**Vertical 11. Prizes and Challenges**

*Note: Content has been crowdsourced and developed by community, with goal of harmonizing content between Innovation Toolkit and existing Federal resources. These resources were drawn upon with an aim toward acknowledging existing content, ensuring accuracy, and approval to include. Resources were augmented, updated, and further developed throughout the draft.*

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| --- |
| **Outline:**   1. **An “elevator pitch,” which provides highlights of the content, such as why the approach is important, how it works, and examples of where it has worked.** 2. **A short, digestible summary of underlying premises and rationales, supported by research (i.e., not a report).** 3. **Profiles of major categories of candidate users, including specific examples of when, and under what circumstances, the approach may be employed, supported by research into the target audience and their needs.** 4. **One or more “success stories” or other learning narratives that highlight the impact of and justification for using this approach.** 5. **Documentation of challenges to deployment, and potential limitations of the approach, including barriers or obstacles encountered within agencies employing the approach.** 6. **A “How-To” document, detailing key steps for deploying the approach, including promising practices in adaptation and deployment.** 7. **An online inventory of resources.** 8. **Examples of policy (e.g. legislation, Executive Order, etc.) that have enabled or encouraged the approach.** 9. **Future directions (next practices as opposed to best practices).** |

#### Deliverable 1: Elevator pitch summary

##### **Intro**

An incentive prize is a contracting model that promotes innovation by offering a monetary or non-monetary reward upon completion of a specific objective task. Prizes enable the Federal government to pay only for success, establish an ambitious goal, and reach beyond the “usual suspects” to increase the number of minds tackling a problem without having to predict which team or approach is most likely to succeed. *Sourced directly from:* [“[Innovative Contracting Case Studies](https://www.whitehouse.gov/sites/default/files/microsites/ostp/innovative_contracting_case_studies_2014_-_august.pdf),” Office of Science and Technology Policy, August 2014.] To date, agencies have sponsored more than 740 public-sector prize competitions on Challenge.gov, a one-stop shop where tens of thousands of entrepreneurs and citizen solvers have participated and been awarded over $250 million in prizes. *Sourced directly from:* [“[A Strategy for American Innovation](https://www.whitehouse.gov/sites/default/files/strategy_for_american_innovation_october_2015.pdf),” Economic Council and Office of Science and Technology Policy, October 2015.]

##### **Why**

*Sourced directly from:* [“[Prizes and Challenges](https://www.whitehouse.gov/administration/eop/sicp/initiatives/prizes-challenges),” White House, 2017.]

Prize competitions have become a proven way to increase innovation for the public, private, and philanthropic sectors. Today, incentivized, open competition has become a standard tool in many agencies’ toolbox for delivering more cost-effective and efficient services and advancing agencies’ core missions. Federal agencies have discovered that prizes and challenges allow them to:

* Pay only for success and establish an ambitious goal without having to predict which team or approach is most likely to succeed.
* Expand the Federal government’s reach to citizen solvers and entrepreneurs of diverse backgrounds, skillsets, and experience.
* Bring out-of-discipline perspectives to bear.
* Increase cost-effectiveness to maximize the return on taxpayer dollars.
* Inspire risk-taking by offering a level playing field through credible rules and robust judging mechanisms.

[“[Prizes and Challenges](https://www.whitehouse.gov/administration/eop/sicp/initiatives/prizes-challenges),” White House, 2017.]

**How**

In December 2010, Congress passed the [America COMPETES Reauthorization Act](https://www.gpo.gov/fdsys/pkg/PLAW-111publ358/content-detail.html), providing all Federal agencies broad authority to conduct prize competitions as called for by the President in the [Strategy for American Innovation](https://www.whitehouse.gov/sites/default/files/uploads/InnovationStrategy.pdf). In 2016 Congress passed the [American Innovation and Competitiveness Act](https://www.congress.gov/bill/114th-congress/senate-bill/3084/text), which updated important parts of this authority. All agencies and programs should be aware of the flexibilities offered by the COMPETES Act prize authority to source solutions from American innovators. Under the Act, agencies have authority to establish ambitious prizes to advance national priorities:

* **Scope**: The Act authorizes agencies to conduct any prize competition that will “stimulate innovation that has the potential to advance the mission of the respective agency.”
* **Size**: Agencies can offer up to a $50 million prize without further consultation with Congress.
* **Multi-Sector Partnerships**: The Act allows agencies to partner broadly with other government entities and the private sector, as well as solicit and accept philanthropic and private sector funds to support a prize purse or the competition’s design and administration. (For more information on the prize authority in the America COMPETES Reauthorization Act, please see the [Fact Sheet and Frequently Asked Questions memorandum](https://cio.gov/wp-content/uploads/downloads/2012/09/Prize_Authority_in_the_America_COMPETES_Reauthorization_https:/cio.gov/wp-content/uploads/downloads/2012/09/Prize_Authority_in_the_America_COMPETES_Reauthorization_Act.pdf).)

Agencies can also consider conducting prizes under other authorities, such as agency-specific authorities (such as those that apply to DOD, DOE, and NASA); 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. The General Service Administration has a contract vehicle (Schedule 541 4G) to decrease the amount of time required for agencies to tap the private-sector expertise that is so critical to early success.

In considering the use of prizes and challenges, agencies should have a clear idea of what they are trying to accomplish by supporting or encouraging the creation of a prize, and how the prize will help them achieve that goal. A prize should not be an end in itself, but one means within a broader strategy for spurring private innovation and change. Furthermore, agencies should plan appropriately for all stages of prize development and, where permissible, consider partnering with other entities that might administer, support, or catalyze the prize. *Sourced directly from:* [“[Guidance on the Use of Challenges and Prizes to Promote Open Government](https://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-11.pdf.),” Office of Management and Budget M-10-11, March 8th, 2010.]

Prepare

* Estimate the necessary resources and partnerships
* Determine if a challenge is the appropriate tool for addressing your goals.
* Identify the goals and desired outcomes of your efforts

Develop

* Determine the prize competition structure and implementation timeline.

Work with internal groups to establish eligibility and submission requirements, terms and conditions, and judging criteria

* Connect with your communications team to outline your announcement and ongoing outreach strategy to engage your solver pool.

Conduct

* Roll out your communications plan, accept solutions, and interact with solvers to continue to generate interest and enthusiasm.
* As submissions close, begin to evaluate entries, select winners and verify winner eligibility.

Award & Transition

* Determine the appropriate channels for announcing your winner(s)
* Work with internal teams to expedite payment and document your processes.
* Explore important nonmonetary incentives that reach all participants — regardless of winner status — such as detailed feedback, recognition, and information on follow-on funding opportunities.
* Analyze and document the results, outcomes and impact of your incentivized competition
* Evaluate avenues for remaining engaged with your solvers as well as and next steps for high-potential solutions, whether moving them into an “accelerator” or exploring other channels for transitioning prize solutions to procurement. *Subsection drawn directly from:* [“[Challenges and Prizes Toolkit](https://www.challenge.gov/toolkit/phases/),” Challenge.gov, 2017.]

#### Deliverable 2: Summary of underlying rationales / empirical research

*Section sourced directly from:* [“[Innovative Contracting Case Studies](https://www.whitehouse.gov/sites/default/files/microsites/ostp/innovative_contracting_case_studies_2014_-_august.pdf),” Office of Science and Technology Policy, August 2014.]

What are the benefits of Incentive Prizes?

Incentive prizes offer resource-constrained program managers a cost-effective tool to spur innovative solutions to clearly-defined challenges. In addition to only paying the winner, well-structured prizes can drive cumulative competitor investment totaling 10-40 times the prize purse. Incentive prizes also reduce bureaucratic obstacles to innovation by attracting and focusing competitors of all backgrounds to address a well-defined challenge in pursuit of a prize and acclaim. Incentive prizes offer innovators a clear target to shoot for, generate substantial public and industry support, and require far less paperwork than traditional acquisition processes.

Incentive prizes enable the Federal government to:

* **Pay only for success and 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 value past performance at the expense of disruptive innovation. With a focus on proven results, prizes empower untapped talent to deliver unexpected solutions to tough problems.
* **Reach beyond the “usual suspects” to increase the number of minds tackling a problem**. Prizes can tap the top talent and best ideas wherever they lie, sourcing breakthroughs from a broad pool of innovation in a given industry.
* **Bring out-of-discipline perspectives to bear.** Empirical research conducted by Harvard Business School3 finds that breakthrough solutions are most likely to come from outside the scientific discipline or at the intersection of two fields of study.
* **Increase cost-effectiveness to maximize the return on taxpayer dollars.** As teams compete not just for the cash purse, but also for the associated validation, prestige, and satisfaction that results from solving important problems, prizes incent significant additional investment, leveraging the prize purse’s impact.
* **Inspire risk-taking by offering a level playing field through credible rules and robust judging mechanisms.** Prizes give entrepreneurs and innovators license to pursue an endorsed stretch goal that otherwise would have been considered overly audacious. Clear target metrics and validation protocols defined for the judging of a prize can themselves become defining tools for the subject industry or field.

[“[Innovative Contracting Case Studies](https://www.whitehouse.gov/sites/default/files/microsites/ostp/innovative_contracting_case_studies_2014_-_august.pdf),” Office of Science and Technology Policy, August 2014.]

#### Deliverable 3: Profiles of major categories of candidate users - examples of when to deploy

**When/How to use**:

*Sourced directly from:* [“[Guidance on the Use of Challenges and Prizes to Promote Open Government](https://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-11.pdf.),” Office of Management and Budget M-10-11, March 8th, 2010.]

A prize should not be an end in itself, but one means within a broader strategy for spurring change. When considering prizes, agencies should select the type of prize best able to accomplish the broader aim. A 2009 McKinsey study identified six prize archetypes:

* **Exemplar prizes**, such as the Nobel Prize, define excellence within an area. Historically, most prizes have been exemplar prizes that recognize past general achievement in a field, but other prize designs may more effectively spur future innovation.
* **Point solution prizes** aim to reward and spur development of solutions for a particular, well-defined problem. NASA, for example, is using an online “innovation marketplace” with 180,000 participants to spur solutions to problems such as forecasting solar activity, keeping food fresh in space, and developing a compact aerobic device for astronauts. An advance market commitment may be one vehicle for spurring specific solutions by providing a commitment to purchase a product that does not yet exist. In the private sector, for example, five governments and the Gates Foundation have pledged $1.5 billion to support the purchase of pneumococcal vaccines for children in developing countries, which could save the lives of 7 million children by 2030.
* **Exposition prizes** help identify and promote a broad range of promising ideas and practices that may not otherwise attract attention, facilitating further development of the idea or practice by third parties. Successful exposition prizes can mobilize capital and institutions in support of ideas and practices developed during a prize competition. For example, the Director of National Intelligence sponsors the Galileo Award to encourage Federal employees to propose creative solutions for the Intelligence Community, and provides winners with a cash prize and the opportunity to brief senior officials on their ideas.
* **Network prizes** build networks and strengthen communities by organizing winners into new problem-solving communities that can deliver more impact than individual efforts. One example would be a contest encouraging people worldwide to share their thoughts and ideas on a variety of topics of universal interest and then organizing participants into an active online community, creating a global, cross-cultural dialogue in furtherance of the public diplomacy mission of the United States.
* **Participation prizes** create value during and after the competition – not through conferral of the prize award itself but through their role in encouraging contestants to change their behavior or develop new skills that may have beneficial effects during and beyond the competition. As part of his “Educate to Innovate” campaign, for example, President Obama has highlighted the FIRST robotics competitions, which engage over 200,000 students, and are designed to motivate young people to pursue opportunities in science, technology, engineering, and mathematics. A contest encouraging good nutrition on the part of school cafeterias or school children would be an example of a participation prize; contestants participate not necessarily to collect the reward, but for the fun and benefits of the competition itself.
* **Market stimulation prizes** try to establish the viability of a market to address a potential market failure, mobilize additional human talent and financial capital to jumpstart the development of a new industry, or change public perceptions about what is possible. The goal of the Ansari X Prize, for example, was to serve as a catalyst for the private spaceflight industry.

[“[Guidance on the Use of Challenges and Prizes to Promote Open Government](https://www.whitehouse.gov/sites/default/files/omb/assets/memoranda_2010/m10-11.pdf.),” Office of Management and Budget M-10-11, March 8th, 2010.]

While this is one taxonomy of prizes developed by McKinsey & Company, the 2014 [“The Craft of Incentive Prize Design”](https://dupress.deloitte.com/dup-us-en/topics/social-impact/the-craft-of-incentive-prize-design.html) report from Deloitte University Press also offers a taxonomies of prize types. More recently the Federal Challenges and Prizes Community of Practice developed a taxonomy of prize types relevant to Federal prizes and challenges that can be found at [www.challenge.gov/toolkit/types](http://www.challenge.gov/toolkit/types)

Is a prize the right tool for this problem/challenge?

*Section sourced directly from:* [“[Challenges and Prizes Toolkit: Prepare: Determine if a Challenge is Appropriate](https://www.challenge.gov/toolkit/prepare-1_4/),” Challenge.gov, 2017.]

Before deciding whether a prize challenge is the right tool to solve the problem, you must define the objective clearly. The problem definition process may involve research, analysis of why the problem hasn’t yet been solved, identification of needed breakthroughs and workshops to test assumptions. With this information you can draft a concise problem statement that serves as an initial focus for your challenge.

As part of the problem definition phase it is important to assess if a challenge is the best or only approach for achieving the desired outcomes. Challenges are only one of the many ways agencies can entice innovators to take risks and invest resources to potentially secure a future benefit, such as a cash award, recognition or advanced market commitment. Also, challenges are just one of many possible interventions that could be applied to help address market challenges, in a technique known as “market shaping.” [[crosslink Contracting content section on market shaping]] Depending on the nature of the problem and the anticipated outcomes, a challenge might not be the best intervention. For example, traditional “push mechanisms” such as contracts or grants may be appropriate if the solution is obvious or additional research is needed. Push and pull mechanisms are two distinct approaches to supporting new market activity. In OSTP’s words, “push programs pay for research inputs; pull mechanisms pay for research outcomes.” Push mechanisms such as grants typically aim to reduce the cost of research and development by directly funding research. Through establishing an end goal and setting innovators loose to get there. Pull mechanisms, on the other hand, are structured to incentivize private sector engagement and competition by creating viable market demand for specific products. In the cases where you are more flexible on how to solve your problem, it may help to pursue a mechanism that is more customizable and can achieve a number of different outcomes. Additionally, challenges may be combined with other vehicles in order to achieve some goals and desired outcomes.

**1. Identify your ideal potential solvers.**  
Consider who might enter the competition and bring innovative and creative solutions. Challenges often provide a mechanism for reaching solvers who are not usually engaged through vehicles such as grants and contracts. How will you reach them? What would they bring to the problem that other methods don’t? Will the targeted solvers have the time, funding, facilities and other resources to compete? Challenges shift some risks to the solvers, most of whom will not win, so consider the incentives—even large prize amounts may not be enough if the solvers can’t enter or don’t want to take on the risk without additional support.

**2. Identify the benefits of applying a challenge approach to your problem.**  
“If challenges are so great, why don’t we use them all the time?” says Sam Ortega, the manager of the Centennial Challenges program at NASA: “For the same reason you don’t use a saw to cut a pizza; sometimes it’s the wrong tool for the job.” [Lowden, T., “[Challenge, Contract or Grant – Which tool is right for the job?](https://www.digitalgov.gov/2014/08/14/challenge-contract-or-grant-which-tool-is-right-for-the-job/),” DigitalGov, August 14th, 2014.] In general, if your problem can be solved by traditional methods (grants, contracts, interagency agreements, etc.), a challenge is unlikely to be more effective. Challenges aren’t simply a different way to address problems; they work best in situations where traditional methods are not providing sufficient incentive or direction or situations where a new perspective is needed.

**3. Determine if your problem is suited for a prize.**

Many of the steps of prize and challenge design are flexible. However, there are a few aspects that are important in considering if a problem is “prizable.”

* Can you clearly define and explain the problem that you want to solve? Have you identified the key issues that can be addressed by a challenge? If you’re unable to define the problem well it will be extremely difficult to develop a challenge that can effectively solve it.
* Can you describe what a successful outcome should look like? Can you explain it clearly to the potential solvers?
* Can you identify experts from other disciplines that you’d like to attract to participate in your challenge? Can you develop sufficient incentives (prize purse and others) to convince them to participate?
* Is there a way to measure and judge the winners? The evaluation does not have to be quantitative, but you should be able to define a way to select the winners

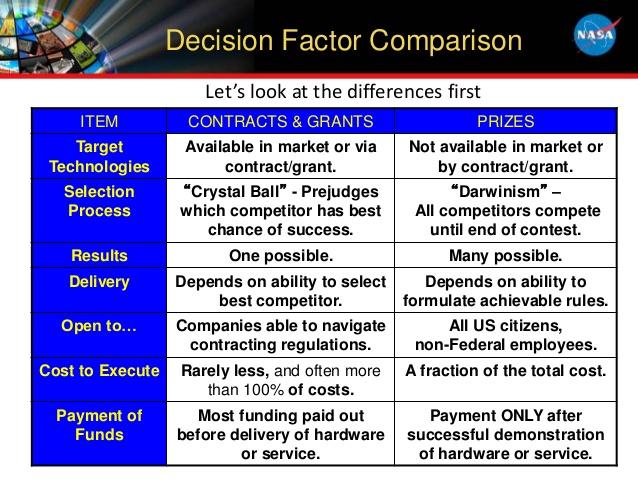
**4. Consider the timeline and process.**Challenges are often seen as a faster process than traditional grants, but that’s not always the case, especially considering the time required to develop and approve the challenge. Challenges also may change the order of certain processes. Funding for more traditional processes is generally provided up front, before the work is done, whereas although the prize funds may need to be committed up front, prizes are awarded after.

**5. Identify potential aspects of prizes and challenges that can be brought to traditional vehicles.**A challenge approach has many advantages—for example, it allows for engaging a more diverse set of solvers. Identifying the aspects of challenges that best address your problem can help you leverage those advantages. If ultimately you decide a challenge is not the best approach, you may be able to incorporate some of those elements into the approach you do take, such as reaching a broader group of solvers using communications strategies common to prizes and challenges.

**6. Evaluate other mechanisms.**  
In some cases, you and your contracting office may determine that a challenge is inappropriate. For example, if you intend to purchase production units or life cycle support for a given solution under the umbrella of a single acquisition effort, then a challenge may not be the best approach. Challenge-based acquisition takes the challenge concept a step further by making it part of the procurement process. It brings the innovation opportunity of a challenge into the procurement framework of the Federal Acquisition Regulations (FAR). If procurement is one of your goals, you should assess if a challenge is sufficient for your needs or if the use of a challenge-based acquisition or other FAR-based procurement approach is more appropriate.

[“[Challenges and Prizes Toolkit: Prepare: Determine if a Challenge is Appropriate](https://www.challenge.gov/toolkit/prepare-1_4/),” Challenge.gov, 2017.]

Choosing between a contract, a grant, or a public prize competition to get solutions to the problems is a difficult task. Each tool has different qualities for varying situations. For example, traditional “push mechanisms” such as contracts or grants may be appropriate if the solution is obvious or additional research is needed. In some cases, more ambitious mechanisms, like challenge-based acquisition, may be appropriate to consider. Even if you determine an incentive prize is most appropriate for your objective, assess how other acquisition options could also help realize broader implementation goals. According to officials from the Office of Science and Technology Policy, incentive prizes can and should be used in conjunction with more traditional acquisition contracts. For instance, it’s possible to deploy incentive prizes within a staged contract. [[crosslink V18 staged contracting]].



*Image sourced from:* [Lowden, T., “[Challenge, Contract or Grant – Which tool is right for the job?](https://www.digitalgov.gov/2014/08/14/challenge-contract-or-grant-which-tool-is-right-for-the-job/),” DigitalGov, August 14th, 2014.]

**SIDEBAR: History of prize challenges**

Prizes are not new; they have long been used by both public and private sponsors to elicit effort from individuals and organizations:

* In 1714, the British Parliament offered a prize to the first individual to invent an instrument for accurately measuring longitude at sea;
* In the 18th century, prizes encouraged basic research by rewarding research results with monetary compensation or other types of recognitions;
* In the early 20th century, prizes played a role in incenting the development of the aviation industry;
* The privately funded Orteig prize, for the first aviator to fly nonstop from New York to Paris, was won in 1927 by Charles Lindbergh.  [Luciano, K., “[Managing Innovation Prizes in Government](http://www.prizeresearch.org/shared/Kay-2011-Managing_innovation_prizes_in_government.pdf),” School of Public Policy, Georgia Institute of Technology, 2011.]

 More recently, prizes have been used to tackle challenges in technology, aviation and aerospace, climate and environment, medicine, transportation, energy, defense, computing and software, and chemistry. [Luciano, K., “[Managing Innovation Prizes in Government](http://www.prizeresearch.org/shared/Kay-2011-Managing_innovation_prizes_in_government.pdf),” School of Public Policy, Georgia Institute of Technology, 2011.]

Agencies including HHS, NASA, the Department of the Interior (DOI), the Department of Agriculture (USDA), the Department of Homeland Security (DHS), DOE, and the Environmental Protection Agency (EPA) have established strategies and policies to accelerate widespread use of the new prizes and challenges. Some agencies, such as NASA, HHS, EPA, DHS, and the U.S. Agency for International Development (USAID), have personnel dedicated to lead prize design and administration efforts at their agencies and to provide internal support to program managers interested in making use of prizes. *Sourced directly from:* [“[A Strategy for American Innovation](https://www.whitehouse.gov/sites/default/files/strategy_for_american_innovation_october_2015.pdf),” Economic Council and Office of Science and Technology Policy, October 2015.]

To support ongoing efforts at all Federal agencies, the White House Office of Science and Technology Policy, the General Services Administration, and NASA’s Center of Excellence for Collaborative Innovation have supported training opportunities for over 2,000 agency staff through workshops, online resources, and an active community of practice. *Sourced directly from:* [“[A Strategy for American Innovation](https://www.whitehouse.gov/sites/default/files/strategy_for_american_innovation_october_2015.pdf),” Economic Council and Office of Science and Technology Policy, October 2015.]

#### Deliverable 4: One or more “success stories” or learning narratives to underscore impact

Case studies

1. **NIJ: Ultra-High Speed Apps**
2. **NIH: Breast Cancer Startup Challenge**
3. **NEI: Audacious Goals in Vision Research**

**Case Study 1: NIJ: Ultra-High Speed Apps**

*Case Study sourced from:* [“[Challenges and Prizes Toolkit: Ultra-High Speed Apps](https://www.challenge.gov/toolkit/case-studies/ultra-high-speed-apps/),” Challenge.gov, November 29th, 2016.]

The National Institute of Justice’s (NIJ) Ultra-High Speed Apps Challenge was one of the first Challenges launched by NIJ and the Department of Justice. Using its general authorizing statute to conduct research and 28 USC section 530C[“[Challenges and Prizes Toolkit: Ultra-High Speed Apps](https://www.challenge.gov/toolkit/case-studies/ultra-high-speed-apps/),” Challenge.gov, November 29th, 2016.], NIJ designed the Ultra High-speed App Challenge to source new solutions to improve public safety applications. A total prize purse of $150,000 was offered, and the four winning entries provided real-time and individually tailored information to practitioners in rapidly evolving emergency situations. [“[NIJ Ultra-High Speed Apps Challenge: Using Current Technology to Improve Criminal Justice Operations](https://nij.gov/funding/pages/fy13-ultra-high-speed-apps-challenge.aspx),” NIJ.gov, January 20th, 2015.]

**Key accomplishments:**

NIJ’s expansion of ultra-high speed (UHS) networks offers the opportunity to revolutionize the way services and information are delivered for criminal justice and other public safety applications. UHS applications (“apps’) have the potential to provide ubiquitous, real-time, individually tailored information and decision-support functions to criminal justice and public safety practitioners in rapidly evolving emergencies. Additionally, the increased capacity of UHS systems now makes it possible to merge and manipulate data allowing the development and use of powerful analytical and management tools.

**How they did it**

The developers created a close-knit team to launch the Challenge. The team included staff from the Office of Justice Programs’ (OJP) Office of the Chief Information Officer (OJP OCIO), Office of the Chief Financial Officer (OJP OCFO), Office of Communications (OJP OCOM), Office of the General Counsel (OJP OGC); and NIJ’s Offices of Research and Evaluation (NIJ ORE) and Science and Technology (NIJ OST). NIJ is an OJP component.

NIJ sought to encourage the development, use, and evaluation of UHS apps that were capable of improving criminal justice and public safety-service delivery efficiency and/or effectiveness and to develop models for measuring and quantifying the specific impact of these apps. Contestants were required to submit a working prototype of the software and corresponding apps. All submissions were required to demonstrate a need for the app; articulate the manner in which the app would improve criminal justice effectiveness and/or efficiency; specify the public access databases used to support the app and the proposed method of acquiring and updating these data; and identify appropriate and obtainable impact measures.  
  
Submissions were accepted in two phases. During Phase I, contestants submitted prospectus papers outlining the ideas for their apps. Submissions from contestants that were selected to move on to Phase II included short videos that described and demonstrated their app prototypes. NIJ received 15 papers in Phase I. Five contestants were selected to compete in Phase II. Phase II submissions demonstrated the potential to improve, measurably services and operations in areas such as school safety, crime mapping, video technology, and data streaming. The first, second, and third place winners were announced in July 2015.

One of the reasons that this Challenge was particularly successful was because NIJ developed appropriate objectives, judging, and evaluation criteria through intramural research and outreach to the field. NIJ relies heavily on the practitioner end-user to define technology performance requirements, because those who have to use a technology are best positioned to understand what it must be able to do and how it might best be used.

The Challenge required contestants to submit short videos with their Phase II submissions that explained their solutions. Contestants were encouraged to develop their submissions in collaboration with criminal justice agencies capable of providing insight into available data and agency operations. A UHS provider and a software develop helped ensure the feasibility and relevance of the resulting apps.  
  
Once the Challenge was launched, NIJ spread the word to interested parties through press releases and social media content while also performing targeted outreach to interested parties at relevant conferences and events.[“[Challenges and Prizes Toolkit: Ultra-High Speed Apps](https://www.challenge.gov/toolkit/case-studies/ultra-high-speed-apps/),” Challenge.gov, November 29th, 2016.]

**Key learning insights:**

* **Prepare estimates for budget and resource availability as part of planning**
* **Use a defined evaluation and judging process for the implementation phase**

Prepare estimates for budget and resource availability as part of planning

The tiered prize structure was intended to provide incentive for applicants to develop “the best solution” rather than just “a solution.” The prize purse was determined through consultation with industry and government experts familiar with this area of research, along with agency legal and budget staff. The ideal prize amount and structure was considered one, which would draw a broad, diverse pool of applicants with the background and skills necessary to develop competitive and compelling proposals, which not only provided viable solutions in the short term – but also served as a starting point for additional problem solving and app development. Challenge prize money came from the agency’s operational budget used to support extramural research, development, and evaluation grants.  
  
As both a cost-saving and risk reduction measure, NIJ uses a streamlined version of OJP’s existing grant making systems and processes to process Challenges. Agency science and management staff were responsible for all activities related to the Challenge, with some limited support from agency contract staff for activities such as application review and other related work.

Use a defined evaluation and judging process for the implementation phase

A distinguished panel of individuals with expertise in one or more of the following areas: criminal justice, public management, application development, emergency management, and network management judged submissions to this Challenge through a consensus process. Their recommendations were advisory. The NIJ Director made final award determinations.  
  
To ensure both equity in judging and the receipt of high quality submissions, the Challenge announcement specified the elements to be addressed in the submissions. It also included well-defined, weighted criteria against which submissions were judged. These criteria were:

* Contribution of the application towards improving the effectiveness and/or efficiency of criminal justice services (60 percent);
* Ease of implementing the application by state and local criminal justice agencies, including considerations of platform, and time and cost requirements (15 percent);
* Practicality of dataset selection in terms of relevance, ease of acquisition, and ongoing access (15 percent); and,
* Feasibility of evaluation methodology and impact measurement (10 percent).

These criteria were embedded in the on-line Peer Review Module of the OJP Grants Management System, used by the judges to record their individual and consensus evaluation scores and narratives.  
  
During the judging process, the evaluators discussed the submissions based on individual scores and participated in consensus meetings to make informed recommendations. During Phase I, the consensus meeting was conducted through an NIJ moderated teleconferences. For Phase II, the judges were brought together for a full day, face-to-face meeting.[“[Challenges and Prizes Toolkit: Ultra-High Speed Apps](https://www.challenge.gov/toolkit/case-studies/ultra-high-speed-apps/),” Challenge.gov, November 29th, 2016.]

**To Learn More:** <http://nij.gov/funding/pages/fy13-ultra-high-speed-apps-challenge.aspx>

**Case study 2: NIH: Breast Cancer Startup Challenge**

*Case Study sourced from:* [“[Breast Cancer Startup Challenge](https://www.challenge.gov/toolkit/case-studies/nci-breast-cancer-startup-challenge/),” Challenge.gov, 2013.]

In 2013, NCI in partnership with the Center for Advancing Innovation (CAI) conceived the idea to create a startup challenge as a strategy to move promising, early-stage National Institute of Health (NIH) technologies to the market. Later that year, NCI, CAI and a philanthropic partner, the Avon Foundation for Women, launched the Breast Cancer Startup Challenge (BCSC), a first-of-a-kind, international university-based competition. The idea arose from the need to address a fundamental problem: NCI technologies are typically very early stage, and there is a need to find partners to help develop them. However, the potential partners—biomedical companies—are reluctant to form partnerships around early-stage discoveries because of lengthy developmental timelines and high financial risk. *Sourced directly from:* [“[Breast Cancer Startup Challenge](https://www.challenge.gov/toolkit/case-studies/nci-breast-cancer-startup-challenge/),” Challenge.gov, 2013.]  
  
In creating the BCSC, nine emerging breast-cancer-related technologies were selected from the NCI patent portfolio, and one technology from the Avon Foundation for Women Grantee portfolio, with the primary goals of bringing them to market and stimulating the formation of startup businesses. The BCSC was one of the first competitions to focus on the creation of startups and is an innovative approach to licensing emerging Federal technology and moving it to market. In addition to helping advance development and commercialization of multiple NCI inventions, the BCSC created a new model that can be applied to advance other Federal technologies. Based on the BCSC framework, NIH has since launched the Neuro Startup Challenge and the Nanotechnology Startup Challenge. *Sourced directly from:* [“[Breast Cancer Startup Challenge](https://www.challenge.gov/toolkit/case-studies/nci-breast-cancer-startup-challenge/),” Challenge.gov, 2013.]

**Key accomplishments**

* The challenge advanced development and commercialization of nine breast-cancer-related technologies from NCI and one from the Avon Foundation Grantee portfolio. Ten winners and two finalists were announced in March 2014. As of November 2015, three of these startups are active and viable. The startups formed as a result of the BCSC have created jobs and have the potential to stimulate economic development.
* The BCSC provided an excellent educational platform to help postdoctoral and graduate students learn the “business of science,” and motivate and train the next generation to meet NIH’s mission.
* The challenge increased the likelihood of moving promising NIH inventions to the market where they can have a positive impact on public health.
* The BCSC established collaboration between the best minds and ideas from the Federal, private, academic and entrepreneurial arenas to focus on the development and commercialization of Federal inventions. It has served as a platform for crowdsourcing talent for startups and venture philanthropy.
* The challenge created a new model to help advance other Federal inventions. The BCSC framework was refined and used to launch the Neuro Startup Challenge in 2014 and the Nanotechnology Startup Challenge in October 2015. *Sourced directly from:* [“[Breast Cancer Startup Challenge](https://www.challenge.gov/toolkit/case-studies/nci-breast-cancer-startup-challenge/),” Challenge.gov, 2013.]

**How they did it**

The primary goal of the BCSC was to accelerate the development and commercialization of emerging breast cancer technology by designing a new competition that would result in the creation of startup companies. Because of the long, complex developmental timelines associated with biomedical technologies, blazing new ways for invention development is needed to meet the agency mission. The creation of BCSC was a way to address that; it provided another option and an additional way to find partners who can develop and commercialize potentially life-saving technology.

While a total of $50,000 in cash prizes were awarded to the 10 winning teams, the larger incentive was the opportunity to create a startup company around a promising NIH invention, and the opportunity to work with NIH and the CAI to further a business plan and develop early-stage breast cancer technologies. Additionally the BCS Challenge:

* Developed a rigorous new paradigm to train the next generation of scientists on the business of science
* Brought together a diverse set of participants to consider developing technologies
* Brought together a diverse set of judges and mentors to provide feedback to the teams as they developed business plans and pitches
* Established a new model for venture philanthropy, creating a multiplier effect for grant vehicles—for the equivalent of one grant for one invention, 10 inventions could be pushed forward in a highly meaningful way
* Created a new channel for invention commercialization
* Directly supported the [presidential memorandum](https://www.whitehouse.gov/the-press-office/2011/10/28/presidential-memorandum-accelerating-technology-transfer-and-commerciali) and Startup America
* Provided significant media and White House exposure for being a game-changing model for invention commercialization

[“[Breast Cancer Startup Challenge](https://www.challenge.gov/toolkit/case-studies/nci-breast-cancer-startup-challenge/),” Challenge.gov, 2013.]

**Key learning insights**

* **Build a team**
* **Design the challenge structure**
* **Develop a communications plan**
* **Prepare to announce**
* **Document metrics, results and outcomes**

Build a team  
In 2013, NCI entered into a Partnership Intermediary Agreement (PIA) with CAI, a nonprofit, to evaluate and offer recommendations to help evaluate, market and commercialize the NCI patent portfolio. An outcome of that effort was the idea to create a business and startup challenge to help move certain technologies forward. Breast cancer was selected as the focus of the challenge. CAI was already working with the Avon Foundation for Women, and a three-way collaboration agreement was developed to implement the challenge by NCI, CAI and The Avon Foundation for Women.  
  
Each partner and member of the team played a crucial role in the launch and execution of this challenge  
NCI advocated for the challenge by identifying and engaging multiple internal (Federal) stakeholders early in the design process and obtaining their support before moving forward. This was a crucial, necessary and time-consuming effort; without the input and support of the key stakeholders, the challenge likely would have never gotten off the ground. Leading this effort, the project champion from the NCI Technology Transfer Center (TTC) sought feedback from NCI senior leadership (on the overall program), TTC staff (about design and technologies) and NCI’s offices of communications and legal counsel.  
  
NCI analyzed multiple inventions from its portfolio and selected technologies ideally suited for the challenge. This included engaging the NIH Office of Technology Transfer to analyze information on the patents and likelihood of licensing the inventions.  
  
NCI reached out to Principal Inventors (PIs) with technologies proposed for the challenge to assess the inventor’s willingness to participate in the new program and managed all interactions with PIs with inventions selected for the challenge. NCI scientists participated in the challenge by answering questions about their technologies in two webinars with the teams.  
  
NCI also negotiated and put into place all the needed collaboration agreements to facilitate the challenge; developed messages and communications about the BCSC for internal audiences; worked with CAI to write external communications about the BCSC; and worked with the NCI press office to have those external communications reviewed and approved.  
  
CAI negotiated and put into place the needed collaboration agreements to facilitate the challenge with Avon Foundation for Women, as well as sought a philanthropic partner to fund the challenge and managed all interactions with that partner. The center also created a proposal and pitched the challenge from the Avon Foundation for Women board of directors to raise money to pay for the challenge.  
  
CAI conceived the initial design and collaborated with NCI to refine details of the challenge timelines, criteria, etc. The center developed and implemented a stakeholder engagement plan to entice entrepreneurs and university students to form teams and enter the competition. This required massive amounts of outreach to create awareness about and update the challenge model based on inputs. CAI managed all interactions with the teams entering the challenge and all interactions with the winning teams and startups at the conclusion of the challenge. This meant ensuring that teams met predetermined criteria to enter, managing the submission process and facilitating “live pitch sessions” by the competing teams.  
  
CAI analyzed the NCI patent portfolio and provided input on inventions that would be suitable for the challenge given their commercial viability and most optimal commercialization path (being a startup). CAI also established a panel of qualified judges, mentors and advisors and managed the judging process.  
  
Finally, the center also was instrumental in developing content on a variety of fronts, from the creation of training curriculum and course materials to the production of press releases and social media posts.

[“[Breast Cancer Startup Challenge](https://www.challenge.gov/toolkit/case-studies/nci-breast-cancer-startup-challenge/),” Challenge.gov, 2013.]

Design the challenge structure  
The BCSC is a novel way to address a fundamental problem, focusing on creating startup companies to help develop and commercialize particular inventions rather than seeking out large commercial partners unwilling to invest at an early stage. CAI and NCI partnered to analyze the NCI patent portfolio. They selected nine promising breast-cancer-related technologies suitable for commercialization by startup companies.  
  
Together NCI and CAI designed the framework for a startup competition targeted to university students. The framework included specific and strict criteria to enter the challenge. For instance, in order for a team to compete, it was required to form a multi-disciplinary team that included at least one seasoned entrepreneur, and students majoring in business, legal, medicine, science and, in certain cases, engineering or computer science. Teams averaged 10 members and typically included mentors and advisors who were industry leaders, venture capitalists, foundation executives, subject matter experts and academics.  
  
The challenge framework was designed to cover three phases. Teams entered in the first phase. In the second phase, teams were tasked with presenting a live, five-minute sales pitch to a panel of judges and with creating business plans to develop and commercialize NIH inventions. In the third phase, the 12 BCSC winners and finalists incorporated their startups, began to raise funding and negotiated with the NIH Office of Technology Transfer to receive licenses to the technologies.

[“[Breast Cancer Startup Challenge](https://www.challenge.gov/toolkit/case-studies/nci-breast-cancer-startup-challenge/),” Challenge.gov, 2013.]

Develop a communications plan

CAI, working with NCI, took the lead in developing and executing the communications plan for the BCSC. It was developed and executed against a comprehensive stakeholder engagement plan to engage all members of the ecosystem at every step in the challenge. This included:

* Funding partners—both non-dilutive funders (e.g., economic development organizations and foundations) and venture funders (e.g., angel and series A, including venture capital organizations, industry venture groups, economic development organizations and venture-oriented foundations)
* Challenge participants—serial entrepreneurs to serve as mentors, judges and advisors for the teams; experts from academia and government and key opinion leaders; industry partners (e.g., licensing and research-and-development groups from large pharma); associations for additional resources (e.g., industry reports); other business plan and startup challenges to create a compounding effect (and also potential competitors); universities; patent advocacy groups to help spread the word; and other ecosystem channels (e.g., Biotechnology Industry Organization, Association of University Technology Managers, etc.)
* Post-challenge engagement—incubators (for space), accelerators (for ongoing mentoring) and other startup challenges

The communications plan also included crowdsourcing world-class mentors, advisors and judges to supplement the core challenge team to build capacity throughout the challenge. For example, CAI recruited: Elaine Jones, head of venture from Pfizer; Reinhard Ambrose, head of venture from Novartis; and Scott Weiner, partner from Pappas Ventures.

[“[Breast Cancer Startup Challenge](https://www.challenge.gov/toolkit/case-studies/nci-breast-cancer-startup-challenge/),” Challenge.gov, 2013.]

Prepare to announce

In preparation to launch the BCSC, CAI:

* Developed a comprehensive stakeholder engagement plan
* Created a soft launch by engaging 385 people via telephone to gain input on the challenge design, including but not limited to timeline, criteria, team formation, etc.
* Designed the logo for the challenge
* Put out a press release
* Created social media handles and posted everywhere based on topics like inventions, new judges, new teams in the challenge, challenge results, challenge timings, etc.
* Developed a website with all stages, directions and criteria
* Created a confidential disclosure agreement and other forms required for the challenge
* Hosted webinars on the challenge
* Provided cell phone numbers of the CAI team to actively engage possible teams and answer questions
* Developed email templates for judges, advisors and mentors; potential teams; etc.
* Created a poster, flyer and other deck materials for people to use
* Hosted weekly team meetings to review communications
* For its internal communications, NCI met with inventors to ensure they were comfortable with their invention being part of the challenge. The institute also developed invention overviews and had inventors review these to gain their input.
* To support the announcement and launch, the challenge team developed guiding principles on how communications could be developed and deployed. The team also created standard wording that could be used.

[“[Breast Cancer Startup Challenge](https://www.challenge.gov/toolkit/case-studies/nci-breast-cancer-startup-challenge/),” Challenge.gov, 2013.]

Document metrics, results and outcomes

For in-Challenge metrics, interested participants were tracked by way of the entry forms that they were required to complete in order to register for Phase 1 of the Challenge. The entry forms included confidential disclosure agreement forms, letter of intent forms and the resumes that they were required to provide. As the phases progressed, teams were required to continuously update CAI on any additions and subtractions to their teams. CAI captured each individual’s organization, title, geographic location, years of experience and working discipline and converted the answers into metrics for the challenge.

Key metrics from Phase I demonstrate the range of participants:

* 46 teams comprised of 476 people with more than 4,000 years of experience
* 86 universities represented
* 20 percent of participants were from outside of the United States
* 18 percent of participants were women

CAI also obtained metrics for the startups and teams after Phase 2 through a number of auditing methods. For example, CAI sends out periodic feedback forms asking the startups for a feedback about the status of licensing the technology from NIH, incorporating of their startup company, the status of their team structure and progress with obtaining funding. Based on lessons learned from the BCSC, CAI has also developed a new “Founder’s Agreement.” The agreement outlines requirements of challenge winners, including requirements to provide status updates to CAI and to work closely with the CAI team to track their progress. Ultimately, the challenge resulted in:

* 11 startups;
* Eight licensing agreements;
* $3 million raised by new companies;
* 277 trained entrepreneurs; and
* Three additional startup challenges based on the BCSC model.

[“[Breast Cancer Startup Challenge](https://www.challenge.gov/toolkit/case-studies/nci-breast-cancer-startup-challenge/),” Challenge.gov, 2013.]

**To learn more:** <http://www.breastcancerstartupchallenge.com/>

**Case study 3: NEI - Audacious Goals in Vision Research**

*Case Study sourced from:* [“[About the NEI Audacious Goals Initiative](https://nei.nih.gov/audacious/aboutAGI),” National Eye Institute, November 2014.]

NEI, part of the National Institutes of Health (NIH), recognized that recent technological breakthroughs were propelling paradigm shifts in biomedical research. Vision scientists are pioneering gene therapy, developing stem cell technologies and creating molecular therapies to prevent vision loss and restore sight. Recognizing that a concerted effort might lead to dramatic improvement in treating patients with vision loss, NEI wanted input from the research and patient community to set audacious goals for research. How could NEI alter the playing field to end blindness and catalyze new fields of science?  
  
This Audacious Goals Initiative (AGI) ideation challenge offered a $3,000 prize for each winning submission (up to 20) for proposing audacious goals to stimulate innovation in vision research. To qualify as an audacious goal, a solver’s one-page proposal needed to complete the thought: “It would be fantastic if…” Submissions needed to address barriers and next steps and were judged on five equally weighted criteria:

* Audaciousness: bold, transformative, innovative ideas
* Impact: broad implications across biomedical research
* Relevance to the NEI mission: to fundamentally change vision research or vision care
* Scope: beyond the output of a single investigator — collaboration across disciplines
* Feasibility: to be achievable in about 10 years

[“[About the NEI Audacious Goals Initiative](https://nei.nih.gov/audacious/aboutAGI),” National Eye Institute, November 2014.]

**Key accomplishments**

The challenge attracted more than 450 innovative proposals from around the world. The NEI consolidated the proposals into six themes, which were further explored by leading scientists at the Audacious Goals Development Meeting. In consultation with the National Advisory Eye Council, the NEI chose to pursue the goal of restoring vision through the regeneration of neurons and neural connections in the eye and visual system, specifically targeting the photoreceptors and retinal ganglion cells.

Several research groups funded through the NEI Audacious Goals Initiative (AGI), and are producing cutting edge research such as developing new imaging tools to see the eye and optic nerve in unprecedented detail. [“[AGI Projects](https://nei.nih.gov/audacious/AGI_projects),” National Eye Institute, October 2016.]

**How they did it**

NEI took advantage of the authority in the [America COMPETES Act](https://www.gpo.gov/fdsys/pkg/PLAW-111publ358/content-detail.html) to fund and run the competition. A simple challenge format was chosen to encourage the vision community to think differently and also to attract innovators in disciplines that don’t typically participate in NEI research. NEI launched the three-month AGI challenge with great fanfare, advertising in the Federal Register, online scientific journals, social media and at medical conferences. It hosted informational webinars and reached out to various stakeholders through partner organizations and through its research network. NEI consulted an advertising firm to help place ads but ran the challenge through its own website. It created its own platform with a database that de-identified submissions. [“[About the NEI Audacious Goals Initiative](https://nei.nih.gov/audacious/aboutAGI),” National Eye Institute, November 2014.]

Results  
NEI received 476 entries in the competition from across the country, with an impressive diversity of occupations and career stages listed on the applications (providing occupation information was optional). Each submission could only have one author, but solvers were encouraged to submit multiple entries. Although the COMPETES Act and NIH rules prohibited NIH employees and foreign citizens from participating in the competition, NEI created a parallel submission process to solicit ideas from these stakeholders—while not eligible to win prize money, they were eligible to receive recognition. With the combined pools of submissions, NEI received a total of 548 ideas. Of those, 198 entries came from current or former NEI grantees, an additional 42 represented grantees from other NIH institutes, but over half of the ideas came from individuals new to NIH.  
  
The review process had two phases. First, a group of clinicians and scientists outside of NIH with broad expertise in relevant disciplines evaluated the submissions against the stated criteria, narrowing the entries to 81 proposals. A Federal judging panel then selected 10 challenge winners. The winners were invited to present their ideas to more than 200 cross-disciplinary experts at a 2013 NEI AGI development meeting. This challenge generated valuable contributions from varied stakeholders to inform NEI’s strategic plan, energize its research efforts, increase public awareness of vision research and enhance the national effort to reduce the burden of ocular disorders and diseases worldwide.

In addition to identifying unexplored areas of vision research, analysis of the overall patterns of ideas was a large factor in selecting the ultimate initiatives. For example, neurosciences and regenerative medicine were two of the most common themes repeated in the submissions, and both these concepts were incorporated into the audacious goal. [“[About the NEI Audacious Goals Initiative](https://nei.nih.gov/audacious/aboutAGI),” National Eye Institute, November 2014.]

**Key learning insights**

* **Judge Submissions and Select Winners**
* **Manage solutions**

**Judge Submissions and Select Winners**

NEI employed a multi-tiered review process to select winners, with technical experts outside of NIH providing input to a Federal judging panel. The large number of submissions, most received in the final days of the competition, forced NEI to adjust its initial review strategy and to recruit more technical experts. All entries were de-identified and initially screened by NEI staff; entries that unambiguously failed to satisfy judging criteria were eliminated. The remaining 474 submissions were categorized by primary, secondary and tertiary topics (such as regenerative medicine, neuroscience and healthcare) and sent for technical review by 81 external scientific experts, based on subject matter. NEI identified experts based on extensive medical literature searches and portfolio analysis of NEI grantees. Experts were required to sign a confidentiality agreement and were excluded from reviewing any submission which posed potential conflicts of interest through personal, professional or institutional connections. This first round of judging, which lasted two weeks, identified submissions worthy of more in-depth review. Experts were assigned submissions in their area of expertise and asked to provide a numerical score and technical comments relative to the judging criteria outlined on the Federal Register announcement. They were also invited to review the remaining entries and provide ordinal scores for meritorious submissions. This alternative scoring process allowed experts to single out creative solutions that might otherwise be discarded in a scoring process which relied on averaging results. Numerical scores from all the judges were normalized and combined to provide a rank order of submissions, of which the top 15 percent were included in the final review. The projects identified with the top ordinal scores were also included for review. A panel of senior NIH leaders reviewed the technical comments and scores from the top 15 percent of projects for two weeks. During a half-day face-to-face meeting, they selected 10 prize winners based on the de-identified ideas. [“[About the NEI Audacious Goals Initiative](https://nei.nih.gov/audacious/aboutAGI),” National Eye Institute, November 2014.]

**Manage solutions**  
NEI invited the competition winners to present their ideas at the AGI Development Meeting in February 2013. In addition to prize awards, NEI paid up to $5,000 for participant travel expenses. This meeting brought together nearly 200 thinkers, leading biomedical researchers and clinicians to transform the winning ideas into a set of audacious goals. Over the course of three days, participants combined and fine-tuned the ideas in break-out groups and arrived at six proposals.  
  
NEI leadership reviewed these proposals and ultimately selected a primary audacious goal: “To restore vision through regeneration of neurons or neural connections in the eye and visual system.” Additionally, two other proposals became new NEI research programs: “Intersection of Aging and Eye Disease” and “Molecular Therapy at the Gene Level.” Subsequent implementation of the AGI also has involved community input, with external steering committees, workshops and town hall meetings informing the development of funding initiatives. The initiative has impacted funding decisions, as projects related to the initiative can be designated for priority funding with high program relevance. Concerted strategic planning towards the AGI has led to the development of targeted funding opportunities. These goals recognize that many leading causes of blindness like age-related macular degeneration, diabetic retinopathy and glaucoma result from degeneration of neurons in the eye. However, the achievement of this goal will greatly influence all of neuroscience and the treatment of neurodegenerative diseases. [“[About the NEI Audacious Goals Initiative](https://nei.nih.gov/audacious/aboutAGI),” National Eye Institute, November 2014.]

#### Deliverable 5: Challenges to deployment / approach limitations (inc. lessons learned from agencies where implemented)

**Key ingredients for successful prizes and challenges deployment include:**

* **Define the problem to be solved**
* **Make a strong case to leadership**
* **Develop clear Terms and Conditions of eligibility, intellectual property rights and liability**
* **Keep in mind multiple metrics for success after the challenge is complete**

**Define the problem to be solved**

*Sourced directly from:* [“[Challenges and Prizes Toolkit: Prepare: Define the Problem to be Solved](https://www.challenge.gov/toolkit/prepare-1_3/),” Challenge.gov, 2017.]

Developing and documenting a detailed understanding of your problem is critical to the overall success of any challenge. This is one of the most important parts of the design process and will often be iterated several times. In this step you define WHAT you’re trying to achieve, not HOW it should be achieved. The problem definition process may involve research, analysis of why the problem hasn’t yet been solved, identification of needed breakthroughs and workshops to test assumptions. With this information you can draft a concise problem statement that serves as an initial focus for your challenge. When analyzing why a problem hasn’t yet been solved, consider the history of the problem, known or potential root causes, what a viable solution looks like and who will be using it, must-have features (requirements) and like-to-have features (“desirements”). This step is an important opportunity to engage potential partners and collaborators to help shape the challenge and ensure a common understanding of the problem to be addressed.

5 thing which should be taken into consideration when defining the problem:

1. Engage many people who know the problem space well.
2. Socialize the specific problem statement with leadership.
3. Think about simple ways to frame the problem early.
4. Do your research and determine if the problem can be easily measured or quantified.
5. Learn from others and keep refining.

[“[Challenges and Prizes Toolkit: Prepare: Define the Problem to be Solved](https://www.challenge.gov/toolkit/prepare-1_3/),” Challenge.gov, 2017.]

**Make a strong case to leadership**

*Sourced directly from:* [“[Challenges and Prizes Toolkit: Prepare: Make the Case](https://www.challenge.gov/toolkit/prepare-1_8/),” Challenge.gov, 2017.]

Most challenges will require approval from agency leadership or someone else. When developing your challenge, it may be helpful to think in terms of a business case you can present for approval. Although not necessary for all challenges, this step allows you to drill down on the value proposition of your challenge. Your efforts here will help your leadership understand the benefits to the agency mission, partnerships, audience and stakeholders, as well as the potential return on investment projected for the challenge.

Three elements to consider in making the case:

1. **Always tie your challenge idea back to the agency’s mission and measurable outcomes.** To gain approval and support for your challenge, it’s critical to provide a clear understanding of the challenge goals and outcomes. Keep in mind that outcomes go beyond the prize award and should demonstrate how the solution will be used, how it might affect or be leveraged by agency stakeholders and how it will support your agency mission and goals. The solution may directly or indirectly benefit the agency. An indirect outcome may be helping to develop a market, advance a technology or engage a new audience.
2. **Anticipate potential questions.** Many people are not familiar with challenges as a way for Federal agencies to address issues, so be prepared to describe challenges in general and how they are being used by other agencies across the government. A good first step is to identify others in your agency or department that have run challenges to learn about what issues they had and how they addressed them. If your agency has a challenge lead or coordinator, he or she may have resources that can help you.  
     
   Be prepared to talk about the unique benefits that challenges offer and how they are a complementary tool to contracts and grants. Challenges are a unique approach. Remind your leadership and other offices that the process will look different than what they are used to with contracts and grants—that’s the whole point! Resist other agency personnel that may want to try to force a challenge to look more like a contract or a grant.  
     
   It’s a best practice to use examples from other Federal agencies, or your own agency, where impact from a challenge approach has been demonstrated. Review the case studies in this toolkit and the outcomes reported from your agency in previous America COMPETES reports to find the best examples to make your case.
3. **Start your roadshow early and be open to feedback.** Conducting a roadshow to key offices (e.g., legal, communications, procurement and program offices with a stake in the subject matter) to propose the idea while it’s still in development gives you a chance to enroll those offices as co-designers. When it’s time to go through an approval process to begin challenge design and planning or to announce the challenge, it will be much easier to clear your project if you’ve already started socializing the idea.  
     
   Other offices will likely have legitimate concerns or advice that could strengthen your challenge design overall. Remain open to tweaking your concept and design as you bring more people on board to champion your challenge.

[“[Challenges and Prizes Toolkit: Prepare: Make the Case](https://www.challenge.gov/toolkit/prepare-1_8/),” Challenge.gov, 2017.]

#### Develop clear Terms and Conditions of eligibility, intellectual property rights and liability

*Sourced directly from:* [[Challenges and Prizes Toolkit: Develop: Develop Terms and Conditions](https://www.challenge.gov/toolkit/develop-2_3/),” Challenge.gov, 2017.]

5 elements:

#### Work with your lawyers Work closely with agency legal counsel as you define your challenge’s terms and conditions. You will need to understand the legal constraints and applicable policies specific to your agency and the legal authorization you are utilizing to implement the challenge before making final decisions. There are several authorities under existing statutes that agencies could rely upon to structure prize competitions, including, but not limited to, the America COMPETES Act, agency-specific procurement authority and Other Transaction Authority (OTA).

#### Define who is eligible to compete. Eligibility criteria should reflect your target audience (e.g., students, nonprofits, universities or companies) and ultimate goal (e.g., an algorithm or a poster). Eligibility criteria must also adhere to the challenge’s legal authorization. For example, if foreign eligibility is allowed, it generally won’t include the restricted countries list. For most America COMPETES challenges, eligibility is limited to U.S. citizens, residents and companies. Age restrictions also could come into play in your challenge—additional considerations are required to work with solvers under age 18.

#### Be aware of liability and indemnification requirements. [The America COMPETES Act](https://www.gpo.gov/fdsys/pkg/PLAW-111publ358/content-detail.html) has specific requirements that will help guide the development of your challenge’s terms and conditions. One of the most important requirements relates to liability. The law requires participants to obtain liability insurance or demonstrate financial responsibility for damages that could occur in the process of competing in the challenge. Participants must also indemnify the Federal government against damage claims.

1. **Clarify your intellectual property requirements.**Please consult your general counsel to determine the most appropriate intellectual property intellectual property requirements. The solutions submitted to challenges will often be protected or eligible for protection under intellectual property laws. The Federal government is prohibited from acquiring an interest in intellectual property without the contestant’s written consent but is able to negotiate license to use any intellectual property submitted as a solution in a challenge. Requirements should be carefully considered relative to the contest’s goals, the Federal government’s need to license the submitted or winning solutions and whether these requirements will dampen incentives to enter the contest. It’s particularly important to negotiate the Government Purpose Rights of the IP as part of the challenge terms and conditions if you plan to acquire solutions for government use after the challenge.
2. **Prizes to Procurement**  
   Use Prize Challenge Results as Technical Evaluation for a Follow-on Procurement – Consult with your contracting office if your challenge will involve a follow-on procurement. You should clearly articulate in the terms and conditions that the results of a solver’s participation in the challenge could augment a full technical proposal for a follow-on FAR-based acquisition.  
   Use Prize Challenge Results as Part of an Advisory Multi-Step Process – Consult with your contracting office to determine if the terms and conditions of your challenge stipulate that the results of a solver’s participation may be used by the agency as the basis to participate in a follow-on acquisition (see FAR 15.202(b) Advisory multi-step process).  
   Include Relevant Terms and Conditions Required for Execution of IP Strategy – Engage your agency counsel for legal advice regarding how best to develop your intellectual property (IP) management strategy, and consider addressing the government IP needs in the terms and conditions for your challenge. For example, the Department of Defense’s (DOD) Federal Acquisition Regulations (DFAR) provides specific language on the use of Government Purpose Rights (GPR) in technical data and computer software in DoD acquisition that can be helpful in facilitating the acquisition of solutions resulting from the challenge. Once GPR rights are acquired, the associated technical data and computer software can be provided to a third-party as government furnished information (GFI) in support of a government purpose—such as the execution of a contract.

[[Challenges and Prizes Toolkit: Develop: Develop Terms and Conditions](https://www.challenge.gov/toolkit/develop-2_3/),” Challenge.gov, 2017.]

#### Keep in mind multiple metrics for success after the challenge is complete

*Sourced directly from:* [Trebon, K., “Six Tips for Measuring Success in Challenge Competitions,” DigitalGov, March 20th, 2014.]

You need to measure success right after your challenge as you work to implement the winning solution. But you also need to measure success over time by keeping in touch with your winners and the other contestants. Set aside time on your calendar to follow up by phone or email. Continually measure success and communicate all this information up your chain of command.  
Some metrics to consider are:

1. **Return on investment**. For the prize money, what is the value of what you received? Based on participation in your challenge, did a winner or contestant expand their business and create jobs?
2. **Cost effectiveness.** Was your challenge less expensive and/or faster than a traditional grant or procurement?
3. **Quantity/quality/viability/diversity of submissions**. Did you get more submissions than you expected? How many of them met or exceeded the criteria? How many of them were viable? How many of the participants were new to the industry versus known players?
4. **Performance improvement compared to current solutions**. Is the solution that came out of your challenge more efficient than your current practices? Will you be able to save time and solve your problem faster, as a result of what you learned in your challenge? Remember, you can even learn from submissions that didn’t win.
5. **Awareness.** This includes traditional media press coverage, as well as social media (tweets using your challenge hashtag, re-tweets). Are your solvers now more aware of your agency’s programs and data sets? Did they ask for more information? A great example: After the EPA Apps for the Environment Challenge, coders continued to develops apps with the data.
6. **Partner satisfaction and engagement.** Were your challenge partners engaged and satisfied with their participation? Would they partner with you on another challenge?

[Trebon, K., “Six Tips for Measuring Success in Challenge Competitions,” DigitalGov, March 20th, 2014.]

#### Deliverable 6: How-To: Steps for deploying, practices for adapting

Project timeline checklist from challenge.gov:

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*Image sourced from:* [“[Prize & Challenge Toolkit](https://www.challenge.gov/toolkit/files/2016/10/ChallengeProcessMap-FINAL.pdf)”, Challenge.gov, 2017.]

Challenge Phases breaks down the execution process into five sequential stages: Prepare, Develop, Conduct and Award & Transition. This is a step-by-step guide to everything you have to do as a challenge manager to deliver a successful challenge, from Get to Know Challenges to Share Best Practices and Results. If you’re unsure of exactly what the end-to-end challenge process entails, this is where to start.  
  
Every challenge goes through the four phases in the order they’re presented here; each phase is composed of three to eight substeps that do not necessarily need to be completed in the order presented.

**Phase 1: Prepare**

*Sourced directly from:* [“[Challenges and Prizes Toolkit: Prepare](https://www.challenge.gov/toolkit/Prepare/),” Challenge.gov, 2017.]

In this phase you will begin to think through the problem you’re trying to solve, estimate the necessary resources and partnerships and determine if a challenge is the appropriate tool for addressing your goals. This process will help you identify the goals and desired outcomes of your efforts and lead you to the most impactful result.  
  
Get to Know Challenges  
Find your agency challenge point of contact.  
You’ll want to understand if your agency has run any challenges before and if your agency has a challenge point of contact. After generally familiarizing yourself with challenges, you should reach out to your agency’s challenge point of contact. You don’t need to reinvent the wheel!  
  
In addition to resources from your own agency, the Office of Science and Technology Policy (OSTP) and the General Services Administration (GSA), through the Challenge.gov program, have trained over 2,000 agency staff through workshops, online resources and an active community of practice. And NASA’s Center of Excellence for Collaborative Innovation (COECI) provides a full suite of challenge implementation services, allowing agencies to experiment with these new methods. *Sourced directly from:* [“[Challenges and Prizes Toolkit: Prepare: Get to Know Challenges](https://www.challenge.gov/toolkit/prepare-1_1/),” Challenge.gov, 2017.]

Prioritize Goals and Outcomes  
Goals and desired outcomes form the basis for the challenge design and should be planned for in the context of any broader outcome or goal. Recognition of a basic problem such as “we need communities to conserve energy” or “desalination is too expensive” is often the initial conversation that leads to development of a prize concept. Keep in mind that achieving ambitious goals will often necessitate multiple approaches of which challenges may be only one. Once a problem or goal is identified and an initial framework for the challenge is crafted, the next step is to prioritize project goals and desired outcomes. A goal can be loosely defined as an objective your project seeks to achieve; a desired outcome can serve as a measure of how successful you are in achieving that goal.

The goals may not be obvious, but make sure to engage many internal and external stakeholders, collaborators and intended users in the process and identify outcomes together that meet, align with or support their objectives. Challenge yourselves to find the most impactful goals and outcomes and design your challenge around those.

The America COMPETES Act defines the following 10 goals for Federal challenges:

* Improve government service delivery
* Find and highlight innovative ideas
* Solve a specific problem
* Advance scientific research
* Develop technology
* Inform and educate the public
* Engage new people and communities
* Build capacity
* Stimulate a market
* Other

It’s important to specify how your agency and your collaborators will measure the success of the challenge. As you are discussing goals keep in mind that clear and easy-to-follow measures help everyone understand how the challenge supports the goal. Throughout the challenge it’s important to maintain coherent measures that report outcomes to leadership as well as other collaborators and stakeholders.

Once you have settled on a challenge design, it’s common to give briefings and presentations internally. You will want to be clear about your priorities and how they support the agency’s mission. Clearly state what are NOT goals of the challenge so agency leadership understands why certain design decisions were made. *Sourced directly from:* [“[Challenges and Prizes Toolkit: Prepare: Prioritize Goals and Outcomes](https://www.challenge.gov/toolkit/prepare-1_2/),” Challenge.gov, 2017.]

Build a Team  
Challenges need to engage with individuals with different expertise who can perform different roles including problem definition, prize design, communications, procurement and funds disbursement, technical support, legal counsel, event planning and others depending on the specific design. It’s important to identify early on who you’ll need to consult from key offices such as legal, procurement and communications while you’re developing your challenge. These choices will shape the concepts and alternatives available to you in structuring your challenge. Keep in mind that at agencies with experience running challenges, there may already be staff with useful knowledge.

It is useful to identify others at your agency with challenge experience and put together a challenge dream team with key functional roles.  
You may want to consider creating impact by bridging resources through public-private partnerships, or seeking contract support to help design or administer your challenge.

*Sourced directly from:* [“[Challenges and Prizes Toolkit: Prepare: Build a Team](https://www.challenge.gov/toolkit/prepare-1_5/),” Challenge.gov, 2017.]

Identify Legal Authority  
In determining the legal authority, you should consider things like desired participants, intellectual property for solutions and the likelihood of implementing the challenge through partnerships. Engaging your attorneys early in the process allows them to help you weigh these choices.

Consider legal authorities throughout the challenge development process, and become familiar with the flexibilities and restrictions that different legal frameworks provide. Talk to your attorneys to make sure you understand the other legal issues that might apply to your challenge, and fully understand what legal authority you're operating under. *Sourced directly from:* [“[Challenges and Prizes Toolkit: Prepare: Identify Legal Authority](https://www.challenge.gov/toolkit/prepare-1_6/),” Challenge.gov, 2017.]  
  
Estimate Budget and Resources  
Although it may be difficult to reach a decision on funding levels, human resources and timelines without a finalized challenge design, it is still important to estimate likely resources within your agency and among partners at this stage. What is this going to cost? How many FTEs are needed? These will be among the first questions asked when you make the case to your agency leadership. *Sourced directly from:* [“[Challenges and Prizes Toolkit: Prepare: Estimate Budget and Resouces](https://www.challenge.gov/toolkit/prepare-1_7/),” Challenge.gov, 2017.]

**Phase 2: Develop**

*Sourced directly from:* [“[Challenges and Prizes Toolkit: Develop](https://www.challenge.gov/toolkit/Develop/),” Challenge.gov, 2017.]

In this phase you will determine the prize competition structure and implementation timeline. During this critical step, you’ll work with internal groups to establish eligibility and submission requirements, terms and conditions, and judging criteria, and connect with your communications team to outline your announcement and ongoing outreach strategy to engage your solver pool.

Design the Challenge Structure

A few of the challenge structure elements to consider include:

* Competition phases (e.g., ideation, demonstration, pilot)
* Timeline
* Competition setting (e.g., virtual, in person as a head-to-head or as a staggered performance competition)
* Number of winners

Once you have an idea of the challenge structure, it is important to ensure that each part has appropriate incentives that drive sustained participation and achievement. One option available is to provide monetary awards (as authorized by the America COMPETES Act and other authorities) for results in any of the challenge milestones.

One of the goals of many agencies when they set out to run challenges is to engage innovators that do not typically apply for government funds. Due to the “pay for results only” structure of prizes, the research and development cost and risk is shifted almost entirely to the innovator. The incentive structure built into a prize often limits competitors to those who can afford the risk of not winning. A primary goal in challenge design should be to create a fair and balanced incentive structure that does not exploit the innovator. You can accomplish this with a phased approach that provides seed funds as the innovators advance through the competition and that also provides value via communications amplification or introduction to additional funding resources that extend beyond the life of the competition. *Sourced directly from:* [“[Challenges and Prizes Toolkit: Develop: Design the Challenge Structure](https://www.challenge.gov/toolkit/develop-2_1/),” Challenge.gov, 2017.]

Develop Submission Requirements  
This will help your target audience understand what to expect. Some challenges include detailed rules that apply to the submission and judging process in order to maintain fairness. For example, for a prototyping or technology development challenge, an agency may include rules that are important to implementing a judging process that could restrict the volume or weight of the submission, how technologies interface to power sources, etc. Make sure to be explicit and don’t be overly constraining. *Sourced directly from:* [“[Challenges and Prizes Toolkit: Develop: Develop Submission Requirements,”](https://www.challenge.gov/toolkit/develop-2_2/) Challenge.gov, 2017.]

Define Evaluation and Judging Process  
The appropriate evaluation and judging process can vary widely depending on the challenge type. Your particular problem might lend itself to absolute objective solutions, like the fastest possible algorithm, or to subjective criteria based on expert opinion. Because many challenges are designed to achieve multiple outcomes (e.g., technological performance and usability), the criteria may include both subjective and objective evaluation. This step involves establishing the process by which you will evaluate submissions. Evaluation processes include defining specific criteria; identifying the judges, subject matter experts and reviewers you wish to include; and drawing up instructions you will provide to ensure a fair, transparent process and a methodologically sound outcome.

Key elements to take into account include:

* Incorporate expertise.
* Decide on your judging mechanism.
* Equitable assessment is paramount.
* Ensure measurability.
* Develop a judging protocol.
* Manage conflicts of interest and nondisclosure agreements.

*Sourced directly from:* [“[Challenges and Prizes Toolkit: Develop: Define Evaluation and Judging Process](https://www.challenge.gov/toolkit/develop-2_4/),” Challenge.gov, 2017.]

Develop a Communications Plan  
Develop a plan to communicate important information regarding the challenge to various audiences and maintain communications with these audiences throughout the lifecycle of your challenge. The plan should define:

* Audience segments (e.g., target solvers, partner organizations, influencers, end-users and the general public)
* Communication modes (e.g., website, news outlets, email blasts, word-of-mouth and social media)
* Content (e.g., what kind of information should be shared with which audience)

With a communications plan, more is better, but remember to develop and share key high-level messages. There are many opportunities for key overall messages in the course of running a challenge. Develop six or seven and share them early with collaborators and partners. When you review and agree upon key high-level messages with partners, it helps ensure that communications regarding the challenge are consistent regardless of which organization is sharing information about the challenge. Developing a graphic representation for the challenge can be very important and very useful for branding the challenge across various social media venues and can accompany many messages and challenge descriptions. Remember to take advantage of social media and always look for promotional opportunities. Communications planning also includes solver engagement and capacity building, where you should consider opportunities for interactive engagement. *Sourced directly from:* [“[Challenges and Prizes Toolkit: Develop: Develop a Communications Plan](https://www.challenge.gov/toolkit/develop-2_5/),” Challenge.gov, 2017.]

**Phase 3: Conduct!**

When conducting the communications plan, a few things to remember are:

* Develop strong relationships with different communications teams in your agency.
* Don’t underestimate how long it can take to execute your plan!
* Write for multiple audiences.
* Provide an archive for people to easily track prize or challenge evolution and progress.
* Track the impact of your communications.
* Think about amplifying and cross-promoting your communications.

*Sourced directly from:* [“[Challenges and Prizes Toolkit: Conduct: Execute the Communcations Plan](https://www.challenge.gov/toolkit/conduct-3_1/),” Challenge.gov, 2017.]

When accepting solutions, a few things to remember are:

* Most solutions will be submitted less than 48 hours before the deadline.
* Filter for eligibility before accepting a submission.
* Stay true to your terms and conditions regarding which parts of submissions you make public
* Allow teams and judges to ask questions about submissions before the submission deadline.

*Sourced directly from:* [“[Challenges and Prizes Toolkit: Conduct: Accept Solutions](https://www.challenge.gov/toolkit/conduct-3_2/),” Challenge.gov, 2017.]

Manage the Judging Process and Select Winners  
Selection and appointment of qualified judges to choose the winners of prize competitions is important to ensure a balanced and transparent challenge and to allow for innovative ideas to compete. Once you select your judges, you may conduct the process in many ways, such as in person, by phone or via webinar. Judges should be able to constructively debate the submissions received.

Depending on your challenge, you may want a judging team to reflect and have expertise in a variety of areas. When selecting judges, try to get a feel for what they bring to the table and how they are able to work together as a team to ensure progress and success.

Think about what might incentivize a judge to be a part of your challenge. Will they be getting significant publicity or legitimacy? Will they be making professional connections? Approaching judges accordingly will help you retain them; you don’t want them to drop out or commit and not follow through. Just as with incentivizing your competitors, you may want to include nonmonetary reasons for judges to participate in your challenge, especially if you’re looking for volunteers.  
Getting the right judges on your judging panel might even attract participants to your challenge. The National Science Foundation’s Generation Nano competition involved Stan Lee, the creator of Marvel Comics. Other challenges have engaged leaders who are well known in the scientific field related to the competition. *Sourced directly from:* [“[Challenges and Prizes Toolkit: Conduct: Manage the Judging Process and Select Winners](https://www.challenge.gov/toolkit/conduct-3_3/),” Challenge.gov, 2017.]

Communicate the judging panel’s authority to your agency leadership.

Challenges are vastly different than traditional grants. Depending on how you structure your evaluation process, your judges may be entirely responsible for deciding which competitors advance to the next stage or win your challenge. This is the case with many NASA Centennial Challenges. In that case, your agency leadership may have little to no role in deciding the winners and losers of your challenge.  
According to the [America COMPETES Act](https://www.gpo.gov/fdsys/pkg/PLAW-111publ358/content-detail.html), “For each competition, the head of an agency, either directly or through an agreement … shall appoint one or more qualified judges to select the winner or winners of the prize competition.” Thus, the judging process may be entirely outside of the normal operating procedures for decision-making in your agency, and it is important to bring leadership up to speed on the authority judges have in selecting the winners of your challenge.  
  
**Phase 4: Award**

In this phase you will determine the appropriate channels for announcing your winner(s), working with internal teams to expedite payment and document your processes. Additionally, you will explore important nonmonetary incentives that reach all participants — regardless of winner status — such as detailed feedback, recognition, and information on follow-on funding opportunities.

*Sourced directly from:* [“[Challenges and Prizes Toolkit: Award](https://www.challenge.gov/toolkit/award/),” Challenge.gov, 2017.]

There are various ways to administer your prize or challenge. You might choose an external, nonprofit or third-party partner to help administer and execute your challenge, or you can do it all within your agency. For each one of these administration options, the process you follow will depend on the mechanism being used for the prize or challenge:

* Execution by your agency: Funds provided by your agency are paid directly to the prize or challenge or challenge winners. The payout is treated as an invoice. Contact your accounting department to determine how an invoice is typically paid. Structure your payment form such that it can be treated as an invoice.
* Execution by a challenge partner: This pertains to an external partner, such as a nonprofit or foreign government, that isn’t using Federally appropriated funds. Depending on the cited statutory authority and your agency’s specific policies, the third party may be free to follow its own internal payout policies. Your agency would disburse your portion of the prize money, if any.
* Execution by a third-party contractor: For an external partner using Federally appropriated funding, there may be restrictions in your agency’s payout policies. One option is to include prize money as part of the contract and include prize disbursement in the contractor’s roles and responsibilities. *Sourced directly from:* [“[Challenges and Prizes Toolkit: Award: Pay Winners](https://www.challenge.gov/toolkit/award-4_2/),” Challenge.gov, 2017.]

Award Nonmonetary Incentives  
Nonmonetary incentives can be just as important as the size of monetary awards in attracting participants, but they are less cut-and-dry than sending a check. Access to testing facilities, face-time with experts at an awards ceremony, access to fast-tracked regulatory processes and business incubation are all examples of potential incentives that can motivate solvers to participate in your challenge. Incentives to consider include:

* Showcase participant solutions at events and through media channels.
* Provide information on follow-on funding opportunities and next steps.
* Think about releasing prize or challenge data.
* Provide expert feedback on submitted solutions
* Provide access to unique resources your agency has.

It is important to remember to document metrics, results and outcomes. It is critical to document how well your challenge achieved the intended goals and outcomes. This step will help you properly document any relevant metrics, including the data required by the annual COMPETES report. *Sourced directly from:* [“[Challenges and Prizes Toolkit: Award: Award Non-Monetary Incentives](https://www.challenge.gov/toolkit/award-4_3/),” Challenge.gov, 2017.]

#### Deliverable 7: Online inventory of resources

**How-to resources:**

* [Challenge.gov](https://www.challenge.gov/toolkit/) is an essential information and resources to guide Federal employees working on challenges and prizes.
* “[Innovative Contracting Case Studie](https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/innovative_contracting_case_studies_2014_-_august.pdf)s” from the White House Office of Science and Technology Policy describes considerations for using incentive prizes and other contracting vehicles that can return more impact per taxpayer dollar under existing laws and regulations.
* A virtual [Center of Excellence for Collaborative Innovation](https://www.nasa.gov/offices/COECI/index.html), led by NASA, provides guidance to agencies on the full lifecycle of prizes, from design through implementation to post-prize evaluation.
* The UK non-profit NESTA’s “[Challenge Prizes: A Practice guide”](https://www.nesta.org.uk/sites/default/files/challenge-prizes-design-practice-guide.pdf) shares insights and understandings from the Centre’s work to design and run challenge prizes and to support others to do the same

**Further Reading:**

The most comprehensive source of data about Federal challenges since 2010 is the Office of Science and Technology Policy’s (OSTP’s) annual reports to Congress (2011, 2012, 2013 and 2014):

* “[Implementation of Federal Prize Authority: Fiscal Year 2014 Progress Report](https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/NSTC/fy14_competes_prizes_-_may_2015.pdf),” White House Office of Science and Technology Policy, April 2014.
* “[Implementation of Federal Prize Authority: Fiscal Year 2013 Progress Report,](https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/competes_prizesreport_fy13_final.pdf)“ White House Office of Science and Technology Policy, May 2014.
* “[Implementation of Federal Prize Authority: Fiscal Year 2012 Progress Report](https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/competes_prizesreport_dec-2013.pdf),” White House Office of Science and Technology Policy, December 2013.
* “[Implementation of Federal Prize Authority: Fiscal Year 2011 Progress Report,](https://obamawhitehouse.archives.gov/sites/default/files/microsites/ostp/competes_report_on_prizes_final.pdf)[”](https://www.whitehouse.gov/sites/default/files/microsites/ostp/competes_report_on_prizes_final.pdf) White House Office of Science and Technology Policy, March 2012.

[From the White House Office of Science and Technology Policy Blog:](http://www.whitehouse.gov/sites/default/files/microsites/ostp/competes_report_on_prizes_fi)

* Kalil, T. and Dorgelo, C., “[Identifying Steps Forward in Use of Prizes to Spur Innovation](https://obamawhitehouse.archives.gov/blog/2012/04/10/identifying-steps-forward-use-prizes-spur-innovation),” White House Office of Science and Technology Policy, April 10, 2012.
* Case, J., “[Unleashing Innovation and Deepening Democracy Through Prizes](http://www.whitehouse.gov/blog/2012/06/12/unleashing-innovation-deepening-democracythrough-),” White House Office of Science and Technology Policy, June 12, 2012.
* Steffen, R. “[New Center of Excellence Fuels Prize to Help Modernize Tools for Patent Examination,”](http://www.whitehouse.gov/blog/2011/12/16/new-center-excellence-fuels-prize-helpmodernize-) White House Office of Science and Technology Policy, December 16, 2011.

**Selected Academic Resources:**

* Lakhani, K. et al., "Prize-based Contests Can Provide Solutions to Computational Biology Problems,” Nature Biotechnology 31 (2), February 2013.
* Mitch, K. et. al., “[The Craft of Prize Design: Lessons learned from the public sector](http://dupress.com/articles/the-craft-of-incentive-prize-design/),” Deloitte University Press, June 18, 2014. Provides lessons from the public sector prize community
* “[‘And the winner is…’: Philanthropists and governments make prizes count](http://mckinseyonsociety.com/downloads/reports/Social-Innovation/And_the_winner_is.pdf) ,”McKinsey & Company, 2009. A report which addresses how to develop and deliver effective awards.
* Jeppesen, L. and Lakhani, K., “[Marginality and Problem Solving Effectiveness in Broadcast Search](http://dash.harvard.edu/bitstream/handle/1/3351241/Jeppesen_Marginality.pdf?sequence=2),”Organization Science 20, September 18, 2009. Lengthy article detailing science problem solving contests characterized by open broadcast of problem information.
* Lakhani, K. and Tong, R.,“[Public-Private Partnerships for Organizing and Executing Prize-Based Competitions](http://cyber.law.harvard.edu/publications/2012/public_private_partnerships_for_organizing_a),” Harvard University Berkman Klein Center for Internet & Society, June 10, 2012. Provides an overview of the prize lifecycle to help agencies better understand when to use prizes and the various elements involved in developing a prize.

**Watch and Listen:**

* Patel, S., “[Prize Design Interactive session - Developing Ambitious Prizes](https://www.youtube.com/watch?v=r9OGKa_pud8&index=5&list=PLd9b-GuOJ3nHmi8ezudkvqyEtZ3r7WB5Q),” DigitalGov, October 19, 2015. Patel, Open Innovation Manager at the U.S. Department of Health and Human Services, presents a workshop on developing challenge prizes.
* “[Collaborative Innovation conference on public sector prizes](http://www.casefoundation.org/collaborative-innovation)”, Case Foundation, June 2012. Video of panel sessions, presentation decks from the event, and links to relevant reports.

**Further Reading:**

* Kanani, R., “[Incentivizing Innovation: How The White House Uses Challenge.gov To Solve Big](http://www.forbes.com/sites/rahimkanani/2014/02/17/incentivizing-innovation-how-the-white-house-uses-challenge-gov-to-solve-big-problems/#53d418053e02)

[Problems](http://www.forbes.com/sites/rahimkanani/2014/02/17/incentivizing-innovation-how-the-white-house-uses-challenge-gov-to-solve-big-problems/#53d418053e02),” Forbes, February 17, 2014. A summary of some of the most impactful innovations

to emerge from public-private partnerships through Challenge.gov.

* Malykhina, E., “[GSA’s Challenge.gov Wins Harvard Innovation Award,”](http://www.informationweek.com/government/leadership/gsas-challengegov-wins-harvard-innovation-award/d/d-id/1113559?) Information Week, January 23, 2014. Summary of the online portal featuring information on government challenges and competitions to crowdsource innovation.
* Brown, E., “[Scientific Research Increasingly Fueled by Prize Money](http://articles.latimes.com/2013/jan/10/science/la-sci-funding-competition-20130110),” Los Angeles Times, January 10, 2013. A critical look at the advantages and disadvantages of offering prize money for scientific innovation.
* Vergano, D., "[White House touts 'challenge' prizes for tech solutions](http://www.usatoday.com/tech/news/story/2012-04-09/white-house-challengestechnology/)," USA Today, April 10, 2012. A summary of the government’s work with challenge prizes.
* Terdiman, D., “[How the White House is aiming the X Prize model at big problems](http://news.cnet.com/8301-11386_3-57450870-76/how-the-white-house-is-aiming-the-x-prizemodel-),” CNet, June 12, 2012. Interview with Cristin Dorgelo, White House assistant director of grand challenges.
* Bornstein, D., "[Innovation for the People, by the People](https://opinionator.blogs.nytimes.com/2012/02/22/from-the-white-house-incentives-to-innovate/)," New York Times Opinionator Blog, February 22, 2012. Explores examples from the government’s open innovation strategies.
* Schaber, S. “[Why Napoleon Offered a Prize for Inventing Canned Food](http://www.npr.org/sections/money/2012/03/01/147751097/why-napoleon-offered-a-prize-for-inventing-canned-food),” National Public Radio Planet Money Blog, March 5, 2012. An history of innovation prizes.
* Vaitheeswaran, V.,"[The Rise of the Prize](http://www.freakonomics.com/2012/03/14/the-rise-of-the-prize/)," Freakonomics Blog, March 14, 2012. An entertaining look at the utility of innovation prizes.

#### Deliverable 8: Examples of policy that have enabled or encouraged approach (legislation, exec order)

**Legislation**

[S.3084 - American Innovation and Competitiveness Act](https://www.congress.gov/bill/114th-congress/senate-bill/3084), 114th Congress, December 2016.

Stipulates that ‘Federal agencies may use crowdsourcing and voluntary, collaborative citizen science to advance their missions.’

[The America COMPETES Reauthorization Act](https://www.gpo.gov/fdsys/pkg/PLAW-111publ358/content-detail.html), Public Law 111-358: provides all Federal agencies broad authority to conduct prize competitions.

Section 24 of the [**The Stevenson*-*Wydler Technology Innovation Act of 1980**](https://www.gpo.gov/fdsys/pkg/STATUTE-94/pdf/STATUTE-94-Pg2311.pdf), 15 U.S.C. §3719, as enacted by the America COMPETES Reauthorization Act of 2010, permits any agency head to “carry out a program to award prizes competitively to stimulate innovation that has the potential to advance the mission of the respective agency” (§24(b)). Section 24 authorizes agencies to use both private sector and Federal appropriated funds in order to design prizes, administer prizes, and offer monetary awards for prize competitions.

**Policy Guidance**

* **“**[Guidance on the Use of Challenges and Prizes to Promote Open Government,”](https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/memoranda_2010/m10-11.pdf) The White House Office of Management and Budget, March 8, 2010. Memorandum that ‘highlights for agencies policy and legal issues related to the implementation of...prizes and challenges as tools for promoting open government, innovation, and other national priorities.’
* “[Prize Authority in the America COMPETES Reauthorization Act (2011),”](https://cio.gov/wp-content/uploads/downloads/2012/09/Prize_Authority_in_the_America_COMPETES_Reauthorization_Act.pdf) The White House Office of Management and Budget. Fact Sheet and FAQ to ‘provide informal guidance to agencies in their implementation of the prize authority in section 24 of the Stevenson-Wydler Act, as added by the America COMPETES Reauthorization Act.’
* “[FAQ on PRA & Prizes and Challenges](https://obamawhitehouse.archives.gov/sites/default/files/omb/assets/inforeg/challenge-and-prizes-faqs.pdf),” White House Office of Management and Budget, March 1, 2012.
* [GSA Schedule 541-G](http://www.gsaelibrary.gsa.gov/ElibMain/sinDetails.do?scheduleNumber=541&specialItemNum) – “Challenges and Competitions Services” vendors on schedule
* “[Paperwork Reduction Act Guide](https://www.digitalgov.gov/files/2014/01/PRAInformationCollectionManual.pdf),” White House Office of Personnel Management, April 2011. General Services Administration (GSA)’s guidance regarding the relation between the Paperwork Reduction Act and challenge.gov
* “[GSA Rules of Behavior for Handling Personally Identifiable Information (PII)](https://www.gsa.gov/portal/mediaId/199847/fileName/CIO_P21801_GSA_Rules_of_Behavior_for_Handling_Personally_Identifiable_Information_(PII)_(Signed_on_October_29__2014).action),” General Services Administration, October 29, 2014. GSA’s guidance regarding the relation between privacy issues, personally identifiable information (PII) and challenge.gov
* “[Security Guidance](http://www.howto.gov/sites/default/files/documents/ChallengegovSecurityPrimer.pdf)” GSA’s guidance regarding the security of challenge.gov to host challenges:
* “[Children’s Privacy Guidance](http://www.howto.gov/sites/default/files/documents/ChallengegovCOPPAandYoungUserPrime)” GSA’s guidance regarding the protection of young users participating in challenges on challenge.gov:
* “[Cookie Guidance](http://www.howto.gov/sites/default/files/documents/ChallengegovCookiesPrimer.pdf)“ GSA’s guidance regarding the use of persistent cookies safely to enhance user experience on challenge.gov:
* “[Open Government Directive](http://participedia.net/en/cases/open-government-directive-obama-administration),” December 8, 2009. “[Agency Open Government Plans should include] innovative methods, such as prizes and competitions, to obtain ideas from and to increase collaboration with those in the private sector, non-profit, and academic communities.”
* “[2009 Strategy for American Innovation](http://patentlyo.com/media/docs/2009/09/sept-20-innovation-whitepaper_final.pdf),” White House Office of Science and Technology Policy, September 2009. “The Federal government should take advantage of the expertise and insight of people both inside and outside the Federal government, use high-risk, high-reward policy tools such as prizes and challenges to solve tough problems…”
* [Updated Strategy for American Innovation](http://www.whitehouse.gov/sites/default/files/uploads/InnovationStrategy.pdf) (February 2011, see box 2, page 12)

**Agency-Specific Guidance**

• Health and Human Services:

“[Resources for Challenge Managers at HHS](https://www.hhs.gov/idealab/competes/more-info/),” HHS Idea Lab. FAQ on HHS Challenge competitions.

“[HHS delegation of authority,” Federal Register 76 (86), May 4, 2011.](https://www.gpo.gov/fdsys/pkg/FR-2011-05-04/pdf/2011-10847.pdf)

• NASA:

“[NASA Policy Directive on Challenges, Prize Competitions, and Crowdsourcing Activities,” Office of the Chief Technologist, February 12, 2014.](http://nodis3.gsfc.nasa.gov/npg_img/N_PD_1090_0001_/N_PD_1090_0001__main.pdf)

#### Deliverable 9: Future directions (“next practices as opposed to best practices”)

There remains significant untapped potential for further using incentive prizes in creative ways to solve novel, ambitious, and important problems. Tapping this potential will require continuing to build the awareness and expertise throughout the Federal workforce about when and how to use prizes to solve problems. While many well-known incentive prizes have focused on catalyzing technology R&D, there is an opportunity to further deploy incentive prizes to drive market adoption of existing solutions and interventions, and progress in areas of social policy such as health, energy use, and education. [“[Innovative Contracting Case Studies](https://www.whitehouse.gov/sites/default/files/microsites/ostp/innovative_contracting_case_studies_2014_-_august.pdf),” White House Office of Science and Technology Policy (OSTP), 2014.]