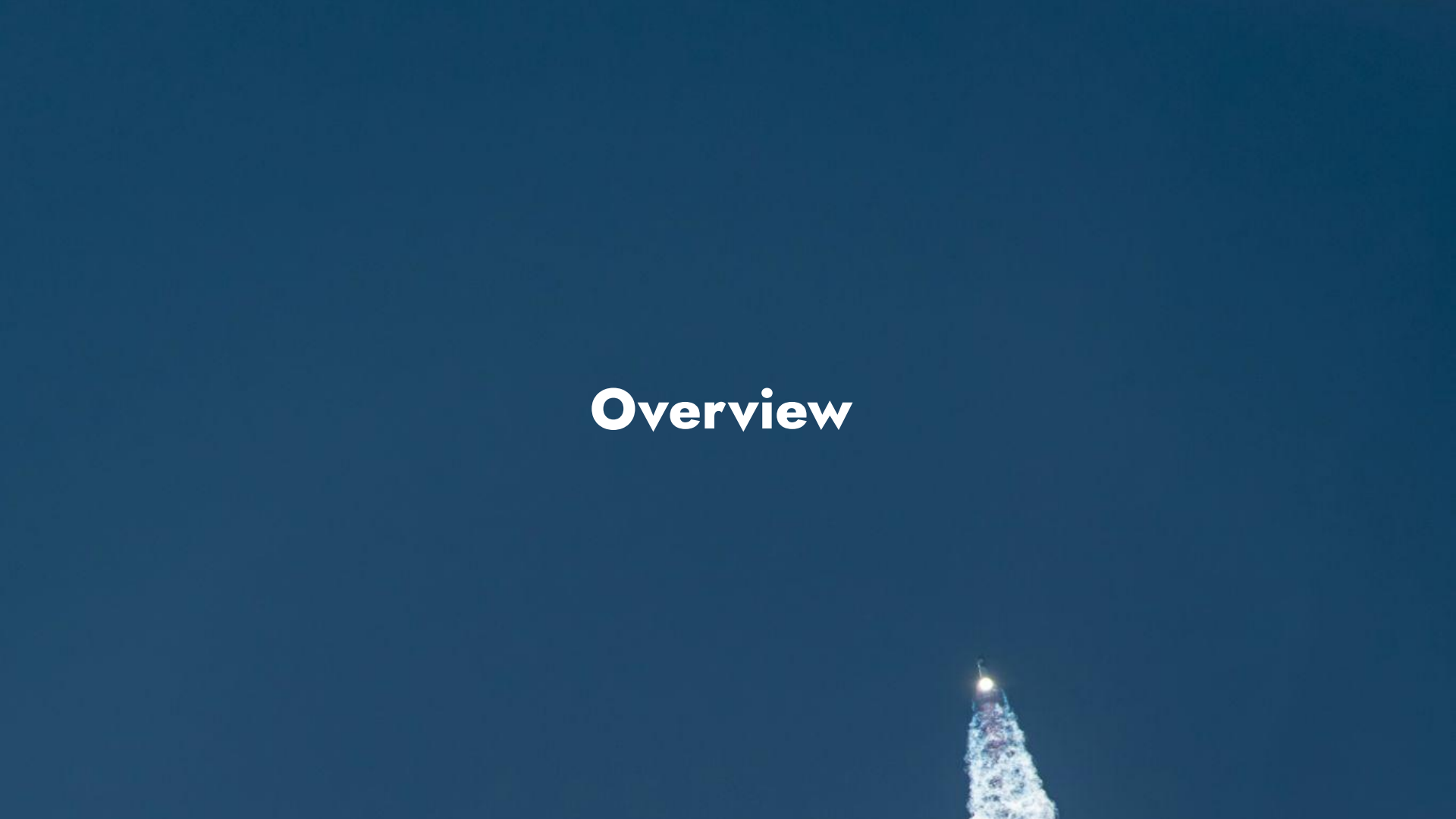
Space Innovation Prize Idea Contest

Entry Pack

Overview



The *British Interplanetary Society*, in association with *Challenge Works by Nesta*, invites you to submit your idea for the UK's next space innovation challenge prize.

What's a challenge prize? Challenge prizes reward breakthrough ideas that solve complex problems. They're open competitions with outcome-based funding, expert support, and a grand prize to scale the best and winning solutions.

What are we looking for? We seek goals that are technically tough, exciting, and unusual – problems with no obvious solution that could attract brilliant, diverse minds from any sector.

What do you get? By entering our contest, you could help shape the future of UK space innovation. Winners will be featured in a forthcoming issue of *SpaceFlight*, and win one of three cash prizes:

1st Prize: £325; **2nd Prize**: £100; **3rd Prize**: £75

How to enter: Submit one side of A4 by 23:59 BST on **1st September 2025** outlining your prize idea, including:

- The problem/challenge
- An indicative challenge statement
- What the outcomes would be and what the prize would achieve
- The kind of innovators it would attract

What is a challenge prize?

A challenge prize is an open competition to solve a societal or technological problem. A sponsor will offer a prize for the best solution to a clearly specified problem, and in modern times, and package of support to develop different solutions.

Challenge prizes have a special connection with aviation and the space sector. The 1919 Orteig Prize offered $25,000 for the first non-stop flight from New York to Paris.

Over time, grants became the dominant form of innovation funding, until the 1996 Ansari X Prize offered $10m to the first innovator to build a crewed spacecraft that could be re-launched within two weeks of use.

The X-Prize is recognised as having both kick-started the present wave of innovation in launch capabilities and reinvigorated the use of challenge prizes to drive innovation.

The Aqualunar Challenge

The *British Interplanetary Society* recently competed as a finalist in [The Aqualunar Challenge], a challenge prize funded by UKSA **to develop a water purification system for use on the lunar surface**.

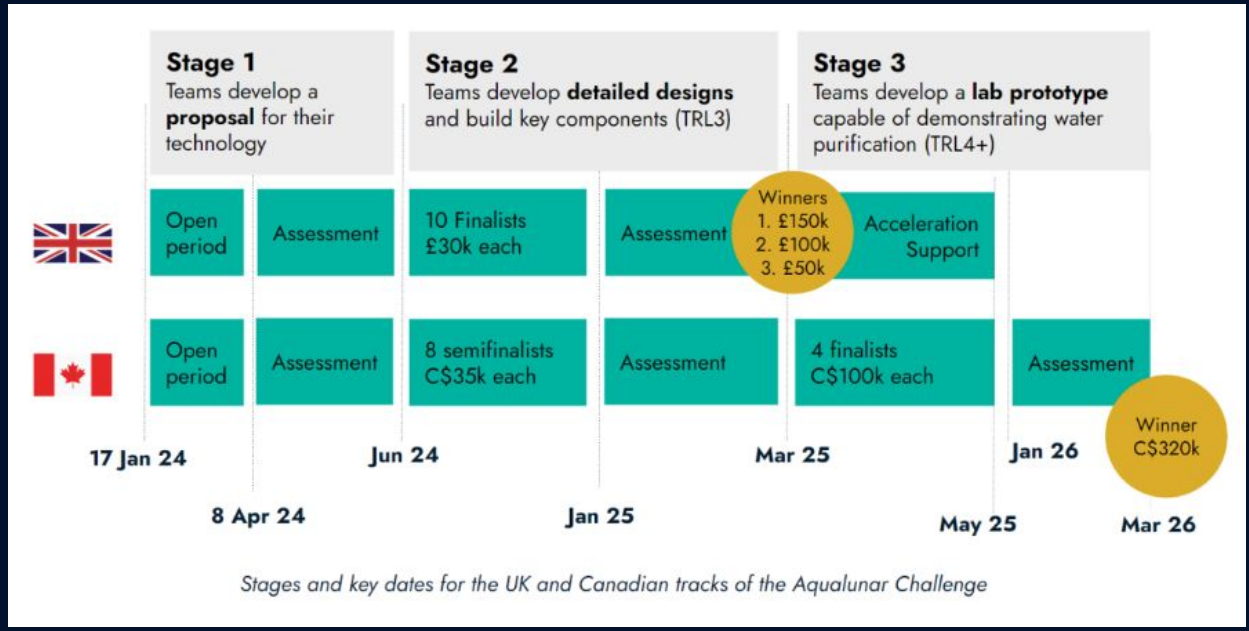
The challenge was designed and delivered by *Challenge Works by Nesta*, on behalf of the *UK Space Agency* and the *Canadian Space Agency*, as part of their International Bilateral Fund.

How does a challenge prize work?

In January 2024, the Aqualunar Challenge called on innovators "to create innovative technologies for use on the Moon to remove contaminants found in lunar water".

Innovators were invited to submit a short two-page proposal within a three-month window. **75 drafts** were tabled, from teams across the UK and Canada, leading to **35 eligible applications**. **10 finalists** were selected by technical assessors from *Space Professionals* to enter the programme's **second stage**.

Each finalist was provided with a **small grant** and a large **package of legal, professional, technical and commercial support**, and networking opportunities, to develop their solutions. Finalists were a mixture of start-ups, engineers, academics and industrial designers, consultants, from inside and outside the space sector, and of course, the *British Interplanetary Society*.



The Aqualunar Challenge: Programme structure

How is a challenge prize won?

In March 2025, a judging panel of prominent space, innovation and water technology experts convened to determine which solutions best satisfied The Aqualunar Challenge **judging criteria**.

The winner and two runner-ups were announced shortly after, and received prizes of £150,000, £100,000 and £50,000 respectively to progress their solutions.

All three, and many other finalists, have progressed to exciting things: the winning team has had its technology accepted onto payload flying next year, and others are in conversation with ESA, DoD, UK government. Several finalists have developed their own IP for the first time, or are working on spin-out companies.

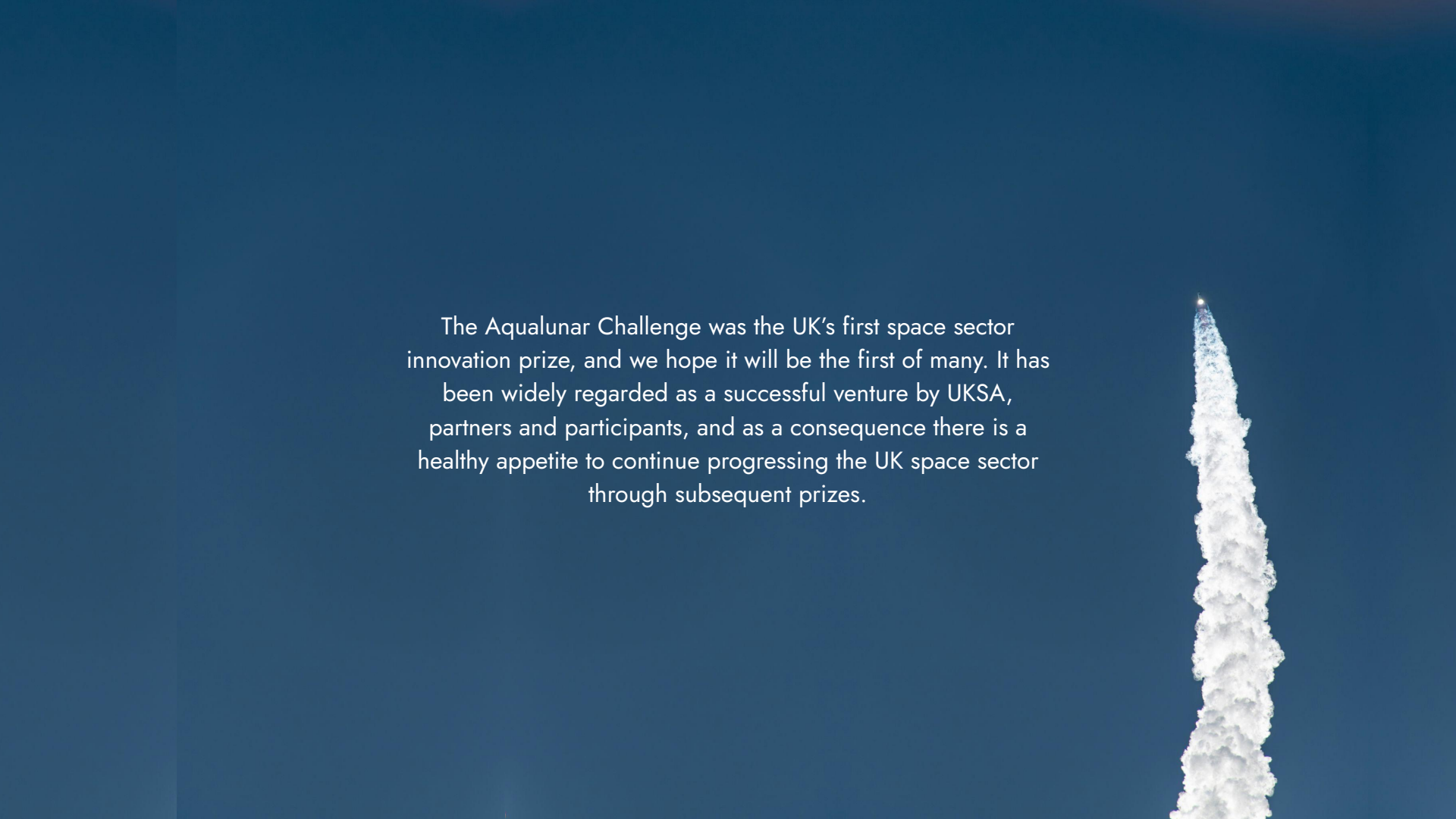
Celebrating the winners' announcement

Challenge prizes have a number of advantages over grants. They work best where...

✓ **You can't make strong assumptions about the right approach to support**	It's not always clear *how* a problem should be solved. If so, better to let multiple teams experiment with small pots of unrestricted funding than handing out one big grant.
✓ **You are really trying build a system or capability, rather than a specific technology**	Often big societal problems are actually lots and lots of small problems (e.g. reaching net zero), and the goal is to build up an ecosystem to tackle it. Supporting lots diverse of innovators is good for building capacity.
✓ **Draw attention and investment to an underappreciated problem**	Markets don't always fund the right things all on their own (especially in space). Prizes direct innovation towards important problems until markets can take over.
✓ **Focus on financial viability**	Prizes reward solutions with pathways to viability after funding has ended.
✓ **Competitive dimension encourages innovation and speed**	Pursuit of a prize tends to push teams to innovate, and quickly. It drives teams to go to their creative and technical limits to get results.
✓ **Outcome-based funding means less hoop-jumping.**	Prizes are awarded for producing solutions that meet the goals of the challenge, rather than for meeting funding milestones/requirements.

A *good* challenge

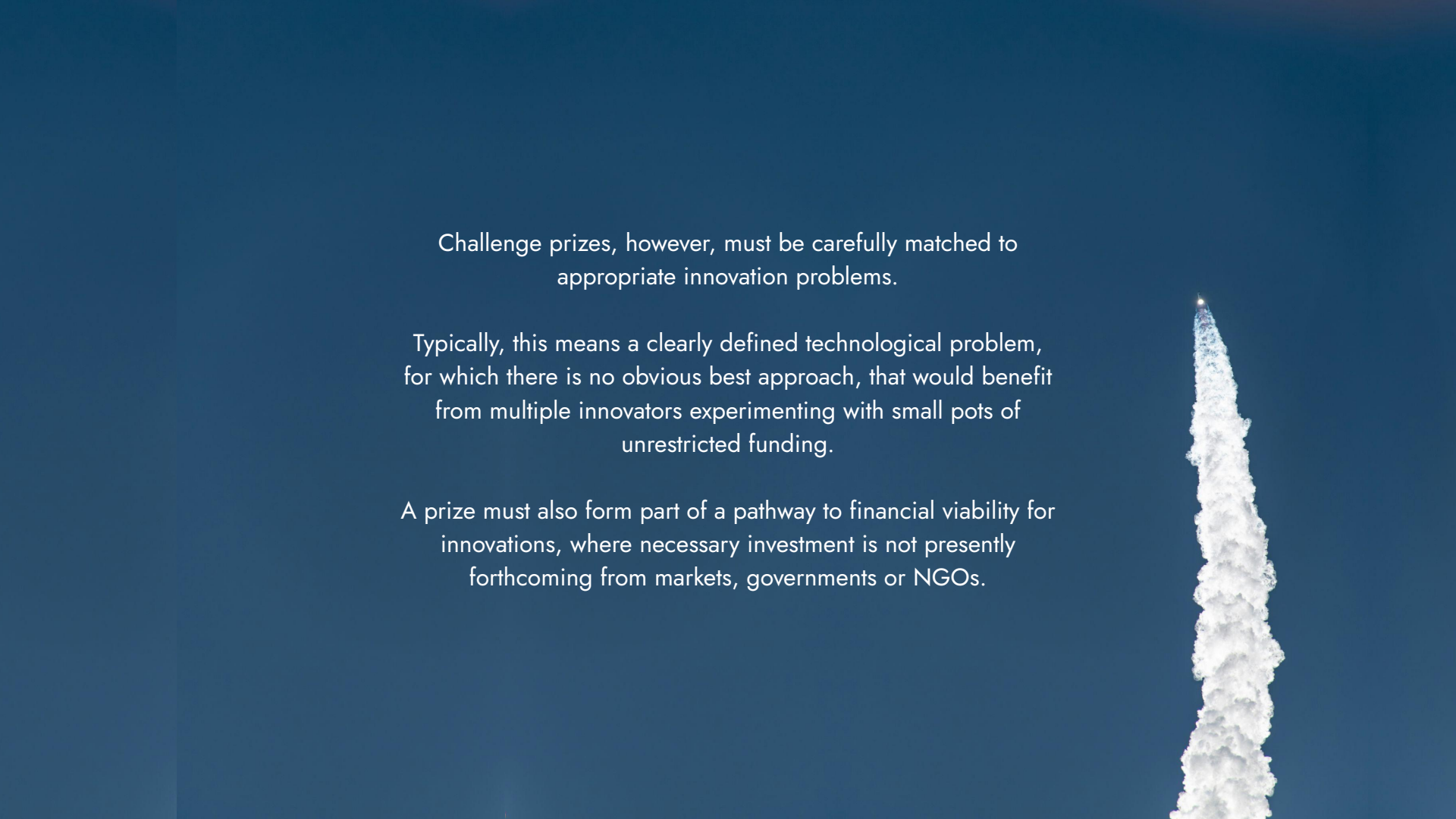
The Aqualunar Challenge was the UK's first space sector innovation prize, and we hope it will be the first of many. It has been widely regarded as a successful venture by UKSA, partners and participants, and as a consequence there is a healthy appetite to continue progressing the UK space sector through subsequent prizes.



Challenge prizes, however, must be carefully matched to appropriate innovation problems.

Typically, this means a clearly defined technological problem, for which there is no obvious best approach, that would benefit from multiple innovators experimenting with small pots of unrestricted funding.

A prize must also form part of a pathway to financial viability for innovations, where necessary investment is not presently forthcoming from markets, governments or NGOs.



The right problem will

✓ Make significant systemic impact, if solved

✓ Have a clear technical challenge statement

✓ Have no obvious best approach (and attract diverse approaches)

✓ Be open to wide pool of diverse entrants

✓ Be compelling, ideally inspiring

✓ Be technically and practically feasible (but hard)

✓ Be fundable (but let *us* worry about this)

Format and how to enter

Format

This prize idea contest will be like a scaled-down challenge prize.

There will be an entry period for submissions, a round of shortlisting, and a judging event to pick the winners. The judging criteria in this document will be used in shortlisting and judging.

Your entry should aim for one side of A4 and can be formatted however you wish to articulate your idea. This is not a hard limit and a good entry could be even less. Images and figures are welcome, provided you have the right to use them.

Please send your entry as an attachment to **spaceprizecontest@challengeworks.org** by 23:59 BST on **Monday 1st September 2025**. PDF is preferred. Please use 'Prize idea submission' as the subject line.

Entries will be shortlisted by assessors in the first two weeks of September. All entrants will be contacted by email to notify them that they have been shortlisted or not, but we cannot provide feedback for entries.

Finalists will then be reviewed by a panel of judges with expertise in space, innovation and prize design. We'll announce the panel before entries close in September.

Judges will convene on 25th September to choose a winner and two runners up, with a view to announce the winners in October, during World Space Week, and the next issues of *Spaceflight* and *Odyssey*.

Full terms and conditions can be found at the end of this document.

How to enter

Submissions should aim for one side of A4, and should **definitely** contain:

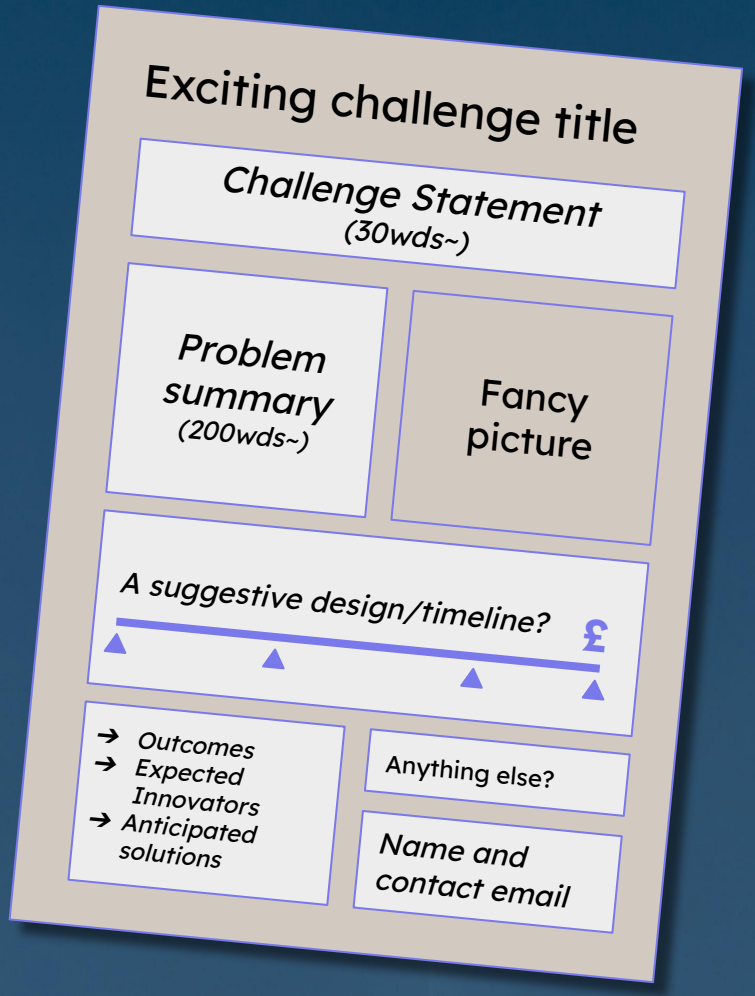
- A summary of the problem/opportunity
- An indicative challenge statement
- An indication of would the outcomes be? What would this prize achieve?
- What types of innovators would you anticipate entering?

And **may** also contain your thinking about:

- Anticipated solutions, if scope of the challenge is very broad/open (but remember, your challenge design should not presuppose the solution)
- What kinds of criteria or victory conditions would the winner need to meet?
- How many finalists would there be, receiving what size of grant?
- How long would the challenge prize run for, and what support would they get?
- How big should the financial prize be?
- Who do you think might be interested in funding this? Why?

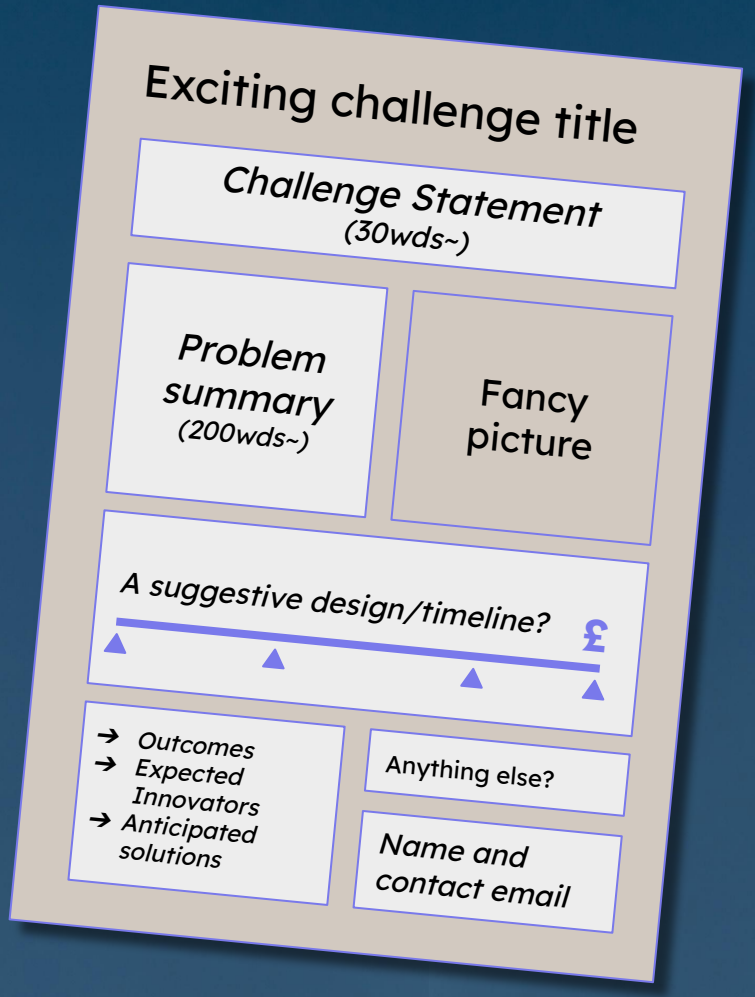
N.B. these latter considerations are less important at this stage (and it's our job), you won't be penalised for ignoring them. We're more interested in the core concept. But the latter set of questions might hone your answers to the former.

There is no proper format. But if you're stuck, maybe it looks like this.



Knowing how challenge prizes run in practice should help you think about **the right problem**. But don't get bogged down in the practicalities of challenge design. Just focus on the core problem and opportunity.

The next two slides should help you think about a 'good' problem.



Essential features of a successful innovation challenge prize

Essential Features	**Example (from The Aqualunar Challenge)**
A clearly defined problem	*'Develop a water purification device for use on the lunar surface that can produce one litre of clean water per hour from regolith.'* A clear and intuitive problem gives innovators an orientation to respond, and common terms on which to define success.
Must be an *innovation* problem	Some problems have less to do with creating and supporting novel solutions and more to with, say, generating political will, or *scaling* or *implementing known* solutions. Such problems are better suited to grant funding, impact investment, lobbying, advocacy and so forth. At the core of a good prize is an unsolved scientific or technological challenge.
No *prima facie* best approach.	Different Aqualunar finalists' designs purified water using electrolysis, ultrasound, supercritical water oxidation, reverse osmosis, distillation and various configurations of heat and pressure. If the best of these options were known, some more prescriptive funding model, such as a grant, might have been preferred.
Open to a diversity of innovators.	The Aqualunar Challenge attracted space sector veterans and start-ups, industrial design agencies, small engineering companies and two university teams. Four finalists were entirely new to the space sector. To attain a diverse range of solutions, you must attract diverse entrants.
Tractable with resources on offer	'Build a heavyweight rocket that can reach Mars and return' would make a great prize according to the (first two) criteria above. But we have to be smart about how we can make a difference with the resources available.
An economically viable post-prize model	In the case of The Aqualunar Challenge, economic viability mostly meant supporting finalists to scale or enter the UK space sector. But more often, prizes are intended to take a specific technology/solution to commercial viability, too. Whichever it maybe, there must be system-change, a legacy for the prize that outlasts the exercise itself.

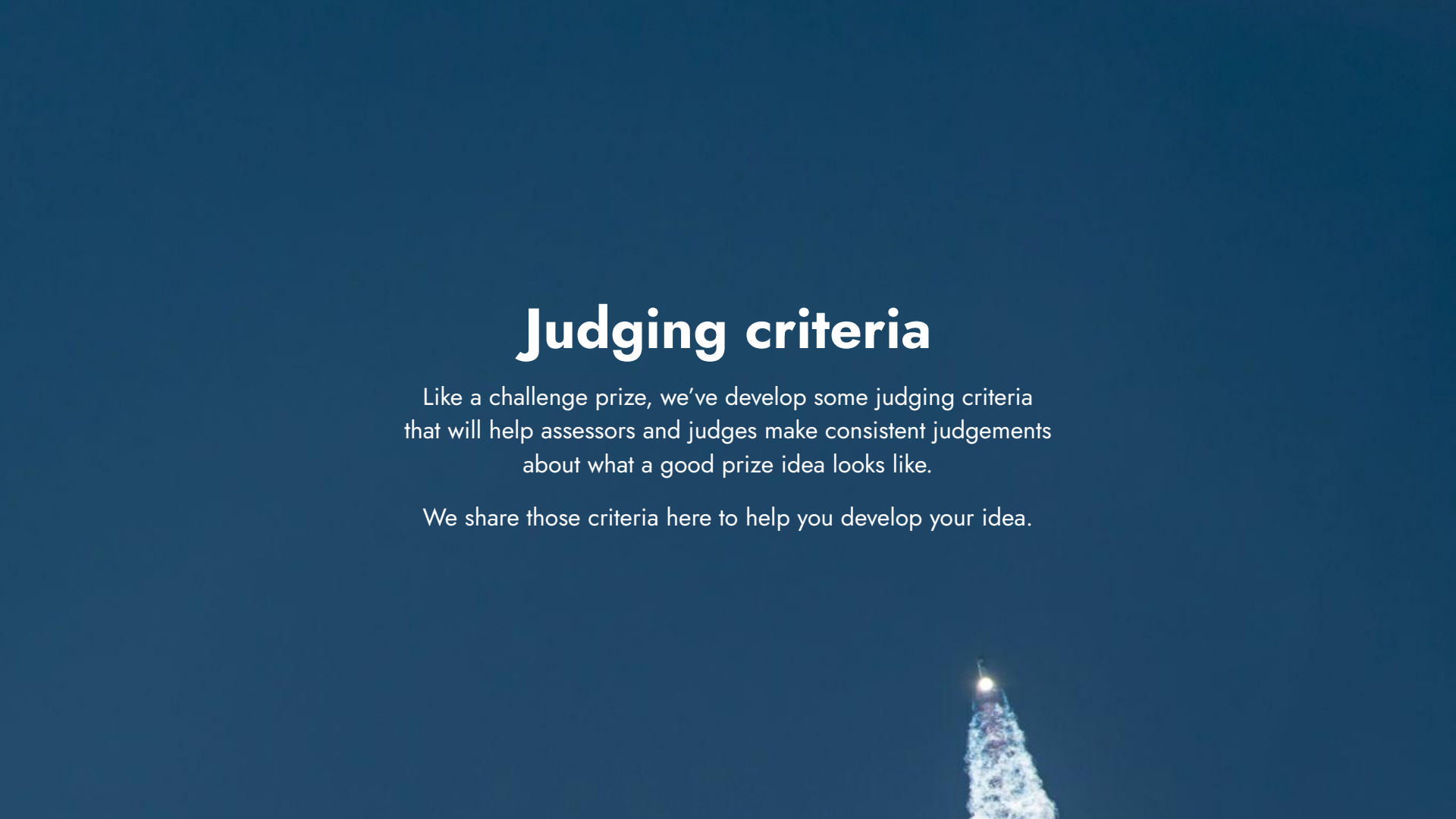
Desirable features of a successful innovation challenge prize

Desirable Features	**Example (from The Aqualunar Challenge)**
Underserved, niche or leftfield problem	Making a real difference typically means looking past big obvious areas of focus that are already swamped with investment and attention (e.g. launch capabilities). Prizes are most impactful where they can redirect some of that attention to other worthwhile areas. Lunar water purification was an effort to attract attention to life-cycle processes that will necessarily underpin any meaningful human activity on the moon.
Big potential, but lacking necessary investment	Typically, we seek to fund challenges that are not being met by the market (but could be in time). One day lunar water purification will be in commercial demand – we want the technology to be there when it is.
Inspiring, wide appeal	A bit of stardust helps attract innovators, amplifies the commercial benefits for participants and generates public/sectoral awareness of the issue at hand. 'Space' has a natural appeal, but water purification on the moon especially catches the imagination.

Judging criteria

Like a challenge prize, we've develop some judging criteria that will help assessors and judges make consistent judgements about what a good prize idea looks like.

We share those criteria here to help you develop your idea.



Space Innovation Prize Idea Contest: Judging Criteria

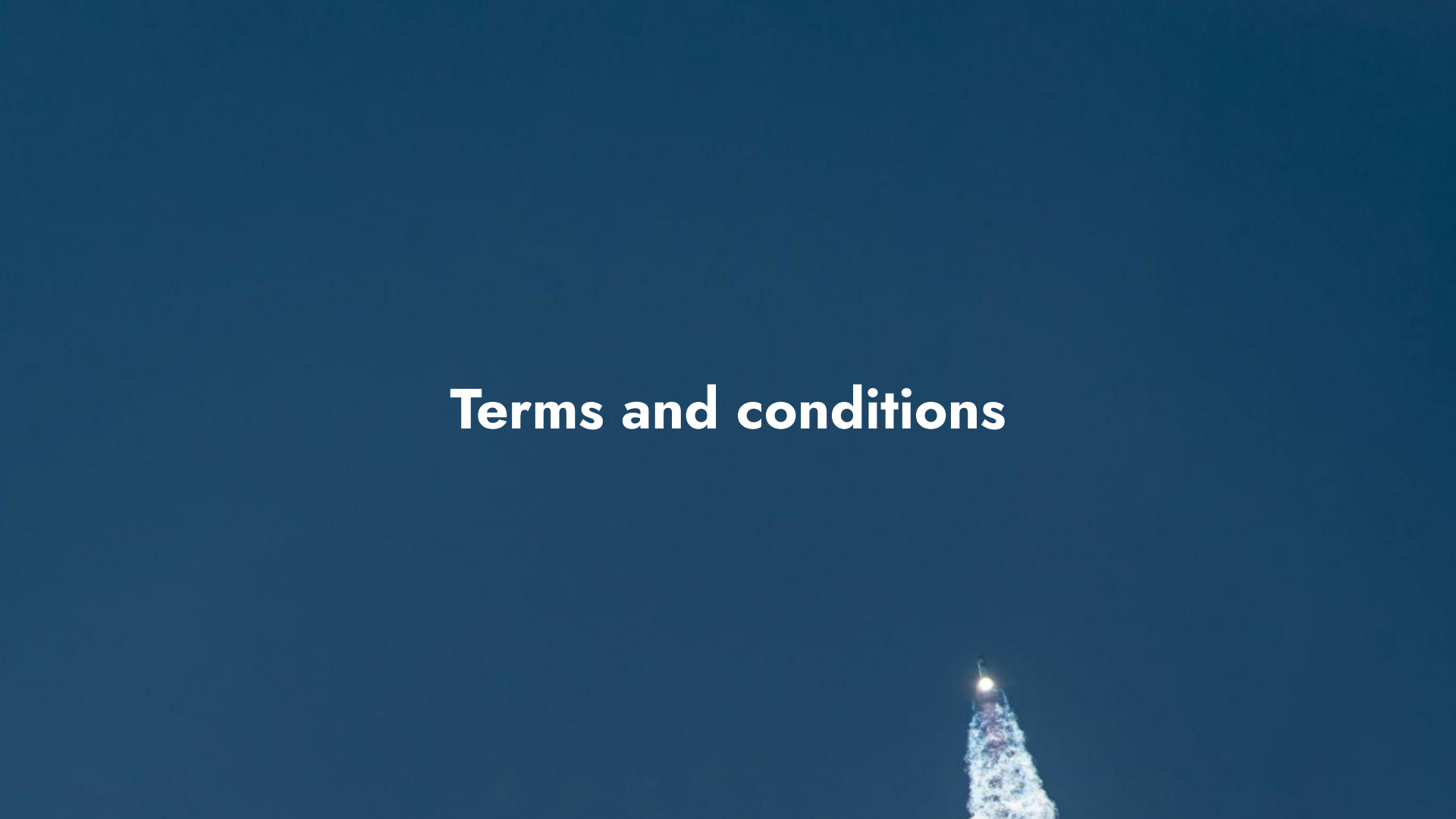
Systemic impact	*There is a coherent and convincing theory of how the challenge prize will lead to impact that is sustained, positive and exponential.*
Problem profile	*The challenge addresses a clear, specific, inspiring and sufficiently hard problem that needs innovation.*
Innovator base	*The prize will attract a large, diverse base of innovation-capable entrants who will progress significantly and permanently through participation.*
Approach diversity	*There is no obvious best approach to the challenge, which will attract a diverse range of competitive solutions.*
Fundability	*There is a plausible idea of who could be persuaded to fund it. Ideally, the challenge deserves funding which is not/cannot be found some other way.*
Feasibility	*The immediate goals of the prize (as specified by the challenge design) must be achievable within the timeframe, technical constraints and resources and funding available.*

*N.B. entrants are encouraged to worry less about **fundability** and **feasibility** than the other four criteria, because they have more to do with the prize design than the idea, and are really our job anyway.*

Space Innovation Prize Idea Contest: Detailed Assessment Criteria

Systemic impact *There is a coherent and convincing theory of how the challenge prize will lead to impact that is sustained, positive and exponential.*	A challenge will lead to large systemic impact where it produces a new, **renewable** source of value, such as • Solutions that scale or replicate • Viable businesses to produce them • Persistent ecosystems to address the problem • A breakthrough – a technology, system or knowledge artifact that unlocks other downstream sources of value.
Problem profile *The challenge addresses a clear, specific, inspiring and sufficiently hard problem that needs innovation.*	It is essential for a challenge prize that: • The problem is **clear** • The problem is **challenging** • The problem needs **innovation** (it is likely to be solved by a novel technical solution that changes the way things are presently done. As opposing to say, rolling out an existing solution, or a political solution, or behavioural/attitudinal change). • The problem has no obvious best approach, and will thus attract diverse approaches. It is advantageous for a challenge prize if: • The problem is **specific** (specificity is good, but tends to trades off against innovator base and approach diversity) • The problem is **compelling** (usually, some combination of inspiring, leftfield, intuitive and close to human needs)
Innovator base *The prize will attract a large, diverse base of innovation-capable entrants who will progress significantly and permanently through participation.*	A challenge prize typically requires innovators who are prepared to be transformed by participation in the challenge, such that they are capable of transforming the target system. To achieve, consider: • Who are the innovators? How diverse the pool? • How many are needed and how many will be attracted? • If they enter, will they be capable of meaningful participation/of innovating? • What are, and how taxing, are the barriers to entry? • How will participation affect them, and what will they do afterwards?
Approach diversity *There is no obvious best approach to the challenge, which will attract a diverse range of competitive solutions.*	Challenges are preferred in situations where: • We are unsure which solutions will succeed. • Success probably lies in a combining parts of different solutions.
Fundability *There is a plausible idea of who could be persuaded to fund it.*	Mostly this is about showing **there is some actor with the money and will to fund it**. But also consider whether **investment will make the difference between it being solved and not**, and whether that i**nvestment may likely be forthcoming from other sources**.
Feasibility *The immediate goals of the prize (as specified by the challenge design) must be achievable within the timeframe, technical constraints and resources and funding available.*	A challenge might score well on systemic impact (outcomes), but can **the immediate goals of the challenge** (outputs) be met with the resources available? This includes but is not limited to **time**, **funding, technical and professional support, access to data, stakeholders, legal and institutional approvals.**

Terms and conditions



Space Innovation Prize Idea Contest – Terms and Conditions

1. The Promoter is Challenge Works (part of Nesta), a registered charity in England and Wales 1144091 and Scotland SC042833 and a company limited by guarantee registered in England and Wales with company number 07706036. Our registered address is 58 Victoria Embankment, London, EC4Y 0DS.
2. To enter the contest you must complete and submit your entry as an attachment to spaceprizecontest@challengeworks.org before 23:59 BST on 1st September 2025.
3. Entry to the prize draw is open to UK residents over 16 years only.
4. It is a condition of entry that the names of finalists, runners up and the winner and the content of their entries will be used for promotional purposes. Their names will only be in summary e.g. 'Mrs Jones from London'.
5. Employees or family members of employees of Challenge works, Nesta, The British Interplanetary Society or any person directly or indirectly involved in the organisation or running of the contest (especially assessment and judging) or their direct family members are not eligible for entry.
6. One winner and two runners up will win prizes of £325, £100 and £75 respectively. The prizes are not transferable and non-refundable.
7. All entries will be reviewed by assessors appointed by Challenge Works. Assessors will determine a shortlist of entries to be reviewed by the judges, according to their ability to satisfy the judging criteria. Challenge Works' decision is final and binding in all matters.
8. The runners up and winner will be chosen from the shortlisted finalists by a panel of judges with relevant expertise according to their ability to satisfy the judging criteria.
9. The judging criteria is intended to guide assessors and judges but ultimately they may use their discretion interpreting and applying the criteria. The judging criteria will be available in the entry pack.
10. The names of the judges, and the date of the judging event, will be announced in due course but may not be in place before launch on 3rd July.
11. All entrants will be notified if they have been unsuccessful or if they have been shortlisted for the judging event, and if shortlisted, will be notified if they win, come runner-up or neither.
12. Entrants may not receive feedback on their entry or an explicit score (scores may or not be explicitly assigned as part of the assessment), and no correspondence will be entered into.
13. Entrants shall be responsible for ensuring that the contact details they provide are up to date and accurate.
14. Winners and runners-up will be required to send Challenge Works full details of a UK bank account to which any winnings can be sent.
15. If the winner or runners-up cannot be contacted by Challenge Works, does not claim the prize within 28 days of being notified by Challenge Works or decides to decline the prize, Challenge Works reserves the right to select a substitute winner.
16. If a significant part of the content of an entry that was not otherwise available to Challenge Works is used by Challenge Works in a future commercial activity, such as a challenge prize, Challenge Works will give due credit to the entrant by, for example, publicly acknowledging their role in the genesis of that activity. The activity itself belongs to Challenge Works and does not imply any obligation to the entrant (financial or otherwise) outside of the contest prizes.
17. Challenge Works reserves the right to replace the prize with an alternative prize of equivalent value or cancel the contest at any time at our discretion.
18. Entry into the contest will be deemed to constitute acceptance of these terms and conditions.