HMGCC Co-Creation

Challenge: Tracking solution for alternative positioning, navigation and timing (PNT)

Summary of the challenge

Small devices to track government staff, wherever they are in the world, are sought in HMGCC Co-Creation's latest challenge.

When satellite systems such as Global Positioning System (GPS) aren't available, for example in remote or hostile locations, national security needs to use an alternative – as small in size, weight and power (SWaP) as possible.

Organisations are being asked to apply if, over a 12-week period, they can develop and demonstrate alternative positioning, navigation and timing (PNT) technology to meet this challenge. HMGCC Co-Creation will provide funding for time, materials, overheads and other indirect expenses.

Key information

Budget per single organisation, up to (exc. VAT)	**£60,000**
Budget per consortium, up to (exc. VAT)	**£120,000**
Project duration	**12 weeks**
Competition opens	**Monday 14 April 2025**
Competition closes	**Thursday 15 May 2025 at 5:00pm**

Context of the challenge

There are many situations in which global navigation satellite systems (GNSS) may not be possible to use.

These systems can be disrupted by deliberate jamming measures, environmental factors such as weather, or location-based factors such as underground locations, urban canyons or in a mountainous area.

Areas where GNSS is unreliable can pose safety concerns as they make it tougher to keep track of UK government assets and representatives.

This challenge is focused on exploring a variety of alternative options for tracking systems without using GNSS.

The gap

When GNSS can't be used, there are other methods ranging from simple map or astral navigation, to sophisticated inertial chipsets and use of existing infrastructure such as cell towers or non-GNSS satellites. There are trade-offs with each method. HMGCC Co-Creation would like to explore these trade-offs to demonstrate and ultimately develop new capability.

Example use case

Law enforcement has gathered some intelligence about a serious and organised crime-owned facility in a remote, but unknown, location. The first step is to launch a reconnaissance mission to determine its exact location. It is likely that the criminal organisation has robust intruder monitoring and counter-surveillance equipment. It is also likely that the criminal gang is utilising GPS/GNSS jammers.

Jonny is leading the reconnaissance, and he must do this cautiously, without mobile phones or other electronic equipment that gives off radio-frequency (RF) or other signature.

Jonny is equipped with a miniaturised tracker. This is extremely small and low-power to ensure it is unobtrusive and does not impede all the other equipment he is carrying. The tracker is suitable for use in areas where GPS/GNSS or cellular signals are unavailable, relying on other ways to track movement.

The tracker does not beacon a live location, fulfilling the requirement to not ping an RF signature.

Once the reconnaissance is finished, Jonny hands over the tracker to Sara. She downloads and then interrogates the data, being able to view exactly where Jonny had gone. This crucial information is fed into the intelligence report to build a picture of the targeted facility.

Project scope

The focus of this 12-week project is to develop and demonstrate technological options for GNSS/GPS denied tracking. The ideal outcome after 12 weeks will be a practical demonstration of a characteristic proof of concept.

This is open to Technology Readiness Levels (TRL) from 3 – 6. It is recommended that applicants should label their existing TRL as well as the level expected by the end of the 12 weeks.

Essential requirements:

- Project related:
  - Provide rationale and trade-off analysis of technology used.
  - Development of a demonstrable proof of concept.
- End product related:
  - Size and power: Miniaturisation and low-power is crucial.
  - Must be able to track a movement, at <100m accuracy, with an aspiration of <10m accuracy, without using GPS/GNSS
  - Must be able to store data for later interrogation.
  - Must enable quick and efficient data interrogation.
  - Must not have a loud and/or continuous RF signature.

Not required:

- Project related:
  - Only a horizon scan.
- End product related:
  - A beacon that shows live location.
  - A live navigation tool.

Dates

Competition opens	Monday 14 April 2025
Online briefing link	Tuesday 29 April 2025 at 10:00am
Clarifying questions published	Tuesday 6 May 2025
Competition closes	Thursday 15 May 2025 at 5:00pm
Applicant notified	Tuesday 27 May 2025
Pitch day in Milton Keynes	Thursday 5 June 2025
Pitch Day outcome	Monday 9 June 2025

Commercial onboarding begins*	Friday 13 June 2025 at 3:00pm
Target project kick-off	Monday 7 July 2025

**Please note, the successful solution provider will be expected to have availability for a 1-hour onboarding call via MS Teams on the date and time specified to begin the onboarding/contractual process.*

Eligibility

This challenge is open to sole innovators, industry, academic and research organisations of all types and sizes. There is no requirement for security clearances.

Solution providers or direct collaboration from countries listed by the UK government under trade sanctions and/or arms embargoes, are not eligible for HMGCC Co-Creation challenges.

How we evaluate

All proposals, regardless of the application route, will be assessed by the HMGCC Co-Creation team. Proposals will be scored 1–5 on the following criteria:

Scope	Does the proposal fit within the challenge scope, taking into consideration cost and benefit?
Innovation	Is the technical solution credible, will it create new knowledge and IP, or use existing IP?
Deliverables	Will the proposal deliver a full or partial solution, if a partial solution, are there collaborations identified?
Timescale	Will the proposal deliver a minimum viable product within the project duration?
Budget	Are the project finances within the competition scope?
Team	Are the organisation / delivery team credible in this technical area?

Invitation to present

Successful applicants will be invited to a pitch day, giving them a chance to meet the HMGCC Co-Creation team and pitch the proposal during a 20-minute presentation, followed by questions.

After the pitch day, a final funding decision will be made. For unsuccessful applicants, feedback will be given in a timely manner.

Clarifying questions

Clarifying questions or general requests for assistance can be submitted directly to cocreation@hmgcc.gov.uk, please also copy to Co-Creation@dstl.gov.uk, prior to the cut-off date. These clarifying questions may be technical, procedural, or commercial in subject, or anything else where assistance is required. Please note that answered questions will be published to facilitate a fair and open competition.

Routes to apply

HMGCC Co-Creation is working with a multiple and diverse set of community collaborators to broadcast and host challenges. Please follow this link for the full list of community collaborators.

If possible, please submit applications via a community collaborator.

If the community collaborator does not host an application route, please send applications directly to cocreation@hmgcc.gov.uk and also Co-Creation@dstl.gov.uk, including the challenge title with a note of the community collaborator where this challenge was first viewed.

All information you provide to us as part of your proposal, whether submitted directly or via a collaborator platform, will be handled in confidence.

How to apply

Applications **must** be no more than six pages or six slides in length. HMGCC Co-Creation reserve the right to stop reading after 6 pages if this limit is breached. The page/slide limit excludes title pages, references, personnel CVs and organisational profiles.

There is no prescribed application format, however, please ensure your application includes the following:

Applicant details	Contact name, organisation details and registration number.
Scope	Describe how the project aligns to the challenge scope.

Innovation	Describe the innovation and technology intended to be delivered in the project, along with new IP that will be generated or existing IP that can be used.
Deliverables	Describe the project outcomes and their impacts.
Timescale	Detail how a minimum viable product will be achieved within the project duration.
Budget	Provide project finances against deliverables within the project duration.
Team	Key personnel CVs and expertise, organisational profile if applicable.

Co-Creation terms and conditions

Proposals must be compliant with the HMGCC Co-Creation terms and conditions; by submitting your proposal you are confirming your organisation's unqualified acceptance of Co-Creation terms and conditions.

Commercial contracts and funding of successful applications will be engaged via our commercial collaborator, Cranfield University.

HMGCC Co-Creation supporting information

HMGCC works with the national security community, UK government, academia, private sector partners and international allies to bring engineering ingenuity to the national security mission, creating tools and technologies that drive us ahead and help to protect the nation.

HMGCC Co-Creation is a partnership between HMGCC and Dstl (Defence Science and Technology Laboratory), created to deliver a new, bold and innovative way of working with the wider UK science and technology community. We bring together the best in class across industry, academia, and government, to work collaboratively on national security engineering challenges and accelerate innovation.

HMGCC Co-Creation aims to work collaboratively with the successful solution providers by utilising in-house delivery managers working Agile by default. This process will involve access to HMGCC Co-Creation's technical expertise and facilities to bring a product to market more effectively than traditional customer-supplier relationships.

FAQs

1. **Who owns the intellectual property?**

As per the HMGCC Co-Creation terms and conditions, project IP shall belong exclusively to the solution provider, granting the Authority a non-exclusive, royalty free licence.

2. **Who are the end customers?**

National security users include a wide range of different UK government departments which varies from challenge to challenge. This is a modest market and so we would encourage solution providers to consider dual use and commercial exploitation.

3. **What funding is eligible?**

This is not grant funding, so HMGCC Co-Creation funds all time, materials, overheads and indirect costs.

4. **How many projects are funded for each challenge?**

On average we fund two solution providers per challenge, but it does come down to the merit and strength of the received proposals.

5. **Do you expect to get a full product by the end of the funding?**

It changes from challenge to challenge, but it's unlikely. We typically see this initial funding as a feasibility or prototyping activity.

6. **Is there the possibility for follow-on funding beyond project timescale?**

Yes it is possible, if the solution delivered by the end of the project is judged by the HMGCC Co-Creation team as feasible, viable and desirable, then phase 2 funding may be made available.

7. **Can we collaborate with other organisations to form a consortium?**

Yes, in fact this is encouraged, and additional funding may be made available. Please see the maximum budget of the individual challenge.

8. **I can't attend the online briefing event, can I still access this?**

If a briefing event is held, which varies challenge to challenge, then yes. Either the recording or the transcript will be made available to view at your leisure after it has been broadcasted. This will be made available via the HMGCC Co-Creation community collaborators.

9. **Do we need security clearances to work with HMGCC Co-Creation?**

Our preference is work to be conducted at OFFICIAL, we may however, request the project team undertake BPSS checks or equivalent.

10. We think we have already solved this challenge, can we still apply?

That would be welcomed. If your product fits our needs, then we would like to hear about it.

11. Can you explain the Technology Readiness Level (TRL)?

Please see the UKRI definition for further detail.

12. Can I source components from the list of restricted countries, e.g. electronic components?

Yes, that is acceptable under phase 1 - feasibility, as long as it doesn't break UK government trade restrictions and/or arms embargoes.

Further considerations

Solution providers should also consider their business development and supply chains are in-line with the National Security and Investment Act and the National Protective Security Authority's (NPSA) and National Cyber Security Centre's (NCSC) Trusted Research and Secure Innovation guidance. NPSA and NCSC's Secure Innovation Action Plan provides businesses with bespoke guidance on how to protect their business from security threats, and NPSA and NCSC's Core Security Measures for Early-Stage Technology Businesses provides a list of suggested protective security measures aimed at helping early-stage technology businesses protect their intellectual property, information, and data.