HMGCC Co-Creation

Challenge: Synthetic environment tools to predict behaviour

Summary of the challenge

Crisis contingency is about predicting people's responses to threat or danger, to help keep them safe in the future. HMGCC Co-Creation's latest challenge is seeking to evaluate tools that provide a synthetic environment to simulate how populations might respond to scenarios such as widespread disinformation or terrorism.

Organisations are being invited to apply for workstream one, workstream two, or both.

- Workstream one is to undertake paper-based landscape mapping to evaluate synthetic environment tools (landscape mapping).
- Workstream two is to provide the evaluation environment for these tools.
- Experts who have a tool they would like to be evaluated as part of the challenge can register their interest.

HMGCC Co-Creation will provide funding for time, materials, overheads and other indirect expenses.

Technology themes

Artificial intelligence, behavioural and social sciences, data science and engineering, digital twinning, information technology, modelling and simulation, psychology and sociology.

Key information

Budget, up to (excluding VAT)	**Workstream one: £70,000** **Workstream two: £105,000** **Workstream two call-off to support third-party charges for selected tools: £30,000**
Project duration	**18 weeks**
Competition opens	**Monday 4 August 2025**
Competition closes	**Thursday 4 September 2025 at 5pm**

Context of the challenge

National security needs the right tools to help it predict population responses, in a bid to be more resilient and to help protect the nation against threats such as terrorism or disinformation. All use of this technology needs to be legal, necessary and proportionate.

For this reason, HMGCC Co-Creation wants to find and evaluate tools that can create a synthetic environment of a population, with a varying degree of market maturity, to simulate responses to certain scenarios and help in crisis planning.

To assure that national security invests in the tools that give the greatest chance of success, HMGCC Co-Creation are co-ordinating a challenge to landscape map tools available or in development, in parallel to capability evaluation.

The challenge is being delivered across two parallel workstreams delivered over a period of 18-weeks, as illustrated below:
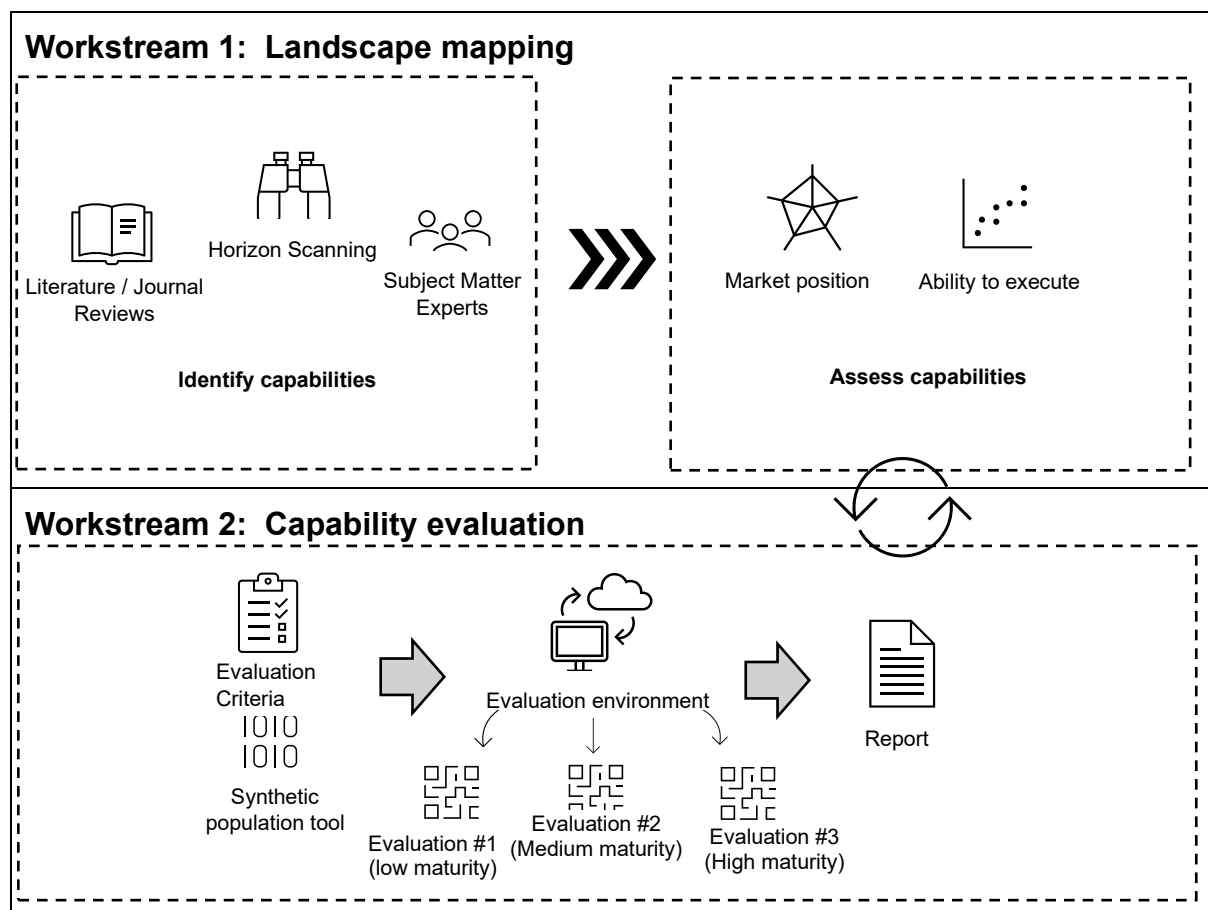

Figure 1 – Illustration showing the relationship between Workstreams 1 & 2

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The gap

There is an ever-present threat from radicalisation and extremist ideology. It is difficult to predict the effect of world events and what disinformation may have, both in the UK and globally.

This challenge is exploring whether research and developments into advanced synthetic environments and AI could be used to help national security resilience.

Workstream one: Landscaping mapping

HMGCC Co-Creation seeks diverse expertise in synthetic environments, digital twinning, software, AI, psychology, sociology, behavioural science and potentially other disciplines.

This workstream is to identify current and future synthetic environment solutions and to develop an assessment framework which will be used to evaluate these capabilities on paper.

This would be an iterative agile process between the solution provider and the challenge sponsors to provide insight into the evaluation criteria and will feed into workstream two.

Workstream two: Capability evaluation

Organisations in this workstream would provide the evaluation environment and will undertake the performance assessments. This includes defining and executing the processes/procedures to evaluate and report on the effectiveness of up to five synthetic environment tools. We will work iteratively with the solution provider to detail testing scenarios and curate an easy/medium/difficult scenario and predictions, potentially based on historical events.

The solution provider(s) from workstreams 1 and 2 are expected to work closely together, co-ordinated by HMGCC Co-Creation, to ensure feedback between both teams.

Expressions of Interest: Tool Vendors

We also want to hear from tool vendors interested in having their product(s) evaluated as part of the project. If you are interested in having your tool evaluated, please send an email expressing your interest to cocreation@hmgcc.gov.uk.

Example use case

Scenario 1:

Jay is a lead researcher in UK national security, working closely with US and European partners to prevent terrorist activity.

Amid the potential threat of radicalisation, disinformation and the consequences they can have, the work of his team is vital in making sure the UK contingency response is accurate and well-judged.

His team is leading on using a new simulation to increase efficiency and confidence in predictions. The synthetic environment tool, backed up with training data sets, provides a series of possible events, with confidence scores against each one. This works at pace and is used, alongside other methods, to feed into senior decision makers.

Scenario 2:

Jay is also looking to utilise the synthetic environment tool to provide training for counter-terrorism personnel.

In this simulation, he has programmed a significant world event, followed by a wave of disinformation targeted at radicalising certain parts of society. This is a sandbox environment meaning that the trainees can make almost any decision possible, as in real-life. The simulated environment can then play out these scenarios over several simulated years, showing possible impacts of decisions made.

Using the simulated environment, new training and lessons learned are able to be carried out at pace.

Thanks to the work of Jay's team and the simulated environment, senior decision makers gain valuable experience and feedback on how their decisions may play out in highly pressurised situations.

Project scope

We are seeking applicants to deliver workstream one, workstream two or a combination of both. Please make it clear in your application which workstreams you are bidding for.

HMGCC Co-Creation will provide the solution provider delivering workstream two the additional reasonable call-off costs of up to £30,000 (excluding VAT) during the project to support third-party charges for selected tools.

Tools and assessment characteristics to consider:

1. Take a portfolio approach of tools to evaluate, with a mixture of commercially available and lower technology readiness disruptive technology.
2. The type of data used to underpin synthetic environments.
3. The type of foundational models used to predict outcomes.
4. Whether the tool is so specific to the UK, it would not be applicable to other countries and demographics.
5. Whether the solution works in other partner countries with different cultures and languages.
6. How the model could be evaluated.
7. Confidence levels in the prediction of events.
8. The complexity and detail involved in the predictions.
9. Explainability and confidence in decision making.
10. If the solution could be hosted in both cloud or on-premise hosting.
11. Could a tool be further trained in-house by national security?

Dates

Competition opens	Monday 04th August 2025
Online Briefing Call (see link here for registration details)	Tuesday 26th August 2025 @ 10am (UK time)
Clarifying questions deadline	Tuesday 26th August 2025
Clarifying questions published	Wednesday 27th August 2025
Competition closes	Thursday 04th September 2025 at 5pm (UK time)
Shortlisted Applicants notified	Tuesday 16th September 2025
Pitch day in Milton Keynes	Tuesday 23rd September 2025
Pitch Day outcome	Monday 29th September 2025
Commercial onboarding begins*	Friday 03rd October 2025
Target project kick-off	Monday 03rd November 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 specified to begin the onboarding/contractual process.

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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 before the deadline with the challenge title as the subject. 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 including the challenge title with a note of the collaborator network 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.

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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?

We are not inviting consortium applications for this 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.

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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.