Open Market Consultation Final Report

18 July 2025

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A Prior information Notice (PIN) has been published in TED on 3 March 2025 to announce the Open Market Consultation on potential future procurement activity (notice publication number: 50219295-e1f6-41e7-bce6-858a514d4db9-01).

The original language of this open market consultation is English.

Abbreviations and acronyms

AI	Artificial Intelligence
ANPR	Automatic Number Plate Recognition
C2	Command and Control
CET	Central European Time
EAFIP	European Assistance for Innovation Procurement
EC	European Commission
EU	European Union
GDPR	General Data Protection Regulation
IPR	Intellectual Property Rights
OMC	Open Market Consultation
PBG	Public Buyers Group
PCP	Pre-Commercial Procurement
PIN	Prior Information Notice
R&D	Research and Development
RFI	Request For Information
SMEs	Small and Medium Enterprises
SOTA	State Of the Art
TED	Tenders Electronic Daily
TRL	Technology Readiness Level
V2Road	Vehicle to Road
V2V	Vehicle-to-vehicle

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1. The INTERCEPT project

During the last decades, criminal activities and terrorist attacks in Europe using motor vehicles have shown an increasing trend in terms of the number of incidents, target types and victims reported. Traffic stops are one of the most common, yet most risky, tasks a police officer undertakes. Traffic-related fatalities rank No. 2 for LEAs each year due to traffic-related events. The list of causes often includes high-risk vehicle events, such as pursuits, which can quickly lead to death or injury. A driver who is impaired, carrying illegal weapons or drugs, facing unpaid tickets or driving a stolen vehicle may make a foolish decision to evade police rather than face often lesser consequences. In fact, an astonishing 91 per cent of police pursuits are precipitated by nonviolent offences but result in thousands of deaths and injuries to police officers, innocent bystanders and suspects each year.

In general, there are different security threats and incidents related to motor vehicles, which represent several security concerns to LEA and citizens. The most relevant scenarios are: high-speed pursuits, stolen cars, DUIs (Driving Under the Influence and terrorism.

Therefore, LEAs throughout the globe are convinced that providing an effective means to remotely stop a vehicle is fast becoming a priority. The development of a safe and controlled system to enable remote stopping has the potential to directly save lives.

Thus, in the continuity of i) the EU strategic impacts of Cluster 3 in the Horizon Europe Strategic Plan 2021-2024 with regards to better protection of the EU and its citizens against crime and terrorism; ii) the strategic objectives and priorities regarding the protection of citizens in public spaces detailed in the EU Security Union Strategy; and iii) the Joint Technical Specifications with regards "Stopping vehicle - engine shut down technology" issued by the i-LEAD (Innovation – Law Enforcement Agency's Dialogue) police practitioners working group, the main focus of INTERCEPT is to enhance EU Law Enforcement Authorities capabilities and provide them effective means to remotely and safely stop vehicles which represent imminent and high security threats to citizens and society, by identifying technology gaps to solve in order to reduce existing vulnerabilities and improve security efficiency.

The INTERCEPT project is a Coordination and Support Action involving a collection of security end users' needs, knowledge exchange between stakeholders, implementation of desk research and analysis, and the conduct of educational initiatives to support the preparatory activities for a PCP. The main objective of INTERCEPT is to urge innovations beyond the state of the art by working towards a more effective means of stopping vehicles remotely. In this context, INTERCEPT aims to define common security needs and translate them into use cases to identify technological gaps and establish concrete R&D requirements as a baseline to prepare a PCP of solutions that enhance the protection of people, infrastructures, and public spaces in EU cities.

1.1. PCP challenge and main requirements

The envisaged future PCP – i.e. a joint procurement of R&D services – is intended to be launched to reinforce public demand-driven innovation in the security domain. PCP has the potential to be an effective demand-side innovation action and a useful tool to close the gap between supply and demand for innovative solutions. Solutions are expected to achieve TRL 7-8.

The future PCP should deliver successful, innovative and fully tested product(s) and/or service(s) that meet the common need of the PBG to procure research, develop innovative marketable solutions, speed up the time-to-market and provide the best value for money.

The PBG aims to develop an innovative solution to tackle the use cases concerning stopping vehicles remotely, namely:

1. Use Case 1: Complex threat and pursuit scenario by car vehicle.
2. Use Case 2: Urban agile threat involving high-powered motorcycles and electric bikes.
3. Use Case 3: Distressed driver operating a large passenger coach.

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1.2. Use cases

At the beginning of the INTERCEPT project, the consortium working in close collaboration with the User Observatory Group defined six operational use cases. These use cases were designed to represent a diverse range of high-risk scenarios in which law enforcement and emergency response units may be required to act swiftly and decisively. Each use case reflected different types of threats and operational challenges commonly encountered in urban and interurban environments. The six initial use cases were as follows:

- Use Case #1 – Vehicle ramming attack in a public market;
- Use Case #2 – High-speed pursuit in urban surroundings;
- Use Case #3 – Large coach with distressed driver;
- Use Case #4 – High-speed pursuit following ANPR alert;
- Use Case #5 – Organised criminal use of high-powered motorcycles and electric bikes;
- Use Case #6 – Hostage-taking and vehicle ramming.

These scenarios served as the foundation for understanding operational needs and technological gaps. Following an in-depth analysis of the most pressing security threats, operational limitations, and the shared priorities of end users, the consortium refined and consolidated the original six scenarios into three core use cases. This process ensured that the project would remain focused on addressing the most critical challenges with the highest potential impact on public safety and operational efficiency.

1.2.1. Use Case 1: Complex threat and pursuit scenario by car vehicle

This comprehensive use case presents a realistic and escalating threat scenario in which a vehicle initially flagged by an ANPR system engages in a series of criminal activities, including an intentional vehicle ramming attack in a crowded urban area, a high-speed pursuit through city streets, and an eventual cross-border chase. The incident reflects the multi-dimensional nature of modern security threats and highlights the range of response challenges and capability gaps faced by LEAs.

1.2.2. Use Case 2: Urban agile threat involving high-powered motorcycles and electric bikes

A series of luxury store robberies in central Paris is linked to a criminal gang using high-powered motorcycles and electric bikes to execute smash-and-grab thefts and evade police through narrow streets and pedestrian zones. The operation demonstrates the growing use of agile vehicles by organised crime networks and the complex urban environment challenges faced by law enforcement.

1.2.3. Use Case 3: Distressed driver operating a large passenger coach

A large 81-seater intercity coach travelling through central London during evening rush hour begins to behave erratically. Passengers on board observe the driver exhibiting signs of severe emotional distress, prompting widespread panic. The coach becomes a mobile hazard, weaving unpredictably through traffic, and presenting a severe safety risk on the city's arterial routes.

1.3. Use Case Requirements

The LEAs participating in the INTERCEPT project have listed the functional requirements the future solution should cover. The requirements were divided into different categories representing different steps of an incident as presented below.

Threat Detection and Identification: The system should enable real-time identification of high-risk vehicles and hazardous substances, detect dangerous driving behaviours, and assess environmental conditions that may affect threat recognition and response.

Before Incident: Ensure reliable threat verification, resource readiness, inter-agency communication, risk assessment protocols, and public alert systems are in place prior to initiating a pursuit.

During Incident: The system must enable real-time tracking, adaptive strategy updates, reliable multi-agency communication, and situational awareness while ensuring safe and controlled neutralization of the target vehicle through measures like deceleration mechanisms, engine control influence, and road-based stopping tools, all with minimal risk to bystanders and infrastructure.

After Incident: Implement secure and efficient tools for evidence collection, event documentation, damage assessment, and post-operation evaluation to support investigations, legal processes, and continuous improvement.

Environmental Adaptation: Solutions must adapt to diverse environmental and geographic conditions, including adverse weather, challenging terrains, and varying pursuit environments, while mitigating associated risks.

External Coordination: Establish robust protocols, interoperable systems, and clear communication tools to enable effective inter-agency and cross-border collaboration, ensuring compliance with international protocols and operational consistency across diverse agencies.

Legal and Regulatory: Ensure all pursuit-related systems and actions comply with relevant laws and regulations on vehicle interventions, data protection, transparency, and proportionality at local, national, and EU levels.

Other Requirements: User-Centred Requirements; Public and Community Interaction; Evaluation and Feedback.

1.4. Results of SOTA analysis

A macro-level analysis of the total stock of relevant patents was conducted using the IPlytics tool to examine the relevant technologies. Keywords were used to identify patents related to each of the three use cases. The results of the IPR search, along with the proposed technologies based on this search, are listed below.

1.4.1. Use Case 1: Complex threat and pursuit scenario by a car vehicle

IPR search results:

- RFID tags to track vehicles.
- Cloud-based communication platforms to ensure cross-border tracking and coordination.
- Emergency vehicle prioritisation and real-time location sharing.
- Real-time vehicle identification and coordination with law enforcement.
- Video & audio analytics for detecting suspicious or criminal behaviour.
- Behavioural pattern recognition to identify criminal activity or dangerous driving behaviour.
- A first sensing system (e.g., ANPR, RFID, facial recognition) identifies the object at a known location, and a second sensing system (e.g., basic cameras, radar) tracks the object over a wider area.

- A traffic model to convert raw sensor data into vehicle trajectory information (e.g., speed, idling time, acceleration patterns).
- A device designed to stop an approaching vehicle by deflating its tires, using upward-facing spikes to puncture the tires, making it an effective immobilisation tool for target vehicles.

Technologies:

- Automatic Number Plate Recognition (ANPR): Detects and reads vehicle license plates from captured images.
- Autonomous Driving Control Systems.
- Emergency Stop Systems.
- Vehicle-to-Device Communication.
- Sensing and Tracking Infrastructure.
- Character Recognition (OCR): Extracts the alphanumeric number from the plate image.
- Artificial Intelligence (AI): Core engine for automation and decision-making.
- On-Demand Roadway Stewardship Systems: Dynamically deploys monitoring and enforcement functions in urban areas.

1.4.2. Use Case 2 – Urban agile threat involving high-powered motorcycles and electric bikes

IPR search results:

- Multi-camera drone surveillance with thermal imaging for real-time vehicle detection.
- Real-time tracking of high-risk or unauthorised vehicles in border zones, highways, and restricted areas. Utilises AI, camera sensors, and inertial sensors to detect unusual traffic events.
- Identifying reckless driving, vehicle malfunctions, and external factors affecting traffic incidents.
- Analysing high-risk vehicle behaviours and alerting law enforcement in real time.
- Identifying violations such as excessive speeding, illegal lane changes, and reckless driving, key indicators of criminal intent.

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- Helping track vehicles involved in violations and intervening before incidents escalate.
- A system that includes a graphical user interface (GUI) for triggering alerts based on real-time drone observations. (patent number).
- Enabling the centralised coordination of numerous drones, making it suitable for large-scale or complex monitoring operations.
- An analytical recognition system that works with multiple camera types, including fixed traffic cameras and aerial drone-mounted cameras.

Technologies:

- Monitoring Control Units.
- Emergency Event Detection.
- Drone Base Station Communication.
- Data Analytics and Decision-Making Algorithms.
- Real-Time Communication.
- Ultra-Wideband (UWB): Used for precise distance measurement and spatial awareness.
- Network Communication: Facilitates data exchange between the UAV, user device, and remote systems.
- Automated Drone Deployment: A drone is instructed to image the incident area based on computed coordinates.
- Real-Time Video Streaming: Live footage from both fixed cameras and drones is displayed for operator assessment.

1.4.3. Use Case 3 – Distressed driver operating a large passenger coach

IPR search results:

- An AI-assisted vehicle deceleration & emergency stop system.
- Real-time monitoring of driver state and vehicle speed.
- Automatic emergency stop and deceleration options for hazardous situations, which works for autonomous and manually driven vehicles.
- Enables non-lethal vehicle stopping, ideal for hazardous or high-risk vehicle intervention.
- Remote monitoring of vehicle and speed control.

- Secure stopping methods for high-risk vehicles in critical zones.
- Sensors are used to detect the driver's presence and continuously monitor their psychological state. Safe mode stop. (Upon detecting driver incapacity, the system initiates a safe stopping manoeuvre).
- An emergency stop system that can receive stop signals from non-driving users in the vehicle. If the required number of signals is received in time, the vehicle is immediately stopped or slowed down.
- Safe mode stop. (Upon detecting driver incapacity, the system initiates a safe stopping manoeuvre). AN: FR2212069A (EU).

Technologies:

- Autonomous Emergency Stop Execution.
- Target Vehicle Identification.
- Remote monitoring of vehicle operations.
- Behavioural pattern recognition.
- Driver Monitoring System (DMS): Detects abnormal driver states (e.g., drowsiness, incapacitation).
- Remote Control Enablement: Authorises remote vehicle operation after the autonomous stop.

2. Purpose of the Open Market Consultation

This document describes the results of the Open Market Consultation (OMC) of the INTERCEPT project for the future **Pre-Commercial Procurement (PCP) of Research & Development (R&D) services** on the security domain to enhance the capabilities of European law enforcement authorities and provide them with effective means to safely stop vehicles remotely. The results are based on the national webinars, e-pitching session, hybrid OMC event in Warsaw and the RFI questionnaire.

The OMC aimed, on the one hand, to inform technology vendors regarding the potential future PCP and, on the other hand, to understand their capabilities to satisfy the procurers' needs and to obtain their input on the viability of the procurement plans and conditions as described in the OMC document and annexes.

In sum, the objectives of this OMC activities were to:

1. Validate the findings of the State-Of-The-Art (SOTA) analysis and the viability of the set of technical and financial provisions.
2. Raise awareness of the industry and relevant stakeholders regarding the upcoming PCP.
3. Collect insights from the industry and relevant stakeholders (including users) to fine-tune the tender specifications.

The OMC was published through a Prior Information Notice (PIN) in the Tenders Electronic Daily (TED) on 3 March 2025. The rules and objectives of the INTERCEPT OMC, as well as information about the challenges, the potential public buyers, and the PCP approach were described in the OMC document with Annexes. This document was published on the INTERCEPT website (https://intercept-horizon.eu/).

Market parties and end users were also requested to fill out a questionnaire in the EU Survey. The preliminary deadline to fill out the questionnaire was 23 May 2025, which was later extended until 4 July 2025. The intention of the questionnaire was to explore the market 'as-is', and to find out more about practitioners' needs and requirements regarding the future PCP. Therefore, there could not be wrong or right answers. The responses to the questionnaire could not contain any confidential information. The information obtained will be used as input for the procurement strategy and conditions.

This OMC was performed under the law of the lead procurer (Kentro Meleton Asfaleias - KEMEA), which is Greek law.

3. Activities & timetable

The OMC was conducted through various formats, including:

- A main (hybrid) event in Warsaw (Poland) on 25 June 2025. This event was carried out in English and broadcasted online.
- A series of webinars in different EU languages held from 9 to 15 May 2025.
- E-pitching sessions in English held from 3 to 5 June 2025.
- Request for Information (RFI) – a questionnaire using the EU Survey tool for technology providers and end users.

The detailed timetable for these activities, along with the required actions for participants, was structured as follows:

Date	Event
3 March 2025	Publication of the Prior Information Notice (PIN) on TED.
7April 2025	Publication of the OMC documents on the project's website: https://intercept-horizon.eu/ Publication of the RFI questionnaire: 1. Technology providers: https://ec.europa.eu/eusurvey/runner/Intercept-OMC_RFI_for_TechnologyProviders 2. End users: https://ec.europa.eu/eusurvey/runner/Intercept-OMC_RFI_for_End-Users
9 May 2025 10:00 – 12:00 CET	OMC webinar in Spanish
12 May 2025 10:00 – 12:00 CET	OMC webinar in English
12 May 2025 12:30 – 14:30 EET	OMC webinar in Greek
13 May 2025 10:00 – 12:00 CET	OMC webinar in French
13 May 2025 12:30 – 14:30 EET	OMC webinar in Finnish
14 May 2025 12:30 – 14:30 CET	OMC webinar in Italian
15 May 2025 10:00 – 12:00 CET	OMC webinar in Polish
15 May 2025 12:30 – 14:30 CET	OMC webinar in Slovak
23 May 2025	Deadline for the submission of questions via the RFI questionnaire

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30 May 2025	Publication of preliminary OMC report based on the findings from the OMC webinars
3 June 2025	E-pitching session 1
4 June 2025	E-pitching session 2
5 June 2025	E-pitching session 3
25 June 2025	OMC event in Warsaw
4 July 2025	Final deadline for the submission of questions via the RFI questionnaire
18 July 2025	Publication of the OMC findings, including all questions and answers to the OMC questionnaire.
18 July 2025	Closure of the OMC.

The INTERCEPT consortium was entitled to adjust the planned activities and the timetable as outlined above, and to include new activities at any time based on the needs and responses of the market. Furthermore, it could decide to terminate the OMC for its own reasons at any time. In that case, the INTERCEPT consortium published such modifications or termination on TED and the project's website (https://intercept-horizon.eu/).

As for this, the consortium extended the deadline for the submission of responses via the RFI questionnaire until 4 July, which led to the postponement of the publication of the OMC findings, as well as the closure of the OMC, until 18 July. Furthermore, the OMC webinars in Greek, Finnish, Italian, and Polish did not take place due to a lack of registration, and the same applied to the E-pitching session 3.

3.1. OMC webinars

Parties interested in participating in the eight online events were requested to register through an online form. A total of 73 people registered for the OMC webinars, including people from public organisations, private organisations, start-ups, SMEs, large organisations and universities/ research organisations. A total of twenty-three (23) attendees participated in the English webinar, twelve (12) in the French, nine (9) in the Slovakian, and twenty-nine (29) in the Spanish webinar. There were either no registrations nor no attendance for the Greek, Finnish, Italian and Polish webinars, but the presentation materials prepared for those sessions were uploaded to the project's website.

The agendas of the OMC webinars are included in Annex I.

The webinars within the framework of the OMC were recorded. The video recordings are available on the INTERCEPT website together with the slides from the meetings.

- Videos: https://intercept-horizon.eu/for-industry/#:~:text=forming%20a%20consortium.-,Videos,-Play
- Presentation materials: https://intercept-horizon.eu/for-industry/#:~:text=Play-,Knowledge,-Open%20Market%20Consultations

3.1.1. Q&A from the OMC webinars:

Q: We currently have existing vehicle-stopping solutions that are not yet remotely operated. We have already initiated R&D efforts to develop remote capabilities. Should our RFI submission focus on the existing system, the ongoing development, or both?

A: Yes, we encourage you to provide information on both your existing vehicle-stopping solutions and the ongoing R&D efforts to develop remote capabilities. The RFI includes multiple sections – such as technology readiness levels (TRLs), existing patents, and current capabilities – where you can specify the maturity and scope of each solution. There are dedicated fields for detailing both current technologies and future developments, including areas where further R&D is underway. Please complete all relevant sections of the RFI as thoroughly as possible. This information will be reviewed by the project team and used to assess suitability for the identified use cases. Based on this assessment, we may reach out for further discussions or clarifications. At this stage, it's important to provide a comprehensive overview, even if some elements are still under development.

Q: When we submit any information to you, will it be treated as confidential and reviewed solely within your team, or is there a possibility it will be shared more broadly within the wider community?

A: Yes, your submission will be treated as confidential. However, please note that our project partners will have access to the responses for evaluation purposes. When we publish any findings, such as in the EMC report, all information will be anonymized and aggregated – no company names, proprietary technologies, or confidential details will be disclosed. That said, publicly available information, such as registered patents, may be referenced to a limited extent. If your submission includes sensitive or export-controlled material that you do not wish to be shared or even anonymized in any public-facing documentation, please make that explicitly clear in your RFI response. We will ensure such information is handled accordingly and with the appropriate level of confidentiality.

Q: The technology we may be able to offer for some of your use cases under the UK government framework is subject to export control regulations. As such, while I can share a certain amount of information in the public domain, more detailed technical data is classified as export-controlled. To disclose that level of detail, I would need to obtain an export license from the UK government, which requires specifying the recipients of the information. If the recipient is a single organization within one country, the process is straightforward. However, if the information is to be shared across multiple countries or within a multinational group, the licensing process becomes more complex. Therefore, some of our responses may initially remain at a high level and in the public domain, with further technical details contingent upon obtaining the necessary export approvals.

A: We fully understand the restrictions associated with export-controlled technology. For the RFI, please provide only the information you are legally authorised and comfortable sharing. If more detailed technical data is needed during the evaluation process, we will contact you directly to explore next steps, which may include appropriate confidentiality measures or export licensing arrangements. At this stage, we are primarily focused on gaining an overview of the capabilities and relevance of your solution to our use cases. Detailed technical specifications are not immediately required. A high-level summary is entirely appropriate, and further discussions can follow if needed.

Q: Could you clarify the definition of 'remote' as used in the documentation? I noticed that some tools are described as remotely deployed or remotely operated, yet it is also stated that an officer is required on-site. In such cases, it seems the system is not entirely remote. Does 'remote' refer to remote control during operation, remote deployment capability, or something else? Additionally, does the need for on-site installation affect whether a system is considered truly remote?

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A: We are still in the process of refining the exact requirements, but our current understanding of 'remote' primarily refers to the ability to stop a vehicle without direct physical intervention by law enforcement officers. The aim is to avoid traditional methods such as physical interception with police vehicles or the use of manual spike systems. Ideally, the system should enable remote activation either autonomously or via remote control without requiring officers to be in close proximity to the target vehicle during the stopping process. That said, we recognize that some systems may still require on-site setup or installation, and we're open to reviewing different levels of remote capability. These distinctions will help us assess the feasibility and maturity of various solutions.

Q: Are you specifically seeking a fully autonomous solution, or would a semi-autonomous system also be considered?

A: At this stage, we are not specifically seeking a fully autonomous solution. The current intent is to maintain a level of human oversight, where law enforcement retains the authority to make the final decision regarding intervention. While a solution may include autonomous features such as detecting high-risk behaviour or identifying target vehicles the actual execution of a stopping action should remain under the control of law enforcement personnel. That said, the precise level of autonomy is still being evaluated in consultation with end users, and final requirements will be shaped based on their operational needs. Ultimately, any proposed solution must be acceptable to and approved by the relevant law enforcement agencies before deployment.

Q: Will solutions that enhance officer safety also be considered, even if they address the use case indirectly? It seems relevant to the overall operational effectiveness and could be an important part of the broader scope.

A: Yes, solutions that enhance officer safety are certainly within the scope of consideration, even if they address the use case indirectly. Within the INTERCEPT project, each use case includes a broad set of requirements not only for remote vehicle stopping, but also for detection, communication, environmental considerations, and pre- and post-incident actions. Importantly, this list of requirements is not final. During the main OMC event, we will be actively engaging with both technology providers and end users to identify additional functionalities and operational needs that may be relevant. This is an ideal time to propose features such as officer safety enhancements that could contribute to the overall effectiveness and usability of the system.

Q: I noticed that the document references existing systems for stopping or tracking vehicles, and we also provide similar solutions currently available on the market. Would you be interested in receiving information about these existing products as potential additions to the current scope? If so, would they require separate RFI submissions, or can they be included within the same response?

A: Yes, existing technologies and solutions are still highly relevant at this stage. As this is an ongoing study, we are still in the process of finalising the requirements and defining the common challenge and use cases. Submitting information on mature, market-ready systems can help us better understand the current technology landscape and inform the shaping of the final scope. You may include these existing products within the same RFI submission, provided it is clear which parts of your response relate to which solution. If the technologies come from different manufacturers and are represented by you as a distributor, please clearly distinguish between them. A separate submission is only necessary if the solutions are substantially different or involve different stakeholders requiring separate evaluation.

Q: In cases where we represent another system from a different manufacturer and country – as a distributor – would it be necessary to submit a separate RFI for that solution, or can it be included within our existing submission?

A: Firstly, it's important to note that the RFI is not a formal application but rather a tool for gathering information. Ideally, we prefer that each organisation submits a single response. However, we understand that there may be cases such as when you're representing a different manufacturer from another country as a distributor where submitting additional information from a different perspective may be necessary. In such cases, it is acceptable to submit more than once, especially if the solutions are distinct or associated with different manufacturers. We are flexible in this regard. That said, it would be very helpful if you clearly indicate in your submission which solution corresponds to which organisation or manufacturer. This will allow us to accurately categorise and analyse the responses during the evaluation process.

3.2. E-pitching sessions

As part of the preparatory activities leading up to a future procurement procedure, e-pitching sessions serve as a structured platform for early engagement between public buyers and technology suppliers. These virtual meetings allow suppliers to present innovative solutions aimed at addressing specific procurement challenges defined by the public sector.

The primary objectives of the e-pitching sessions was to facilitate early dialogue between the public sector and market participants, identify relevant and innovative solutions that meet specific public sector needs, and foster a competitive and transparent procurement process.

In the context of the INTERCEPT project, the e-pitching sessions were scheduled to take place from 3 to 5 June 2025. The process began with public buyers clearly defining the procurement challenges and communicating them to potential suppliers well in advance. Suppliers were then invited to prepare tailored presentations demonstrating how their solutions responded to the identified challenges.

To ensure uniformity in the delivery of presentations, the INTERCEPT consortium provided all suppliers with a standardised PowerPoint template, which is included in Annex III along with the session agenda. Each supplier was allocated a 15-minute slot to present their solutions. Presentations began with an overview of the supplier's organisation, followed by a detailed explanation of the proposed solution. This included its relevance to the defined challenge, associated research and development activities, technical capabilities, anticipated benefits, and how the solution meets the needs of the procuring entities for each of the three use cases. The three use cases were as follows: a complex threat and pursuit scenario involving a car; an urban agile threat involving high-powered motorcycles and e-bicycles; and a distressed driver operating a large passenger coach.

Each presentation was followed by a five-minute question and answer session. This allowed public procurers and other INTERCEPT consortium stakeholders to engage directly with the supplier. This interaction was intended to clarify specific points and assess the suitability of the proposed solution.

The e-pitching sessions took place on 3 and 4 June 2025. The session planned for 5 June was cancelled due to a low number of supplier registrations. In total, eight technology providers from five different countries (France, Germany, Netherlands, Slovakia and the UK) presented their solutions and ongoing research to public buyers and members of the INTERCEPT consortium.

An anonymised summary of the outcomes of these sessions is provided below.

3.2.1. Results of the e-pitching sessions

Use case 1 – Complex threat and pursuit scenario by a car vehicle

In response to Use Case 1technology providers proposed a variety of innovative, non-lethal solutions aimed at enhancing the effectiveness and safety of law enforcement operations. These approaches emphasised real-time tracking, controlled vehicle immobilisation, remote coordination, and operator safety.

One solution focused on vehicle-integrated transceivers capable of receiving remote stop commands. These transceiver units can be installed not only in police vehicles but also in static infrastructure such as traffic lights or overhead gantries. When a pursuit is underway, an authorised operator can issue a stop command to the pursued vehicle as it passes a signal point. The system also enables the creation of virtual geofenced zones, within which any vehicle, except for exempted emergency services, can be instructed to stop upon entry. This approach allows for targeted and controlled interventions across wide urban or motorway areas without requiring physical contact.

Another provider presented a non-lethal light-based system that temporarily blinds and disorients the driver, creating a window of opportunity for intervention. The system can proactively detect whether the suspect may be armed, offering officers additional situational awareness and reaction time. It can be deployed from patrol cars, roadside installations, or aerial platforms, and functions reliably in all lighting and weather conditions.

A separate solution centres around a vehicle-tagging mechanism that uses satellite positioning to attach a tracking device to the fleeing vehicle. The system provides real-time geolocation data with high accuracy and transmits it via a secure mobile network. This enables law enforcement to maintain constant surveillance of the suspect's movements, strategically allocate resources, and deploy roadblocks in a timely and coordinated manner minimising the need for dangerous, high-speed pursuits.

One submission featured a radio frequency-based system capable of remotely halting vehicles equipped with electronic control systems. This approach is non-contact and non-lethal, allowing for safe intervention without endangering occupants or bystanders. The technology is effective at range, while the vehicle is stationary or moving, and is designed to be used with minimal risk to human health.

Physical vehicle restraint solutions were also proposed. One method uses a spiked net designed to bring a fleeing vehicle to a controlled stop, with minimal harm to the vehicle and its occupants. The net can be deployed manually or remotely in seconds and is effective on both paved roads and off-road surfaces. It is suitable for a wide range of vehicle sizes and speeds, and can be integrated with sensor-based systems for automated deployment from a safe distance.

Another physical restraint system involves a remotely activated net deployed via a mechanical arm. When the vehicle refuses to comply, the net attaches to the tires, wrapping around them and gradually bringing the vehicle to a halt. Once the intervention is complete, the net can be detached and retrieved using an electromagnetic release mechanism.

Additionally, a solution utilising electromagnetic radiation was presented as a means to disable vehicles non-cooperatively and without physical contact. This system does not use ammunition, causes no physical damage, and is compliant with existing safety regulations. Although designed primarily for motorcycle vehicles, it is effective on any platform with electronic components and allows for precise targeting within a short range.

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Collectively, these proposed technologies reflect a wide array of approaches to vehicle pursuit scenarios. They prioritise officer and public safety while enabling effective, real-time responses to high-risk threats on the road. The diversity of methods ranging from electronic disabling and real-time geolocation to mechanical entrapment and sensory disruption demonstrates the innovative potential for addressing complex pursuit challenges through procurement.

Use Case 2 – Urban agile threat involving high-powered motorcycles and e-Bicycles

Use Case 2 focuses on the challenges posed by agile, high-powered vehicles such as motorcycles and electric bicycles operating in dense urban environments. These threats are often difficult to intercept using conventional means due to their speed, manoeuvrability, and ability to evade capture in narrow or crowded spaces. Technology providers proposed several innovative solutions intended to support public safety authorities in managing these dynamic scenarios while minimising collateral risks.

One of the proposed approaches involves the integration of a remote-controlled transceiver unit into various infrastructure elements, including police vehicles, traffic lights, and overhead gantries. This unit enables authorities to transmit a stop signal to a targeted vehicle in real time. The system can also define virtual perimeters, known as geofenced zones, within which all non-exempt vehicles – including motorcycles and e-bikes – receive a signal to stop automatically upon entry. This solution is envisioned for wide-scale application across all registered vehicles, with future development aimed at integrating speed-limiting capabilities.

Another proposal centres on a compact, non-lethal light-based system that uses directed energy to disrupt the rider's vision without affecting others in the vicinity. This solution is designed for real-time deployment in crowded environments and incorporates AI-powered tracking to maintain visual contact with the suspect. Its precision targeting and electronically controlled light beam allow it to be mounted on a variety of platforms, including motorcycles, surveillance cameras, and drones. The system provides law enforcement with enhanced situational awareness and reaction time, enabling fast and humane intervention without causing permanent harm.

A further submission showcased a radio frequency-based system capable of halting electrically powered vehicles through non-contact intervention. While it is not effective on vehicles without electronic control systems, it has demonstrated success in neutralising multiple motorcycles simultaneously and is also effective against electric bicycles. The system functions at range and is suitable for both static checkpoints and mobile deployment. It is designed to be safe for human exposure and presents a viable option for urban use where conventional stopping methods may not be feasible or safe.

An additional solution leverages electromagnetic radiation to disable non-cooperative vehicles. This system operates without ammunition and is designed for ease of use in confined urban settings. It offers high directional accuracy, ensuring that only the targeted vehicle is affected, and complies with applicable European safety regulations. Although it has a limited effective range, the solution is suitable for use against vehicles with electronic systems and can be deployed without risk to nearby pedestrians or bystanders.

It is important to note that not all solutions presented during the e-pitching sessions were suitable for motorcycles and electric bicycles. Several approaches were tailored for conventional four-wheeled vehicles and may not be compatible with smaller, lighter vehicles.

In summary, the proposed solutions to this use case reflect a range of innovative thinking, with particular emphasis on non-lethal, targeted intervention in busy urban environments. Solutions varied in their level of technological maturity and operational focus but shared a common goal: to enable law enforcement agencies to respond effectively to agile threats without compromising public safety or operational ethics.

Use Case 3 – Distressed driver operating a large passenger coach

Use Case 3 presents a complex and high-risk scenario involving a distressed driver operating a large passenger coach. The primary concern in such situations is to neutralise the threat safely while minimising harm to passengers and bystanders. During the e-pitching sessions, several technology providers presented solutions tailored or adaptable to this use case, each addressing different operational needs from mechanical intervention to non-lethal vehicle immobilisation.

One solution focuses on remotely transmitting a stop command to the targeted vehicle through transceiver units that can be installed in police vehicles, roadside infrastructure, or gantries. The system allows authorised personnel to activate a command from a control room or patrol unit. In the case of a reported threat, a stop signal can be sent directly to the coach as it passes one of these transceiver-equipped locations. Additionally, this approach enables the establishment of restricted zones through geofencing, where all non-exempt vehicles are commanded to stop upon entry, allowing authorities to control movement in real time.

Another proposed method uses a non-lethal light-based device that emits a precisely focused beam to disorient the driver temporarily. This solution aims to prevent escalation and allow intervention without inflicting permanent harm. While the concept is designed for general application, including scenarios involving armed threats or rapid interventions, its suitability for a coach-sized vehicle may depend on further testing under operational conditions.

Another approach offers a radio frequency-based stopping mechanism that disables the vehicle's electronic systems without physical contact. While this technology has been demonstrated to stop vehicles ranging from small to large trucks, it has not yet been specifically tested on passenger coaches. Nonetheless, based on engine similarities, it is considered technically feasible, pending further trials. The system is non-lethal and does not affect vehicles outside the intended target, making it potentially suitable for use in populated or sensitive areas.

A mechanical intervention method was also presented, involving the rapid deployment of a spiked net system capable of stopping heavy vehicles up to ten tonnes. This solution offers a controlled and non-lethal stop, with minimal risk to passengers. It can be manually or remotely deployed in under 20 seconds, including in emergency scenarios directly ahead of the moving coach. Designed to operate on both road and off-road surfaces, the system is compatible with automated deployment tools, which ensures the safety of operators. It also allows for integration with sensor and vehicle identification systems, enabling a coordinated response to distressed driver events.

Additionally, a solution using electromagnetic radiation was introduced. Although originally designed for motorcycles and smaller vehicles, the system is capable of disrupting electronic systems in any vehicle that relies on electronic controls. It is ammunition-free, non-destructive, and compliant with safety regulations. However, its short-range and narrow targeting beam may limit its effectiveness when dealing with large, fast-moving vehicles in urban or highway settings.

While some technologies were not specifically tested against large passenger coaches, the adaptability of certain systems – particularly those focused on electronic disruption and physical interception – suggests that with further development and validation, they could be highly effective in safely managing this use case. Collectively, the proposed solutions emphasise the importance of precision, control, and non-lethality in responding to complex situations involving distressed drivers of heavy passenger vehicles.

3.3. OMC event in Warsaw

The central event of the INTERCEPT Open Market Consultation (OMC) activities was held on 25 June 2025 in Warsaw, Poland. The event was conducted in a hybrid format and ran from 11:00 to 17:15. It represented a key milestone in the project, facilitating structured engagement between public procurers and market stakeholders. The event aimed to support mutual understanding and collect informed input in preparation for the upcoming procurement process.

The OMC served as a structured dialogue through which public procurers sought insights from the market to assess its capacity to meet identified needs. This engagement helped bridge the gap between the public sector (demand side) and technology providers (supply side), ensuring alignment between procurement objectives and market capabilities.

During the event, the procurers presented their findings from the prior-art and IPR analyses, the standards landscape, contractual frameworks, and project feasibility studies. Technology providers were invited to contribute insights on structuring the procurement phases, resource planning, and identifying and mitigating key risks. The event also focused on validating operational needs, exploring relevant technologies, and assessing innovation potential and readiness levels.

Moreover, the OMC provided a platform for dialogue on future collaboration opportunities, including the formation of consortia and mechanisms to enhance participation, particularly by small and medium-sized enterprises (SMEs). These discussions were intended to inform and refine the tender preparation process and support the co-development of effective, innovative solutions.

As part of the broader OMC process, a dedicated workshop was also conducted to validate preliminary findings related to the three identified Use Cases. This workshop examined technological readiness and procurement feasibility within the context of each Use Case.

The objective of the consultation was to collect expert input from industry stakeholders and technology providers on two critical dimensions of the forthcoming Pre-Commercial Procurement: the structuring and phasing of the project and its associated budget allocation, and the current status and future potential of relevant technological innovations.

OMC event

25 June 2025

Address: Władysława Orkana 14, Warsaw, Poland

Microsoft Teams link

AGENDA

Hours	Topic	Presenter
10:45 – 11:00	Coffe and arrival	
11:00 – 11:15	Welcome and Introduction to the INTERCEPT project	PPHS
11:15 – 11:30	Introduction to Pre-Commercial Procurement	CORVERS
11 30 – 11:45	INTERCEPT Procurement Strategy	KEMEA
11:45 – 12:15	Presentation of the state of the art	DIGINNOV + CORVERS
12:15 – 12:30	OMC objectives and activities	PPHS
12:30 – 12:50	Presentation of the use cases and associated needs	PPHS/DIGINNOV
12:50 – 14:00	Lunch break	
14:00 – 15:30	Workshop / questions about main aspects PCP Survey on the use cases	PPHS
15:30 – 17:00	Matchmaking session (on-site) • introduction to the matchmaking session, • presentations of suppliers, • matchmaking session	Technology providers
17:00 – 17:15	OMC closure	PPHS

Figure 1 Agenda of the OMC event in Warsaw

This section of the OMC report consolidates and synthesises the feedback received during the OMC event and workshop, including insights gathered through interactive discussions and voting sessions. The findings presented herein are intended to inform the planning, design, and implementation of the INTERCEPT PCP process.

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3.3.1. Use Case 1

Project Phasing and Budget

Allocation of Time Across PCP Phases

Participants were invited to suggest how the PCP timeline of 30 months should be distributed across the three established phases: solution design, development, and operational validation.

Figure 2: Allocation of Time Across PCP Phases in Use Case 1

The responses to the question on how to allocate the 30-month PCP project timeline across its three phases demonstrate a range of perspectives reflecting differing priorities and interpretations of project complexity. For the solution design phase, the responses varied from 5 to 12 months, with a concentration around 8 to 12 months, suggesting that while some participants see this phase as relatively concise, others believe it requires a more extended period for defining requirements, stakeholder alignment, and preliminary planning. In the prototype development phase, responses similarly ranged from 5 to 15 months, but with a clear inclination toward higher allocations such as 12 and 15 months. This reflects a consensus that this phase is likely to be the most resource- and time-intensive, due to the technical challenges involved in building and integrating functional prototypes. For the operational validation phase, answers were distributed between 3 and 14 months, showing the widest spread of opinions. While some respondents considered this phase relatively brief, potentially assuming a smooth transition from development to validation, others allocated significant time to this phase, possibly recognising the challenges of real-world testing and validation in diverse operational contexts.

Allocation of Budget

The responses to the budget allocation question reveal different perspectives on how to distribute the 3 million euros across the three phases. For the solution design phase, the answers ranged from 400,000 to 1.5 million euros, with a clustering around 600,000 to 700,000 euros. This suggests that while some respondents view the design phase as requiring a modest investment, others consider it more resource-intensive, reflecting the complexity of planning and aligning stakeholders.

In the prototype development phase, responses ranged from 500,000 to 1.5 million euros, with a significant portion of answers around 750,000 to 1 million euros. This aligns with the expectation that the development of the prototype, including integration and testing, would consume a substantial share of the budget, as this phase involves significant technical work and system creation.

For the operational validation phase, answers ranged from 750,000 to 1.5 million euros, with most responses suggesting a budget between 750,000 and 1 million euros. This indicates that a considerable portion of the budget is expected to go into real-world testing, which may be seen as requiring substantial resources, particularly for ensuring the solution is effective in diverse operational environments.

Phases Requiring More Resources

Feedback from participants consistently emphasised that both the development and operational validation phases would likely require substantially more resources in terms of time and budget. The development phase, in particular, demands significant investments in prototyping, integration, and functional testing. Additional time is often needed to source specialised parts and adapt technologies for the specific demands of law enforcement use cases. The validation phase also emerged as a critical component, with its resource requirements driven by the need to test the solutions in varied and realistic conditions, involving coordination with national and cross-border authorities.

Critical Risks and Mitigation Strategies

The OMC also focused on identifying key risks associated with each phase of the PCP and strategies for mitigating them. In the solution design phase, the main risks are related to ensuring agreement among all users on a common set of requirements, as differing opinions and disagreements among procurers could cause delays. The rapid evolution of technology is also a concern, with the system potentially becoming obsolete before it is fully developed. Another risk is time and budget overruns, as iterations between the solution and testing may be required. This iterative process could lead to delays and additional costs. Mitigation strategies include careful planning, clear predefinitions, and close monitoring of technological advancements to ensure the design remains relevant.

During the development phase, risks include delays in procurement of necessary components, legal or logistical challenges related to export controls for cross-border testing, and the potential for budget overruns if timelines are not rigorously managed. To mitigate these risks, stakeholders recommended deliverable-based payment structures, careful selection of development partners during the tender process, and the use of established local or regional testbeds when cross-border options are not feasible and scheduling testing with government agencies, which often have packed agendas, requires careful planning and early coordination.

In the operational validation phase, the risks include insufficient time for validation, which may lead to incomplete testing, and the need for significant resources if the system must be tested under all conditions. Furthermore, technical integration issues could arise. Mitigation strategies involve ensuring sufficient time for validation, careful planning to allocate necessary resources, and addressing technical integration challenges early on to avoid issues during the final validation phase.

Technology Readiness and Innovation

<u>*Current Capability to Deliver Relevant Solutions*</u>

The responses indicate that none of the companies are fully prepared to meet all the needs described in Use Case 1. However, participants of the OMC indicated that they already possess technologies that **partially cover** the needs and are open to conducting R&D to address the remaining gaps. This suggests that while the companies do not yet have a complete solution, they possess the capability and willingness to develop it further through research and development. Importantly, no companies indicated that they are completely unable or uninterested in providing solutions, showing a proactive approach to meeting the project's requirements.

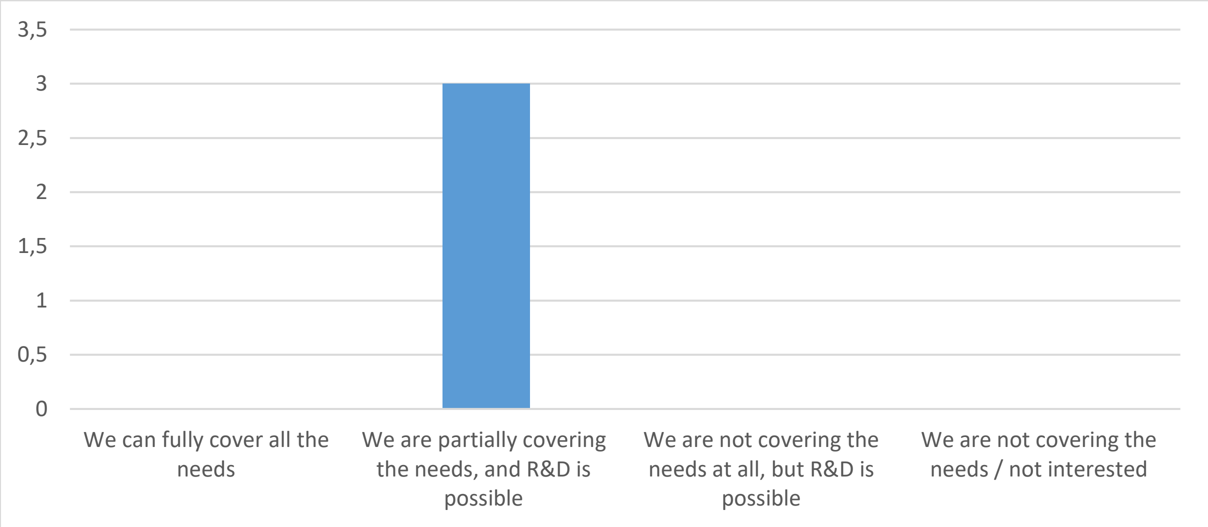

Figure 3: Technology Providers' Capability to Meet the Needs Described in Use Case 1

Room for R&D (TRL 3–7)

The responses indicate a divided outlook on the potential for R&D to address the needs described in Use Case 1. Three respondents believe that there is enough room for R&D (TRL 3-7) to meet the requirements, suggesting optimism about the potential for innovation and development. However, two respondents disagreed, indicating concerns that the current state of technology may not provide enough flexibility or opportunity for effective R&D to resolve the identified challenges. Despite the split, the majority view still supports the possibility of R&D contributing significantly to addressing the needs.

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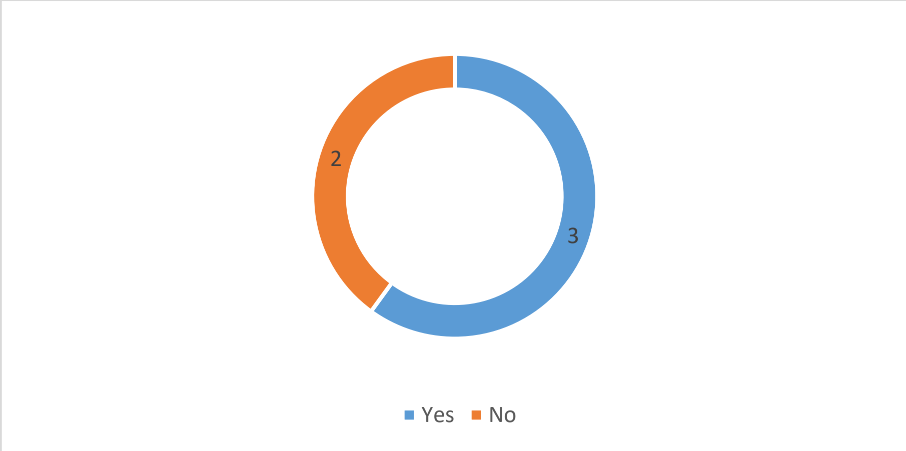

Figure 4: Assessment of R&D Potential (TRL 3-7) to Address the Needs of Use Case 1

Estimated R&D Effort Required

While existing technologies provide a promising starting point, stakeholders agreed that a significant amount of R&D effort is required to meet the identified needs, with all five respondents estimating that more than 75% of the R&D effort is still needed. This suggests a widespread belief that the current state of technology is far from fully meeting the project's requirements, and substantial research and development will be necessary to achieve the desired solutions.

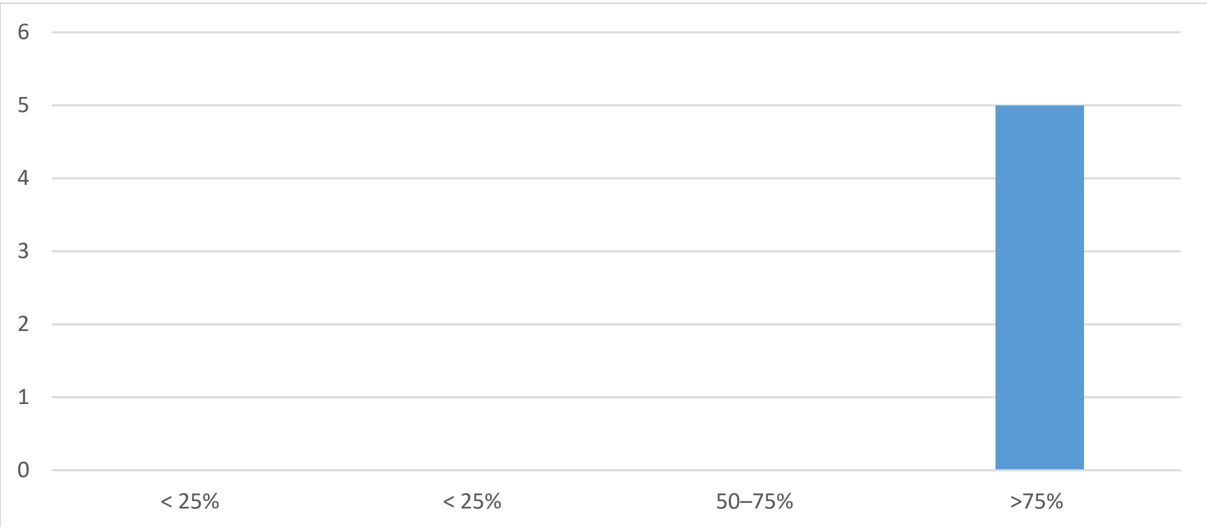

Figure 5: Estimated R&D Effort (TRL 3-7) Required to Meet the Needs Identified in Use Case 1

Interest in Participating in the PCP

All respondents expressed a clear and proactive interest in participating in the upcoming PCP, provided that Use Case 1 is selected.

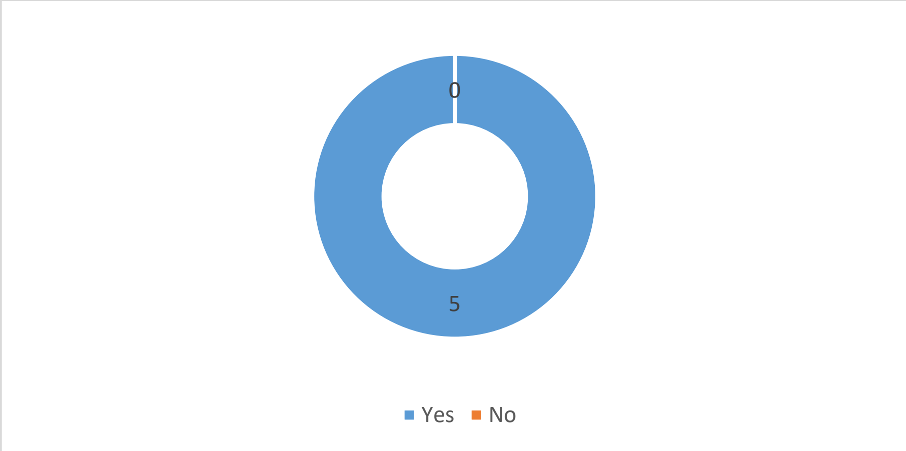

Figure 6: Interest in Participating in the Future PCP for Use Case 1

The scenario is regarded as highly relevant, reflecting real-world challenges faced by law enforcement authorities across Europe. The technical feasibility of addressing the scenario, combined with its societal and security importance, makes it an attractive opportunity for innovation-oriented providers seeking to deliver impactful public safety solutions.

Patents and Proprietary Contributions

Some organisations reported having patented or proprietary technologies that are directly applicable to the objectives of the use case. One respondent explicitly mentioned that their system is patented, while another confirmed that their patented system was also listed in the RFI response. This highlights that the companies have already developed innovative, protected technologies, positioning them as strong contributors to the future PCP project with unique solutions that may provide a competitive edge.

Ongoing Innovations

A number of participants highlighted active innovation initiatives aimed at enhancing remote vehicle stopping capabilities. These initiatives encompass a range of technologies and strategies aimed at enhancing system performance. Key efforts include partnerships with other technology providers to integrate complementary systems and expertise. Additionally, there is a strong focus on the development of advanced detection systems designed to facilitate early identification of potential threats. Non-lethal deterrence methods are also being prioritised, enabling the neutralisation of threats in a safe and controlled manner. Proactive detection technologies are being explored to identify risks before they escalate, while real-time tracking and identification systems are being integrated to ensure precise and timely responses.

Most Ready Technology Domains

When asked which technology domains are most prepared to support the deployment of remote vehicle stopping systems, stakeholders pointed to several areas.

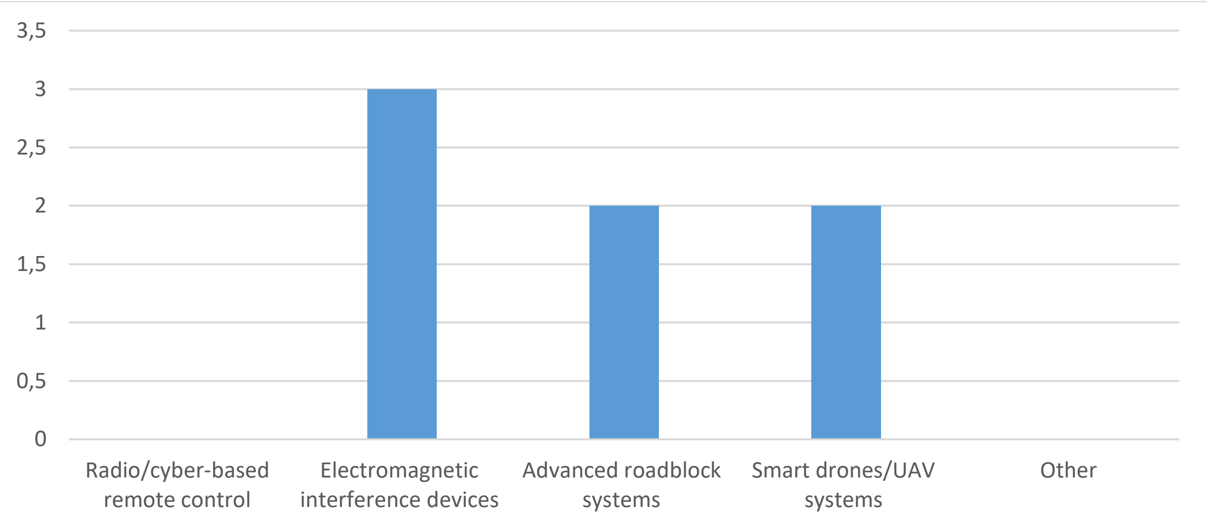

Figure 7: Technology Domains Most Ready to Contribute to Remote Vehicle Stopping for Use Case 1

The responses to the question indicate a clear preference for electromagnetic interference devices (3 responses). These devices are seen as effective for disabling vehicle systems remotely, making them a top choice for this application. Advanced roadblock systems and smart drones/UAV systems each received 2 responses, suggesting moderate interest. Roadblocks are reliable but may face logistical challenges, while drones offer flexibility and mobility, though they require overcoming technical hurdles. Radio/cyber-based remote control received no responses, likely due to concerns about security and potential vulnerabilities in such systems.

Potential Game-Changers in the Next Five Years

Participants were also invited to speculate on technologies that could emerge as transformative in the field of remote vehicle stopping over the next five years. The responses suggest several promising technologies that could revolutionise remote vehicle stopping. Autonomous driving could enable vehicles to be remotely controlled or overridden, providing precise and automated stopping. Advances in battery technology could enhance the effectiveness of remote disabling systems by improving power and range. A chip that can turn off a car would offer a direct and reliable method for remotely disabling vehicles, bypassing traditional mechanical methods. Drone grappler technology could provide a non-lethal, flexible solution by physically capturing or disabling a vehicle, offering an alternative to electronic interference. The integration of satellite communication with electric vehicles could enable remote control in areas with limited traditional communication networks, improving overall response capabilities. As electric vehicles (EVs) become more widespread, their electronic systems could be more susceptible to remote stopping methods. Lastly, the use of massive road sensors would provide real-time tracking and monitoring, allowing authorities to respond quickly to potential threats. These technologies could significantly enhance the precision, safety, and effectiveness of remote vehicle stopping systems in the near future.

3.3.2. Use Case 2

Project Phasing and Budget

Allocation of Time Across PCP Phases

Participants were invited to suggest how the PCP timeline of 30 months should be distributed across the three established phases: solution design, development, and operational validation.

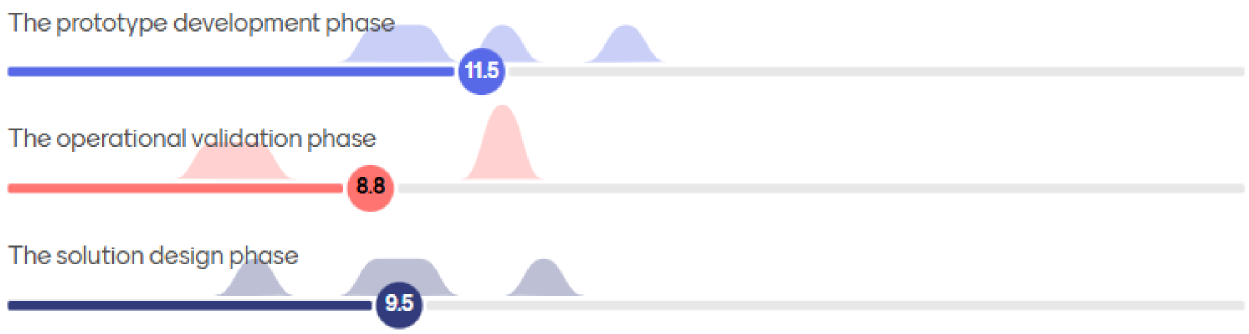

Figure 8: Allocation of Time Across PCP Phases in Use Case 2

As shown in the figure above, for the solution design phase, responses ranged from 6 to 13 months, with some answers suggesting 9 to 10 months. In the prototype development phase, considered as the one requiring most resources, responses varied from 9 to 15 months. This reflects the complexity of developing and testing the prototype, requiring significant time for integration and overcoming technical challenges. For the operational validation phase, answers ranged from 5 to 12 months. Most respondents favoured 12 months, indicating the need for thorough real-world testing, especially in dynamic urban environments. A shorter timeframe was suggested by some, assuming simpler validation or controlled testing environments.

Allocation of Budget

The responses to the budget allocation question suggest varied opinions on how to distribute the 3 million euros across the three phases of the project. For the solution design phase, answers ranged from 700,000 to 1.5 million euros.

In the prototype development phase, there was a broader distribution, with answers ranging from 500,000 to 1.5 million euros. The majority of respondents allocated around 1 million euros, reflecting the high cost of developing, integrating, and testing the prototype. This suggests that respondents foresee this phase as requiring substantial investment to ensure the system's functionality and reliability.

For the operational validation phase, answers ranged from 500,000 to 800,000 euros, with most responses at the lower end of the range. This indicates that respondents believe the operational validation phase, while critical, may require fewer resources than the design and development phases.

Phases Requiring More Resources

The responses to the question about which phases typically require more resources indicate a consensus that the Development phase is the most resource-intensive. Respondents highlighted that this phase often requires more time and budget, primarily due to the complexity of the work involved, such as integrating various technologies and conducting extensive testing, particularly when ensuring safety and functionality. The difficulty of safely stopping two-wheeled vehicles, such as motorcycles, was also emphasised as a factor that makes the development phase more challenging. Additionally, responses suggested that both the design and validation stages also require significant resources, particularly when testing is necessary to meet all requirements and ensure the solution is acceptable to customers.

Critical Risks and Mitigation Strategies

The responses highlight several critical risks in the solution design phase, primarily revolving around stakeholder alignment and technical challenges. Disagreements among procurers and differing viewpoints on system requirements could lead to delays or complications in finalising the design. To mitigate these risks, it is essential to ensure early and continuous engagement from all users, with a clear process for agreeing on a common set of requirements. Additionally, the lack of data and existing technology for stopping motorcycles was mentioned as a challenge. The mitigation strategy involves leveraging electromagnetic systems while ensuring that each system is evaluated based on its own merits, rather than assumptions based on vehicle type.

In the prototype development phase, the main risks identified include delays due to lead times for parts and potential export constraints for testing in different countries. The availability of the right testing environment and coordination with government agencies, which often have fully booked schedules, also poses a challenge. The proposed mitigation strategies involve proactive planning for component procurement and securing testing dates well in advance to avoid delays.

No risks were identified for the Operational Validation phase, suggesting either that the risks are perceived as manageable or that they were not fully addressed in the responses.

Technology Readiness and Innovation

Current Capability to Deliver Relevant Solutions

The responses indicate that most companies are **partially covering** the needs outlined in the use case, indicating that R&D is possible to address any gaps. This suggests that while the companies involved may not have fully developed solutions ready, they are capable of undertaking research and development to meet the project's requirements. None of the respondents indicated that they are either unable to cover the needs or not interested in participating, which shows a willingness to engage and innovate within the scope of this use case.

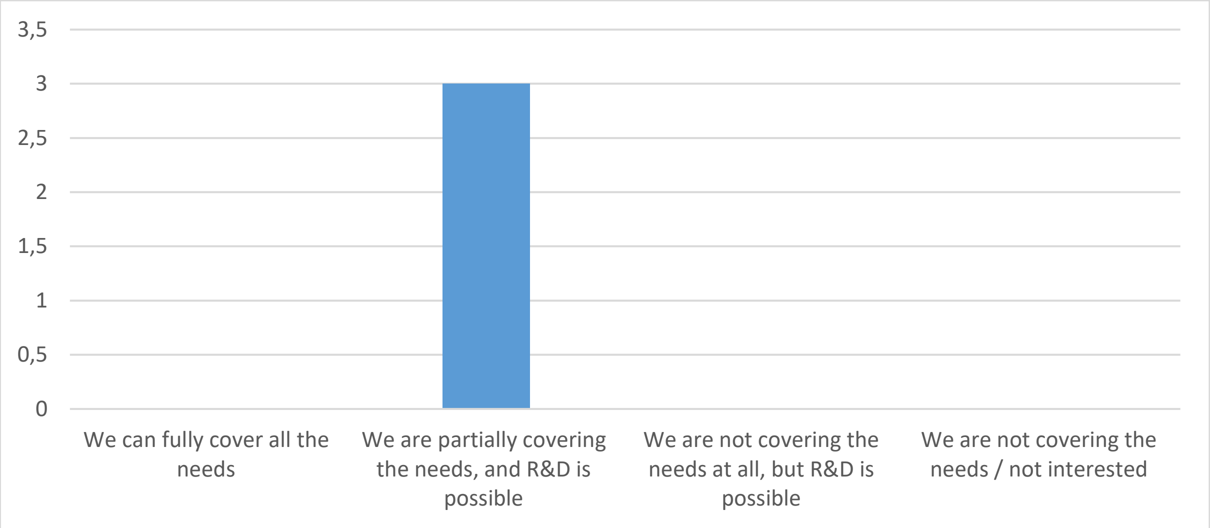

Figure 9: Technology Providers' Capability to Meet the Needs Described in Use Case 2

Room for R&D (TRL 3–7)

The responses indicate a strong belief in the potential for R&D to address the needs described in Use Case 2, with three respondents affirming that there is enough room for research and development (TRL 3-7). Only one respondent disagreed, suggesting a less optimistic view on the feasibility of further R&D. Overall, the majority view supports the idea that R&D can play a significant role in meeting the requirements of the project, indicating confidence in innovation and development to close any existing gaps.

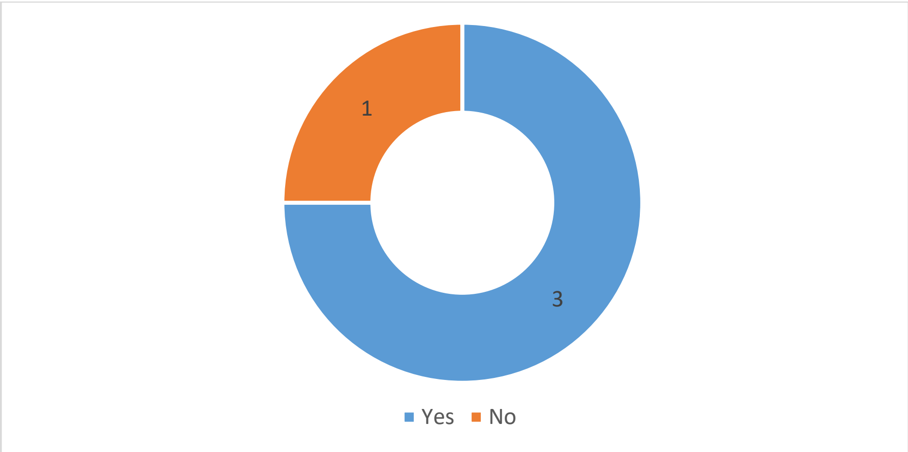

Figure 10: Assessment of R&D Potential (TRL 3-7) to Address the Needs of Use Case 2

Estimated R&D Effort Required

The responses indicate that a majority of participants believe a significant amount of R&D effort is still required to meet the identified needs, with three respondents estimating that more than 75% of the work is yet to be done. One respondent indicated that the required effort would be between 50-75%, while another respondent suggested that less than 25% would be needed. This distribution shows that while there is some variance in opinion, the overall consensus is that a substantial amount of R&D (above 50%) will be necessary to address the technological challenges of the project.

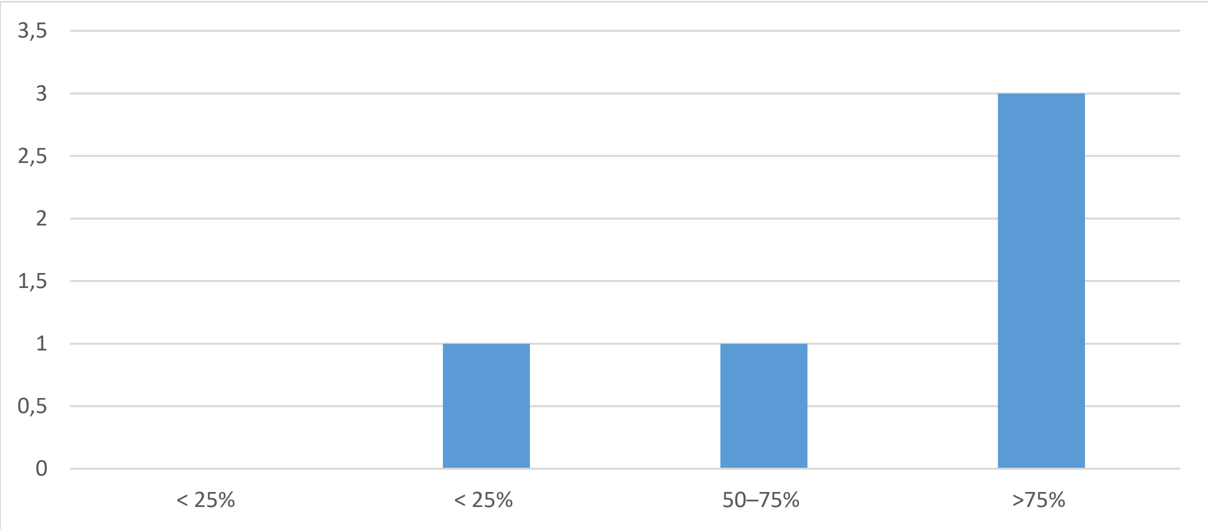

Figure 11: Estimated R&D Effort (TRL 3-7) Required to Meet the Needs Identified in Use Case 2

Interest in Participating in the PCP

All respondents expressed a clear and proactive interest in participating in the upcoming PCP, provided that Use Case 2 is selected. This demonstrates strong enthusiasm and confidence from the participants in the project's potential, indicating a high level of readiness and commitment to contributing to its success.

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Figure 12: Interest in Participating in the Future PCP for Use Case 2

Patents and Proprietary Contributions

The responses suggest that the companies involved have already disclosed their relevant patents or proprietary technologies during the RFI process and presentation events. The key proprietary technology mentioned is non-lethal disabling methods, which could play a critical role in the use case, particularly in providing safe and effective solutions for remotely stopping motorbikes and two-wheelers. This indicates that the technology providers are prepared with specialised, potentially game-changing solutions for the future PCP project.

Ongoing Innovations

The responses suggest that companies are exploring several innovative approaches to enhance remote stopping capabilities. One respondent mentioned the use of a very big airbag, which could be a non-lethal method for immobilising vehicles, particularly for e-bikes, by safely stopping them without causing harm. Another innovation noted was e-bike susceptibility, which likely refers to technologies designed to target and disable e-bikes, a key aspect of the use case. Finally, non-lethal disabling was mentioned, indicating ongoing exploration of technologies that can safely disable vehicles without causing fatal harm, aligning with the goal of providing safe, effective vehicle control methods. These innovations show a focus on developing non-lethal, targeted solutions for remote vehicle immobilisation.

Most Ready Technology Domains

When asked which technology domains are most prepared to support the deployment of remote vehicle stopping systems, stakeholders pointed to several areas.

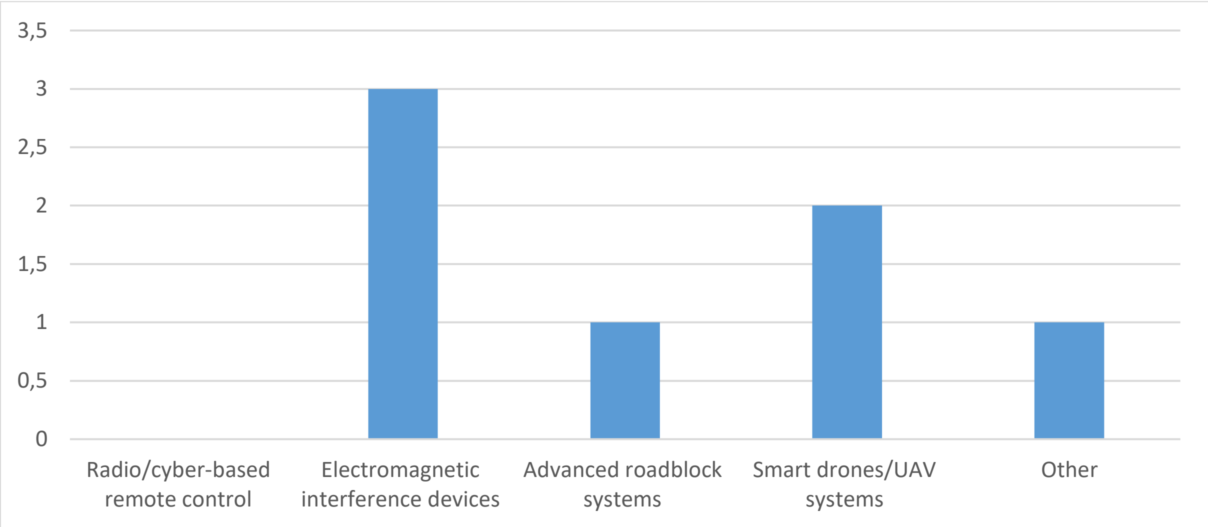

Figure 13: Technology Domains Most Ready to Contribute to Remote Vehicle Stopping for Use Case 2

The responses indicate a strong preference for electromagnetic interference devices as the most ready technology domain to contribute to remote vehicle stopping, with three respondents identifying this as a viable solution. This suggests that electromagnetic systems are seen as well-developed and effective for disabling or controlling vehicles remotely. Smart drones/UAV systems were also noted by two respondents, highlighting the potential for aerial systems to enhance remote immobilisation capabilities, particularly for tracking and targeting vehicles. One respondent mentioned advanced roadblock systems, indicating interest in more physical methods of immobilisation. Additionally, a response labelled as other points to the possibility of alternative solutions.

Potential Game-Changers in the Next Five Years

The responses indicate a focus on unmanned vehicles and advanced communication technologies as potential game-changers for remote vehicle stopping within the next five years. Unmanned vehicles could play a critical role in enhancing the flexibility and precision of remote vehicle immobilisation, possibly by autonomously intervening in high-risk situations. V2Road communication and V2V (vehicle-to-vehicle) communication were also mentioned, emphasising the growing importance of connected vehicle systems. These technologies could enable more effective coordination between vehicles and infrastructure, improving the overall control and safety of remote vehicle stopping. Together, these innovations suggest a future where autonomous and interconnected systems revolutionise the approach to vehicle immobilisation.

3.3.3. Use Case 3

Project Phasing and Budget

Allocation of Time Across PCP Phases

Participants were invited to suggest how the PCP timeline of 30 months should be distributed across the three established phases: solution design, development, and operational validation.

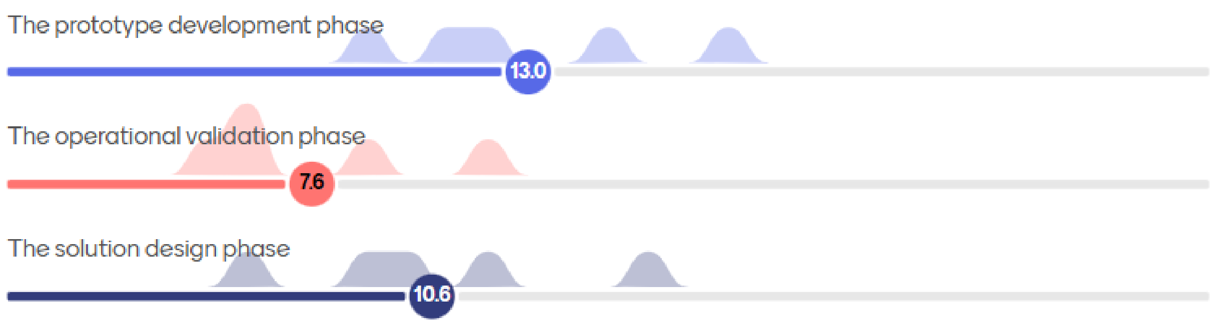

Figure 14: Allocation of Time Across PCP Phases in Use Case 3

As presented in the figure above, the survey responses reveal differing perspectives on the time required for each phase. For the solution design phase, answers ranged from 6 to 16 months. The prototype development phase had responses ranging from 9 to 18 months. This indicates a strong consensus that the development phase will be the most time-consuming, given its complexity. Respondents recognise the need for extended time for prototype creation, integration, and testing. For the Operational validation phase, answers varied from 5 to 12 months. This variation indicates some uncertainty regarding the length of real-world testing. While some respondents expect a relatively quick validation process, others believe that thorough validation will take more time to ensure the solution performs effectively in real-world conditions.

Allocation of Budget

For the solution design phase, the answers ranged from 800,000 to 1.25 million euros, suggesting a moderate allocation of funds. While this phase is essential for planning and aligning stakeholder requirements, it is generally seen as requiring less financial commitment than the other phases.

The responses reflect a consensus on prioritising the prototype development phase, with answers suggesting allocations between 1 million and 1.5 million euros. This indicates that respondents view the development of the prototype as the most resource-intensive phase, requiring substantial investment for technical work, integration, and testing.

The operational validation phase received lower budget estimates, with responses ranging from 500,000 to 700,000 euros. This suggests that the operational validation, while important, is considered less resource-demanding compared to the solution design and development phases, possibly due to the focus on real-world testing rather than extensive development work.

Phases Requiring More Resources

The responses indicate that the Development phase is typically the most resource-intensive, requiring significant time and budget. This phase, which involves taking an idea and turning it into a functional solution, demands considerable effort. Additionally, respondents highlighted the importance of the concept development phase, which occurs before selecting the final solution. This phase, focused on idea validation and exploration, also requires substantial resources, as it lays the groundwork for the subsequent development process.

Critical Risks and Mitigation Strategies

The responses highlight several critical risks across the three phases. In the solution design phase, the key risk identified is the time required for development and achieving a focused definition of the solution. Mitigating this risk involves clear and efficient scope definition and planning to ensure the design phase stays on track and meets stakeholder expectations.

For the Prototype Development phase, risks include resource constraints, cost increases, and challenges in testing and evaluating the prototype. Given the complexity of testing against numerous variables, especially with vehicles of different sizes, the mitigation strategy emphasises thorough planning for resource allocation, budget management, and comprehensive testing across diverse scenarios to ensure the prototype meets performance standards.

In the Operational Validation phase, risks centre around the variability of tests depending on the final solution, with the make and model of each vehicle potentially influencing results. Additionally, poor results during pilot testing were highlighted. To mitigate these risks, the solution should be tailored to accommodate diverse vehicle types, and pilot tests should be thoroughly planned and conducted with a focus on the intended use case to ensure reliability and performance.

Technology Readiness and Innovation

Current Capability to Deliver Relevant Solutions

The responses suggest that no company is fully prepared to address all the needs outlined in Use Case 3. One respondent mentioned that they are **partially covering** the needs and are open to conducting R&D to bridge the gaps, while another stated that they are **not covering the needs at all**, but are still willing to engage in R&D to develop a solution. This indicates a mixed level of readiness, with a clear willingness from both respondents to contribute through research and development. Importantly, no company expressed disinterest or complete inability to participate, showing a positive outlook for future collaboration and innovation.

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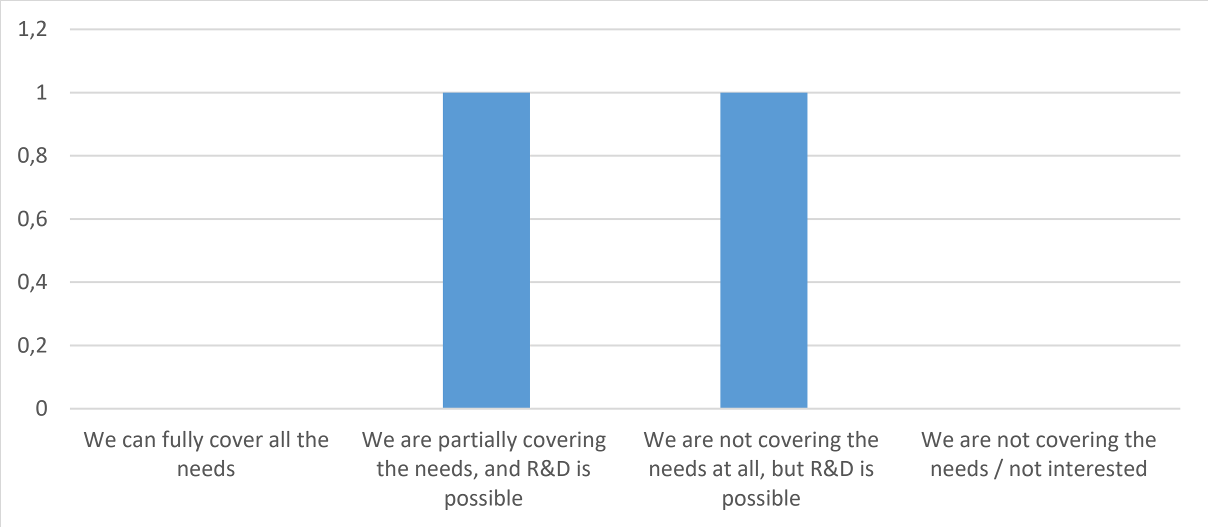

Figure 15: Technology Providers' Capability to Meet the Needs Described in Use Case 3

Room for R&D (TRL 3–7)

The responses indicate a clear consensus that there is ample room for R&D (TRL 3-7) to address the needs outlined in Use Case 3, with all four respondents affirming this. This suggests strong confidence in the potential for innovation and development to meet the project requirements, highlighting a positive outlook for advancing the technology and solutions through research and development.

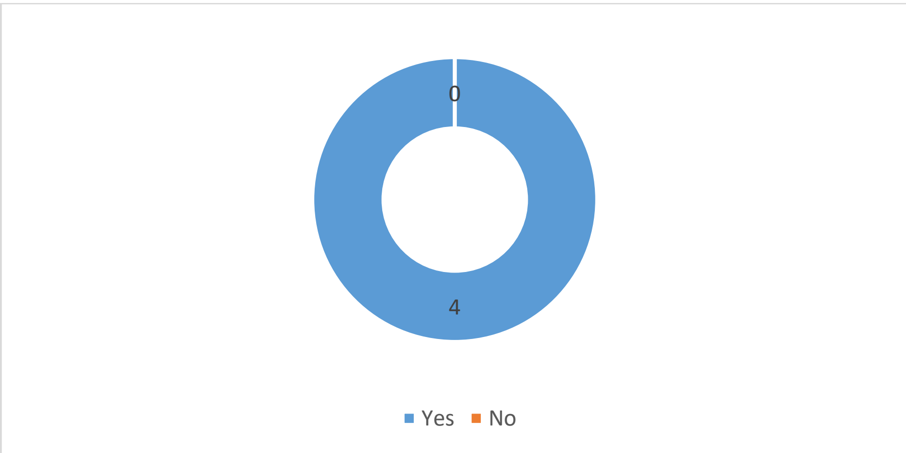

Figure 16: Assessment of R&D Potential (TRL 3-7) to Address the Needs of Use Case 3

Estimated R&D Effort Required

The responses indicate a strong belief that a significant amount of R&D effort is still needed to meet the identified needs. Four respondents estimated that more than 75% of the R&D effort is required, suggesting that the current technologies are far from fully meeting the project's requirements. One respondent indicated that 50-75% of the effort would be necessary. This shows a general consensus that the R&D efforts will need to be extensive to address the technological gaps and meet the project's objectives.

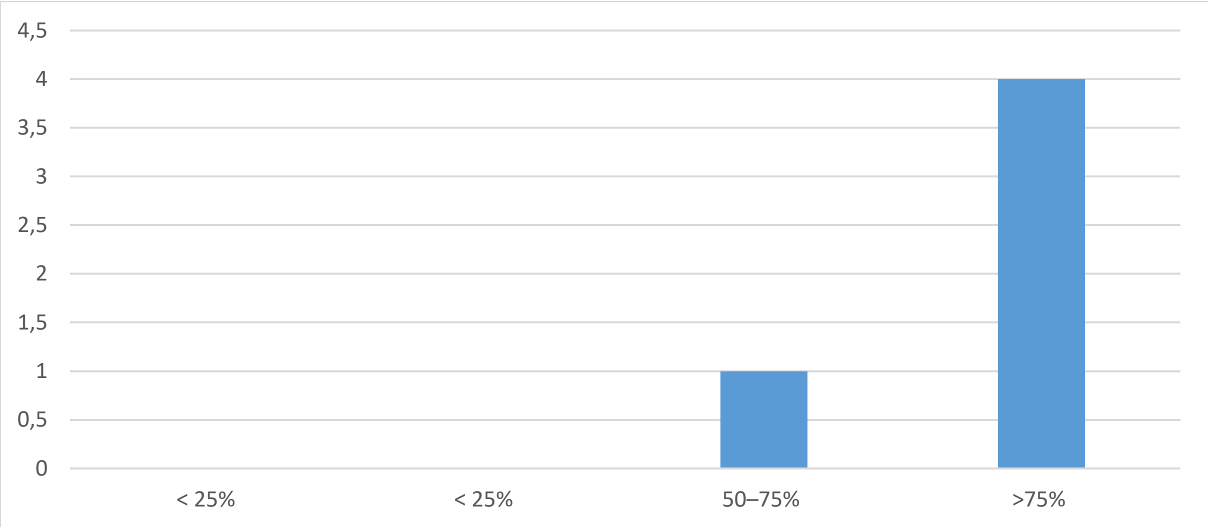

Figure 17: Estimated R&D Effort (TRL 3-7) Required to Meet the Needs Identified in Use Case 3

<u>*Interest in Participating in the PCP*</u>

The responses indicate strong interest in participating in the future PCP, with all respondents expressing a willingness to engage if Use Case 3 and associated needs are selected. This unanimous positive response suggests that the project is seen as an appealing opportunity, and there is confidence in the potential for successful collaboration and development in addressing the identified challenges.

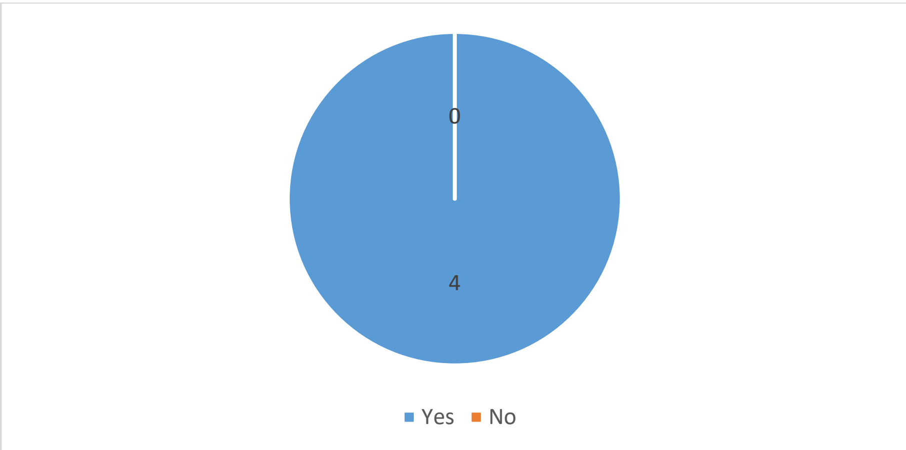

Figure 18: Interest in Participating in the Future PCP for Use Case 3

Patents and Proprietary Contributions

The responses indicate that companies have proprietary technologies that could be relevant to the use case. One respondent mentioned tacho monitoring, which may be useful for tracking and monitoring vehicle movements, a key aspect for remote immobilisation. Another respondent highlighted that their patented system, which was also listed in the RFI response, could play a unique role. This suggests that the companies are bringing specialised, protected technologies to the table, potentially offering innovative solutions for the project's requirements.

Ongoing Innovations

The responses indicate that the companies are exploring several innovative technologies that could enhance remote stopping capabilities. One company is focusing on behavioural intelligent scanning, which could potentially be used for identifying abnormal driving patterns or detecting threats. Another respondent mentioned CAN bus interfaces, which could provide a direct link to vehicle control systems, allowing for integration with remote stopping technologies. Lastly, tacho monitoring was noted, likely to track and monitor vehicle speed and behaviour in real-time. These innovations reflect a strong focus on using advanced technologies to improve vehicle tracking, threat detection, and control, enhancing the effectiveness of remote immobilisation systems.

Most Ready Technology Domains

When asked which technology domains are most prepared to support the deployment of remote vehicle stopping systems, stakeholders pointed to several areas.

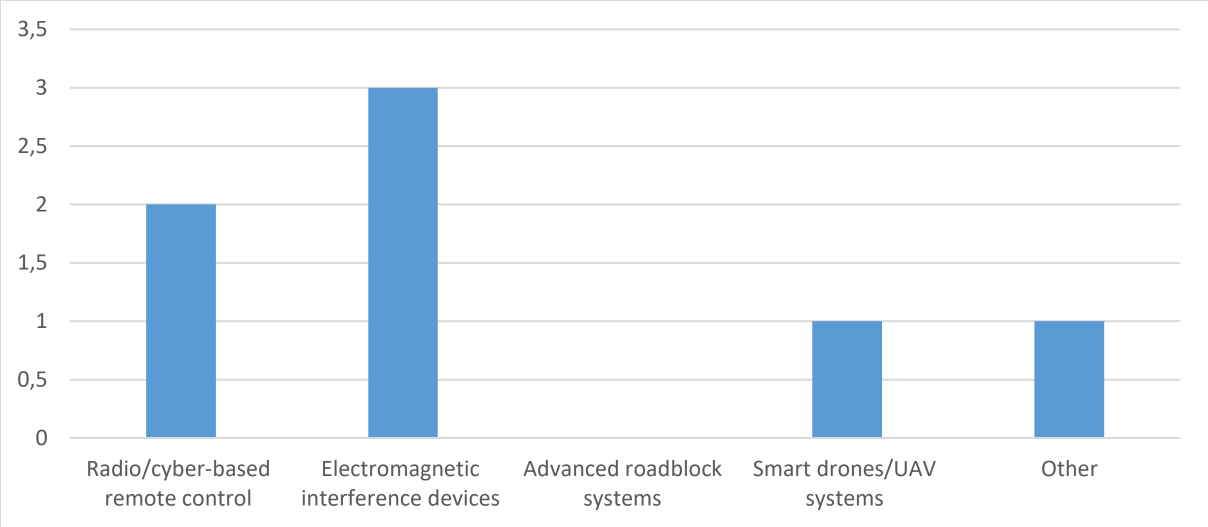

Figure 19: Technology Domains Most Ready to Contribute to Remote Vehicle Stopping for Use Case 3

The responses indicate that electromagnetic interference devices are considered the most ready technology domain for contributing to remote vehicle stopping, with three respondents highlighting this approach. This suggests that electromagnetic systems are viewed as the most developed and reliable option for remotely disabling vehicles. Radio/cyber-based remote control received two votes, which is only the case for Use Case 3, pointing to its potential for controlling vehicles remotely, though it may not yet be as widely applicable across other contexts. Smart drones/UAV systems were also mentioned by one respondent, indicating interest in aerial systems for monitoring and immobilisation. No votes were cast for advanced roadblock systems, suggesting that physical barriers are considered less ready for integration in this use case. Additionally, one respondent mentioned other technologies, indicating the exploration of alternative solutions. Overall, the focus is on electromagnetic and radio-based technologies for remote vehicle control.

Potential Game-Changers in the Next Five Years

The responses suggest that several emerging technologies could play a significant role in the future of remote vehicle stopping. Autonomous driving was mentioned twice, indicating a strong belief in the potential of self-driving technology to contribute to vehicle control, possibly by allowing vehicles to be automatically stopped or rerouted. Cloud-based solutions were also noted, suggesting that cloud computing could enable real-time data processing and decision-making for remote vehicle immobilisation. Additionally, V2Road communication and V2V (vehicle-to-vehicle) communication were mentioned, highlighting the importance of advanced communication systems for enabling vehicles to interact with infrastructure and each other, potentially enhancing the precision and effectiveness of remote vehicle stopping. These responses point to a future where connected, autonomous, and cloud-driven technologies significantly transform the remote immobilisation landscape.

3.3.4. General questions about the PCP

Interest in Forming or Joining a Consortium for the PCP

The responses indicate strong interest in collaboration, with all respondents expressing a willingness to form or join a consortium for the future PCP. This unanimous positive response suggests a high level of enthusiasm for working together on the project, indicating that the companies involved are eager to collaborate and pool resources to address the challenges outlined in the use cases. It also suggest that there is no company that could meet all the project requirements on its own.

Figure 20: Interest in Forming or Joining a Consortium for the future PCP

Potential Partners for Collaboration in the PCP Project

The responses indicate a diverse range of partners that companies would seek for collaboration in the PCP project. Automotive manufacturers and vehicle integrators were mentioned, highlighting the need for expertise in vehicle systems and integration. Telecom providers were also identified, suggesting that communication infrastructure will be crucial for remote vehicle control. Additionally, the mention of Eurocybcar implies a focus on cybersecurity, indicating the importance of secure systems in vehicle immobilisation. Sensor and C2 (Command and Control) control experts were also noted, pointing to the need for advanced technology to manage and monitor the vehicle stopping process. Finally, regulators were mentioned, emphasising the importance of aligning with legal and regulatory requirements. Overall, these responses suggest a multidisciplinary approach to collaboration, involving a broad range of expertise to address the technical, security, and regulatory challenges of the project.

Incentives to Encourage SME Participation in the Future PCP

The responses suggest two key incentives to increase SME participation in the future PCP. One respondent proposed a special prize for the most innovative feasible idea, which could motivate SMEs by rewarding creativity and practicality in developing solutions. Another response suggested free SME dissemination, indicating that providing SMEs with opportunities to promote their innovations could be a strong incentive, helping them gain visibility and market access. Together, these incentives focus on fostering innovation and supporting the growth and visibility of SMEs in the project.

Lessons learned from similar R&D projects

The response highlights the importance of increased communication and transparency among partners and stakeholders as a key lesson learned from similar R&D projects. This suggests that fostering open, consistent communication and ensuring that all parties are well-informed throughout the process are critical factors in ensuring the success of the PCP. By improving these aspects, the project can avoid misunderstandings, align expectations, and enhance collaboration, ultimately leading to more effective and efficient outcomes.

3.3.5. Consortium responses

Recommended Time and Budget Allocation for the PCP Phases

The OMC workshop results show that a large portion of both time and budget has been allocated to the solution design phase, as determined by a majority of technology providers. This likely stems from the understanding that the solution will need to be developed from the ground up. The considerable budget allocation for this phase can be explained by the fact that approximately six providers will be involved in the solution design, with the budget being distributed among them. As the project progresses and fewer competitors remain in later phases, the budget allocation is expected to shift accordingly. This can be the reason why a substantial budget was distributed to this phase.

Drawing from experience in previous PCP projects, the consortium recommends dedicating the most time and resources to Phase 2 - prototype development, as this phase typically requires substantial technical effort, including the integration of various systems, hardware procurement, and testing. Following this, Phase 3 -validation in the operational environment should also receive significant attention, as it is crucial to ensure that the prototype performs reliably in real-world conditions. Lastly, Phase 1 - solution design, while important, should require fewer resources since its primary focus is on developing and submitting the proposal. This phase involves refining the conceptual framework of the solution proposed in the tender offer, but it is more of a preparatory stage compared to the actual development and testing that follows.

In light of these considerations, the consortium suggests the following time allocation:

- Phase 1 - Solution design: 4-6 months
- Phase 2 - Prototype development: 12-14 months
- Phase 3 - Testing and validation: 10 months

This schedule accounts for interim periods during which project partners will assess the outcomes of the preceding phase and oversee the selection and contracting of suppliers for the next stage.

Taking into account the facts described above, the consortium suggests the following budget distribution:

- Phase 1 - Solution design: 12% of the budget
- Phase 2 - Prototype development: 63% of the budget
- Phase 3 - Testing and validation: 25% of the budget

This allocation ensures that the majority of resources are dedicated to the critical development and validation stages, while the solution design phase is appropriately scaled to its role in the project lifecycle.

The expected number of contractors for each phase is as follows:

- Phase 1 - Solution design: 6-5 contractors
- Phase 2 - Prototype development: 3-4 contractors
- Phase 3 - Testing and validation: 2 contractors

Mitigating Risks of Requirement Misalignment in the solution design phase

The OMC workshop results underscored a key risk identified by technology providers during the Solution Design phase: the potential for misalignment in requirements among different law enforcement agencies. Given the diverse nature of law enforcement operations, stakeholders feared that the LEAs may have varying expectations, priorities, and operational contexts, which can lead to disagreements or inconsistencies in how the solution should be designed. This misalignment could result in multiple iterations of the design, which would not only delay the project but also increase costs and reduce overall efficiency.

The INTERCEPT consortium emphasised that the process of clearly defining all requirements will be finalised during the tendering phase of the PCP. This phase is vital in setting a strong foundation for the entire project, as it will ensure that all stakeholders are aligned on the needs and expectations before the formal submission of offers. By clearly documenting these requirements, technology providers will have a comprehensive understanding of what is expected, reducing the likelihood of misunderstandings or misaligned proposals.

Moreover, with clearly defined requirements in place, technology providers will be tasked with demonstrating how their proposed solutions specifically address these needs in their offers. This process will ensure that each proposal aligns with the collective expectations and that the solutions being offered are viable and directly relevant to the operational challenges faced by law enforcement agencies.

3.4. Matchmaking event

As part of the INTERCEPT Open Market Consultation (OMC) event held on 25 June 2025 in Warsaw, a dedicated matchmaking session was organised to provide participating technology providers with the opportunity to introduce their companies and demonstrate their capabilities in addressing the specific needs of public buyers.

Following the introductory presentations and discussions, technology providers were given the opportunity to engage directly with one another. This allowed participants to exchange ideas, discuss potential areas of collaboration, and initiate conversations that could lead to future consortium formation in the context of upcoming procurement activities.

Once the common challenge is communicated to the market, it was agreed that a dedicated matchmaking tool would be provided to all participating technology providers. This tool will enable participants to register their interest, view profiles of other registered providers, and identify potential partners for collaboration.

The INTERCEPT matchmaking form collects key information to support matchmaking and collaboration opportunities. It gathers details such as company name, headquarters location, website, technology sector, and primary contact information. Participants can specify their needs, whether seeking a partner, joining a consortium, or exploring collaboration opportunities. The tool also captures a brief company description, desired expertise or support, and the technologies or sectors of interest. Additional relevant information or requirements can also be provided, ensuring a tailored matchmaking process.

Click here to access the matchmaking form: https://intercept-horizon.eu/for-industry/#:~:text=Find%20a%20Business%20Partner

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4. Summary of the replies to the RFI questionnaire

The Request for Information surveys are part of the OMC of the INTERCEPT project. Two surveys were created, including the targeted questions for **technology providers** and **end users**.

The RFI questionnaire collected input from technology providers on solutions for the remote and safe stopping of vehicles. It focused on company profiles, existing or emerging technologies, and their suitability for six predefined high-risk use cases. Providers were asked to describe key technical features, safety mechanisms, development timelines, and readiness levels. The questionnaire also explored innovation compared to the current state-of-the-art, use of patents or standards, and any technical or operational barriers. Additional input on risks and support needed for development was also requested.

On the other hand, the RFI questionnaire for end users aimed to understand operational needs, technical expectations, and legal considerations related to remote vehicle-stopping solutions. Respondents were asked to share organisational details, the frequency and context of high-risk incidents, and rank the relevance of the six INTERCEPT use cases. Input was gathered on current tools, critical technical requirements, preferred environments for testing, and integration needs. The questionnaire also explored legal, ethical, and societal concerns, as well as end users' willingness to engage in testing, certification needs, and procurement constraints.

The (preliminary) results summarised below will be considered when drafting the tender documents for the future PCP.

After completing the analysis of the responses, the INTERCEPT Consortium will publish a final OMC report, scheduled for release on 4 July 2024. The purpose of this report is to inform the market and relevant stakeholders ahead of the upcoming e-pitching events and to support transparent, broad-based information exchange. All responses received through the EU Survey have been fully anonymised. As such, the report will present only aggregated findings and summarised insights derived from the collected data. The final OMC report will be made publicly available on the official INTERCEPT project website.

4.1. Technology providers

Based on the feedback provided in the EU Survey questionnaire for the technology providers, the respondents belong to start-ups, SMEs and private organisations as indicated in the figure below.

The participants who replied to the EU Survey questionnaire are from organisations in Spain, the United Kingdom, Portugal, the Netherlands and France.

	Answers	Ratio
Start-up	2	28.57 %
SME	2	28.57 %
Public organisation	0	0.00 %
Private organisation	2	28.57 %
R&D institute/University	1	14.29 %
Other (Please indicate below.)	0	0.00 %
No Answer	0	0.00 %

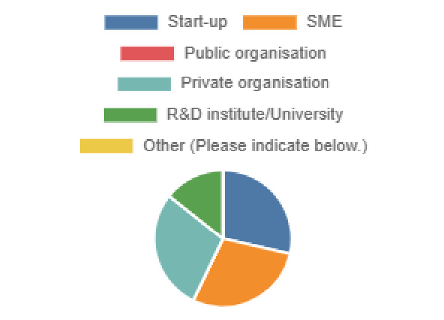

Figure 21: Type of organisations that replied to the Request for Information for end users using the EU Survey tool.

4.1.1. PCP challenge and requirements

1- Are you aware of any existing or emerging technologies that could enable the remote stopping of vehicles in high-risk situations (as described in INTERCEPT)?

A majority (4) of respondents confirmed awareness of existing or emerging technologies capable of remotely stopping vehicles. These include RF-based solutions, OTA (over-the-air) control systems, AI-supported UAVs, and novel physical intervention devices. A respondent noted their awareness of multiple emerging technologies for vehicle immobilisation, but emphasised their focus on rapidly deployable physical systems that utilise kinetic energy to deliver reliable and controlled intervention.

	Answers	Ratio
Yes	4	57.14 %
No	3	42.86 %
No Answer	0	0.00 %

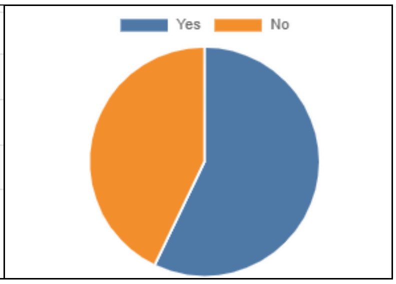

Figure 22: Awareness of remote vehicle-stopping technologies among providers.

2- Are you currently developing or have you developed any solution relevant to any of the following use cases? (Tick all that apply and describe briefly.)

Six of the respondents are engaged with at least one relevant use case:

- **Use Case 2 (High-speed pursuit in urban areas)** was covered by the majority.
- Use Cases 1, 3, and 4 (Vehicle ramming, ANPR pursuits) followed.
- Use Cases 5 and 6 (e-bikes, hostage-taking) were less frequently addressed.

One provider developed a real-time tracking system (SARO) that uses a launcher-deployed device to track vehicles remotely. Another proposed a drone-based UAV system capable of pursuing vehicles in GNSS-denied environments. A third is working on vehicle perception and control integration with OTA compatibility. One solution focuses on neutralising engines through RF disruption. Another proposes a compact mechanical system for stopping vehicles using a remote-controlled launcher. A respondent indicated that their organisation develops vehicle stopping systems engineered for rapid and reliable deployment in critical situations. These systems are compact, non-lethal, and single-use, designed to bring moving vehicles to a halt safely without causing loss of control or secondary incidents. Their suitability for urban environments—where space constraints and public safety are paramount—makes them particularly valuable. In circumstances such as ramming threats or hostage events, these solutions provide law enforcement with an effective and decisive means to immobilise vehicles safely.

	Answers	Ratio
Use Case 1: Vehicle ramming attack in a public market.	4	57.14 %
Use Case 2: High-speed pursuit in urban surroundings.	6	85.71 %
Use Case 3: Large coach with distressed driver.	2	28.57 %
Use Case 4: Pursuit following ANPR alert.	3	42.86 %
Use Case 5: Criminal use of motorcycles/e-bikes.	1	14.29 %
Use Case 6: Hostage-taking and vehicle ramming.	2	28.57 %
No solution was developed for any of the use cases above.	1	14.29 %
No Answer	0	0.00 %

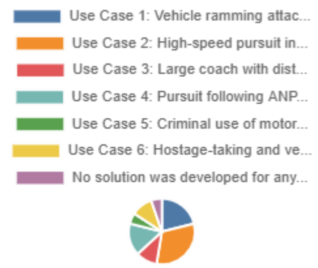

Figure 23: Relevance of proposed technologies to INTERCEPT use cases.

3- What are the most critical technical functionalities or performance parameters your solution would focus on (e.g., real-time tracking, safe neutralisation, communication systems)?

The following functionalities have been stated:

- Real-time vehicle tracking through satellite and inertial systems.
- Safe engine neutralisation, either electronically (RF or OTA) or physically (mechanical intervention).
- Situational awareness and perception, with AI-driven detection of behaviour patterns.
- Secure communication and command infrastructure, especially in urban and GNSS-challenged environments.
- Controlled and safe neutralisation: Delivers reliable vehicle immobilisation while minimising risks to occupants and the surrounding area.

  Rapid deployment: Engineered for swift setup in dynamic operational environments.

  Compact and portable design: Facilitates easy transport and deployment by field units.

  Operational robustness: Maintains effective performance across diverse weather conditions and surface types.

  System integration capability: Compatible with external sensors and actuators (e.g., ANPR), enabling automated deployment in response to identified threats.
- Safe neutralisation; advanced communication system.

Core functionalities focus on **operational precision**, **safety**, and **integration**, reflecting the complexity of deployment in live, public environments.

4- What are the safety mechanisms and fail-safe features your solution would include to avoid collateral damage or unintended consequences?

Diverse approaches to safety and collateral damage prevention were described:

- One RF system restricts its effect to a brief, directional burst, staying within human-safe thresholds.
- UAV-based systems include autonomous return-to-home, collision avoidance sensors, and AI-based decision logic to prevent crashes.
- Mechanical solutions prioritise remote operation to ensure user safety and distance from the target vehicle.

- Physical trackers are designed for non-lethal contact, with training emphasised for precision in deployment.
- In vehicle-integrated systems, trajectory planning algorithms and automated control aim to ensure safe stops.
- One respondent stated that the systems are designed to apply controlled stopping force to slow and stop the vehicle without causing sudden movements or loss of control. The mechanism is non-lethal, aiming to prevent harm to vehicle occupants or bystanders. Operators manually activate the solution to minimise the risk of accidental deployment. Use of the system is supported by structured training and established protocols.

5- Do you foresee any technical or operational barriers in implementing remote vehicle-stopping systems?

Commonly identified barriers include:

- Legal restrictions, particularly around RF transmission, geolocation, and public safety.
- Dependency on in-vehicle connectivity (e.g., OTA capability) for some systems.
- GNSS and network availability affecting tracking systems.
- Environmental conditions (e.g., tunnel use, temperature extremes) affecting physical deployment.
- Public misunderstanding of certain technologies (e.g., DEW, RF), requiring clearer communication and education.

- Low-profile and covert deployment options: In certain situations, such as hostage cases, discretion is required. Training and integration: Effective use relies on incorporation into tactical procedures and sufficient user training. Resupply and logistics: Solutions need to be easy to transport, store, and replenish. Cross-agency operability: Tools should function across a range of security and law enforcement agencies with minimal modification.

		Answers	Ratio
Yes		6	85.71 %
No		1	14.29 %
No Answer		0	0.00 %

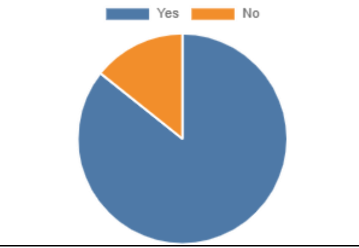

Figure 24: Perceived barriers to implementation

6- Can you identify relevant needs that have not been described in the market consultation document?

Only one provider mentioned a gap in the consultation documents: the public perception of technologies like microwave-based systems, which are often misunderstood. They stressed the importance of clarifying that these are non-kinetic, safe solutions and recommended more robust public-facing education strategies.

		Answers	Ratio
Yes		1	20.00 %
No		4	80.00 %
No Answer		0	0.00 %

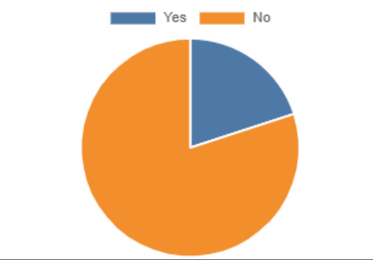

Figure 25: Unaddressed needs identified.

7- If you were to develop the solution for *use case 1 Vehicle ramming attack in a public market*, please provide your estimated time allocation (in months) for each of the following phases: (Total should not exceed 30 months.)

- **Phase 1: Solution Design (months):**
- **Phase 2: Prototype Development (months):**
- **Phase 3: Validation & Demonstration (months):**
- **Please briefly justify your estimated time:**

Please provide your estimated budget for *use case 1 Vehicle ramming attack* in a public market (in Euros) for each phase:

Note: Please be aware that there is a predefined budget allocation for this PCP project, and the total available budget will be divided across phases and participating contractors. The exact budget allocation remains confidential at this stage of the consultation.

- **Phase 1: Solution Design (€):**
- **Phase 2: Prototype Development (€):**
- **Phase 3: Validation & Demonstration (€):**
- **Please briefly justify your estimated budget distribution:**

One estimated 3 months for design, 12 months for prototype development, and 6 months for validation, noting overlapping phases to keep the total under 18 months. Their budget ranged from €100,000 for design to €500,000–750,000 for prototyping and €100,000–200,000 for validation, justified by hardware integration, dataset generation, and live environment testing. Another estimated 6 months for each phase, with a total cost of €520,000 distributed across design (€120,000), prototype (€320,000), and demonstration (€80,000), with clear mention of engineering, subcontracting, and police field testing. Another provider estimated a total development timeline of 30 months, with 6 months allocated to solution design, 10 months to prototype development, and 14 months to validation and demonstration. The corresponding budget was €150,000 for design, €400,000 for prototyping, and €450,000 for validation. The justification outlined that the design phase would involve refining specifications and planning system integration, while the prototyping phase would cover the construction and internal testing of the system. The largest portion of time and funding was reserved for validation due to the need for thorough real-world trials and certification procedures.

8- If you were to develop the solution for *use case 2 High-speed pursuit in urban surroundings*, please provide your estimated time allocation (in months) for each of the following phases: (Total should not exceed 30 months.)

- **Phase 1: Solution Design (months):**
- **Phase 2: Prototype Development (months):**
- **Phase 3: Validation & Demonstration (months):**
- **Please briefly justify your estimated time:**

Please provide your estimated budget for *use case 2 High-speed pursuit in urban surroundings* (in Euros) for each phase:

Note: Please be aware that there is a predefined budget allocation for this PCP project, and the total available budget will be divided across phases and participating contractors. The exact budget allocation remains confidential at this stage of the consultation.

- **Phase 1: Solution Design (€):**
- **Phase 2: Prototype Development (€):**
- **Phase 3: Validation & Demonstration (€):**
- **Please briefly justify your estimated budget distribution:**

Four respondents gave detailed time and cost estimates. One reported 3 months for design, 2 months for prototype development, and 1 month for validation, with a budget of €60,000, €40,000, and €20,000. Another specified 12 months for design, 14 months for development, and 4 months for demonstration, with a budget of €360,000, €1,440,000, and €600,000. A third stated 3, 12, and 6 months respectively, and corresponding budgets of €100,000, €500,000–750,000, and €100,000–200,000. A fourth also provided figures consistent with the ones they had proposed for Use Case 1, stating the same values and work scope. Another respondent proposed a similarly intensive schedule, allocating 7 months for design, 11 months for prototype development, and 12 months for validation, again totalling 30 months. The estimated budget for this use case was €180,000 for design, €450,000 for prototyping, and €470,000 for validation. The justification emphasised the complexity of designing systems capable of addressing rapid pursuit scenarios in dense environments, requiring advanced engineering and extended testing in both controlled and operational settings.

9- **If you were to develop the solution for *use case 3 Large coach with a distressed driver*, please provide your estimated time allocation (in months) for each of the following phases: (Total should not exceed 30 months.)**
- **Phase 1: Solution Design (months):**
- **Phase 2: Prototype Development (months):**
- **Phase 3: Validation & Demonstration (months):**
- **Please briefly justify your estimated time:**

Please provide your estimated budget for *use case 3 Large coach with a distressed driver* (in Euros) for each phase:

Note: Please be aware that there is a predefined budget allocation for this PCP project, and the total available budget will be divided across phases and participating contractors. The exact budget allocation remains confidential at this stage of the consultation.

- **Phase 1: Solution Design (€):**
- **Phase 2: Prototype Development (€):**
- **Phase 3: Validation & Demonstration (€):**
- **Please briefly justify your estimated budget distribution:**

One provider indicated 6 months each for design, prototype development, and validation. The budget was €150,000 for design, €100,000 for development, and €200,000 for demonstration. The justification mentioned adapting the system to specific requirements and vehicle types. Another respondent stated: 4 months for design, 8 months for prototyping, and 8 months for validation. The total budget was €150,000, €300,000, and €300,000 for the respective phases. The provider explained that they already have an existing system rated for 10-ton vehicles, which would only require minor adaptation for this scenario.

10- If you were to develop the solution for *use case 4 High-speed pursuit following the ANPR alert*, please provide your estimated time allocation (in months) for each of the following phases: (Total should not exceed 30 months.)

- **Phase 1: Solution Design (months):**
- **Phase 2: Prototype Development (months):**
- **Phase 3: Validation & Demonstration (months):**
- **Please briefly justify your estimated time:**

Please provide your estimated budget for *use case 4 High-speed pursuit following the ANPR alert* (in Euros) for each phase:

Note: Please be aware that there is a predefined budget allocation for this PCP project, and the total available budget will be divided across phases and participating

contractors. The exact budget allocation remains confidential at this stage of the consultation.

- **Phase 1: Solution Design (€):**
- **Phase 2: Prototype Development (€):**
- **Phase 3: Validation & Demonstration (€):**
- **Please briefly justify your estimated budget distribution:**

Two providers gave full estimates for this use case. One reported 3 months for design, 2 months for prototype development, and 1 month for validation, with a budget of €60,000, €40,000, and €20,000. Another listed 3, 12, and 6 months with respective budgets of €100,000, €500,000–750,000, and €100,000–200,000. The justifications referred to prior development stages, continued R&D, and field validation needs. One noted ongoing work with a national interior ministry, and another explained that real-world validation of ammunition and launcher efficiency was still in progress.

11-If you were to develop the solution for *use case 5 Organised criminal use of high-powered motorcycles and electric bikes*, please provide your estimated time allocation (in months) for each of the following phases: (Total should not exceed 30 months.)

- **Phase 1: Solution Design (months):**
- **Phase 2: Prototype Development (months):**
- **Phase 3: Validation & Demonstration (months):**
- **Please briefly justify your estimated time:**

Please provide your estimated budget for *use case 5 Organised criminal use of high-powered motorcycles and electric bikes* (in Euros) for each phase: *Note: Please be aware that there is a predefined budget allocation for this PCP project, and the total available budget will be divided across phases and participating contractors. The exact budget allocation remains confidential at this stage of the consultation.*

- **Phase 1: Solution Design (€):**
- **Phase 2: Prototype Development (€):**
- **Phase 3: Validation & Demonstration (€):**

- **Please briefly justify your estimated budget distribution:**

No provider submitted complete estimates for time or budget.

12- If you were to develop the solution for *use case 6 Hostage-taking and vehicle ramming*, please provide your estimated time allocation (in months) for each of the following phases: (Total should not exceed 30 months.)

- **Phase 1: Solution Design (months):**
- **Phase 2: Prototype Development (months):**
- **Phase 3: Validation & Demonstration (months):**
- **Please briefly justify your estimated time:**

Please provide your estimated budget for *use case 6 Hostage-taking and vehicle ramming* (in Euros) for each phase:

Note: Please be aware that there is a predefined budget allocation for this PCP project, and the total available budget will be divided across phases and participating contractors. The exact budget allocation remains confidential at this stage of the consultation.

- **Phase 1: Solution Design (€):**
- **Phase 2: Prototype Development (€):**
- **Phase 3: Validation & Demonstration (€):**
- **Please briefly justify your estimated budget distribution:**

One respondent planned for a full 30-month timeline, divided into 7 months for design, 10 months for prototyping, and 13 months for validation. The financial distribution was €200,000 for design, €450,000 for development, and €500,000 for validation. The justification pointed to the sensitive and high-risk nature of hostage scenarios, requiring precise, non-lethal functionality and extensive validation to meet safety and ethical standards.

13- What are the main risks or uncertainties in the R&D process for your proposed solution?

Most respondents highlighted technical and environmental factors as the main sources of uncertainty:

- Adhesion-based solutions cited performance variability of the glue in extreme temperatures and potential safety issues if not properly deployed. One noted the need to refine the ammunition and launcher components as a major R&D focus.
- A solution based on UAVs mentioned integration challenges across subsystems and the complexity of achieving safe autonomous navigation in dense environments.
- Providers working on embedded vehicle systems noted the difficulty of securing infrastructure for remote vehicle control, as well as the lack of access to real-world datasets for algorithm training.
- One respondent indicated that although core electronic components were finalised, external factors like legal approval and operational testing conditions remained potential risks.

- Operational variability: Achieving consistent performance across various vehicle types, speeds, and environmental conditions. Integration complexity: Addressing the technical requirements of connecting with third-party systems (e.g., ANPR, sensors) for automated deployment. Safety certification: Complying with safety and legal standards, particularly for public or hostage situations. User training and misuse risk: Providing appropriate training to ensure proper use under stress and minimising the risk of unintended outcomes. Scenario unpredictability: Adapting to dynamic, high-risk environments by developing robust and flexible solutions.

14- Are there particular operating environments (e.g., tunnels, city centres, rural roads) where your solution would face challenges?

Some of the providers acknowledged that their solutions would face challenges in specific settings:

- Tracking technologies dependent on GNSS could be hindered in **tunnels** or **urban areas with signal obstruction**.
- UAV-based systems face risks in confined spaces like tunnels, where maneuvering is limited and the consequences of failure are severe.

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- Adhesive tracking solutions may be affected by **freezing temperatures**, which could reduce glue performance.
- One respondent noted **cellular coverage** as a limiting factor for continuous data transmission during tracking.
- Physical launchers may be constrained by deployment accuracy and road surface conditions.
- Challenges may arise in highly dynamic or fast-changing situations where vehicle paths shift unpredictably.

		Answers	Ratio
Yes		3	42.86 %
No		2	28.57 %
No Answer		2	28.57 %

Figure 26: Challenging operating environments.

15- Are there specific types or classes of vehicles that your solution is designed for or particularly effective against? *(Please select all that apply and provide details where applicable.)*

If applicable, please describe any limitations or performance differences your solution may have across different vehicle types:

The majority of the respondents confirmed support for **passenger cars and light commercial vehicles**. Other capabilities varied:

- Most solutions extended to **heavy-duty trucks, buses/coaches**, and **electric two-wheelers**, though some caveats were noted:
- Adhesive-based trackers require a broad surface to attach securely; motorcycles may pose a safety risk due to potential imbalance upon impact.
- One system had not been tested on buses and could not confirm performance.
- Embedded sensor systems noted variation in calibration depending on the vehicle class and sensor configuration.

One respondent also noted a need for testing on **outboard engines** and **UAVs**, implying multi-domain applicability. One respondent reported that tests have demonstrated the ability to stop vehicles weighing up to 12,000 kg.

		Answers	Ratio
Passenger cars		7	100 %
Vans / light commercial vehicles		6	85.71 %
Heavy-duty trucks/lorries		5	71.43 %
Motorcycles/mopeds		3	42.86 %
Electric scooters/e-bikes		3	42.86 %
Buses/coaches		4	57.14 %
Agricultural or construction vehicles		3	42.86 %
Other (Please indicate below.)		1	14.29 %
No Answer		0	0 %

Figure 27: Vehicle types supported.

16- Are there any legal/regulatory constraints (e.g. national transport laws, safety standards, frequency usage) you foresee?

Six of the seven respondents reported identifiable regulatory barriers:

- **RF-based solutions** are subject to national transmission licensing, with approval varying across countries.
- **Geolocation tracking systems** often require prior authorisation from judicial authorities in line with proportionality principles (notably referenced in France).
- UAV deployment in **urban areas** requires flight permits and additional operational approvals.
- Privacy and data protection compliance (e.g., GDPR) was noted, especially concerning facial recognition and license plate data. One provider had implemented real-time anonymisation for these data types.
- Legal and regulatory constraints can involve traffic laws, public safety rules, and restrictions on deploying stopping systems in public spaces. Coordination with authorities is necessary to meet local standards and approval processes.

		Answers	Ratio
Yes		6	85.71 %
No		1	14.29 %
No Answer		0	0 %

Figure 28: Legal or regulatory constraints.

17- Can you provide any other recommendations regarding the challenges?

Three providers offered additional recommendations:

- One emphasised the urgency of developing a **non-lethal vehicle tracking solution**, particularly for high-speed noncompliance scenarios frequently encountered by police in urban areas.
- Another encouraged a clear **definition of operational use cases** and **early engagement with end users** to ensure practicality, especially for deployment planning and technical integration with law enforcement workflows.
- A provider working on RF-based systems stressed the need for **public education** to counter misconceptions related to terms like "microwave" and "radiation," which may hinder acceptance despite proven safety standards.

- Involving end users and authorities during the development process may address operational, legal, and safety considerations. Scenario-based testing and modular design are approaches that can facilitate adaptability in various environments and use cases.

		Answers	Ratio
Yes		3	42.86 %
No		3	42.86 %
No Answer		1	14.29 %

Figure 29: Recommendations regarding the challenges.

4.1.2. State-of-the-art analysis

1- Do you think there is room for technological development beyond the state of the art? Please explain.

All of the respondents answered "yes" and provided detailed explanations. One provider emphasised innovation in the mechanical and adhesive design for vehicle tracking devices. Unlike traditional systems that rely on magnets or piercing mechanisms, their approach focuses on reliable, high-performance adhesion upon impact using a specialised glue delivery component engineered for durability and precision.

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Another provider working on UAV technology pointed out several limitations in current drone systems, especially under urban and GNSS-denied conditions. They highlighted the need for improvements in AI-based behaviour prediction, real-time adaptive navigation, robust low-latency communications, and smart fail-safe mechanisms like emergency landing and onboard diagnostics.

A third response indicated potential progress in road user behaviour prediction and cooperative perception, specifically through enhanced communication technologies between systems.

A fourth respondent stated they are focusing on making their high-powered RF system more compact and lightweight. They also mentioned exploring alternative power sources to align with electric vehicle platforms.

The fifth provider noted that current solutions, such as tire-deflation systems do not fully stop a vehicle. Their proposed concept claims to bring the vehicle to a complete stop within a few meters, which they described as a unique advancement compared to existing tools.

Another respondent noted strong potential to improve automation, sensor integration, and precision deployment for better responsiveness, adaptability, and compatibility with systems like ANPR and real-time threat detection.

The final response indicated that because technology involves multiple systems, interoperability is required.

2- What is the current Technology Readiness Level (TRL) of your solution(s)? Please indicate the TRL for each relevant use case, if applicable.

One provider reported TRL 7 for Use Cases 2 and 4. Another stated TRL 3 for Use Case 2. A third indicated TRL 5 for Use Cases 1 through 4. One solution based on RF described the core effector system as TRL 8–9 but clarified that final integration into a host platform would place the complete system at TRL 6–7. Another respondent reported TRL 2 for Use Cases 1 and 2 and left other use cases unaddressed.

3- What improvements beyond the state-of-the-art would your solution introduce?

One respondent stated that their solution introduces improvements through the integration of advanced artificial intelligence for autonomous tracking, behaviour recognition, and real-time decision-making. Their system also operates in GNSS-denied environments using visual-inertial navigation and maintains secure communication in interference-prone zones. Additional features include autonomous emergency landing and predictive maintenance, contributing to reliability in urban deployment.

Another provider highlighted their non-lethal RF-based technology, which disables a vehicle's engine while allowing the driver to maintain control. They emphasised that the system can be deployed covertly, potentially leaving the occupants unaware of how the intervention occurred—unlike conventional physical interventions.

The other three providers did not submit any explanatory content in response to this question or left the section blank. One included a placeholder reference to the next question but gave no actual answer.

4- Do you rely on any patented technology or standards?

Three providers stated that they rely on patented technology. One of them listed several patents related to camera systems and vehicle perception, including filings in Germany, Spain, Japan, and the USA. Another mentioned specific standards such as ISO/IEC for AI, digital twins, and multimedia data processing. Another respondent stated that they hold five applicable patents, registered in the EU and the US, founded in the UK. Other respondents confirmed they do not rely on any patented technologies or standards.

5- Are there existing patents or intellectual property barriers that could limit your solution's development or deployment? Please explain.

All seven providers stated there were no known intellectual property or patent barriers that would limit the development or deployment of their solutions.

4.1.3. Miscellaneous

1- What information do you still need to make a good plan of action for the development and/or implementation of solutions suitable to address the challenge?

One provider requested more detailed information regarding available budgets, technical requirements of operational personnel, and specific descriptions of the deployment environments. They also asked for a timeline and performance specifications that the solutions should meet. Another mentioned the need to engage with potential end-users to better understand practical expectations and vehicle platform integration.

2- Do you have specific requirements to achieve the functionalities that INTERCEPT should take into account?

One provider noted that integration needs would vary depending on whether the system is to be overt or covert and who—either the end-user or OEM—would handle installation. Another stated that understanding host vehicle platforms is essential for planning and ensuring proper system fit. Others responded with "no" or left the section unanswered.

3- What are the risks associated with the development and implementation of a solution that tackles the functional needs of INTERCEPT?

One respondent identified legal and regulatory risks, particularly around permissions to use certain technologies and concerns related to public perception of terms like "microwave" and "radiation." Another pointed out potential failures in prototype performance and the uncertainty of real-world implementation, though they indicated they had backup strategies. One also mentioned the lack of real-world data and infrastructure as possible obstacles to deployment.

4- Do you have any suggestions and/or remarks?

Two providers contributed with suggestions. One emphasised the severity of vehicle non-compliance incidents in Europe and the urgent need for safe intervention tools, noting the number of injuries among officers due to such events. Another mentioned that their RF system requires export licenses per organisation—even within the same country—and suggested that this regulatory complexity should be considered in planning.

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4.2. End users

Based on the feedback provided in the EU Survey questionnaire, the respondents belong to public organisations as indicated in the figure below.

The participants who replied to the EU Survey questionnaire for end users are from organisations in Spain, France, Germany, Portugal, Greece and Finland.

		Answers	Ratio
Public Organisation		6	100.00 %
Private Organisation		0	0.00 %
Other (Please indicate below.)		0	0.00 %
No Answer		0	0.00 %

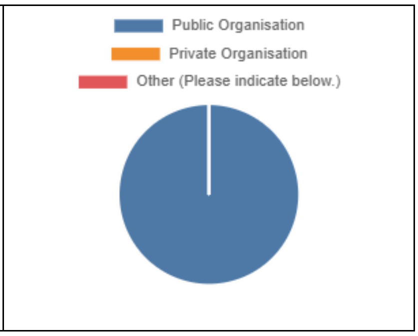

Figure 30: Type of organisations that replied to the Request for Information for end users using the EU Survey tool.

4.2.1. Operational Needs & Gaps

1- In your day-to-day operations, how often do you encounter high-risk situations involving vehicles (e.g., pursuits, threats, incapacitated drivers)?

Respondents were asked how often they encounter high-risk situations like pursuits, threats, or incapacitated drivers. The results show that:

- Two of the respondents encounter such situations frequently (multiple times per week).
- Two of the respondents encounter them rarely (less than once per month).
- One regularly faces high-risk situations; the other does so only occasionally.

		Answers	Ratio
Rarely (e.g., less than once per month)		2	33.33 %
Occasionally (e.g., 1-2 times per month)		1	16.67 %
Regularly (e.g., once per week)		1	16.67 %
Frequently (e.g., multiple times per week)		2	33.33 %
Very Frequently (daily or almost daily)		0	0.00 %
No Answer		0	0.00 %

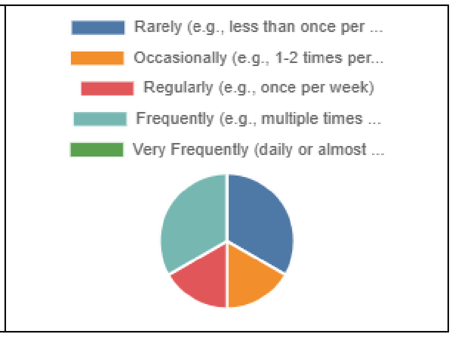

Figure 31: Frequency of encountering high-risk vehicle situations in day-to-day operations.

2- Which of the six INTERCEPT use cases is most relevant to your context? Please rank them from 1 (most relevant) to 6 (least relevant).

Respondents ranked the six INTERCEPT use cases. In their view, the most relevant were:

- Use Case 2 – High-speed pursuit in urban surroundings: **Highest average score (5.16)**.
- Use Case 1 – Vehicle ramming in a public market: Score 4.66.
- Use Case 5 – Criminal use of motorcycles: Tied at 3.83.
- Use Case 4 – ANPR alert pursuit: 2.16
- Use Case 6 – Hostage-taking & vehicle ramming: 3.16.
- Use Case 3 – Large coach with distressed driver: Least relevant with a score of 2.0.

High-speed pursuits, particularly in urban contexts, are seen as the most relevant challenge. Conversely, issues involving distressed drivers in large coaches appear less pertinent to these respondents.

	1	2	3	4	5	6	Score
Use Case 1 – Vehicle ramming attack in a public market	50% 3	0% 0	16.66% 1	33.33% 2	0% 0	0% 0	4.66 6
Use Case 2 – High-speed pursuit in urban surroundings	16.66% 1	83.33% 5	0% 0	0% 0	0% 0	0% 0	5.16 6
Use Case 3 – Large coach with distressed driver	0% 0	0% 0	0% 0	0% 0	100% 6	0% 0	2 6
Use Case 4 – High-speed pursuit following ANPR alert	0% 0	16.66% 1	16.66% 1	0% 0	0% 0	66.66% 4	2.16 6
Use Case 5 – Organised criminal use of high-powered motorcycles/e-bikes	33.33% 2	0% 0	16.66% 1	33.33% 2	0% 0	16.66% 1	3.83 6
Use Case 6 – Hostage-taking and vehicle ramming	0% 0	0% 0	50% 3	33.33% 2	0% 0	16.66% 1	3.16 6
No Answer	0.00 % 0						

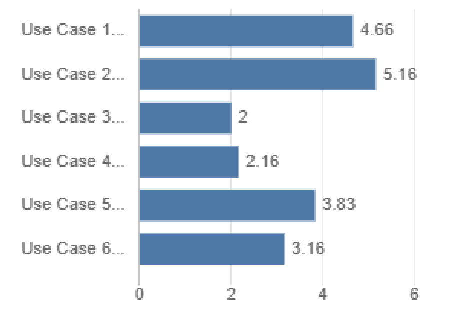

Figure 32: Relevance ranking of INTERCEPT use cases by End Users.

3- What existing tools or strategies do you currently use for remote vehicle intervention (if any)?

When asked about current strategies or tools, most of the respondents reported having no such tools, or only limited tools applicable solely during pursuits (e.g., "None", "non-existing", "pursuit only"). The following methods have been described: slowing down a vehicle using a police car, deploying a nail strap, or utilising a specially equipped vehicle with technology designed to stop another car.

There is a significant technology gap; existing tools are either non-existent or not suitable for broader scenarios. This reveals a strong need for the development and deployment of new, versatile remote vehicle-stopping solutions.

4.2.2. Technical Expectations & Constraints

1- What would be your top 3 requirements for a remote vehicle-stopping solution? (e.g., effectiveness, response time, operator control, minimal public disruption)

Key priorities identified across responses include:

- Effectiveness.
- Response time.
- Minimal public disruption.
- operator control and usability for end-users.

2- In which environments would it be most important to test these technologies? (Please tick all that apply.)

Respondents identified **urban streets, highways and public events/open markets** as the top priority environments for testing, each selected by the majority of participants, while rural roads were selected by one-third. One participant also highlighted waterways (sea and lake areas), indicating an interest in broader operational contexts beyond land-based traffic.

The high emphasis on dense urban settings, highways and public events/open markets suggests a focus on public safety, crowd control, and pursuit scenarios. The mention of waterways opens an avenue for exploring cross-domain solutions, particularly in border security or smuggling contexts.

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		Answers	Ratio
Urban streets / dense city centres		6	100 %
Rural roads		1	16.67 %
Highways / motorways		5	83.33 %
Tunnels or underpasses		0	0 %
Public events / open markets		5	83.33 %
Transport hubs (airports, train stations)		1	16.67 %
Industrial or logistics zones		0	0 %
Other (Please specify below.)		1	16.67 %
No Answer		0	0 %

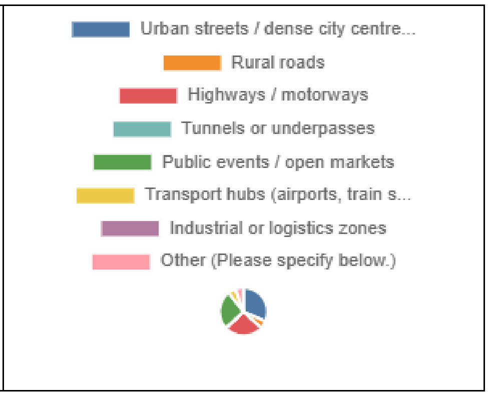

Figure 33: Preferred operational environments for testing remote vehicle-stopping technologies.

3- What level of operator involvement would you prefer?

Two of the respondents favoured manual control, and the other two pointed out the semi-automated systems, while one provided a nuanced view suggesting a context-dependent hybrid model. For scenarios like blocking access to public spaces, fully automated "electronic gate" systems were preferred. In contrast, manual control was seen as necessary during dynamic events such as pursuits, paralleling the operation of counter-UAS (unmanned aerial systems) technologies.

		Answers	Ratio
Fully automated (system detects and acts without human input)		1	16.67 %
Semi-automated with human confirmation (system proposes action, human confirms)		2	33.33 %
Manual control only (operator initiates and executes all actions)		2	33.33 %
Other (Please indicate below.)		1	16.67 %
No Answer		0	0.00 %

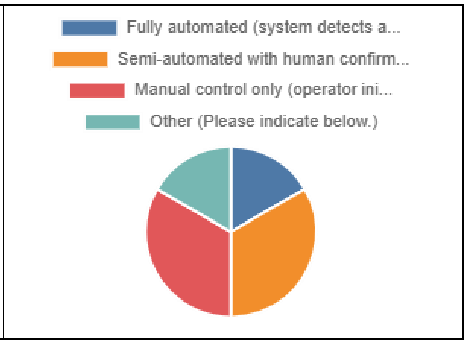

Figure 34: Preferences for operator involvement in vehicle-stopping scenarios.

4- Are there specific communication or integration standards a solution would need to comply with in your jurisdiction? (Select all that apply, or specify others)

The most commonly selected requirements were integration with national police ICT systems and secure and encrypted communications, each mentioned by 66.67% of respondents (4 out of 6). Compliance with EU or national data protection regulations (e.g., GDPR) was cited by 50% of respondents (3 responses), reflecting strong attention to data privacy.

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Other requirements included compatibility with ANPR or vehicle databases (33.33%), V2X (vehicle-to-everything) communication protocols (16.67%), and other unspecified needs (16.67%). Notably, no respondents stated that there were no standards, and only 2 indicated they were unsure. A custom response also stressed compliance with electromagnetic regulations, which may relate to operational safety or interference concerns.

	Answers	Ratio
Integration with national police ICT systems	4	66.67 %
Secure and encrypted communications	4	66.67 %
Compatibility with ANPR or vehicle databases	2	33.33 %
V2X (vehicle-to-everything) communication protocols	1	16.67 %
Compliance with EU/National data protection regulations (e.g., GDPR)	3	50.00 %
There is none.	0	0.00 %
I do not know.	2	33.33 %
Other (Please indicate below.)	1	16.67 %
No Answer	0	0.00 %

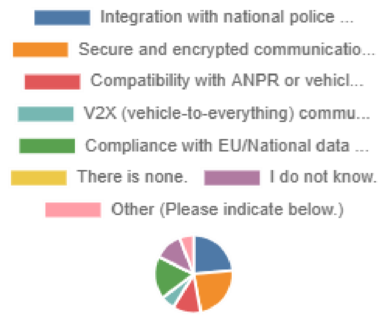

Figure 35: Required integration and communication standards.

4.2.3. Legal, Ethical & Societal Considerations

1- Are there national or regional laws that could restrict or govern the use of remote vehicle-stopping systems in your country? Please explain.

Two-thirds of respondents affirmed the existence of legal constraints. The following elaborations have been provided:

- Fundamental legal grounds for interfering with citizens' rights.
- GDPR.
- Regulatory concerns spanning CEM (counter-electronic measures) and ethical use of vehicle-installed technologies.

		Answers	Ratio
Yes		4	66.67 %
No		2	33.33 %
No Answer		0	0.00 %

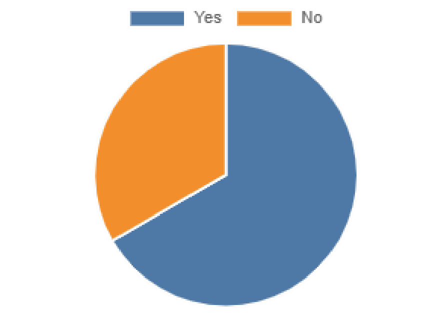

Figure 36: Legal considerations affecting the use of remote vehicle-stopping solutions.

2- What are the main ethical concerns or public perception risks in using such technologies? (Please select or describe briefly.)

The most cited concern was a lack of public trust in automated interventions, selected by 83.33% of respondents (5 out of 6). This reflects strong apprehension about deploying systems that operate with limited human oversight or transparency.

Concerns about surveillance or tracking were also significant, identified by 66.67% of respondents (4 responses), suggesting that monitoring capabilities embedded in such systems raise privacy and civil liberties issues.

Half of the respondents (50%) expressed concern about the risk of misuse or abuse by authorities, indicating sensitivity around how these tools might be used beyond their intended scope.

Other notable concerns included potential harm to suspects or bystanders and disproportionate use in certain communities, each mentioned by 33.33% of respondents. These responses underline fears about safety risks and discriminatory application.

		Answers	Ratio
Risk of misuse or abuse by authorities		3	50.00 %
Lack of public trust in automated interventions		5	83.33 %
Potential harm to suspects or bystanders		2	33.33 %
Concerns about surveillance or tracking		4	66.67 %
Disproportionate use in certain communities		2	33.33 %
No major concerns were identified.		1	16.67 %
Other (Please indicate below.)		0	0.00 %
No Answer		0	0.00 %

Figure 37: Ethical and public perception risks identified by End Users.

3- How would you ensure accountability and transparency in the use of remote vehicle-stopping tools? (Tick all that apply or explain.)

Respondents emphasised:

- Clear protocols, event logging, and video documentation.
- Training/certification and independent oversight were also seen as important.

		Answers	Ratio
Clear operational procedures or usage protocols etc.		4	66.67 %
Independent oversight or auditing		2	33.33 %
Mandatory logging of usage events		3	50 %
Bodycam or in-vehicle video recording during activation		5	83.33 %
Public reporting or annual transparency reviews		1	16.67 %
Training and certification for authorised users		4	66.67 %
Other (Please indicate below.)		0	0 %
No Answer		0	0 %

Figure 38: Recommended measures for accountability and transparency.

4.2.4. Feasibility, Procurement & Testing

1- Would your organisation be interested in participating in testing or piloting such a solution?

All respondents (100%) expressed interest in participating in testing or piloting a remote vehicle-stopping solution. There is strong engagement and willingness from end users to support early-stage development through real-world testing.

		Answers	Ratio
Yes		6	100 %
No		0	0 %
No Answer		0	0 %

Figure 39: End User interest in testing and piloting activities.

2- Would you require a certification or third-party evaluation before adopting a new system?

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- Four respondents indicated uncertainty about the need for certification ("I do not know yet").
- One stated certification is not required, while the other confirmed the certification requirement.

		Answers	Ratio
Yes		1	16.67 %
No		1	16.67 %
I do not know yet.		4	66.67 %
No Answer		0	0 %

Figure 40: Certification and evaluation requirements for adoption.

3- Are there budgetary or procurement constraints that may affect participation in future PCP activities?

- Five respondents were unsure whether constraints would apply.
- One of them indicated there are no current constraints while the other confirmed the constraints.

		Answers	Ratio
Yes		1	16.67 %
No		1	16.67 %
I do not know yet.		5	83.33 %
No Answer		0	0 %

Figure 41: Budgetary and procurement constraints for PCP participation.

4- Do you have any feedback or suggestions regarding the tender preparation or functional requirements?

One respondent emphasised that the system must prioritise **safety for bystanders** and the **proportionality of intervention**. A key concern was that the solution should not pose greater risks than the threats it aims to neutralise—for example, it should not introduce more harm in the process of stopping a vehicle than allowing the pursuit to continue.

5. Conclusions

The INTERCEPT Open Market Consultation (OMC) provided a vital forum for engaging public security authorities and technology providers across Europe, gathering critical insights into operational challenges, emerging technological capabilities, and market readiness for remote vehicle-stopping solutions. The consultation successfully validated INTERCEPT's central assumption: that there is both strong interest and significant capacity within the market to innovate and deliver solutions addressing complex scenarios.

The OMC demonstrated that high-risk vehicle incidents, particularly in urban environments, remain a frequent and pressing challenge for end users. Among various operational scenarios, high-speed pursuits and vehicle ramming attacks were identified as the most critical, highlighting a clear gap between current intervention tools and operational needs. Public safety authorities emphasised that future solutions must prioritise effectiveness, rapid response, minimal public disruption, and careful attention to legal, ethical, and public trust considerations, particularly regarding surveillance and proportionality. Recent responses reinforced this, especially highlighting GDPR compliance and transparency as key concerns.

Technology providers responded positively to this demand signal, showcasing a diverse range of innovative solutions and a willingness to invest in research and development (R&D) to close the remaining capability gaps. The Request for Information (RFI) process revealed active work on technologies such as adhesive tracking devices, autonomous UAV systems, RF-based engine disablement tools, and integrated perception platforms. While many solutions remain at early stages of development, key innovation areas include AI-driven behavioural prediction, resilient tracking independent of GNSS, secure communications for complex environments, and miniaturisation of intervention technologies. Recent response provided more detail on operational robustness, covert deployment, and structured training requirements, alongside hardware solutions designed for varied vehicle types, including heavy-duty buses and motorcycles.

Providers also raised important challenges such as system reliability, legal authorisation for deployment, and standardisation across vehicle types and scenarios, underscoring the complex ecosystem within which these solutions must operate. Technical barriers were repeatedly linked to vehicle variability, legal mandates on frequency usage, and integration with host platforms.

The e-pitching sessions on 3-4 June 2025 further deepened engagement between public buyers and technology suppliers, offering a targeted platform for suppliers from five countries to present tailored solutions addressing three distinct use cases. These sessions made clear that the market is actively developing a variety of technological approaches suited to different public safety contexts.

For **Use Case 1** (remote stopping of standard vehicles in complex pursuit scenarios), suppliers presented non-lethal solutions including light-based disorientation systems, remote stop signals, geofencing, vehicle tracking, and various electronic and physical stopping methods. These innovations aim to reduce risks during high-speed pursuits while enhancing precision and control for law enforcement.

In **Use Case 2** (agile threats in dense urban environments, such as those posed by motorcycles and e-bikes), technologies focused on rapid, real-time intervention: AI-enabled tracking, light-based disorientation systems, and short-range electronic disabling tools. However, compatibility with lightweight two-wheeled vehicles was noted as a challenge requiring further adaptation.

For **Use Case 3** (distressed drivers operating heavy passenger coaches), providers proposed electronic and mechanical solutions designed for safe intervention, such as remote stop commands, deployable nets, and non-contact control systems. While some technologies have yet to be tested specifically on coaches, providers indicated promising adaptability with additional development.

The central OMC event on 25 June 2025 in Warsaw consolidated these insights, further validating that no single supplier can comprehensively address all technical requirements alone, and highlighting the importance of partnerships and consortia. Across all use cases, providers confirmed significant R&D is still needed, most estimating that over 75% of the effort remains, while expressing unanimous interest in participating

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in the future Pre-Commercial Procurement (PCP). The market also indicated strong readiness to collaborate with a wide variety of partners including automotive manufacturers, vehicle integrators, telecom providers, cybersecurity specialists, sensor and command and control experts, and regulators, reflecting the multidisciplinary nature of the challenge.

The discussions consistently highlighted electromagnetic interference devices as the most ready technology domain to contribute to remote vehicle stopping available today. However, participants also pointed to a wide range of emerging technologies as potential game-changers over the next five years: autonomous driving systems, vehicle-to-vehicle (V2V) and vehicle-to-road (V2Road) communications, cloud-based solutions, advanced battery technologies, chip-based disabling systems, drone grapplers, satellite-enabled communications, and extensive real-time sensor networks.

In conclusion, the INTERCEPT OMC confirmed a strong alignment between end-user needs and supplier capabilities, even while acknowledging that significant R&D work remains before comprehensive solutions can be deployed. The consultation provided confidence that the market is prepared to rise to this challenge through innovation, collaboration, and investment. Feedback gathered in June and July 2025 reinforces this outlook, confirming both end-user willingness to pilot systems and the supplier community's capacity to deliver scalable, ethical, and operationally fit technologies. The feedback and insights gained from the RFI, e-pitching sessions, and central OMC event will play an essential role in shaping the structure and design of the upcoming PCP. With a clearly articulated demand, enthusiastic supplier engagement, and a spirit of partnership, INTERCEPT is well-positioned to drive forward the development of safe, effective, and legally compliant remote vehicle-stopping technologies that meet the evolving needs of public safety authorities across Europe.

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Annex I. Agenda of the OMC webinars

OMC Webinars

9-15 May 2025

Online mode

AGENDA

Hours	Topic
10:00 – 10:15	Introduction to the INTERCEPT project
10:15 – 10:30	Introduction to Pre-Commercial Procurement
10:30 – 10:45	INTERCEPT Procurement Strategy
10:45 – 11:00	Presentation of the use cases and associated needs
11:00 – 11:15	Presentation of the state of the art
11:15 – 11:30	OMC objectives and organisation of the activities
11:30 – 11:45	Open discussion
11:45 – 11:50	Conclusions

Annex II. Agenda of the OMC event in Warsaw

OMC event

25June 2025

Address: Władysława Orkana 14, Warsaw, Poland

AGENDA

Hours	Topic	Presenter
10:45 – 11:00	Coffee break and arrival	
11:00 – 11:15	Welcome and Introduction to the INTERCEPT project	PPHS
11:15 – 11:30	Introduction to Pre-Commercial Procurement	CORVERS
11 30 – 11:45	INTERCEPT Procurement Strategy	KEMEA
11:45 – 12:15	Presentation of the state of the art	DIGINNOV + CORVERS
12:15 – 12:30	OMC objectives and activities	PPHS
12:30 – 12:50	Presentation of the use cases and associated needs	PPHS/DIGINNOV
12:50 – 14:00	Lunch break	
14:00 – 15:30	Workshop / questions about main aspects PCP Survey on the use cases	PPHS
15:30 – 17:00	Matchmaking session (on-site) • introduction to the matchmaking session, • presentations of suppliers, • matchmaking session	Technology providers
17:00 – 17:15	OMC closure	PPHS

Annex III E-pitching sessions agenda and PowerPoint template

E-pitching sessions

3-4 June 2025

Online mode

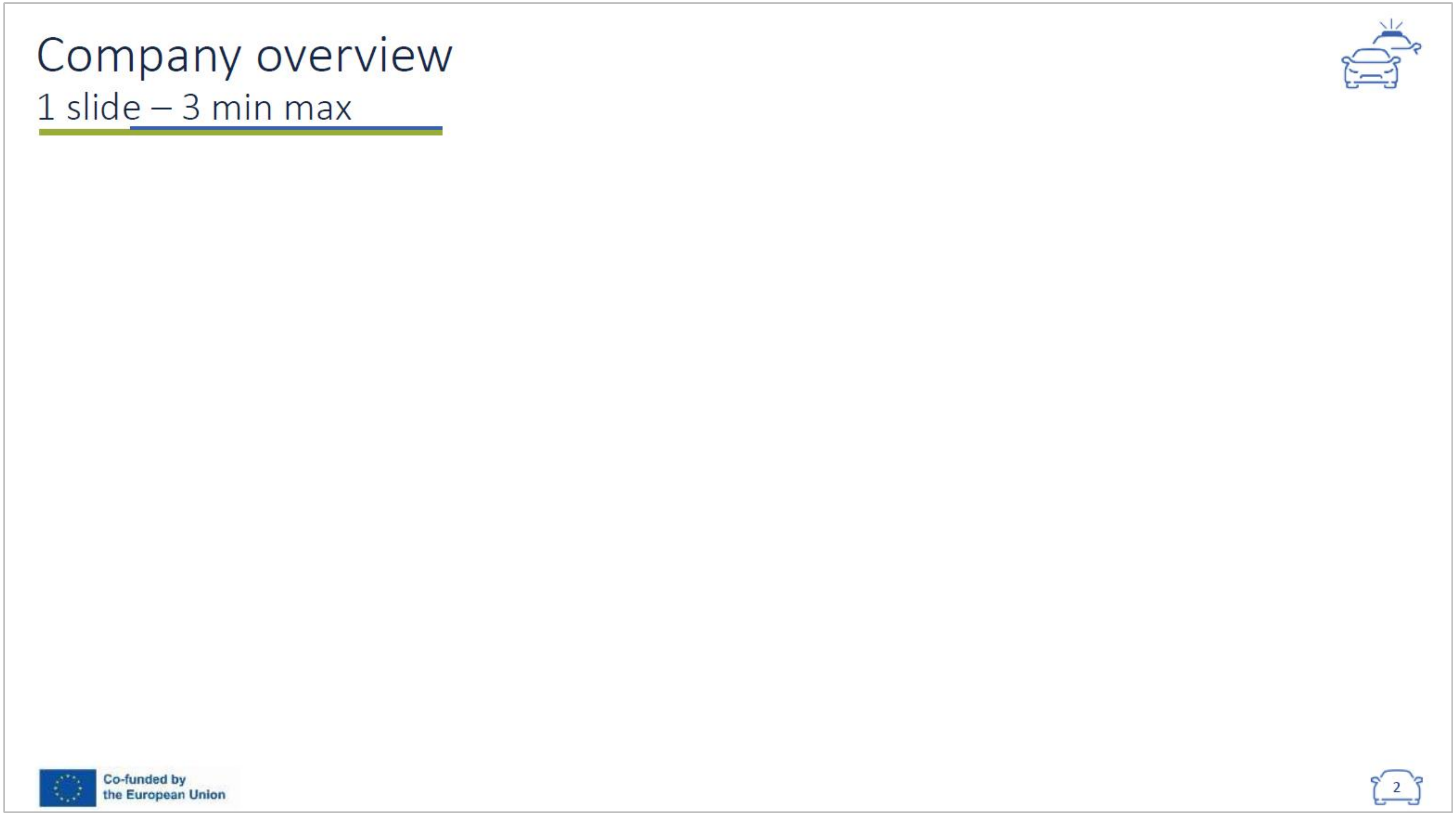
AGENDA

Hours	Topic
max 3 minutes	Company overview
max 3 minutes	Presentation of existing solutions
max 3 minutes	R&D efforts and capabilities
max 3 minutes	Presentation of how the solution answers Use Case 1 – Complex threat and pursuit scenario by a car vehicle?
max 3 minutes	Presentation of how the solution answers Use Case 2 – Urban agile threat involving high-powered motorcycles and e-Bicycles ?
max 3 minutes	Presentation of how the solution answers Use Case 3 – Distressed driver operating a large passenger coach?
max 5 minutes	Q&A session

E-pitching sessions
[name of your company]

INTERCEPT project

[date]


Company overview
1 slide – 3 min max
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2

Existing solutions

1 or 2 slides – 3 min max

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3

R&D efforts and capabilities

1 or 2 slides – 3 min max

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4

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How does your solution answer Use Case 1 – Complex threat and pursuit scenario by a car vehicle?

- <Prepare this slide only if your solution answers use case 1>

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How does your solution answer Use Case 2 – Urban agile threat involving high-powered motorcycles and e-Bicycles ?

- <Prepare this slide only if your solution answers use case 2>

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How does your solution answer Use Case 3 – Distressed driver operating a large passenger coach?

- <Prepare this slide only if your solution answers use case 3>

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