Implementation of Federal Prize Authority: Progress Report

A Report from the
Office of Science and Technology Policy

In Response to the Requirements of the
America COMPETES Reauthorization Act of 2010

March 2012

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DEPARTMENT, AGENCY, OFFICE, AND DIVISION ABBREVIATIONS

BLS	Bureau of Labor Statistics (part of DOL)
CDC	Centers for Disease Control and Prevention (part of HHS)
DCCPS	NCI Division of Cancer Control and Population Sciences (part of HHS)
DOD	Department of Defense
DOE	Department of Energy
DOL	Department of Labor
GSA	General Services Administration
HHS	Department of Health and Human Services
NASA	National Aeronautics and Space Administration
NCI	National Cancer Institute (part of HHS)
NIH	National Institutes of Health (part of HHS)
OMB	Office of Management and Budget
OES	Occupational Employment Statistics (part of BLS/DOL)
ONC	Office of the National Coordinator for Health Information Technology (part of HHS)
OSHA	Occupational Safety and Health Administration (part of DOL)
OSTP	Office of Science and Technology Policy
USDA	United States Department of Agriculture
VA	Department of Veterans Affairs
WHD	Wage and Hour Division (part of DOL)

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EXECUTIVE SUMMARY

On January 4, 2011, President Obama signed into the law the America COMPETES Reauthorization Act, granting all agencies broad authority to conduct prize competitions to spur innovation, solve tough problems, and advance their core missions.

Prizes have a good track record of spurring innovation in the private and philanthropic sectors. Early adopters in the public sector have already begun to reap the rewards of well-designed prizes integrated into a broader innovation strategy. Section 1 provides tangible examples of how prizes have enabled the National Aeronautics and Space Administration (NASA), the Department of Defense (DOD), and the Department of Energy (DOE) to:

- Establish an ambitious goal without having to predict which team or approach is most likely to succeed;
- Benefit from novel approaches without bearing high levels of risk;
- Reach beyond the "usual suspects" to increase the number of minds tackling a problem;
- Bring out-of-discipline perspectives to bear;
- Increase cost-effectiveness to maximize the return on taxpayer dollars; and
- Pay only for success.

The successes of these three agencies underscore what can be expected from all Federal agencies as they develop the expertise and capacity to use prizes strategically and systematically to advance their core missions.

Over the past three years, the Obama Administration has taken important steps to make prizes a standard tool in every agency's toolbox. The September 2009 *Strategy for American Innovation* recognized the potential for prizes and challenges to mobilize America's ingenuity to solve some of our Nation's most pressing challenges. In March 2010, the Office of Management and Budget (OMB) issued a formal policy framework to guide agency leaders in using prizes to advance their core missions. In September 2010, the Administration launched Challenge.gov, a one-stop shop where entrepreneurs and citizen solvers can find public-sector prizes. As a result, Challenge.gov now features more than 150 prizes from 40 agencies.

The prize authority in the America COMPETES Reauthorization Act supports this effort, as described in Section 2. By giving agencies a clear legal path, the legislation makes it dramatically easier for agencies to use prizes. By significantly expanding the authority of all Federal agencies to conduct prize competitions, the legislation enables agencies to pursue more ambitious prizes with robust incentives.

Over the past year, the Administration has laid the policy and legal groundwork to take maximum advantage of the new prize authority in the years to come. Policy and legal

staff in OSTP and OMB jointly developed a Fact Sheet and Frequently Asked Questions memorandum, issued in August 2011, which provided informal guidance to help streamline implementation of the new, government-wide authority. Agencies, such as the Department of Health and Human Services (HHS), have begun to establish strategies and policies to further accelerate widespread use of the new prize authority granted to them through COMPETES. As the groundwork is put in place for agencies to take full advantage of the authorities provided to them under COMPETES, many agencies have continued to administer numerous prizes and challenges developed under other pre-existing authorities including agency-specific authorities and procurement authority such as that provided by the Federal Acquisition Regulation (FAR), adding additional lessons learned and best practices regarding the use of prizes and challenges.

In addition, as called for in Section 24(n) of the Act, the General Services Administration (GSA) launched in July 2011 a new contract vehicle to dramatically decrease the amount of time required for agencies to tap the private-sector expertise that is so critical to early success. Finally, the Administration created a new government-wide Center of Excellence led by NASA to provide agencies guidance on the full life cycle of prizes: from prize design, through implementation, to post-prize evaluation.

Even as the Administration laid the foundation for widespread use of COMPETES, the Act began to unleash significant new activity in national priority areas such as health, veterans' services, and employment. In fiscal year 2011 (FY2011), HHS, the Department of Veterans Affairs (VA), the Department of Labor (DOL), and the Department of Agriculture (USDA) each launched prizes under COMPETES that would not have been possible without this legislation. For example, under the new prize authority in COMPETES, HHS launched the Investing in Innovation (i2) initiative, a new $5 million program to spur health IT innovations through prizes, challenges, and other mechanisms to improve the health care of all Americans. This early look at the first eight months of implementation of the new prize authority indicates the ways the America COMPETES Reauthorization Act will help agencies across the Federal government reap the benefits of high-impact prizes.

INTRODUCTION

From the 1714 Longitude Prize that stimulated the development of the world's first practical method to determine a ship's longitude, to the Orteig Prize that inspired Charles Lindbergh to fly nonstop from New York to Paris, to the recent Oil Cleanup X Challenge[1] awarded to a company from Illinois that demonstrated more than four times the previous best tested recovery rate for cleaning up oil from the ocean's surface, prizes have a long record of spurring innovation. In the 21st century, unprecedented levels of connectivity have given rise to a renaissance for prize competitions. A 2009 McKinsey report found that philanthropic and private sector investment in prizes has increased significantly in recent years, including $250 million in new prize money between 2000 and 2007.[2] Some of these new prizes included the GoldCorp Challenge[3], the Ansari X Prize[4], the Netflix Prize[5], and the Heritage Health Prize Competition[6].

Inspired by the success of philanthropic and private sector prizes, the Obama Administration has taken important steps to accelerate public sector adoption of these innovative tools. The *Strategy for American Innovation* recognized the potential for prizes and challenges to mobilize America's ingenuity to solve some of our Nation's most pressing challenges.[7] In March 2010, OMB issued a memorandum that provided a policy framework to guide agency leaders in using prizes to advance their core missions.[8] In September 2010, the Administration launched Challenge.gov, a one-stop shop where entrepreneurs and citizen solvers can find and engage with public-sector prizes.

On January 4, 2011, President Obama signed Public Law 111-358, the America COMPETES Reauthorization Act. Section 105 of this Act added section 24 (Prize Competitions) to the Stevenson-Wydler Technology Innovation Act of 1980, to provide all agencies broad authority to conduct prize competitions in order to spur innovation, solve tough problems, and advance their core missions. By giving agencies a simple and clear legal path, the Act supports the Administration's effort to make prizes a standard tool in every Federal agency's toolbox.

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[1] http://www.iprizecleanoceans.org/
[2] McKinsey & Company, "*And the Winner Is…"; Capturing the promise of philanthropic prizes,* 2009, http://www.mckinseyonsociety.com/downloads/reports/Social-Innovation/And_the_winner_is.pdf
[3] Fast Company, http://www.fastcompany.com/magazine/59/mcewen.html
[4] http://space.xprize.org/ansari-x-prize
[5] http://www.netflixprize.com/
[6] http://www.heritagehealthprize.com/c/hhp
[7] http://www.whitehouse.gov/innovation/strategy
http://www.whitehouse.gov/sites/default/files/microsites/ostp/innovationstrategy-prizes.pdf
[8] http://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-11.pdf

The Act also requires OSTP to annually submit to the Committee on Commerce, Science, and Transportation of the Senate and the Committee on Science and Technology of the House of Representatives a report on the activities carried out under the new prize authority during the preceding fiscal year.

This report covers FY2011. As the legislation was not enacted until January 4, 2011, the Administration's work in FY2011 focused on laying a foundation to maximize the impact of the Act in the years to come. The potential for future impact is best illustrated by the benefits documented by agencies that – due to their specific history and authorities – built up their capacity to strategically identify, design, and implement prize competitions prior to FY2011. This scope of this report includes an overview of every prize conducted under the COMPETES authority and only selectively covers prizes conducted under other authorities. Specifically, this report does not detail the various prizes and challenges conducted in FY2011 under other authorities available to agencies beyond the authority provided to agencies within COMPETES. This report documents the benefits the Federal government has already reaped from prizes, the steps the Administration has taken to establish a foundation for use of the prize authority in the America COMPETES Act, and early indicators from FY2011 of how the Act will increase the number of agencies that use prizes to achieve their missions more efficiently and effectively.

1. BENEFITS OF PRIZES IN THE PUBLIC SECTOR

The unique benefits of prizes have been well documented in the private and philanthropic sectors.[9] Early adopters in the public sector have already begun to reap the rewards of well-designed prizes. Specifically, prizes have enabled the Federal government to:

- **Establish an ambitious goal without having to predict which team or approach is most likely to succeed.** Contracts and grants are awarded based on proposals for future work, forcing agencies to assess merit based on past performance and credentials. With a strict focus on targeted results and outcome-based competition that is open-ended with respect to approaches, prizes empower new, untapped talent to deliver unexpected solutions to tough problems. As the solution is delivered prior to payment, the government can benefit from novel approaches without bearing high levels of risk. For example, the Progressive Insurance Automotive X Prize[10], sponsored in part by DOE, offered $10 million in

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[9] *See e.g.*, McKinsey & Company, *"And the Winner Is…"; Capturing the promise of philanthropic prizes,* 2009, http://www.mckinseyonsociety.com/downloads/reports/Social-Innovation/And_the_winner_is.pdf
[10] http://www.progressiveautoxprize.org/

prizes to the teams that build production-capable, super fuel-efficient vehicles that exceed 100 MPG or the energy equivalent. As the prize did not dictate a single approach, it incentivized 111 teams from around the globe to develop a new generation of technologies in the field. For example, the Virginia team that won one of the three prizes used a fuel-injected internal combustion engine, but focused on building a super light car that boasts the lowest drag coefficient of any car ever tested in the GM wind tunnel. In contrast, another winner from North Carolina built an electric car powered by a best-in-class lithium-ion battery and 91.5% efficient battery charger. The winning approaches were identified through objective evaluation using clear performance metrics. The prize's sponsors and the industry at large benefited from a gold mine of publicly available technical data collected from test track and laboratory conditions on the competing technologies under rigorous conditions.

- **Reach beyond the "usual suspects" to increase the number of minds tackling a problem.** As Sun Microsystems co-founder Bill Joy once famously said, "No matter who you are, most of the smartest people work for someone else." Prizes are one tool to tap the top talent and best ideas wherever they lie, sourcing breakthroughs from a broad pool of both known and unknown sources of innovation in a given industry.

  The Air Force Research Laboratory (AFRL) recently tested "Joy's Law" on a problem that had vexed military security forces and civilian police for years: how to safely stop uncooperative fleeing vehicles without causing permanent damage to the vehicle or harm any of the occupants. All pre-existing solutions - such as "tire shredder" strips or the wheel-entangling SQUID - needed to be prepositioned, which has led to police officer deaths while getting the device in place or from drivers swerving around them. With help from the Wright Brothers Institute and InnoCentive, AFRL opened this challenge to the world. As a result, AFRL was able to multiply the number of people thinking about this problem over 100-fold and received a workable solution within a 60-day period. A retired 66-year-old mechanical engineer from Lima, Peru, submitted the winning solution – a remote-controlled, electric-powered vehicle that can accelerate up to 130 mph within 3 seconds, position itself under a fleeing car, and then automatically trigger a restrained airbag to lift the car and slide it to a stop. The design not only overcomes the previous restrictions of having to preposition the system, but it is also very affordable and almost universally applicable across a broad range of scenarios. AFRL awarded the winner $25,000 for the rights to use his idea and has assigned a team and allocated funding to build and test a prototype based on the detailed design.

  The AFRL case study echoes the experience of many other prize sponsors, including NASA. For example, the Space Life Sciences Directorate of NASA's Johnson Space Flight Center launched a challenge for a predictive algorithm to

help protect America's astronauts from radiation exposure in space.[11] Over 500 problem solvers from 53 countries answered NASA's call. Expecting no solutions for a long-intractable problem, NASA received a solution that exceeded its requirements from a retired radio-frequency engineer in rural New Hampshire, Bruce Cragin. Cragin's winning approach forecast solar proton events 8 hours in advance with 85% accuracy, a result NASA dubbed "outstanding." In a survey of the nearly 3,000 solvers that competed in seven NASA prizes, 81% reported that they had never before responded to a government request for proposals, let alone worked with NASA,[12] evidence of the expanded talent pool that prizes can attract.

- **Bring out-of-discipline perspectives to bear.** Empirical research conducted at the Harvard Business School has found that breakthrough solutions are most likely to come from outside the scientific discipline or at the intersection of two fields of study.[13]

   One powerful example of this phenomenon is the Mapping Dark Matter Competition. NASA, the European Space Agency, the Royal Astronomical Society, and Kaggle teamed up to launch a data-mining competition[14] tackling a problem that physicists have been working on for decades: mapping "dark matter." In less than a week, Martin O'Leary, a PhD student in glaciology, had crafted an algorithm that outperformed the state-of-the-art algorithms most commonly used in astronomy for mapping dark matter. O'Leary applied techniques used in his field such as detecting edges in glacier fronts from satellite images.[15] Ultimately, 73 teams submitted a total of 760 entries as they vied for first place. The winners – a cosmology professor and grad student team from the University of California, Irvine – submitted 16 times, continuously improving their statistical model with feedback from a live leaderboard to emerge on top.[16] Beyond O'Leary, fierce competition continued to emerge from unexpected places, including from a neuroscientist at Harvard Medical School and a signature verification expert at Qatar University whose research brings quantitative modeling techniques to the understanding of flowing Arabic script.[17] The participants invested significant time and thought motivated by a

[11] https://www.innocentive.com/ar/challenge/9059496
[12] http://www.nasa.gov/pdf/572344main_InnoCentive_NASA_PublicReport_2011-0422.pdf
[13] Jeppesen, Lars Bo, and Karim R. Lakhani. "Marginality and Problem-Solving Effectiveness in Broadcast Search." *Organization Science* 21 (September - October 2010): 1016-1033.
[14] http://www.kaggle.com/c/mdm
[15] http://www.whitehouse.gov/blog/2011/06/27/competition-shines-light-dark-matter
[16] http://blogs.wsj.com/venturecapital/2011/09/28/zot-uc-irvine-team-proves-stellar-at-mapping-dark-matter/
[17] http://host.kaggle.com/casestudies/mdm

very modest prize: an expense paid trip to NASA's Jet Propulsion Laboratory in California to present their ideas to NASA scientists.

- **Increase cost-effectiveness to maximize the return on taxpayer dollars.** Prize competitions can boost public sector efficiency.

  First, prizes have been shown to stimulate private sector investment many times greater than the cash value of the prize. In the Orteig Prize won by Charles Lindbergh in 1927, nine teams spent a cumulative $400,000 to win the $25,000 prize purse. More recently, the Ansari X PRIZE was won in 2004 by Burt Rutan and SpaceShipOne, after the 26 competing teams spent more than $100 million to win the prize. As teams compete not just for the cash purse, but also for the associated validation, prestige, publicity, and intrinsic satisfaction that results from solving important problems, prizes often incentivize significant investment leveraging the impact of the prize purse.

  For example, harking back to the 20th century prizes that help spark a private aviation industry, the recent Green Flight Challenge[18] called upon aviation innovators to build and demonstrate a super-fuel efficient full-scale aircraft. A total cash prize purse of $1.65 million attracted 14 teams, which collectively invested more than $6 million. In a historic achievement that some have referred to as a "Lindbergh moment," the two winning teams exceeded the performance requirements by nearly a factor of two, flying more than 200 miles on the energy equivalent of just half a gallon of gas, all while averaging 100 mph with two people on board.

  As the third-place competitor failed to meet the ambitious performance requirements, NASA awarded just $1.47 million of the $1.65 million prize purse – thereby illustrating the second way in which prizes increase cost-effectiveness in budget-constrained times: they only pay for results. In contrast to grant-driven efforts, no award is made until a competitor meets each and every criteria set out by the prize sponsor. As a result, prizes shift risk from the government to the competitors.

  NASA further leveraged taxpayer dollars by partnering with the CAFE Foundation, which invested over $1 million in rigorous evaluation and publicity – extending the impact of the prize. The high-profile demonstration of safe, low-emission technologies may spark a new electric airplane industry.

  Still, one could argue even a fourfold return underestimates the value of the Green Flight Challenge, for NASA could not have achieved such ambitious goals

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[18] http://cafefoundation.org/v2/gfc_main.php

for $1.47 million unless it were able to accurately pick the team and technology most likely to succeed. As NASA explains, "Other approaches would have required selection and funding based on proposals and would have provided no assurance that payment would result in successful demonstrations. Limited program funds could not have been leveraged to investigate as broad a spectrum of possible solutions."[19]

Prizes and challenges for open innovation offer the benefits described through these case studies, as well as numerous other advantages, such as the ability of prizes to inspire risk-taking by offering a level playing field through credible rules and robust judging mechanisms; to give entrepreneurs and innovators license to pursue an endorsed stretch goal that otherwise would have been considered overly audacious; and to define clear target metrics and validation protocols that themselves become defining tools for the subject industry or field.

Of course, prizes are not the right tool for every problem. However, these select case studies underscore that prizes can be a powerful mechanism if used strategically and systematically within an agency and when aligned with a broader strategy for spurring innovation and change.

For historical reasons, NASA, DOD, and DOE began using prizes much earlier and have – over time – increased awareness of the tool, developed expertise, and established infrastructure to enable implementation. Therefore, these agencies are best positioned to demonstrate results from the use of prizes and challenges. Examples and case studies from prizes and challenges run by these agencies highlight what can be expected from all Federal agencies as they begin using prizes for open innovation – and COMPETES plays a critical role in unleashing that potential.

2. SCALING SUCCESS

Over the past three years, the Obama Administration has taken important steps that will help scale the successful use of prizes and challenges by NASA, DOD, and DOE across the entire Executive Branch.

The prize authority in the America COMPETES Act plays a critical role in the Administration's work to make prizes a standard tool in every agency's toolbox. By granting clear, broad authority to all Federal agencies, COMPETES has – in just its first months of implementation alone – inspired new activity by agencies that had not

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[19] Report on Prize Competitions Conducted in Fiscal Year 2011, submitted by Mason A. Peck, Ph.D., NASA Chief Technologist, to Dr. John P. Holdren, Director, OSTP, January 17, 2012

conducted prizes before, in national priority areas including health, veterans' services, and employment (see Section 3 for more details).

Early implementation in FY2011 is just the tip of the iceberg, as the Administration has laid the policy and legal groundwork to take maximum advantage of the new authority in the years to come:

- **Fact Sheet and Frequently Asked Questions:** Policy and legal staff in OSTP and OMB jointly developed a Fact Sheet and Frequently Asked Questions (FAQ) memorandum, which was issued in August 2011.[20]

  The Fact Sheet offered policy and programmatic staff a concise summary of the legislation's authorities and requirements and provided informal guidance to agencies in their implementation of the prize authority found in this legislation. To streamline and accelerate implementation of the new, government-wide authority, the FAQ addressed the questions most frequently raised by agency personnel, including general counsels, and thereby helped empower agencies to take full advantage of the authorities in COMPETES, including the authority to conduct prizes up to $50 million with existing appropriations; to accept private sector funds for the design, administration, or prize purse of a competition; to partner with non-profits and tap the expertise of for-profits for successful implementation; and to co-sponsor with another agency.

- **Agency Implementation Guidance:** Following on the August 2011 Fact Sheet and FAQs, and through OSTP's support, agencies have begun to establish strategies and policies to further accelerate widespread use of the new prize authority granted to them under COMPETES.

  HHS has been at the forefront of agency implementation efforts. On October 12, 2011, Secretary Sebelius issued a memorandum notifying the Department of the new prize authority provided under the America COMPETES Reauthorization Act, outlining the strategy to optimize the use of prize competitions, and calling on the heads of operating and staff divisions to forecast their future use of prize competitions to stimulate innovation in advancing the agency's mission. The memorandum also highlighted the implementation framework established to accelerate the use of well-designed prizes.[21] For example, Secretary Sebelius delegated the authority to conduct prize competitions to the Heads of all Operating and Staff Divisions. The Department also developed judging guidelines

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[20] *Prize Authority in the America COMPETES Reauthorization Act*:
http://www.cio.gov/documents/Prize%20Authority%20in%20the%20America%20COMPETES%20Reauthorization%20Act.pdf
[21] http://www.hhs.gov/open/initiatives/challenges/

(as required by Section 24(k)(3)) governing principles (outlining responsibilities for prize managers), a financial management policy for prize competitions, and a vehicle to share best practices across the Department. The full set of policy statements, guidance, and resources are available online at http://www.hhs.gov/open/initiatives/challenges/.

Other agencies are now engaging actively in similar internal review and planning related to their new prize and challenge authorities granted under COMPETES.

- **General Services Administration Assistance:** Section 24(n) of the America COMPETES Reauthorization Act calls on the GSA to "develop a contract vehicle to provide agencies relevant products and services, including technical assistance in structuring and conducting prize competitions to take maximum benefit of the marketplace as they identify and pursue prize competitions to further the policy objectives of the Federal Government."

  In response, GSA launched Schedule 541 4G, "Challenges and Competitions Services"[22] in July of 2011, thereby dramatically decreasing the amount of time required for agencies to tap the private sector expertise that is so critical to early success. To date, twelve contractors have joined sub-schedule 541 4G, offering agencies options for technical assistance, prize platforms, and communities of individuals and teams interested in entering prize competitions. GSA continues to educate private-sector vendors and agencies about the new schedule and its benefits.

- **Government-wide Center of Excellence:** Finally, the Administration launched a government-wide Center of Excellence for Collaborative Innovation led by NASA to provide agencies guidance on all aspects of implementing prize competitions, from problem definition to design of effective monetary and non-monetary incentives, to post-submission evaluation of solutions.

  From the Centennial Challenges Program, to the NASA Open Innovation Pavilion, to the NASA Tournament Lab, NASA leads the public sector in the breadth and depth of experience and experimentation with prizes and challenges. Now, with the support of OSTP, NASA will leverage that expertise to help other agencies follow in its footsteps. For select agency pilots, the Center will leverage existing NASA open innovation infrastructure to provide a full suite of services, from prize design through implementation to post-prize evaluation. This end-to-end service will allow agencies to rapidly experiment with these new methods before

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[22]http://www.gsaelibrary.gsa.gov/ElibMain/sinDetails.do?scheduleNumber=541&specialItemNumber=541+4G&executeQuery=YES

standing up their own capabilities. In addition, it will capture and communicate best practices, case studies, and successful methodologies.

Note that as agencies prepare to take full advantage of the clear and broad authorities provided to them under COMPETES, numerous public sector prizes and challenges have been administered in FY2011 under other pre-existing authorities including agency-specific authorities, procurement authority such as that provided by the Federal Acquisition Regulation (FAR); authority to award grants, participate in cooperative agreements, or both; and authority related to "necessary expense" doctrine, among others. These prizes and challenges add additional lessons learned and best practices to the growing community of practice engaged in public sector prizes and challenges.

In fiscal year 2012 (FY2012), as agencies complete their internal policies and strategies related to the implementation of programs under COMPETES, as more resources for development, implementation, and promotion of challenges become available to agencies through GSA, and as the Center of Excellence for Collaborative Innovation engages in initial pilot programs, the use of the prize authorities granted to agencies by COMPETES will continue to increase, resulting in highly leveraged innovation programs for grand challenges and high priority agency initiatives. Section 3 and the Appendix of this report will focus on the initial prizes and challenges developed under the specific prize authority provided by COMPETES.

3. EARLY INDICATORS

While the Administration and agencies were establishing the policy and legal framework for implementation of the new prize authority under COMPETES, some agencies were able to identify, design, and implement initial prize competitions under the new authority between January and September 2011. These early competitions provide early indicators for how COMPETES will help agencies across the Federal government to reap the benefits discussed earlier and to promote positive innovation and breakthroughs in national priority areas such as health, veterans' services, and employment. A summary of the highlights of early activity under COMPETES is provided here.[23]

Department of Health and Human Services
In HHS's FY2011 report on use of COMPETES submitted to OSTP, HHS Chief Technology Officer Todd Park and HHS Assistant Secretary for Administration E.J. Holland concluded that "[v]arious HHS agencies found prize competitions to be beneficial for advancing the mission of the agency and the primary objective of the challenge. Examples of positive outcomes include a healthier [university] campus environment, an influential software

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[23] See the Appendix for a detailed account of all FY2011 activities under COMPETES.

application, improved communication and awareness, and improved recognition of innovation efforts."[24]

Investing in Innovation (i2)

The most ambitious project launched by any agency under the new prize authority in the America COMPETES Reauthorization Act in FY2011 is the HHS Investing in Innovation (i2) initiative, a new $5 million program to spur innovations in Health Information Technology (Health IT).

Led by the Office of the National Coordinator for Health Information Technology (ONC), the core of i2 is a series of prize competitions – up to 15 each year – to accelerate innovation and adoption of Health IT for improved clinical outcomes and efficient care delivery.

Under i2 (and COMPETES), the National Cancer Institute (NCI) partnered with ONC to launch the "Using Public Data for Cancer Prevention and Control: From Innovation to Impact" competition in July 2011.[25]

With the proliferation of health-related data (e.g., HealthData.gov, Healthindicators.gov) and the ongoing evolution of cyberinfrastructure and HealthIT, the potential to inform and engage health providers and consumers throughout the spectrum of cancer control has been significantly expanded. The rapid evolution of electronic medical record (EMR) systems, medical devices, and mobile technologies for health (mHealth) has resulted in an urgent need to expand the development of HealthIT tools and applications that are compatible with these emerging platforms and healthcare delivery systems. Innovations are needed to disseminate the growing behavioral and communication science evidence base for cancer.

The "Using Public Data for Cancer Prevention and Control: From Innovation to Impact" competition challenged software development teams to use public data to build an application that can integrate with existing Health IT platforms that addresses challenges faced by consumers, clinicians, or researchers on the continuum of cancer control. Teams were encouraged to create apps to promote healthy behaviors for cancer prevention (e.g., nutrition, physical activity, or smoking cessation), aid early

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[24] Report on Prize Competitions Conducted in Fiscal Year 2011, submitted by Todd Park, HHS Chief Technology Officer, to Dr. John P. Holdren, Director, Office of Science and Technology Policy, January 17, 2012
[25] http://challenge.gov/ONC/208-using-public-data-for-cancer-prevention-and-control-from-innovation-to-impact

detection and screening, inform decision-making, or increase patient adherence to treatment plans.

The competition had two phases. Phase I submissions were submitted in August 2011, and were evaluated on their use of cancer-related data, as well as potential for impact, innovation, and usability. At a major Health IT conference in September 2011, four semi-finalists received $10,000 to continue to refine their submissions as they raced toward the grand prize. At the end of Phase II, two $20,000 prizes were awarded to the two top teams at an international system sciences conference in January 2012, focused on linking application developers with experts in the health science, commercial, and venture capital arenas for advice on commercialization, integration with existing platforms, and public health impact.

Both winners were novel in their approach. *Ask Dory*![26], submitted by Chintan Patel, PhD, Sharib Khan, MD, and Aamir Hussain, is a sleek, consumer-friendly, web-based portal that provides curated information about clinical trials for cancer and other diseases. *Ask Dory!* improves on the existing clinicaltrials.gov in at least two significant ways. First, *Ask Dory!* asks the user personalized questions and then deploys an innovative entropy-based algorithm for rapid and accurate answers. Second, *Ask Dory!* allows users to immediately connect with trial administrators by web-phone or email.

To create *Ask Dory!,* the winning team leveraged its software development and computational expertise to develop a cancer-specific consumer information portal that builds on their existing clinical information database and decision algorithms. By offering cash prizes, recognition and publicity for the winners, the NCI/ONC challenge incentivized this small team to marshal their limited resources to address the challenge of cancer control.

The second $20,000 prize was awarded to *My Cancer Genome*[27], an application that leverages the NCI Physician Data Query (PDQ) dataset to provide – for the first time – tailored decision support for treatment options based on tumor gene mutations.

The team lead for *My Cancer Genome,* Dr. Mia Levy, was able to bring a rare combination of expertise in clinical oncology, genomic medicine, and bioinformatics to bear on the NCI/ONC challenge. Dr. Levy serves as a clinical faculty member at Vanderbilt. Yet, she previously failed to secure traditional National Institutes of Health (NIH) funding for the *My Cancer Genome* application because of its focus on the translation and application of existing scientific evidence for clinical impact. The challenge provided a rapid mechanism for her team to gain publicity and support for

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[26] http://dory.trialx.com/ask/
[27] http://www.mycancergenome.org/

further development of an important, emerging area of cancer treatment decision support.

In sum, the "Using Public Data for Cancer Prevention and Control: From Innovation to Impact" challenge spurred the development of innovative, evidence-based consumer Health IT applications with potential for commercialization using a significantly lower investment of public funds compared to traditional peer-review funding mechanisms. In addition, the challenge incentivized teams to leverage previously under-exploited resources – public data – for potential public benefit.

In addition, the extensive media outreach to non-traditional stakeholders has led to a significant increase in inquiries from computer scientists, software engineers, and technology entrepreneurs that are eager to bring their skills to bear in partnership with medical research to address the difficult challenge of cancer prevention and control through NCI's existing R01/R21/R01 grant funding mechanisms.

Finally, by increasing innovation in cancer control through use of public data, these prize competitions also help advance the NCI Division of Cancer Control and Population Sciences (DCCPS) core mission to communicate and disseminate information towards the prevention, early detection, diagnosis, and treatment and control of cancer to the general public.

Centers for Disease Control and Prevention (CDC) Flu App Challenge

The CDC Flu App Challenge[28] offered $35,000 in prizes for the best applications, data visualization tools, or games that used CDC flu data to improve communication about critical information about the flu and its impact.

With a wealth of flu data, CDC sought innovative ways to increase its reach to new audiences in order to raise awareness about influenza and its symptoms, promote positive health behavior changes for flu prevention, and educate consumers on ways to treat the flu.

By opening the challenge to this new set of developers and designers, CDC received numerous submissions that showcased creative applications of flu data from entities that normally do engage with government procurements. Entrants into the challenge included small businesses, universities, consulting firms, professional graphical artists, computer programmers, educators, doctors and public health professionals, students teams, and design firms with wide geographic representation across the US.

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[28] http://fluapp.challenge.gov

Entries in CDC's Flu App Challenge, even those that did not win, offered creative approaches to improving influenza message dissemination and audience engagement. In many instances, CDC was already aware of the core technology but had yet to utilize it to advance CDC's mission due to resource and budget constraints, security requirements, or other barriers. The challenge enabled CDC to take real applications of those technologies for a spin. In doing so, it invigorated existing CDC efforts, provided promising new innovations to explore further, and helped CDC technologists eliminate ineffective or inappropriate possibilities.

For example, one entry combined CDC's new content syndication application programming interface (API) with older interactive phone systems and text-to-voice technology to bring CDC health messages to those who still do not have access to the Internet. Another combined a popular location-based social networking service with CDC data on flu incubation and infection periods to empower users to encourage friends to get vaccinated after realizing they might have been infectious the last time they met. Other entries used the social graphs in popular social networking sites to encourage vaccination, give notice of infection, investigate possible paths for the spread of infection among friends, and even win sympathy when infected.

The winning entry, *Flu-Ville!*, used current flu activity reports, prevention messages, and other CDC health information to create an interactive game. Games are highly popular and allow CDC to reach audiences that might have interest in gaming, but not public health or influenza. Research on the impact and effectiveness of games in driving positive health behaviors is still nascent and the challenge gave CDC a low-cost way to engage game developers in applying online gaming principles to solving some of public health's most pervasive and persistent challenges.

The technology and the solutions shown in the CDC Flu App Challenge are not necessarily influenza-specific and can be adapted to meet other health information dissemination needs, whether the topic be other infectious diseases, emergency information or chronic disease management. Elements of the winners are being considered and redesigned for use in other products, such as ways to incorporate location-based tailored information in mobile applications, improved services for existing systems, and the increased use of peer-to-peer communication of CDC health messages.

Department of Veterans Affairs

Blue Button® for All Americans Prize Contest[29]

To help veterans have access to their heath information regardless of where they get their care, the VA sponsored the Blue Button® for All Americans Prize Contest. The prize was announced in July 2011 under the new prize authority in the America COMPETES Reauthorization Act. This challenge asked HealthIT software developers to include a Blue Button data download function in personal health records (PHR) systems and then arrange to install the PHR on patient-facing websites of 25,000 doctors across America.

The Blue Button is a tool that gives patients access to their personal health data via an electronic file that is easy to read by both people and computers. This data file includes things like emergency contact information and immunizations, as well as medication history, laboratory results, and appointments.

The winner of the $50,000 prize – McKesson Corporation's Relay Health division – added Blue Button download functions to its existing PHR system which is used by approximately 200,000 doctors and 2,000 hospitals. McKesson donated the cash prize to the Wounded Warrior Project after being declared the winner of the challenge in October 2011.

Veterans who receive medical care through VA health care facilities can download their personal health data through the My HealtheVet patient portal using the Blue Button® software function.[30] VA delivers care to approximately six million veterans; many of these and most of the 24 million veterans in the United States receive their care from providers outside the VA health care system. VA believes that all veterans – and not just veterans who receive their care from VA – should be able to download their health data using the Blue Button.

The goal of the challenge was to enable veterans to be able to download their health data regardless of where they get their care. The primary objective of the challenge was to achieve installation of Blue Button-enabled PHRs in a large number (>25,000) of non-VA doctor's offices across America.

A prize competition was assessed as the most efficient and economical way of encouraging PHR developers to include Blue Button functions in their software and arrange to install that software on patient portals of thousands of doctors across the country. This particular outcome was especially well suited for a prize: it could be executed quickly, achieved inexpensively, and judged objectively. Moreover, due to the

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[29] http://bluebutton.challenge.gov/
[30] https://www.myhealth.va.gov/index.html

fragmented and competitive market of PHR software development, a cooperative agreement would have been difficult. Instead, VA chose to leverage these factors by giving developers a new opportunity to compete.

While typical contract and grant making development cycles span several months before soliciting proposals, this challenge took only six weeks to develop and launch. VA was able to declare a winner of the challenge approximately four months after the announcement date: this time included about four weeks of evaluation of the winner's entry.   VA estimates that performance periods under a contract or grant would have been at least three times as long.

Had the winner merely installed a Blue Button-enabled PHR in the patient portals of 25,000 doctors – the minimum necessary – the $50,000 prize would equate to a cost of two dollars per doctor.   Because the winner added the Blue Button function to the PHRs used by the approximately 200,000 doctors in its system, the prize amount cost the taxpayers about 25 cents per doctor. The winner's user base had substantially more than the 25,000 minimum doctors required, and in addition represented very significant share of the overall doctor and hospital markets: almost a third of America's practicing doctors and slightly more than a third of the country's registered hospitals.[31]

In addition, during the pendency of the challenge, the Robert Wood Johnson Foundation launched a website, http://bluebuttondata.org/, to promote the use of Blue Button technologies in health care. Aetna, Inc. and United Health Group, each among the five largest health benefit plans in the country, announced during the challenge period that they would add Blue Button capabilities to their patient portals. Aetna's Blue Button implementation occurred in the fourth quarter, 2011; United Health Group's Blue Button functions are scheduled to go live in the first quarter, 2012. Walgreen's, one of the Nation's largest pharmacy chains, announced it would add Blue Button functions to its online patient portals and store-based kiosks. While the challenge was open, Humetrix, Inc., a medium-size California HealthIT developer, announced a mobile Blue Button application to allow patients to securely transmit their health information directly to the tablet computers of their doctors. Other software developers, including Iatrix, Inc. (a hospital software company in Massachusetts) and a number of small companies, added Blue Button capabilities to their software. The challenge was at least in part a catalyst for the adoption of Blue Button technologies in a wide cross-section of the HIT market. The challenge validated Blue Button technology as part of the routine way in which doctors across America and their patients – including veterans – share health information.

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[31] Report on Prize Competitions Conducted in Fiscal Year 2011, submitted by James M. Speros, Special Assistant to Chief Technology Officer, Office of the Secretary, VA to OSTP, January 19, 2012

Department of Labor

Occupational Employment Statistics Challenge[32]

The Bureau of Labor Statistics (BLS) collects a wealth of information, including Occupational Employment Statistics (OES), but these data can be overwhelming if not presented in a fashion tailored to specific user needs.

To address this issue, DOL adopted an innovative strategy to engage third party developers in making the data user-friendly. First, DOL published an API and SDK online. Then, the Department offered $34,500 in prizes for software developers, innovators, and entrepreneurs to create interactive tools based on BLS data that could help Americans plan their education or job training strategies, negotiate pay and benefits with employers, find places to update their skill sets, and make informed decisions about potential career changes.

The grand prize winner of the Occupational Employment Statistics Challenge, *Where are the Jobs?,[33]* allows users to retrieve average salaries of occupations and occupation groups by State and/or region and has a comparison function that allows users to find where job types or industries are centered and the best compensated. It helps workers make better choices about where to get training and education, apply for positions or, if necessary, move to find good jobs. *Where are the Jobs?* was just one of many high-quality applications submitted, many of which incorporated access to mainstream applications like Google, Yahoo!, and Bing.

DOL is in the process of evaluating additional success factors including data on application usage, feedback from users, usage of DOL data, and influence over consumer choices based on enforcement activities.

In summary, these challenges conducted by HHS, VA, and DOL show the potential of prizes and challenges implemented under the authorities provided by COMPETES to impact high-priority areas such as health, veterans' services, and employment. These highlighted programs as well as a full list of prize and challenges completed under COMPETES are detailed in Appendix 1.

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[32] http://challenge.gov/Labor/202-occupational-employment-statistics-challenge
[33] http://challenge.gov/challenges/202/submissions/4595-where-are-the-jobs

CONCLUSION

Prizes have an impressive track record of spurring innovation in the private and philanthropic sectors. Early adopters in the public sector, such as NASA, DOD, and DOE, have already begun to reap the rewards of well-designed prizes integrated into a broader innovation strategy. The successes of these public sector prizes show what can be expected from all Federal agencies as they develop the expertise and capacity to use prizes strategically and systematically to advance their core mission.

The prize authority in the America COMPETES Reauthorization Act is a critical step toward making prizes a standard tool in every agency's toolbox. By giving agencies a clear legal path, the legislation makes it easier for agencies to use prizes. By expanding the authority of all Federal agencies to conduct prize competitions, the legislation enables agencies to pursue more ambitious prizes with robust incentives.

Over the past year, the Administration has laid the policy and legal groundwork to take maximum advantage of the new prize authority in the years to come, with GSA launching a new contract vehicle to decrease the amount of time required for agencies to tap private sector expertise and with the launch of the new government-wide Center of Excellence for Collaborative Innovation. Agencies have begun to establish specific strategies and policies to further accelerate widespread use of the new prize authority granted to them through COMPETES.

Even as the Administration laid the foundation for widespread use of COMPETES, the Act began to unleash significant new activity in national priority areas such as health, veterans' services, and employment. This early look at the first eight months of implementation of the new prize authority indicates the ways the America COMPETES Reauthorization Act will help agencies across the Federal government to reap the benefits of high-impact prizes for open innovation in the years to come.

APPENDIX 1: AGENCY PROGRAMS CONDUCTED UNDER THE AMERICA COMPETES REAUTHORIZATION ACT OF 2010

The scope of this Appendix provides a summary of all prizes and challenges conducted in FY2011 under the prize authority provided to agencies in COMPETES and does not include any of the multiple prize competitions conducted under other authorities in FY2011 or prior.

LIST OF CHALLENGES

1. **Department of Agriculture**
   1.1. MyPlate Fruits and Veggies Video Challenge

2. **Department of Defense**
   2.1. Humanitarian Assistance and Disaster Relief - Challenge

3. **Department of Health and Human Services**
   3.1. Using Public Data for Cancer Prevention and Control: From Innovation to Impact
   3.2. CDC Flu App Challenge

4. **Department of Labor**
   4.1. InformACTION App Challenge
   4.2. Occupational Employment Statistics Challenge

5. **Department of Veterans Affairs**
   5.1. Blue Button® for All Americans Prize Contest

DETAILED CHALLENGE REPORTS

1. **Department of Agriculture**

   1.1. MyPlate Fruits and Veggies Video Challenge

   Sponsoring Agency:
   Center for Nutrition Policy and Promotion, USDA

   Overview:
   Building on the First Lady's "Let's Move" initiative, the USDA MyPlate Fruits and Veggies Video Challenge invited the general public to create short videos (approximately 30 seconds) showing how to add fruits and vegetables to meals

and snacks without spending a lot of money. The challenge's goal was to encourage sharing between peers about the key messages of the MyPlate[34] initiative. The public was encouraged to create videos that were inspiring and instructive. The videos gave actionable tips that others can use to improve their diets.

 Videos were submitted in the following categories:
- Tips for kids
- Tips when eating at home
- Tips when eating away from home

The goal of the challenge was raise awareness of the new MyPlate food icon, which was launched by First Lady Michelle Obama and USDA Secretary Tom Vilsack, in June 2011, to encourage healthy eating habits. The MyPlate icon is supported by *Dietary Guidelines for Americans*[35] messages and the Challenge features the selected message "Make Half Your Plate Fruit and Vegetables." In June 2011, USDA released the Consumer Message Calendar[36] which provides an opportunity for Federal agencies, programs, industry, and partners to support the *Dietary Guidelines for Americans* and MyPlate with consistent and coordinated messaging. Make Half Your Plate Fruits and Vegetables is the first message included in the calendar and is the overarching consumer message for the MyPlate Communications Plan. The video challenge also directs consumers and professionals to ChooseMyPlate.gov, a comprehensive resource that offers a wealth of information to help consumers meet their specific nutritional and physical activity needs.   Resources include the new SuperTracker diet and physical activity assessment tool and nutrition education information for a wide variety of professional and consumer audiences.

Website:
http://fruitsandveggies.challenge.gov/

Problem Statement:
While most Americans realize that eating fruits and vegetables is important to a healthy diet, under-consumption continues to be a problem. Efforts have been underway nationally for nearly 20 years to promote fruits and vegetables through supermarkets, on packaging, and in local communities. Efforts have strengthened over the last five years to assure that fruits and vegetables are

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[34] http://www.choosemyplate.gov
[35] http://health.gov/dietaryguidelines/
[36]

http://www.cnpp.usda.gov/Publications/DietaryGuidelines/2010/DGCommunicationsMessageCalendar.pdf

available where people eat. A combination of both fruit and vegetable availability and messaging is critical to increase America's consumption of fruits and vegetables.[37] This challenge was designed to encourage the general public to share information between peers regarding the benefits of consuming fruits and vegetables.

Proposed Goal:
The goal of the MyPlate Fruits and Veggies Video Challenge was to drive innovation and grass-roots, peer-to-peer marketing impact in the following ways:
- Generate creative videos that help inspire individuals and families to adopt healthier eating habits by consuming more fruits and vegetables cost effectively
- Counter the perception that eating enough fruits and vegetables is too expensive
- Highlight MyPlate and promote recommendations from the *Dietary Guidelines for Americans*
- Recruit consumers and partners to engage with ChooseMyPlate.gov and be empowered by its wealth of science-based, user-friendly tools and resources to personalize the Dietary Guidelines

Why a Prize as Preferred Method:
By engaging with a diverse pool of participants (4,700 individuals registered on the Challenge website and over 140 submissions were received), this challenge enabled USDA to encourage the general public to share positive messages about the benefits of consuming fruits and vegetables with their peers.

One of the entrants in the challenge, a student at Rider University studying Radio/Television Communication, shared the following that demonstrates the desired impact of using a prize competition to drive grass-roots distribution of the MyPlate messaging: "I actually got a lot of my peers to view the video and they were very moved by the effort and message displayed in it. As young adults we do not always think about eating healthy or even encouraging the younger generation to eat healthy foods. However, many of my fellow students have younger siblings that do not understand the importance of good eating habits, but I've been told that the ideas in my video were a great help. Family members with children have also told me that getting the children involved in the shopping process was an excellent idea."[38]

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[37] State of the Plate: 2010 Study on America's Consumption of Fruits and Vegetables, 2010
[38] Excerpt from statements on the USDA Fruits and Veggies Video Challenge submitted by Dr. Robert C. Post, Deputy Director, Center for Nutrition Policy and Promotion, USDA to OSTP, January 27, 2012.

Desired Participants for Competition:
The agency opened the competition to the general public with greater interest in families and schools. The submissions for the challenge included a wide array of individuals including dietitians, kids, schools, communities and families, each of whom shared the MyPlate messaging with their peers in unique, targeted ways.

Solicitation and Outreach Methods and Results:
The agency used press releases, social media, and contractors to spread the word about the challenge. Working with media groups, listservs, and blogs was very effective in reaching a wide range of audiences and provided a diverse pool of submissions for the challenge. The entrants in the competition were able to share their submissions with their own peers and networks to further the impact of the competition.

Incentives:
The MyPlate Fruits and Veggies Video Challenge awarded $9,000 in total prizes to nine teams or individuals who placed 1st, 2nd, or Popular Choice in each category. First place winners received $1,500; 2nd place winners received $1,000; and Popular Choice winners received $500. Winners are featured on ChooseMyPlate.gov and partner websites. Given the emphasis on sharing high-impact key messages with peers, prizes were awarded based on the quality of the video concept, the creativity and quality of the video, and the potential of the video to inspire others to eat more fruits and vegetables on a budget.

Evaluation:
Judging was based on the following criteria. Staff judges used the following information to rate each category and determine award for the challenge. Creating a standard judging form allowed the judges to more objectively assess each video.

Criteria	Elements	Scoring Scale		
Quality of the Idea	Is the video creative and original?	0	5	10
Quality of the Idea	Does the video endorse any business, product, restaurants, industry names, logos, or trademarks?	0	5	10
Implementation of the Idea	Are the audio and visual elements clear?	0	5	10
Implementation of the Idea	Does the video include the message "Make Half Your Plate Fruits and Vegetables."	0	5	10

Criteria	Elements	Scoring Scale		
Implementation of the Idea	Does the video direct people to ChooseMyPlate.gov?	0	5	10
Potential Impact on Healthy Eating Habits	Is the video instructive and easy-to-follow?	0	5	10
Potential Impact on Healthy Eating Habits	Does the video include a cost-effective idea?	0	5	10
Nutrition	Does the video discuss/show fruits and vegetables?	0	5	10
Nutrition	Does the video provide information consistent with the Dietary Guidelines?	0	5	10
Nutrition	Are the foods shown in the video fried, in heavy sauces, include added sugars or solid fats?	0	5	10

Partnerships:
The USDA/CNPP Nutrition Communicators Network[39] provides an opportunity for different communities and organizations to join together to promote the *Dietary Guidelines for Americans* and MyPlate. The agency did not use the Partnership to complete the prize award. However, USDA's partners highlighted the Challenge in their blogs, on Twitter, and print outreach, and were invited to look for ways to use the videos in their education and promotion efforts. USDA partners have agreed to post the videos on their websites to provide more visibility for the Dietary Guidelines message.

Resources:
The agency used the following resources to fund the MyPlate Fruits and Veggies Video Challenge:
- Contract expenditure: $72,000. The agency contracted with Ketchum, a public relations firm to administer the challenge.
- Staff salary expenditure: $25,000. Agency staff included those associated with management, nutrition, web development, library services and finance.
- Agency expenditure: $9,000. The total cash prize award for the Challenge.

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[39]

http://65.216.150.253/partnerships/downloads/NutritionCommicatorsNetwork/PartnershipProgramPromotion.pdf

No private funds were used for this competition, all funding came from the agency's existing resources.

Results:
The MyPlate Fruits and Veggies Video Challenge is likely to increase the long term availability of consumer-friendly nutrition promotion tools available to the public. The Challenge drew attention to the consumer message "Make Half Your Plate Fruits and Vegetables" by encouraging the general public and youth to share the message in a creative, custom, and targeted way and expands the many ways in which programs, partners, schools, and communities promote the *Dietary Guidelines for Americans*. Beyond the promotion and distribution achieved during the competition itself, the videos can be used as part of subsequent efforts to promote MyPlate, fruit and vegetable consumption, healthy eating, and wellness among private and public organizations. The videos will continue to be available through *YouTube* to extend their accessibility to the public. The Center of Nutrition Policy and Promotion creates resources to help professionals, educators and intermediaries extend the reach of nutrition information and education. The MyPlate Fruits and Veggies Video Challenge meets the mission of the Center and provides long-term resources for those wishing to engage audiences in creative and practical ways.

2. **Department of Defense**

   2.1. Humanitarian Assistance and Disaster Relief - Challenge

   Sponsoring Agency:
   The National Defense University, Center for Technology and National Security Policy, Department of Defense

   Overview:
   Design a Kit to Provide Power, Potable Water, and Communications & Win $10,000

   Website:
   http://hadr.challenge.gov/

   Problem Statement:
   In March 2010, a Joint Capability Technology Demonstration (JCTD) was initiated by the Office of the Secretary of Defense (OSD) to deliver a capability that can support the immediate needs of first responders to a crisis event by providing essential services and the capability to quickly assess and survey a crisis area and communicate with regional and national level leaders to coordinate the national response.

The project developed an integrated kit that provides:
- Reliable power from primarily renewable sources to power system components
- Potable water from local sources
- Local and global communications to transmit & receive voice, data, and images
- Local situational awareness and information sharing

The kit satisfies all operational requirements as defined by DOD, and delivers more capability than is required by other user organizations. In order for some user organization to make use of the JCTD kit, some further modifications will be required to reduce size, weight, and cost.

Proposed Goal:
Interested individuals and organizations were invited to design a kit for use in Humanitarian Assistance and Disaster Relief (HADR) situations. The kit had to be suitable for initial HA/DR response activities by US government departments and agencies, as well as by non-governmental organizations (NGOs) and foreign governments. The kit and all its components had to meet export control restrictions and if possible had to cost no more than US$50,000 and weigh no more than 500 lbs.

Why a Prize as Preferred Method:
Prior to the HADR-Challenge, the Pre-positioned Expeditionary Assistance Kit (PEAK) project had issued a formal Request for Proposals (RFP) and, as expected, all the responses came from commercial entities/vendors. The HADR-Challenge used a prize competition so that submissions could be received from interested individuals and organizations (such as colleges), and not just from commercial entities or vendors. The Challenge opened the field to include an unlimited range of ideas that were not restrained by commercial viability.

Desired Participants for Competition:
Submissions were received from individuals, colleges, and companies.

Solicitation and Outreach Methods and Results:
The Challenge was advertised on the Challenge.gov website and on the Sharing to Accelerate Research: Transformative Innovation for Development and Emergency Support (STAR-TIDES) website.[40] The HADR-C management team

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[40] http://star-tides.net/

was aware of many interested companies through the PEAK project, and all were advised via phone and email in advance of the Challenge being launched. Only eight submissions were received, which indicated the method of solicitation may not have been particularly effective.

Incentives:
A cash prize of $10,000 was awarded to the winning submission. The funds were provided by the TIDES program at the National Defense University.

Evaluation:
All interested competitors were required to submit an HADR-Challenge Submission Packet via the DOD's Challenge.gov platform no later than 15 August 2011. All submissions and competitors were to address the HADR Challenge Design Parameters and adhere to eligibility requirements outlined in the announcement. The HADR-Challenge ran from 6 July 2011 through 15 August 2011.

A team of assessors was used. The team developed a scoring matrix that was aligned with the technical specifications, and it was made available to all competitors at the same time as the competition requirements were issued. Every assessor reviewed every submission and recorded his or her results in the scoring matrix. The assessment team then met to review the results and to reach consensus on a single set of scores that provided a direct comparison of all submissions. The result provided a clear finishing order for awarding the prize, as well as a useful summary of the strengths and weaknesses of each submission for use in providing feedback to the competitors.

Announcement of the Challenge winner was made on 31 August 2011.

Partnerships:
The HADR-Challenge team had an informal relationship with the PEAK project. The project contributed subject matter expertise to guide the design and specifications of the Challenge. In return, the project received information on a broader range of concepts and technical solutions than had been received from the formal RFP process.

Resources:
All prize funds were provided by the TIDES program. Personnel from the PEAK project, as well as the TIDES program, contributed their time to organizing the Challenge. No separate accounting of labor contributions was required because all activities were directly linked to information gathering for the PEAK and TIDES initiatives.

Results:

The HADR-Challenge competition received eight submissions. Some of the entries contained some innovative ideas, but these ideas will require further modification to meet the overall needs of the project. Almost all were based on an aggregation of commercially available technologies. The more innovative of those technologies have been included in the TIDES database, and will also be considered as alternative modules for the PEAK project. The TIDES database is intended to disseminate information on technologies that are relevant to humanitarian assistance and disaster relief situations. The PEAK project is intended to make innovative technologies available in deployable disaster relief kits, so both initiatives benefitted from participation in the HADR-Challenge.

3. **Department of Health and Human Services**

   3.1. **Using Public Data for Cancer Prevention and Control: From Innovation to Impact**

   Sponsoring Agency:
   NIH/NCI and ONC

   Overview:
   The NCI innovation challenge titled "Using Public Data for Cancer Prevention and Control: From Innovation to Impact" was launched in July, 2011 in conjunction with ONC. This highly innovative effort was presented as part of the ONC's Investing in Innovations ("i2") Initiative, and was managed by the Health 2.0 Developer Challenge program. Teams were asked to develop an application that has the potential to integrate with existing health information technology platforms and addresses targets at one or more points on the cancer control continuum, using public data that are relevant to cancer prevention and control. The competition launched officially in July 2011. Teams were required to address challenges faced by consumers, clinicians, or researchers on the continuum of cancer control. Suggested targets include promoting healthy behaviors (e.g., nutrition, physical activity, smoking cessation), early detection and screening, informed decision-making, and adherence to treatment plans.

   Website:
   http://challenge.gov/ONC/208-using-public-data-for-cancer-prevention-and-control-from-innovation-to-impact

   Problem Statement:
   Entrants were asked to develop software applications (apps) that utilize the wide array of health-related data made available by NCI and other Federal agencies for innovative consumer health apps; these apps should potentially integrate

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with existing technology platforms and address targets comprising DCCPS priority areas on the continuum of cancer prevention and control.[41] Entrants were required to address challenges faced by consumers, clinicians, or researchers such as behavior risk reduction for prevention and survivorship (e.g., nutrition, physical activity, smoking cessation), early detection and screening, informed decision-making, and adherence to treatment regimens.

Proposed Goal:
Solve a health problem(s)

Why a Prize as Preferred Method:
With the proliferation of health-related data (e.g., HealthData.gov, Healthindicators.gov) and the ongoing evolution of cyberinfrastructure and HealthIT, the potential to inform and engage health providers and consumers throughout the spectrum of cancer control has been significantly expanded. The rapid evolution of electronic medical record (EMR) systems, medical devices, and mobile technologies for health (mHealth) has resulted in an urgent need to expand the development of HealthIT tools and applications that are compatible with these emerging platforms and healthcare delivery systems. Innovations are needed to disseminate the growing behavioral and communication science evidence base for cancer. This competition has resulted in the development of innovative, evidence-based consumer HealthIT applications with potential for commercialization using a significantly lower investment of public funds compared to traditional peer-review funding mechanisms. Through engaging with stakeholders beyond the health and behavioral science communities, the NCI's prize competition has also dramatically increased NCI's strategic outreach to computer scientists, engineers, informaticians, software developers, and technology entrepreneurs who understand the cyberinfrastructure and technologies for connecting data sources for accelerating discovery, and who are motivated to address the difficult challenge of cancer prevention and control. By increasing innovation in cancer control through use of public data, this prize competition also helps advance the NCI DCCPS core mission to communicate and disseminate information towards the prevention, early detection, diagnosis, and treatment and control of cancer to the general public.

Desired Participants for Competition:
Academia, Private entities, Public entities

Solicitation and Outreach Methods and Results:
   a) *Marketing methods for competition and participants:* Federal Register Notice, NCI's Informatics for Consumer Health platform (web, Twitter,

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[41] http://cancercontrol.cancer.gov/od/index.html

LinkedIn), Federal, academic and scientific listservs, and the Health 2.0 organization's PR apparatus (press release, Twitter, webinars, conference sessions, etc.)

b) *Evaluation method:* Assessment of email, web, Twitter, LinkedIn metrics, and ongoing engagement with Health 2.0 organization's PR staff.

c) *Lessons learned from outreach:* Partnering and engaging with the right partners is essential. For this software application challenge, HHS leveraged the respective social networks of Federal partners (NCI/NIH and ONC), Academic advisory board (Claremont Graduate University, University of Hawaii, Northwestern, Rensselaer Polytechnic Institute), and Silicon Valley HIT entrepreneurs (the Health 2.0 organization) for targeted outreach to health and behavioral scientists, computer scientists, engineers, informaticians, software developers, and technology entrepreneurs.

Incentives:

a. *Non-monetary:* Publicized registered teams on challenge web page, highlighting 4 semi-finalists and two winning teams in challenge-related communications (web, presentations, press releases, Twitter & LinkedIn group updates). Four semi-finalists were invited to Health 2.0 Fall conference in San Francisco, CA, to "engage with leaders in government, venture capital, and technology for support in translating their innovations into commercially successful apps with potential public health impact." Two winners were invited to present their apps in an award ceremony during a special symposium at the Hawaii International Conference on System Sciences (HICSS) conference in Maui, Hawaii, on January 4, 2012. The HICSS symposium focused on linking application developers with experts in the health science, commercial, and venture capital arenas for advice on commercialization, integration with existing platforms, and public health impact. Travel expenses to San Francisco and Hawaii were not be separately reimbursed but were intended to be paid for from the Phase I and II awards, respectively.

b. *Monetary:* Four teams received $10,000 each in Phase I, and two winning teams received $20,000 each at the end of Phase II (to be awarded in FY2012).

c. *Description of funding source and allocation:* ONC Investing in Innovations (i2) Initiative.[42]

Evaluation:
Evaluation process was managed by the challenge contractor, Health 2.0, with oversight from NCI and ONC. Also, technical evaluators & judges were not

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[42] http://www.hhs.gov/news/press/2011pres/06/20110608a.html

selected from NCI or ONC departments that originated the challenge to help increase potential objectivity of evaluation process.

This was a two-phase challenge. Phase I submissions were submitted in August 2011, and were evaluated on their use of cancer-related data, as well as potential for impact, innovation, and usability.

Partnerships:
Partnering and engaging with the right partners is essential and will depend on the overall goals of the prize competition and the target audience. With NCI's challenge focusing on the development of innovative applications for cancer control that have the potential to be integrated onto existing and emerging technology platforms including EHRs, partnering with ONC was advantageous because of NCI's agency leadership of the Federal health IT strategic plan and shared priorities for innovation in HIT. NCI also worked with an advisory group of academic scientists from the Claremont Graduate University (Kay Center for E-Health Research), University of Hawaii Business School, Northwestern University (SONIC Lab), and Rensselaer Polytechnic Institute (Tetherless World Consortium), who have an intimate understanding of science, technology, data, health communication, and the research enterprise. NCI's relationship with the challenge administrator, Health 2.0, was also essential for engaging with software developers and entrepreneurs.

Resources:
The prize competition was run under ONC's Investing in Innovation (i2) contract with Capital Consulting Corporation (Health 2.0 is the subcontractor). Funds for the two-year i2 contract drew from HITECH appropriations. The estimated cost for this two-stage challenge (Stage 1 was completed in FY2011) is approximately $80,000. In conjunction with this prize competition, ONC personnel worked with the NCI manager to determine competition parameters such as the timeline and award amounts, identify technical review panelists, promote the competition to ONC stakeholders and developer networks, and develop outreach materials.

Results:
Note that in FY2011, only Stage 1, in which four semi-finalists were each awarded $10,000, was completed. The semi-finalists were given additional time to upgrade and submit their applications for evaluation. The prize competition concluded with the announcement of the winners on January 1, 2012. Complete results are included in this report.

Both winners of the NCI/ONC challenge were novel in their approach to the problem space. Winner 1, *Ask Dory!* from Applied Informatics, is a web-based portal providing information about clinical trials for cancer and other diseases to benefit consumers and clinical trials researchers. It significantly improves on

clinicaltrials.gov in two ways – with an innovative entropy-based algorithm for rapid and accurate answers and with a consumer-friendly interface that allows users to immediately connect with trial administrators by web-phone or email.

Applied Informatics is a start-up firm that responded to the NCI/ONC challenge by using their software development and computational expertise to develop a cancer-specific consumer information portal that builds on their existing clinical information database and decision algorithms to benefit consumers and clinical trials researchers. With the potential for cash prizes and more significantly, the recognition and publicity that winners would receive, the challenge incentivized this small developer to marshal their limited resources to address the challenge of cancer control.

Winner 2, Dr. Mia Levy, the team lead for *My Cancer Genome*, was able to bring a rare combination of expertise in clinical oncology, genomic medicine, and bioinformatics to bear on the NCI/ONC challenge. As a clinical faculty member at Vanderbilt, Dr. Levy was not able to obtain NIH grant or contract funding for their application because of its focus on the translation and application of scientific evidence for clinical impact. The challenge provided a rapid mechanism for her team to gain publicity and support for further development of an important, emerging area of cancer treatment decision support with an application that can be integrated with EHR systems.

My Cancer Genome is the first application to provide tailored decision support for treatment options based on tumor gene mutations, an important and emerging area of scientific inquiry. Utilizing the NCI PDQ dataset, this application is integrated with Vanderbilt's EHR system and can also be accessed as a stand-alone service on the web.

The extensive media outreach by NCI, ONC, and Health 2.0 (the challenge contractor) with stakeholders outside the scientific community has led to a significant increase in inquiries from developers, engineers, and technology entrepreneurs to find suitable partners in medical research to address the difficult challenge of cancer prevention and control through NCIs' existing R01/R21/R01 grant funding mechanisms.

The innovation challenge effort has also led to utilization of public data resources such as PDQ, clinicaltrials.gov, and the Cancer Atlas for potential public benefit which would not have been leveraged without the incentives provided to developers by the challenge.

3.2. **CDC Flu App Challenge**

Sponsoring Agency:
CDC, part of HHS

Overview:
This challenge asked competitors to use CDC flu data to develop an innovative mobile or web application, data visualization, system, tool, or game that would improve communication about critical information about the flu and its impact.

Website:
http://fluapp.challenge.gov

Problem Statement:
CDC was seeking an innovative use of technology to raise awareness of influenza and educate consumers on ways to prevent and treat the flu. CDC has a wealth of flu data and information that can be used to help increase awareness of flu symptoms and the benefits of vaccination, to promote positive health behavior changes, and to increase the reach of CDC health messages to new audiences.

Proposed Goal:
The primary objectives of the challenge were to:
- Develop new and innovative ways to present CDC flu data through creative tools, applications, or games which have the potential to:
    - Increase awareness of CDC flu information
    - Improve flu health communication message delivery
    - Educate audiences about the benefits of vaccination and the symptoms of flu
    - Impact positive behavior change outcomes, including encouraging the general public to get vaccinated
    - Build new audiences and improve the reach of CDC information through new communications channels
- Contribute to CDC's goal to make content, tools, and services available when, where, and how users want them by developing creative ways to distribute and disseminate flu health messages
- Advance the Open Government Directive to enhance public participation by:
    - Piloting a challenge using CDC flu data
    - Applying lessons learned to future challenges
- Support the Administration's guidance that "strongly encourages agencies to utilize prizes and challenges as tools for advancing open government, innovation, and the agency's mission."

Why a Prize as Preferred Method:
In an effort to surface key CDC content and data about seasonal flu, CDC decided to host the "CDC Flu Application Challenge." This challenge asked developers across the United States to leverage the abundant data CDC has to offer. These new developers were encouraged to create an application, game or visualization tool that communicates flu data in a new and innovative way. By opening the challenge to this new set of developers and designers, CDC received numerous submissions that showcased creative applications of flu data.

In addition to generating new and inventive ways of communicating flu information, this challenge allowed CDC to generate multiple innovative tools from individuals, micro-enterprises and small business that normally do not work on government contracts or are a part of the regular procurement process.

Desired Participants for Competition:
This competition challenged developers across the United States to leverage the abundant data CDC has to offer. These new developers were encouraged to create an application, game or visualization tool that communicates flu data in a new and innovative way. By opening the challenge to this new set of developers and designers, CDC received numerous submissions that showcased creative applications of flu data from individuals, micro-enterprises and small business that normally do not work on government contracts or are not a part of the regular procurement process. Entrants into the challenge included small businesses, universities, consulting firms, professional graphical artists, computer programmers, educators, doctors and public health professionals, students teams, and design firms with wide geographic representation across the US.

Solicitation and Outreach Methods and Results:
   a. *Marketing methods for competition and participants :*CDC developed an extensive marketing plan which included:
      o Prominent buttons displayed on CDC's full website and mobile website
      o Announcements through CDC's email lists
      o Promotion through CDC's social media channels, including Facebook and Twitter
      o Announcements via CDC's text message program

   In addition to marketing via CDC's communication channels, the challenge was also promoted externally through features on Challenge.gov, USA.gov and the GovGab blog.

   Advertisements were also posted on Facebook pages targeted to mobile application designers, gamming developers, and various other types of technology specialists.

The challenge was also marketed through an extensive partnership plan which included outreach to various health communication associations and development communities, including announcements at various mobile and technology conferences.

b. _Evaluation method:_ The efforts of the marketing were evaluated at several points during the challenge to determine which channels were most effective at generating interest in the challenge and to revise tactics in order to capitalize on the most effective methods.

In developing the marketing plan, CDC considered several elements including a multi-phased approach to:
   o Generate interest prior to the launch of the challenge
   o Encourage participation upon launch of the challenge
   o Promote public participation in the review and selection of a People's Choice Award at the conclusion of the challenge
   o Announce and publicize the winning entries after the evaluation period to generate interest and usage of the winning solutions

Incentives:
a. _Monetary:_ CDC's Federal funds were used to fund the prizes and the prizes were awarded through an existing CDC contract.   No private funds were used.

The challenge offered a total of $35,000 in prizes among nine winners:
   o First Place: $15,000 cash
   o Second Place: $10,000 cash
   o Third Place: $5,000 cash
   o People's Choice: $2,500 cash
   o Honorable Mention (5): $500 cash

Evaluation:
Submissions were evaluated by a qualified panel selected by CDC. The panel evaluated each submission to ensure that the technology solution used at least one of the flu datasets provided by CDC and met the goal of raising awareness of influenza and its impact or educating audiences on influenza prevention and treatment. The panel selected winners for the categories for first place, second place, third place and the five honorable mentions based on the effectiveness of the technology solution to showcase CDC flu information in new and innovative ways. Specific evaluation criteria included:

- o Data Criteria: Does the app or game use a combination of creative and relevant data sets including at least one from data.CDC.gov? (20%)
- o Technical Implementation: Is the app implemented in a functional and elegant fashion? (20%)
- o Education Criteria: Does the software apply best practices for health and risk communication, as cited on www.cdc.gov/healthcommunication/HealthBasics? (20%)
- o Creativity: Is the app creative? Interesting? Fun to use? (40%)

The People's Choice Award was selected based on public voting and ranking of the different applications.

Lessons learned from the evaluation included:

Lessons Learned	Recommendations
The rules language regarding the selection of technical evaluators & judges was too strict, and did not allow for the flexibility to add an additional technical evaluator after the challenge opened.	Future challenges should include language in the rules that CDC has the right to add, or remove a technical evaluator from the challenge up until the submission deadline.
Because of the sheer number of entries (96), the review process took longer than expected, and as a result CDC was unable to announce the winners on schedule, and needed to extend the date to announce winners.	Rules regarding the announcement of winners need to allow for the date to be extended, or changed.
Some of the applicants included the CDC logo in the graphics that accompanied their submissions. The CDC logo is not public domain and cannot be used without written permission from CDC. CDC contacted applicants individually by email asking them to remove the CDC logos, and also created a discussion thread informing other competitors of the policy.	Include specific language in the rules that the CDC logo is not public property, and cannot be included in any submissions without written permission from CDC.

Lessons Learned	Recommendations
One of the tasks for moderators of the Challenge.gov site was to mark submissions as eligible for evaluator. Until an app was marked as eligible it did not get posted to the list of submissions on the site. Moderators needed to review each submission and confirm that it met the data requirement, as well as the education requirement prior to making it eligible. The time associated with this task was more than was originally anticipated.	Discuss the moderation process and eligibility requirements for applications at the outset, and identify a process for approving and reviewing apps. This will ensure it is included in the schedule and all team members can cover the work.
The challenge schedule dictated that applications be submitted by midnight on a Friday. This proved to be a mistake as many applicants had last minute questions, or concerns as they finished their app and prepared to submit, however the Challenge.gov staff and project team was not available to troubleshoot, and follow up with competitors.	The deadline for submissions is mid-week rather than before a weekend or holiday, so that staff is available to support participants, and address any technical errors that occur as users are making their final submission. Also recommend that the deadline for future challenges be changed to 5:00 p.m. EST instead of midnight to ensure that the project team is available to answer last minute questions.
Many of the submissions to be evaluated were mobile applications designed for a variety of mobile technology platforms including iPhone, Android, and Blackberry. It proved to be a challenge to ensure that all technical evaluators & judges had access to the needed technologies to test submissions.	A list of all devices needed for evaluating submissions should be shared with technical evaluators & judges well in advance. Technical evaluators & judges should be asked to confirm that they can procure access to the platforms if needed by networking with others understanding that Federal funds cannot be used unless authorized and allowable." If technical evaluators & judges would not have access to the majority of the devices needed for testing, CDC recommends choosing an alternate technical evaluator.

Partnerships:
The challenge was administered solely by CDC without the assistance of external partnerships.

Resources:
The challenge was managed by CDC staff and contractors.   In addition to the CDC staff, CDC also employed the assistance of an outside contracting firm to assist with:
- o Technical expertise related to the project (application development and challenges)
- o Project management and coordination of a new media project
- o Technical support for a new media project
- o Promotion of challenge
- o Evaluate the project
- o Pay prizes to the developers of the winning tools

The total contract cost of the challenge was $94,611.29 (inclusive of the cash awards).

The funding was FY10 funding and was placed on an existing CDC contract (200-2004-03409, Task Order 78). This challenge was started before the COMPETES process was in place. The funding citation was: 939ZDQG 2512 2010 75-X-0140 131183121.

The applications developed for CDC's flu app challenged showcased an impressive amount of creativity and variety of technology solutions from flu games, to Facebook applications, to mobile applications, to web-based solutions, to interactive voice response systems.

Results:
Entries in CDC's Flu App Challenge, even those that didn't win, offered creative approaches to improving influenza message dissemination and audience engagement. CDC was already aware of the technology proposed by many of the entrants, but due to resource and budget constraints, security requirements, or other barriers, may not yet have applied the tools and concepts in challenge entries to CDC's current work. Through challenge submissions, CDC was able to see real applications of current technologies and approaches to the problem, and how they could be applied to CDC data and messages. The challenge invigorated CDC's existing efforts, provided promising new innovations to explore, and helped CDC technologists eliminate ineffective or inappropriate possibilities.

One entry combined CDC's new content syndication API with older interactive phone systems and text-to-voice technology to bring CDC health messages to

those who still do not have access to the Internet. Another solution used a popular location-based social networking service and combined it with incubation and infection periods and health messages to enable a user to alert her friends that she might have been infectious when they last met and to encourage vaccination. Other entries used the social graphs in popular social networking sites to encourage vaccination give notice of infection investigate possible spread of infection among friends and even win sympathy when infected.

The winning entry, Flu-Ville!, used current flu activity reports, prevention messages, and general CDC health information to create an interactive game. Games are highly popular and allow CDC to reach audiences that might have interest in gaming, but not public health or influenza. Research on the impact and effectiveness of games in driving positive health behaviors is still nascent and the challenge gave CDC a low-cost way to engage game developers in applying online gaming principles to solving some of public health's most pervasive and persistent challenges.

The technology and the solutions shown in the Flu App Challenge are not necessarily influenza-specific and can be adapted to meet other health information dissemination needs, whether the topic be other infectious diseases, emergency information or chronic disease management. Elements of the winners are being considered and redesigned for use in other products, such as ways to incorporate location-based tailored information in mobile applications, improved services for existing systems, and the increased use of peer-to-peer communication of CDC health messages.

4. **Department of Labor**

   4.1. InformACTION App Challenge

   Sponsoring Agency:
   DOL – Wage and Hour Division (WHD) and Occupational Safety and Health Administration (OSHA)

   Overview:
   This DOL competition asked developers to use its public enforcement data in innovative way to increase public awareness about employer compliance with laws enforced by DOL to ensure fair and safe workplaces.

   Website:
   http://challenge.gov/Labor/201-dol-informaction-app-challenge

Problem Statement:
DOL offers a wealth of data that often go unnoticed by the technical community and general public. For example, as part of the Data.Gov initiative, DOL displays online enforcement data that shows the results of Wage and Hour and OSHA compliance inspections of workplaces. While this is an important first step in making enforcement data available to the public, the raw data is not presented in a way that the public can easily understand and use.

Proposed Goal:
The challenge required the use of OSHA and WHD inspection and compliance information from hotel, motel, restaurant, and retail industries to help workers and consumers take educated action. Workers and consumers are already accustomed to using online review sites, apps, and other tools. The InformACTION App Challenge made it possible for workers and consumers to easily access enforcement data to inform their decisions and general awareness about workplace issues. By making DOL's enforcement data more accessible to the public, the competition also increased the incentives employers have to comply with Federal workplace laws because their compliance track record is now readily accessible to the public.

Why a Prize as Preferred Method:
DOL utilized a prize competition in order to tap into pools of talented developers across the country that traditionally do not participate in Government IT development or mission specific exercises, with a desire to collaborate directly with new and established innovators who typically do not interact with Government data, who do participate in the creation of new groundbreaking online platforms and technologies, and who are experts in the development of mobile applications.

Desired Participants for Competition:
Talented developers across the country that traditionally do not participate in Government IT development or mission specific exercises, with a desire to collaborate directly with new and established innovators who typically do not interact with Government data, who do participate in the creation of new groundbreaking online platforms and technologies, and who are experts in the development of mobile applications.

Solicitation and Outreach Methods and Results:
DOL utilized GSA's Challenge.gov platform to host and launch its informACTION App challenge. The Department used multiple methods to market the challenge, including press releases, social media via its Open Government Blog, Facebook and Twitter accounts. DOL also announced the challenge on the Federal Register, as required by the America COMPETES Reauthorization Act. DOL additionally created a dedicated website, http://developer.dol.gov/ that housed APIs, SDKs

and sample code for multiple platforms to ensure developer success. These actions drew the attention of various media outlets that ran stories about the challenge and amplified DOL's outreach efforts. Lessons learned include: establishing more clear and mature measures of success, need to establish DOL developer community, and non-traditional outreach via developer-friendly online communities.

Incentives:
All challenge prizes were offered in monetary form. The total prize award resulted in $34,500 (first place prize of $15,000; second place prize of $10,000; third place prize of $5,000; four honorable mention prizes of $500 each; and a people's choice prize of $2,500).

All monetary prizes were obligated and paid from appropriated funds derived from the Departmental Management account.

Evaluation:
DOL's evaluation process was composed of two parts. The first was the development of four basic evaluation criteria that were weighed based on their priority:
- Use of Required Data - Does the application use a combination of creative and relevant data sets, including at least the two mentioned in this challenge from api.dol.gov? (20%)
- Technical Implementation - Is the application implemented in a functional and elegant fashion? (20%)
- Mission - Does the application meet the mission defined for this challenge? (20%)
- Creativity - Is the application creative, interesting, and easy to use? (40%)

The second part included the establishment of a two-tiered panel of judges composed of subject matter experts and DOL leadership. The initial panel screened all submissions for compliance with minimum established technical and policy requirements, and ranked each submission based on the above criteria. The final panel of DOL leaders evaluated each qualified submission based on the above criteria, and potential for mission amplification.

Partnerships:
The challenge was developed and executed through an internal partnership among DOL agencies, including the Office of the Deputy Secretary, WHD, OSHA, Solicitor's Office (SOL), Office of Public Affairs (OPA) and Office of the Assistant Secretary for Management (OASAM).

Resources:

Resources used for the development, execution and management of this challenge included staff time from the Office of the Deputy Secretary, WHD, OSHA, SOL, OPA, and OASAM.   Related obligations and expenditures were recorded against the appropriate salaries and expenses accounts.

Results:

As a result of the InformACTION Challenge, there are now multiple new public tools available for consumers to easily search and use DOL enforcement data to inform decisions about where to shop, eat, or spend the night. The applications also make it easier for workers and employers to keep track of the compliance record of employers in their area.

In addition, DOL used the opportunity to publish a DOL API and SDK to make data available to third party developers.

The total prize purse was $34,500, including a first place prize of $15,000; a second place prize of $10,000; a third place prize of $5,000; four honorable mention prizes of $500 each; and a people's choice prize of $2,500).

The informACTION challenge on Challenge.gov advanced DOL's mission by leveraging existing technology to raise public awareness about employer compliance with Federal workplace laws.   Multiple applications were developed utilizing DOL enforcement data that in many cases incorporated access to mainstream applications like Yelp!, Google, Yahoo! and Bing. Consumers, workers and employers can now more easily identify OSHA and WHD enforcement history of restaurants, shops, and hotels or motels in relation to Federal wage and hour and workplace safety laws.

DOL is in the process of evaluating additional success factors including data on application usage, feedback from users, usage of DOL data, and influence over consumer choices based on enforcement activities.

4.2. Occupational Employment Statistics Challenge

Sponsoring Agency:
DOL – Office of the Deputy Secretary of Labor

Overview:
This challenge asked developers to take data from DOL's Bureau of Labor Statistics(BLS) and create applications that could help individuals plan their education or job training strategies, negotiate pay and benefits with employers,

find places to update their skill sets, and make informed decisions about potential career changes.

Website:
http://challenge.gov/Labor/202-occupational-employment-statistics-challenge

Problem Statement:
BLS collects a wealth of information, including Occupational Employment Statistics (OES), but these data can be overwhelming if not presented in a fashion tailored to specific user needs. There is a lack of awareness by the general public about the large amount of DOL data available to help individuals better understand the job market, allow consumers to assess companies' labor practices, and better connect workers to good jobs, local training opportunities, and other resources.

Proposed Goal:
Reach key DOL customer groups including job seekers and individuals planning a career change, relocating, or planning their career paths. In addition, DOL used the opportunity to publish a new DOL API and SDK to make data available to third party developers.

Why a Prize as Preferred Method:
DOL utilized a prize competition in order to tap into pools of talented developers across the country that traditionally do not participate in Government IT development or mission specific exercises. DOL wanted to collaborate directly with new and established innovators that typically do not interact with Government data.

Desired Participants for Competition:
Talented developers across the country that traditionally do not participate in Government IT development or mission specific exercises, with a desire to collaborate directly with new and established innovators who typically do not interact with Government data, who do participate in the creation of new groundbreaking online platforms and technologies, and who are experts in the development of mobile applications.

Solicitation and Outreach Methods and Results:
DOL utilized GSA's Challenge.gov platform to host and launch its OES App challenge. The Department used multiple methods to market the challenge, including press releases, social media via its Open Government Blog, Facebook and Twitter accounts. DOL also announced the challenge on the Federal Register, as required by the America COMPETES Reauthorization Act. DOL additionally created a dedicated website, http://developer.dol.gov/ that housed APIs, SDKs and sample code for multiple platforms to ensure developer success. These

actions drew the attention of various media outlets that ran stories about the challenge and amplified DOL's outreach efforts. Lessons learned include: establishing more clear and mature measures of success, need to establish DOL developer community, and non-traditional outreach via developer-friendly online communities.

Incentives:
All challenge prizes were offered in monetary form. The total prize award resulted in $34,500 (first place prize of $15,000; second place prize of $10,000; third place prize of $5,000; four honorable mention prizes of $500 each; and a people's choice prize of $2,500).

All monetary prizes were paid from appropriated funds derived from the Departmental Management account.

Evaluation:
DOL's evaluation process was composed of two parts. The first was the development of four basic evaluation criteria that were weighed based on their priority:
- Use of Required Data - Does the application use a combination of creative and relevant data sets, including at least the two mentioned in this challenge from api.dol.gov? (20%)
- Technical Implementation - Is the application implemented in a functional and elegant fashion? (20%)
- Mission - Does the application meet the mission defined for this challenge? (20%)
- Creativity - Is the application creative, interesting, and easy to use? (40%)

The second part included the establishment of a two-tiered panel of judges composed of subject matter experts and DOL leadership. The initial panel screened all submissions for compliance with minimum established technical and policy requirements, and ranked each submission based on the above criteria. The final panel of DOL leaders evaluated each qualified submission based on the above criteria, and potential for mission amplification.

Partnerships:
The challenge was developed and executed through an internal partnership among DOL agencies, including the Office of the Deputy Secretary, BLS, Chief Economist Office, and OPA.

Resources:
Resources used for the development, execution and management of this challenge included Office of the Deputy Secretary, BLS, Chief Economist Office,

the Office of the Solicitor, and OPA.   Related obligations and expenditures were recorded against the appropriate salaries and expenses accounts.

Results:
The grand prize winner, *Where are the Jobs?*, allows users to retrieve average salaries of occupations and occupation groups by State or region and has a comparison function that allows users to find where job types or industries are centered and the best compensated. It helps workers make better choices about where to get training and education, apply for positions, or, if necessary, move to find good jobs.

The application assists individuals in planning their education, changing careers, relocating, or negotiating compensation packages by generating data visualizations of customized results on wages, employment growth, unemployment, and industry outlook based on geographic location, occupation, industry or other user-selected criteria. The application also helps all other users access and organize the BLS OES data.

In addition, DOL used the opportunity to publish a new DOL API and SDK to make data available to third party developers.

The OES competition on Challenge.gov advanced DOL's mission by leveraging existing technology to provide workers with interactively tools to explore salary and job statistics for various occupations at national, state and regional levels, and be able to identify an occupation and explore the job market for that occupation (at the state or regional level). Multiple applications were developed utilizing Labor Market Information data that in many cases incorporated access to mainstream applications like Google, Yahoo!, and Bing.

DOL is in the process of evaluating additional success factors including data on application usage, feedback from users, usage of DOL data, and influence over consumer choices based on enforcement activities.

5. **Department of Veterans Affairs**

5.1. Blue Button® for All Americans Prize Contest

Sponsoring Agency:
VA Innovation Initiative (VAi2)

Overview:
To help veterans have access to their heath information regardless of where they get their care, the VA sponsored the Blue Button® for All Americans Prize

Contest, announced in July 2011. This challenge asked HealthIT software developers to include a Blue Button data download function in PHR systems and then arrange to install the PHR on patient-facing websites of 25,000 doctors across America.

Website:
http://bluebutton.challenge.gov/

Problem Statement:
Veterans who receive medical care through VA health care facilities can download their personal health data through the My Health*e*Vet patient portal using the Blue Button® software function.

VA delivers care to approximately six million veterans; many of these and most of the 24 million veterans in the United States receive their care from providers <u>outside</u> the VA health care system. VA believes that all veterans – and not just veterans who receive their care from VA – should be able to download their health data using the Blue Button.

Proposed Goal:
The goal of the challenge was to enable veterans to be able to download their health data regardless of where they get their care. The primary objective of the challenge was to achieve installation of Blue Button-enabled PHRs in a large number (>25,000) of non-VA doctor's offices across America.

Why a Prize as Preferred Method:
A prize competition was assessed as the most efficient and economical way of encouraging PHR developers to include Blue Button functions in their software and arrange to install that software on patient portals of thousands of doctors across the country. This particular outcome was especially well suited for a prize: it could be executed quickly, achieved inexpensively, and judged objectively. Moreover, due to the fragmented and competitive market of PHR software development, a cooperative agreement would have been difficult. Instead, VA chose to leverage these factors by giving developers a new opportunity to compete.

Desired Participants for Competition:
VA identified two kinds of PHR developers that VA expected to compete.

- First, startup or small-business PHR developers who would perceive their product to be more competitive with a Blue Button function, and for whom the prize amount would be relatively significant.

- Second, established PHR vendors who would have similar expectations about the competitive advantages of adding Blue Button functionality to their existing products, and for which the primary benefit of participation would not be the prize amount but instead publicity and market differentiation.

Based on inquiries VA received during the course of the challenge on the Challenge.gov website, it seemed clear that VA had successfully identified the relevant markets. VA did receive submissions (which did not meet judging criteria) from startup and small organizations. The winner was from an organization with an established PHR customer base.

Solicitation and Outreach Methods and Results:
The challenge was announced in the Federal Register, 76 FR 42164, on July 18, 2011 and on the Challenge.gov website the same day.

VA identified the health IT trade press as the optimal way to publicize the challenge to likely participants, and used press releases, blogs, social media such as Twitter and VA websites for that publicity. VA achieved significant "echo effect" from trade press and health IT blogs, with significant assistance from the U.S. Chief Technology Officer, HHS, and the Robert Wood Johnson Foundation.

Incentives:
The prize amount paid to the winner was $50,000.

Evaluation:
Contest rules required an entrant to demonstrate that a Blue Button-enabled PHR had been installed on the patient-facing websites of at least 25,000 doctors. VA's evaluation focused on verifying that an entrant's qualifying PHR was in fact so installed.

VA deliberately structured the challenge to provide entrants maximum flexibility in how they built and installed their PHR products; VA needed to be equally flexible in how VA evaluated the entries VA received. VA's evaluation method was tailored to the installations presented by the winning entrant and involved actual log-on to internet web sites to verify required Blue Button functionality, and actual installation of the PHR by the required number of doctors.

McKesson was declared the apparent winner of the competition on September 28, 2011, and after providing additional information required by the competition rules was declared the winner of the challenge on October 21, 2011.

Partnerships
The White House, VA, and HHS Chief Technology Officers were actively engaged in promoting the challenge as well as advancing the underlying concepts of empowering consumers with their own health data.

While the challenge was underway, HHS sponsored a media event that drew considerable attention to the Blue Button technology and solicited commitments from industry to install and use Blue Button-enabled PHRs in a variety of HIT settings.

Also during the pendency of the challenge, the Robert Wood Johnson Foundation launched a website, http://bluebuttondata.org/ to promote the use of Blue Button technologies in health care.

Resources:
Overall costs were modest, consisting of administrative salary expense and the cost of the prize purse.

Category	Hours	Cost	Account
Salary Expense			
Senior Leadership (SES)	35	$ 2,616	3600000.00 0151A1 FY11
Contest Coordinator (GS15)	270	$ 19,795	3610160.01 0152A1 FY11
Staff and Fiscal Support (GS13-14)	85	$ 3,715	3602000.80 0151A1 FY11
Office of General Counsel	55	$ 4,488	3620151A1.02 101-1200-017
Total Salary Expense		$ 30,614	
Prize Amount		$ 50,000	3620160-6068-803800-2580 - T21SOTH00
Total Resources		**$ 80,614**	

Results:

The winner of the $50,000 prize – McKesson Corporation's Relay Health division – added Blue Button download functions to its existing PHR system which is used by approximately 200,000 doctors and 2,000 hospitals. McKesson donated the prize to the Wounded Warrior Project after being declared the winner of the challenge in October 2011.

- While typical contract and grant making development cycles span several months before soliciting proposals, this challenge took only six weeks to develop and launch. This was VA's first challenge under the COMPETES Act.

- VA was able to declare a winner of the challenge approximately four months after the announcement date: this time included about four weeks of evaluation of the winner's entry. Performance periods under a contract or grant would have been at least three times as long.

- Administrative costs (see section 14, below) were modest and are assessed as significantly less than if a conventional contract or grant vehicle was used.

- Had the winner merely installed a Blue Button-enabled PHR in the patient portals of 25,000 doctors – the minimum necessary – the $50,000 prize would equate to a cost of two dollars per doctor. Because the winner added the Blue Button function to the PHRs used by the approximately 200,000 doctors in its system, the prize amount cost the taxpayers about 25 cents per doctor.

As noted, the goal of the challenge was to advance VA's mission of improving the health care and health status of veterans by enabling them to download their health data from a large number of non-VA doctors. The primary objective of the challenge was to achieve installation of Blue Button-enabled PHRs in a large number (>25,000) of non-VA doctor's offices across America. VA achieved the goal and significantly exceeded the objective.

- The winner of this challenge had approximately 200,000 doctors and 2,000 hospitals using their PHR system.

- The winner's user base had substantially more than the 25,000 minimum doctors required, and in addition represented very significant share of the overall doctor and hospital markets: almost a third of America's practicing doctors[43] and slightly more than a third of the country's registered hospitals.[44]

- The challenge was at least in part a catalyst for the adoption of Blue Button technologies in a wide cross-section of the HIT market:

    o Aetna, Inc. and United Health Group, each among the five largest health benefit plans in the country, announced during the challenge period that they would add Blue Button capabilities to their patient portals. Aetna's Blue Button implementation

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[43] http://www.bls.gov/oco/ocos074.htm#projections_data : 661,000 physicians.
[44] http://www.aha.org/research/rc/stat-studies/fast-facts.shtml : 5,754 hospitals.

occurred in the fourth quarter, 2011; United Health Group's Blue Button functions are scheduled to go live in the first quarter, 2012.

o While the challenge was open, Humetrix, Inc., a medium-size California HIT developer, announced a mobile Blue Button application to allow patients to securely transmit their health information directly to the tablet computers of their doctors.

o Walgreen's, one of the Nation's largest pharmacy chains, announced it would add Blue Button functions to its online patient portals and store-based kiosks.

o Other software developers, including Iatrix, Inc. (a hospital software company in Massachusetts) and a number of small companies, added Blue Button capabilities to their software.

The challenge validated Blue Button technology as part of the routine way in which doctors across America and their patients – including veterans – share health information.