Nesta...

CHALLENGE PRIZES

A Practice Guide

ACKNOWLEDGEMENTS

About the Centre for Challenge Prizes

The Centre for Challenge Prizes was founded in April 2012 with co-funding and support from the Department for Business, Innovation and Skills (BIS) to bring together the growing interest and expertise in challenge prizes.

It aims to build an understanding of how challenge prizes can play a role in stimulating and supporting innovation.

For further information, contact **challengeprizes@nesta.org.uk**

About Nesta

Nesta is the UK's innovation foundation.

An independent charity, we help people and organisations bring great ideas to life. We do this by providing investments and grants and mobilising research, networks and skills.

Nesta's Practice Guides

This guide is part of a series of Practice Guides developed by Nesta's Innovation Skills team. The guides have been designed to help you to learn about innovation methods and approaches and put them into practice in your work.

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CHALLENGE PRIZES
A Practice Guide

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INTRODUCTION

On the battle fields of Europe some centuries ago, Napoleon had a problem: how could he feed his troops when the countries he was invading were not able or inclined to provide food?

The French military leader believed in the power of prizes to incentivise innovation and spur on scientific and technological development. In 1795 he offered a reward of 12,000 francs to improve upon the food preservation methods of the time. Fifteen years later, he finally awarded the cash prize to a confectioner named Nicolas François Appert. Appert's method of heating, boiling and sealing food in airtight glass jars is pretty much the process we still use to can and preserve food today.

Challenge prizes are a very simple idea. You identify a problem, publicise the challenge and offer a reward to the person who can find the best solution. You attract the interest of the people with the right knowledge and expertise. Compelled by the powerful motivations that competitions tap into – the promise of a cash reward, the glory of being the first or best, the satisfaction of putting skills to use and making a change in the world – talented individuals and teams put aside what they are doing and make solving your problem one of their urgent priorities.

This simplistic story of how prizes work understates the strategic and practical decisions that underpin their success. To have a chance of success, you need to reach, attract and motivate the right innovators to work on your challenge. You need to encourage individuals or teams to carry the risks associated with working towards an uncertain reward. You need to measure and judge performance and to lay the groundwork for the uptake of solutions beyond the prize. You also need to understand why your challenge hasn't already been met, and whether you'll be able to create the right conditions for making progress through a challenge prize. A prize can focus attention on an issue, incentivise innovators and unlock additional finance and resources for your challenge, but may not resolve deeper systemic barriers to innovation.

Challenge prizes are a tried and tested way to support and accelerate change in the world and it is worth exploring whether they could be useful in helping you to address a problem, need or opportunity.

They are also making a comeback, as governments and funders look for better ways to solve problems, create value and exploit the opportunities presented by collaborative technologies.

How to use this Practice Guide

This Practice Guide is part of a series of guides developed by Nesta's Innovation Skills Team. It aims to help governments, funders, leaders of charities and public service organisations to understand the potential of challenge prizes and explore the practicalities of designing and running a prize. In this guide you'll find useful information about the history and current uses of challenges prizes, alongside a range of strategic prompts and practical tools for designing a prize and supporting the early stages of project planning.

SECTION A: What is a challenge prize?

This section gives you a brief introduction to challenges prizes. It should help you to:

- Learn about the history and current uses of challenge prizes.
- Understand how prize methods are developing with the use of collaborative technologies.
- See the range of ways that you could use a challenge prize to make an impact.

SECTION B: Should I run a challenge prize?

This section supports you to reflect on whether and how you could run a prize to make progress on your problem, need or opportunity. It should help you to:

- Understand the range of things you need to have in place to make a challenge prize work.
- Sense check your early ideas for running a prize.
- Decide whether a challenge prize could help you to address your problem, need or opportunity.

SECTION C: Developing your prize

This section offers an introduction to designing and running challenge prizes, along with some practical tools for supporting your thinking and planning. It should help you to:

- Understand the main phases of work involved in designing and running a challenge prize.
- Explore the elements of prize design and make key decisions (using our Challenge Prize Design Worksheet).
- Sketch out an activity schedule for your challenge prize (using our Challenge Prize Schedule Worksheet).

We hope that this guide helps you to learn about challenge prizes, explore your own challenge and identify the best way of meeting your aims.

SECTION A

What is a challenge prize?

This section gives you a brief introduction to prizes and to some of the ways in which they can be used to find solutions to problems

What is a challenge prize?

Challenge prizes (also called 'inducement' prizes) offer a reward to whoever can first or most effectively meet a defined challenge. They act as an incentive for meeting a specific challenge, rather than being a reward for past achievements (prizes that do this, such as the Nobel Peace Prize, are referred to as 'recognition' prizes).

What can prizes do?

Challenge Prizes aim to do various things and have prompted a range of different kinds of changes in the world.

Sometimes they aim to solve big problems and if they are successful produce major breakthroughs in human knowledge and practice. For example, a recently launched prize from the Methuselah Foundation (whose mission is to extend healthy human life) offers a US$1 million reward for the production of an artificial liver. The prize aims to solve the problem of the global organ shortage, and if successful will prompt a major breakthrough in human knowledge and development.

Prizes can play a role in accelerating progress towards ambitious goals. They do this by shining a powerful light on an issue or opportunity and providing an incentive for lots of different innovators and investors to make meeting the challenge a priority. The US$10 million Ansari X-Prize for the creation of a private re–useable passenger space aircraft (awarded in 2004) was a massive success. It leveraged private investment in multiples of the original reward.

Prizes have created new markets and prompted the development of whole new industries. When Charles Lindbergh became the first pilot to fly non–stop from New York to Paris winning the Orteig prize in 1927, his celebrity transformed the aviation industry. The number of US passengers increased thirty–fold in three years, while applications for pilot licenses increased 300 per cent.

But prizes don't always need to make radical leaps or aim at ambitious, complex goals. People also use prizes to:

- Shine a light on a neglected issue or problem.

- Encourage other people to invest in solving a problem or making advances.

- Bring new products and services to market.

- Prompt new collaborations and partnerships.

- Gather new information and data on an issue.

- Identify great ideas.

- Identify great practice.

- Build the capacity of new innovators and support their entry into the market.

Prizes are a tried and tested method

Prizes have prompted a surprising array of developments through the past few centuries, including:

- The popularity of the potato as a human foodstuff in Europe, which was an outcome of the Academy of Besançon's Prize for Substitute Foods (awarded in 1773).

- Accurate marine navigation, which was an outcome of the British Government's Longitude Prize (awarded in 1765).

- The commercial hydraulic turbine, which was developed in the context the French Society for the Encouragement of Industry Prize (awarded in 1826).

Prize–led advances include innovations in food and agriculture, aviation and space travel, energy and power, climate and the environment, health and medicine, design and architecture and government and social innovation.

Prizes were once such an important way to spur on technological development that American campaigners launched a sustained effort to replace the US patent system with prizes in the 1850s.

But as technological innovation increasingly became the domain of universities and corporate laboratories, prizes fell out of favour.

Prizes are making a comeback

In recent years, there has been a renewed interest in challenge prizes across the private, public and third sectors. The interest from governments and funders is especially notable.

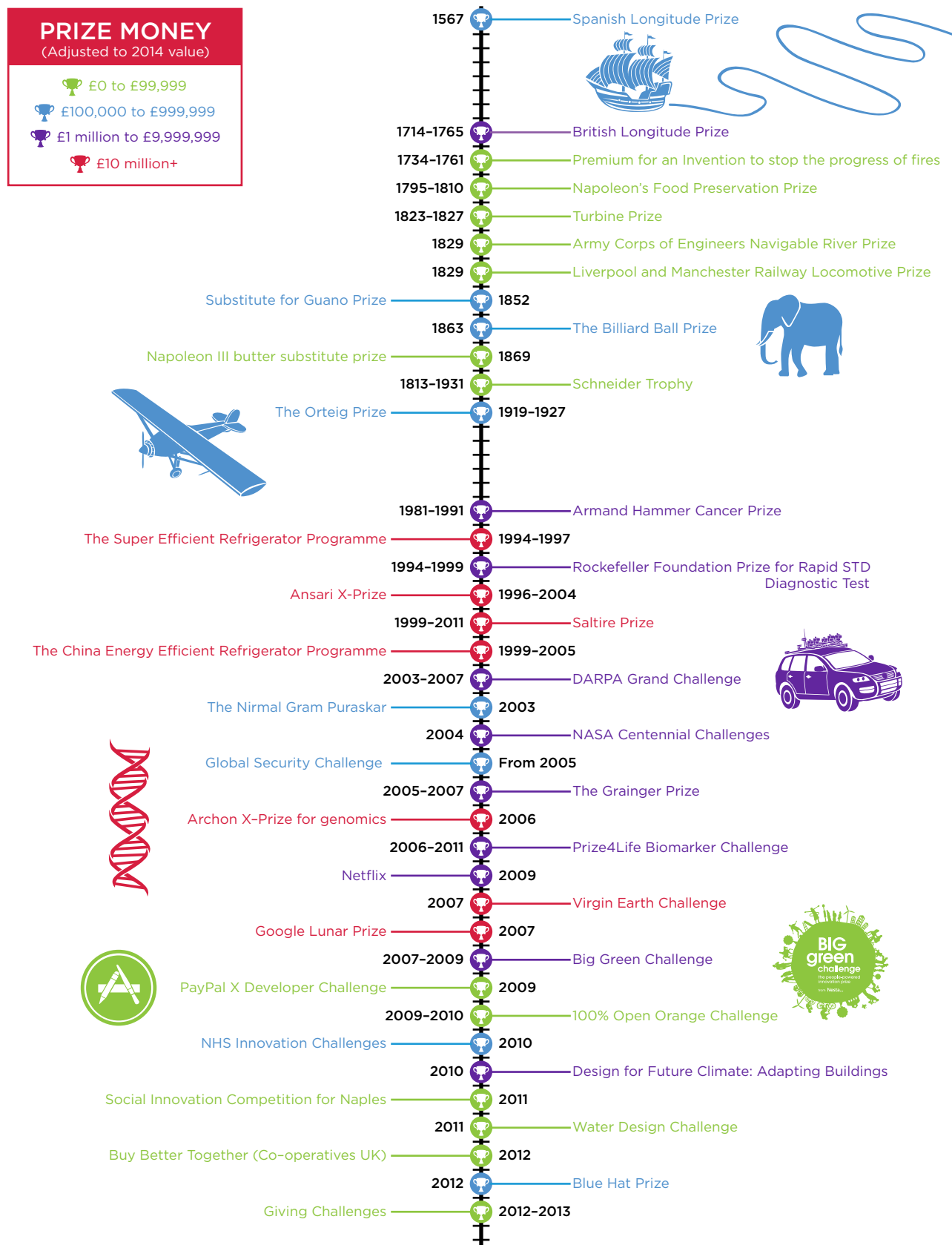The US Government has embraced the potential of challenge prizes:

- In 2009, The Strategy for American Innovation called for all federal agencies to use prizes and challenges to promote and support innovation. In March 2010, the White House issued a government–wide memorandum on the use of challenges.

- As part of the strategy, the US Government has also created Challenge.gov, an online challenge platform that empowers the US Government and the public to bring the best ideas and top talent to bear on the nation's most pressing challenges.

- In 2011, NASA announced the formation of the Center of Excellence for Collaborative Innovation (COECI). COECI aims to speed up the US Government's adoption of new models of problem–solving such as challenge prizes, crowdsourcing and open innovation.

In the UK and Europe:

- In 2008, the Scottish Government launched the £10 million Saltire Prize for innovation in the field of renewable marine energy.

- In 2009, the UK Government announced a £5 million 'Composites Grand Challenge' administered by the Technology Strategy Board in three parts (feasibility, development and final prize).

- In 2012, the UK Department for Business, Innovation and Skills (BIS) as part of their Innovation and Research strategy, launched a prize fund to run inducement prizes. This resulted in the Ageing Well and Waste Reduction Challenges run by Nesta in partnership with the Cabinet Office.

- In 2013, the European Commission launched the 'European Social Innovation Challenge' in memory of Diogo Vasconcelos, to encourage new social innovations from all over Europe. The Competition invites Europeans to come up with new solutions to reduce unemployment and minimise its corrosive effects on the economy and our society both now and in the future. The three winning projects will be awarded financial support of €30,000.

- The National Health Service (NHS) runs a range of inducement prizes to encourage, recognise and reward exemplary practice, including Innovation Challenges (up to £150k); Breakthrough Challenges (Dementia, Diabetes and Stroke, £1 million top prize); Dementia Partnership Challenge (£150k).

Recent challenge prizes in India (the National Innovation Council's Prize to Reduce Work Drudgery) and Africa (the African Innovation Foundation's Innovation Prize for Africa, the African Leadership Academy's Anzisha Prize and the Yara Prize for Green Revolution in Africa) are also notable.

Figure 1: Historical prizes and their different values

PRIZE MONEY
(Adjusted to 2014 value)

🏆 £0 to £99,999
🏆 £100,000 to £999,999
🏆 £1 million to £9,999,999
🏆 £10 million+

Date	Prize
1567	Spanish Longitude Prize
1714–1765	British Longitude Prize
1734–1761	Premium for an Invention to stop the progress of fires
1795–1810	Napoleon's Food Preservation Prize
1823–1827	Turbine Prize
1829	Army Corps of Engineers Navigable River Prize
1829	Liverpool and Manchester Railway Locomotive Prize
Substitute for Guano Prize	1852
1863	The Billiard Ball Prize
Napoleon III butter substitute prize	1869
1813–1931	Schneider Trophy
The Orteig Prize	1919–1927
1981–1991	Armand Hammer Cancer Prize
The Super Efficient Refrigerator Programme	1994–1997
1994–1999	Rockefeller Foundation Prize for Rapid STD Diagnostic Test
Ansari X-Prize	1996–2004
1999–2011	Saltire Prize
The China Energy Efficient Refrigerator Programme	1999–2005
2003–2007	DARPA Grand Challenge
The Nirmal Gram Puraskar	2003
2004	NASA Centennial Challenges
Global Security Challenge	From 2005
2005–2007	The Grainger Prize
Archon X-Prize for genomics	2006
2006–2011	Prize4Life Biomarker Challenge
Netflix	2009
2007	Virgin Earth Challenge
Google Lunar Prize	2007
2007–2009	Big Green Challenge
PayPal X Developer Challenge	2009
2009–2010	100% Open Orange Challenge
NHS Innovation Challenges	2010
2010	Design for Future Climate: Adapting Buildings
Social Innovation Competition for Naples	2011
2011	Water Design Challenge
Buy Better Together (Co-operatives UK)	2012
2012	Blue Hat Prize
Giving Challenges	2012–2013

Prizes are changing

As more and more people run challenge prizes, they are experimenting with and inventing new methods and approaches. There are now so many different ways to run a challenge prize.

Prizes are thriving in the context of opportunities for connection and collaboration offered by the internet and social media. Using digital platforms, prize organisers can publicise challenges and reach out to communities of problem solvers on a global scale. Over the past decade, we have seen the rise of online solutions marketplaces designed to support people (including private companies, governments and charitable funders) to pose challenges and receive solutions from respondents.

For example, InnoCentive has grown a solver community of over 300,000 people across 200 different countries. So far over 1650 challenges have been posted by different business and philanthropic organisations and over 1,500 awards have been made (rewards range in value from US$5,000 to over $1million). Another online marketplace called Kaggle has developed a highly specialised community of statisticians and data miners who develop predictive models and analytics that address business and research challenges (a current challenge sponsored by General Electric has 58 teams working to optimise flight routes based on weather and traffic conditions).

Online solutions marketplaces – some examples

InnoCentive.com	TopCoder.com
Maker.Good.is	NineSigma.com
Kaggle.com	Skild.com
Changemakers.com	Chaordix.com

For governments and funders, challenge prizes have become one of a range of tools we have at our disposal to prompt change in the world. They sit alongside our more established funding and support mechanisms, such as grants, contracts, investment/impact investment and incubation.

There is great scope to use prizes strategically alongside or combined with other mechanisms. A challenge prize can bring new providers to your attention and help you to identify new investment opportunities and so can be usefully deployed alongside procurement and equity financing.
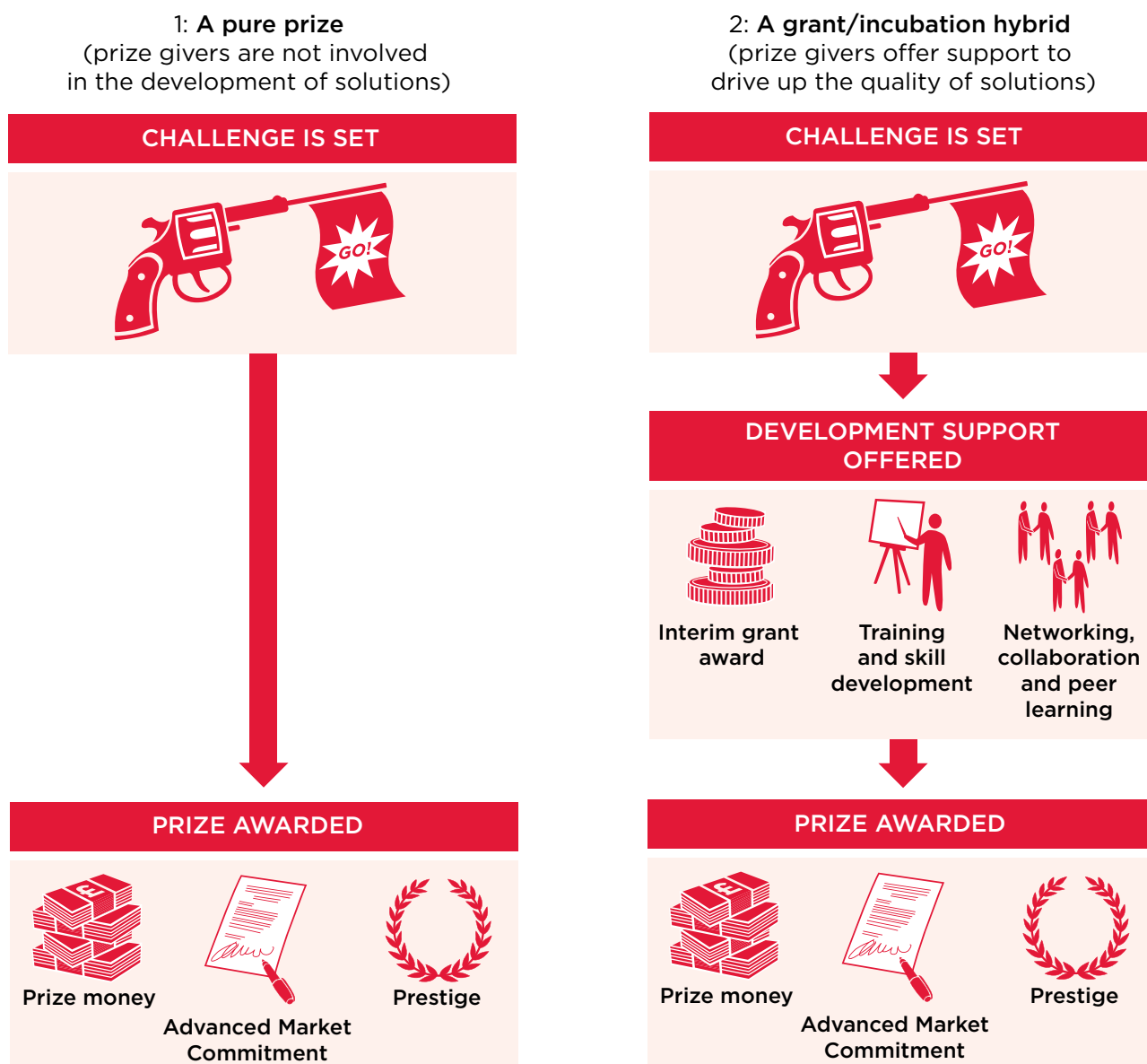
Prizes can also be combined with other funding and support methods to create new kinds of programmes. At Nesta – where we have often pursued the goals of social innovation through challenge prizes – we often combine a prize incentive with incubation and/or grant funding. This allows new kinds of innovators (for example frontline workers, community groups or social enterprises) to grow their ideas and their capacity to deliver them in a supportive environment.

Though competition is such an important element of the typical prize, collaboration can also be a strong feature of prizes and challenge–based programmes. Those who run prizes might:

- Host hack days that enable people to work together to develop solutions.
- Invite wider public or peer commentary on ideas in development.
- Create opportunities for peer collaboration and support through the programme.
- Create opportunities for end users or purchasers of solutions to input into idea development.

These new approaches show how much prizes are changing. There are now numerous different models for running prizes and lots of potential for further experimentation and adaptation.

Figure 2: **Different ways to structure a prize**

1: **A pure prize**
(prize givers are not involved
in the development of solutions)

2: **A grant/incubation hybrid**
(prize givers offer support to
drive up the quality of solutions)

CHALLENGE IS SET	CHALLENGE IS SET

DEVELOPMENT SUPPORT OFFERED

Interim grant award	Training and skill development	Networking, collaboration and peer learning

PRIZE AWARDED	PRIZE AWARDED

Prize money   Prestige
Advanced Market Commitment

Prize money   Prestige
Advanced Market Commitment

Reflection Point

This guide should help you to explore different models and learn about the different ways you could put a prize together. But keep in mind that your own strategic aims are the most important factor in a designing prize. The remainder of this guide will help you to reflect on whether a prize could help you to achieve your aims and, if so, what you kind of choices you should make to have the impact you seek.

SECTION B

Should I run a challenge prize?

This section offers a set of prompts for thinking about whether and how you could run a prize to make progress on your problem, need or opportunity

If you're thinking of running a challenge prize, take a look at the following questions. They are designed to help you to sense check whether a prize could be a good response to your problem, need or opportunity, or whether it would be better for you investigate other support or funding mechanisms. We consider each question in turn over the following pages.

1. **Can you define a clear goal (in response to your problem, need or opportunity) and see a way to measure and judge whether the goal has been met?**

2. **Do you think that you could generate the best solutions by opening up the problem to a wider pool of innovators?**

3. **Do you think you could motivate innovators to participate?**

4. **Do you think you could accelerate progress through a prize?**

5. **Do you think that the solutions will be adopted or taken to market?**

1.   Can you define a clear goal (in response to your problem, need or opportunity) and see a way to measure and judge whether the goal has been met?

Challenge prizes prompt advances by setting a clear goal and inviting innovators to compete to reach that goal (or make the best progress towards the goal by a particular point in time). They can be particularly effective when you have a clear goal in mind, but when the means for achieving the goal are unknown or too speculative for traditional research programmes, grant programmes or procurement.

Take a look at the simplicity and precision of some current and recent challenges:

CHALLENGE FROM NASA

Create a robot that can autonomously navigate a natural terrain and collect specified samples in two times phases. The challenge is held at Worcester Polytechnic in Worcester.

CHALLENGE FROM METHUSELAH FOUNDATION

Break the world record for the oldest–ever mouse (awarded to the research team who are able to develop the science and technology that supports life extension).

CHALLENGE FROM UNITED NATIONS DEVELOPMENT PROGRAMME (UNDP)

Find a sustainable and cost–effective solution (at a cost of no more than €5,000) for a standalone off–grid renewable energy supply that covers the daily needs of an average family in rural Bosnia and Herzegovina (producing an average of 2,25 kWh and 120 litres of water a day).

CHALLENGE FROM WENDY SCHMIDT OIL CLEAN UP X–CHALLENGE

Demonstrate the ability to recover oil on the sea surface at the highest Oil Recovery Rate (ORR) of over 2,500 gallons per minute (GPM) with an Oil Recovery Efficiency (ORE) of more than 70 per cent.

Most people would understand the aims and the terms of these challenges, even if solving them required specific expertise at the highest level. This clarity of mission is what you're aiming for with a challenge – precision around the goal, with an open mind about how a goal could be achieved.

Although all funding mechanisms aim for impact, challenge prizes usually have precise measures of progress and success built into their design. Sometimes success may simply be that your winner is the 'first' to do something (just as Charles Lindbergh was the first aviator to make a trans–Atlantic crossing, winning the Orteig Prize in 1927). Sometimes demonstrating success may mean meeting specific cost or performance targets (like the examples listed above), in which case you may need quantitative measures and to create a test environment in which you can assess performance. Sometimes you will want to make awards based on much more qualitative measures, and judging winners could be a much more subjective affair.

Creating the right way to measure success will take some thought and it will help to explore options through market testing. But if you don't think your issue will lend itself to challenge setting and measurement you might need to explore more exploratory, open–ended processes of research and development, which don't require you to define your outcomes precisely at the outset.

2. Do you think that you could generate the best solutions by opening up the problem to a wider pool of innovators?

A key feature of prizes is that they open up problem solving to new players and create the conditions for solutions to be put forward from unusual places.

Challenge prizes lend themselves to situations in which the route to solution is not clear and there may be many ways to address a challenge. In the early stages of the Hands off My Bike Prize (which looked for ways to reduce bike theft), Nesta's prize team looked at the challenge from different angles an imagined that a solution could potentially come from a wide range of places. They identified and targeted different kinds of experts (see Figure 3 below).

Figure 3: **Seeking insights and ideas from different places**

Researchers and policy professionals

Local authorities,including police and councils

WHO KNOWS ABOUT BIKE THEFT?

People who ride bikes and have had them stolen

People who design bikes and related products and services

People who steal bikes

People who sell bikes and bike products

Engaging with these diverse groups helped the team to understand the problem, learn about what solutions were in train or had been tried (and why they had failed), and identify the different kinds of people who could be encouraged to respond to the challenge. It was not obvious who would be best placed to develop a solution or what it might look like, for example would it be a better lock, a safer place to park, a different bike, a GPS tracking solution or a community monitoring solution, with the aid of a mobile phone app? But a strong way forward was to encourage groups with different understandings of the problem to pool their intelligence towards developing a more effective solution.
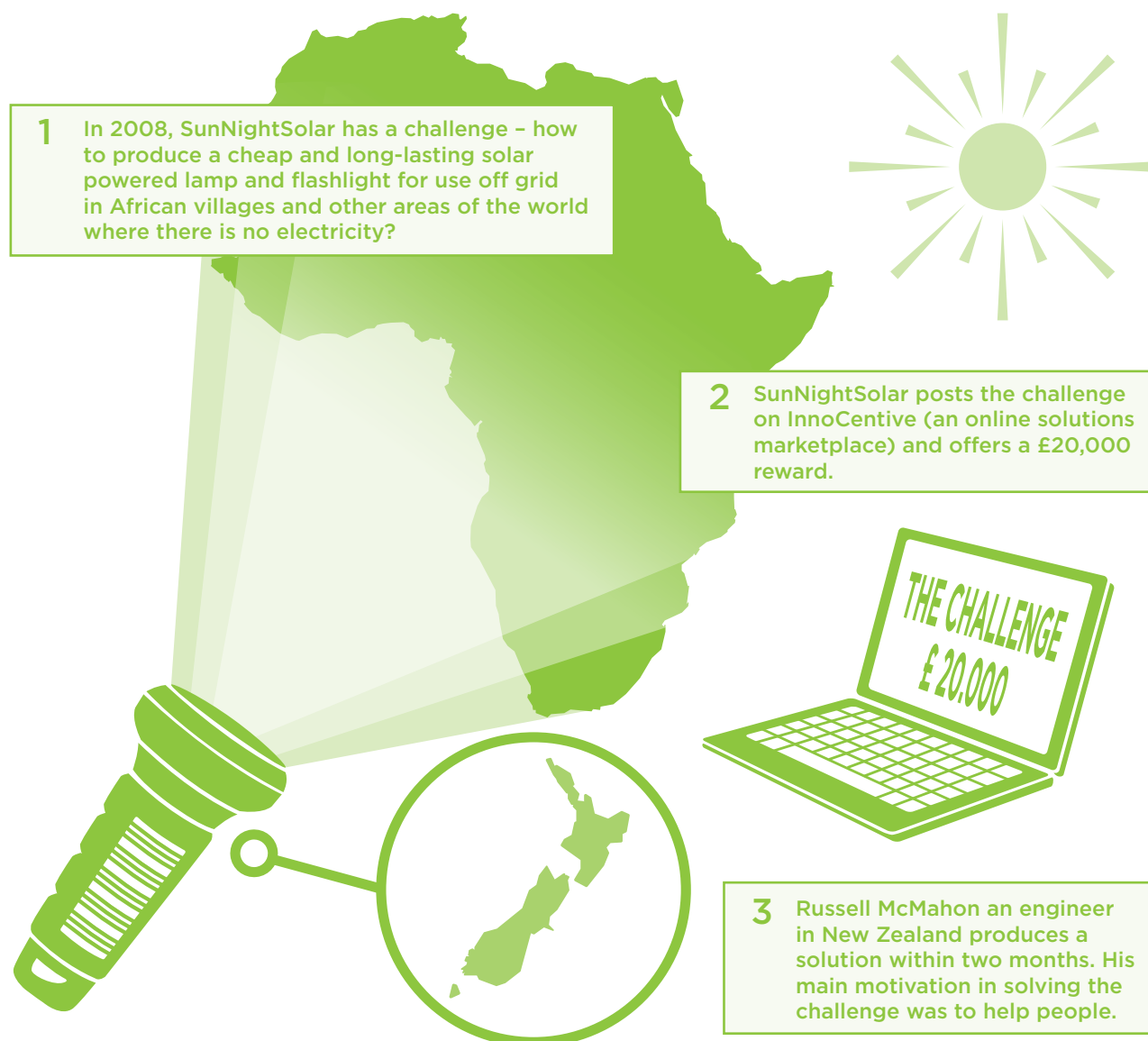
If it seems as though there is only a small group of people in the world with the expertise and capital to develop a solution to a problem, then a challenge prize may not be the right response. But if you can imagine solutions coming in different forms and from different places, then a prize is worth exploring.

Having said this, you may have a good idea of who could solve a problem and still set a challenge. Many prizes are highly targeted and aim to prompt action amongst a specific group of players. Launched in 2007, Nesta's Big Green Challenge was a £1 million prize fund to stimulate and reward community–led innovation in response to climate change. It focussed specifically on community groups because a key aim of the prize was to understand whether and how communities could be effective leaders of change in this area.

Prizes are also used today to crowdsource ideas and solutions that are already out there. The NHS Innovation Challenge Prizes (hosted by the NHS Institute for Innovation and Improvement) reward ideas that tackle challenging issues in healthcare. Their challenges are pitched at professionals currently delivering services (whether within or alongside the NHS) and aim to shine a light on ideas and practice that deliver better patient outcomes, that have the potential to be spread or scaled.

While the traditional challenge prize model focusses on broadcasting a problem and seeking solutions, online solutions marketplaces function as brokers who match people with problems with people with solutions. With the use of online platforms and collaborative technologies, people with challenges to pose now have the option of approaching existing 'solutions' marketplaces where there are active communities of experts waiting to respond to an appropriate challenge. In these cases, challenge prizes are a way to quickly surface the right expertise regardless of where in the world it might be found.

Figure 4: InnoCentive – Matching problems with the people who can solve them

1 In 2008, SunNightSolar has a challenge – how to produce a cheap and long-lasting solar powered lamp and flashlight for use off grid in African villages and other areas of the world where there is no electricity?

2 SunNightSolar posts the challenge on InnoCentive (an online solutions marketplace) and offers a £20,000 reward.

THE CHALLENGE
£ 20,000

3 Russell McMahon an engineer in New Zealand produces a solution within two months. His main motivation in solving the challenge was to help people.

3. Do you think you could motivate innovators to participate?

Running an effective prize depends on creating the right incentives for participants.

Prizes ask for innovators to give their own time and energy to solving a problem. They often also require innovators (whether they are part of a team, or working alone) to make a financial investment in the project, based on the chance – but not the certainty – of a reward for the effort.

Judging the value of cash reward is one important piece of the puzzle, and if you are offering this kind of incentive, you will need to think about how best to do this. But money is not the only thing that motivates people to participate in prizes. Sometimes the opportunity to meet an ambitious goal in front of an expectant public or group of peers (and the brand credibility and recognition this could bring) is a powerful lure. Sometimes the creative challenge of solving an intractable problem or simply helping people drives innovators to lend their expertise to a challenge.

A good prize design recognises and responds to the full range of things that will motivate and enable people to work on a challenge and, because every challenge is different, it's important to think about what the right set of incentives might be in each context.
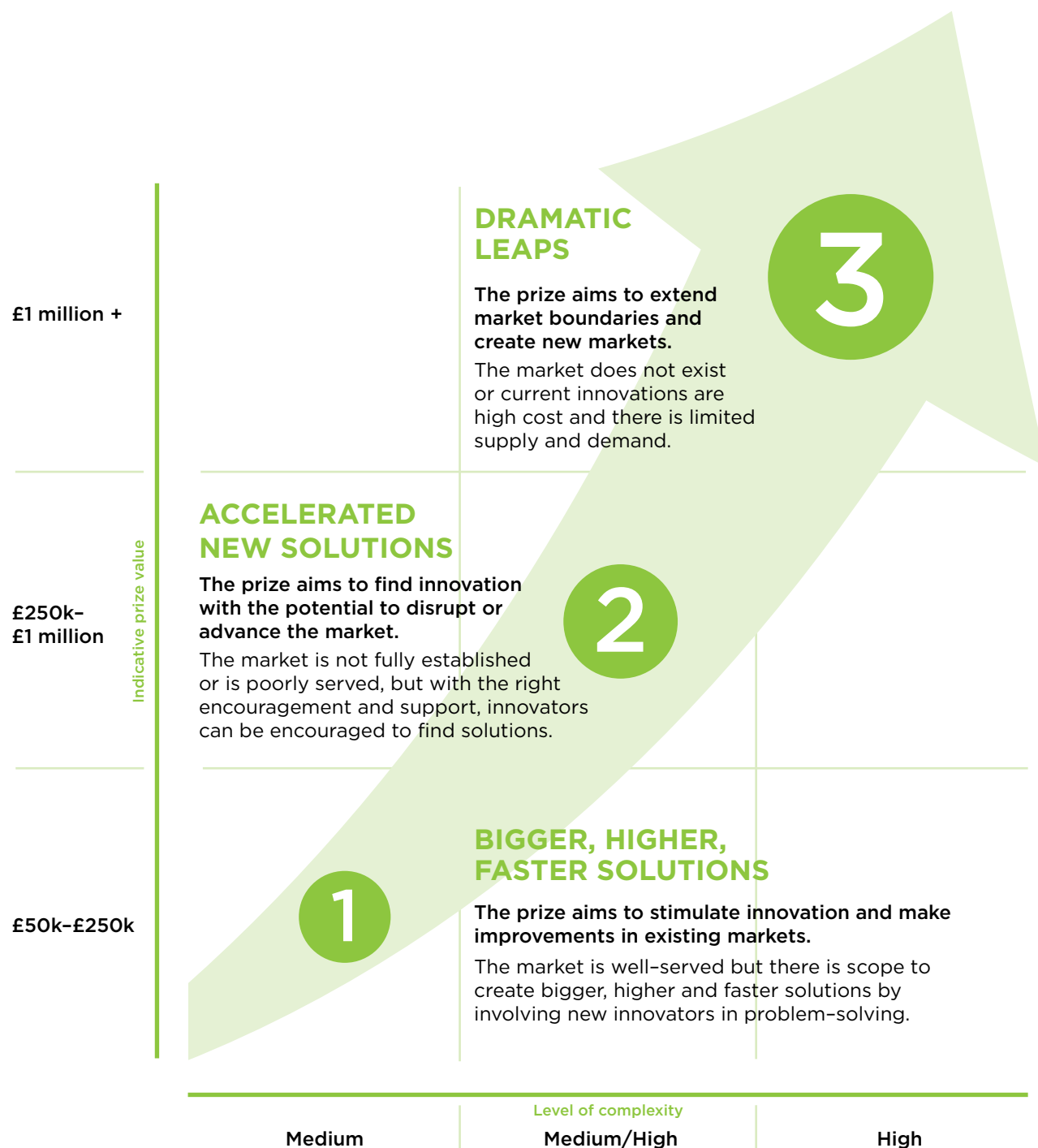
Setting the value of a cash prize

More often than not, challenge prizes offer a financial reward to whoever can first or best deliver a solution to a problem. There is no precise science to setting the value of a cash prize, but it should be commensurate with the scale of the challenge.

Estimate the capital costs and people resources involved and think about the level of complexity and timescales. A crude rule of thumb is that the prize is equal to or greater than the value of the investment you might expect one person or team to make, probably with an added bonus.

Prizes come in all shapes and sizes. They aim to effect change on vastly different scales and require different levels of commitment from participants. There are 'mega–scale' prizes exemplified by the high profile Ansari X–prize for the creation of a private re–useable passenger space aircraft (valued at US$10 million and awarded in 2004). At the other end of the spectrum, lots of prizes offer modest cash sums. Facebook, Microsoft and Google joined forces in a project known as HackerOne, offering small rewards of between US$300 and US$5,000 to 'friendly hackers' who could find glitches in their programmes. This is the kind of work a talented person can do in their spare time at home.

Figure 5: **How the size of a prize might grow in relation to the complexity of a challenge**

£1 million +

**£250k–
£1 million**

£50k–£250k

Indicative prize value

DRAMATIC LEAPS

The prize aims to extend market boundaries and create new markets.

The market does not exist or current innovations are high cost and there is limited supply and demand.

3

ACCELERATED NEW SOLUTIONS

The prize aims to find innovation with the potential to disrupt or advance the market.

The market is not fully established or is poorly served, but with the right encouragement and support, innovators can be encouraged to find solutions.

2

BIGGER, HIGHER, FASTER SOLUTIONS

The prize aims to stimulate innovation and make improvements in existing markets.

The market is well–served but there is scope to create bigger, higher and faster solutions by involving new innovators in problem–solving.

1

Level of complexity

Medium   Medium/High   High

Non–financial incentives

Cash rewards grab headlines and are often the first thing that captures the interest of would–be innovators. But financial incentives are not the only thing that motivates people to participate in prizes.

Figure 6: **What motivates participants?**

How will you tap into the passions and interests of innovators and understand what will push their buttons? Will people be compelled by a moral purpose and the chance to make a difference in the world? Or is it professional credibility that drives their interest (what scientist or research group wouldn't want it known that they had cracked an important problem for NASA)?

From the launch of a challenge to the award of the prize and beyond, you can create lots of opportunities for publicity and recognition. Don't overlook how attractive it can be to participate in a prize that is linked to an ambitious a challenging mission. Richard Branson continues to flag his entry in the Ansari X–Prize as part of a story of the birth of the Virgin Galactic brand, linking his endeavours to a powerful history of prize–driven entrepreneurship. Sometimes just participating in a prize can validate effort and enhance professional credibility.

Recognise that the benefits of prizes are mutual. If you are smart in the way you engage and recruit participants, you will find a way to align their passions, energy and commitment with the bigger aims of your prize, so that what drives people to solve the problem you set is never just the money.

Support and staging

In a 'pure' and traditional challenge prize, organisers set a challenge, offer a reward and step back while fully–formed solutions are put forward. But this is not the only way to run a prize.

Many prize organisers run challenges in stages, building points into the programme where the progress and efforts of innovators can be rewarded en route to a longer–term goal. Even the British Government's Longitude Prize – one of history's most famous prizes – offered interim awards. Along the way to developing a practical and simple way to measure a ship's longitude, the Government made interim awards for astronomy, navigation and clockmaking.

Rewards for smaller breakthroughs can support progress in increments and help to maintain momentum towards a longer–term goal.

Some challenge prizes and challenge–led programmes have stage gates and filters. These create moments where you can select and filter the best ideas and provide more intensive support (both financial and non–financial) to an increasingly refined group of competitors. This kind of structure aims to influence and drive up the quality of the solutions produced. It also gives you points in the programme where you can learn more about how the prize is working and make adaptations to your processes.

Figure 7: **Using stage gates and filters in a challenge prize**
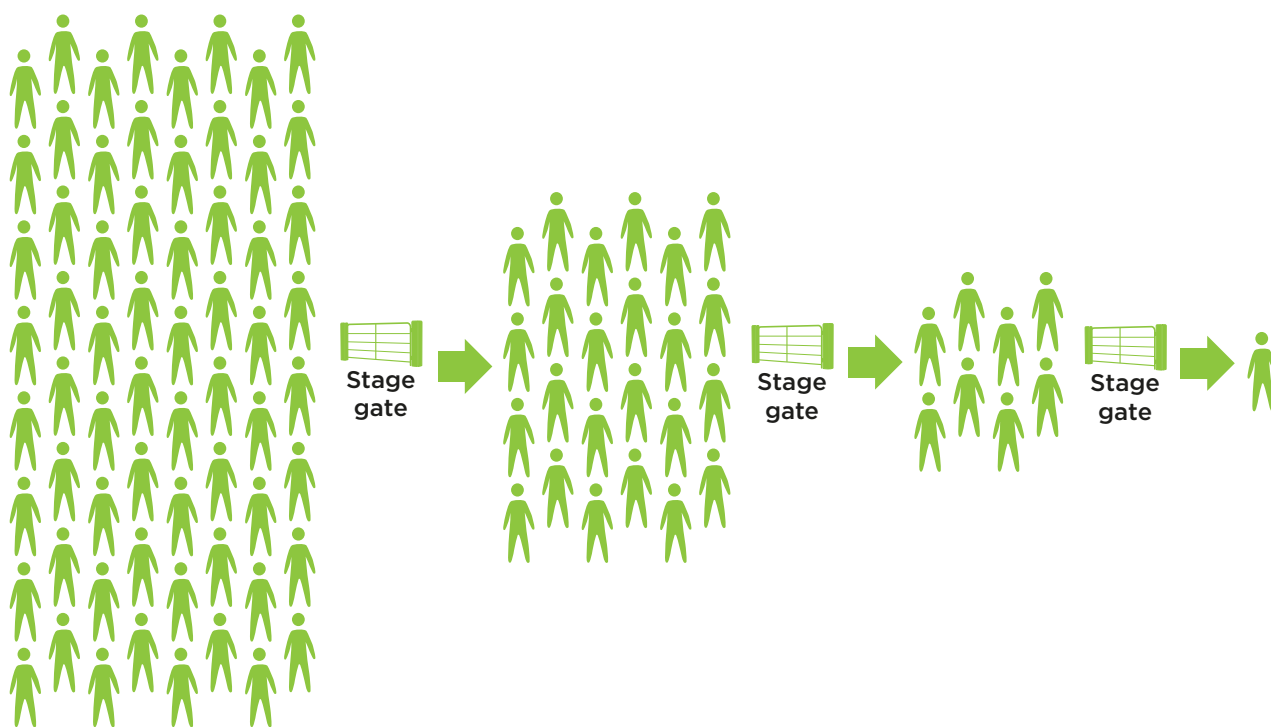
Many of Nesta's challenge prizes combine the incentive of a prize with a grant funding and incubation programme. Nesta's Big Green Challenge was a staged programme. Over a three–stage process, competitors were supported to articulate, develop and – if they became a finalist – to implement their ideas. The final prize was given based on results that were measured during the prize implementation period, as well as an expert judgement about their future potential.

A prize model that has stages and offers support – whether mentoring and coaching, grant funding, planning or networking opportunities – can be useful for challenges that require innovators to develop new knowledge and capacities (such as community groups that might need to prototype and set up a new service). Developmental support of this kind probably becomes less relevant if the skills required for the creation of solutions are technical and highly specialised. If innovators are likely to understand the context of the challenge already (for example, an engineering challenge to build a solar powered car) or if they are not really required to understand the context (such as an algorithm challenge, where competitors need only to 'crack the code') then developmental support is probably not relevant.

But even if you don't use stages or offer developmental support, it's worth considering how the information you give competitors can support them to put forward appropriate and effective solutions. Make information about the prize as clear as possible and give contextual information where it is appropriate.

Figure 8: Nesta's Big Green Challenge – A prize with interim stages and support

THE OUTCOMES

The finalists achieved CO_2 reductions of 10–46 per cent in just one year. Set against the context of the UK target of a 34 per cent reduction by 2020, this was a significant achievement.

Without the prize approach, it is unlikely that these innovators could have achieved so much in a short space of time, or that some of the more informal groups could have found any other route for getting their ideas off the ground.

STAGE 3   Just 17 groups are then selected to pitch to panel of judges.

10 finalists are chosen to receive £20k seed funding and mentoring support to trial their ideas for one year in order to compete for the final prize fund.

STAGE 2   100 ideas are chosen to receive support from the programme partners in developing their ideas into detailed plans.

STAGE 1   Nesta makes an open call to communities with good ideas to reduce CO_2.

More than 350 groups come forward with a wide range of imaginative and practical ideas to do this.

THE CHALLENGE

A £1 million prize for the community-based innovation/s that can achieve the biggest reductions in CO_2 emissions in a one year period (in ways that engage communities and have the potential to scale and are sustainable).

BIG green challenge
the people-powered innovation prize
from Nesta...

4. Do you think you could accelerate progress through a prize?

Challenge prizes resolve some of the barriers to innovation by offering an incentive to innovators to work on a problem. They are useful in situations where:

- People might be working away at the problem from different angles but efforts are not co–ordinated or progress is not being made as quickly as is needed.

- The expertise exists to solve a problem, but there is nothing driving or supporting innovators to invest in solving the problem.

At the Centre for Challenge Prizes, we often describe the perfect area of work for prizes as being in contexts where problems are 'solvable but not too solvable'. We might rule out an idea for a challenge if we think it will be too easily met.

This could mean that we discover that:

- The solutions are already out there and we know how to find them.

- There is already a lot of research and development activity in the area, and we think the right approaches will soon be found without a prize.

At the other end of the spectrum, we might discount certain kinds of challenges for being too hard to meet at this time. There may be financial, regulatory or systemic barriers that mean that progress will be slow and difficult, and the prize stimulus to innovators won't be sufficient to make advances.

What are the right conditions for prize–led advances? Think about the existing incentives for innovation in the area. If there don't appear to be sufficient incentives for innovators and investors to prioritise the challenge, then your prize could give innovators an additional push.

The scenarios listed below outline the features of particularly 'prize ready' markets.

- **If development costs are high, but the potential market opportunities are small (for example, research into a rare form of cancer).**

- **If the market is monopolised (for example, in relation to energy provision).**

- **If development costs exceed the potential price point (for example, in the case of providing sustainable heating for refugees).**

- **If the innovators will not be the direct beneficiary of the market value or savings created (for example, supporting independent living for the elderly).**

If you recognise these features, then a challenge prize may create the additional incentive for innovation that is otherwise lacking.

5. Do you think that the solutions will be adopted or taken to market?

A good prize aims to produce a useful change in the world – a solution to a genuine problem that people have or new products and services that will enhance our lives.

As we have seen, challenge prizes often have very ambitious aims. Sometimes this means there is not a developed market for solutions – perhaps because the changes are so radical that lots of other things might need to change in a system in order for the solutions to be scaled up or adopted.

If you are aiming for radical innovation, you should think about how you will work with your innovators and with strategic partners to find routes to a more sustained change.

This could involve creating a public awareness campaign aimed at changing hearts and minds or agitating for a change in policy, or demonstrating the effectiveness of solutions to would–be commissioners and purchasers.

In other cases, the demand for your solutions might be very apparent and the prize is an important mechanism for bringing something quickly to market. You might like to explore whether any sponsors, commissioners or investors would be willing to offer an advanced market commitment – a commitment to purchase the winning solution. Many businesses that run prizes for their own benefit make these kinds of offers as part of a reward package. Clear (an American Airport Security company) offered a US$500,000 prize for the development of technology that would make security lanes at airports both faster and more secure, and committed to purchasing the winning solution. Similarly, the UNDP committed to purchasing 50 of the winning devices that came out of its recent challenge to create a standalone off–grid renewable energy supply that covers the daily needs of an average family in rural Bosnia and Herzegovina.

It is important to consider how your winning ideas will be scaled or commercialised as part of your prize design. You can help innovators to develop business plans or by making introductions to investors and other strategic partners. You can also support their efforts by making the most of publicity opportunities during and beyond the award.

Should I run a challenge prize? Let's take stock

Having considered the questions in this section and reflected on your own problem, need or opportunity, do you think a challenge prize could help?

	Yes	No	?
1. Can you define a clear goal (in response to your problem, need or opportunity) and see a way to measure and judge whether the goal has been met?			
2. Do you think that you could generate the best solutions by opening up the problem to a wide pool of innovators?			
3. Do you think you could motivate innovators to participate?			
4. Do you think you could accelerate progress through a prize?			
5. Do you think that the solutions will be adopted or taken to market?			

If you mostly answered 'yes' to the questions in this section, then a challenge prize is probably worth exploring. Keep reading – the following sections will help you to think through the design of your prize and begin to plan for programme activity.

If you answered 'no' or 'not sure' to some questions (and this is really to be expected), you may want to undertake some additional scoping work before determining whether a prize is right for you.

SECTION C

Developing your prize

This section offers an introduction to designing and running challenge prizes, along with some practical tools for supporting your thinking and planning

If you've read this far, you'll understand some of the things that challenge prizes can do and some of the different ways that people use them to achieve their goals. You'll have considered questions that help you to check whether a prize could be the right kind of response to your problem, need or opportunity. And if you've answered yes to these questions, you are probably reasonably confident that you'd like to run a prize.

What should you do next? How do you begin the real work of scoping and designing a prize?

This section offers you guidance and practical tools for designing and running a challenge prize. It includes hints and guidance for:

- Scoping a prize.
- Making design decisions.
- Planning a prize.

Scoping your prize

All good methods for designing prizes begin with a thorough and disciplined research and engagement exercise that helps you to clarify your aims, investigate the problem, need or opportunity and make key design decisions. Even if you have a challenge statement and the bones of a prize model in mind you will want to test your assumptions with different kinds of experts and check that you are on firm footing.

It helps to begin by doing four things:

1. Clarifying your own strategic aims and constraints.
2. Investigating the problem, need or opportunity more deeply and checking that you have the right conditions for running a successful prize.
3. Thinking about likely innovators – the people you would want to participate in your prize – and how you might encourage their participation.
4. Discussing your ideas and research findings with experts and if necessary, undertaking further research and enquiry based on their feedback.

Below is a set of prompts for planning these initial scoping activities. We find that this phase of work is critical to checking that we have the right conditions for a prize and that we are focussing our thinking on the right kind of problem and the right kind of 'solvers'.

Expect to deliberate and iterate

It is highly likely that in this phase of initial scoping your challenge prize idea will change. With a deeper enquiry into your prize area, you are likely to shift and refine the focus of your prize. This is to be expected. Sometimes you will need to investigate a different angle on or aspect of the problem or opportunity. Sometimes you might need to redraft your aims because new insights emerge about the opportunities and constraints around the work. You might also find the conditions are not right for a prize. You may need to undertake more than one research and analytical exercise to follow up additional questions that arise.

See this work as iterative and plan a series of events and activities (roundtables, workshops or focus groups) that help you to test your early thinking with different people. We sometimes like to assemble written provocations to take into these events based on our early ideas, so that it is easy for others to challenge, ask questions and help to develop our thinking.

Prompts for scoping a prize

1. What are your aims and constraints?

Your strategic aims and the constraints of your operating environment will shape decisions about how you focus and frame the prize.

Key questions for you and your team:

- What is driving the project? Why is it important to tackle this issue? Why do we think a challenge prize could work?

- What are our aims and what kind of impact do we hope to have through the prize? Looking at the list below could help clarify your aims (and remember, you may have more than one aim).

We want to:

- **Solve a problem.**

- **Prompt a major breakthrough in thinking and practice.**

- **Bring new products and services to market.**

- **Shine a light on a neglected issue or problem.**

- **Encourage other people to invest in solving a problem or making advances.**

- **Prompt new collaborations and partnerships.**

- **Gather new information and data on an issue.**

- **Identify great ideas.**

- **Identify great practice.**

- **Build the capacity of new innovators and support their entry into the market.**

- What would be an acceptable outcome for your commissioners and sponsors?
  - How important is it to demonstrate a radical leap? How important is it to show an immediate impact or to bring products to market?
  - How important is profit generation through the new solution? Will you want to retain the IP of any solutions developed?
- What are the budget, timing, legal factors that will shape the programme? Do the timings and budget seem appropriate given your level of ambition?
- Will you need to seek additional strategic partners to deliver on your aims (either to bring in additional funding for the prize, to provide support to innovators as they develop solutions, or to offer advanced market commitment as part of the incentive)?

2. What is the problem, need or opportunity?

You will want to develop a thorough understanding of your challenge area that includes:

- Awareness of existing innovation efforts and activities in your area of interest, so that you do not launch a prize in search of a solution that already exists, or into an already crowded research and development space.
- Understanding the barriers to progress in relation to your issue, so that you can check whether the incentives you have in mind would stand a chance of resolving these blockages.
- Analysis of the market for the kinds of solutions you might create – are there ready commissioners, purchasers and customers for the innovation?

Your research might ask:

- What are the priorities, trends and issues in this challenge area?
- What are the barriers to progress (market, cultural, technical or financial)?
- What efforts are already in place to tackle the problem or explore the opportunity? How effective are they? Why have past efforts failed?
- What are the recent or imminent breakthroughs in your challenge area?

Your research should help you to check that you have spotted a genuine opportunity for innovation and provide you with the evidence you need to be confident that you could make progress with a prize.

3. Who are the experts on this?

You will want to identify and engage a range of people who can:

- Help you to understand your challenge area and the relevant past, current and future activities.
- Identify and reach out to potential innovators, and understand what might motivate them.
- Be actively involved in helping you to make the right choices about the focus and design of the prize.

Imagine expertise in its broadest sense and reach out to people who:

- Research and think about the issue (academics, researchers and thought leaders).
- Need and would use the new solutions (citizens, service users, consumers).
- Commission or purchase solutions (commissioners, policymakers and businesses).
- Create solutions (engineers, designers, social innovators).
- Create problems or suffer the problems you are trying to address.

These people can play a variety of roles through both your design and operational phases. They can become your advisers and advocates, your judges of performance, and the people who encourage and support the adoption and use of the solutions you create.

4. Who might be the likely innovators?

The following are questions that you could explore, either through a research exercise or through your discussions with experts:

- Who has the knowledge and experience to tackle this issue (think laterally and explore unusual options)?
- If it is easy to identify likely participants, what's stopping you from commissioning them directly? What difference could the prize incentive make to interest and activity?
- Are there any particular collaborative arrangements that you could support that could be powerful in generating different kinds of solutions?
- If it is difficult to identify likely participants, what research and investigations could you undertake to identify innovators?
- Are there any online platforms that have active 'solver' communities whose expertise is relevant?

Once you have developed a picture of potential innovators:

- What is the best way of reaching and engaging innovators?
- What might motivate them to get involved?
- What support and resources might they need and how likely are they to have access to these?
- What level of risk will entrants be taking by entering?
- What are the potential costs associated with creating a solution?

Outcomes of your scoping exercise

If you've undertaken the activities above, you will probably have made progress in the following areas:

Clarifying strategic aims and constraints

You should have clear aims for the prize and a sense of the impact you would hope to see, and any specific outcomes that sponsors and commissioners expect. You might also have assembled a set of strategic partners to take the work forward and have clear sense of the budget and timescales for the programme.

Clarifying the problem, need or opportunity

You should have developed a solid understanding of the context around your challenge area including past and current innovations efforts. You have judged that the conditions seem right for a prize – it looks as though an inducement could stimulate the right kinds of innovators to develop solutions and that there could be a market for these.

Engaging experts

You will have engaged an expert or stakeholder group, and hopefully inspired their interest and commitment to your project. They have helped you to clarify your initial assumptions and make some decisions about a firm focus for your prize.

Identifying innovators

You may not know exactly who your innovators are but you have a sense of the kinds of people you need to reach out to and engage. You have also given thought to what might motivate them to participate and what level of finance and support they might need.

Making design decisions

Once you have developed your understanding of your challenge, it is time to make some precise design decisions. We usually prepare our prize design according to the checklist of details below – a completed checklist becomes the basis for design.

You will find a worksheet for recording your own decisions at the end of this guide (Appendix A: Challenge Prize Design Worksheet). You can use it with colleagues to develop and check your thinking about prize design.

Checklist for prize design

1. What is your rationale for a prize?

Describe the context for your prize and the need you are trying to address, problem you are trying to solve or opportunity you are aiming to take.

Explain your theory for why the prize will work and what you expect it to achieve. Include the evidence you have gathered from research and engagement to substantiate your account.

2. What is your prize statement or question?

Define the challenge to which you want people to respond in a single sentence or two. The sentence may also suggest the method you have chosen for judging successful performance against the goal.

Make sure you have considered:

- What constitutes success in the eyes of your commissioners and sponsors.
- The period of time over which success will be realistically (but still ambitiously) achieved.
- How success could best be measured (whether as the achievement of a specific target or as the best result over time).
- What kind of test environment or judging process you might need to create.

3. What are your eligibility criteria?

Define who can and cannot participate in the competition. This will reflect the decisions you have made about the kind of innovators you need to target (and whether you will be highly targeted or very open).

4. What is your prize (and other incentives)?

Define the exact value of the cash prize (if there is one) and any other financial or non-financial incentives, such as a commitment to purchase solutions or to provide developmental support.

Your choices should be informed by the evidence you have gathered about:

- What will motivate the specific groups and individuals you'll target.
- The support and resources they might need and whether it is likely that they have access to these.
- The level of risk people will take by entering (and the likely cost of the investment they will make to develop a solution).

5. What is the prize structure?

Describe how your prize process will work as a programme, including whether you will have interim prizes or stage gates, and whether you will provide support.

Your choices should be informed by the evidence you have gathered about:

- What will motivate the specific groups and individuals you'll target.
- The support and resources they might need and whether it is likely that they have access to these.
- The level of risk people will take by entering (and the likely cost of the investment they will make to develop a solution).

6. How will you assess and judge prize winners?

Define the criteria you will use to judge performance against the goal, outline any test environment you might need to create and describes the kind of expertise you will need on an assessment and judging panel.

Make sure you have considered:

- What constitutes success in the eyes of your commissioners and sponsors.
- The period of time over which success will be realistically (but still ambitiously) achieved.
- How success could best be measured (whether as the achievement of a specific target or as the best result over time).

7. Will you use a prize platform?

Clarify whether your challenge could be most effectively run using an online platform. If you go down this route, you will need to decide whether you are building a new platform or using a pre-existing platform.

8. What kind of communications strategy might be needed?

Outline the key features of a communications strategy for your prize. It should consider how you will make likely participants and the general public aware of the prize, how you will encourage them to get involved and how you will shine a light on activities through the life of the programme and beyond.

In relation to likely participants, make sure you have considered:

- Whether you will need additional market research intelligence to make good decisions.
- What specific messages will pique people's interest and encourage their participation.
- What specific channels will work to reach people.
- The importance of prestige and publicity, and the kinds of opportunities you can build into the programme (for example, at launch, award and other events).

In relation to the general public and others, make sure you have considered:

- What kinds of people will be interested in the challenge and what the specific messages to them will be.
- What specific channels will work to reach people and how you would like them to participate.

9. Who will own the IP that your prize generates?

Clarify whether ownership of the IP remains with the participant or with your organisation, or whether you will share this.

10. How will you support the winning entrants to grow solutions?

Outline how you will support winning entrants to find and develop a market for their solution. Include any plans for building market testing or brokerage opportunities into the programme.

This should be informed by the evidence you have gathered about:

- The likely market for solutions.
- Specific interest from commissioners, investors and strategic partners.

Reflecting on your design sketch

Capture your initial thoughts about prize design using the Challenge Prize Design Worksheet (Appendix A).

Having arrived at some answers to the questions above, what kind of challenge prize have you sketched?

- **Are you happy with all aspects of the design? Do you need to undertake some additional research and engagement to develop or check aspects of the design?**

- **How feasible is your challenge prize? Do you have the time, expertise and resources to run a prize like this? What additional expertise and resources might you need to enlist to run the challenge prize? What kind of strategic and delivery partners might you need to approach?**

If you are happy that your prize design is robust and feasible, you might be ready to develop a plan for running your challenge prize. The following section offers some prompts for thinking about translating your prize idea into a practical programme of work.

Planning a prize

Every challenge prize is different and there is no 'off the peg' methodology that you can apply to running your prize. You should create your own model and your own programme around your own aims. There are, however, some milestones and activities that are common to running a challenge prize, such as launching a prize, attracting innovators, assessing and judging performance and making awards.

Figure 9: **Main phases of work in a challenge prize**

Scoping	Design and development	Pre-launch
Deadline	**Support**	**Launch**
Assessment and judging	**Award**	**Post-award**

The diagram above outlines the main phases of work that might exist for a challenge prize or a challenge–led programme. It should help you to think through the activities you'll need to undertake and run your programme. As an additional prompt, the table on the next page sketches some examples of specific activities that might be undertaken at each phase. Keep in mind the ways in which you can adapt the model to meet your aims, especially around the provision of support and the use of stages.

Develop your plan further using the Challenge Prize Schedule Worksheet (Appendix B). You can use this to sketch out key activities along a timeline.

Upfront planning and communications are critical

Plan for almost all aspects of delivery of your challenge prize before you launch. This is important for all programmes, but especially for prizes where all your key players need a clear and precise understanding of the rules of engagement (this includes participants, judges and assessors, any support providers and your communications specialists). Well–planned briefings and communications are critical across the board, so that everyone understands your vision and the role you'd like them to play in meeting the challenge.

Phase of work	Example activities
Scoping	• Clarify strategic aims and constraints. • Initial research into the problem. • Initial brainstorm around possible prize participants. • Assemble expert group to test and develop findings and agree on best opportunity to pursue. • Investigate strategic partnerships.
Design and development	• Develop a set of options for a challenge prize design and make key design decisions. • Translate idea for prize design into a prize plan, with defined timelines, milestones, budget and human resource requirements. • Develop specific plans for key activities such as: publicising the challenge and engaging innovators; supporting innovators during the challenge; wider communications around the challenge; methods for judging and assessing entries; and creating the conditions for the adoption of solutions. • Recruit a challenge prize team and relevant expertise to deliver the programme. • Recruit specialists to provide development support. • Recruit communications professional with sector knowledge to support identification of likely participants. • Recruit a judging panel from relevant experts and stakeholders. • Secure strategic and delivery partnerships.
Pre-launch	• Create clear processes for relevant innovators to become aware of and respond to the challenge. • Produce clear materials that communicate: the prize statement or questions; the financial and any other non–financial rewards; the aims, rationale for the prize and any additional contextual information; eligibility and selection criteria; the deadline for submission of entries and other relevant milestones (such as provision of advice and support, or interim prizes), the measures of performance and the method for assessment and judging; any other information about what the challenge will mean or entail for participants. • Publicise the challenge through channels that will appeal to and reach relevant innovators and will engage people and the media (where relevant) more generally. • Provide FAQs and put in place an advice line for interested participants to ask questions and discuss issues. • Recruit specialists to provide development support. • Recruit communications professional with sector knowledge to support identification of likely participants. • Recruit a judging panel from relevant experts and stakeholders. • Secure strategic and delivery partnerships.

LAUNCH THE CHALLENGE PRIZE

Support

- Maintain an advice line for interested participants to ask questions and discuss issues and provide motivation and support.
- Roll out a programme of networking events and developmental support to help drive up the quality of submissions.
- Maintain a buzz around the prize, creating opportunities to publicise the challenge and shine a light on work in train.

DEADLINE

Assessment and judging

- Close the competition and collate entries.
- Prepare a briefing pack for the assessment team that includes the assessment criteria and guidance on how to interpret and apply the criteria. Offer specific advice for how to judge whether something is 'innovative' or has 'potential'.
- Briefing meeting with the assessment team to ensure everyone understands what success looks like in accordance with strategic aims.
- Receive and moderate assessments and judge winner/s.
- Inform winner/s and all other programme participants.
- Offer feedback on assessment process and decisions made, which could include offers to support the development of a range of submissions with potential.
- Make arrangements for conferring the award/s including publicity.

AWARD

Post-award

- Signpost participants to additional funding and support and communicate how we will take forward the work of addressing the challenge.
- Assist the future development of winning solutions by making introductions to would–be investors, commissioners and others.
- Establish a schedule for checking progress with winners and interesting other participants.
- Seek feedback from competitors, judges and partners and evaluate the effectiveness of the programme.

APPENDIX A: Challenge Prize Design Worksheet

Develop your prize design using this worksheet. Discuss and record key design decisions and test out thinking with a group of wider stakeholders.

1. Rationale for the prize

Describe the context for your prize and the need you are trying to address, problem you are trying to solve or opportunity you are aiming to take.

2. Prize statement or question

Define the challenge to which you want people to respond in a single sentence or two.

3. Eligibility criteria

Define who can and cannot participate in the competition.

4. The prize (and other incentives)

Define the exact value of the cash prize (if there is one) and any other financial or non–financial incentives.

5. The prize structure

Describe how your prize process will work as a programme (are there interim prizes or stage gates? Will you provide support?).

6. Assessment and judging method

Define the criteria you will use to judge performance and note decisions about the assessment process.

7. Prize platform decision

Will you use an online platform to run the prize? If so what functionality do you need? Does the platform exist or will you build it?

8. Communications strategy

Outline how you will make likely participants and the general public aware of the prize, how you will encourage involvement and how you will shine a light on activities through the programme.

9. Ownership of IP

Clarify whether ownership remains with the participant or with your organisation, or whether you will share this.

10. Supporting adoption

Outline how you will support winning entrants to find and develop a market for their solution.

APPENDIX B: Challenge Prize Schedule Worksheet

Translate your prize idea into a sketch for a programme using this worksheet. List key activities at each phase on the left. On the right, plot your own programme timeline.

Your key activities	Your timeline
Scoping	
Design and development	
Pre–launch	
Launch	
Support	
Deadline	
Assessment and judging	
Award	
Post–award support	

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See: www.innocentive.com/seekers/innovation-case-studies

Challenge Prizes: A Practice Guide

Challenge prizes (also called 'inducement' prizes) offer a reward to whoever can first or most effectively meet a defined challenge. They act as an incentive for meeting a specific challenge, rather than being a reward for past achievements (prizes that do this, such as the Nobel Peace Prize, are referred to as 'recognition' prizes).

Challenge prizes are a tried and tested way to support and accelerate change in the world in areas where more innovation and endeavour are needed. They are also making a comeback, as governments and funders look for better ways to solve problems, create value and exploit the opportunities presented by collaborative technologies.

This guide is aimed at governments, funders, leaders of charities and public service organisations. It shows how prizes are currently being used to find solutions to problems across the globe and the circumstances in which they are helpful. It also provides practical guidance and support to help you to design and run a prize.

We hope it will help you to explore your own challenge and reflect on whether running a prize could help you to meet your aims.