

Commercialising Connected and Automated Mobility

National Digital Exploitation Centre, Ebbw Vale , Wales
24th May 2022



Centre for Connected and
Autonomous Vehicles



Innovate
UK



InnovateUK
KTN



Introduction

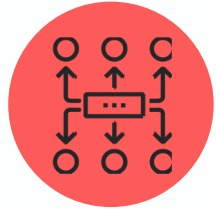
Innovate UK KTN exists to connect innovators with new partners and new opportunities beyond their existing thinking – accelerating ambitious ideas into real-world solutions.

We increase access to new markets through our contacts and networks, work alongside government and private agencies to promote innovative solutions and assist SMEs and companies in accessing funding and development opportunities through guidance, contacts and support.

Anthony Gallego, Automated Mobility
Knowledge Transfer Manager.

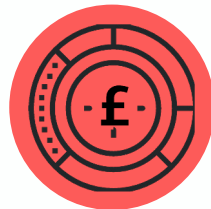


What KTN do - Growth Through Innovation



Connecting

- Finding valuable partners
- Project consortium building
- Supply Chain Knowledge
- Driving new connections
- Articulating challenges
- Finding creative solutions



Funding

- Awareness and dissemination
- Public and private finance
- Advice – project scope
- Advice – proposal mentoring
- Project - follow-up



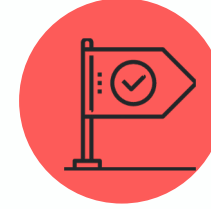
Influencing

- Promoting Industry needs
- Informing policy makers
- Informing strategy
- Communicating trends and market drivers



Supporting

- Intelligence on trends and markets
- Business Planning support
- Success stories / raising profile



Navigating

- Navigating the innovation support landscape
- Promoting coherent strategy and approach
- Engaging wider stakeholders
- Curation of innovation resources



Welcome to the National Digital Exploitation Centre, Ebbw Vale, Wales

- House keeping
- Networking



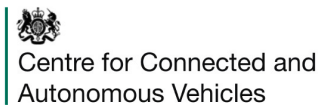
Meeting Mojo is KTN's tool to support in-person, hybrid and digital events

<https://ccavindustry-engagement.meeting-mojo.com/>



AGENDA

- Welcome & overview of programme.
- Competition scope.
- David Webb Insights to Competition event.
 - *Scope Q&A.*
- Application process.
 - *Application Q&A.*
- Coffee Break and networking.
- Zenzic engagement and support.
- EDGE Presentation.
- 2 Minutes Pitches & Networking time.
- *CLOSE*





Commercialising CAM – CCAV intro

Michael Talbot, Deputy Head



Summary



Advances in automation, connectivity, and electrification (ACE) – together – can make journeys safer, fairer, cleaner, more efficient and more productive, unlocking significant social and economic benefits (£42bn by 2035).



Where are we now?

UK is ranked 2nd among G7



KPMG AVRI 2020

“The UK has a really healthy ecosystem for early stage work, with a lot of tests and trials.”

Sarah Owen-Vandersluis
Partner, Head of Future Mobility
KPMG in the UK

Cybersecurity top five

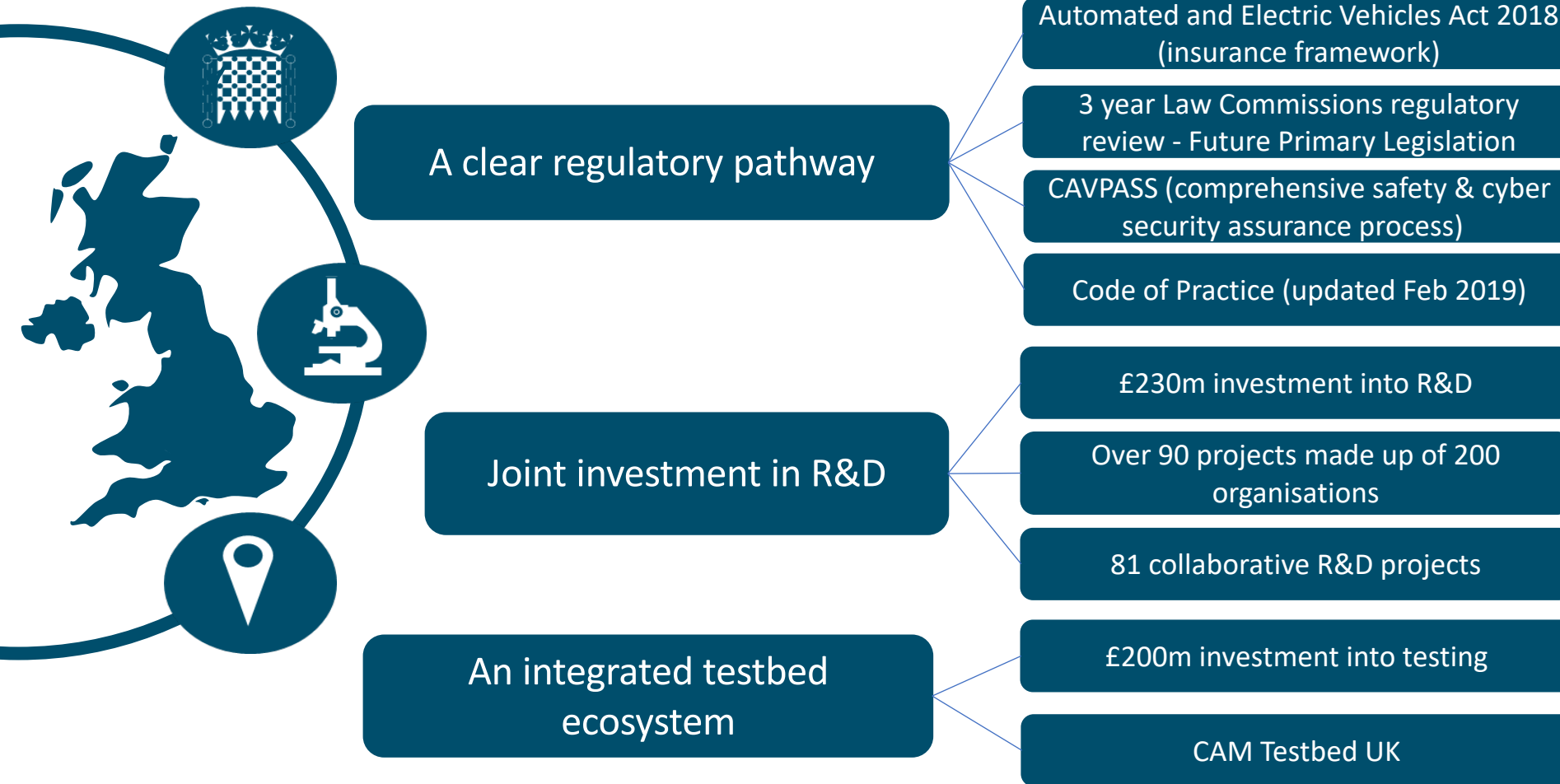


International Telecoms Union, *Global cybersecurity index* (2018)

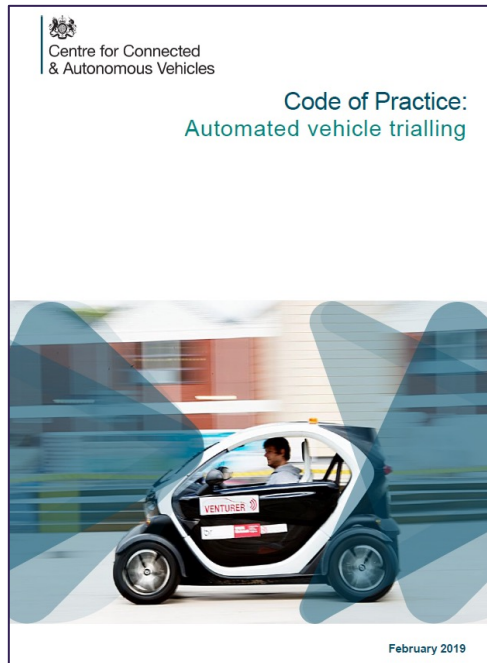
KPMG AVRI 2020



How did we get here?



How did we get here?



Code of Practice
on Automated
Vehicle trialling
updated 2019



Law Commissions'
Review published
January 2022

AEVA 2018

Framework for automated
vehicle insurance



Engagement with **UNECE**
(World Forum
for Harmonisation of
Vehicle Regulations)

CAVPASS

Connected and Automated
Vehicles: Process for Assuring
Safety and (Cyber) Security



R&D: £250m across 90+ projects



Comprehensive, interoperable testing ecosystem



CAM TESTBED UK

BIRMINGHAM

LONDON

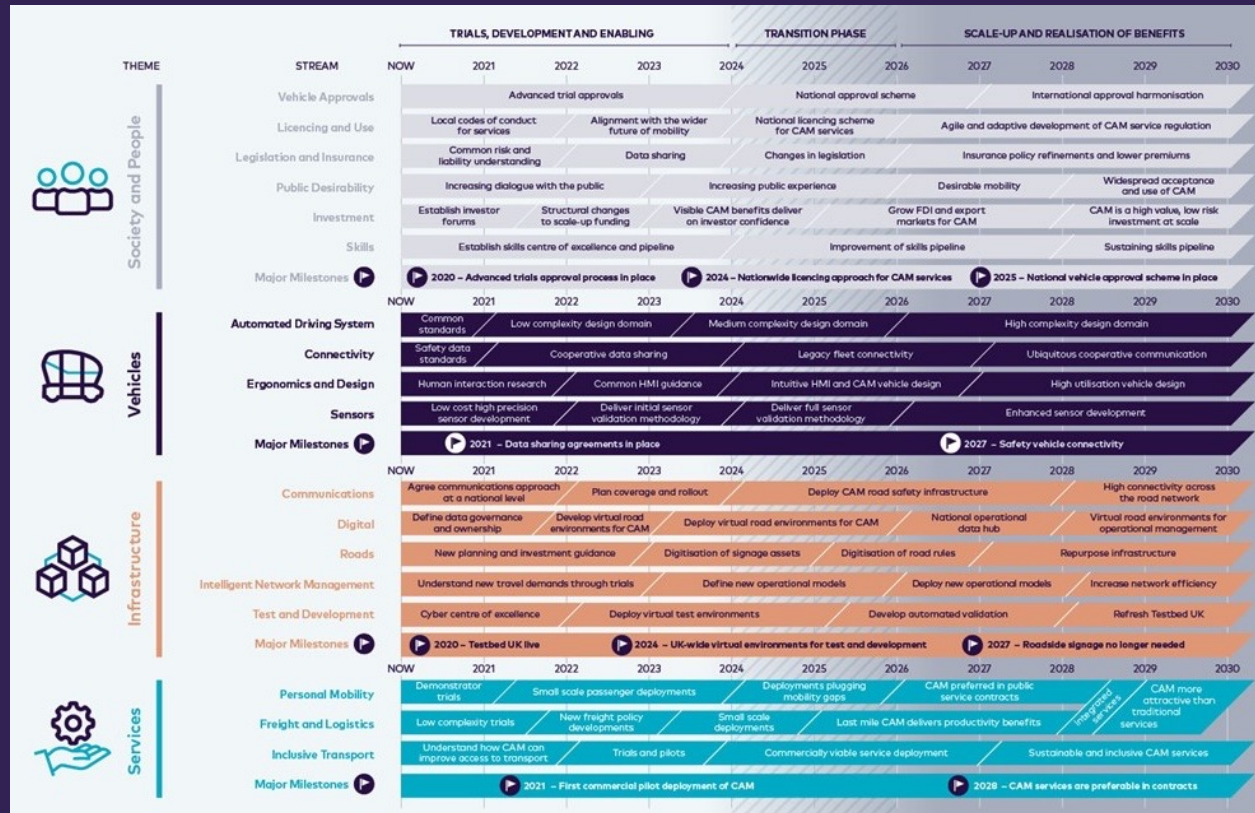
- A ASSURED CAV**
Urban parking
Limit of controllability
- B MIDLANDS FUTURE MOBILITY**
Highly connected real-world and digital environments
CONVEX
Data
Virtual
- C CAVWAY**
Controlled environments
Configurable junctions
Flexible connectivity
- D UTAC Millbrook – Culham**
Secure site
Controlled and semi-controlled
- E Smart Mobility Living Lab London**
Public and private
London roads
Digital and real-world testing



What's next?



UK consensus view: CAM Roadmap to 2030



200+ organisations contributed to the roadmap

300+ individuals contributed to the roadmap

600 unique relationships

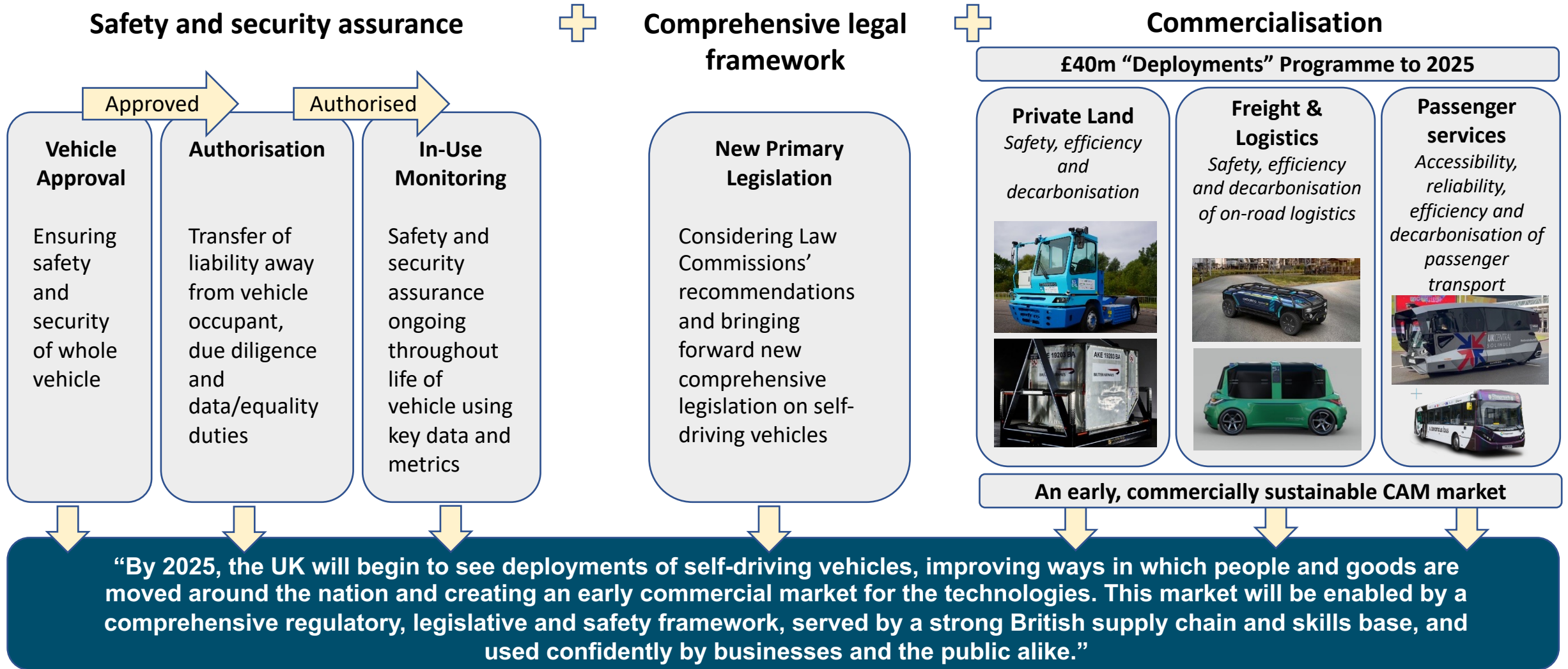
Milestones are connected through almost

"... the roadmap highlights significant challenges that require cross industry support such as cyber resilience, use of simulation environments, sign-off and type approval, and in-use compliance ... Connected and Automated Mobility is the future and the roadmap provides a direction and a well ordered set of critical enablers"

- Craig Stephens, Director: Controls & Automated Systems R&A, Ford Motor Company



UK CAM 2022 to 2025 and onwards





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& Autonomous Vehicles

Thank you



Michael.talbot@ccav.gov.uk



gov.uk/ccav



@ccavgovuk



Search: Centre for Connected and Autonomous Vehicles





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Commercialising Connected & Automated Mobility (CAM) - Competition Scope

Richard Morris – Innovation Lead, 24 May 2022



1 Competition, 2 Strands

Innovate UK, part of UK Research and Innovation, will work with the Centre for Connected and Autonomous Vehicles (CCAV) to invest up to **£41.5** million in innovation projects across two competition strands.

The aim of this competition is to support the CCAV ambition to progress technologies, products and services into commercial offerings.

This competition is split into 2 strands.

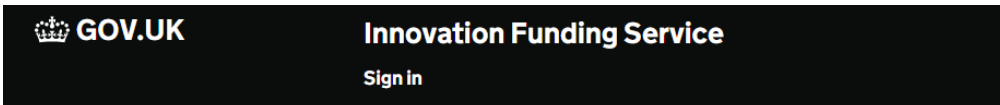
- Strand 1: Commercialising Connected and Automated Mobility: **Deployments**
- Strand 2: Commercialising Connected and Automated Mobility: **Mass Transit**

It is your responsibility to ensure that you are entering the appropriate strand of the competition for your project.

CCAV Phase 2: Commercialising CAM

Links to Competition pages on website:

<https://apply-for-innovation-funding.service.gov.uk/competition/1179/overview>



BETA This is a new service – your [feedback](#) will help us to improve it.

[◀ Back to all competitions](#)

Funding competition

Commercialising Connected and Automated Mobility: Deployments

UK registered organisations can apply for a share of up to £40 million of CCAV competition funding, supporting new automated transport service projects.

Competition opens: Monday 23 May 2022

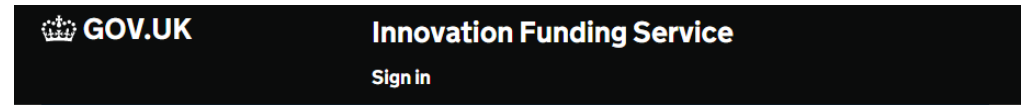
Competition closes: Wednesday 20 July 2022 11:00am

[Start new application](#)

Or [sign in](#) to continue an existing application.

Summary	Eligibility	Scope	Dates	How to apply	Supporting information
Description	Innovate UK, part of UK Research and Innovation, will work with the Centre for Connected and Autonomous Vehicles (CCAV) to invest up to £41.5 million in innovation projects across two competition strands.				

<https://apply-for-innovation-funding.service.gov.uk/competition/1178/overview>



BETA This is a new service – your [feedback](#) will help us to improve it.

[◀ Back to all competitions](#)

Funding competition

Commercialising Connected and Automated Mobility: Mass transit

UK registered organisations can apply for a share of up to £1.5 million for feasibility studies into the use of connected and automated mobility as a mass transit solution.

Competition opens: Monday 23 May 2022

Competition closes: Wednesday 20 July 2022 11:00am

[Start new application](#)

Or [sign in](#) to continue an existing application.

Summary	Eligibility	Scope	Dates	How to apply	Supporting information
Description	Innovate UK, part of UK Research and Innovation, will work with the Centre for Connected and Autonomous Vehicles (CCAV) to invest up to £41.5 million in innovation projects across two competition strands.				

Contents of Presentation

Strand 1:

- Competition outline
- Eligibility & project magnitude
- Funding levels
- Scope
- What is out of scope
- Dates & timings

Strand 2:

- Competition outline
- Eligibility & project magnitude
- Funding levels
- Scope
- What is out of scope
- Dates & timings

Common aspects

Strand 1:
Commercialising Connected and
Automated Mobility: **Deployments**

Competition Outline – Strand 1

- The Centre for Connected and Autonomous Vehicles (CCAV) has allocated up to £40 million to fund collaborative industrial research and experimental development projects in this strand.
- Your project must develop a new automated passenger or goods service to the point of commercial deployment.
- We expect to fund 5 to 8 high quality projects that use UK technologies to provide commercial CAM services.
- Grant funding is available for upto 50% of eligible project costs and grants must be between £500k and £9M.
- Projects must be complete by 31st March 2025.
- Strand 1 : Two stage application process – Written application & interview.

Competition Eligibility (1)

Your project

Must:

- start by 1 March 2023
- end by 31 March 2025
- carry out all project work in the UK
- intend to exploit the results from or in the UK
- work with the Centre for Connected and Autonomous Vehicles (CCAV) to ensure compatibility with relevant current and future regulatory compliance

Competition Eligibility (2)

Lead organisation

To lead a project your organisation must:

- be a UK registered business of any size, or
- be a public sector organisation (local authority or transport authority)
- collaborate with at least 2 other UK registered organisations

Academic institutions, research organisations and research and technology organisations cannot lead or work alone.

Competition Eligibility (2)

Project team

To collaborate with the lead, your organisation must be one of the following. A UK registered:

- business of any size
- academic institution
- charity
- not for profit organisation
- public sector organisation
- research and technology organisation (RTO)

The lead and at least two other organisations must claim funding by entering their costs during the application.

Any subcontractors must be UK based (with some limited exceptions) and their combined costs must not exceed 20% of the total project costs.

Industry Partner Funding Levels:

Industrial Research or Experimental Development

Your project can focus on industrial research or experimental development. This will depend on the challenge.

For industrial research, you could get funding for your eligible project costs of:

- up to 70% if you are a small business
- up to 60% if you are a medium-sized business
- up to 50% if you are a large business

For experimental development projects which are nearer to market, you could get funding for your eligible project costs of:

- up to 45% if you are a micro or small business
- up to 35% if you are a medium-sized business
- up to 25% if you are a large business

Organisations undertaking non-economic activity

Local Authorities, research organisations, academic institutions, etc.

The organisations undertaking non-economic activity as part of the project can share up to 30% of the total eligible project costs. If your consortium contains more than one organisation undertaking non-economic activity, this maximum is shared between them.

Of that 30% you could get funding for your eligible project costs of up to:

- 80% of full economic costs (FEC) if you are a Je-S registered institution such as an academic institution.
- 100% of your project costs if you are an RTO, charity, not-for-profit organisation, public sector organisation or research organisation.

However:

Grant funding is available for up to a maximum 50% of the total eligible project costs.

Zenzic Levy

- You must pay Zenzic for the services it provides, outlined in the Supporting Information section and later in this briefing.
- This will be by the payment of a fee through the Lead Partner.
- The fee will be calculated as 3% of the total grant offered to the project. Academic partners are also required to pay this fee.
- The Zenzic levy is NOT an eligible cost – you cannot claim for it.
- This is an absolute condition of the award of your grant.

Scope

Your project must develop a new automated passenger or goods service to the point of commercial deployment.

If you are developing a passenger service, your project must improve on and integrate into existing transport systems. It must enhance how the public move and encourage active transport and public journeys, wherever appropriate.

If your project uses public roads it must comply with the Department for Transport (DfT) Code of Practice: Automated Vehicle Trialling, relevant standards for safety and security. You must work with DfT and its agencies to audit your safety and security cases before on-road trials or service deployments begin.

You must also explain how the service could be improved or expanded in the future, as technology and legislation develops.

In line with the Government's decarbonisation goals, vehicle procurement costs, whether capital or otherwise, will only be eligible for zero emission vehicles.

Themes

Your project must focus on one or more of the following four listed options in commercial connected and automated mobility deployments:

Logistics services

- in public spaces to which the public have access
- in private spaces to which the public do not have access

Passenger services

- in public spaces to which the public have access
- in private spaces to which the public do not have access

You must ensure that you will comply with all legal requirements in your chosen deployment areas. It is your responsibility to take legal advice in this matter.

Out of Scope

We are not funding projects that:

- are early stage research into automated driving systems
- include testing or deployments of drone technologies in public spaces
- include aircraft or waterborne craft
- include rail vehicles
- are dependent on export performance
- are dependent on domestic inputs usage

Dates

Announcement & competition open	23 May 22
Briefing event	24 May 22
Out-of-scope query deadline	29 June 22
Competition close	20 July 22 (11.00am)
Invitations to interview	19 September 22
Interviews (Swindon)	w/c 10 October 22
Applicants notified	21 October 22
Projects must start by	1 March 23
Projects must end by	31 March 25

Strand 2:
Commercialising Connected and
Automated Mobility: **Mass transit**

Competition Outline – Strand 2

- The Centre for Connected and Autonomous Vehicles (CCAV) has allocated up to £1.5 million for feasibility studies in this strand.
- Your project must develop plans for the use of connected and automated mobility as a mass transit solution. We expect to fund 7 to 10 high quality projects that could deliver a significantly more cost effective, and low carbon solution than traditional public transport options.
- Grant funding is available for eligible project costs and grants must be between £50k and £200k.
- Projects must be complete by 30th November 2023.
- Strand 2 : Single stage application process – Written application only.

Competition Eligibility (1)

Your project

Must:

- start by 1 January 2023
- end by 30 November 2023
- carry out all project work in the UK
- intend to exploit the results from or in the UK
- work with the Centre for Connected and Autonomous Vehicles (CCAV) to ensure compatibility with relevant current and future regulatory compliance

Competition Eligibility (2)

Lead organisation

To lead a project your organisation must:

- be a UK registered business of any size, or
- be a UK RO or RTO, or
- be a public sector organisation (local authority or transport authority)
- collaborate with at least 1 other UK registered organisations

Competition Eligibility (3)

Project team

To collaborate with the lead, your organisation must be one of the following. A UK registered:

- business of any size
- academic institution
- charity
- not for profit organisation
- public sector organisation
- research and technology organisation (RTO)

Competition Eligibility (4)

Project team

Your project must include as a lead or grant claiming partner a:

- local or regional authority or a local or regional transport authority
- Connected & Automated Mobility (CAM) technology provider or an infrastructure provider

The lead and at least one other organisation must claim funding by entering their costs during the application.

Any subcontractors must be UK based (with some limited exceptions) and their combined costs must not exceed 30% of the total project costs.

Industry Partner Funding Levels:

Feasibility Studies

For feasibility study projects, you could get funding for your eligible project costs of:

- up to 70% if you are a micro or small organisation
- up to 60% if you are a medium sized organisation
- up to 50% if you are a large organisation

Organisations undertaking non-economic activity

Local Authorities, research organisations, academic institutions, etc.

The organisations undertaking non-economic activity as part of the project can share up to 30% of the total eligible project costs. If your consortium contains more than one organisation undertaking non-economic activity, this maximum is shared between them.

Of that 30% you could get funding for your eligible project costs of up to:

- 80% of full economic costs (FEC) if you are a Je-S registered institution such as an academic institution.
- 100% of your project costs if you are an RTO, charity, not-for-profit organisation, public sector organisation or research organisation.

Scope

Your project must identify a new application for CAM as a mass transit solution on a segregated route and quantify the real-life potential of a suitable solution.

Your proposed automated vehicle services must be on physically segregated infrastructure: routes that are not open to public access: for vehicles, pedestrians, cyclists and other road users. This can include for example, tracks, disused railway routes.

Your proposal must:

- consider the utilisation of new CAM technologies for innovative mass transit services on segregated infrastructure, including both new and disused infrastructure, or infrastructure that would otherwise require a significant upgrade
- propose the design, delivery, and operational cases for the introduction of a service on a specific, UK route currently underserved by public transport, including how it could be practically delivered and operated as part of an integrated public transport network.

Scope

Your proposal must also:

- solve real-life transport problems and focus on areas and routes in the UK that are currently underserved by public transport, particularly areas where traditional rail services are not deemed viable
- set out why an automated vehicle service would provide better outcomes than traditional mass transit modes, for example, heavy and light rail, tram and bus, including guided busways
- consider how a service could be improved or expanded in the future, for example, as technology develops and legislation enables the use of automated vehicles on public roads

Your project must submit:

- an interim report by 1 May 2023
- a final report by 30 November 2023

Themes

Your project can consider the use of CAM:

- on new infrastructure
- on disused infrastructure or infrastructure that otherwise requires costly upgrades, for example rail lines
- in rural, semi-rural or urban environments

Your project must consider all 12 of the aspects listed in the Themes section of the scope.

You must ensure that you will comply with all legal requirements in your chosen deployment areas. It is your responsibility to take legal advice in this matter.

Out of Scope

We are not funding projects that:

- are industrial research or experimental development projects
- rely on the use of automated vehicles on public roads
- propose the use of automated vehicle technology on rail vehicles
- include aircraft or waterborne craft
- are dependent on export performance
- are dependent on domestic inputs usage

Dates

Announcement & competition open	23 May 22
Briefing event	24 May 22
Out-of-scope query deadline	29 June 22
Competition close	20 July 22 (11.00am)
Applicants notified	30 September 22
Projects must start by	1 January 23
Projects must end by	30 November 23

Common Aspects:

Russian Aspects:

- Under current restrictions, this competition will not fund any procurement, commercial, business development or supply chain activity with any Russian entity as lead, partner or subcontractor.
- This includes any goods or services originating from a Russian source.

Subsidy Control & State Aid:

- This competition provides funding in line with the UK's obligations and commitments to Subsidy Control. For further information see links in the scope.
- EU State aid rules now only apply in limited circumstances. Check the links in the scope.
- Innovate UK is unable to award organisations that are considered to be in financial difficulty. We will conduct financial viability and eligibility tests to confirm this is not the case following the application stage.

Other Common Aspects:

- Where appropriate, your project must align with the nine principles of the [Future of Mobility Urban Strategy](#).
- Technical terminology in your application must comply with the meanings as per [BSI Flex 1890 v4.0:2022-03: Connected and automated vehicles - Vocabulary](#).
- We will fund a variety of projects across the competition strands, themes, different applications, geographies and operational design domains. We call this a ['portfolio approach'](#).
- Successful project applications must support and engage with the new [Impact and Evaluation framework](#).



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Thank you



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Centre for Connected
& Autonomous Vehicles



HM Government

Commercialising Connected and Automated Mobility Scope Insights



Deploying CAM

- ▶ CCAV is keen to support developing solutions that solve transport problems in three overarching Use Cases:
 - ▶ **Private Land** – Safe, secure and accessible self-driving services supporting innovative solutions that improve the safety, efficiency and decarbonisation of passenger and goods journeys on private land (land within which the public has restricted access)
 - ▶ **Logistics** – Safe, secure and accessible self-driving services supporting innovative solutions that improve safety and efficiency of goods journeys in public spaces (areas which the public have unfettered access)
 - ▶ **Passenger** - Safe, secure and accessible self-driving services supporting innovative solutions that improve safety and efficiency of passenger journeys in public spaces (areas which the public have unfettered access)

Future of Mobility - Urban Strategy

- ▶ Deployments will need to bring together parties to deliver long term, beneficial services that support the nine Future of Mobility Urban Strategy Principles.
 1. ...must be safe and secure by design.
 2. ... benefits of innovation ... must be available to all ...
 3. ...active travel must remain the best option for short urban journeys
 4. Mass transit must remain fundamental
 5. ...lead the transition to zero emissions.
 6. ...reduce congestion ...
 7. ...give the best deal to consumers.
 8. ...operate as part of an integrated transport system
 9. Data ... must be shared ... to improve choice and ... operation of the transport system.

Future of Mobility - Urban Strategy

▶ The below tables show our proposed priorities in each of the three overarching uses cases

	Private Land		Low Speed Logistic Services		Passenger Services
1	Safety, security, & accessibility by design	1	Safety, security, & accessibility by design	1	Safety, security, & accessibility by design
2	Must improve efficiency or fulfill a logistic/passenger need (Carbon reduction is key)	2	Must improve efficiency or fulfill a logistic need (Carbon reduction is key)	2	Must improve & integrate into existing transport systems while bringing benefit across the diversity of geographic, social, and economic sections of the UK
3	The marketplace for mobility must be open to stimulate innovation and give the best deal to consumers.	3	Must stimulate market competition & improve consumer choice	3	Active and mass travel must remain the best options where appropriate



Self-driving deployments on Private Land as a potential early commercial use case.

Private Land – That which the public does not have unfettered access to.

Utilising key automated technologies in (much more) controlled environments to deliver significantly / suitably constrained missions without requirements to meet Road Traffic Act (1988).

Supporting safety, efficiency and decarbonisation goals.

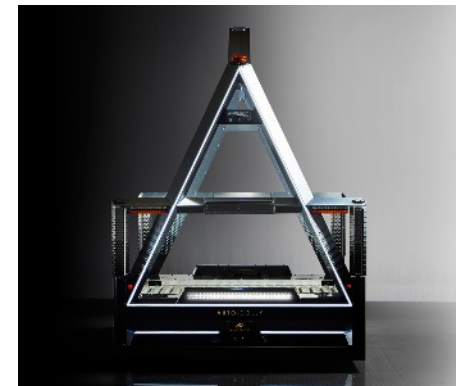
Depot Operations – Moving vehicles around at the start and end of their operational duty

Airside Operations – Moving people and / or goods

(Controlled) **Campus Operations** – Moving people and / or goods

Private Land

No public access





Logistic Services Public Spaces

Small(er), slow(er) speed logistics operations as a first commercial deployment of CAM operating in public spaces.

These smaller vehicles are designed to have zero human occupancy, utilising new and novel vehicle designs for optimum payload.

Successful deployments in the US (Nuro) and announced public partnerships here in the UK highlight the opportunity.

Low Speed Logistics have the opportunity to change how people consider local journeys (groceries) and how parcels could move in the last mile (or so).

However, consideration must be given to potential impact on active travel and engagement with vulnerable road users.





Passenger Services Public Spaces

Low Speed Passenger services have been trialled across the UK (and globally) operating across almost all viable driving surfaces.

The UK has and will deploy trials of larger higher speed vehicles with (in future terminologies) a User in Charge, including 12m self-driving buses.

We seek to support the deployment of passenger services which:

1. Are safe, secure and accessible by design
2. Improve & integrate into existing transport systems, bringing benefit across the diversity of geographic, social and economic sections of the UK
3. Ensure active and mass travel remain the best options where appropriate



Information on legal considerations for trials and deployments of vehicles using self-driving technology on private land

- ▶ *The laws regarding the use of vehicles using self-driving technology on private land are complex.*
- ▶ *It should be noted that in some cases, the courts have found that private land can be publicly accessible road or public place, and therefore the ownership of land is not the determining factor for whether the space is considered a public or private road, in law. This will be case specific and turn on the factual circumstances of the particular space and how it is typically used. A trialling organisation will want to take legal advice on the specific nature of the proposed trial to understand the legal frameworks that will apply to the trial.*
- ▶ *Even outside the domain of road vehicle and road traffic legislation, other laws and legislation (civil or criminal along with other statutory frameworks) will apply and it may be entirely in accordance with those legal obligations to take into account relevant aspects of the road vehicle and road traffic laws and standards if there are similar safety risks and risks to the public involved.*
- ▶ *As highlighted in the “Commercialising Connected and Automated Mobility: Deployments” competition scope, provided by Innovate UK, all bidders must ensure that they will comply with all legal requirements in their chosen deployment area(s) and have considered the legal implications of running trials on private land.*
- ▶ *It is therefore recommended that all bidders take independent legal advice in this matter.*



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Eligibility criteria

Previously submitted applications

This competition does allow you to submit a previously submitted application.

Previously submitted application	Not a previously submitted application
<p>A previously submitted application is an application Innovate UK judges as <u>not</u> materially different from one you have submitted before (but it can be updated based on the assessors' feedback)</p>	<p>A brand-new application, project or idea that you have not previously submitted into an Innovate UK competition</p> <p>OR</p> <p>A previously submitted or ineligible application which:</p> <ul style="list-style-type: none">✓ has been updated based on assessor feedback✓ <u>and</u> is materially different from the application submitted before✓ <u>and</u> fits with the scope of this competition



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Eligibility criteria - Commercialising Connected and Automated Mobility: Deployments

Eligibility criteria - Commercialising Connected and Automated Mobility: Deployments

Project eligibility	<ul style="list-style-type: none">• carry out all project work in the UK• intend to exploit the results from or in the UK• work with the Centre for Connected and Autonomous Vehicles (CCAV) to ensure compatibility with relevant current and future regulatory compliance• must be collaborative
Total project costs	Between £500,000 to £9,000,000
Project length	<ul style="list-style-type: none">• start by 1 March 2023• end by 31 March 2025

Eligibility Criteria: Funding Opportunities

Funding for R&D projects split in to 2 categories; **industrial research and experimental development.**

For industrial research projects, you could get funding for your eligible project costs of:

- up to 70% if you are a micro or small organisation
- up to 60% if you are a medium-sized organisation
- up to 50% if you are a large organisation

For experimental development projects which are nearer to market, you could get funding for your eligible project costs of:

- up to 45% if you are a micro or small organisation
- up to 35% if you are a medium-sized organisation
- up to 25% if you are a large organisation

For research organisations conducting fundamental research you could get funding for your eligible project costs of up to 30%.

Zenzic levy

You must pay Zenzic for the services it provides, outlined in the Supporting Information section, by the payment of a fee through the Lead Partner.

The fee will be calculated as 3% of the total grant offered to the project. Academic partners are also required to pay this fee. This is an absolute condition of the award of your grant.

For general guidance on what our research categories are please visit:
<https://www.gov.uk/guidance/innovation-apply-for-a-funding-award#categories-of-research-and-development>



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Eligibility criteria - Commercialising Connected and Automated Mobility: Mass transit

Eligibility criteria - Commercialising Connected and Automated Mobility: Mass transit

Project eligibility	<ul style="list-style-type: none">• carry out all project work in the UK• intend to exploit the results from or in the UK• work with Department for Transport (DfT) and the Centre for Connected and Autonomous Vehicles (CCAV) to ensure compatibility with regulatory requirements• must be collaborative
Total project costs	Between £50,000 to £200,000
Project length	<ul style="list-style-type: none">• start by 1 January 2023• end by 30 November 2023

Eligibility Criteria: Funding Opportunities

Funding for R&D projects for this strand covers Feasibility Studies

For industrial Feasibility Studies, you could get funding for your eligible project costs of:

- up to 70% if you are a micro or small organisation
- up to 60% if you are a medium-sized organisation
- up to 50% if you are a large organisation

For experimental development projects which are nearer to market, you could get funding for your eligible project costs of:

- up to 45% if you are a micro or small organisation
- up to 35% if you are a medium-sized organisation
- up to 25% if you are a large organisation

For research organisations conducting fundamental research you could get funding for your eligible project costs of up to 30%.

For general guidance on what our research categories are please visit:

<https://www.gov.uk/guidance/innovation-apply-for-a-funding-award#categories-of-research-and-development>



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Further Eligibility

Types of organisations we fund

Business – Small or Micro, Medium or Large registered in the UK

Research Organisation (RO):

- universities (HEIs)
- not for profit distributing Research & Technology Organisation (RTO) including Catapults
- Public Sector Research Establishments (PSRE)
- Research Council Institutes (RCI)

Public sector organisations and charities doing research activity

If you are 100% owned by a large parent company as a small subsidiary this means you are classed as a large company and will only be entitled to the relevant grant. For more information on company sizes, please refer to the [Company accounts guidance](#).

Compliance with the UK Subsidy Control Regime

On 1 January 2021, the UK left the EU and is no longer subject to EU laws on State aid. We draw your attention to the guidance issued by BEIS: [Complying with the UK's international obligations on subsidy control: guidance for public authorities](#). Please be aware this is a living document and may be updated by BEIS as time progresses.

The set rules (typically GBER) which we previously relied on for the limits of what we could award, have now been replaced by internal decisions based on the new BEIS Subsidy Control Regime, and on policy, which will in turn set out bespoke eligibility requirements for each funding opportunity.

Innovate UK is offering funding for this competition in line with the UK's obligations and commitments to Subsidy Control. To ensure that Innovate UK remains compliant with the UK's international Subsidy Control duties in respect of:

- the EU-UK Trade and Cooperation Agreement;
- Article 10 of the Northern Ireland Protocol (successful applicants which are affected by the Northern Ireland Protocol will be funded in line with EU State aid regulations)
- Article 138 of the Withdrawal Agreement (some Union law applicable after 31 December 2020 in relation to the UK's participation in Union programmes and activities)
- the Subsidies and Countervailing measures within the WTO (ASCM)
- any other Free Trade Agreements active at the time of award

All awards will be conditional on compliance at all times with the UK's International obligations on Subsidy Control - this will be reflected in the terms and conditions of any award.

Due diligence for UK Subsidy Control Regime

Under the Subsidy Control Regime, we will carry out financial health checks and going concern assurances on your organisation.

Certify you are eligible

When submitting an application, you must certify that you are eligible for funding. If you are unsure, please take independent legal advice before applying. Should you be successful, we will complete these financial checks and assurances before confirming the grant offer.

For more information on company sizes, please refer to the [Company accounts guidance](#).

Further information is available on our website in the general guidance.

Eligibility Criteria - EU State Aid Regulations – Northern Ireland Protocol

If you are an applicant who is conducting activities that will affect trade of goods and/or electricity between Northern Ireland and the EU as envisaged by [Article 10 of the Northern Ireland protocol](#), then you must apply under European Commission State aid rules.

Undertaking in Difficulty

For applicants subject to the European Commission State aid rules, you will be required to prove that they were not an “Undertaking in Difficulty” (UiD). We will ask for evidence of this.

This test applies to:

- companies that are more than 3 years old
- companies where more than half of its subscribed share capital has disappeared as a result of accumulated losses.
- your parent or holding company

Certify you are eligible

When submitting an application, you must certify that you are eligible for State aid. If you are unsure, please take legal advice before applying. Should you be successful, we will apply this test as part of our viability checks before confirming the grant offer.

Further information is available on our website in the [general guidance under state aid](#).

If you are applying for an award funded under State aid Regulations, the definitions for company size are set out in the [European Commission Recommendation](#) of 6 May 2003.

Participation Rules

The aim of this funding opportunity is to:

- optimise the level of funding to business and
- recognise the importance of research base to project

At least **70%** of total eligible project costs must be incurred by business.

The maximum level (**30%** of total eligible project costs) is shared by all research organisations collaborating on the project.

What is collaboration?

In all collaborative projects there must be:

- at least two organisations claiming grant within the application (including the lead)
- a business or RTO-led consortium, which may involve both business and the research base
- evidence of effective collaboration

We would expect to see the structure and rationale of the collaboration described in the application.

Making more than one application

Any one business may be involved in up to 3 applications to this competition, but can only be the lead partner in one application.

Any one research & technology organisation may only be the lead partner in one application. There must be at least two other UK businesses claiming grant. If they are leading an application, they may be involved in up to 3 applications to this competition.

If a research & technology organisation is not the lead on any application, they can be a partner in any number of applications.

Other Innovate UK projects

If you have an outstanding final claim or Independent Accountant Report (IAR) on a live Innovate UK project, you will not be eligible to apply for grant funding in this competition, as a lead or a partner organisation.

If you applied to a previous competition as the lead or sole company and were awarded funding by Innovate UK, but did not make a substantial effort to exploit that award, we will award no more funding to you.

If you applied to a previous competition as the lead or sole company and failed to comply with grant terms and conditions.

Key Dates

Timeline	Dates
Competition Opens	23 May 2022
Briefing Event	24 May 2022
Submission Deadline	20 July 2022, 11:00
Interviews for Deployment Stand Only	W/C 19 th September 2022
Applicants informed	30 September 2022



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Innovation Funding Service (IFS)

Search for a funding competition and review criteria

Innovation competitions

Browse upcoming and live competitions. Find out when new competitions are launched by [signing up for competition updates](#).

Filter competitions 13 competitions

Keywords

Innovation area

[Update results](#)

[SBRI: Innovation in cycling and walking](#)

Organisations can apply for a share of up to £470,000 for innovative proposals that encourage more journeys by bicycle or on foot.

Eligibility:

To lead a project you must:

- be an individual, business, group or organisation
- carry out your project in the UK
- involve at least one small or medium-sized enterprise (SME)
- work collaboratively

Opening soon

Opens: 18 September 2017

Closes: 15 November 2017

Innovation in rail 5

for innovations to minimise disruption to train services and to develop

2017
2017 12:00pm

[How to apply](#) [Supporting information](#)

The UK, on behalf of the Department for Transport, will invest up to £7.9 to support innovation and growth in national and international rail services. This is a joint initiative with the rail industry, under the direction of its Technical Leadership Group, the team responsible for creating a vision for the future of the railways.

The aim of this competition is to create innovations that address the main goals identified in the industry's ['Rail Technical Strategy Capability Delivery Plan' 2017](#). These are:

- 'minimal disruption to train services'
- 'intelligent trains'

Projects should last between 6 months and 2 years. If your proposed project falls outside of the project funding range or duration, please [contact Innovate UK](#) before you apply.

Lead Applicant: create an account

The lead applicant must create an account:

- **UK registered businesses**

Use Companies House lookup as it speeds up our checks by providing your company number. You are unable to enter this at a later date.

- **Research organisations, academics and universities**

Enter your information manually so you are not listed as a business on IFS and ensure you receive the correct funding.

GOV.UK Innovation Funding Service

BETA This is a new service – your [feedback](#) will help us to improve it.

← Back

Create your account

Your organisation

i Your organisation must be UK based to receive funding from Innovate UK

Business

Find your organisation on Companies House
Enter your organisation name or registration number

Companies House search results
Select your organisation from the options below

[NOMENSA LTD](#)
04214477 - Incorporated on 10 May 2001
13 Queen Square, Bristol, BS1 4NT

GOV.UK Innovation Funding Service

BETA This is a new service – your [feedback](#) will help us to improve it.

← Back

Please sign in or create an account

Used this service before?
Please sign into your Innovation Funding Service account.

New to this service?
If you haven't used the new Innovation Funding Service before you will need to create an account.

Innovation Funding Service

Sign in

Email address
Please enter your email address.

Password
Please enter your password.

▼ [Need help signing in or creating an account?](#)

My email and/or password isn't working

If you applied previously using the old service, you will need to create a new account.

[Forgotten your password?](#)

Project Details

Application Team - Collaborators can invite organisations who you are working with on the project. Contributors can invite colleagues from your own organisation to help you complete your application

Application Details - Title, timescales, research category, innovation area and previously submitted application (y/n)

Subsidy basis - Will the project, including any related activities, you want Innovate UK to fund, affect trade between Northern Ireland and the EU? All participants must complete this section.

Equality, Diversity and Inclusion - External survey to complete

Project Summary - Short summary and objectives of the project including what is innovative about it

Public Description - Description of your project which will be published if you are successful

Scope - How does your project align with the scope of this competition? - If your project is not in scope, it will be ineligible for funding

Application Questions

Detailed guidance available on IFS

Application form		Appendix?
Question 1	Applicant location (not scored)	No
Question 2	Need or challenge	No
Question 3	Approach and innovation	Yes - optional
Question 4	Team and resources	Yes - optional
Question 5	Market awareness	No
Question 6	Outcomes and route to market	No
Question 7	Wider impacts	No
Question 8	Project management	Yes - mandatory
Question 9	Risks	Yes - mandatory
Question 10	Added value	No
Question 11	Costs and value for money	No



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Application finances

To claim funding

Your business does not have to be UK registered with Companies House when you apply but it must be registered before you can receive funding.

You are unable to claim funding if:

- you are an overseas organisation, so your company number begins with FC

- your organisation is setup as a branch, so your company number begins with BR

- you are a collaboration with no formal structure of ownership or control, so your company number begins with ML

- you are a Crown Dependency:

 - if your company is based in Jersey, your company number begins with JE

 - if your company is based in Guernsey

 - if your company is based in the Isle of Man

British Overseas Territories

You are also unable to claim funding if your company is based in any of the British Overseas Territories (BOTs):

- Anguilla
- Bermuda
- British Antarctic Territory
- British Indian Ocean Territory
- British Virgin Islands
- Cayman Islands
- Falkland Islands
- Gibraltar
- Montserrat
- Pitcairn Islands
- Saint Helena, Ascension and Tristan da Cunha
- South Georgia and the South Sandwich Islands
- Turks and Caicos Islands

Labour

Eligible:

- staff working directly on project
- paid by PAYE
- NI, pension, non-discretionary costs

Ineligible:

- dividends
- bonuses
- non productive time
- overtime

Labour

£25,862 —

You can claim the labour costs of all employees you have working on your project.

▶ [Labour costs guidance](#)

If your application is awarded funding, you will need to account for all your labour costs as they occur. For example, you should keep timesheets and payroll records. These should show the actual hours worked by individuals and paid by the organisation.

Working days per year

Number of staff and roles within the project

Role within project	Gross employee cost	Rate (£/day)	Days to be spent by all staff at this grade	Total costs	
<input type="text" value="Project Manager"/>	<input type="text" value="50000"/>	£216	<input type="text" value="120"/>	£25,862	Remove
<input type="text"/>	<input type="text" value="0"/>	£0	<input type="text" value="0"/>	£0	Remove

[Add another role](#)

Total labour costs **£25,862**

Overheads

Innovate UK's definition

Additional costs and operational expenses incurred directly as a result of the project. These could include additional costs for administrative staff, general IT, rent and utilities

Indirect (administration) overheads

Please ensure they are additional and directly attributable to the delivery of the project

Direct overheads

- e.g. office utilities, IT infrastructure, laptop provision not covered by capital usage
- must be directly attributable to the project
- provide detailed breakdown together with methodology/basis of apportionment

Overhead costs

£ 44,483 ▲

You can incur overhead costs associated with those directly working on the project as well as indirect (administration) overheads. To be eligible both overhead categories need to be directly attributable to the project. The indirect overheads need to be additional as well as directly attributable. Note that there are certain cost categories/activities which are not eligible. To find out which costs are ineligible/eligible refer to our [project costs guidance](#).

► [Overheads costs guidance](#)

- No overhead costs
- 20% of labour costs
- Calculate overheads

Calculate overheads

If you feel your overheads are higher than 20% you may calculate a value using the Innovate UK model in the spreadsheet available below. The model shows you which types of indirect costs associated with your project you may claim. For support with this option, please contact our Customer Support Service on 01793 44 2700. Any value claimed under this model will be subject to a review. This will assess the appropriateness of your claim if your grant application is successful.

Download the overhead calculation spreadsheet

Download as an Excel document [overhead calculation spreadsheet.xlsx \(16KB\)](#)

Download as an Open Office document [overhead calculation spreadsheet.ods \(10KB\)](#)

Upload your completed spreadsheet

No file currently uploaded

+ Upload

Material costs

Please be clear on what the materials are, just putting consumables does not provide enough detail.

If insufficient information is provided, we will request more information should you be successful which may delay your project start date.

Materials £10,000 —

You can claim the costs of materials used on your project providing:

- they are not already purchased or included in the overheads
- they are purchased from third parties
- they won't have a residual/resale value at the end of your project. If they do you can claim the costs minus this value

[Please refer to our guide to project costs for further information.](#)

▶ [Materials costs guidance](#)

Please provide a breakdown of the materials you expect to use during the project

Item	Quantity	Cost per item (£)	Total	
<input type="text" value="Software"/>	<input type="text" value="1"/>	<input type="text" value="10000"/>	£10,000	Remove
<input type="text"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	£0	Remove

[Add another materials cost](#)

Total materials costs **£10,000**

Capital equipment usage

Eligible:

Used in the project or shared with day-to-day production.

Calculations will need to be in line with your accounting practices.

Even if the equipment is depreciated fully over the life of the project this must be added under capital equipment.

Capital usage	£750 —
You can claim the usage costs of capital assets you will buy for, or use on, your project.	
▶ Capital usage guidance	
Please provide a breakdown of the capital items you will buy and/or use for the project.	
<hr/>	
Item description	
<input type="text" value="Laptop"/>	
New or existing item	
<input checked="" type="radio"/> New <input type="radio"/> Existing	
Depreciation period (months)	
<input type="text" value="24"/>	
Net present value at the start of your project or the price you bought it for (£)	
<input type="text" value="2000"/>	
Residual value at end of project (£)	
<input type="text" value="500"/>	
Utilisation (%)	
<input type="text" value="50"/>	
Net cost	
£750	

Subcontractors

Justified and quantified.

If non-UK subcontractors are being used, you will need to provide strong justification on why an UK-based subcontractor is not being used.

If you are subcontracting to a parent or sister company, please ensure you list at cost and do not include profit.

You can subcontract work if you don't have the expertise in your project team. You can also subcontract if it is cheaper than developing your skills in-house.

▶ [Subcontracting costs guidance](#)

Please provide details of any work that you expect to subcontract for your project.

Subcontractor name

Robotics experts ltd

Country where the subcontractor will work

UK

Role of the subcontractor in the project and description of the work they'll do

facilitation and availability of robotics labs

Cost

36795

Travel and subsistence

Eligible:

Costs must be directly linked to the project.

Please breakdown your costs as follows:

- Travel
- Accommodation
- Subsistence

If you have an annual trip to visit the parent company this is not an eligible cost.

Travel and subsistence				£ 3,000 ▲		
Purpose of journey or description of subsistence cost				Number of times	Cost each (£)	Total (£)
Travel to robotics labs for testing	12	100	£ 1,200	Remove		
monthly project meetings	12	150	£ 1,800	Remove		
Add another travel cost						
Total travel & subsistence costs				£ 3,000		

Other costs

Costs that could not be added under previous headings

Do not double count

Patent filing costs for new IP – SMEs **up to £7,500**

Other costs	£ 0 ▲
Please provide details of any project costs which cannot be covered by the other cost categories.	
▶ Other costs guidance	
Please note that legal or project audit and accountancy fees are not eligible and should not be included as an 'other cost'. Patent filing costs of new IP relating to the project are limited to £7,500 for SME applicants only. Please provide estimates of other costs that do not fit within any other cost headings.	
Description and justification of the cost	Estimated cost (£)
<input type="text"/>	<input type="text" value="0"/>
Add another cost	

Funding

Funding rules

The level of funding awarded will depend upon the type of organisation and the type of research being undertaken in the project

Funding is calculated by project participant

IFS will advise the maximum grant % you can request based upon your answers to:

- type and size of organisation

- research category defined by the lead applicant in the Application Details section of the application

Organisation or type of activity	Technical feasibility studies and industrial research	Experimental development
Business (economic activity)	Micro or Small – 70% Medium – 60% Large – 50%	Micro or Small – 45% Medium – 35% Large – 25%
Research organisation (non-economic activity)	Universities – 100% (80% of Full Economic Costs) Other research organisations can claim 100% of their project costs	Other research organisations must: <ul style="list-style-type: none"> • be non-profit distributing and • disseminate the project results and • explain in the application form how this will be done
Public Sector Organisation or Charity (non-economic activity)	100% of eligible costs	Must: <ul style="list-style-type: none"> • be performing research activity and • disseminate project results and explain in the application form how this will be done • ensure that the eligible costs <u>do not include work / costs already funded</u> from other public sector bodies
Research organisations (undertaking economic activities) Organisations receive funding related to the size of their organisation	Micro or Small – 70% Medium – 60% Large – 50%	Micro or Small – 45% Medium – 35% Large – 25%



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Academic partners

Why Je-S?

We use the Research Councils' Joint Electronic Submission System (Je-S) to collect academic finances.

The Je-S system automates the collection of Full Economic Costs (FEC) based costs from academic partners and tells them exactly what numbers should be used in the application form for their costs.

Also to collect project finance details from non-HEIs (e.g. RTOs) that are claiming they are carrying out academic quality work and want to be funded on an FEC basis.

Using Je-S means that Innovate UK follows standard Research Council guidelines on funding universities and enables Research Councils to easily co-fund Innovate UK projects.

The Je-S system is completely separate from Innovate UK and we cannot advise on its usage.

Project costs – academic partners

Enter the TSB reference number here. 

Enter the TSB Contribution column figures from *your* J-eS output document into the project costs section of the application.

Upload the Je-S with council status form as a PDF at the bottom of the screen.

Any queries, contact Je-S Helpdesk (not Innovate UK)

jeshelp@je-s.ukri.org

01793 444164

TSB reference This number is found at the top of your Je-S form	
<input type="text" value="My REF"/>	
Financial resources Please enter the following costs from the summary of resources section on your Je-S form	
Directly incurred	TSB Contribution (please refer to the TSB contribution column)
Staff	<input type="text" value="11"/>
Travel & subsistence	<input type="text" value="22"/>
Other costs	<input type="text" value="33"/>
Subtotal	<input type="text" value="£ 66"/>
Directly allocated	
Investigators	<input type="text" value="44"/>
Estates Costs	<input type="text" value="55"/>
Other costs	<input type="text" value="66"/>
Subtotal	<input type="text" value="£ 165"/>
Indirect costs	<input type="text" value="77"/>
Exceptions	
Staff	<input type="text" value="88"/>



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Submitting your application

Project cost summary

Project cost breakdown								
	Total	Labour	Overhead costs	Materials	Capital usage	Subcontracting costs	Travel and subsistence	Other costs
Barry Shaw Experts Ltd Partner	£230,162	£84,052	£16,810	£90,550	£0	£35,000	£3,750	£0
EMPIRE LTD Lead organisation	£331,442	£222,414	£44,483	£11,750	£13,000	£36,795	£3,000	£0
University of Bath Partner	£19,762	£8,104	£5,731	£412	£0	£0	£504	£5,011
Total	£581,366	£314,570	£67,024	£102,712	£13,000	£71,795	£7,254	£5,011

This is the level of cost detail that the assessors will see during the assessment process.

Ensure the highlighted costs fits the criteria for this competition with a maximum total grant of up to £9million for the deployment strand and £200,00 for the Mass Transit, Feasibility Strand

Research organisation participation is no greater than **30%** of the total project costs.

All organisations can see a summary of project costs.

Checking your finances are complete

Finances Summary

The following organisations have not marked their finances as complete:

- EMPIRE LTD



[Return to the finances section to complete your finances](#)

This application cannot be submitted unless finances have been marked as complete by all partners.

		Total costs	% Grant	Funding sought	Other public sector funding	Contribution to project
Barry Shaw Experts Ltd Partner	✓	£230,162	70%	£161,113	£0	£69,049
EMPIRE LTD Lead organisation	⚠	£282,655	70%	£197,859	£0	£84,797
University of Bath Partner	✓	£239,114	0%	£0	£0	£239,114
Total		£751,931		£358,972	£0	£392,959

All organisations have marked their finances as complete.

Research organisation participation is no greater than 30% of the total project costs.

IFS DOES NOT VALIDATE TOTAL PROJECT COSTS

Editing a submitted application

[test](#)
Application number: 242
Competition: 599 Covid de minimis round 2

Awaiting assessment

Application submitted

[Reopen](#)

Reopen by clicking here

Terms and conditions
You must agree to these before you submit your application.

[Award terms and conditions](#) ✓ Complete

[Review and submit](#) [Print your application](#)

Remember to press
'Submit application'

Terms and conditions Open all

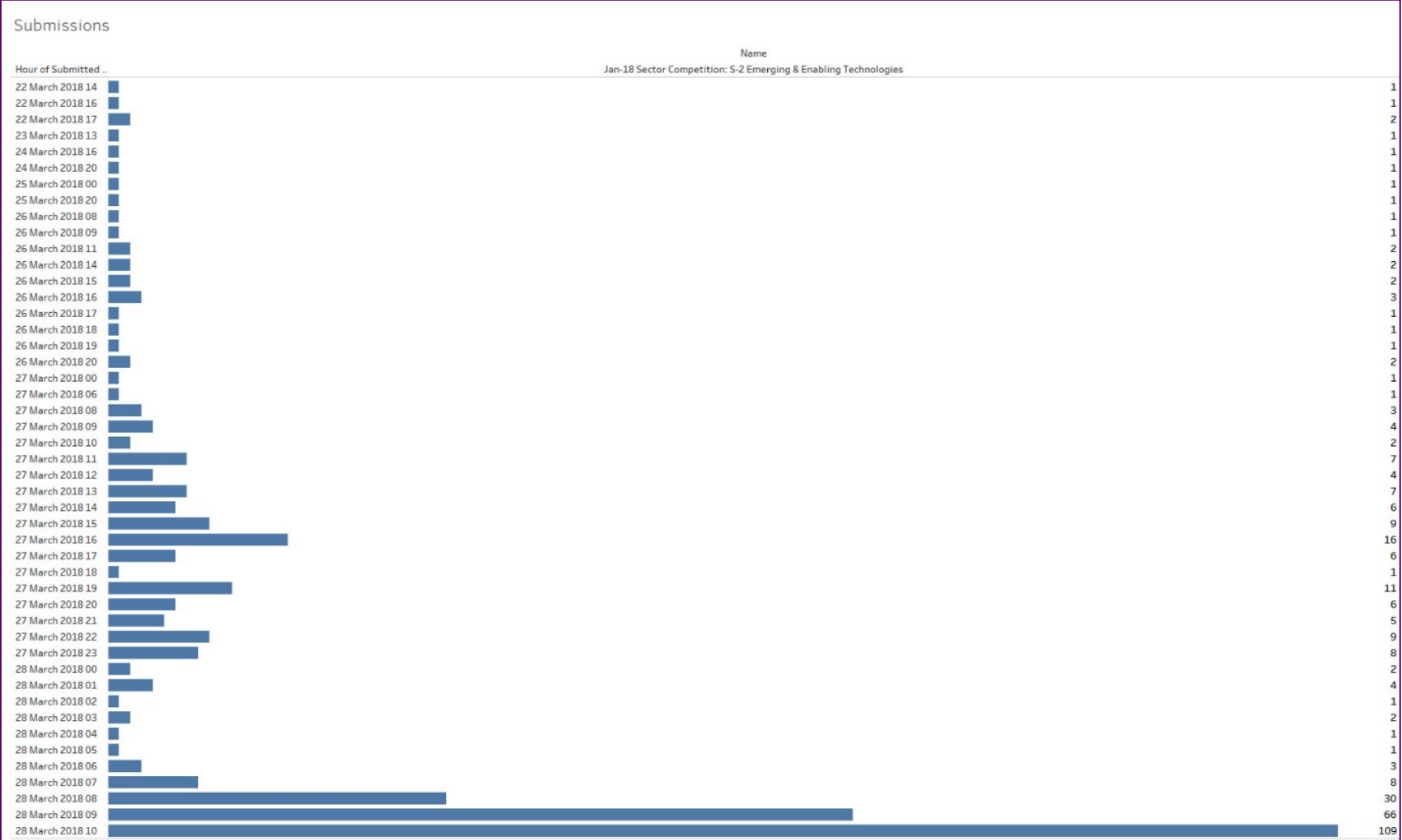
[Award terms and conditions](#) ✓ Complete +

[Submit application](#)

Need help with this service? [Contact us](#)

Submit your application early!

Customer Support can help resolve any issues you might have when submitting but only if they are contacted before the deadline. Once the deadline has passed, your application cannot be submitted.





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Assessment

How do our assessors assess?

www.imcpawork.ukf.org

0300 001 4157



International Migration Centre for Professionals



How are successful applications selected for funding?

www.improvement.edu.org

1-800-311-4457



Interviews – Deployment Strand

If you are invited to progress to interview:

- you can bring up to nine people to attend the interview
- you will have 30-minute to present a maximum of 30 PowerPoint slides, with no videos or embedded links
- there is a 45-minute Q&A session lead by members of the panel
- the response to feedback, presentations and presenters' names have to be provided ahead of the interview



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Project setup for successful applicants

Notification

If you are unsuccessful in this competition

You can use the feedback from the assessors to develop your idea and apply into another competition that allows previously submitted applications

If you are successful in this competition

you will be assigned a Delivery Executive who will guide you through the Project Set Up process

you will have 7 days to complete the project team, project details and bank details

you will then have **90** days to complete project set up – funding may be withdrawn if this is not completed within this timeframe

Please ensure all your contact details in the IFS portal are correct and up to date and that you regularly monitor it.

Project set up

All communication will be through IFS.

Lead applicant must provide collaboration agreements and exploitation plans if applicable.

Any partners with individual total project costs of **up to** £50,000 must provide evidence with a Statement of Expenditure (SoE).

Any partners with individual total project costs **above** £50,000 must provide evidence with an Independent Accountants Report (IAR).

Project delivery

All grants are paid quarterly in arrears and are only paid following quarterly reporting and necessary audits.

Claims can only be made for costs incurred and paid between the project start and end dates.

Monitoring of the project includes a visit from the appointed Monitoring Officer.



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Q&A

Contact

Customer Support Services

0300 321 4357 (Monday - Friday 9am - 5pm)

support@iuk.ukri.org

Innovate UK EDGE

<https://www.innovateukedge.ukri.org/>

Innovate UK KTN (Knowledge Transfer Network)

www.ktn-uk.co.uk

Innovate UK

<https://www.gov.uk/government/organisations/innovate-uk>



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Thank you





Application Q&A (10 minutes)

www.ktn-uk.org



InnovateUK
KTN

ZENZIC[®]

Bringing CAM in the UK together

Zenzic's support into CCAV's 2025
CAM programme
24th May 2022

ACCELERATING
THE SELF-DRIVING
REVOLUTION



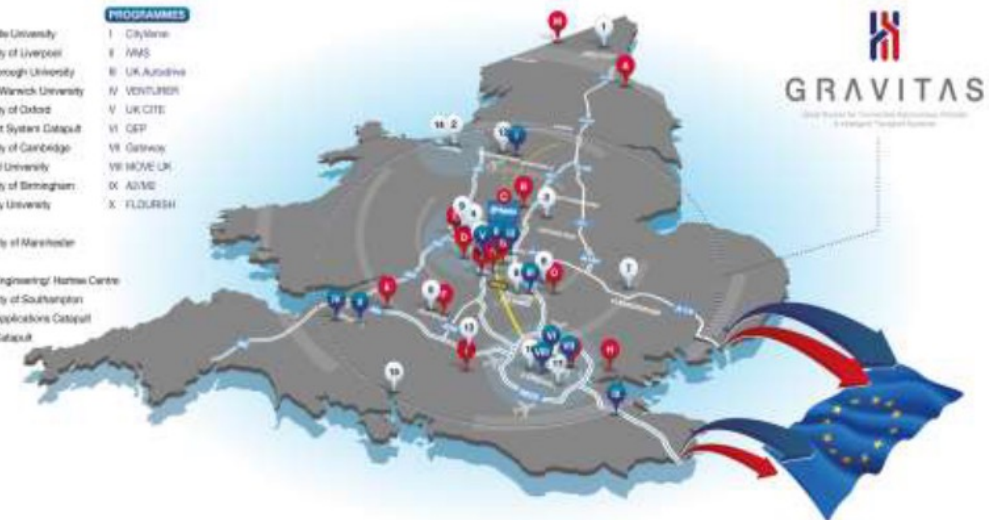
zenzic.io

Gravitas Call for Evidence

1. Identify what enabled environments and capabilities are required
2. Map the existing UK capabilities, projects and investments
3. Create a UK brand for the ecosystem
4. Establish a “thin” coordinating and promoting organization
5. Continuously update this strategy

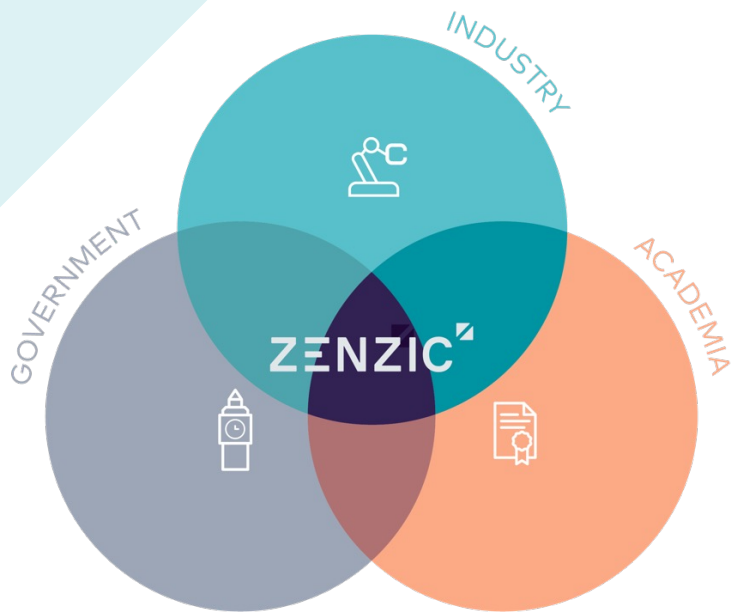


INDUSTRY	RTE	PROGRAMMES
A. Nissan	1. Newcastle University	I. CityView
B. Toyota	2. University of Liverpool	E. AMS
C. HERTS/MPS	3. Loughborough University	B. UK.Autodrive
D. Jaguar Land Rover	4. NAC @ Warwick University	IV. VENTURER
E. Honda	5. University of Oxford	V. UK CITE
F. Octavia	6. Transport Systems Catapult	VI. CEP
G. PDM	7. University of Cambridge	VII. Gateway
H. Ford	8. Cranfield University	VIII. MOVE UK
I. McLaren	9. University of Birmingham	IX. ADIME
J. Aston Martin	10. Coventry University	X. FLOURISH
K. LTI	11. KCL	
L. Daimler Eagle	12. University of Manchester	
M. Advanced Driveline	13. TR	
N. Ricardo	14. Virtual Engineering Hub Centre	
O. MIRA	15. University of Southampton	
	16. Space Applications Catapult	
	17. Digital Catapult	



Enabling the UK to be a world leader in the development and deployment of CAM by 2030.

Bring together industry, government, and academia across all relevant sectors to develop and deploy CAM in the UK.



ZENZIC

Insights

Hold the strategic vision and roadmap for the UK CAM ecosystem, providing informed guidance to government, industry and academia.

Innovation

Channel investment into targeted CR&D into late-stage tech and CAM Scale-Up programmes; accelerating new technology the CAM market opportunity.

Collaboration

Provide the trusted brand and front door to a collaborative CAM supply chain, promoting and driving inwards investment.

Effective Innovation relies on both Insights and Collaboration.

Zenzic's core programme



**UK CAM
Roadmap**



**Strategic
Research**



**CAM
Scale-Up**



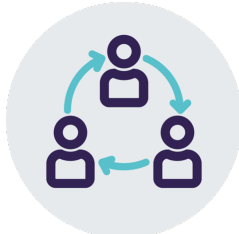
**Interoperability
Projects**



**Deployment and
supply chain
support**



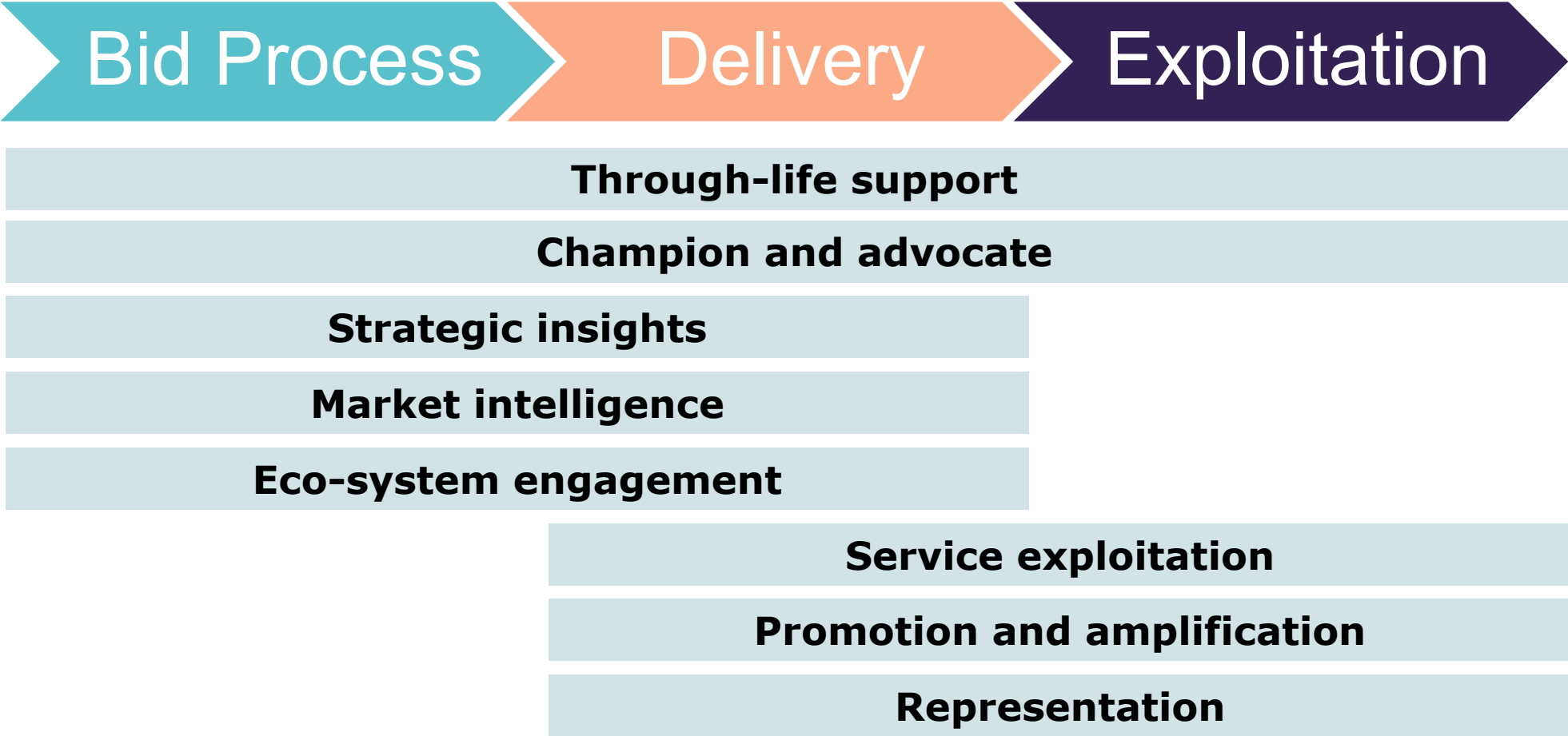
**CAM Testbed
UK support**



**CAM UK
Community
Support**

Deployment project support

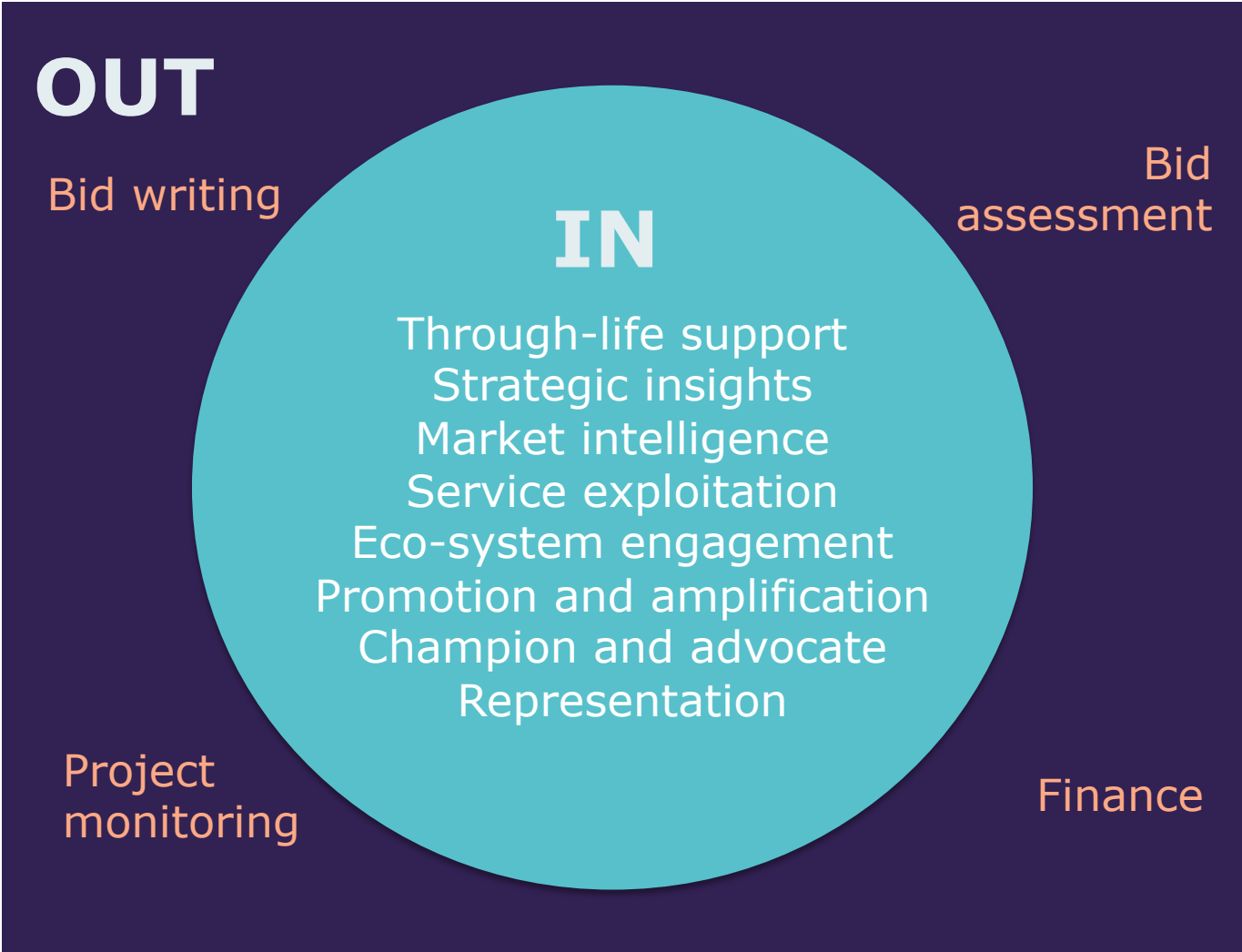
Helping projects to be successful through whole-life support, focusing on partnership building and engagement



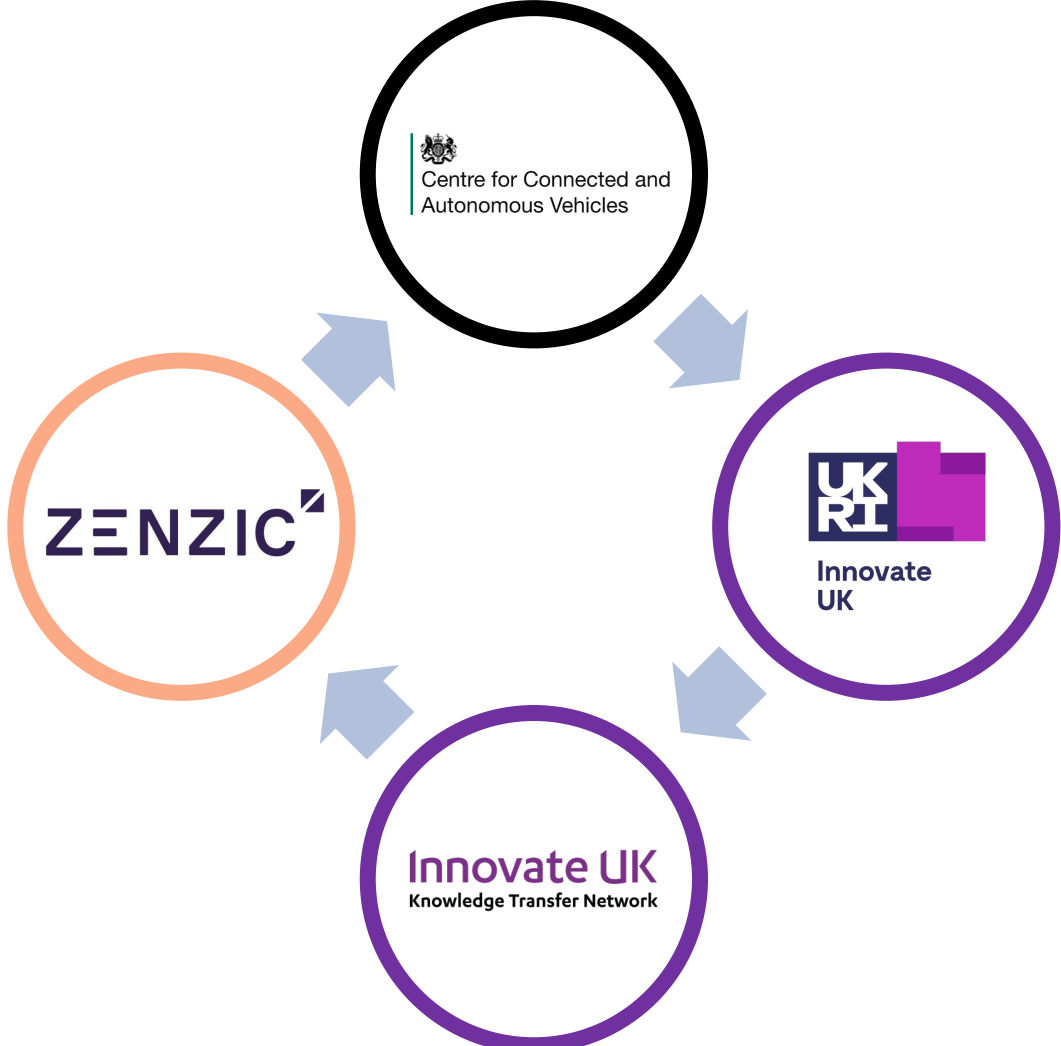
ZENZIC

Funded through a levy on deployment competitions, based on 3% equivalent of the project grant award amount

Deployment project support



ZENZIC²





Innovate
UK
EDGE

Innovate UK EDGE

Phil Jones



UK Research and Innovation

We work with the government to invest over £7 billion a year in research and innovation by partnering with academia and industry to make the impossible, possible. Through the UK's nine leading academic and industrial funding councils, we create **knowledge with impact**.



**UK Research
and Innovation**



Innovate UK EDGE – Who are we?

- UK innovation agency's **resource** for innovative SMEs from any sector who are ambitious to grow further and scale
- Team of Innovation & Growth Specialists **throughout Wales** with various expertise available to support SMEs
- Specialisms across the innovation and growth development journey:

Commercialisation	Manufacturing (Lean)	Life Sciences
Marketing	Regulatory Expertise	New Technology development
Grant funding and investment	Quality management	Business planning and pitch decks
Business management & finances	Deep network of contacts	Growth and Scale

Innovate UK EDGE – What do we offer?

- Bespoke support that helps to accelerate growth, scale, and internationalise innovative businesses
- Through the new **High Growth project** we support businesses for a **12 month period**
- Support includes:
 - Delivery of a number of specific **bespoke work packages** (financial, marketing etc)
 - Sign posting and networking
 - Monthly contact to review and plan ('critical friend')
 - Assistance with innovation management
 - Assistance with internationalisation
 - Guidance towards investment readiness and scale-up

Innovate UK EDGE - Examples

- **Hexigone** – Supported scaling from laboratory to industrial scale production, also Scale Up Client
- **Fuelactive** – internationalisation and operational support, market research around international mining sector (key players, influencers, market trends), supply chain review and risk management framework. Now looking at operational management systems
- **Myana Naturals** – lots of support, strategic marketing, financial forecasting, Pitchfest and supply chain development.
- **Intuitix** – advisory work around commercialisation strategy and market insight support

Innovate UK EDGE – Examples

- Specialist in novel water tanks just won an IUK Smart grant of £500k
- Company in the energy sector working with National Distributors to improve energy information on the grid and won £450k in one project, expanding and looking for next round of investment
- Development of a shipping container battery retrofit/fix unit. Won ~£500k



Innovate UK EDGE – Other programmes

Innovate UK EDGE Programmes	
Global Business Innovation Programme (GBIPs)	<u>India: Urban systems</u> <u>Germany or Canada: Artificial Intelligence</u> <u>Portugal: Eureka</u> <u>South Korea: Smart cities</u>
Pitchfest Wales	Changing to an Investment Readiness support – more comprehensive
Women in Innovation	Support Innovate UKs funding competition that support women entrepreneurs
Young Innovators	Supports young people over 3 years with individuals benefiting from a £5,000 grant, one on one coaching and an allowance to cover living costs
Scale up	Helps the highest potential businesses to scaling by addressing key scaleup challenges
Catapults	Access to Catapults and Research & Technology Organisations
Strategic relationships	British Standards Online, IPO, Design for Growth,

Innovate UK EDGE – What do clients say?

“ We had practical feedback which helped me have confidence in the financial models

What I also found extremely useful was the advice around what type of financing”

“Innovate UK EDGE has been instrumental in bringing diverse parts of a project together into one consolidated roadmap”

“Innovate UK EDGE been crucial to us as we find our feet ...always there to offer advice and guidancefeedback on grants and investment pitches has been invaluable”

“We are looking forward to taking our business to the next stage and continue to work closely with Innovate UK Edge. Running a business sometimes can be hard and having the possibility to share a question, problem or difficulties with an expert can make the all difference.”

For more information and contact details

Innovate UK EDGE website: <https://www.innovateukedge.ukri.org>

General email: fill in the form on the website

Tel: 0300 123 3066

IUK EDGE Wales social media

- LinkedIn – Innovate UK EDGE Wales
- Twitter – @IUK_EDGE_Wales

Or contact me directly

Phil Jones

M: 07791135591

E: phil.jones@innovateukedge.ukri.org





Innovate
UK
EDGE

Thank you



@InnovateUK



Innovate UK



Innovate UK

www.innovateukedge.ukri.org

Canada-UK Net Zero Value Chains: Transportation

Up to £4 million in innovation CR&D projects in automotive, rail and maritime from Innovate UK & National Research Council of Canada Industrial Research Assistance Program (NRC IRAP) .

Your project can address on-vehicle, including locomotives, or on-vessel technologies, processes, or technology-based services, around 4 Specific Themes:

1. Low and zero emission propulsion
2. Advanced sustainable materials and manufacturing
3. Highly disruptive technologies
4. Assistive technologies and control systems

- grant funding ≤ £300,000 to share among UK organisations
- grant funding ≤ CA\$500,000 to each Canadian SME
- start by 1 January 2023, end by 31 December 2024
- last between 12 and 24 months

Timeline	Dates
Competition opens	4 April 2022
Briefing event	7 April 2022
Matchmaking event	25 April 2022
Canadian Eol registration deadline	23 May 2022
Canadian Eol submission deadline	27 May 2022
IFS submission deadline	29 June 2022
Applicants informed	16 Sept 2022



National Research
Council Canada

Conseil national de
recherches Canada



PITCHES

www.ktn-uk.org



InnovateUK
KTN

ABB UK Ltd.



Motion eMobility products and solutions

ABB can provide with a full range of electric Motors, Drives, batteries and auxiliary equipment.

We aim to support our customers and partners in the electrification journey and enable CO2 emissions significant reductions with high efficiency products.



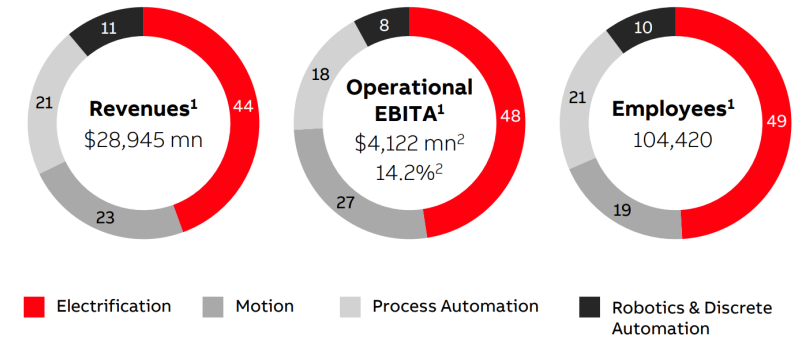
Experience

ABB is a well-known multinational company with more than 130 years in the industrial market.

From road to rail, from bus to boat, via the world's most exciting electric motor racing series, ABB technology is delivering high-performance transport solutions with its suite of advanced technologies. Whether with advanced digital monitoring systems, high-efficiency motors and drives, or multiple fast-charging solutions, ABB is driving progress towards a more sustainable future of transportation. You can find Further information at:

<https://new.abb.com/motors-generators/iec-low-voltage-motors/heavy-electric-vehicles>

Organisational Capabilities



<https://global.abb/group/en/investors/investor-and-shareholder-resources>

Administrative Information

Your e-mobility partner for products, packages and system integration

Luciano Santos

Area Sales Manager - Europe
Motion E-mobility Motors and Drives
luciano.santos@gb.abb.com
Daresbury Park
WA4 4BT Warrington, Cheshire
United Kingdom

Introduction

1

No.1 provider of AI Data services in Korea with deep learning based technology & proprietary toolsets

60+

AI Tech Company with over 60% of the core team focused on R&D

100+

100+ Global clients and partners across multiple AI domains

- ▶ Series A funded start-up/SME with Global support structure
- ▶ DataOps focussed company **open to partnership** with lead MLOps organisations
- ▶ EU operation based in MIRA Technology Park

Ground Truth as a Service

High-quality, high volume Ground Truth for ADAS & Autonomous Driving

- ▶ Focused on the DataOps pipeline AI toolsets for annotation, quality & project management
- ▶ Human in the Loop (HitL) approach to guarantee quality levels
- ▶ Data collection & curation service



Annotation Services



Sensor Fusion Cuboid



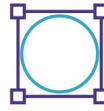
Video Annotation



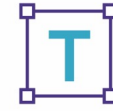
Face Landmark



Sensor Fusion Segmentation



Semantic Segmentation



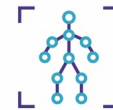
Natural Language Processing



2D Box



3D Cuboid



Landmark



Polygon



Line & Spline



Voice Recognition

Multi-Domain Experience





Making Sense of AI Data

David Marks / Head of Sales (Europe)

e: david@aimmo.co.kr

m: +44 7555 542 846

www.aimmo.ai



Transformation

Proposed Approach/Project idea

What is your understanding of the part of the problem you can solve?

The development and introduction of CAV for large commercial vehicles will create a labour market crisis, with 270,000 truck drivers and 100,000 bus drivers across the UK faced with the daunting prospect of redundancy, redeployment or re-training with a different set of skills.

What part of the Scope do you want to address?

We want to help transport operators to prepare their employees to become 'road pilots' and use their existing skills and experience in collaboration with automated systems.

Organisational Capabilities

What skills, capabilities, facilities does your organisation have that will be vital for this project?

We have over 20 years' experience developing professional drivers with new skills and abilities, and we understand the steps needed between manual driving and level 5 autonomous operation.

Is your organisation academic, SME, big business, etc (and explain the benefits to this project of whichever you are)

We are an SME, meaning we're agile and responsive to the rapidly changing landscape of CAV.

Experience

What previous, relevant, work or track record can you bring to the team?

We've recently completed a European project called 'Steer to Career' which focused on the topic of driver career development. Through this project, we understand the possibilities for re-training and redeployment with both truck and bus drivers.

project-steertocareer.eu

Administrative Information

Do you intend to lead a proposal or be a partner?

Be a partner.

Your contact details including:

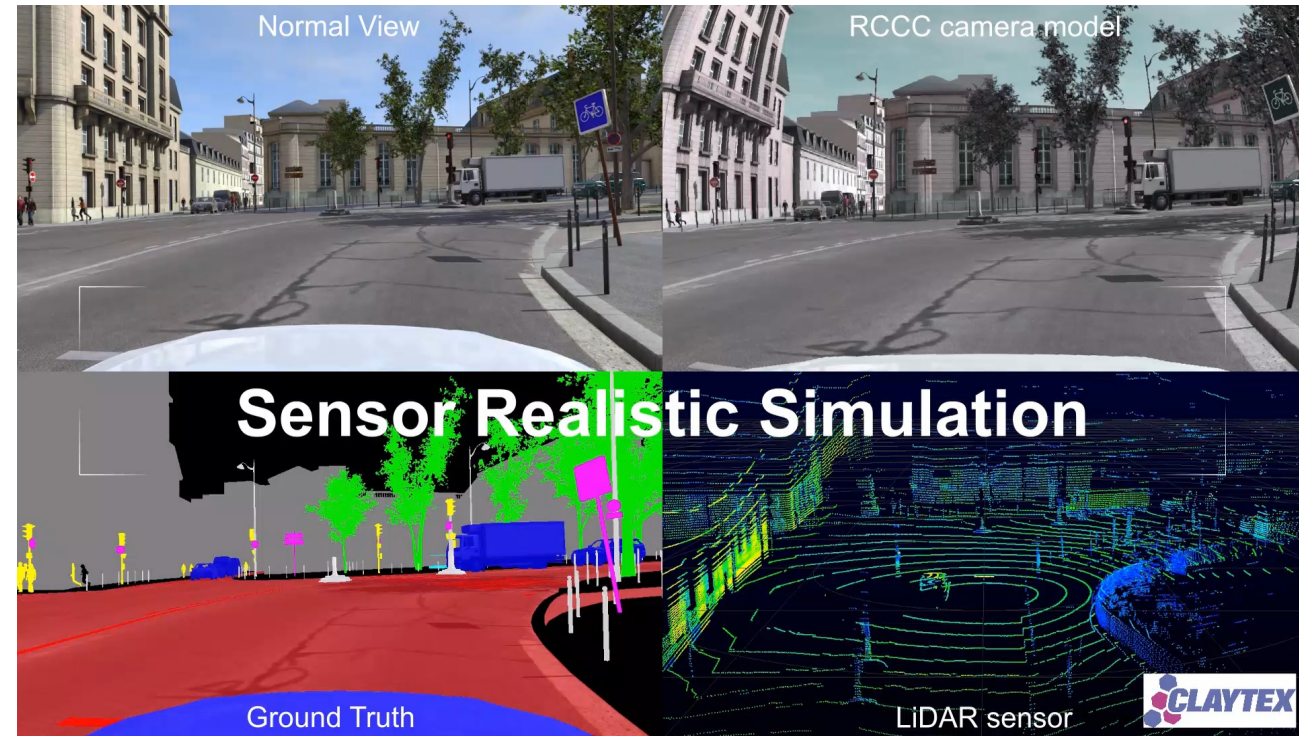
James Tillyer
james@transformation.co.uk
07957 312586

What should companies do now to make use of their drivers tomorrow?

- Address basic skills for handling current tech to help the transition to more complex devices & systems
- Provide training in areas not connected to current tasks
- Develop professional & social skills for a customer service role
- Look to redeploy instead of hiring fresh
- Involve drivers when deciding which vehicles to hire or buy
- Map out future job roles for horizontal progression
- Maintain regular communication
- Stay aware of industry developments to identify newly emerging jobs linked to vehicle autonomy
- Be proactive, not reactive!

AV Modelling and Simulation

- AV Simulation Solution Developer
 - Multi-spectral sensor realistic simulation
 - Physics based models for vehicle dynamics and sensors
 - Accurate models of real-world locations
 - Support for open standards and with open API
 - OpenDRIVE, OpenSCENARIO, Modelica, FMI
 - Real-time and fully synchronous simulation modes
- Current and Past Innovate UK Projects
 - **MORSE** – Real-time modelling and simulation
 - **Streetwise** – Sensor modelling
 - **D-Risk** – Simulation of edge cases in sensor realistic environment
 - **SEER** – Simulation of UAV and eVTOL aircraft
 - Innovate UK Edge Scaleup Programme

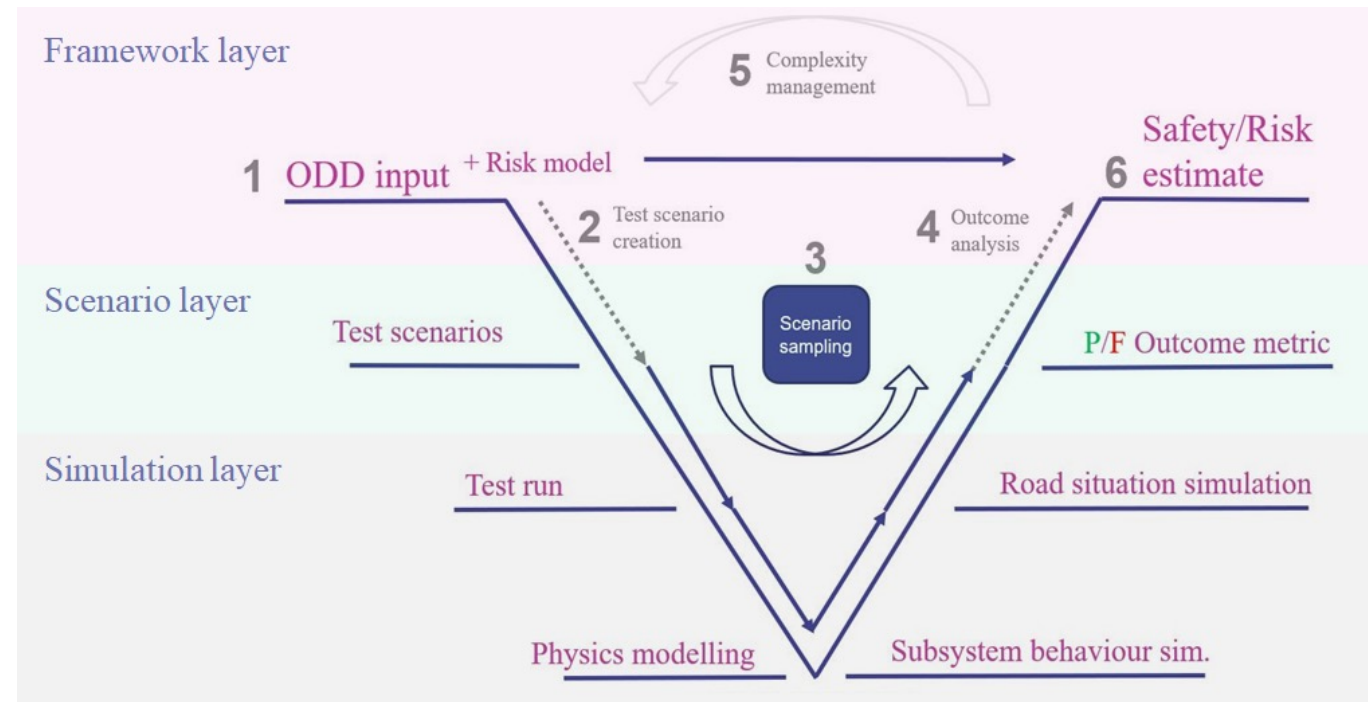


- Part of TECHNIA, an AddNode Group company since January 2022
 - 2500 employees, 19 countries, 4 continents
- Contact Details:
 - Mike Dempsey, Managing Director
 - 01926 885900, mike.dempsey@claytex.com

CAV Deployment - ASDE Safety Case support

- Research questions to be answered
 - What is safety?
 - What is the public perception of safety?
 - How do we measure safety?
- ASDE Safety Case Support
 - How do we use our simulation capability to support the safety case
 - Virtual Verification & Validation capability
 - Model development, validation and certification
 - Probabilistic Risk Assessment
 - Adapting established methodologies from nuclear industry

Virtual Verification & Validation



Proposed Approach/Project idea

We are open to discussing ideas for projects once the scope of the competition is published.

We are particularly interested in the integration of CAV shuttles with the public transport network to address gaps in service coverage and provide first / last mile access to bus and rail services.

This use case is supported by academic research of public attitudes for autonomous vehicle technology, which points to a preference for use of the technology to improve public transport rather than for private vehicles.

([Driverless Futures, A Survey of UK Public attitudes](#))



Organisational Capabilities

Dedicated to sustainable development, Arup is a global collective of 16,000 designers, planners, engineers, architects, consultants and technical specialists, working across every aspect of today's built environment.

Through this global network we can bring an array of skills, experience and deep domain knowledge to support the development and delivery of projects.

We are also trusted advisors to a range of public transport authorities and operators across the UK.

Experience

Design of public transport systems across the UK and internationally. This includes the design of Digital Demand Responsive Transport (DDRT) services including work with Transport for Wales to develop their Fflecsi service (operating here in Ebbw Vale).

Arup led UK Autodrive, the largest trial of CAVs over a 3-year period in Milton Keynes. As well as trialling the technology, we explored how these frameworks will need to change and the governance demands this will place on data security.

Research into [Tomorrow's Public Transport System](#) which makes the case for an integrated public transport system incorporating CAVs and new forms of mobility to make public transport more attractive to users and secure a transition to net-zero transport.

Administrative Information

We are open to partnering or potentially leading a proposal. Please get in touch to discuss further.

Contact details:

Daniel McCool

Senior Transport Planner

029 20 266603

Daniel.mccool@arup.com



PROBLEM

1 Trillion connected devices by 2025 - attack surfaces increase exponentially
Quantum Computers will invalidate most of commonly used cryptography methods
End-to-end security cannot be guaranteed
CAM/CAL/CAV systems can not be deployed commercially without strongest cyber-resilience

SOLUTION

ANGOKA secures devices, not networks
Device Private Networks – a unique technology creates trust over un-trusted networks
High-grade, quantum-secure authentication, encryption and communication

PROJECT

ANGOKA offers to join any project where success depends on M2M communications; we offer the competitive edge to take you even closer to deployment at scale

EXPERIENCE

CAV, CAL, CAM, C-ITS, Automotive, Drones, Teleoperations, HUMS

Innovation projects funded by CCAV, Future of Flight, Horizon Europe including S-CAN and ENCODE (CCAV), Xcelerate (FoF), Secure Connected Transport (Plexal)

Accelerators include

National Cyber Security Centre Cyber Accelerator,
Zenzic CAM Scale-up, APC TDAP, Software République

Commercial activity includes contracts with Swarco, Flanders Government, BT

ORGANISATIONAL CAPABILITIES

5G cyber testbed built to carry out physical simulation of systems to be protected

Deep-rooted experience in **CAM** and in **cyber-security**

Software and hardware development capabilities

ANGOKA offers the **agility** and **pro-activity** of a 5-year old SME with UK offices in Belfast and London

ADMINISTRATIVE INFORMATION

Role: options depending on the project are:

- very (pro)active partner
- proactive supplier

Contact details:

- Daniel Ruiz
- D.ruiz@angoka.io
- +44 7799 896606

ANGOKA

ANGOKA TECHNOLOGY SAFEGUARDS DRIVERLESS VEHICLES AT LIVE LOGISTICS SHOWCASE IN LONDON AND OXFORD

March 29, 2022



ZENZIC² What we do About CAM Projects CAM Testbed UK CAM Scale-Up Contact United Kingdom

Case study: ANGOKA



CAM Scale-Up programme

CREATING A SEAMLESS CAM TESTBED UK

HM Government

National Cyber Strategy 2022

Pioneering a cyber future with the whole of the UK



Angoka Team demonstrating their solution

The company mission is to ensure the safety and resilience of Smart Cities and mobility, which are becoming more complex and reliant on networks of connected devices and machine-to-machine communication. Our solution allows the creation of trusted zones operating a decentralised, quantum-proof security, dynamically updated to always provide a moving target for attackers. It means device owners can take full control of their security.

Daniel Ruiz | d.ruiz@angoka.io | 07799 896606

We want to be your partner for EV/autonomous vehicle wireless charging infrastructure.

All autonomous vehicles will need to be charged *BUT* plugging in doesn't work without a driver.

We are developing a centralised wireless EV charging system using our proprietary CTS cable. We can efficiently distribute high frequency AC power, over long distance, at 85kHz, with minimal voltage drop-off. Traditional cables experience rapid voltage drop off doing this; CTS doesn't.

We will be able to provide multiple chargepads from a single charging station.

Advantages include:

- Lower opex and capex than other wireless systems
- No street furniture at point of charge
- Fewer buried components
- Opportunity to capture and re-use lost heat
- V2G and V2X opportunities
- Charging by 'grazing' reduces batteries required and lowers vehicle costs

Experience

We have been established for 8 years developing CTS (Capacitive Transfer System). The cable design is focused on the efficient delivering of electricity with lower losses. We have won both InnovateUK and BEIS funding to develop our solution are in discussions with testing houses to validate it.

Extensive testing at different frequency levels has led us to focus on applying CTS' qualities to the vast opportunities of wireless EV charging.

Organisational Capabilities

We have multiple experts in Project management, power systems, engineering capability, lab facilities and modelling software to create full scale prototypes and testing loads.

We have been the leader and PM on various university and industrial project groups. Our extensive network of partners and sub-contractors mean we can deliver the frequency conversion, power distribution, ground and vehicle pads and the on-board systems where required.

Our business is an SME with 14 employees and we have patented technology that is capable of rapidly growing our company, our solutions and specific expertise within the UK.

Administrative Information

We would likely be a partner or sub-contractor.

Martin Beaumont
martin.beaumont@enertechnos.com
+44 7715 323956

Based in Kingston upon Thames – SW London.

Proposed Approach/Project idea

At IPG Automotive we have a deep understanding of the global automotive industry. We develop innovative software and hardware products that are utilised in all stages of **vehicle development**. Our simulation solutions therefore contribute significantly to the digitisation, development efficiency and robustness, and physical prototype reduction.

We aim to continuously improve our digital prototypes to shape the mobility of the future with safe, sustainable and autonomous vehicles.

Our tools include vehicle models, realtime control systems integration in SiL and HiL, data management and proven sensor models.

Organisational Capabilities

With over 350 people in offices across 8 countries, and a customer base comprising many of the major OEMs and Tier 1 suppliers, we are actively engaged in innovation. We have high quality simulation (and relate consultancy) skills, as well as a variety of hardware in the look facilities such as a steering-in-the-loop rig.

We're enough to be well connected but small enough to be extremely nimble and collaborative.

Experience

With our reliable simulation solutions, decades of experience and well-founded process expertise, we enable our customers to reach their goals and implement agile development processes. Founded in 1984, we're a world leader in virtual test driving technology, partnered with multiple exciting technology companies in the AV and ADAS world.

Specific experience references:

- APC's [ViVID](#) with Ford, HORIBA MIRA and Loughborough University.
- <https://ipg-automotive.com/en/know-how/success-stories/>

Administrative Information

Interested in partner positions.

Elliot Hemes, Managing Director

+447775481503

elliott.hemes@ipg-automotive.com

Proposed Approach/Project idea

The Development / Application of “**KAN Simulation Manager**” as an integrated, end-to-end, closed loop simulation solution for the Development, Validation and Verification (V&V), Certification and/or Insurance of ADAS or Electric, Connected and Automated Vehicles.

What part of the Scope do you want to address?

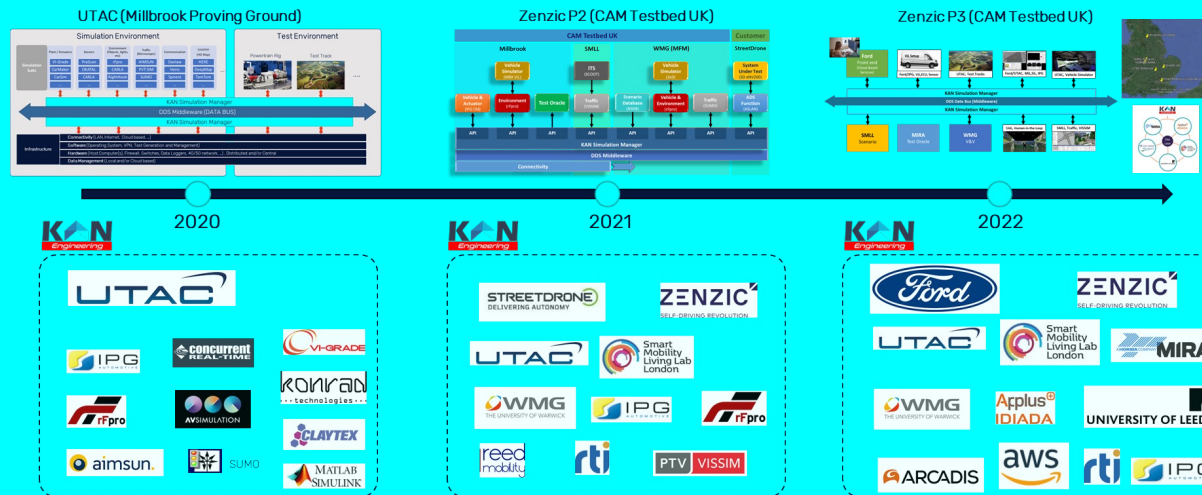
- Commercialising CAM (Only as a sub-contractor)
- CAM Supply Chain (Lead or partner)
 - Simulation
 - V&V, ...

We are a leading solution provider in the Design, Development and Implementation of:

- Real-time, Integrated and Distributed Simulation environments,
- X-in-the-Loop (XiL) Rigs

for **Smart & Connected Mobility applications** including (but not limited to):

- Hybrid and Electric Vehicles (HEV),
- Advanced Driver Assistance Systems (ADAS),
- Connected and Autonomous Vehicles (CAV),
- Multimodal, Smart Transportation Systems, ...



KAN Engineering was the Technical Lead and the System Integrator of:
Zenic Interoperable Simulation Projects, Phase 2 & 3

We are happy to lead a proposal or be a partner or support your project as a subcontractor.

Contact details:

Dr Amir Soltani

a.soltani@kanengineering.co.uk

07585065914

'Lets make Autonomous vehicle's a commercial reality'



Proposed Offering

For AVs to become a commercial reality, AV developers are starting to realize that they must learn to handle huge numbers of edge cases -- the countless high-risk scenarios which are individually unlikely, but together make up the bulk of the risk. dRISK is solving this problem with a full-stack technology suite for training and testing AVs on the most diverse ever collection of edge cases. This product, the first true driver's test for self-driving cars, is funded by a major grant from CCAV and will be delivered in September this year.

dRISK offer a chance to test, train and validate an AV stack against our Knowledge graph of Edge Cases gathered from real life events collected from all over the world. Using simulation, we can give confidence that the AV stack is safe in all ODD regions.

Experience

dRISK are currently delivering the World's first true driving test for AVs to UK government as part of the CAVSIM grant funded project.

We are already serving many of the world's leading AV companies, insurance companies, fleet companies and forward thinking local authorities.

The company holds 3 patents with 2 pending on Edge case testing.

We have assisted a CAV Four project with a safety case and testing in simulation.

Organisational Capabilities

dRISK will pressure test an AV stack (camera, lidar, radar etc) against all the risky scenarios that can happen on the roads or within a closed ODD and offer training to ensure the stack can handle all eventualities.

dRISK are a SME based in London and Los Angeles. We are a team of 9 and pride ourselves on being agile and agnostic to tools. Is your organisation academic, SME, big business, etc (and explain the benefits to this project of whichever you are)

Administrative Information

dRISK would be happy to be a consortium partner offering confidence in the project safety case proven in simulation. We can advise on specific scenarios to be trialled on the test track. We are also happy to be subcontracted in by a partner.

Rav Babbra

Rav@dRISK.ai

+44 (0) 7766513343

Connected Autonomous Vehicles Lab



Safe and Trustworthy AI for Autonomous Driving

- ❑ The **vision** of CAV-Lab is to enable HAVs to co-exist with all road users in a way that society considers them **trustworthy** and **safe**.
- ❑ CAV-Lab aims to develop a novel **highly automated driving platform** for HAVs of CCAM using **explainable** and **human-centric AI** solutions to provide them greater situational awareness, which is holistic and inclusive of human values, to ensure that the wider anticipated benefits of CCAM are realised.
- ❑ To achieve its vision and aims, CAV-Lab seeks to analyse the human and societal values that underpin responsible human driving and to analyse the capabilities, limitations and potential conflicts of AI based systems for CCAM.
- ❑ CAV-Lab defines several objectives touching the targeted AI technology based CCAM solutions that will evolve from reactive and/or adaptive system support into system state awareness, environmental perception and decision-making with equal importance together focusing on standardisation activities.

Experience

- ❑ CAV-Lab is a leading research lab in the UK that provides unique AI solutions for Connected, Cooperative and Automated Mobility (CCAM), especially Highly Automated Vehicles (HAVs).
- ❑ CAV-Lab was established in 2016 and since then has received several research funding (~£3.5M) from the UK and European governments (e.g. EPSRC, Innovate UK, H2020, KTP) in collaboration with major companies as well as universities active in CCAM industry.
- ❑ CAV-Lab have already developed 4 patented algorithms that enable safety and performance management of automated vehicles in previous projects

Organisational Capabilities

CAV-Lab provides knowledge and expertise in the areas of:

- ❑ Safe and Trustworthy AI and Machine Learning
- ❑ Explainable AI and Learning Control Systems for Decision-making
- ❑ End-to-end and Vision-based Learning systems for ADAS
- ❑ Verification and Validation of AI- and ML-based HAV Functionalities

CAV-Lab provides a unique laboratory to design and develop AI-enabled HAV functionalities used for highly automated transportation systems and CCAM.

Administrative Information

CAV-Lab is interested in leading or contributing to proposals related to safe and trustworthy CCAM or verification and validation of HAV functionalities

Contact details:

Dr Saber Fallah,

s.fallah@surrey.ac.uk

01483686528 (office), 07460536501 (mobile)



D35

VAN 06

VATEC

D33

D32

Crowford
ASSA ABLOY

TERBERG

SG
CAL

VATEC

4.75m

SG
CAL

MOTIS MOTIS MOTIS

STREETDRONE



mark@streetdrone.com

Sunderland – BAI Ltd Joint Venture



Proposed Approach/Project idea

Project Idea: Pilot multiple last mile autonomous passenger vehicles in a urban environment to accelerate acceptance, commercialisation, sustainability, expandability, and exportability across the city and beyond.

Problem – How do we reduce pressure on existing transport systems, congestion, develop new greener mobility models, drive modal shift, improve air quality and well being, improve public perception of AV's?

Solution: identify new routes from the Sunderland Interchange Hub to Sunderland Royal Hospital and 'Riverside' one of the UK's largest Regeneration projects that will prove safety, security and affordability of transition to zero carbon autonomous public transport

Organisational Capabilities

Have:

Telecoms, Key City institutions inc. planning, highways
Academic research evaluation cyber assurance
Programme managers
5G private Network covering maj. Of route

Need:

Autonomous Vehicle Software provider
Passenger carrying autonomous vehicles
(Public Roads)

Experience – Our core team comprises

BAI Communications: Telecoms provider to city scale metros (NY / HK / Toronto / London)

Sunderland: UK's leading Smart City

Newcastle University: Next generation automotive trials and public engagement

Angoka / Coventry: Leading automotive cyber security experts

PG: Programme and partner managers – project assurance

North East Automotive Alliance: an industry-led automotive cluster, supporting the economic sustainable growth and competitiveness of the automotive sector in the North East of England.

Administrative Information

Contacts:

Richard Barrington

Richard.barrington@performgreen.co.uk

07590034674

Liz St Louis –

liz.stlouis@sunderland.gov.uk

07795 224396

Solihull MBC



Proposed Approach/Project idea

SMBC wish to develop shared passenger movement, solving real world mobility need, linking people with places.

SMBC have a unique mobility use case for applying automated vehicle technology.

With the arrival of an HS2 interchange in the Borough in 2030, SMBC have a need to explore game-changing mobility solutions. HS2 will be located in the same nine square miles as the NEC, Birmingham Airport, Birmingham Business Park, Birmingham International rail station and a large Jaguar Land Rover plant, just off Jnc 6 of the M42 – collectively known as The Hub. Efficiently moving people in, out and around this area is critical.

Specifically, SMBC wish to install Phase 1 & 2 of their CAM ambition for The Hub (map on Slide 2). This is a low-speed, fixed path route within a relatively controlled ODD.

Experience

SMBC became the first local authority in the UK to purchase their own automated shuttle in June 2021 and have since run extended deployments at the NEC and Birmingham Airport. Working closely with Transport for West Midlands (TfWM), the previous 12 months have seen the Council's large stakeholders, politicians, residents and internal teams engaged in the vision, understanding every element of what is involved in automated transport.

This route is one of 12 use cases developed for the application of automated people movement within the Borough.

Organisational Capabilities

SMBC have 18 months of experience in the planning and delivery of automated people movement; Strong relationships with all organisations within The Hub, and the regional transport body TfWM; A vision for automated transport within their Borough, starting within The Hub and breaking out into residential areas.

SMBC is the local authority and therefore the highway authority, with the ability to control activity and infrastructure on the Borough's roads.

Administrative Information

We are open to lead or partner within a bid, dependent upon the nature of the consortium.

Contact details:

Colin Maltby; colin.maltby@solihull.gov.uk;
07970 355272



Opportunity Connectivity Lifestyle

investinukcentral.com

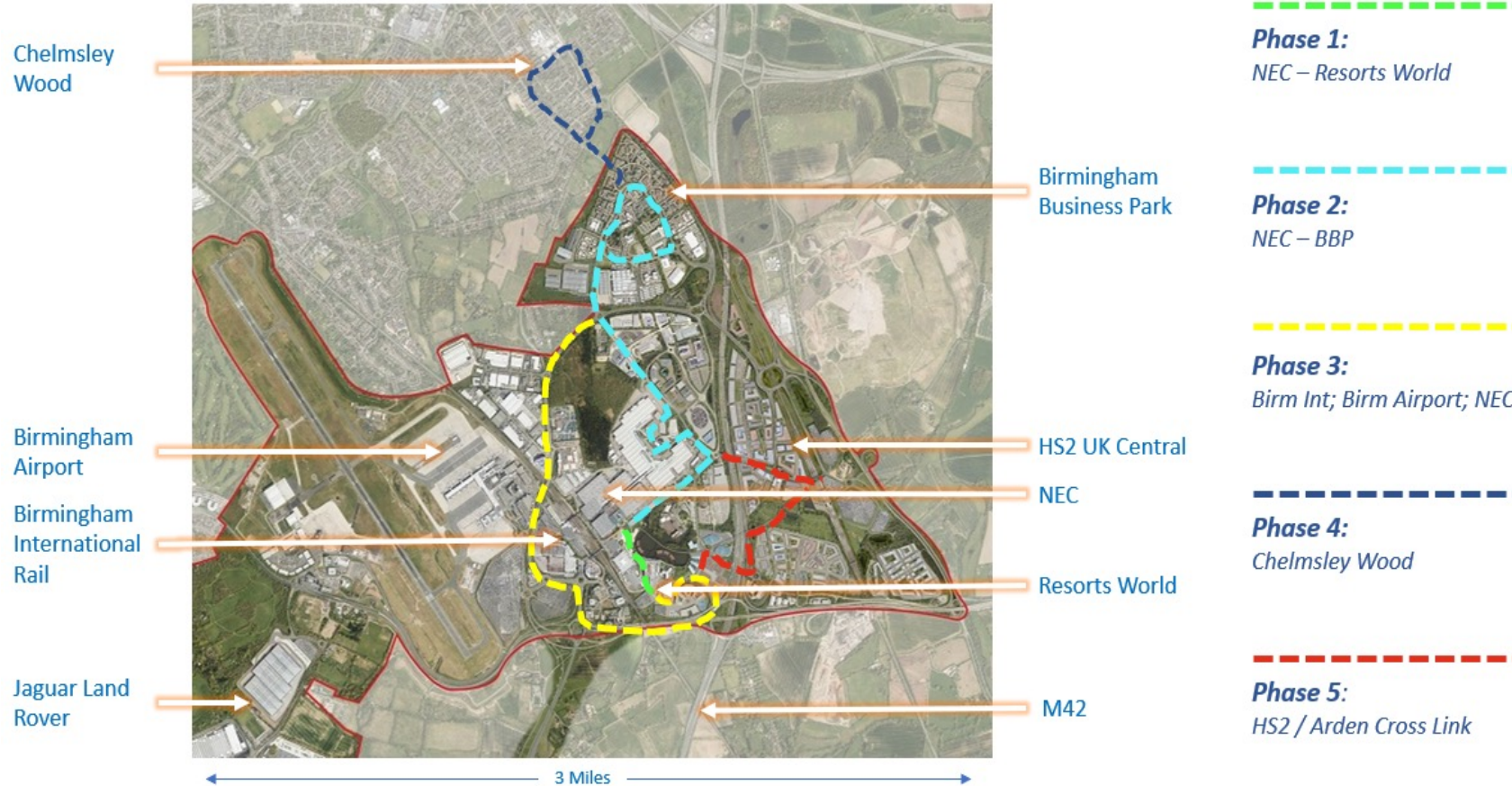


@UKCentralComms

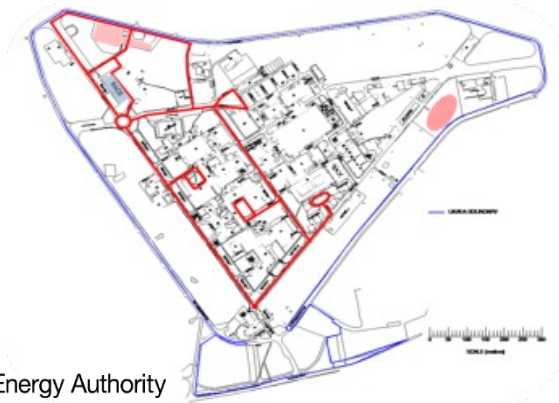
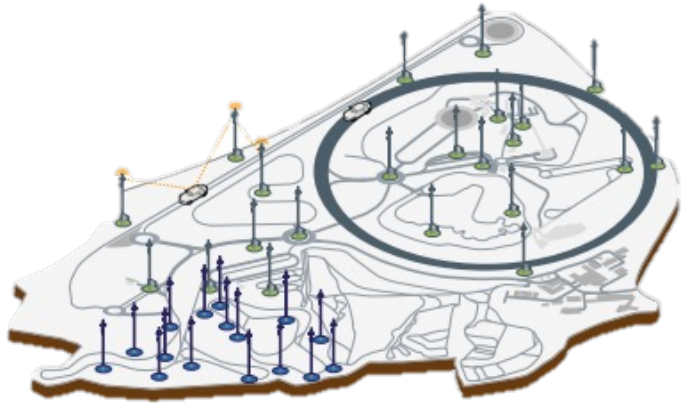


The Hub - Potential CAM Shuttle Routes

NOTE: NOT POLICY – INDICATIVE ONLY



THE UK'S CONTROLLED URBAN CAV & 5G TRANSPORT TESTBED



Centre for Connected & Autonomous Vehicles



Department for Digital, Culture, Media & Sport



1. Your Project

- Test services to the CAV industry
- **New test facilities**
- Improved physical infrastructure
- **Simulation suite**
- V2X capability / 5G

2. What's innovative about it?

- Clear path to on-road operation
- **Open to all players**
- Link to other UK testbeds
- **No IP threat or compromise**

3. The services you can offer?

- **Development, trials, test, demonstration**
- Vehicles, components and systems
- 80km tracks, 900 acres. Endless scenarios - with and without other road users

4. The customers you seek?

- **Start up's, SME's, OEM's, consortia**
- On or off road testing. Static or dynamic
- City, urban, interurban users, virtual players

Beam Connectivity

www.ktn-uk.org



Beam Connectivity

Pioneers in Better Connected Vehicles

Experts in connecting vehicle systems:

- Telemetry data collection & visualisation
- Over-the-air software updates
- Remote control from mobile apps/cloud
- Cyber security

Support growth of CAM Supply Chain with best-in-class performance

Organisational Capabilities



Connected systems



Cyber security



Embedded software:



Hardware: Circuit design,
RF

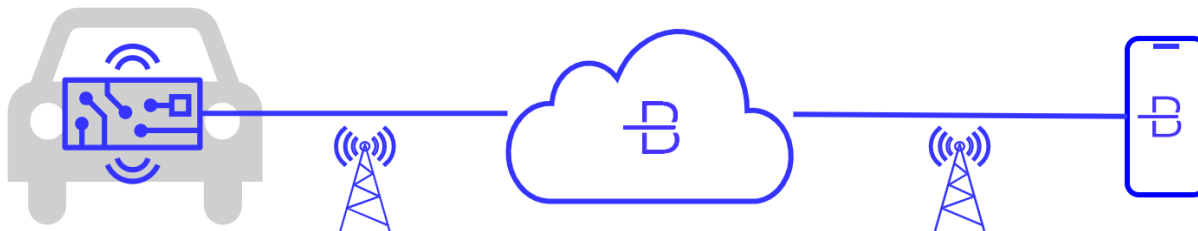


Mobile app
development



Cloud data analysis

Connected Vehicle as a Service



Versatile

High Performance

Cyber Secure

Administrative Information

SME formed over last 2 years; digital native and agile, delivery focussed

Looking to support any project which requires a connectivity solution

Thomas Sors, CEO: thomas@beamconnectivity.com

Rob Potter, CTO: rob@beamconnectivity.com

<https://www.beamconnectivity.com>

Conigital

www.ktn-uk.org



Conigital Ltd



Proposed Approach/Project idea

Safely and Sustainably Automating the Way People and Goods Move in Industrial, Commercial and Smart City Sites; Digitally Connecting Autonomous Vehicles to empower mobility for all.

We are building explainable self-driving technology and mobility platforms to accelerate the adoption of Autonomous, Connected Electric Shared (ACES) Fleets for a safer, cleaner, greener and more climate-conscious future.

We provide the self-driving, journey management and booking systems that allow self-driving vehicles to provide passenger and logistics services as part of an integrated transport solution.

This is supported by our Remote Monitoring and Tele-Operation system that enables un-handled edge cases to be dealt with in a safe and controlled manner.

We are aiming to provide our full portfolio to support the integration and extended trial of self-driving vehicles at scale for both passenger (as part of MaaS solution) and/or first/last mile delivery.

Experience

- Over 300 man years of expertise - working in the CAV space for over 6 years
- Both collaborative R&D and commercial projects allowing us to build our product suite
- 5 CAM trials on public highways in the UK and now also commencing in Australia
- Recently completed ANCAP testing on our Ford Ranger in Australia – TfNSW approval process
- Demonstrated on-demand booking app and interactive journey management as a path to MaaS
- 5G based Remote Tele-Operation with both monitoring and control capability as well as implementation of MRM

Organisational Capabilities

- UK SME
- Lift-and-Shift Self-Driving Applicable to Any Vehicle – Already Demonstrated on Road
- Full Software Stack
 - Vehicle Automation
 - Fleet Management
 - Journey Planning & Management
 - Booking App
- Remote Monitoring and Tele-Operation Support System
- Experienced Project Management
- Trial Management
- Dissemination & Exploitation

Administrative Information

We are open to discussing both lead and partner roles in bids – subject to achieving critical mass.

Tom Robinson:

tom.robinson@conigital.com, 07958 773731

Don Dhaliwal:

don.dhaliwal@conigital.com, 07960 887290

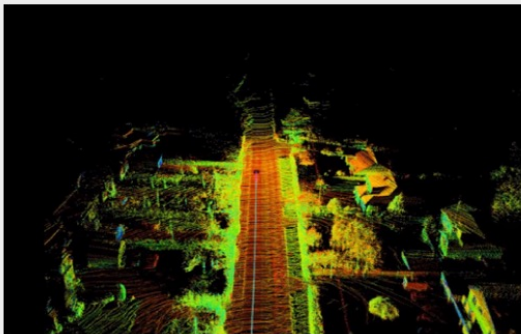
ConICAV: Autonomous Mobility Platform & Stack

Retrofit & Automation

Light/Heavy EV Industrial and Commercial vehicles for freight and passenger mobility



Autonomous Vehicle Software



Mobility Platform for Operators and End Users



Fleet Monitoring & Remote Teleoperation



Commsignia

www.ktn-uk.org



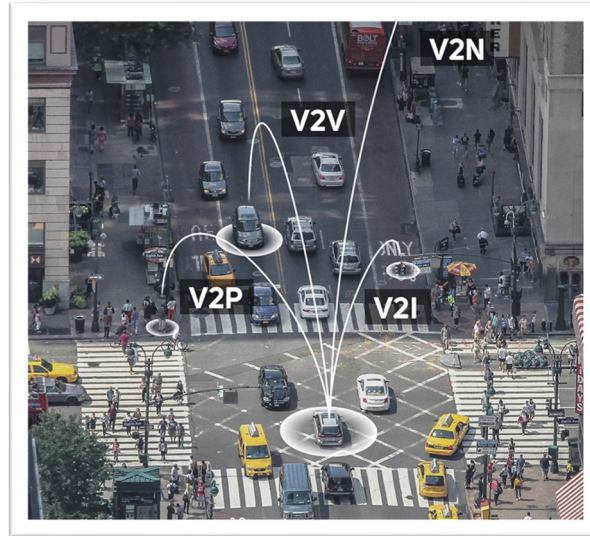
PROPOSED APPROACH / PROJECT IDEA

Vehicle to Everything (V2X) communication

ETSI / ISO Standards based

V2X Applications

- In Vehicle Signage
- Hazard Warning
- Right/Left Turn Assist
- Collision Warning
- GLOSA
- Signal Prioritisation
- Vulnerable Road User
- Red Light Violation

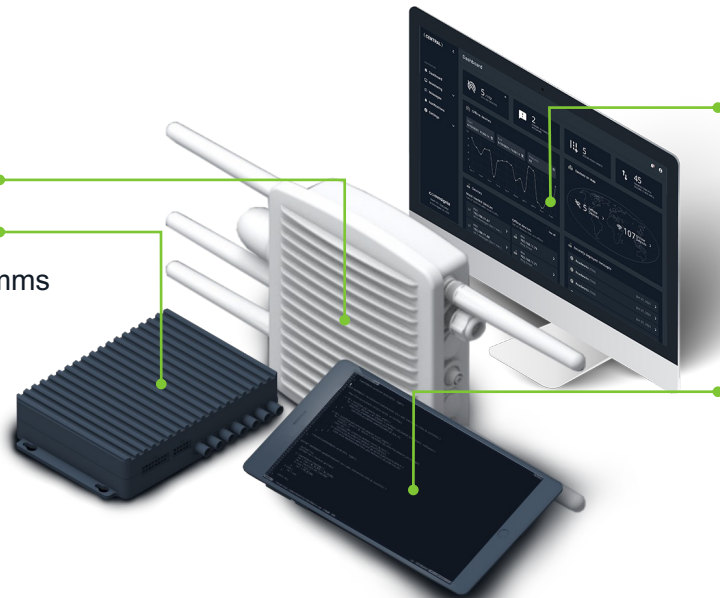


EXPERIENCE

Roadside unit - RSU

Onboard unit - OBU

- ITS G5 & PC5 comms



Central Device & Data Manager Platform

- RSU management
- Live Road Status
- Message Control

Software

- (MISRA Compliant)
- V2X Software Stack
- Middleware
- V2X Apps

V2X over Mobile
Cellular (Public MNO)

ORGANISATIONAL CAPABILITIES

- SME - 130+ Employees worldwide
- Worlds largest V2X company
- 10 years V2X Experience
- 2,000+ RSU's shipped
- 25 + Active deployments in 28+ Countries (inc. US, Europe and Asia)
- Active in V2X standards (ETSI, SAE, 5GAA etc.)
- Dedicated Research V2X team.

ADMINISTRATIVE INFORMATION



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Vodafone

www.ktn-uk.org



WHAT IF ...

WE COULD MAKE
EUROPEAN ROADS
SAFER FOR EVERYONE?

.....

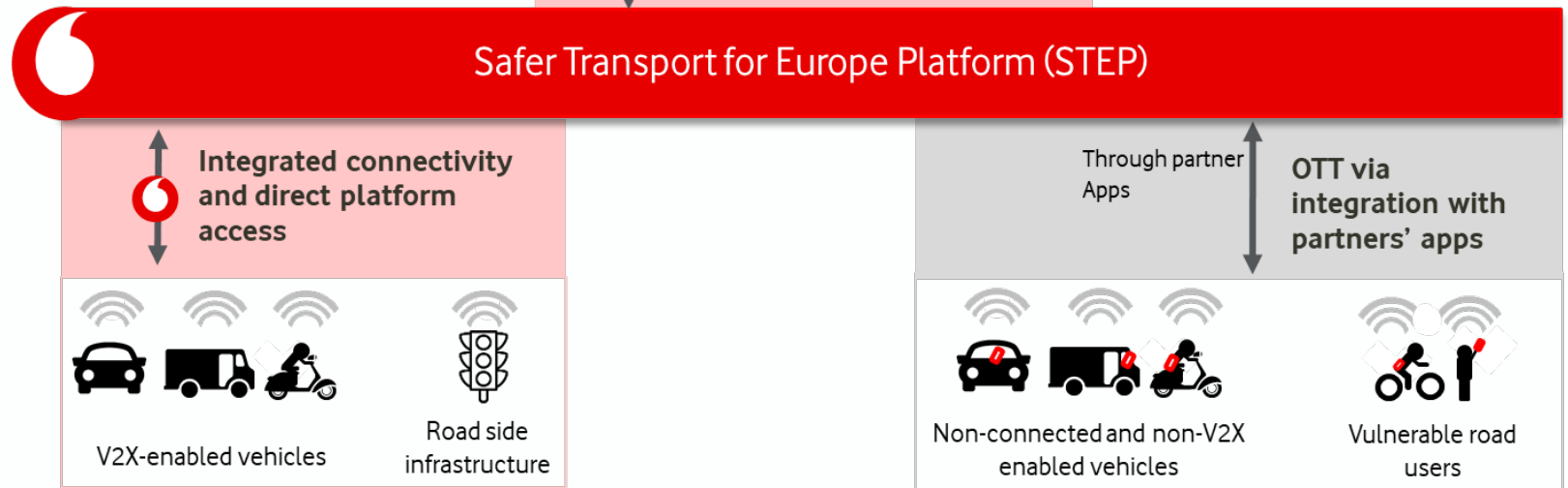
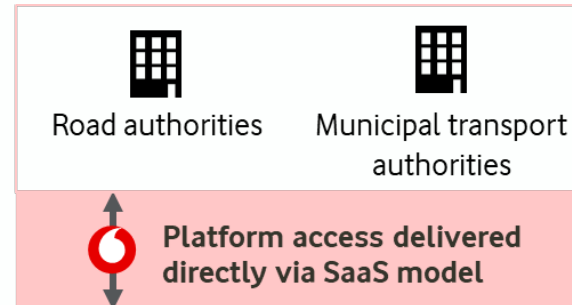
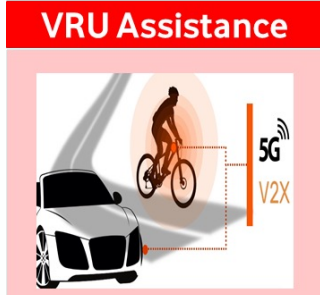
Bob Banks
Group R&D



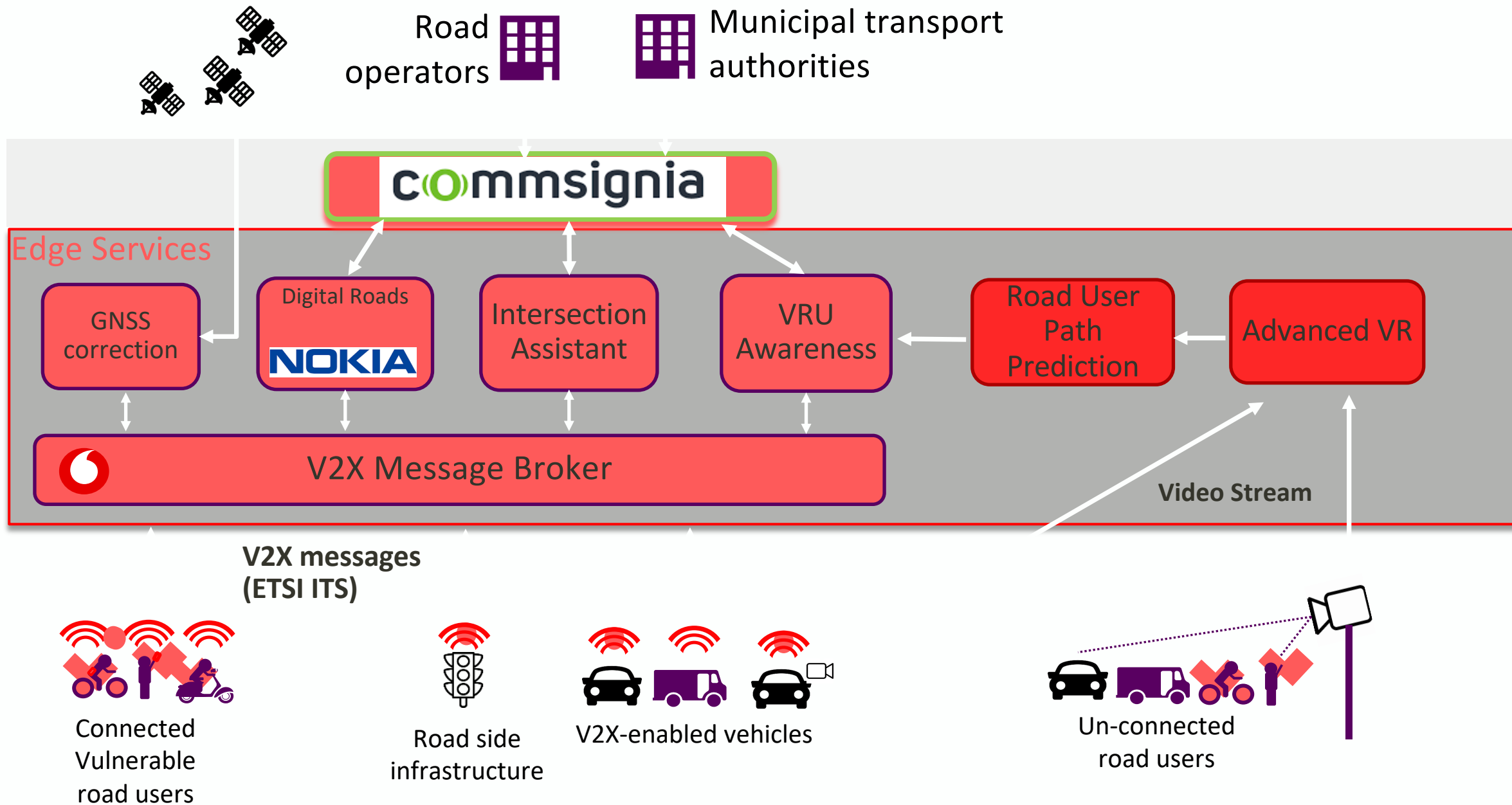
Vodafone is committed to make all European roads safer for all categories of road user - vehicle, pedestrian, (e)cyclist, (e)scooter, horse rider, etc

Platform to distribute, broker and validate V2X messages in real-time leveraging 4G/5G RAN and Edge Cloud

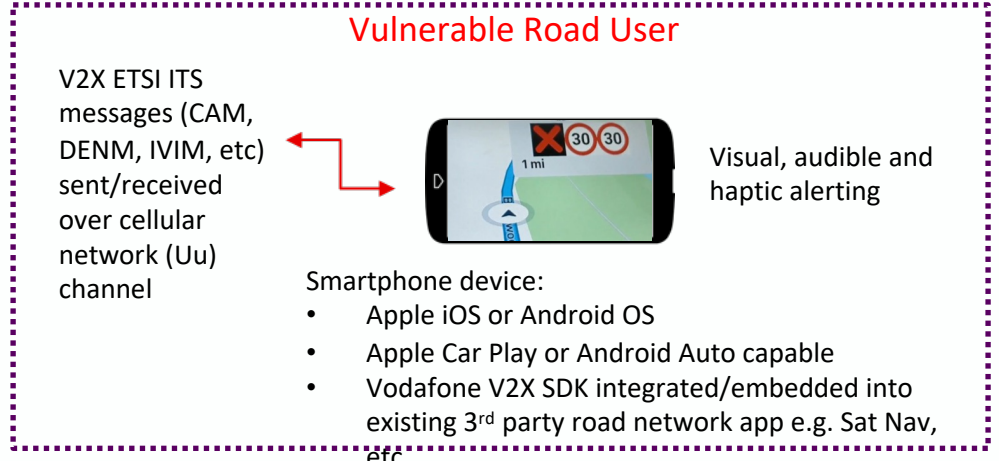
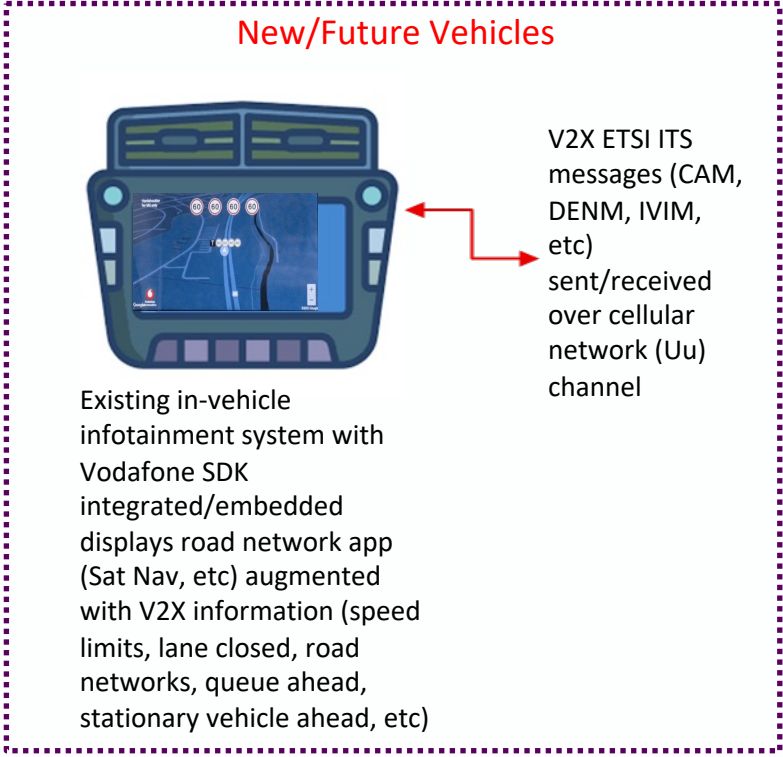
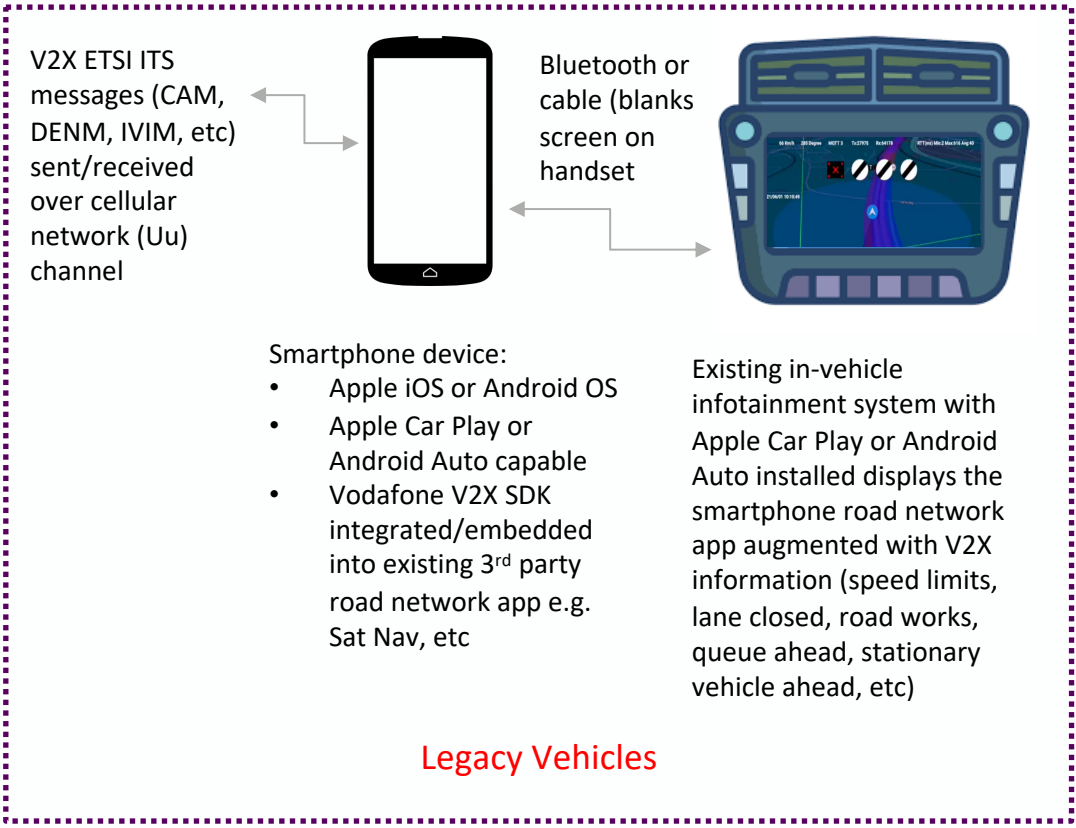
STEP aims to make the V2X / Connected Mobility space scale, reliable, and assured



V2X Platform at the Edge



Addressing the different user categories



Enertechnos EV charging

www.ktn-uk.org



We want to be your partner for EV/autonomous vehicle wireless charging infrastructure.

All autonomous vehicles will need to be charged *BUT* plugging in doesn't work without a driver.

We are developing a centralised wireless EV charging system using our proprietary CTS cable. We can efficiently distribute high frequency AC power, over long distance, at 85kHz, with minimal voltage drop-off. Traditional cables experience rapid voltage drop off doing this; CTS doesn't.

We will be able to provide multiple chargepads from a single charging station.

Advantages include:

- Lower opex and capex than other wireless systems
- No street furniture at point of charge
- Fewer buried components
- Opportunity to capture and re-use lost heat
- V2G and V2X opportunities
- Charging by 'grazing' reduces batteries required and lowers vehicle costs

Experience

We have been established for 8 years developing CTS (Capacitive Transfer System). The cable design is focused on the efficient delivering of electricity with lower losses. We have won both InnovateUK and BEIS funding to develop our solution are in discussions with testing houses to validate it.

Extensive testing at different frequency levels has led us to focus on applying CTS' qualities to the vast opportunities of wireless EV charging.

Organisational Capabilities

We have multiple experts in Project management, power systems, engineering capability, lab facilities and modelling software to create full scale prototypes and testing loads.

We have been the leader and PM on various university and industrial project groups. Our extensive network of partners and sub-contractors mean we can deliver the frequency conversion, power distribution, ground and vehicle pads and the on-board systems where required.

Our business is an SME with 14 employees and we have patented technology that is capable of rapidly growing our company, our solutions and specific expertise within the UK.

Administrative Information

We would likely be a partner or sub-contractor.

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+44 7715 323956

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