



Challenge: Visualising Smart Cities

Summary of the challenge

Can you help us see inside a smart city? This is the focus of the latest funded challenge launched by HMGCC Co-Creation.

We're looking for innovators to build a tool that lets security professionals quickly visualise a smart city in 3D — showing where nodes and sensors are located, how they connect, and where the vulnerabilities might be.

Smart cities use thousands of sensors, cameras and connected devices to manage infrastructure and public services. But, to mitigate security risks, better ways are needed to understand where those devices are and how they connect.

HMGCC is looking for software that can take open-source smart city data and display it as an immersive, interactive 3D map — layering in the locations and types of sensors and connected devices across an urban environment. Approaches such as Virtual Reality (VR) or Augmented Reality (AR) are welcome, but we would also like to hear about novel methods.

The goal is a Technology Readiness Level 5 (TRL 5) demonstrator – technology basic validation in a relevant environment.

HMGCC Co-Creation will provide funding for time, materials, overheads and other indirect expenses for applicants successful in phase 2 of the competition.

Technology themes

App development, business intelligence, communication systems, control software, cybersecurity, data science and engineering, digital services, digital twinning, geospatial science and technology, information technology, modelling and simulation, software development.

Key information

HMGCC Co-Creation will be hosting a two-stage competition process.

- 1) Phase 1. The objective is to rapidly assess one-page proposals. Those unsuccessful will be informed with feedback. Successful applicants will be invited to phase 2. For further information please see **How to apply – phase 1**.

- 2) Phase 2. Following a feedback phase, successful phase 1 applicants will be requested to submit a proposal directly to cocreation@hmgcc.gov.uk. For further information please see **How to apply – phase 2**.

Total budget (excluding VAT)	£60,000
Project duration	12 weeks
Phase 1 Competition opens	Monday 20 July 2026
Phase 1 competition closes	Thursday 13 August 2026
Applicants notified	Monday 24 August 2026
Phase 2 competition opens	Tuesday 25 August 2026
Phase 2 competition closes	Thursday 10 September 2026

Context of the challenge

A smart city is an urban environment that uses technology, data, and digital connectivity to improve infrastructure, enhance public services, and create a safe and sustainable liveable environment. These sensor rich environments are developed through a complex supply chain of vendors. Understanding more about the way they work can help mitigations be put in place around any potential risks for privacy or information security.

To better understand these threats, HMGCC Co-Creation requires a user-friendly solution that enables us to see an immersive version of any global city.

The gap

Although the ability to create a 3D virtual city exists, and some open source smart city data is openly available, what is rare is bringing these datasets together.

A functional 3D map must not only visualise the city layout but specifically layer the various smart city nodes (such as CCTV, streetlights and utility sensors), with a particular interest in sensors using wireless connection protocols. The data ingestion pipeline must also be able to handle global data.

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Example use case

Monica assesses the risk of smart city attack vectors.

Traditionally, this requires searching massive databases or physically visiting a site. Using smart city digital twin software, she can provide an increasingly efficient risk mitigation service.

This software not only offers the visualisation of a city, but includes up to date information from local government and private industry when new smart city nodes are installed.

When Monica receives a report of a vulnerability in a specific wireless protocol, she uses the digital twinning software to query which devices are affected and view their exact locations.

This helps her find out the locations of devices and triage engineering works by the criticality of need. An example of this could be identifying a vulnerability that affects both streetlights and a water treatment centre.

Project scope

This challenge focuses on augmenting commercial systems by adding a layer of smart city nodes onto 3D visualisations.

The outcome should be a demonstrator after a 12-week project, to a minimum Technology Readiness Level (TRL) 5 – technology basic validation in a relevant environment. The software should be delivered to the sponsors further testing.

Essential requirements:

- Provide software that can visualise a city in a 3D view.
- Display the smart city nodes and their interaction with communication points and other sensors.
- Where the data is available, include precise locations of nodes, sensor types, manufacturer, and associated datasheets / internet links.
- Develop a data ingestion pipeline to render new cities or update information.
- Include an admin mode – allowing users to add data and modify software independently.

Desirable requirements:

- Consider interactive user interfaces, for example, but not limited to Virtual Reality (VR) and Augmented Reality (AR).

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- Consider future requirements of a solution on a mobile device.
- Estimations of future development and maintenance costs.
- Ability to add additional data / information layers, such as bus stops, rail stations, EV charging locations.
- Ability to filter data by node type (e.g. CCTV) and communication protocol (e.g. cellular).
- Visualisation from the point of view of the user (e.g. pedestrian or cyclist)

Constraints:

- Demonstrators may use cloud computing, but future versions must work on-premises.
- Utilise open-source data for the initial phase of work.

Not required:

- Physical surveys or primary collection of new smart city data.

Dates

Phase 1 competition opens	Monday 20 July 2026
Clarifying questions deadline	Monday 3 August 2026
Clarifying questions published	Thursday 6 August 2026
Phase 1 competition closes	Thursday 13 August 2026
Applicants notified	Monday 24 August 2026
Phase 2 competition opens	Tuesday 25 August 2026
Phase 2 competition closes	Thursday 10 September 2026
Applicant notified	Tuesday 22 September 2026
Pitch day in Milton Keynes	Wednesday 7 October 2026
Commercial onboarding begins*	Friday 16 October 2026
Target project kick-off	November 2026

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*Please note, the successful solution provider will be expected to have availability for a one-hour onboarding call via MS Teams on the date 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 to apply – phase 1

Please submit your application on the [HMGCC Co-Creation website](#). Any queries please email cocreation@hmgcc.gov.uk.

All information you provide to us as part of your application will be handled in confidence.

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

All proposals will be assessed by the HMGCC Co-Creation team.

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.

Following assessments, the successful applicants will be invited to submit a more in-depth proposal in phase 2. There will be feedback given to the successful applicants to aid their full proposal submission.

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How to apply – phase 2

Please submit your application directly to cocreation@hmgcc.gov.uk.

All information you provide to us as part of your application will be handled in confidence.

Applications **must** be no more than six pages or six slides in length. HMGCC Co-Creation reserves the right to stop reading after six 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:

Feasibility	• What is the technical credibility of the minimum viable product proposed? ○ Is it technically possible? ○ Are there key technical risks overlooked? • Likelihood of the minimum viable product reaching or exceeding the minimum required Technology Readiness Level (TRL)? ○ Does the proposal aim to reach the minimum TRL? ○ Assessors' confidence in the proposal from technical perspective? ○ Will the proposal exceed the minimum TRL? • Credibility of the team regarding technical and project management skills? ○ Does the team have all the relevant expertise? ○ How experienced are they? ○ Have they delivered something similar before?
Desirability	• How closely does the proposal directly address the challenge? ○ Does the proposal achieve all essential requirements? ○ How many desirable requirements are achieved? ○ Is this something the user's want? • How well is the benefit for government and dual-use described? ○ Is the benefit to the user's well described? ○ Have the applicants identified dual-use markets? • Ambition of the proposed solution? ○ Does the solution provide an incremental step in capability or significant leap? ○ Is the proposed solution unique to the applicants?

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Viability	• How well is the exploitation route described? ○ Is the proposal just aiming to deliver the minimum for the project? Or have they got a project plan post phase 1? ○ Are they thinking about commercial exploitation routes? ○ Are there rough costings for future work? • How well does the proposal demonstrate value for money and are the costs broken down and justified? ○ How much time and resource is spent on a project for the cost? ○ Is there a perceived high ambition for the cost? ○ Is there a robust costing plan? • How well is the project delivery described leading to the minimum viable product? ○ Is there a Gantt chart or similar? ○ Are there proposed outcomes after each sprint? ○ Are the applicants experienced in Agile methodology?
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Invitation to present

Successful phase 2 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.

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.

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[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?

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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, any questions (and answers) will be captured and published after the event. The call itself is not recorded and use of AI notetakers is not permitted.

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.

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