# A Multiple Case Study of Government Internal Ideation Programs: Understanding Challenges and Identifying Effective Practices

Gwanhoo Lee

*Professor, Kogod School of Business, American University, USA*

**A B S T R A C T**

Ideation is a process of generating new ideas or solutions using online crowd-sourcing technologies. This process has the potential to change the ways by which government agencies innovate and solve problems. Although increasingly more government agencies are implementing online ideation programs to tap into their employees' ideas and creativity, little is known about the unique challenges and effective practices of such programs. Thus, many government agencies are undergoing trial and error and often reinventing the wheel. This research aims to address this problem. By analyzing a focus group session and four cases of U.S. federal government ideation programs designed for their employees, this research identifies important organizational and technological challenges and effective practices. Furthermore, effective practices are grouped into different phases of ideation process and strategic vs. tactical levels to provide more meaningful and actionable insights. This research is an important step towards building a theoretical foundation for government ideation programs. The implications and limitations of this study are discussed.

*Keywords:* Ideation, Open Innovation, Government, Online Platform, Social Media, Challenges, Effective Practices, Ideation Phases, Multiple Case Study

## Ⅰ. Introduction

The way government agencies innovate and solve problems is changing. Ideas for innovation are now being shared openly online. Over the last few years, an increasing number of government agencies have adopted social media-based tools for idea generation and selection. This research investigates this new

innovation process called ideation, which is an important element in building a collaborative government (Chun et al., 2012). While some government ideation programs crowdsource the public (Linders, 2012; Nam, 2012), others crowdsource government employees. Although relatively more studies have investigated government crowd-sourcing that targets citizens, few studies have looked at crowd-sourcing

*Corresponding Author. E-mail: glee@american.edu Tel: 1(202)8851991

that takes place within government agencies. However, the latter is an increasing phenomenon in the government sector, which creates public value through innovation (Pang et al., 2014). As a result, this study fills the gap in the literature. This research investigates the current states, important challenges, and effective practices of government internal ideation programs that are made available exclusively to government employees. Government internal ideation programs use social media tools to harness the innovation and wisdom of employees for government agencies. They can elevate ideas and issues from the workforce, and help government leaders implement ideas that have support and buy-in from all levels of the organization.

U.S. government's ideation programs are a response to the Open Government Directive that calls for agencies to enhance participation and collaboration among employees (Lee and Kwak, 2012; McDermott, 2010). Initial experiences from a few agencies show that these ideation tools hold great promise in engaging employees and stakeholders in problem-solving (Kettrie, 2010) and transforming government into a platform for innovation (O'Reilly, 2010). While there appear to be promising benefits to ideation programs, making innovation an aspect of everyone's job is hard to achieve. The Ideation Community of Practice (iCOP) has been established within the U.S. federal government to help improve the process for government ideation. The new imperative today is to view innovation as an all-the-time, everywhere capability that harnesses the skills and imagination of government employees at all levels.

Given that these ideation tools and programs are relatively new, government agencies are still in a steep learning curve and often do not know what to expect during the implementation process. This research aims to address this problem. USA is one of the leading countries in promoting the vision of Open Government (The White House, 2009), of which government ideation programs are part. As a result, U.S. federal government is a fertile ground to study ideation programs in the government agencies. Through the analysis of a focus group session and four cases of U.S. federal government ideation programs designed for their employees, this research identifies important organizational and technological challenges and effective practices for launching and operating government internal ideation programs. This research intends to help government agencies speed up the learning curve, make the most of other agencies' experience, and prepare for the future challenges. Furthermore, this research is an important step towards building a theoretical foundation for government ideation programs.

In what follows, we briefly discuss some background information on ideation. We then describe four cases of U.S. federal government's internal ideation programs in terms of background, current activities and use, and outcomes and impacts. Then, we present important challenges and risks associated with government ideation programs. We then discuss the effective practices of government ideation programs. These practices are organized by different phases of ideation process: idea generation, idea evaluation and selection, and idea implementation. We also discuss the effective practices commonly applied to all phases. These practices are further grouped into strategic vs. tactical levels to provide more meaningful and actionable insights. We conclude by discussing the implications of this research.

## Ⅱ. Background and Related Work

To fulfill the need for a continual stream of innovations, organizations have traditionally relied on

internal R&D staff to generate ideas (Schulze and Hoegl, 2008). However, organizations are becoming increasingly disappointed with the outcomes of their internal innovation processes (Bayus, 2013). With the introduction of new collaborative social media and Web 2.0 tools (Linders, 2012), organizations are beginning to leverage the collective intelligence of the crowd to supplement or even replace current in-house innovation processes (Bonabeau, 2009). This phenomenon, commonly referred to as crowdsourcing (Howe, 2008), open innovation (Chesbrough, 2006), or user innovation (von Hippel, 2005), is gaining attention in scholarly literature and in practice (Erickson et al., 2012). Indeed, the potential for emerging technology to be a tool for mass collaboration is tremendous, both in the private and public sectors (Bertot et al., 2012). The chief technology officer of Tata Consultancy Services describes how he learns from his organization's collective intelligence: "*we have really launched into the exploitation of the social Web as a means for ideation, as a means of finding the expert, as a means of learning. We use the Web to form groups to look at specific problems and tap into a collective intelligence. For example, I have a blog inside the company, and I have just finished writing a blog post which will go live tomorrow morning on the ideation process*" (Hopkins, 2011).

Ideation is one particular type of new innovation processes such as crowdsourcing, open innovation, and user innovation. It was born from the term *idea generation* (Graham and Bachmann, 2004). Ideation is the process of generating new ideas or solutions using crowdsourcing technologies. Ideation tools utilize online brainstorming or social voting platforms to enable users to submit new ideas, search previously submitted ideas, post questions and challenges, discuss ideas and expand upon them, vote ideas up or down, and flag them (Jonson, 2005). These Web-based interactive applications for idea management have been thought of as the glorified suggestion box. Ideation applications may take the form of an ongoing forum, one-time contest, or multistage tournament (Terwiesch and Xu, 2008). Most prior research has investigated one-time idea contests or multistage tournaments. Little research, with a few exceptions (Bayus, 2013; Di Gangi and Wasko, 2009), has investigated ongoing ideation processes.

There have been two notable streams of research that are closely related to ideation: user innovation and open innovation. An organization that utilizes user communities for innovation can continuously renew its innovation capabilities by leveraging loyal users. Lead users play a critical role in developing an organization's ability to innovate (von Hippel, 2005). Open innovation researchers argue that organizations must combine internal and external resources to successfully develop innovations in the era of hyper-competition (Chesbrough, 2006). Therefore, the network between the organization and its external partners and customers is becoming increasingly important (Laursen and Salter, 2006).

While companies such as Starbucks and Dell pioneered ideation (Di Gangi and Wasko, 2009), governments have also begun to tap into the ideas of internal government employees (Bertot et al., 2012). Potential benefits of government internal ideation programs include, but are not limited to leveraging good ideas and creative thinking that exist within government employees, engaging government employees in solving vexing problems, connecting a disparate workforce over common ideas, building a sense of community engagement, and building trust and feeling of ownership by having a two-way dialogue between senior leaders and employees (Bovaird, 2007). To the best of our knowledge, no prior research has specifically investigated government's internal idea-

tion process. This research intends to fill the gap.

## Ⅲ. Research Methods

In this study, we employed qualitative research methods (Kaplan and Duchon, 1988; Mingers, 2001; Strauss and Corbin, 1998; Yin, 2003) to obtain rich findings and insights about the emerging phenomenon of government ideation programs. We used a focus group session along with multiple cases to identify challenges and effective practices of U.S. federal government's internal ideation programs. We first conducted a focus group session with the members of iCOP (Ideation Community of Practice), a U.S. federal government's working group of managers who are responsible for running ideation programs. In one iCOP meeting, we invited the members to participate in our focus group session and thirteen out of seventeen members agreed to participate. We asked them to identify important organizational and technological challenges in implementing ideation programs as well as effective practices, policies, processes, and mechanisms that help ideation programs become viable and sustainable. Finally, we asked them to identify successful ideation programs within U.S. federal government agencies. As a result, we identified six ideation programs. We contacted the managers of these programs and four of them were willing to participate in this research. These programs are the U.S. Department of Transportation's IdeaHub, the U.S. Department of State's Sounding Board, the U.S. Department of Homeland Security's IdeaFactory, and IdeaLab of Centers for Disease Control and Prevention at the U.S. Department of Health and Human Services.

Using a semi-structured questionnaire, we conducted a series of field interviews face-to-face and by phone with ideation program managers and users to identify and validate important challenges and effective practices for government-led ideation programs. Each interview lasted for about one hour. In total, eleven interviews for the four programs were completed. The interviews were transcribed for data analysis. The text was analyzed and open coded to discover recurrent themes and then was axial coded to find causal relationships between ideation program practices and outcomes (Silvester, 1998; Strauss and Corbin, 1998). An external coder and the author of this paper went through several iterations until they agreed on common themes, categories, and causal relationships until no new item was found. The external coder was a graduate student. She was trained on coding by the author and coded two practice materials successfully before the coding of this study.

As a result, we identified the following four categories of challenges: *managing the ideation process and technology, managing cultural changes, managing privacy, security and transparency,* and *managing the use of an ideation tool.* Furthermore, we concluded that effective practices can be organized by three distinct ideation phases including ideation generation, ideation evaluation and selection, and idea implementation. We also found that some practices can be viewed as strategic whereas others are more tactical. Strategic-level practices help to create overarching environment, culture, structure, and process to promote government ideation programs. On the other hand, tactical-level practices help to address more micro-level, local, short-term challenges that are small obstacles rather than big barriers to successful implementation.

We then used a sorting procedure (Moore and Benbasat, 1991; Xia and Lee, 2005) to classify the challenges and the effective practices into the categories identified above. Two raters including the author conducted the procedure. First, each challenge item

we identified from our data analysis was printed on a 3×5-inch index card. Each rater was asked to carefully read the card and place it in one of four categories of ideation challenges. An additional category, "too ambiguous/unclear," was included for the raters to put a card into if they felt it did not belong to any of the predefined categories. The hit ratio was 91.5%, indicating that the raters placed most of the items in the same categories. The raters resolved the differences by discussion. A similar procedure was used to categorize effective practices into different phases and strategic versus tactical dichotomy. The hit ratio was 93% and the raters resolved the differences by discussion. Finally, we presented the results to two federal managers who participated in this research and used their feedback to change the wording of a few items. In the next section, we discuss four U.S. federal internal ideation programs.

# Ⅳ. Cases of U.S. Federal Ideation Programs

## 4.1 IdeaHub (U.S. Department of Transportation)

IdeaHub (www.dot.gov/cio/ideahub.html) is an internal ideation platform for the U.S. Department of Transportation (DOT), on which its employees can post new ideas. It is being used in the DOT of every state. It is a platform that serves all DOT employees and provides a space to collaborate on innovative solutions to some of the department's most thorny issues. The submitted ideas not only cover transportation solutions but also management improvements in the department. IdeaHub was initially launched by the Federal Aviation Administration (FAA) in August 2010.

In response to the depressing results of the 2008 Best Places to Work in the Federal Government Survey which ranked the agency the second-to-last place (bestplacestowork.org), the FAA started IdeaHub with two objectives in mind. First, it aims to leverage its employees' ideas to make the agency better by creating an online community environment that enables innovation and cross-organizational collaboration within the agency and by empowering its employees to develop, rate, and improve innovate ideas for programs, processes, and technologies. Second, the agency aims to improve employee morale through engagement by providing a conduit for great ideas and fresh perspectives to move upstream and by recognizing employees for their contribution to the agency. In sum, IdeaHub leverages employees' ideas to help the agency accomplish its missions and continue to improve the work environment. It has rolled out to the entire department after the successful pilot test with the FAA.

IdeaHub functions as an online community above and beyond an online suggestion box. It is an interactive tool that facilitates innovation and collaboration exclusively for the department's employees. Employees can offer suggestions and ideas, and once an idea is posted, the employee community can vote it up or down. Naturally, outstanding ideas tend to attract more votes and generate comments for improvement. These filtered ideas are presented to the department's IdeaHub liaisons and the Innovation Council. After the ideas are evaluated, excellent ideas are put into practice. The IdeaHub community allows the department to post "challenges" events to employees as a way of getting people to think about specific questions or problems. This two-way communication and interaction make idea generation and selection more efficient.

Since its inception in August 2010, IdeaHub has been widely used by the employees. Although the

usage data for the entire DOT is not available, we obtained the cumulative usage data from August 2010 to July 2013 for the FAA. During this period, 5,527 ideas were submitted; 86 ideas were implemented or being implemented at the time of this writing; 24,725 comments were posted; 17,299 unique users participated; and 62% of the users participated more than once.

As mentioned earlier, one of the important objectives of IdeaHub is to improve employee morale and thus improve lagging Best Places to Work scores for the DOT and the FAA. In 2013, the DOT was recognized as the most improved large federal organization in employee satisfaction (Partnership for Public Service, 2013). In addition, the FAA was noted as one of the top five most improved sub-units in 2013, moving from the second-to-last place to the top third place in just four years. The DOT recognized that these significant gains in its Best Places to Work scores over the last few years are linked to the efforts made through IdeaHub.

One of the most consequential ideas that have been implemented has to do with aviation safety. Some airports used the same phonetic alphabet name (Alpha, Bravo, Charlie, etc.) for a parking area and the ramp area of an airport, which could lead to confusion on the airfield. The idea was to create guidance that discouraged this confusing practice. The Office of Airports agreed and went through the process of making the guidance for U.S. airports. They also presented the matter to the International Civil Aviation Organization (ICAO) that issued the same guidance internationally for non-U.S. airports. As a result, this idea made a significant contribution to improving aviation safety not only in the U.S. but also in other parts of the world. Department budget issues are another case in point that demonstrates the potential value of IdeaHub. DOT employ-

ees have submitted a number of cost-cutting ideas to date. These ideas have already resulted in substantial cost savings and the DOT estimates much more cost savings realized in the future (www.dot.gov/open/plan-chapter3).

## 4.2 The Sounding Board (U.S. Department of State)

The Sounding Board (soundingboard.state.gov) is an internal online discussion forum for State Department employees to exchange ideas. At the behest of former secretary of state, Hillary Clinton, State Department's Office of eDiplomacy launched it in February 2009. Employees are encouraged to submit non-policy ideas and solutions about how to improve the department's operation and management. The Sounding Board is designed to promote communication between employees and to collect ideas and suggestions for innovations and reform (Cull, 2013).

The process flow of the system is as follows. First, employees submit ideas concerning problems. Then, other users can comment on the ideas. This way, employees work together to build an integrated proposal collectively by adding diverse perspectives, highlighting concerns, and filling in details. The Sounding Board works as an online forum that opens the conversation to every employee who is interested in participating during the idea generation process. The community is based on interactive dialogue. Discussions and shared thoughts between users lead to the better ideas and solutions. The supervising team tracks the status of individual ideas, providing quick and direct responses to employees on their proposals when appropriate. The aim is to provide clear and well-defined proposals for review and action by the department's management.

The topics discussed in the Sounding Board cover

much ground. Employees submit ideas about cost savings, resource requirements, and any obstacles or challenges in carrying out their missions. The discussions can be set as anonymous. The Feedback feature of the Sounding Board gives management an opportunity to answer questions and update reform decisions. The ideas are marked in a different status when it is ready for the employees to follow the feedback given by the management team.

As of April 2012, the Sounding Board reached about 55,000 users, who together have made 27,160 comments on 2,840 ideas submitted since February 2009. It has registered 66,986 votes and 604 subject matter expert comments (Hanson, 2012). Furthermore, 82 ideas were implemented, 17 were under consideration for implementation, 64 were in planning, and 27 were judged to be not currently feasible (Hanson, 2012).

One example of a new program initiated by an idea submitted to the Sounding Board is a bike-share program to facilitate local trips to interagency meetings, which involves building more showers for bicycle commuters. Another example is that the Harry S. Truman Building and the Foreign Service Institute cafeterias introduced "greenware" disposable food packaging and committed to reducing non-biodegradable waste (O'Connor et al., 2009). The Sounding Board has been recognized as a model for employee outreach and was named one of the most innovative programs studied by the National Economic Council and the White House Office of Science and Technology Policy.

## 4.3 IdeaFactory
### (U.S. Department of Homeland Security)

IdeaFactory (ideafactory.dhs.gov) is a Web-based ideation tool that uses social media concepts to enable innovation and collaboration within the U.S. Department of Homeland Security (DHS). The Transportation Security Administration (TSA) within DHS has used it since 2007 to enable its employees to suggest ideas to programs within the agency (www.whitehouse.gov/open/innovations/Idea Factory). To keep the nation's transportation systems secure, IdeaFactory empowers the TSA's large and dispersed workforce to submit and collaborate on innovative ideas.

The TSA employees contribute to innovative ideas by submitting new ideas of their own and also by suggesting solutions to existing problems. After a new idea is submitted, other users can express their opinions by rating the idea and adding comments. The built-in toolbox allows users to track ideas and collaborate with peers to further develop ideas. All participants involved in creating and shaping an idea are informed when the idea is recognized and implemented. TSA specialists monitor the ideation site and help put ideas into action. The supervising team manages the ideas and determines how to implement them. After an idea is approved, the IdeaFactory team works with program offices to communicate strategically with the workforce.

After years of experimentation and improvement, IdeaFactory has become a center for employee-driven innovation and idea generation. It has led to the implementation of more than 45 innovative ideas that positively impact policies, procedures, and quality of employees' work life. More than 25,000 TSA employees have actively participated on the site. In October 2009, the Department of Homeland Security expanded the use of TSA's IdeaFactory to all agencies in the department. As of January 1, 2010, on average, 10 ideas are submitted each day, and each idea receives 8 comments and 30 ratings. Approximately 100 new users visit the site each week, 5,000 users visit the

site each month, and 40 percent of the visitors actively contribute. In total, as of January 1, 2010, there are almost 10,700 ideas, 84,000 comments, 318,000 ratings, 28,000 users, and more than 50 new programs that have resulted from these ideation activities (www.howto.gov/sites/default/files/ideafactory-at-tsa-slides.pdf).

The White House named TSA's IdeaFactory as a model of open governance. Its service provides a voice for employees and fosters information sharing and also organizes agency operations and improves employee morale. It helps to connect senior leadership with front-line employees and allows the program managers to receive meaningful and diverse input from the workforce.

## 4.4 IdeaLab (Centers for Disease Control and Prevention, U.S. Department of Health and Human Services)

IdeaLab is a Web-based ideation system that serves employees of the Centers for Disease Control and Prevention (CDC) in the U.S Department of Health and Human Services. It is launched in August 2009. CDC has around 14,000 employees, including full-time, part-time, and contractual. The workforce is geographically dispersed in 19 states in the United States and in 54 countries around the world. The diverse workforce can be a management challenge but can be a great resource as well. IdeaLab intends to break through geographic barriers and to leverage wisdom of CDC employees stationed around the world (ericschnell.blogspot.com/2009/12/capturing-employee-ideas-cdc-idealab.html).

IdeaLab connects employees from all divisions by creating an idea network. CDC employees are encouraged to use it to post their ideas, to comment on others' posts, and to vote on the quality of the posts and comments. Employees may post their "Ideas" or requests for "Help Wanted." Hence, the ideas are built on a peer-to-peer network. Submissions are attributed in real time. The real time authentication and application enables the rapid adoption and implementation of the best ideas. Ideas are categorized according to CDC organizational goals, and related ideas are affinity-grouped using tag clouds, which helps users to quickly find the information they need.

IdeaLab aims to bring a number of benefits. It intends to increase connectivity of CDC employees who support multidisciplinary, evidence-based solutions; promotes scientific crowd-sourcing and peer-to-peer networking in building ideas; to enable virtual piloting and refinement of ideas; to foster retention and sharing of institutional memory; improves interactions among networks of knowledge; to accelerate health impacts by increasing employee-driven innovation; and to improve organizational efficiency (www.whitehouse.gov/open/innovations/idealab). In December 2009, IdeaLab was accepted into the White House Open Innovation Gallery.

# Ⅴ. Challenges, Issues, and Risks

In part due to limited experience, U.S. federal agencies have yet to grasp a sound understanding of how best to utilize employee-driven idea generation, to encourage employee-driven idea generation through structuring agency-sponsored challenges and contests, and to design prizes to unlock the creative energies of government employees (Kittrie, 2010). Important challenges, issues, and risks are associated with the adoption and implementation of government ideation programs. Because these ideation programs have been implemented in only a

handful of U.S. federal agencies and for a relatively short period of time, it is important for government agencies to be aware of the risks and challenges posed by them (Erickson et al., 2012). A government manager speaks to the importance of learning from one another: "*we continued to work with a number of other programs that do ideation to talk about best practices; how are you set up; what are you guys doing; how your program interacts with labor relations and labor union. We have done a lot of that in the last two years as a community.*" As noted earlier, we classified the challenges into four categories, which we identified based on the focus group discussion results. We discuss each of them below.

## 5.1 Managing the Ideation Process and Technology

Securing the necessary resources to support the ideation process and technology is critical to successful implementation. The staff supporting an ideation site could be overwhelmed by a large number of idea submissions and user interactions. As a result, the staff may be unable to keep up with submissions in terms of monitoring, response, and evaluation (O'Connor et al., 2009). This problem is more pronounced when an idea challenge event is announced, leading to a massive amount of idea submissions in a short period of time. "*We see big spikes when the Secretary hosts something. Participation tends to be very broad and we become extremely short-handed,*" said an ideation manager. The criteria and process by which a submitted idea is adopted or rejected are not very transparent in some ideation programs. Consequently, employees do not have the same expectation about the way in which their ideas will be handled, which in turn affects their willingness to participate. Furthermore, many great ideas do not

end up being turned into action due to the unpredictable dynamic nature of the online ideation community.

When it comes to ideation technologies, government agencies have yet to optimize Web 2.0 technologies and social media to facilitate participation and collaboration (Kittrie, 2010). Moreover, there is no formal centralized organization that facilitates the exchange of ideas and experiences with respect to the use of technologies for government ideation programs. Fortunately, iCoP (Ideation Community of Practice) has been created to address this issue. Nevertheless, it remains challenging to nurture and sustain this community of practice, given the lack of personnel and financial investment.

U.S. federal agencies need to ensure compliance with Section 508 (Jaeger, 2006), which requires that electronic and information technology is accessible to people with disabilities. Within many federal government agencies, there are no agreed-upon standards for what constitutes compliance with the law for electronic tools used internally. Furthermore, because of the novelty and fast-paced growth of ideation tools and social media, there remain many issues to be resolved with regard to the appropriate use of these tools (The Innovation Tools Subgroup, 2009).

## 5.2 Managing Cultural Changes

Since Web 2.0-based government internal ideation programs are still a novel practice, cultural changes are needed to assimilate an ideation program into the extant organizational structure and process. For example, incentivizing ideation-related activities is an important cultural change. Currently, idea submitters are not sufficiently recognized in general. Most agencies do not provide monetary incentives for their employees' idea generation efforts. "*We did*

*not go into and create a separate award structure. We had no idea of how we were going to have funding for any kind of award,*" said an ideation manager. Failure to incentivize idea submitters could decrease the likelihood of sustainable ideation sites (Glassman, 2011).

Ideation tools allow for a new relationship between rank-and-file employees and leadership. Because they allow for direct communication of ideas between employees and leadership, they may challenge the traditional hierarchy. Harnessing the collective wisdom of the crowd and ideas from all levels of employees may challenge traditional notions of who can be considered an expert within the organization. Opening up innovation to employees outside the currently sanctioned innovation group presupposes that all employees, regardless of position and training, can add value to the innovation process. It presumes that an employee's value is a function of their contribution, not their job title or the implications of their job description. While some managers within sanctioned innovation groups may see the benefit of organization-wide ideation, others may feel threatened or fail to see the value "outsiders" can bring to the process.

Managers of innovation teams may see company-wide ideation initiatives as encroaching on job responsibilities and bucking the current chain of command. As such, these managers may attempt to protect their turf by instituting onerous processes within their groups or denying support to those tasked with managing the ideation process (Erickson et al., 2012). Obtaining buy-in from mid-level management (e.g., the program offices that would ultimately be reviewing, responding to, and potentially adopting the innovations) is crucial, but it can be very challenging unless there is strong support from senior management.

While measuring the outcome of the ideation program is important, focusing mainly on the tangible traditional measures of innovation can exclude the intangible benefits that internal ideation may bring to the government. These intangible benefits include positive changes in employee morale, enhanced cross-functional collaboration, and the building of an innovative company culture. "*Measuring the impact of the ideation program is very hard to do. Let's say there was a change that was made to an HR process that affects everyone. Well, I don't know if you can put a dollar amount on it but there is a huge amount of satisfaction that comes out of not having this painful experience anymore,*" said a government manager.

## 5.3 Managing Privacy, Security, and Transparency

One important issue concerns privacy and disclosure (Orluskie, 2010). With no central control and with autonomous ideation activities, there could be instances of accidental disclosure of private information. There is also the potential for government ideation to produce bad publicity and possibly affect the agency's reputation. Many of the ideas submitted by government employees have to do with improving their benefits or working conditions. While some are constructive and legitimate suggestions, others can be seen as overly demanding. If these posts somehow become public, they could give the impression that government employees would waste taxpayers' money just to increase their own benefits.

Government ideation tools are typically housed on government entities' intranets and not accessible by the public. However, some agencies made their ideation platforms accessible from outside their network. "*We knew that there are going to be a lot*

*of people who were going to access it from outside the network, so we host it outside,*" said a manager. This may raise a number of security issues such as unauthorized data access and hackers' attacks.

## 5.4 Managing the Use of an Ideation Tool

Information technology often produces unintended negative consequences. Government employees might spend an excessive amount of time with the ideation system. As a result, there is a risk that their productivity could be undermined. Furthermore, government employees might use the ideation tool not to promote innovative ideas but to broadcast grievances, rumors, or personal opinions about political or sensitive social issues.

Another important issue is that government agencies need to determine how ideation tools best mesh with existing digital platforms, and decide which types of tools are best suited to each purpose. Ideation tools can be an effective forum for stimulating innovation and building new ideas, but they are not as suitable for general discussions among employees. It is critical to ensure that government agencies are using the optimal tools for the intended purposes, and that there are linkages between the digital platforms so that employees can easily direct their attention and energy to the most appropriate places (Spagnoletti et al., forthcoming).

We have presented the four important categories of challenges in launching and operating government ideation programs. While it is important to understand obstacles and barriers, it is also crucial to understand how to overcome or manage them. In the following section, we present effective practices that help cope with the challenges associated with government ideation programs.

# Ⅵ. Effective Practices for Government Ideation Programs

The four cases along with the focus group sessions helped us identify effective practices for government ideation programs. As noted earlier, the effective practices are organized by three distinct phases including ideation generation, ideation evaluation and selection, and idea implementation. We also present the effective practices that are applied to all phases rather than only to a single phase. Recent research has developed stage models for implementing open government or government 2.0 (Khan, 2015). It is important to understand the dynamics of ideation programs taking place in different phases or stages. Furthermore, we also group the effective ideation practices into strategic or tactical level. <Table 1> summarizes these practices by phase and level.

## 6.1. Idea Generation Phase

The key challenge in the idea generation phase is to motivate government employees to submit their ideas and engage in others' ideas. We find that the following strategic and tactical practices are effective for encouraging and motivating employees to participate in ideation.

### 6.1.1. Strategic Level

*Generate Awareness.* In cases where participants report successful outcomes of ideation programs, proactive leaders are personally involved in generating awareness of the government ideation program. For example, the leader championing the internal-crowdsourcing initiative invites employees who have contributed breakthrough ideas to executive meetings. This type of recognition helps to gen-

<Table 1> Federal Ideation Practices By Phase

| Ideation Phase | Effective Practices |
|---|---|
| Generation | *Strategic level*<br>　Generate awareness<br>　Create a safe environment for idea sharing<br>　Use challenges and HQ-sponsored ideas to spur interests and participation<br>*Tactical level*<br>　Allow anonymous posting<br>　Do not delay posting ideas due to censorship<br>　Authenticate and categorize submitted ideas in real time |
| Evaluation and Selection | *Strategic level*<br>　Make evaluation/selection criteria and process as transparent as possible<br>　Strike a balance between autonomy and control in evaluating ideas<br>　Focus more on user engagement than on selecting best ideas<br>*Tactical level*<br>　Keep everyone informed of idea statuses<br>　Ensure ideas are thoroughly reviewed/approved before implementation<br>　Provide users with powerful search tools and analytical capability |
| Implementation | *Strategic level*<br>　Do not trivialize ideas and do implement them as new programs or initiatives<br>　Track metrics of the impact of implemented ideas<br>　Acknowledge the innovators<br>*Tactical level*<br>　Use multiple rewards programs<br>　Encourage communication between idea owner and idea submitter<br>　Let high priority ideas take precedence in implementation |
| All Phases | *Strategic level*<br>　Secure sufficient resources<br>　Know your organizational culture and build a new culture<br>　Identify key users and get help from them<br>　Clearly define the responsibilities of the ideation program office<br>*Tactical level*<br>　Create incentives and mandates for participation<br>　Support interagency knowledge transfer<br>　Leverage open source software |

erate awareness that any employee could contribute valuable input. This proactive leader also meets with other executives to address their concerns, to help them understand the value such ideation programs bring to the organization, and to set expectations regarding support of and contribution to the new initiative.

*Create a safe environment for idea sharing.* Given the potential abuse or misuse of the ideation tool, it is critical to provide users and program managers with rules of engagement. It is through strategic, vigilant, and consistent moderating that ideation tools can provide users with a safe, fair, and reliable environment within which to share ideas. For example, TSA program staff monitors the ideation website on a daily basis, reading every idea to ensure com-

pliance with the submission guidelines and reviewing each item for possible elevation to the next phase of process. They adjudicate ideas and distribute them to the appropriate program offices and identify key trends by conducting daily, weekly, and monthly site analyses.

*Use challenges and HQ-sponsored ideas to spur interests and participation*. To sustain the interests and participation from users, it is important to organize meaningful events occasionally. In the case of IdeaLab, there is a weekly "Featured Challenge Event" that highlights a challenge that has broad agency interest across multiple national centers and offices. Another effective approach is that government agencies ask employees to respond to headquarter-sponsored ideas. This changes the direction of the dialogue between headquarter and employees and gives the employees the opportunity to play a different role. It sends a message to employees that idea generation is not necessarily bottom-up, but rather a combination of bottom-up and top-down. IdeaFactory also has a similar program called "We Ask You."

### 6.1.2. Tactical Level

*Allow anonymous posting*. Users feel safer in submitting a radical idea that might interfere with others' interest if they can submit the idea anonymously. Although requiring users to use their real name might help prevent users from posting offensive, unproductive ideas, it discourages users to submit ideas that are innovative yet potentially controversial or sensitive. For example, the users of the Sounding Board can choose to enter their name or an invented name, so the system is dependent upon self-identification of its users.

*Do not delay posting ideas due to censorship*. Compared to commercial organizations, government agencies tend to value control more than autonomy. Therefore, it is tempting for government agencies to censor submitted ideas before posting them online. However, such censorship delays posting submitted ideas. Delaying posting ideas for hours or sometimes even for days has a significant, negative effect on the dynamics of user participation and interaction. To overcome this issue, all submissions of IdeaFactory are posted immediately and do not go through a review prior to posting. This ideation site is, however, reviewed daily by the program managers who have the discretion to remove inappropriate comments or ideas. By doing so, the ideation program managers regain the control they have given up earlier in order to boost idea submission. Furthermore, self-policing or community-policing plays an important role in reassuring control. An icon on the IdeaFactory system allows users to report abuses of the system, such as inappropriate language or disparaging comments directed at an individual. These reports are sent to the program managers for an immediate review.

*Authenticate and categorize submitted ideas in real time*. For easy search and data management, ideas should be indexed and grouped into meaningful categories. In IdeaLab, submissions are attributed and authenticated in real time. Ideas are categorized according to organizational goals, and related ideas are affinity-grouped using tag clouds. In the Sounding Board, users post their submission idea in a free text format, and one of the editors assigns a category or categories to the submission. A field is also available for users to identify tags to help guide the categorization of their submissions.

## 6.2. Idea Evaluation and Selection Phase

Once ideas are submitted to the ideation system, users make comments, vote for or against ideas, and

sometimes engage in excessively escalated discussions. The ideation team and senior managers need to effectively manage highly unpredictable dynamics during the ideation process, while striking a balance among efficiency, effectiveness, autonomy, and control.

### 6.2.1. Strategic Level

*Make evaluation/selection criteria and process as transparent as possible.* By making the evaluation and selection criteria and process transparent, agencies can establish a shared understanding and expectation across the organization. Employees' perceived fairness of the process affects their willingness to participate in the ideation program. A manager said, "*we are as transparent as we can be. But, clearly, there is something that happened behind closed doors. I don't think we can really ever have a 100% transparency because it is just the nature of decision making. But, what we strived to have is that 100% transparency on 'why', not certainly on 'how' because the "how" is where people get nervous.*" In IdeaFactory, ideas garnering 75 votes and a score of 4.0 out of 5.0 are considered "threshold" ideas and are guaranteed a formal evaluation in response by the appropriate program office.

*Strike a balance between autonomy and control in evaluating ideas.* When evaluating submitted ideas, it is important to involve not only employees but also experts in the process. By doing so, agencies can maintain the right balance between autonomy (i.e., employee-driven evaluation) and control (i.e., expert-driven evaluation). Although the wisdom of the crowd works well in many cases, it does not work well all the time. Getting experts involved in the evaluation and selection process ensures that the best ideas are selected for implementation. In IdeaFactory, the program staff and subject matter

experts review the ideas and select the most promising ones for further review, regardless of their overall score given by employees.

*Focus more on user engagement than on selecting best ideas.* In the long term, it is the level of employee engagement that matters most for the success of ideation programs. Although selecting best ideas might produce short-term positive impacts, continuous participation of a large number of employees will produce more innovative ideas in the long run (Richet et al., 2010). Therefore, it is more important to ensure the fairness of idea evaluation criteria and process than just to increase efficiency of the process.

### 6.2.2. Tactical Level

*Keep everyone informed of idea status.* Government employees should be informed of the current status of submitted ideas through multiple channels. In particular, keeping everyone posted about the status of the highly popular and most promising ideas is important to help employees continue to engage throughout the entire ideation process. In the case of IdeaLab, a weekly "Bright Idea" highlights a submission that has broad agency interest and popularity across multiple centers and offices. All communications are stored in a searchable archive so that anyone at CDC can review at any time.

*Ensure ideas are thoroughly reviewed and approved before implementation.* One of the responsibilities of the ideation program staff is to ensure that ideas, especially ideas under review for implementation, are based on facts, not on myths. The popularity of an idea is not a reliable indicator of the veracity and validity of the idea. In addition to fact-checking, ideas need to be reviewed and approved by all important stakeholders before implementation. In the case of IdeaFactory, because most high-impact ideas

involve more than one program office, ideas receiving support at the program office level are then subjected to a cross-functional review by the Review Board. This board is comprised of fifteen to twenty people representing leadership from program offices, relevant staff offices such as legal and budget, and program managers.

*Provide users with powerful search tools and analytical capability.* The ideation system should be designed such that users can determine how they want to see the information and can easily identify the most popular ideas. Powerful search and filter tools should be in place to allow users to conduct advanced searches based on keyword, idea status, ideas they have contributed towards, and category. Due to the dramatically increased interest in and demand for analytics of big data, numerous data analytics tools have become available over the last few years. As ideas are accumulated in the ideation system, it is important for users to be equipped with advanced analytical capabilities that help analyze and make sense of massive data. For example, the Sounding Board provides users with analytical functionality through advanced filters, dashboard functions, and more sophisticated uses of crowdsourcing. Sufficient user training facilitates user adoption of such tools (Lee and Xia, 2011).

## 6.3. Idea Implementation Phase

Idea implementation is critical feedback to employees and could affect their future ideation activities depending on how ideas are implemented. "*The biggest battle is finding ideas that are the right things to do. I mean, taking action, having someone take action. Unless an idea is actually implemented, it doesn't make a difference at the end of the day,*" said a federal manager. As the history of government ideation program is short, a coherent set of effective practices in the idea implementation phase is still emerging. Implementing ideas not only requires resource commitment but also results in important consequences.

### 6.3.1. Strategic Level

*Don't trivialize ideas and implement them as new programs or initiatives.* Do not trivialize selected ideas by making them one-off deals or temporary solutions to problems. Establish a formal program or initiative to implement a selected idea so that the organization takes it seriously. Idea submitters and others who were involved in the evaluation and selection process will keep track of how the organization implements the idea they generated and selected. It is crucial to send a signal to employees that a meaningful change can be brought by an idea submitted to the ideation system.

*Track metrics of the impact of implemented ideas.* It is important to demonstrate the value of ideation program to senior management and all levels of employees. To that end, ideation program managers should keep track of metrics showing the impact of implemented ideas. Oftentimes, it is not easy to quantify the impact. Both quantitative and qualitative metrics need to be employed to fully grasp the broad impact of innovative ideas.

*Acknowledge the innovators.* Sustained engagement by the government workforce is largely dependent on recognizing both the innovators and the value of the ideas submitted. The reward and recognition component of ideation program's strategy is integral to its long-term success. In particular, recognition by top leadership through announcements or rewards ceremonies in acknowledging a successful idea can go a long way in enticing employees to continue to submit ideas and provide comments.

### 6.3.2. Tactical Level

*Use multiple rewards programs.* Instead of using a single reward program, successful agencies use multiple rewards programs to motivate government employees. Both non-financial and financial rewards should be utilized. For example, TSA recently offered a bonus that represented a portion of the savings accrued in response to a cost-saving challenge. Furthermore, TSA recognizes the success of idea generators through mechanisms such as a signed letter and certificate of appreciation from the TSA Administrator; recognition and stories in various internal newspapers; a feature-story or webcast on the TSA's intranet home page; and the opportunity for the idea creator to help with the implementation of the idea.

*Encourage communication between idea owner and idea submitter.* One of the daunting tasks in implementing an idea has to do with the transition from idea selection to idea implementation. During this transition, it is possible for the idea implementation owner to misunderstand the idea and lose the context in which the idea was developed. Knowledge transfer between an idea submitter and an idea owner can be very challenging, especially if the nature of knowledge is tacit rather than explicit (Nonaka, 1991). Therefore, it is important to encourage frequent communication and close collaboration between idea submitters and idea owners. By so doing, agencies can also build accountability in the transition process.

*Let high priority ideas take precedence in implementation.* Normally, the speed of implementation cannot keep up with the rate of ideas selection. As a result, it is likely to have a number of ideas backlogged for implementation. To address this issue, government agencies should prioritize ideas based on their impact and likelihood of success and let high-priority ideas take precedence in implementation.

### 6.4. All Ideation Phases

The following practices are found to be important for all phases of the ideation process.

### 6.4.1. Strategic Level

*Secure sufficient resources.* While it is relatively easy to set up an ideation program, it is much more difficult to ensure that the organization has an infrastructure and process in place to deal with the employee idea suggestions. An ideation program creates a significant amount of work upfront and does require dedicated resources including people and infrastructure. Because these programs are novel, it is hard to estimate the optimum size of staff to support them. Instead of hiring new employees to run the ideation program, agencies would benefit from using a collaborative approach involving existing employees across the organization. For example, the State Department is utilizing a collaborative approach to manage its ideation program. Six people contribute to the running of the program: one full-time program manager, assisted by time lent from five additional staff members across the State Department.

*Know your organizational culture and build a new culture.* The ideation program staff should be aware of their organizational culture and develop a coping strategy accordingly. Since organizational culture changes at a much slower pace than the speed at which the ideation tool is developed, the culture oftentimes may not be ready to accept a full-blown ideation tool. It may be best to develop a first-generation tool with simple software and improve the software over time in response to the organizations' uptake of the tool. This approach has been taken by the TSA, the State Development, and CDC. Once you understand the current organizational culture,

you then need to build a new culture emphasizing transparent, open innovation (Bertot et al., 2010). The importance of developing a culture conducive to idea generation should not be overlooked. Senior managers can address cultural barriers by living the vision of the ideation tool and using organizational change levers such as one-on-one coaching for inappropriate content and leading by example.

*Identify key users and get help from them.* Key users play an important role in creating initial buzzwords and interests. By using a Social Network Analysis (SNA) during pre-pilot planning, the ideation program team should first identify key users such as Connectors (the "hubs" of a social network that connect different groups), Mavens (people who know about many things), and Salespersons (the persuaders and evangelists) (Gladwell, 2008) and invite social media explorers (SMEs) and advocates to participate. The ideation team should brainstorm with early adopters and advocates to think about the most appropriate use of the ideation tool for the agency. Furthermore, lead users can provide early feedback so that the ideation team can resolve important issues early in the process (McCarthy, 2010).

*Clearly define the responsibilities of the ideation program office.* Since the ideation program office is a new organizational unit, senior managers and employees might have varying expectations of the office. Therefore, it is important to clearly define the responsibilities of the office. "*We don't drive change, we don't actually go from A to B but we help facilitate that, make folks more willing to move things. We facilitate a lot of information up the chain and back down the chain to through our platform and the other corporate communication platforms,*" said a government manager. The major functions of the ideation program office should include monitoring the tool's website, reading every idea to ensure compliance with the submission guidelines, reviewing each item for possible elevation to the next phase of process, distributing ideas to the appropriate program offices, identifying key trends by conducting site analysis on a regular basis, interfacing with all stakeholders, working to optimize the site and business processes to increase engagement, designing and documenting program processes, identifying areas for improvement, and tracking progress against a strategic plan for the program.

### 6.4.2. Tactical Level

*Create incentives and mandate for participation.* Effective ideation programs create incentives to encourage employee participation. This includes bonuses, awards, and public recognition of contributors either via company-wide email or at company events. In addition, government agencies may mandate employees to participate. This can be particularly powerful in ensuring the contributions of innovation groups who are hesitant to share their best ideas on open platforms (Erickson et al., 2012).

*Support interagency knowledge transfer.* Since government ideation practice is still in early stages, it is important to learn from other agencies' experiences. One effective way to do so is to create a community of practice. iCOP (Ideation Community of Practice) has been established within the U.S. federal agencies. It has become an important vehicle for transferring knowledge and experience about ideation to other agencies. "*it is more like broadening each other's horizons. it is really a practice community that's about information sharing, like we have the same problems here, this is how we worked around here,*" said a government manager.

*Leverage open source software.* Although commercial ideation tools such as IdeaScale are available

on the market, government agencies should consider utilizing open source software to implement their ideation site quickly and at a low cost. This can eliminate financial barriers to adopt the ideation practice. For example, IdeaLab was developed by the Office of Strategy and Innovation at CDC using the open source WordPress publishing platform.

## Ⅶ. Discussion and Conclusions

Ideation programs based on the concept of crowd-sourcing are becoming pervasive. Given the rapid development of social media and other related information technology, these ideation programs will become more technologically sophisticated. Ideation programs will be here to stay, as the power of the wisdom of the crowd will soon materialize tangible benefits. U.S. federal government agencies have been embracing these tools and launching ideation programs to boost employee-driven innovation. However, many daunting challenges and issues remain to be addressed. The challenge is that government agencies should figure out how to make their ideation program sustainable over a long period of time.

This research contributes to the literature by opening up the not-so-well understood process of government ideation programs focusing on internal employees. While a growing body of literature has investigated government open innovation programs that crowdsource citizens, our current understanding of government's internal ideation program is very limited. We find that to be successful government has to cope not only with technological challenges but also with a wide range of challenges associated with process, organizational culture, privacy, security, and user experience. This research also investigates the dynamic of a government ideation program taking place in different phases and identifies effective practices over the lifecycle of the ideation program. This contributes to the growing body of literature that deepens our understanding of stage models for implementing open government or government 2.0. Such stage models suggest the importance of orderly progression in government transformation. We find that designing and implementing government ideation programs requires an approach that is more collaborative, democratic, autonomous, and transparent than conventional approaches to government innovation. Future research can use the findings and insights obtained from this research to build and refine theories for government ideation process. Policy makers may use our research findings to revise the current policies or create new ones to facilitate ideation and innovation within government.

One of the limitations of this study is that the findings are solely based on the U.S. federal government cases. As a result, it is possible that the findings are the artifact of the specific context of U.S federal government. Although we suspect that some of the findings are valid for other countries' governments, future research needs to empirically validate them with data from other countries. Another limitation is that this study does not provide quantitative evidence as only qualitative data is used. Future research needs to complement this study by triangulating the findings with quantitative data.

We recommend that to sustain its internal ideation program a government agency should treat the ideation program not as a management fad but as a vehicle to reinvent the agency to be an innovation-centric organization; institutionalize the ideation program so that ideation activities are viewed as legitimate tasks; make the ideation team a permanent organizational unit and rotate staff periodically; quantify their impact and demonstrate the return

on investment in the ideation program; share the return with the employees through meaningful rewards; assimilate and integrate the ideation program into the mission-critical administrative processes; develop an easy-to-use mobile app for the ideation system as increasingly more employees will use mobile devices to access the system; and keep learning from other agencies and even from commercial organizations.

When ideation becomes a daily routine for government employees, the power of the online ideation tools will be fully realized and thus make a difference to governments and to the public. Given the limited resources and time available to governments, one of the critical success factors for ideation programs is the ability to learn quickly from the agency's own experience as well as from other agencies' experiences. Centers for excellence and the communities of practice would play a central role in transferring knowledge between government agencies. This research contributes to such an organizational learning process by documenting important insights obtained from early experiences of several U.S. federal government ideation programs.
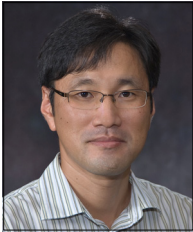
# <References>

[1] Bayus, B. L. (2013). Crowdsourcing New Product Ideas Over Time: An Analysis of the Dell IdeaStorm Community. *Management Science, 59*(1), 226-244.

[2] Bertot, J. C., Jaeger, P. T., and Grimes, J. M. (2010). Using ICTs to Create a Culture of Transparency: E-Government and Social Media as Openness and Anti-corruption Tools for Societies. *Government Information Quarterly, 27,* 264-271.

[3] Bertot, J. C., Jaeger, P. T., and Hansen, D. (2012). The Impact of Polices on Government Social Media Usage: Issues, Challenges, and Recommendations. *Government Information Quarterly, 29,* 30-40.

[4] Bonabeau, E. (2009). Decisions 2.0: The Power of Collective Intelligence. *MIT Sloan Management Review, 50*(2), 45-52.

[5] Bovaird, T. (2007). Beyond Engagement and Participation: User and Community Coproduction of Public Services. *Public Administration Review, 67*(5), 846-860.

[6] Chesbrough, H. W. (2006). *Open Business Models: How to Thrive in the New Innovation Landscape.* Boston, MA: Harvard Business School Press.

[7] Chun, S. A., Luna-Reyes, L. F., and Sandoval-Almazan, R. (2012). Collaborative e-Government. *Transforming Government: People, Process and Policy, 6*(1), 5-12.

[8] Cull, N. J. (2013). The Long Road to Public Diplomacy 2.0: The Internet in US Public Diplomacy. *International Studies Review, 15*(1), 123-139.

[9] Di Gangi, P. M., and Wasko, M. (2009). Steal my idea! Organizational adoption of user innovations from a user innovation community: A case study of Dell IdeaStorm. *Decision Support Systems, 48*(1), 303-312.

[10] Erickson, L. B., Trauth, E. M., and Petrick, I. (2012). *Getting Inside Your Employees' Heads: Navigating Barriers to Internal Crowdsourcing for Products and Service Innovation.* Paper presented at the International Conference on Information Systems, Orlando, FL.

[11] Gladwell, M. (2008). *Outliers: The Story of Success*: Little, Brown and Company.

[12] Glassman, B. (2011). Advanced Ideation Web Seminar: Best Practices, Common Mistakes, and Effective Idea Generation and Idea Management Methods. from http://www.slideshare.net/briang 1621/glassman-ideation-best-practices-2010

[13] Graham, D., and Bachmann, T. (2004). *Ideation: The Birth and Death of Ideas*: John Wiley and Sons.

[14] Hanson, F. (2012). Knowledge Management for eDiplomacy Resources: Brookings Institute.

[15] Hopkins, M. S. (2011). Interview: Leveraging the Social Web Within the Enterprise. *MIT Sloan Management Review, 52.*

[16] Howe, J. (2008). *Crowdsourcing: Why the Power of the Crowd is Driving the Future of Business*: Random House.

[17] Jaeger, P. T. (2006). Assessing Section 508 compliance on Federal E-Government Web Sites: A Multi-Method, User-Centered Evaluation of Accessibility for Persons with Disabilities. *Government Information Quarterly, 23*(2), 169-190.

[18] Jonson, B. (2005). Design Ideation: the Conceptual Sketch in the Digital Age. *Design Studies, 26*(6), 613-624.

[19] Kaplan, B., and Duchon, D. (1988). Combining Qualitative and Quantitative Methods in Information Systems Research: A Case Study *MIS Quarterly, 12*(4), 571-586.

[20] Kettrie, E. (2010). Federal Ideation Community of Practice (iCOP). from http://www.slideshare.net/OnlineTownhalls/federal-ideation-community-of-practice-powerpoint-fei

[21] Khan, G. F. (2015). The Government 2.0 Utilization Model and Implementation Scenarios. *Information Development, 31*(2), 135-149.

[22] Kittrie, E. (2010). Promoting a Culture of Innovation at HHS. from http://www.dtic.mil/ndia/2010USCG/Panel4kittrie.pdf

[23] Laursen, K., and Salter, A. (2006). Open for Innovation: The Role of Openness in Explaining Innovation Performance Among UK Manufacturing Firms. *Strategic Management Journal, 27*(2), 131-150.

[24] Lee, G., and Kwak, Y. H. (2012). An Open Government Maturity Model for Increasing Social Media-Based Public Engagement. *Government Information Quarterly, 29*(4), 492-503.

[25] Lee, G., and Xia, W. (2011). A Longitudinal Experimental Study on the Influences of Persuasion Quality, User Training, and First-hand Use on User Perceptions of New Information Technology. *Information & Management, 48*(7), 288-295

[26] Linders, D. (2012). From e-Government to we-Government: Defining a Typology for Citizen Coproduction in the Age of Social Media. *Government Information Quarterly, 29*(4), 446-454.

[27] McCarthy, T. (2010, March 15). HUD Ideas in Action. from http://www.slideshare.net/OnlineTownhalls/hud-ideas-in-action-usda-presentation?from=share_emai

[28] McDermott, P. (2010). Building Open Government. *Government Information Quarterly, 27*, 401–413.

[29] Mingers, J. (2001). Combining IS Research Methods: Towards a Pluralist Methodology. *Information Systems Research, 12*(3), 240-259.

[30] Moore, G. C., and Benbasat, I. (1991). Development of an Instrument to Measure the Perceptions of Adopting an Information Technology Innovation. *Information Systems Research, 2*(3), 192-222.

[31] Nam, T. (2012). Suggesting frameworks of citizen-sourcing via Government 2.0. *Government Information Quarterly, 29*(1), 12-20.

[32] Nonaka, I. (1991). The Knowledge Creating Company. *Harvard Business Review, 69,* 96-104.

[33] O'Reilly, T. (2010). Government as a Platform. In D. Lathrop and L. Ruma (Eds.), *Open Government: Collaboration, Transparency, and Participation in Practice*: O'Reilly Media.

[34] O'Connor, K., Moran, M., and Martin, C. (2009). Sound Ideas: Department Uses Social Media to Make Improvements. *U.S. Department of State Magazine,* 18-19.

[35] Orluskie, L. (2010). Privacy Impact Assessment for the IdeaFactory: U.S. Department of Homeland Security.

[36] Pang, M., Lee, G., and DeLone, W. (2014). IT Resources, Organizational Capabilities, and Value Creation in Public Sector Organizations: A Public-Value Management Perspective. *Journal of Information Technology, 29*(3), 187-205

[37] Partnership for Public Service. (2013). Best Places to Work in the Federal Government Analysis: 2012 Snapshot.

[38] Rich, B. L., Lepine, J. A., and Crawford, E. R. (2010). Job engagement: Antecedents and effects on job

performance. *Academy of Management Journal, 53*(3), 617-635.

[39] Schulze, A., and Hoegl, M. (2008). Organizational Knowledge Creation and the Generation of New Product Ideas: A Behavioral Approach. *Research policy, 37*(10), 1742-1750.

[40] Silvester, J. (1998). Attributional Coding. In G. Symon and C. Cassell (Eds.), *Qualitative Methods and Analysis in Organizational Research* (pp. 73-93). Thousand Oaks, CA: Sage Publications.

[41] Spagnoletti, P., Resca, A., and Lee, G. *forthcoming*. A Design Theory for Digital Platforms Supporting Online Communities: A Multiple Case Study Approach. *Journal of Information Technology,* doi:10.1057/jit.2014.37

[42] Strauss, A., and Corbin, J. (1998). *Basics of Qualitative Research: Techniques and Procedures for Developing Grounded Theory.* London, U.K.: Thousand Oaks.

[43] Terwiesch, C., and Xu, Y. (2008). Innovation Contests, Open Innovation, and Multiagent Problem Solving. *Management Science, 54*(9), 1529-1543.

[44] The Innovation Tools Subgroup. (2009). Electronic Management Tools for New Idea Generation in the Federal Workplace.

[45] The White House. (2009). *Memorandum for the Heads of Executive Departments and Agencies: Transparency and Open Government.*

[46] von Hippel, E. (2005). *Democratizing Innovation.* Cambridge, MA: The MIT Press.

[47] Xia, W., and Lee, G. (2005). Complexity of Information Systems Development Projects: Conceptualization and Measurement Development. *Journal of Management Information Systems, 22*(1), 45-83.

[48] Yin, R. B. (2003). *Case Study Research: Design and Methods.* Thousand Oaks, CA: Sage Publications.

# ◆ About the Authors ◆

**Gwanhoo Lee**

Gwanhoo Lee received the BS and MS degrees in Industrial Engineering from Seoul National University and the PhD degree in information systems from the University of Minnesota. He is a Professor of Information Technology and the Director of Center for IT and the Global Economy in the Kogod School of Business at the American University, Washington, DC. His current research interests include complexity and agility in information systems development, digital innovation and ecosystem, e-government, cybersecurity, and information privacy. He has published his research in premier journals including MIS Quarterly, Journal of Management Information Systems, and IEEE Transactions on Software Engineering. He has received grants from IBM Center for the Business of Government. He advises Samsung Economic Research Institute, the World Bank, and Korea Ministry of Science, ICT, and Future Planning. He is a member of the Association for Information Systems, the Society for Information Management, and the Academy of Management.