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## Using Competitions and Awards to Spur Innovation



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# **Challenge.gov: Using Competitions and Awards to Spur Innovation**

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## Foreword

On behalf of the IBM Center for The Business of Government, we are pleased to present this report, *Challenge.gov: Using Competitions and Awards to Spur Innovation*, by Kevin C. Desouza.

Cutting-edge government leaders are constantly seeking new and innovative ways to solve public problems. The challenge facing government managers is to find these new approaches.

One new approach is the use of challenges, which use “crowd-sourcing” to canvass solution approaches for particular problems. Challenges open up new avenues for connecting people who have innovative ideas to people in government who can implement these ideas. A recent IBM Center report, *Managing Innovation Prizes in Government* by Luciano Kay, examined various models pioneered in the private sector to connect innovators with ideas to businesses looking to solve problems. This report by Dr. Desouza provides an in-depth examination of a cross-government electronic platform, known as Challenge.gov, created to be a one-stop location where agencies can pose problems and challenge the public to provide solutions.

Federal agencies have posted nearly 200 contests on this website since it was launched in September 2010. Dr. Desouza examines the outcomes of various contests to better understand the issues and problems for which agencies are seeking solutions, and evaluate the various approaches they are using to conduct these contests. The concept of challenges gained a legislative boost in December 2010, when Congress included a prizes component in legislation, the America COMPETES Act, designed to increase American innovation and competition.

To gain insights about what worked in Challenge.gov and what can be improved, Desouza interviewed government managers who sponsored contests, and contest winners. Based on his research and their insights, he offers a series of findings and recommendations on ways agencies can better use Challenge.gov, from the pre-competition phase through design, launch, and operation, to identify promising ideas for solving public problems.



Daniel J. Chenok



Daniel Prieto

Based on his research, Desouza concludes, "Challenge.gov is still in the developmental stage and our analysis and interviews point to numerous opportunities to improve its operation and impact . . . We believe Challenge.gov is a viable platform for solving the grand challenges of our time."

While Challenge.gov is designed to primarily address federal innovation needs, there are similar platforms being developed for local government use. We think the insights and recommendations presented here will be helpful to them and to federal managers who seek to tap into the innovative talent of the American public.



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# Executive Summary

Over the past three years, the Obama administration has encouraged federal agencies to engage citizens in solving public problems by increasing the use of electronic participation platforms. The America COMPETES Act—adopted in 2010—provides statutory support for conducting public contests and providing awards to winners. The Office of Management and Budget issued a memorandum in March 2010 on agencies' use of challenges and prizes to provide guidance on how to conduct such initiatives.

One of the most prominent approaches to engaging citizens has been the creation of the government-wide website, Challenge.gov. Launched in September 2010, the website presents information on the 199 competitions held from its creation until August 2012, when this report went to press. This cross-agency site is a one-stop platform that includes all the contests sponsored by federal agencies and their partners. These competitions range from those with large prizes and ambitious goals, such as the development of autonomously operated vehicles for the Defense Department, to those with smaller prizes targeted to smaller challenges, such as the creation of an app to track the arrival status of local buses.

This report reviews the competitions posted on Challenge.gov from its launch until August 2012, and presents findings based on the experiences of award-winners and federal managers who sponsored some of the competitions. Based on interviews with these winners and managers, the report presents recommendations for better design and implementation of future competitions.

Based on the assessment conducted for this report, Challenge.gov is a budding platform that furthers the Obama administration's goal of more open, collaborative, and participatory public agencies. Numerous federal agencies across government have taken advantage of the Challenge.gov platform for conducting contests and embraced it as an alternative mechanism for sourcing new ideas, knowledge, and solutions for the challenges they face. In addition, citizens have shown their interest by contributing solutions and increasing the vitality of public institutions.

Research findings from this project show that Challenge.gov is still in the developmental stage and there are now numerous opportunities to improve its operations and impact. Federal agencies have not yet realized the full potential of Challenge.gov.

Challenge.gov is now a viable platform for solving the grand challenges of our time. By addressing key issues and seizing improvement opportunities, Challenge.gov can advance the missions of federal agencies and enhance their relevancy, legitimacy, and impact by empowering citizens to help solve problems and enable the realization of goals that matter to the nation.

The report divides the Challenge.gov process into five phases:

- **Phase One:** Pre-Competition
- **Phase Two:** Designing the Competition
- **Phase Three:** Launching the Competition
- **Phase Four:** Operating the Competition
- **Phase Five:** Post-Competition

Recommendations for improving the operations of Challenge.gov are presented on the next page.



# Recommendations

## Recommendations for the Pre-Competition Phase

- **Recommendation One:** Agencies need a strong champion to launch a competition
- **Recommendation Two:** Agencies need to assess the level of effort needed to operate a competition
- **Recommendation Three:** The General Services Administration should create a government-wide forum to share lessons learned

## Recommendations for Designing the Competition

- **Recommendation Four:** Government managers need to set realistic expectations for a competition
- **Recommendation Five:** Government managers need to spend more time designing the problem statement
- **Recommendation Six:** Government managers should assess when a multi-stage competition is appropriate for a given competition
- **Recommendation Seven:** Government managers need to spend more time designing the evaluation criteria
- **Recommendation Eight:** Government managers need to determine appropriate incentives for each competition
- **Recommendation Nine:** Government managers need to be strategic in the use of external judges
- **Recommendation Ten:** As part of the design phase, government managers need to plan in advance for what happens after the competition

## Recommendations for Launching the Competition

- **Recommendation Eleven:** Government managers should recruit participants via targeted marketing campaigns

## Recommendations on Operating Competitions

- **Recommendation Twelve:** Government managers should engage with the applicants during the competition
- **Recommendation Thirteen:** Agencies should designate a point of contact as the public face of a competition
- **Recommendation Fourteen:** GSA should enhance existing platforms to allow participants to connect with each other

## Recommendations for Post-Competition Activities

- **Recommendation Fifteen:** Agencies should provide feedback on all submissions
- **Recommendation Sixteen:** Agencies should actively be engaged in communities that are likely to participate in future competitions
- **Recommendation Seventeen:** Agencies should communicate the impact of a completed competition to the public
- **Recommendation Eighteen:** Agencies should conduct a lessons-learned review after each competition

# Part I: An Overview of Challenge.gov

Over the past three years, the Obama administration has been encouraging federal agencies to engage citizens in solving public problems by increasing the use of electronic participation platforms. The America COMPETES Act—adopted in 2010—provides statutory support for conducting public contests and providing awards to winners (Holden 2011). The Office of Management and Budget (OMB) issued a memorandum in March 2010 on agencies' use of challenges and prizes to provide agencies with more guidance on how to conduct such initiatives (U.S. OMB 2010).

One of the most prominent approaches to engaging citizens has been the creation of the government-wide website, Challenge.gov. Launched in September 2010, the website presents information on 199 competitions held from its creation until August 2012, when this report went to press. This cross-agency site is a one-stop platform that includes all the contests sponsored by federal agencies and their partners. These competitions range from those with large prizes and ambitious goals, such as the development of autonomously operated vehicles for the Defense Department, to those with smaller prizes targeted to smaller challenges such as the creation of an app to track the arrival status of local buses.

This report reviews the competitions posted on Challenge.gov from its launch until August 2012 and presents findings based on the experiences of award winners and federal managers who sponsored some of the competitions. Based on interviews with these winners and managers, the report presents recommendations for better design and implementation of future competitions.

## Using Competitions to Spur Innovation

Competitions use monetary and non-monetary awards as incentives to drive participation in solving public problems. There is a rich history of using prizes to spur achievement and recognize excellence. The private sector has long realized the value of sourcing ideas and solutions from outside the organization (Chesbrough 2003).

There have been several private-sector competition platforms. One of the most well-known is InnoCentive, the competition crowdsourcing platform of choice for organizations such as Procter & Gamble and the National Aeronautics and Space Administration (NASA) to find innovative solutions to problems. InnoCentive's competitions and awards—open to a wide range of participants—have led to notable solutions such as dealing with oil spill recovery and developing a simpler manufacturing process for drugs fighting tuberculosis. The solution for the latter came from a scientist in India, and the former from a citizen whose expertise was in the concrete industry. For a detailed analysis of the role of prizes in industry and government, see Luciano Kay's report for the IBM Center (Kay 2010).

Competitions have several valuable features that make them ideal for solving problems. First, through a prize, organizations have the ability to leverage limited resources better than they could through traditional mechanisms (e.g., contracts). For example, the Ansari X PRIZE awarded \$10 million to the winning team. The X PRIZE Foundation was able to leverage its investment 40:1 (Schroeder 2004), with teams investing over \$100 million and with \$1.5 billion in public and private expenditure to support the private space flight industry.

Second, competitions allow for the hedging of risks—you only have to pay the winner.

Third, competitions allow for the leveraging of collective intelligence. Collective intelligence helps source solutions from the masses rather than a select few experts. When prizes are announced and participation is open, seldom do the winners originate from the “usual suspects.”

Fourth, through competitions, public agencies can draw attention to causes. For example, First Lady Michelle Obama held a competition to develop Apps for Healthy Kids as part of the Let's Move! campaign that is drawing attention to the issue of childhood obesity in the U.S.

And finally, today, advanced information and communication technologies are enabling engagement of a wider audience for competitions without the traditional constraints (e.g., geography). For all of the above reasons, competitions allow government to empower citizens as co-creators of solutions to address problems, and even to participate in the realization of opportunities.

## Implementing a Challenge

After nearly two years of operation, what can be learned about the use of Challenge.gov, the government-wide platform created for agencies to conduct contests and awards? What types of challenges are undertaken on that site versus other sites? Which agencies use it the most? What kinds of prizes are awarded?

There are a number of key steps that federal agencies must undertake before launching a competition on Challenge.gov. These steps involve:

- Identifying and assessing the problem
- Describing the desired solution
- Selecting the target audience
- Developing criteria for judging
- Setting milestones

Upon receiving clearance from the general counsel of the agency, agency managers work with the Office of Citizen Services and Innovative Technologies at the General Services Administration

### How Does Government Define a Challenge?

(from [Challenge.gov](http://Challenge.gov))

A challenge is exactly what the name suggests: it is a challenge by one party (a seeker) to a third party or parties (a solver) to identify a solution to a particular problem or reward contestants for accomplishing a particular goal. Prizes (monetary or non-monetary) often accompany challenges and contests.

Challenges can range from fairly simple (idea suggestions, creation of logos, videos, digital games, and mobile applications) to proofs of concept, designs, or finished products that solve the grand challenges of the 21st century.

## Research Methodology

The author and his colleagues conducted phone interviews, both with award winners and with federal managers who designed and implemented specific competitions for their agencies using the Challenge.gov platform.

The author and his colleagues interviewed 15 award-winning participants across a wide range of competitions. All interviewees were highly educated (many with advanced degrees) and were well-connected within their professional networks. All of them had day jobs or were not working. Most viewed their efforts on creating solutions for competitions as low-budget, side activities they pursued to explore their curiosities. Their efforts were not motivated toward making themselves rich. All of them, in their own way, had an interest in exploring how technology could be leveraged toward advancing causes they cared about. Most interviewees were interested in continuing to work on their apps even after the competition ended, and were finding alternative means to support their efforts (e.g., loans, resources from nonprofits, venture capital).

Telephone and in-person interviews were conducted with 14 public managers involved in the creation and management of competitions hosted on Challenge.gov. Interviews were conducted using a semi-structured protocol that explored the public managers' experience with competitions in general, the experience on Challenge.gov and lessons learned, and future plans with using competitions as a tool for citizen engagement, crowdsourcing of ideas, and innovation within their agencies.

In addition, the author and his colleagues interviewed one public manager from the General Services Administration (GSA) who is responsible for the Challenge.gov platform. Interviews lasted about 45 minutes on average. Three public managers did not consent to the interviews being recorded. Two researchers were present for all interviews, one who conducted the interview and one who took detailed notes. Findings from the interviews were shared with the public manager for comments and corrections. In addition, the summary of major findings across the interviews (which are presented in this report) was shared with four other managers who had experience with competitions in the public sector. They confirmed the findings through sharing their own experiences. Confident that the research had reached theoretical saturation, it was decided not to conduct future interviews.

(GSA) to upload the competition on the Challenge.gov platform. GSA creates a moderator account that allows personnel from the sponsoring federal agency to manage the particulars of their competition on the platform. The Office of Citizen Services and Innovative Technologies also works to promote competitions to the general public through press releases, Twitter feeds, and updates on its Facebook site.

Competitions posted on the Challenge.gov platform include competitions sponsored by one federal agency, by two or more agencies, or sponsored jointly by a federal agency and private-sector entities. Examples of each type include:

- The Occupational Employment Statistics Challenge was sponsored by one agency, the U.S. Department of Labor.
- The My Air, My Health competition is being sponsored by both the Department of Health and Human Services and the Environmental Protection Agency (EPA).
- The 2010 Progressive Automotive X PRIZE, aimed at creating a new generation of super-efficient vehicles, was a joint initiative of several organizations, including Progressive Insurance, Cisco, the Department of Energy, and the state of Michigan.

There is a wide range in the scope of competitions, which includes:

- Competitions seeking solutions to technical challenges (such as the Power Beaming Challenge and the Nano-Satellite Launch Challenge)

# Frequently Asked Questions about Challenge.gov

(from [Challenge.gov/faq](#))

## What is a challenge?

A government challenge or contest is exactly what the name suggests: it is a challenge by the government to a third party or parties to identify a solution to a particular problem or reward contestants for accomplishing a particular goal. Prizes (monetary or non-monetary) often accompany challenges and contests.

Challenges can range from fairly simple (idea suggestions, creation of logos, videos, digital games, and mobile applications) to proofs of concept, designs, or finished products that solve the grand challenges of the 21st century. Find current federal challenges on [Challenge.gov](#).

## Why would the government run a challenge?

Federal agencies can use challenges and prizes to find innovative or cost-effective submissions or improvements to ideas, products, and processes. Government can identify the goal without first choosing the approach or team most likely to succeed, and pay only for performance if a winning submission is submitted. Challenges and prizes can tap into innovations from unexpected people and places.

## What is Challenge.gov?

Challenge.gov is a site administered by the U.S. General Services Administration (GSA) in partnership with ChallengePost. On this site, federal agencies are able to post their challenges and the public can offer innovative submissions to those challenges. To learn more about this site, visit the About Challenge.gov page: <http://challenge.gov/about>.

## Why was this site created?

Challenge.gov makes it easy for federal agencies to launch challenges and for the public to share their submissions and innovations with government. The U.S. General Services Administration (GSA) has done the heavy lifting by making available a free tool to agencies that has passed GSA's policy reviews for security, privacy, accessibility, and other federal requirements. GSA has tested the platform so it is user-friendly for both federal employees posting challenges and for the public supporting challenges and proposing submissions.

The Office of Management & Budget tasked GSA with selecting an online challenge platform to fulfill this pledge as a result of the March 8, 2010 Memorandum on Innovation Challenges and Prizes.

## Who manages this site?

This site is managed by the U.S. General Services Administration (GSA). In terms of the individual challenges, those are created and moderated by each particular agency. Each particular agency is also responsible for record keeping and should consult with their records officer and Office of General Counsel. Challenges stay on challenge.gov even after they are concluded, but federal agencies should not rely on challenge.gov as the sole record.

## Is Challenge.gov open to everyone?

Yes, Challenge.gov is open to the general public. On this site, the public can show their support for a particular challenge and propose a submission to government challenges. Federal agencies can also create challenges on this site as well as showcase challenges they might be running on other sites. There is no cost for agencies or the public to use this site.

- Competitions related to social and policy issues (such as America’s Home Energy Education Challenge and the Equal Pay Apps Challenge)
- Competitions related to community-based activities (such as the September 11 National Day of Service and Remembrance 10th Anniversary Challenge)

While the Challenge.gov platform is open, the submission and eligibility requirements are set by the sponsoring federal agency. For example, competitions, such as the Apps for Energy competition, can restrict the age of participants, as well as require participants to be citizens or permanent residents of the United States.

Awards for winning competitions range from cash prizes to non-monetary prizes, such as certificates and events that recognize the winners. Judging the submissions can be done by an agency-selected panel, public voting, or a combination of both. Part II of the report includes a description of specific competitions, their award structure, and their judges.

While Challenge.gov serves as a platform for running federal agency competitions, it also serves as a hub where competitions conducted by federal agencies on alternative platforms are advertised. For example, several agencies host competitions on other platforms such as the private sector-based InnoCentive program. In these cases, the Challenge.gov platform is used as a gateway to share information with the public on the competition, and then route users to the external platform where the competition is actually hosted (i.e., submissions are accepted, judging details are posted, etc.).

### Competitions for Local Government

The Bloomberg Philanthropies, supported by New York City Mayor Michael Bloomberg, launched a \$9 million competition during summer of 2012. The Mayors Challenge is a competition “to inspire American cities to generate innovative ideas that solve major challenges and improve city life.”

Twenty finalists will be announced during the fall of 2012. Teams from each of the finalist cities will attend a two day workshop in New York City where the teams will work together to improve one another’s ideas. Nearly 400 cities have applied as of mid-August 2012. The deadline for applications was September 14, 2012.

The five winning cities will be announced in the spring of 2013. The winning city will receive the \$5 million grand prize, with the four runner-up cities each receiving a \$1 million prize.

Selection criteria include:

- **Vision:** Demonstrate a novel and visionary approach to a challenge faced by cities
- **Ability to Implement:** Reflect thoughtfulness in planning for budget, resources, duration, and key milestones
- **Replicability:** Must address a challenge that is relevant to multiple cities
- **Impact:** Must show the potential to impact one of the following:
  - Address social or economic problems
  - Improve customer service for residents or businesses
  - Enhance accountability of or engagement with the public
  - Create efficiencies that make government work better, faster, and cheaper

For more information, visit the Mayor’s Challenge website: [mayorchallenge.bloomberg.org](http://mayorchallenge.bloomberg.org).

## Part II: Descriptions of Selected Challenge.gov Competitions



### Apps for Communities Challenge

*(Sponsored by the Federal Communications Commission and the Knight Foundation)*

**Description of Competition:** The goals of the Challenge were to:

- Make local public information more personalized, usable, and accessible for all Americans
- Promote broadband adoption, particularly among Americans who are less likely to be regular Internet users (including low-income, rural, residents on tribal lands, seniors, people with disabilities, and the low digital ability/low English literacy communities); and create better links between Americans and services provided by local, state, tribal, and federal governments.

The Challenge was intended to bring together providers of public data, developers, and traditionally underserved populations through a national contest for innovative uses of local data, and to provide recognition to contestants who develop software applications (apps) that provide easy access to relevant content, with an emphasis on apps that use hyper-local and other public data from cities, counties, townships, tribes, and states.

**Monetary Prize:** Total purse of \$100,000

**Number of Submissions:** 66

**Dates of Competition:** April 14, 2011 to October 3, 2011

**Judging Criteria:**

- Local impact
- User experience and presentation
- Accessibility
- Sustainability
- Focus on traditionally disconnected populations

**Winners:**

- **Grand prize (\$30,000): YAKB.us** for developing a real-time bus notification system that uses voice and SMS to inform users when the next arrival times are for bus stops
- **Second prize (\$20,000): Homeless SCC (Santa Clara County)** for developing web-based app that connects homeless individuals with services according to specific needs and eligibility.



- **Third prize (\$10,000): txt2wrk** for a system that uses text-to-speech to help parolees, homeless, and other job seekers receive information about new job postings, and allows them to apply for the jobs as well.

**Runner-up prizes (\$1,000):** Five awards were made.

**Bonus prizes:** Five bonus prizes were awarded:

- Best design and visualization (\$10,000)
- Most replicable applications (\$10,000)
- Best use of SMS (\$5,000)
- Digital proficiency (\$5,000)
- Digital literacy (\$5,000)

## **Apps for Entrepreneurs Challenge** *(Sponsored by the Small Business Administration)*

**Description of Competition:** For most entrepreneurs and small businesses, the federal government has useful programs and services, but it can be hard to identify, engage, and navigate federal websites. Entrepreneurs and small businesses need better tools to navigate the federal government's vast resources—including programs, services, and procurement opportunities. The goal of Apps for Entrepreneurs was to give small businesses and entrepreneurs those better tools through this challenge format.

The competition provided recognition to individuals or teams of individuals for developing innovative applications designed for the web, a personal computer, a mobile handheld device, console, or any platform broadly accessible on the open Internet that uses data freely available on federal government websites.

**Monetary Prize:** Total purse of \$20,000

**Number of Submissions:** 23

**Dates of Competition:** November 4, 2011 to November 20, 2011

**Judging Criteria:**

- Mission and impact
- Creativity
- Use of required dates
- Technical implementation

**Winners:**

- **First Place (\$5,000): SBA Gems**, a mobile Android app for small businesses and entrepreneurs to find and share federal SBA programs and resources to jumpstart or grow businesses



- **Second Place (Three prizes at \$3,000 each):**
  - **Small Business Toolbox**, an app providing a new way to easily stay updated on government programs available to businesses
  - **SBA Loan Search App**, an Android app that displays publicly available information on government loans, grants, tax incentives, and venture capital, which can be searched based on various criteria
  - **CapitaList**, an app that allows users to browse federal databases for licenses, awards, grants, proposals, and websites
- **Third Place (Three prizes at \$2,000 each):**
  - **SB Alert**, an app designed to take the pain out of finding contract opportunities
  - **Every Thing for the Entrepreneur**, an app that allows the user to quickly scan open SBIR solicitations
  - **Energy SBA**, an app that provides the ability to search for everything the SBA offers by keyword



## Challenge to Innovate (C2i) Gaming Challenge

*(Sponsored by the Department of Education, the National Education Association Foundation, and Microsoft)*

**Description of Competition:** The challenge sought ideas on how interactive technology game-based learning can improve teaching and learning. Ideas were sought on how to use existing gaming and technological competencies that can be translated into student achievement.

**Monetary Prize:** Total purse of \$10,000

**Number of submissions:** 157

**Dates of Competition:** January 23, 2012 to March 5, 2012

**Judging Criteria:** All entries were scored on a 5-point scale (0=lowest, 5= maximum)

**Winners (\$1,000 each):**

- **Crime Scene Reporter**, Attleboro High School, Attleboro, MA,
- **Friends of a Feather**, Harvard Graduate School of Education, Cambridge, MA
- **Curriculum APPLications**, Signal Mountain High School, Chattanooga, TN
- **Challenge the World**, Falcon Elementary School of Technology, Peyton, CO
- **The Candy Factory Game**, Virginia Tech, Blacksburg, VA
- **Creating Citizens with Game Based Learning and Authentic Assessment**, ASCD/Buck Institute for Education, Tacoma, WA
- **STEM learning with Video Games**, University of Texas—Brownsville, Brownsville, TX
- **Game-Based Learning with Online ‘Quiz Shows,’** Williamson High School, Williamson, NY
- **Dungeons and Discourse**, Massachusetts College of Liberal Arts, North Adams, MA
- **Learn to Earn: Game-Based Learning**, Windber Area Middle School, Windber, PA



## The Healthymagination Challenge

*(Supported by the Department of Health and Human Services, General Electric, Kleiner Perkins Caufield & Beyers, Venrock Capital, Mohr Davidow, and MPM Capital)*

**Description of Competition:** The Healthymagination Challenge: Assembling Tools to Fight Cancer is an open call to action for businesses, entrepreneurs, innovators, and students with breakthrough ideas for accelerating early detection and enabling more personalized treatment for breast cancer. The Healthymagination Challenge is focused on finding new ideas that accelerate innovation in early diagnosis, patient stratification, and the personalized treatment of breast cancer.

**Monetary Prize:** Total purse of \$500,000

**Number of Submissions:** 514

**Dates of Competition:** September 15, 2011 to November 20, 2011

### Judging Criteria:

- Merit
- Scientific foundation
- Innovation character
- Potential to significant impact
- Economic viability
- Sustainability

### Winners (\$100,000 each):

- **MyCancerGenome – Personalized Approach to Triple Negative Breast Cancer:** Vanderbilt University in Nashville, Tennessee is developing MyCancerGenome, a free online cancer medicine resource and decision-making tool for physicians, patients, caregivers, and researchers.
- **Creating Safer & Stronger Breast Implants with Cancer-Fighting and Healing Properties:** The University of Akron in Akron, Ohio is developing new materials for breast reconstruction to transform tissue expanders and implants into cancer-fighting and healing devices.
- **Identifying a Predisposition to Cancer Spread:** Moffitt Cancer Center in Tampa, Florida is working to understand the genetic “modifier” genes and their role in predisposition to the spread of cancer to other parts of the body following cancer onset.
- **Saving Lives in Developing Countries:** For developing countries such as Uganda, breast ultrasound holds promise in identifying cancers in young women with palpable lumps. Fred Hutchinson Cancer Research Center in Seattle, Washington, and Uganda Cancer Institute (UCI) in Kampala are establishing a breast cancer screening program where women will receive education about breast cancer and those with symptoms will be offered clinical breast exam and breast ultrasound.
- **Moving to Personalized Therapy for Triple Negative Breast Cancer:** Researchers at Vanderbilt-Ingram Cancer Center in Nashville, Tennessee have demonstrated that gene expression analysis reveals at least six distinct disease subtypes for triple negative breast cancer that likely respond differently to chemotherapy.



## DARPA Shredder Challenge

*(Defense Advanced Research Projects Agency, Department of Defense)*

**Description of Competition:** DARPA's Shredder Challenge calls upon computer scientists, puzzle enthusiasts and anyone else who likes solving complex problems to compete in the challenge by piecing together a series of shredded documents. The goal is to identify and assess potential capabilities that could be used by our warfighters operating in war zones, but might also create vulnerabilities to sensitive information that is protected through our own shredding practices throughout the U.S. national security community. Presently, a variety of techniques exist for reconstructing shredded documents including manual assembly, fully automated (computerized) algorithms and hybrid operator-assisted approaches.

**Monetary Prize:** \$50,000

**Number of Submissions:** 9,000

**Dates of Competition:** October 27, 2011 to December 2, 2011

**Winner (\$50,000):**

A small San Francisco-based team correctly reconstructed each of the five challenge documents and solved their associated puzzles. The "All Your Shreds Are Belong to U.S." team used custom-coded, computer-vision algorithms to suggest fragment pairings to human assemblers for verification. In total, the winning team spent nearly 600 man-hours developing algorithms and piecing together documents that were shredded into more than 10,000 pieces.



## Apps for Healthy Kids Challenge

*(Sponsored by the Department of Agriculture)*

**Description of Competition:** The Apps for Healthy Kids competition is a part of First Lady Michelle Obama's Let's Move! campaign to end childhood obesity within a generation. Apps for Healthy Kids challenges software developers, game designers, students, and other innovators to develop fun and engaging software tools and games that drive children, especially "tweens" (ages 9–12)—directly or through their parents—to eat better and be more physically active.

**Monetary Prize:** Total purse of \$60,000

**Number of Submissions:** 94

**Dates of Competition:** March 10, 2011 to June 30, 2011

**Judging Criteria:**

- Potential impact on target audience
- Quality, accuracy, and content of message
- Creativity and originality
- Potential for further development and use
- Potential to engage and motivate target audience

**Winners:**

- **First Place: Tools (\$10,000): Pick Chow!**, a website that allows children to create meals by dragging and dropping foods onto their virtual plate with a meter showing the nutritional values as well as a meal rating in a fun and easy way.
- **First Place: Game (\$10,000) and GE Healthymagination Student- Game (\$10,000): Trainer**, a game that gives the player the responsibility of caring for creatures that all have dietary and fitness needs.
- **GE Healthymagination Student: Tool (\$10,000): Work It Off**, a mobile application for Android phones, teaches children the correlation between the calories they eat and the calories they burn.
- **Popular Choice: Tool (\$4,500): Tony's Plate Calculator**, an online tool that can help you calculate the nutritional values for a single item, an entire recipe, or a full day's worth of food.
- **Popular Choice: Game (\$4,500): Food Buster**, a game that asks you to carefully stack food items that don't break our scale. For each round you'll try to find foods with the fewest calories, least added sugar, and least amount of saturated fat. The fewer the calories, the more points you'll get.

**Apps for the Environment Challenge***(Sponsored by the Environmental Protection Agency)*

**Description of Competition:** The Apps for the Environment challenge is aimed at encouraging private-sector software developers, students, and others to create innovative applications that use EPA data to promote protection of human health and the environment. EPA publishes a wide variety of environmental data, in multiple formats, as do other parts of the federal government. EPA believes that innovative synthesis and presentation of these various data could foster public understanding of environmental conditions, inform decision-making, and produce a range of other positive outcomes that protect human health and the environment.

**Prize:** No monetary rewards, winners were invited to Washington to receive recognition

**Number of Submissions:** 38

**Dates of Competition:** June 9, 2011 to September 16, 2011

**Judging Criteria:**

- Usefulness
- Innovativeness
- Usability

**Winners:**

- **Best Overall App: Light Bulb Finder**, a mobile app that helps users switch from incandescent to energy-efficient light bulbs by recommending the right bulbs based on inputs about home fixtures and incandescent light bulb styles.

- **Best Student App: EarthFriend**, a mobile app game designed to educate users by incorporating data from EPA databases.
- **Popular Choice App: CG Search**, a mobile Green IT app that enables users to know and visually compare the air quality index, air pollutant levels, and energy consumption of various U.S. cities and compares them to Atlanta.

# Part III: Findings and Recommendations

## Overall Assessment

Based on our assessment, Challenge.gov is a budding platform that furthers the Obama administration's goal of more open, collaborative, and participatory public agencies. Our assessment is based on an analysis of the Challenge.gov platform, as well as interviews with award-winning Challenge.gov participants and agency managers responsible for running the competitions.

Numerous federal agencies across government have taken advantage of the Challenge.gov platform for conducting contests and embraced it as an alternative mechanism to sourcing new ideas, knowledge, and solutions for the challenges they face. In addition, citizens have shown their interest by contributing solutions and increasing the vitality of public institutions.

Our research findings also show that Challenge.gov is still in the developmental stage and our analysis and interviews point to numerous opportunities to improve its operations and impact. We found that federal agencies have not yet realized the full potential of Challenge.gov. Our findings and recommendations point to design advancements that can be made on the Challenge.gov platform to further the building of a community of problem-solvers where learning takes place among citizens, between citizens and public agencies, and across public agencies.

We believe Challenge.gov is a viable platform for solving the grand challenges of our time. By addressing key issues and seizing improvement opportunities, Challenge.gov can advance the missions of federal agencies and enhance their relevancy, legitimacy, and impact by empowering citizens to help solve problems and enable the realization of goals that matter to the nation.

## Study Findings and Recommendations

To assist agency managers in both implementing and improving their use of Challenge.gov, it is helpful for agencies to view Challenge.gov as consisting of the following five phases:

- **Phase One:** Pre-Competition
- **Phase Two:** Designing the Competition
- **Phase Three:** Launching the Competition
- **Phase Four:** Operating the Competition
- **Phase Five:** Post-Competition

The findings and recommendations of this study will be organized by the five-phase framework presented above.

## The Challenge.gov Platform Was Easy to Use

The public managers we interviewed found the Challenge.gov platform to be easy to use. Many report that working on the online platform was the easiest aspect of their whole experience with the challenge competition.

When an agency wants to initiate a competition, it just has to set up an account on the website and post the details related to the specific competition it is undertaking. Such information includes the judging criteria, deadlines, and the submission guidelines. The platform provides the framework to fill in this information. By using the existing Challenge.gov platform, the sponsoring agency does not have to worry about the design of the website, setting up of access credentials for participants, and the security of the data submitted by the participants through the website.

Since the platform already has hosted many successful competitions, new agencies that want to initiate a competition can use existing information from previous successful competitions to design their own competition. In addition, support for Challenge.gov is provided by the Office of Citizen Services and Innovative Technologies at GSA. GSA is viewed by agency managers as providing excellent support during their use of the Challenge.gov platform. GSA also provides a [HowTo.gov](#) website which provides information, training material, and video tutorials for agencies that want to initiate competitions.

The Challenge.gov website also provides information on how to use the site to promote competitions and solicit citizen participation. In addition, the website also provides post-competition information, such as analytics, to understand competition participation and assist agencies in evaluating the effectiveness of the outreach efforts.

## Phase One: Pre-Competition

### Findings about the Pre-Competition Phase

**Agencies do not fully understand the America COMPETES Act.** A major finding is that federal managers lack understanding on how to use the America COMPETES Act, which provides the authority to undertake competitions. Learning how to translate the authority vested in the America COMPETES Act was a challenge faced by every public manager we interviewed.

Many of those interviewed struggled with trying to ensure their competition was indeed within the purview of the Act. In some cases, public managers leveraged their own professional and social networks to find peers in other agencies that had previously run competitions. Managers would then seek out the variety of legal language used in previous competitions that were already underway, tweak it to meet their needs, and confirm it with their general counsel. One manager points out that he contacted his colleague at the EPA to get EPA's template and language and then repurposed it for his competition. For many government managers, interpreting the America COMPETES Act proved more difficult than anticipated. Managers continue to have many questions about the proper implementation of the law.

One example of the complexity of the America COMPETES Act is the requirement that judges from both agencies and industry be included. As a result, vetting of potential conflicts of interest becomes necessary. This adds a significant amount of time to the vetting and selection of judges. Efforts are now underway to determine how early in the process to include the selection of a judging panel. Compensation for non-federal employees must also be determined.

Based on our interviews with public managers involved in competitions, we found that they do not have a central source to go to for resolution on their issues in effectively navigating the

America COMPETES Act. As a result, public managers have to spend a significant amount of time and effort in getting competitions through legal clearances within their agency. In addition, common mistakes are frequently repeated. Currently, there does not appear to be a forum in which information and success stories can be shared within government to make the process of designing future competitions more effective and efficient.

**Agencies are unclear on how to balance the use of Challenge.gov with traditional procurements.** Based on our interviews, managers have a difficult time articulating how the use of a challenge competition fits with other traditional instruments of engaging with external parties, such as grants, contracts, and hiring external consultants on a project basis. This lack of clarity and understanding often proves frustrating to many of the managers we interviewed, who do not know when a challenge should be used instead of traditional options. One manager tells us, “Challenges are a novelty and there is limited guidance on when we can use them and for what purpose. Does a challenge replace traditional grants and contracts? I do not think so, but they might in certain cases ...”

There is a clear need for more guidance from OMB and the departments as to when challenges are the most effective option. Without such guidance, there is the concern that contests may be viewed as a passing fad. In addition, there are those in the procurement community who do not want to see the increased use of challenges because they may threaten the use of traditional contracting vehicles.

**Agencies are not getting assistance on how to manage a competition.** The managers we interviewed did not have adequate mechanisms to learn from their peers who had run competitions in other agencies. Many managers had to use their own social networks to find contacts in other agencies and get to know others who had run competitions and seek their advice and counsel.

Since the GSA is tasked with running Challenge.gov, it is most helpful on the specifics of setting up a competition on Challenge.gov. However, most of the assistance actually needed by managers is related to areas regarding the design of the competition itself, an area in which GSA could not provide assistance. Managers want a list of experts and employees in peer agencies whom they can contact to get help with running challenges. One manager remarks, “I struggled to find someone that could sit me down and share their experiences on a past challenge ... People are busy, and in D.C., I would say that everyone is 100 times more busy than one expects ... but having a contact list of people who could share their experience or an online platform where we can share lessons learned would have helped us avoid some mistakes.”

**Agencies need to assess whether they should collaborate with non-governmental players.** During the pre-competition phase, government managers must carefully think about partnerships for a given competition. Designing fruitful collaborative alliances might increase the reach and impact of the competition. Agencies may be well served to engage with foundations, nonprofits, and private organizations that share similar goals and aspirations. The critical issue is to understand the motivations of each stakeholder, and find ways for everyone to participate and contribute resources while retaining the integrity of the competition.

Public agencies should think about whom to partner with, not only in terms of drawing an audience for the competition, but in terms of which organizations could be interested in the potential solutions within the government and even beyond. Hence, partnering is a good strategy to help a public agency build a market for possible solutions and increase the chance that submitted solutions will find a viable home for their future development.



**Participants in competitions view collaboration with non-governmental organizations as a plus.** Collaboration with foundations, nonprofits, and even private enterprise is viewed positively by the competition participants we interviewed. One interviewee notes, “Collaboration with foundations is seen as attractive [by developers]. Instead of searching for marketing methods to reach such potential customers of the app, the collaboration [puts] the app directly in the hands of the customer.”

Collaboration with non-governmental organizations is viewed positively by contest participants because it is seen as a sign that their contribution will get wider recognition and visibility. In addition, some participants report that they would feel more comfortable contributing to a competition that has a non-governmental agency as a co-partner. One interviewee tells us, “I have nothing against government agencies ... but they are slow to act ... at least with a foundation or a business, I can expect immediate feedback if I have a worthwhile solution.”

## Recommendations for the Pre-Competition Phase

### ***Recommendation One: Agencies need a strong champion to launch a competition***

All the public managers we interviewed had to navigate various bureaucratic hurdles in their effort to design competitions. Many were often the first in their departments to consider doing a competition. As such, many report that they had to deal with the typical inertia of trying to do something new and different. As noted above, the use of competitions often goes against traditional mechanisms and operating procedures for which guidance and expectations already exist. For example, rules and regulations exist on how to issue traditional requests for proposals, draft contractual agreements, and hire subject-matter experts on projects. These tools have been in existence for decades and public managers know how to work with these vehicles.

Competitions are a new concept, hence there is no developed history of their use. While managers have legal authority through the America COMPETES Act, many of them still have to spend time justifying the need for a competition to their legal counsel. The presence of a strong competition champion within the organization is important to move the concept ahead within the bureaucracy. The champion has to have enough political capital and be amenable to investing the time needed to make the competition a reality.

In one agency, the public manager we interviewed enlisted the support of his chief information officer (CIO) to get the competition designed and implemented. He worked within the information technology unit of the agency, designed the competition, and then convinced his CIO to move it ahead. He notes, “If it was not for [the CIO], I do not think the challenge would have moved further ... Risk-taking is talked about, but not encouraged ... if an agency is going to take any risks the higher-ups have to sign off.”

### ***Recommendation Two: Agencies need to assess the level of effort needed to operate a competition***

Implementing a competition is no trivial task. However, many of the public managers we interviewed were lone wolves when trying to manage a competition. With competitions and prizes being relatively new for most government agencies, it is understandable that resources are limited.

Going forward, however, personnel time dedicated to the effort is important for the overall success of competitions. Personnel time involves aspects such as hours required for constructing the competition, loading it on the platform, responding to citizen inquiries, reviewing submissions, managing judging panels, and conducting public outreach. Resources are especially

important if agencies are to engage effectively with citizens and provide them adequate feedback on their submissions.

***Recommendation Three: The General Services Administration should create a government-wide forum to share lessons learned***

It would be very beneficial to have a government-wide platform or forum where agencies could share lessons learned, best practices, ask questions, and even collaborate on developing best practices and guidelines for future competitions. In addition, for agencies that have organized competitions and experienced success or failure, it could be beneficial for government managers to share their experiences. Other agencies can learn from their experiences to follow or avoid similar practices during competition organization. The General Services Administration should be tasked with building and managing this forum.

While GSA hosts training material, lessons learned, and success stories for competitions on the HowTo.gov platform, peer-to-peer interaction is a missing component. By having a platform that allows for and facilitates peer-to-peer interaction, agencies would have a tool that would foster ideas and improve the quality and success of competitions.

## Phase Two: Designing the Competition

### Findings about Designing the Competition

**Government managers need to be clear about their own expectations.** Based on our interviews with winners in Challenge.gov competitions, competitions do not stimulate participants to create new innovations or seek to gain recognition for a new solution. Rather, competitors often developed the solutions they submitted for the competition for a myriad of other reasons and submitted them as a way to gain external recognition for their existing work.

For example, one participant created her solution based on her observations while working as a radiologist. It was not specifically developed for the Show Off Your Apps Challenge (sponsored by the National Library of Medicine of the National Institutes of Health). Since her solution was aimed at helping people understand CT scans, she saw the development of the solution as an opportunity to create a medium for people to have easy access to CT scan information. Her interest in the app development process came out of her recently completed formal training in software development.

Another competition participant explains, “The app was not developed for the contest. The application was already under development. A registered dietician on the team heard of the contest and recommended we participate since we met all the criteria.”

Most government managers we interviewed had constructed competitions with the hope that citizens would develop new solutions for the competitions. Competition participants, on the other hand, did not do so. Rather, when a participant submitted a solution that he or she thought fit the call by the competition, he or she submitted a solution built on prior work. Hence, public managers need to rethink their intentions and goals with participating on Challenge.gov. This is especially true for competitions with a small prize purse where the money offered is not large enough to be an incentive for someone to take on a completely new project to create a solution.

**Government managers need to better understand the recognition needs of those participating in competitions.** Based on our interviews with competition participants, monetary incentives are only one factor that attracts contest participants. Interviewees report that they view

the monetary incentives not as rewards, but as an opportunity to recover their costs of development. One interviewee responds, “It is nice to have development costs covered by prize winnings.”

While cash prizes are viewed positively for the most part, many of those interviewed do not view most financial rewards as being large enough to justify their investment of serious time and effort. One participant tells us, “These challenges aren’t something an entrepreneur is able to take too seriously because the prizes and amount of effort going into most of these aren’t significant. Right now, (competition) seems more directed towards hobbyists and enthusiasts. It’s hard for someone who is looking to turn this into a serious business to take these challenges seriously.”

Many of the competition participants interviewed see the competition as a way to earn extra money or as a way to showcase their skills, knowledge, and competencies. For example, one interviewee sees the competition as a way to develop something that can facilitate better accessibility to information. When he learned about the Apps for Communities competition (sponsored by the Federal Communications Commission and the Knight Foundation) through Challenge.gov, he viewed it as a perfect opportunity to demonstrate some of his skills. He had conceptualized the solution long before the competition, but the competition served as an impetus for him to focus on its development and complete it on time for submission.

A common frustration highlighted by interviewees is an apparent discrepancy between agency perceptions and everyday realities. As one participant tells us, “Contests are relatively high-risk ... We placed, but despite placing the reward wasn’t substantial relative to the amount of work done.” Seldom did monetary rewards cover time and effort spent by participants in creating the solutions.

Moreover, in several competitions, citizens who win awards are invited to events in the Washington, D.C. area to be honored. However, many of them lack the discretionary financial resources to make this trip. One award-winning citizen notes, “[The sponsoring agencies] need to be in touch with the realities of developers. Seldom do developers have extensive resources to support travel to D.C. for events.”

**Government managers find that specifying problem statements for competitions is difficult.**

An issue encountered by most public managers, particularly those running a competition for the first time, is how to correctly frame the competitions. In most cases, after setting up a competition, many managers realize that their competition might not fully achieve its objectives due to a lack of clear specificity in defining critical competition aspects, such as the problem statement, submission requirements, and evaluation guidelines.

As a result, managers often found it difficult to meet the expectations they had set for themselves when creating the competition. One manager notes, “We have yet to choose a winner ... We got a variety of responses that meet the stated goals, but not some ‘unstated goals’ internally. [The] original goal was, ‘Use our data ... and do something to help businesses.’ But this was too broad ...”

**Competitions that use existing government data require more upfront planning.** When it comes to competitions focused on leveraging existing government data, the need to make data usable and penetrable is critical. Many government managers realize that they may have been too optimistic with their expectations as existing government data are difficult to use and at times nearly impossible to interact with. One of the public managers we interviewed notes, “Even big name, all-star judges cannot beat impenetrable data that is difficult to find

in a format nobody understands with horrible or non-existent documentation ... In some instances, we charged for our data ... There was not a single developer who was going to pay for the data and then produce a free app.”

Moreover, several managers say that competitions using existing government data rarely attracted participants. One manager says, “We underestimated the difficult nature of messy data ... we did get solutions ... most of them came from traditional players who were already investing in data analysis for profit-seeking reasons.”

In the future, government managers will proceed more cautiously with competitions that involve government data. One manager tells us, “I’m going to argue we need to push for open and easily available data and APIs, so that you’ve got standard data presentation as well as documentation to go with it. Then, and only then, will I say run a challenge.”

Additionally, competitions that revolve around leveraging open government data face specific design issues such as the accessibility of the data in question. One solution to this issue may be to have competitions that are designed around cleaning and making data open before having competitions on leveraging data. Data-centric competitions need to have considerably more support in place to help participants navigate the resource (i.e., the data), and even interact with members from the agency as the competition is underway to help seek information and resolution on issues.

**Government managers do not have clear guidelines for determining what the amount of the prize purse should be.** Most of the public agencies we examined do not have a clearly defined process for arriving at their competition’s prize purse. When asked how their agency had arrived at the amount for their prize purse, one manager told us, “My CIO looked at his budget and said, ‘I can do \$10,000.’”

Agencies viewed monetary incentives as a means to incentivize individuals to work on submissions for their competition. As one manager reports, “We envisioned someone working very hard for three weekends in a row, and so if they got a grand or two grand for three weekends’ worth of work, that’s not a bad return on investment for them.”

**Government managers have found external judges to be useful.** Many agencies decided that one way to draw attention to a competition was through the composition of the judging panel. In competitions where external judges were used, managers report that they were able to attract a larger audience to their challenge. Managers report that an external set of judges with high visibility, networks, and stature was important in attracting more attention from both participants and citizens.

For example, the Department of Commerce’s Business Apps competition included a judging panel comprised of notable people such as Steven Van Roekel (the chief information officer of the federal government), Vint Cerf (vice president and chief Internet evangelist of Google), Vivek Kundra (a former chief information officer of the federal government), Tim O’Reilly (founder and CEO of O’Reilly Media, Inc.), and Sheryl Sandberg (chief operating officer of Facebook).

Similarly, the Healthymagination competition conducted by the Department of Health and Human Services (HHS) had senior executives from General Electric as judges, along with leaders in the medical field and notable individuals such as Tim O’Reilly, Sue Siegel (general partner at Mohr Davidow Ventures), and Risa Stack (partner at Kleiner Perkins Caufield and Byers). The panel of judges helped spread the word about the competition through the various physical and virtual platforms on which they participated (e.g. Twitter, Facebook). One manager

says, “When I was out promoting I dropped [their] names, that got people’s attention. They literally stop what they’re doing and listen.”

## Recommendations for Designing the Competition

### ***Recommendation Four: Government managers need to set realistic expectations for a competition***

Based on our research, there are two options that government managers can pursue in setting realistic expectations. First, public managers should rethink using the platform to seek new solutions and instead use it to keep the public informed about the issues they are working on and then seek solutions on a rolling basis. These solutions can then be vetted, evaluated, and, if deemed significant, moved along for further consideration.

Second, public agencies should explicitly call for new solutions in their proposals when a new solution is sought. This call for new solutions should be accompanied by clear guidelines on how the solutions will be evaluated along with the provision of adequate resources, both money and staff time, to incentivize potential participants to consider taking on a new project. We posit that participants will rise to the challenge of developing innovative solutions if they are provided with the necessary resources and have the right incentives to work toward a solution. Also, rather than looking to spur innovation, agencies should be looking for solutions to problems and using competitions as an opportunity to engage citizens in the search for new ideas and new approaches.

### ***Recommendation Five: Government managers need to spend more time designing the problem statement***

Being specific in designing a problem ensures that an agency will actually receive submissions it can use to advance a cause or make a difference in the life of the public. Simply collecting submissions is not advisable, as it sets the wrong expectations with potential contributors. Individuals are less likely to participate and invest time in future competitions when they learn the agency failed to plan for the implementation of their work.

Government contest designers need to specify boundary conditions, i.e., what falls within the problem definition and what is out of scope of the problem. When possible, government competition designers should use illustrative examples of potential solutions that meet their agency requirements. Designers should clearly outline how a solution will advance causes in the public sector and/or benefit the nation. It is highly advisable to get the problem definition reviewed by experts, and even tested (i.e., get feedback on what solutions one might design upon reading the problem statement) before it goes live.

### ***Recommendation Six: Government managers should assess when a multi-stage competition is appropriate for a given competition***

Rather than running one-shot competitions in which submissions are received, winners are selected, and the competition is closed, agencies should consider expanding the competition process. For example, creating a multi-stage competition whose submitters need to pass requirements to advance to the next stage will offer the possibility of a richer competition. This provides an initial low barrier for entries to ensure the capture of a variety of submissions, but then only the submissions that satisfy the requirements and needs of the agencies are advanced to the next stage of development or further.

With this type of process, citizens can receive more focused feedback and are not investing too much time on solutions with a low probability to make an impact, agencies are able to focus their resources more effectively as only the submissions that meet their requirements

and needs are advanced in the competition, and the issue of communication between citizens and public agencies during the solution development process is addressed.

***Recommendation Seven: Government managers need to spend more time designing the evaluation criteria***

Just as it is important to be specific in the problem definition, it is also important to be specific in the evaluation rubric. By conducting due diligence to understand what the agency would like in terms of solutions, such as outlining features and characteristics of desirable solutions, the agency can increase the quality of submissions.

As noted earlier, working with experts can help with this process. A clear evaluation rubric is also important in managing the expectations of citizens. If working with external judges, government managers should involve them early on in the process to get their participation in the construction of the evaluation rubric. The evaluation rubric should be clearly communicated on the competition posting.

***Recommendation Eight: Government managers need to determine appropriate incentives for each competition***

It is apparent from both sets of interviews (with competition participants and government managers) that a better alignment of incentives for citizens and public agencies is necessary. While in most cases federal agencies have focused on providing nominal monetary incentives as a means to motivate citizens to contribute solutions, it is clear that more is needed and, at times, the monetary incentives are ineffective as strong motivators. Most citizens who participate in competitions do not do so simply to win the prize money.

As we have noted, entering a competition simply for prize money is a very risky proposition on the part of competition participants. Citizens enter these competitions with the hope that if they win, their solution will be used by the federal agency and the agency will leverage its network to connect them with other agencies and institutions beyond the public sector that might use their solutions. Agencies need to recognize that monetary incentives are not sufficient or applicable to all situations, and that there is sometimes more value through different means, such as feedback from judges or a photograph with the First Lady.

***Recommendation Nine: Government managers need to be strategic in the use of external judges.***

If external judges are used, agencies need to consider how and why they are being used (e.g., network, marketing). External judges are best used when the competition's goal is to engage a large number of citizens, and when the submissions are not of a technical nature. Social challenges are ideal for external judges, as they bring attention to the event and can attract submissions from citizens who want to impress (or even just meet) them.

For example, Communities on the Move, a video contest, was able to get tens of thousands of supporters just by virtue of having backing from First Lady Michelle Obama. Supporters are not individuals who participate in the competition themselves, but who are interested in following the progress of the competition and sign up to say, "This is a cool idea. You have my e-mail address, keep me updated."

Internal judges are chosen more for their domain expertise on the competition rather than their external (network) reach potential. For example, many of the competitions under the science and technology category, such as the \$50,000 USPTO Algorithm Challenge or the \$10,000 PatentLabeling2 Algorithm Challenge (both organized by NASA), involved internal



judging. Rather than having a panel of well-known judges, it was necessary for such competitions to include judges that could not only thoroughly verify and test the submissions, but also evaluate the best from the pool.

***Recommendation Ten: As part of the design phase, government managers need to plan in advance for what happens after the competition.***

It is just as important, if not more, for agencies to have plans in place to continue engaging with both winners and losers once a competition has completed. Competition participants note how little they interacted with agencies during the competition, and especially post-competition, beyond being told they had won. This has led to the perception that agencies do not match the commitment or enthusiasm put forth by the citizens. Winners especially expect a deeper level of engagement than simply receiving the award. Public managers need to think beyond the end of competitions and ask themselves, “What are we going to do with the winning solutions after they are recognized?”

## Phase Three: Launching the Competition

### Findings About Launching the Competition

**Government managers need to better understand their expected target audience.** Agency managers found that they often had to adjust their expectations. Managers hoping to stimulate innovation got serious participants who were eager to build upon or repurpose their prior work on a solution to an existing problem.

Moreover, managers at several federal agencies now realize that they were not actually attracting the kind of participants they were hoping for. Public managers wanted to attract solutions from the everyday (lay) citizen who might not otherwise think of engaging with the government. However, as one manager states, “... most of our apps were done by professional companies or groups of people ... It turns out the ones that are going to win are professional shops.”

**Government managers need to improve the marketing of competitions.** Most citizens did not hear about the competition they participated in directly from Challenge.gov or any federal agency. Federal agencies appear not to be tapping into the circles where possible solution providers operate. This was evident from our interviews with competition participants who routinely point out Challenge.gov’s limited reach and brand recognition.

In contrast, citizens and potential participants have their own deep networks, most of which surpass the number of followers on Challenge.gov. One interviewee tells us, “[It is important to] increase the visibility of the programs through developer networks. Many app developers do not know of them. Direct connection and communications of government agencies [with app developers] is missing.”

**Government managers underestimated the need for better marketing efforts.** Finding ways to draw attention to a competition is becoming increasingly important as the competitions increase across government. As noted by one public manager, “Say eight months ago, had you run a challenge, that’s all you needed to do. Now challenges are not a novel concept anymore. We were one of four agencies who put up a challenge that week.” Agencies now need to find innovative ways to get their message across, and are actually competing for attention against other competitions. Some of the ways to gain attention include having notable individuals on judging panels, innovative prizes, larger prize purses, and media mentions and coverage.

Agencies have struggled, and some still continue to struggle, with finding the right networks of problem-solvers to publicize their competitions with. “I don’t feel like [the agency] advertised enough. Probably hard for [the agency] to advertise because how many real hackers really follow [the agency]? They could’ve pushed a little harder in terms of marketing by going to their target people like posting on *Hacker News*,” says one participant we interviewed. However, public managers have all attested to the fact that they need to do more to extend their social and professional networks, especially to those platforms like *Hacker News* where intended participants can be found. Attending conferences and building connections with journals and other prominent media outlets are strategies agencies can employ. As one public manager tells us, “After your initial splash, then you need to really work at it. So we sent out a press release and then I got interviewed ... That became a nice base on which I did a lot of communication ... Did some stuff on Twitter like tagging people on our panel and they would retweet it.”

## Recommendations for Launching the Competition

### ***Recommendation Eleven: Government managers should recruit participants via targeted marketing campaigns***

In launching a competition, it is critical for public agencies to have an effective marketing plan in place that taps into the professional networks of their target audience. While planning to give participants sufficient time to develop and submit a solution is necessary, it is also critical to ensure that participants have a good chance of discovering the competition in time to be involved in it.

Agencies need to work with existing online platforms to target specific audiences, such as *Hacker News*, to market to developers, continuously engage and communicate with external judges to spread the news within their networks, and participate in interviews for prominent blogs in order to spread the news about their competitions. Getting bloggers to cover the challenge is also a good way to attract attention. If a challenge is specific to a given industry (e.g., transportation), then work with the relevant scientific and industry associations to promote the competition.

In addition, federal agencies should tap into existing professional and social networks on which their potential solution providers spend time. For example, software developers spend a great deal of time exchanging ideas with peers on online networks that are viable avenues to advertise competitions on. An interviewee remarks, “Federal agencies should find ways to leverage the connections among developers. When one developer finds an opportunity, they share it with others they know in their personal networks.”

## Phase Four: Operating the Competition

### Findings About Operating the Competition

**Participants would like to collaborate with other participants *during* the competition.** Based on our interviews, competition participants developed their solutions independently and seldom were able to get help from any other citizens or entities in the process. One contributing factor to this is the difficulty involved in finding other like-minded citizens who might be interested in tackling a competition.

In addition, given the timeframes of the competitions, it is difficult for participants to find peers to collaborate with unless information is made available on Challenge.gov (e.g., who else is participating, who is looking for help, and profiles of problem-solvers, among others). Interviewees are favorable to the idea of collaborating with others; it should be easier to find like-minded people who are also interested in participating.



**Participants found communication and engagement with government during a competition to be unsatisfactory.** Once a competition is posted, federal agencies have limited interaction with the potential respondents to the competition. Contributors have to rely on information presented on the Challenge.gov platform to understand the details of a competition. This is not always easy. Interviewees point out that they would prefer to interact directly with officials from the federal agencies so that they can ask questions, share working prototypes, and even get feedback on ideas as they are developing their solutions. “[Public agencies] need to keep direct and constant communication with the app developers so that they remain engaged in the app development process,” one interviewee notes.

Engagement with public officials during a competition could generate better solutions, giving participants a greater understanding of the problem and an opportunity to seek feedback as they work on the solution. One potential explanation for why public managers do not engage with citizens during a competition is their limited experience with running competitions. In traditional government contracting, working with potential bidders or solution providers is not permitted during the request-for-proposal stage, as it might compromise the integrity of the selection and award process. Thus, the reluctance of government managers to engage with competition participants during a competition is likely based on their prior experience with the government contracting system.

**Government managers need more experience in effectively using external judges in evaluating submissions.** When external judges were present there were mixed results with the evaluation process. On the positive side, the ability to bring in external perspectives made the evaluation process richer. On the negative side, agencies using external judges often changed the evaluation criteria during the screening as there was little upfront work done to communicate the details of the competition to the judges.

In general, the focus of public managers is just bringing the judges onboard, and giving them the elevator pitch on the competition and how it fits their agenda. Only after the submissions were received did they get down to specifics on how to evaluate the submissions. It is normal that a diverse set of experts who may never have worked with any of the others before and who may have deep-rooted views on how to solve problems will experience conflicts in determining the evaluation criteria.

## Recommendations on Operating Competitions

### ***Recommendation Twelve: Government managers should engage with the applicants during the competition***

It is strongly recommended that agencies engage with applicants during the competition. Types of engagement with applicants would include:

- Answering queries
- Hosting online forums for Q&A
- Posting regular updates during the submission window

Agencies could also help applicants by creating centralized information repositories or databases that they can use to get information, post questions and receive responses, and check on the status of requests and other related events. Agencies can host online question-and-answer sessions with potential participants to hear from them and respond to concerns, and also host open online forums with the purpose of attracting their target audience to engage in dialogue. This could help them know if the information about the competition on their website is clear and understandable.

***Recommendation Thirteen: Agencies should designate a point of contact as the public face of a competition***

A person within the agency should be designated as the point of contact for the competition in order to be the public face of the agency and competition. This person should be responsible for activities such as responding to queries from participants, continuously engaging with the public by providing updates on progress, and communicating with press to market the competition. A dedicated point of contact will help participants feel more commitment and engagement from agencies.

***Recommendation Fourteen: GSA should enhance existing platforms to allow participants to connect with each other***

The Challenge.gov platform should be further enhanced with forums and community spaces that promote citizen interactions. These enhancements should be undertaken by GSA. While many competitions do have a discussion forum section, the use of such forums is not consistent. Increased interactions among participants would help them share ideas and competitions, exchange solutions, and work collaboratively on solution development. Having viable platforms for participants to exchange information reduces the burden on public agencies by having participants respond to fellow participant requests as the solution and ideation process is underway. Contest participants can gain knowledge and feedback from their peers and do not need to rely solely on information from public agencies or struggle privately to resolve an issue by themselves.

Another reason for the increased use of forums is to promote cooperation among developers. In addition to virtual spaces, physical meetings and forums might also be of interest, especially when solutions focus on a specific community or geographic focus. The meetings or forum interactions could provide an opportunity for contest participants to understand the problem space better, ideate potential solutions and apps, and discuss technical issues.

Federal agencies can also enhance the Challenge.gov platform by providing basic educational resources to new developers, enthusiasts and hobbyists. In addition, the Challenge.gov platform needs to support the development of a network of participants so that participants can find other like-minded participants to collaborate with. To achieve this, the platform should collect more information on who visits and what their interests are, build out detailed profiles of participants, and then try and connect participants based on these data points. Integrating with social networking sites will also allow participants to engage with their own personal networks to find collaborators as well as to raise awareness and to garner interest in the competitions.

## Phase Five: Post-Competition

### Findings About Post-Competition Activities

**Participants find communication and engagement *after* a competition to be unsatisfactory.**

One surprising finding from our interviews is how strongly participants —whether they won a competition or not —feel about the importance of continuing the conversation after a competition was completed. Agency managers agree that they had not considered this to be a factor in their planning efforts.

Nearly all participants interviewed are disappointed by the limited or nonexistent follow-up from federal agencies once the competition was completed. Even more disturbing, these are the award-winners. If these individuals were not engaged after the competition, one can only posit that other solution contributors (i.e., those that did not win) received no communication after the competition.

This leads us to conclude that most competitions are not being used to their full potential. Interviewees expected the federal agencies to help them market the developed solutions and make the availability of these solutions known to a broader audience who could gain from them.

Contributors to competitions invested a great deal of personal time and resources in order to create, refine, and submit a viable solution. They perceive that the federal agencies do not match their enthusiasm. Some participants who won a contest believe their contributions were insufficiently valued, in part, because of the perception that agencies did not follow through on the results of the contest.

A little over one-third of the interviewees are discouraged and question the validity of competitions, with at least one vowing never to participate in another competition until agency commitment to winning entries is addressed. One interviewee tells us, “It is hard for me to understand the level of commitment [public agency] has to the competition ... No one reached out after the competition to ask me about the submission or their interest in using it.”

**Participants seek greater transparency in the evaluation review process.** Nearly all the participants interviewed expressed frustration with their experience working with public agencies. Some participants vowed never to participate in another competition until issues regarding transparency in the evaluation process are addressed. Many express dissatisfaction with the judging process because it was unclear how other submissions were ranked and which submissions had fulfilled all the competition requirements. Participants do not fully understand why some applications fulfilled the competitions’ judging criteria better than other applications did.

**Government managers found their evaluation criteria to be unclear and not helpful.** Most of the public managers interviewed had difficulties when it came to evaluating submissions for their competitions. There are two reasons for this. First, the evaluation metrics were not clearly outlined in the competition announcement. For example, one agency sought to foster the development of applications that could leverage data recently made available to the public. The agency outlined four judging criteria and requirements for the solutions—use of the agency open data (20 percent), usability and interface design (20 percent), relevance to stated objectives (40 percent), and creativity (20 percent). However, the agency did not specify that the applications had to be *new* (i.e., they wanted to use the competition to spur the creation of new applications).

Similarly, consider the Equal Pay Apps (sponsored by the Department of Labor), meant to develop applications to educate the public about the gender pay gap and promote equal pay for women. Three evaluation criteria—design and ease of use (20 percent), creativity (30 percent), and the capability of the submission to meet at least one of the goals of the competition (50 percent) were outlined. Yet, the competition did not specify whether the submissions should be *new* solutions.

The unexpected nature of submissions often requires government managers to add or modify the evaluation criteria. For example, in one competition that originally sought out any type of solution for a data problem, the judges eventually decided to only go with submissions that were original—created specifically for the competition. Most of their submissions came from individuals and organizations that already had products in development or in use. This was appropriate in keeping with the spirit of the competition, but was not communicated upfront to citizens and as such hindered the value of the competition.

One manager remarks, “Over half of the submissions we got were from existing solution providers ... we knew of about half of them, but it was nice to learn about others ...In all

honesty, we did not want to encourage traditional thinking and hence decided to focus on solutions from [those] that worked on tools for the challenge ...Yes, we could have been more specific on the evaluation criteria but we did not think existing businesses would submit to our competition.” The manager goes on to note, “I am sure that the solutions provided by businesses already in the space were superior ... and so to change the criteria halfway was not fair to them either.”

**Agencies often had no plan on how to work with prizewinners.** When asked whether a plan was in place for how to engage with winners post-competition, one public manager interviewed responds, “I’m not actually sure.” None of the public managers interviewed had considered actions to take once the competition had ended. Questions such as the following were *not* asked:

- What are they going to do with the winning solutions?
- How are they going to infuse them within their agency or program?
- How are they going to maintain connections with the citizens that were involved in the competition?

In many competitions, these critical questions remained unanswered. As a result, many competition participants perceive competitions as having little value. Due to their lack of experience in running competitions, public managers had not thought of them holistically, or about the value they could generate beyond the effort for the agency. Many managers admit that they were naïve in this respect.

## Recommendations for Post-Competition Activities

### ***Recommendation Fifteen: Agencies should provide feedback on all submissions***

It is critical to engage all participants in competitions after the competition is completed. In fact, all participants interviewed for this report emphasize how much they value feedback. It is clear that providing feedback on each submission, both to those who won and to those who lost, is valuable in itself. It is critical to acknowledge the time, effort, and enthusiasm put forth by participants to develop ideas and produce solutions, and to match it by taking the time to provide feedback that gives insight as to why a certain contribution was or was not chosen as the winner. Engaging with the participants who do not win is likely to give them a positive experience despite their loss, and encourage them to try again.

Providing feedback will contribute to building a network of future problem-solvers. Without a plan on how to engage with winners and losers after the competition, a competition should not go ahead.

Without procedures in place for feedback and evaluation, it is difficult for participants to fully trust the final decision. Feedback and transparency in the evaluation process are thus critical for developing the foundation of trust necessary to improve the experience of participants and encourage participation in future competitions. The current lack of both transparency and feedback (i.e., engagement) is one of the most critical aspects that prevent competitions from being used to their full potential.

**Engaging those who won.** Interviewees who participated in competitions were also looking to engage the individuals who comprised the judging panel. One interviewee notes, “People like Steve Wozniak and Mark Pincus were among the judges for the challenge, but we didn’t interact with them at all. It would have been extremely beneficial to receive feedback from them or, even better, have a chance to talk with them and others, such as venture capitalists.”

Winners are also eager for post-competition engagement with federal agencies to receive suggestions on how to further advance their solutions. As one participant interviewee tells us, “Having a monetary prize is good, but I haven’t really used any of it. Instead, I really wish there was a way to be able to create a closer relationship with the organizations and people you want to get the attention of.”

Even after a prize has been awarded, many winners would like to continue working on the submission to take it to another level, such as building a sustainable company around the submission. It would benefit federal agencies to continue working with the winner if they express the desire to do so, and to help connect them with interested parties. By doing so, agencies have the opportunity to further their own agenda, but they also have the opportunity to connect with the network of the winner.

Agencies should perform a post-competition analysis of the applicants and expend resources to communicate and advertise the submissions to potential interested parties. This will not only increase the reach of the agency and promote its innovation agenda, but draw attention to the submissions, thereby increasing the value provided to the developers.

**Engaging those who lost.** It is critical for agencies to consider how they are going to interact with those who have lost in the competition. Public managers lack a clear sense of how to address the citizens who invested time and effort yet walked away with nothing. At the very least, these individuals need to receive valuable feedback, as this serves as something of value for their effort to contribute ideas and solutions. This is a critical issue to consider because a positive experience needs to be spread in order to encourage future and increased participation from citizens.

By continuing to engage with non-winners, agencies can build a network of participants whom they can alert about future events such as upcoming competitions. Ultimately, competitions are calling for a new model for civic engagement, where the element of cooperation between citizens and public agencies should be highlighted more than just the element of competition among citizens for attention from a public agency. Elements to promote cooperation among citizens are currently absent from the Challenge.gov platform.

Additionally, federal agencies could also identify apps from the submitted pool that could be further developed. Given the time and monetary limitations faced by the app developers, many of the submitted apps could have several shortcomings. However, the apps could still be valuable and developed further by connecting app developers with interested investors, academic partners, and even other developers.

***Recommendation Sixteen: Agencies should actively be engaged in communities that are likely to participate in future competitions***

Federal agencies initiating the competitions should follow up after the competition to publicize the winning applicants. Agencies could create marketing platforms for submitters to publicize their solutions, whether they won the competition or not. Federal agencies can also help applicants by assisting them in creating relationships with organizations and pertinent stakeholders that might be interested in their solution.

While the winning of monetary rewards, and even being recognized as an award-winner, are important, they are not sufficient. Federal agencies have an opportunity to strengthen their relationship with various communities by helping them find future funding for their projects, marketing and advertising the solutions, and even enabling them to draw on some administrative support from the agencies.

In addition, federal agencies can connect applicants with others in the government community who might have an interest in their solutions and skills. This will require federal agencies to think beyond their individual program or agency needs and take a more holistic view of the innovations being developed by citizens, referring them to peer agencies and programs where they can also be of value.

***Recommendation Seventeen: Agencies should communicate the impact of a completed competition to the public***

By communicating the impact of the competition, the agency not only conveys the important work the winners have accomplished, but also communicates to participants that their effort contributed to something significant. Future participants may be motivated if they can see the results of past efforts. And a record of past efforts gives participants something to use to set and manage their expectations.

***Recommendation Eighteen: Agencies should conduct a lessons-learned review after each competition***

Agencies need to interview participants to derive lessons learned, and work closely with scholars to study the impact of the competitions. Lessons learned from each competition need to be shared between public agencies so that mistakes are not repeated. Based on our interviews, it is clear that mistakes are being repeated now. One explanation for this is the fact that all agencies are getting their feet wet by experimenting on the platform. While valid, this is not acceptable. A way to mitigate repeated mistakes is to build standardized processes and structures around competitions.

Every agency refers to its general counsel to determine if it is within the provisions of the America COMPETES Act. Providing a standardized process will help agencies reduce the amount of time spent on legalities, and allow them to spend more time and resources on the competition itself. Another benefit of standardized processes and structures is that they provide public agencies with the means to identify common pitfalls and issues, such as having a post-competition engagement strategy, early in the competition design phase. They also provide agencies a way to identify different methods or strategies for competitions, such as hosting videoconferencing question-and-answer sessions with the target audience. Being able to exchange knowledge such as lessons learned is critical in order for this to succeed.

# Appendix: A Detailed Analysis of Competitions Held on Challenge.gov

## Competitions by Subject Matter and Typology

We classified the types of competitions listed on the Challenge.gov website by their topical focus and type of competitions (see Table A.1). The competitions fell into the following categories:

- Science and Technology (40 percent)
- Health (18 percent)
- Energy and Environment (12 percent)
- Education (12 percent)
- Economy (9 percent)
- Personal and Public Safety (6 percent)
- Jobs (4 percent)
- International Affairs (1 percent)

Table A.1 also categorizes the different types of competitions listed on Challenge.gov's website. We classified the 179 competitions into six types, based on a model first developed by McKinsey & Co. in 2009:

- **Exemplar competitions** seek to define excellence within a specific area, similar to the Nobel Prize. Competitions like the Small Business Innovation Research Hall of Fame are examples of this because they aim to recognize certain individuals for their accomplishments in a certain field.
- **Exposition competitions** represent the largest amount of competitions for any single category (71, or 40 percent). Exposition competitions aim to highlight a broad list of promising ideas in order to choose a winner among them, akin to the World's Fair where countries and organizations from all over the world present concepts and ideas through exhibits that follow themes. Competitions like the AmeriCorps Video/Photo Contest are examples of this because they request participants to submit videos and photos that follow a specific theme.
- **Network competitions** seek to identify, celebrate, empower, and invest in prize participants and the broader stakeholder system to continue the work they are currently engaged in. Competitions like the General Electric (GE)-sponsored Healthymagination are examples of this because they identify and recognize medical experts who are conducting groundbreaking research and practice, and further empower and invest in them to continue with their work for the continued improvement of the field.
- **Participation competitions** aim to inspire individuals to change their behavior. Competitions like Communities on the Move Video Challenge are examples of this because they aim to share inspiring videos about their efforts to reverse the trend of childhood obesity.



- **Market Stimulation** competitions aim to emulate free-market mechanisms to spur innovation and growth in a latent market in the same way that the Ansari X PRIZE jumpstarted the space flight industry. Competitions like the L Prize are examples of this because they aim to get organizations and teams to invest resources toward achieving a specific innovation such as producing a high-quality, high efficiency, long-lasting light bulb.
- **Point Solution** competitions aim to focus a community of experts on solving a well-defined problem with no clear path to a solution. Many of the competitions hosted on InnoCentive, such as the Oil Spill Recovery Institute's effort to identify ways of dealing with oil spills, are examples of this.

## The Prize Purse Varied by Topic and Type of Competition

Sixty percent of the Challenge.gov competitions reviewed for this study offered a cash prize as an award. The remaining 40 percent provided recognition at receptions or online media and certificate awards. As shown in Table A.1, the prize purses varied according to the features of the competition. For example, the large prize purses were reserved for competitions that generally needed a higher level of capital investment or required specialized knowledge, and were run by agencies such as the Department of Energy, EPA, and the Defense Department.

Competitions with the highest monetary rewards were in the science and technology category as they required heavy investment of capital, advanced equipment, multiple rounds of testing and development, and often advanced laboratories dedicated for the project. Similarly, competitions under the energy and environment category have a high average prize purse, as these prizes are designed for projects such as new clean energy technologies, innovative pollution reduction techniques, and advanced ways of harnessing non-conventional energy resources.

Competitions that sought to engage a wider audience of participants had lower prize purses, but also required lower capital and/or specialized knowledge investment from the participants.

Market stimulation competitions represent the largest share (46 percent) of the total prize purse. Participation competitions represent the smallest share (1 percent). Exposition and point solution competitions both represent roughly one-quarter of the total prize purse (29 percent and 20 percent, respectively). Although market stimulation competitions offered the largest share of the total prize purse, there were only seven such competitions.

Exposition competitions were the most common type of competitions run, yet they only represented 29 percent of the total prize purse awarded. A possible explanation for the prevalence of exposition competitions could be due to these being simpler to conduct and evaluate relative to others, such as market stimulation competitions. As a result, prize amounts could be smaller to cast a wider net. On the other hand, market stimulation competitions require significantly more effort and investment due to the complex nature of most of these challenges (for example, the L Prize was announced in 2008, but a winner was not announced until 2011).

## Public Participation Depended on Visibility of the Contest

The public participated both as competitors and/or as judges by voting for the submissions they believed had merit. Their extent of participation seems related to the contest's degree of public visibility. In some cases, the "draw" was the public status of those outside government who were invited to judge the contest submissions. In other cases, it was related to the extent to which the public was engaged in the selection of the prizewinners.



**Table A.1: Categorization of Competitions by Topical Focus and Type of Competition**

<b>Topical Focus (and Frequency of Use)</b>	<b>Type of Competition and Frequency of Use</b>	<b>Average Total Purse Prize</b>	<b>Average Grand Prize to Winners</b>	<b>Top Federal Agencies Running Competitions</b>
Economy (17)	Exemplar: 7 Exposition: 5 Network : 1 Participation: 2 Point Solution: 2	\$33,594	\$1,400	<ul style="list-style-type: none"> <li>• Corporation for National and Community Service</li> <li>• Small Business Administration</li> </ul>
Education (21)	Exemplar: 2 Exposition: 9 Network: 4 Participation: 5 Point Solution: 1	\$62,190	\$6,100	<ul style="list-style-type: none"> <li>• Department of Education</li> <li>• Centers for Disease Control and Prevention</li> <li>• General Services Administration</li> </ul>
Energy and Environment (22)	Exemplar: 2 Exposition: 13 Network: 1 Participation: 4 Market Stimulation: 1 Point Solution: 1	\$153,665	\$4,631	<ul style="list-style-type: none"> <li>• Environmental Protection Agency</li> <li>• Department of Energy</li> <li>• National Park Service</li> </ul>
Health (28)	Exemplar: 1 Exposition: 9 Network: 1 Participation: 14 Point Solution: 3	\$29,538	\$11,557	<ul style="list-style-type: none"> <li>• Department of Health and Human Services</li> <li>• National Institutes of Health</li> <li>• Centers for Disease Control and Prevention</li> </ul>
International Affairs (2)	Exposition: 1 Network: 1	\$5,000	\$5,000	<ul style="list-style-type: none"> <li>• Department of State</li> <li>• U.S. Agency for International Development</li> </ul>
Jobs (6)	Exposition: 5 Participation: 1	\$62,190	\$6,100	<ul style="list-style-type: none"> <li>• Department of Labor</li> <li>• Department of Commerce</li> <li>• Department of Veterans Affairs</li> </ul>
Personal and Public Safety (8)	Exposition: 3 Participation: 1 Point Solution: 4	\$14,094	\$13,813	<ul style="list-style-type: none"> <li>• U.S. Air Force</li> <li>• Federal Emergency Management Agency</li> <li>• Consumer Product Safety Commission</li> </ul>
Science and Technology (75)	Exemplar: 4 Exposition: 29 Network : 4 Participation: 4 Market Stimulation: 6 Point Solution: 28	\$656,033	\$354,900	<ul style="list-style-type: none"> <li>• National Aeronautics and Space Administration</li> <li>• Office of the National Coordinator for Health Information Technology</li> <li>• Department of Defense</li> </ul>

**Competitors.** The competition with the largest number of submissions was the Poster Contest on Carbon Monoxide Safety with 444 submissions. Agencies whose competitions received the most submissions included the U.S. Consumer Product Safety Commission, the U.S. Department of Agriculture, and the Corporation for National and Community Service with 444, 266, and 223, respectively.

For competitions offering prizes under \$1 million, there were several instances of public voting used in conjunction with expert judgment. For example, the Surgeon General's Video Contest: Tobacco I'm Not Buying It competition incorporated public voting into the process of selecting winners. The contest solicited participation from youth (aged three to 17) and young adults (aged 18 to 25) to create original anti-cigarette smoking videos. The contest had a total prize purse of \$10,000. After the close of the submission period for the participant entries, the panel of judges selected a set of videos from the submission pool. These videos were then made available for online public voting. Ultimately, the selection of winners (four) and runner-ups (12) was based on public voting. As such, the contest used a combination of expert judgment and public voting for the selection of prize recipients. The average prize purse was significantly lower (\$14,808) for competitions that included public voting versus those that used only expert judgment (\$260,334).

**Public followers or voters for submissions.** Nearly all of the competitions hosted directly on Challenge.gov (69) attracted public followers (citizens who were interested, but were not direct participants). However, only eight attracted more than 1,000 followers. Communities on the Move Video Challenge, sponsored by the Let's Move campaign, attracted a substantial amount of followers compared with all of the other competitions (39,627 followers, representing 49 percent of all Challenge.gov followers). The top five competitions captured 80 percent (the top two account for 64 of the total). The remaining 65 competitions attracted only 20 percent of the total followers.

Significantly, the size of the prize purse did not influence the number of followers for competitions. Only a few of the competitions initiated by agencies offering the largest prize purses were able to attract a large followership. For example, only the Healthy Living Innovation Awards by HHS were able to attract more than 1,000 followers.

None of the competitions with a prize purse of more than \$1 million were able to attract a record number of followers. This could be because these competitions, although technologically advanced and novel, do not appeal to the average citizen. Citizens who followed the progress of various competitions demonstrated more interest in competitions that touched their lives, such as health or energy-related awards that could impact individuals and families. For example, although the Centers for Disease Control and Prevention's (CDC) Flu Apps Challenge did not have a heavy purse prize, it attracted 636 followers, 576 likes on Facebook, and close to 800 tweets on Twitter. The competition was designed to develop technological tools that can help spread information related to the flu and its impact.

## Winners of Competitions

The average number of finalists for competitions was six, with the highest being 60 and the lowest being one. As of May 15, 2012, there were a total of 214 cash prize winners through competitions hosted on Challenge.gov. The total prize money awarded to these winners was \$1,570,755.

The average prize purse awarded for a contest held on Challenge.gov was \$7,339, and the median prize purse awarded was \$10,000. The average grand prize awarded was \$12,390,

and the median grand prize awarded was \$5,000. The largest prize purse was \$500,000 awarded to 14 winners of the September 11th National Day of Service Challenge. The largest grand prize awarded was \$75,000 through the popHealth Tool Development Challenge.

The average number of participants who did not win a grand prize, or any other prize (such as honorary mention) in competitions was 13, with the highest being 434 for the Poster Contest for Carbon Monoxide Safety.

### **Competitions with Public Voting Engaged Significantly Larger Number Of Citizens**

Competitions with public voting had on average 4,102 followers, compared to 499 for those that only used expert judgment. In our discussion with citizens, it became apparent that competitions giving the public a role in selecting the winners are viewed more favorably. However, it is also clear that not all competitions are appropriate for the public voting feature.

Competitions that require specialized technical knowledge, for example, are best left to expert judging. In comparison, it is recommended to include the public in judging challenges that lead to solutions meant for public consumption (e.g., mobile apps).

## References

Anderson, C. (2006). *The Long Tail: Why the Future of Business is Selling Less of More*. New York, NY: Hyperion.

Brunt, L., Lerner, J., and Nicholas, T. (2008). "Inducement Prizes and Innovation." CEPR Discussion Paper No. DP6917. Available at SSRN: <http://ssrn.com/abstract=1307507>

Buchanan, R. (1992). "Wicked Problems in Design Thinking." *Design Issues*, Volume 8, 5–21. 31

Chu, B., and Fotheringham, A. (2012). "After the Riots, Spain Swings the Axe on Spending." *The Independent*. Retrieved February 5, 2012, from <http://www.independent.co.uk/news/world/europe/after-the-riots-spain-swings-the-axe-on-spending-7604060.html>

City of Santa Clarita. (2011). "Former City of Santa Clarita Employee Develops Award-Winning Application." Retrieved May 21, 2012, from <http://www.santa-clarita.com/Index.aspx?page=133&recordid=721&returnURL=%2findex.aspx>

Conklin, J. E. (2006). "Wicked Problems and Social Complexity." *Dialogue Mapping: Building Shared Understanding of Wicked Problems*. London: Wiley.

DARPA. (2011a). "Solution to Complex Puzzle Remains Elusive in Shredder Challenge." Retrieved May 21, 2012, from <http://www.darpa.mil/NewsEvents/Releases/2011/11/21.aspx>

DARPA. (2011b). "DARPA's Shredder Challenge Solved." Retrieved May 21, 2012, from [http://www.darpa.mil/NewsEvents/Releases/2011/12/02\\_.aspx](http://www.darpa.mil/NewsEvents/Releases/2011/12/02_.aspx)

Department of Energy. (2011). "DOE Announces Philips as First Winner of the L Prize Competition." Retrieved May 21, 2012, from <http://www.lightingprize.org/philips-winner.stm>

Desouza, K.C., Awazu, Y., Jha, S., Dombrowski, C., Papagari, S. Baloh, P., and Kim, J.Y. (2008). "Customer-Driven Innovation." *Research-Technology Management*, 51 (3), 35–44.

Dixit, A. (2002). "Incentives and Organizations in the Public Sector: An Interpretive Review." *The Journal of Human Resources*, 37, 696–727.

Geiger, C.P., and Lucke, J. (2010). "Open Government Data." In *Proceedings of the International Conference for E-Democracy and Open Government*, 183–194.

Gowen, A. (2012). "Occupy movement returns for May Day protests in D.C., New York and around U.S." *The Washington Post*. Retrieved May 2, 2012, from [http://www.washingtonpost.com/local/occupy-movement-returns-for-may-day-protests-in-dc-new-york-and-around-us/2012/05/01/gIQASDqQvT\\_story.html](http://www.washingtonpost.com/local/occupy-movement-returns-for-may-day-protests-in-dc-new-york-and-around-us/2012/05/01/gIQASDqQvT_story.html)

Hatchuel, A., and Weil, B. (2009). "C-K Design Theory: An Advanced Formulation." *Research in Engineering Design*, 19, 181–192.

Holden, J.P. (2011). "America COMPETES Act Keeps America's Leadership on Target." Retrieved May 21, 2012, from <http://www.whitehouse.gov/blog/2011/01/06/america-competes-act-keeps-americas-leadership-target>

Irvin, R.A., and Stansbury, J. (2004). "Citizen Participation in Decision Making: Is It Worth the Effort?" *Public Administration Review*, 64, 55–65.

Isidore, C. (2012). Spain Falls into Second Recession since 2009." Apr. 30, 2012. *CNNMoney*. Retrieved May 2, 2012, from <http://money.cnn.com/2012/04/30/news/economy/spain-recession/>

Johnston, E., and D. Hansen. (2011) "Design Lessons for Smart Governance Infrastructures." In Ink, D. (eds.), *American Governance 3.0: Rebooting the Public Square?*, National Academy of Public Administration; Desouza and Bhagwatwar (PAR paper and Urban Technology paper)

Kalil, T. (2006). "Prizes for Technological Innovation." Washington, D.C.: The Brookings Institution.

Kay, L. (2011). *Managing Innovation Prizes in Government*. Washington, D.C. IBM Center for The Business of Government.

Knight Foundation. (2011). "FCC Chairman Julius Genachowski and Knight Foundation announce winners of the first-of-its-kind 'Apps for Communities Challenge.'" Retrieved May 21, 2012, from <http://www.knightfoundation.org/press-room/press-release/apps-communities-event-with-fcc/>

Kremer, M. (1998). "Patent Buyouts: A Mechanism for Encouraging Innovation." *Quarterly Journal of Economics*, 113, 1137–1167.

Lindblom, C. E. (1959). The Science of "Muddling Through." *Public Administration Review*, 19, 79–88.

Mason, J. (2009). "Snap Analysis: Obama Says Government Must Solve Economic Crisis." Reuters. Retrieved May 20, 2012, from [http://www.reuters.com/article/2009/02/10/us-obama-analysis-sb-idUKTRE5190Q620090210\\_32](http://www.reuters.com/article/2009/02/10/us-obama-analysis-sb-idUKTRE5190Q620090210_32)

McKinsey and Company. (2009). "And the Winner is ...' Capturing the Promise of Philanthropic Prizes". Retrieved May 21, 2012, from <http://mckinseysociety.com/capturing-the-promise-of-philanthropic-prizes/>

Melanson, D. (2012). "First White House Chief Technology Officer, Aneesh Chopra, Steps Down." Retrieved May 21, 2012, from <http://www.engadget.com/2012/01/27/first-white-house-chief-technology-officer-aneesh-chopra-steps/>

National Academy of Engineering. (1999). "Concerning Federally Sponsored Inducement Prizes in Engineering and Science."

Ogle, A. (2012). "Light Bulb with 20-Year Life Unveiled on Earth Day." Retrieved May 21, 2012, from <http://www.mnn.com/green-tech/gadgets-electronics/stories/light-bulb-with-20-year-life-unveiled-on-earth-day>

O'Reilly, T. (2012). Official Bio. Retrieved May 21, 2012, from [www.oreilly.com/oreilly/tim\\_bio.html](http://www.oreilly.com/oreilly/tim_bio.html)

Resella, R. (2011). The story of YAKB.US. Retrieved May 21, 2012, from <http://blog.ryanresella.com/post/14937338573/the-story-of-yakb-us>

Rittel, H. W. J., and Webber, M. M. (1973). "Dilemmas in a General Theory of Planning." *Policy Sciences*, 4, 155-169.

Schroeder, A. (2004). "The Application and Administration of Inducement Prizes in Technology". Golden, CO: Independence Institute.

Scola, N. (2010). "A Challenging Space Inside Government." *TechPresident*. Retrieved May 2, 2012, from <http://techpresident.com/blog-entry/challenging-space-inside-government>

Scotchmer, S. (2004). *Innovation and Incentives*. Cambridge, Massachusetts: MIT Press.

Shavell, S., and Ypersele, T. V. (2001). "Rewards versus Intellectual Property Rights." *Journal of Law and Economics*, 44, 525-547.

Snider, M. (2010). "Winners in First Lady's Apps for Healthy Kids Competition." Retrieved May 21, 2012, from <http://content.usatoday.com/communities/gamehunters/post/2010/09/winners-in-first-ladys-apps-for-healthy-kids-competition-1#.T7qdU-tYuBp>

Sobel, D. (1995). *Longitude: The True Story of a Lone Genius Who Solved the Greatest Scientific Problem of His Time*. Walker and Company. New York.

The NEA Foundation. (2010). "C2i: We Asked. You Answered. Now We are Asking Again." Retrieved May 21, 2012, from [www.neafoundation.org/blog/c2i-we-asked-you-answered-now-were-asking-again](http://www.neafoundation.org/blog/c2i-we-asked-you-answered-now-were-asking-again).

The NEA Foundation. (2011). "C2i Update: Educators Receive \$2,500 for Solution to Classroom Challenges." Retrieved May 21, 2012, from [www.neafoundation.org/blog/c2i-update-educators-receive-2500-for-solutions-to-classroom-challenges](http://www.neafoundation.org/blog/c2i-update-educators-receive-2500-for-solutions-to-classroom-challenges)

Tolbert, C. J., and Mossberger, K. (2006). "The Effects of E-Government on Trust and Confidence in Government." *Public Administration Review*, 66, 354-369.

U.S. General Services Administration, and The White House Open Government. (2010). Challenge.gov.

U.S. Office of Management and Budget (2010). M-10-11 "Guidance on the Use of Challenges and Prizes to Promote Open Government," March 8. From [http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda\\_2010/m10-11.pdf](http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-11.pdf)

The White House. Retrieved April 8, 2012, from <http://www.whitehouse.gov/open/innovations/Challenge>

von Hippel, E. (1994) "'Sticky Information' and the Locus of Problem Solving: Implications for Innovation." *Management Science* 40 (4), 429–439.

Wadhwa, V. (2011). "Code for America: An Elegant Solution for Government IT Problems." Retrieved May 21, 2012, from [http://www.washingtonpost.com/national/on-innovations/code-for-america-an-elegant-solution-for-government-it-problems/2011/12/16/gIQAXrlu2O\\_story.html](http://www.washingtonpost.com/national/on-innovations/code-for-america-an-elegant-solution-for-government-it-problems/2011/12/16/gIQAXrlu2O_story.html)

Wright, B. D. (1983). "The Economics of Invention Incentives: Patents, Prizes, and Research Contracts." *The American Economic Review*, 73, 691–707.

Zakaria, T. (2010). "Obesity Task Force Urges Action." Reuters. Retrieved May 2, 2012, from <http://www.reuters.com/article/2010/05/11/us-obesity-usa-idUSTRE64A36E20100511>

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This report was written when Professor Desouza was the Director of the Metropolitan Institute at Virginia Tech.



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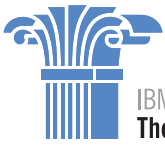
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