failure to mutually understand key concepts, assumptions, and expectations before work begins) (Shapiro, Kirkman and Courtney, 2007).

Nonaka and colleagues discuss the types of knowledge involved in research-practice relationships and describe four conversion processes that facilitate knowledge creation (Nonaka and Takeuchi, 1995). Some elements of knowledge are explicit, formal, and embodied in easily accessible media or artifacts, such as written policies, procedures, standards, and databases. This kind of knowledge is readily conveyed to others by language, images, or structured data and information systems. Other elements of knowledge are likely to be more tacit, embedded in social context and practices, and conveyed through “learning by doing” rather than through explicit means (Wenger, 1998). Tacit knowledge also may be viewed as an organization-level phenomenon, embedded in organizational forms, expertise, and historical, social, material, and cultural contexts (Gherardi, 2000). Nonaka and Takeuchi hypothesized a “knowledge spiral” consisting of four methods of knowledge conversion: socialization (tacit to tacit), externalization (tacit to explicit), combination (explicit to explicit) and internalization (explicit to tacit). Of the four, socialization depends most on human interaction that involves spending time together, creating shared mental models, developing empathy and accepting the beliefs and feelings of others. It is the foundation for the other kinds of knowledge conversion. Externalization takes place when tacit knowledge becomes embedded in concepts, language,
and artifacts that can be explicitly communicated to others. Combination brings together explicit knowledge from different sources such as across different disciplines or policy domains, and internalization is characterized by “know how” —the process by which explicit knowledge becomes embedded in professional practice and organizational functioning.

All four methods are pertinent to digital government research-practice partnerships. Researchers and practitioners need to get to know one another as fellow professionals working in richly detailed contexts before they can create knowledge together, externalize it in useful ways, and incorporate it into their usual ways of working. Our joint aim can be to “become researchers who appreciate the knowledge that practitioners bring as insiders; and become practitioners who appreciate the reasons and logic behind research standards” (Ospina and Dodge, 2005, 420).

Some changes in the institutional environment are moving in these directions. For example, the US National Science Foundation requires all proposals for research funding to explain how the work will have a “broader impact” on society, and requires reviewers to weigh this potential impact equally with intellectual merit. Universities are encouraging “service learning” to actively engage students outside the classroom where they combine practical knowledge with academic training. These are encouraging signs, but they are slow in coming and not yet pervasive enough to influence traditional promotion and tenure processes that rely almost exclusively on scientific peer review by other academics. Something more or different is needed to reach the tipping point where academics and practitioners view each other as co-producers of knowledge (Rynes, 2007).

SOME MODEST SUGGESTIONS

Based on nearly twenty years of experience, I offer some modest suggestions for digital government researchers who would prefer, or would at least like to try, working in this way. I address the research community
because I believe we need to take the first steps to seek out and foster relationships with government organizations as partners in our work. My recommendations are cast at the individual level. They describe actions that a single researcher can try either alone or with a small group of colleagues. There are certainly more ambitious ways to try to move whole organizations or institutions, but my point here is that it is not necessary to move mountains, to make some real progress toward better relationships and mutual benefits.

1. **Seek out and build relationships.** Building a genuine relationship based on mutual understanding and trust is the essence of the socialization process of knowledge creation. This takes a deliberate effort — and it takes some time. To understand better how government professionals view and act on problems, you need an insider’s view. You can start to acquire that view by reading the publications that practitioners read and attending their conferences as an active observer and participant. Where professional societies are open to academic members, take part. Volunteer to serve on boards and committees in those organizations and in government agencies where you live. When you teach, get to know and learn from the mid-career students in your classes; invite them or their managers to give guest lectures or to host field visits, engage them in serious discussions of their challenges, ideas, and constraints. The goal is to understand the world of practice as fully as possible without the filter of traditional academic publications or conferences. In fact, try to recast your own academic writing into the language of practice (Gil-García and Pardo, 2005). Learn how to translate research findings into practical advice for action, then ask your practitioner colleagues to react to it.

2. **(Re)consider your methods.** Van de Ven contends that the declining usefulness of academic research as a means of solving practical problems may be addressed by emphasizing “action” or applied science in addition to “normal” or academic science (Van de Ven, 2000). The so-called gold-standard large N quantitative study is only one way, and often not the
best way, to do research in a practice setting. Become familiar with other approaches that deal directly with context and complexity. Single or comparative case studies, ethnography, field research, experimental test beds, evaluation studies, action research, system dynamics models, and prototypes are all ways to pursue new knowledge about a phenomenon without dismissing these important aspects of the phenomenon itself. Action research has certain advantages in that it requires investigators to engage repeatedly over time with the organization they are studying in a mutual testing and learning process. Moreover, differences among stakeholders is a hallmark of almost everything that is important in the public sector. Learn to use data collection and analytical methods that engage or represent multiple and diverse stakeholders. Some of these methods include participatory design, value-sensitive design, group facilitation and group decision making, stakeholder analysis, and process analysis. These are all well documented techniques in the social and information sciences. In addition, guides and tools are available for doing such work specifically within the field of digital government (e.g., Cresswell, Canestraro, and Pardo, 2008; Cresswell, 2004; Dawes et al., 2004). Finally, consider using mixed methods as a way to more fully explore a problem and to collect different kinds of data to shed light on and interpret it. While much multi-method research is conducted by teams in well-established research units, individual scholars can also do this effectively on a more modest scale (Gil-García and Pardo, 2006).

3. Adopt appropriate research management techniques. Doing research in partnership with practitioners is quite different from doing traditional self-directed research. The government organizations and individual professionals involved have not only knowledge and capabilities to contribute but also a stake in the credibility and usability of the results. Davison et al. recommend an explicit researcher-client agreement, conducting the work in a cyclical process from diagnosis through reflection, accomplishing change through action and understanding of the organizational context, and learning through ongoing reflection (Davison,
Martinson and Kock, 2004). Other research indicates that sustained interaction before, during, and after a research project is the best way to assure that the research is relevant to, and understood and used by practitioners. This kind of research should identify at the design stage who will use the findings. It should be open to modifying the design in ways that meet user needs without compromising integrity, and it should plan explicitly to produce major products especially for a practitioner audience. This approach is captured in the idea of co-production of the research (Orr and Bennett, 2012) in which rich social interactions between academic and practitioner investigators generates a continual framing of the problem and exchange of ideas in which both parties learn from the expertise and viewpoint of the other (Yin and Moore, 1988). These recommendations have been borne out in several recent studies involving such topics as the capabilities of the government workforce (Dawes and Helbig, 2007), organizational learning during times of transition (Mohrman et al., 2001), and local government leadership practices (Orr and Bennett, 2012).

4. Consider the optimal timing for practice-based research. Much public affairs research is retrospective. It attempts to draw conclusions and build theory by looking at what has already happened, generally in an evaluative and critical way. This work certainly has value, but practitioners tend to resist it because it conveys a sense of judgment long after the time when recommendations for action would have been useful. Prospective research is more welcomed by practitioners and more likely to be the kind of investigation where a partnership is feasible. From this practical perspective, the most helpful timing for research is when a problem or opportunity is recognized but before decisions are made. This is the juncture when alternatives are being considered, some experimentation can take place, and decision makers are most open to different ways of framing problems and crafting solutions. This approach is embedded in the ideas of design science in which the “mutual nesting of practical problems and knowledge problems” leads to linked cycles of investiga-
tion and learning (Wieringa, 2009). In other words, the research focuses on (and therefore contributes to) new ideas, processes, services, or policies as they are being made.

5. Recognize the realistic costs, risks, and benefits. In my own experience working in this way takes more time at the start of a research project and things seem to move too slowly both for the practitioners who prefer quick action and for the academics who prefer more autonomy to design the work and get started. Because this work is taking place in the midst of real government activity, it also runs the risk of being overtaken by social and political events such as elections, budget cycles, or crisis events that can make the research infeasible for any number of practical or political reasons. Another consideration is the need to share decision making about the project goals, timeline, roles, and work plan which adds the need for project management skills that traditional researchers may not have and will need to acquire. In addition, the researchers’ contributions may not be highly valued in traditional academic assessments (especially for junior faculty) and negative research findings may be unwelcome by the government sponsors and participants. Finally, the need to meet operational demands or decision points on the government side often means preparing practical outputs first and delaying the academic writing for journals and scientific conferences until later. For all these reasons, it is better to start with a small project and learn to handle larger and more complex ones through experience and joint reflection. These costs and risks may be too high for some, and certainly they suggest that for most researchers this kind of work should be a modest part of a larger portfolio that includes traditional research projects and products. Despite the costs and risks, however, joint research between digital government academics and practitioners offers considerable benefits. First, once good working relationships are established, they give the researchers excellent access to research venues and data. In effect, the researchers gain entrée to an insider’s view. Further, when research partnerships are successful in building trusting and mutually respectful rela-
tionships, reputational effects lead to additional research opportunities with the same or other government organizations. In addition to the research itself, this kind of work produces extensive teaching material based on the research results and the academic’s greater understanding of the nuances of the government environment. And finally, this engaged research generates not only new concepts and theories in our field, but it also contributes directly to public sector effectiveness.

CONCLUSION

In 1997, Ernest Boyer called for a four-part scholarship of engagement: 1) the discovery or the creation of knowledge, 2) the integration of knowledge across disciplines into broader contexts of understanding, 3) the scholarship of practice or the purposeful generation of issues and the application of knowledge to the world around us, and 4) teaching or the conveyance of knowledge in the service of both action and future scholarship (Boyer, 1997). This multi-faceted definition of scholarship strongly values traditional academic research, but also argues that it is not the sole means, or always the most useful means, of building knowledge. Digital government is especially suited to Boyer’s definition because it is both a research domain and a field of practice. As such, it needs the benefits of both new knowledge and practical problem solving and innovation. To achieve both, scholars need to embrace the contributions, cultures, and constraints of both communities, experiment with different ways of designing and conducting research, and consider the career effects and the public value of working in this more engaged and interconnected way.

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