



# 5G MOBIX

5G for cooperative & connected automated  
MOBility on X-border corridors

## Deployment Study RFQ

### *Legal disclaimer*

*The information and views set out in this deliverable are those of the author(s) and do not necessarily reflect the official opinion of the European Union. The information in this document is provided "as is", and no guarantee or warranty is given that the information is fit for any specific purpose. Neither the European Union institutions and bodies nor any person acting on their behalf may be held responsible for the use which may be made of the information contained therein. The 5G-MOBIX Consortium members shall have no liability for damages of any kind including without limitation direct, special, indirect, or consequential damages that may result from the*

use of these materials subject to any liability which is mandatory due to applicable law. Copyright © 5G-MOBIX Consortium, 2018.

## Table of contents

<b>1. CONTEXT .....</b>	<b>3</b>
1.1. 5G-MOBIX .....	3
1.2. Deployment Study .....	3
1.3. Context of this request .....	4
<b>2. DEPLOYMENT STUDY .....</b>	<b>5</b>
2.1. Research questions .....	5
2.2. International reach .....	6
2.3. Requested work .....	13
2.4. Expected result .....	14
2.5. Interaction with the 5G-MOBIX team .....	15
<b>3. PROPOSALS .....</b>	<b>16</b>
3.1. Request form .....	16
3.2. Approach and example projects .....	16
3.3. Questions .....	16
3.4. Price & date .....	16
3.5. Contracts and conditions .....	17
3.6. Proposal submission timeline .....	18
<b>4. EVALUATION OF PROPOSALS .....</b>	<b>19</b>
4.1. MoSCoW .....	19
4.2. Calculation of scores .....	19
<b>APPENDIX 1. REQUEST FORM .....</b>	<b>25</b>

## 1. CONTEXT

### 1.1. 5G-MOBIX

5G-MOBIX aims to showcase the added value of 5G technology for advanced Cooperative, Connected and Automated Mobility (CCAM) use cases and validate the viability of the technology to bring automated driving to the next level of vehicle automation (SAE L<sub>4</sub> and above). To do this, 5G-MOBIX will demonstrate the potential of different 5G features on real European roads and highways and create and use sustainable business models to develop 5G corridors. 5G-MOBIX will also utilize and upgrade existing key assets (infrastructure, vehicles, components) and the smooth operation and co-existence of 5G within a heterogeneous environment comprised of multiple incumbent technologies such as ITS-G5 and C-V2X.

5G-MOBIX will execute CCAM trials along cross-border (x-border) and urban corridors using 5G core technological innovations to qualify the 5G infrastructure and evaluate its benefits in the CCAM context. The Project will also define deployment scenarios and identify and respond to standardization and spectrum gaps.

5G-MOBIX will first define critical scenarios needing advanced connectivity provided by 5G, and the required features to enable some advanced CCAM use cases. The matching of these advanced CCAM use cases and the expected benefits of 5G will be tested during trials on 5G corridors in different EU countries as well as in Turkey, China, and Korea.

The trials will also allow 5G-MOBIX to conduct evaluations and impact assessments and to define business impacts and cost/benefit analysis. As a result of these evaluations and international consultations with the public and industry stakeholders, 5G-MOBIX will identify new business opportunities for the 5G-enabled CCAM and propose recommendations and options for its deployment.

Through its findings on technical requirements and operational conditions, 5G-MOBIX is expected to actively contribute to standardization and spectrum allocation activities.

### 1.2. Deployment Study

Rural and cross-border areas are always the last on MNOs planning regarding 5G coverage. Advanced CCAM services requiring 5G connectivity will not be able to be supported, unless full coverage is available. To investigate the options and expectations, 5G-MOBIX is preparing a Deployment Study to address:

- The exact needs of CCAM services **at border areas** and CCAM use cases detailed requirements.
- Projected **data and vehicular traffic**.
- An estimation of the **additional 5G investment needed** in those areas.
- Existing (or planned) telecom and transport **infrastructure**.
- Each stakeholder's role and interests and interconnections between the different stakeholders.

Specifically, 5G-MOBIX expects the study to provide:

- A more detailed definition of service requirements along the corridor over time based on the common use case categories identified by the expert group. This will lead to the planning for deployed technologies and expected penetrations/densities for vehicles and cellular/road infrastructure, respectively, as well as classes of service for C-ITS and beyond.
- A full network planning (full map with exact “illustrative” locations of all sites and coverage) along the corridor concerned for the different scenarios. This will enable to launch an early CEF deployment project based on this concrete draft planning. However, site locations might remain hypothetical for the purpose of the study and might be modified in the final deployment project.
- Cost calculation of the planned network for all relevant categories of deployment cost including passive and active equipment, civil engineering, etc. This should be adapted to the local circumstances of the countries of the corridor.
- Rough outline of deployment project with time phases (Finalisation of network planning, permit requests, preparation of works, works, testing, service launch)

5G-MOBIX intends to answer these questions, alongside two other projects performing a similar study. 5G-MOBIX has created this RfQ to obtain objective and unbiased information data and circumvent potential confidentiality issues between operators, when collecting commercially sensitive data.

### 1.3. Context of this request

Given the broader scope of the total deployment study, this RfQ needs to be placed in the context of the total deployment study to make you aware of the other parts relevant to this study. This will enable you to create a better proposal.

The requested parts are visualized grey in their context in below diagram.

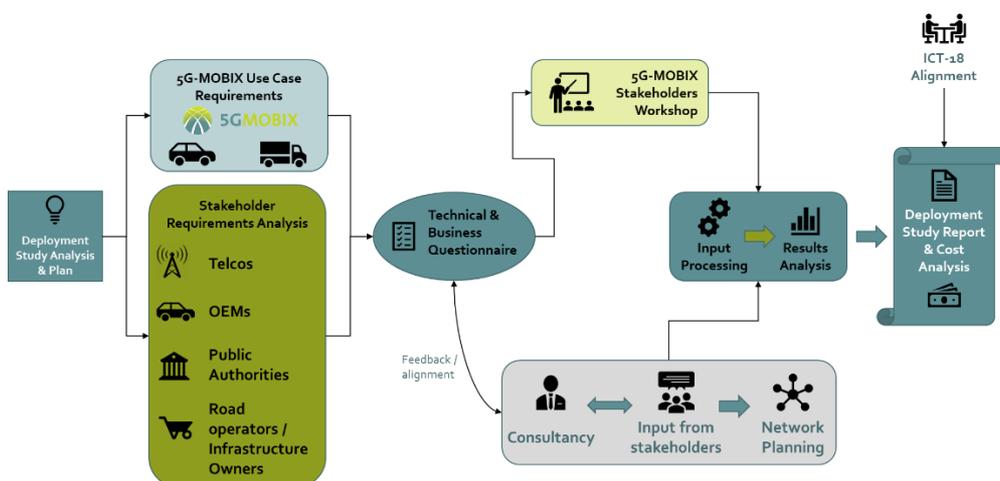


Figure 1. Deployment Study diagram.

## 2. DEPLOYMENT STUDY

### 2.1. Research questions

To provide the necessary input for the 5G-MOBIX study, the following research questions need to be answered by the selected contractor:

- What are the traffic characteristics that would be expected for 2023 and 2025?
  - What is the projected CCAM vehicle fleet penetration rate?
  - What is the projected yearly CCAM market share?
  - What amount of 5G traffic is expected, differentiating background 5G traffic from CCAM-generated traffic.
- What are the exact needs of CCAM services at border areas and the CCAM use-cases' detailed requirements?
  - What are the gaps in projected services & coverage and estimated service needs (background 5G + CCAM)
- What are the already planned investments in physical & digital infrastructure to be deployed in the Cross Border areas?
  - What are the (projected) automotive investments in CCAM?
  - What are the (projected) private investments in telecom infrastructure (from MNOs, vendors, etc.)?
  - What are the projected telecom services and coverage in cross-border areas?
- What is the deployment "delta" between current planned investments and the necessary investments to deliver full coverage for the CCAM use-cases
  - How would the CCAM "delta" look like in 2023 and 2025?
  - What are the generic steps and timelines between decisions for and deployment of 5G?
  - What is the high-level 5G network planning for the deployment scenarios in the selected sites with a visual representation (map and/or infographic), based on the 5G-MOBIX use-cases?
- What is necessary with regards to networking, preparation for market and business risks, enablers, market analysis, and competitive intelligence?
  - What are the pricing and deployment models for the CCAM eco-system?
- What are any assumptions and projections that can be made towards 2030?

## 2.2. International reach

The different CBCs and TSs on which the deployment study should focus are detailed below. Additional countries are allowed on top of this to broaden the results.

### 2.2.1. Spain-Portugal (ES- PT) Cross-Border Corridor. CBC

The locations of the different CBCs and TSs and the CCAM User Stories for which the 5G network will have to provide service are shown in the following sections.

#### 2.2.1.1. ES-PT CBC Location

The ES-PT cross-border corridor is in the border of the north of Portugal with Spain. This border is established by the Minho/Miño river, and contains several bridges providing the road infrastructure serving trucks, cars and pedestrians. International trade as well as large passenger commuting flows are of great importance and provide ideal conditions for the execution of diversified trials to showcase the advantages offered by the 5G connectivity to CCAM use cases.

The Spain-Portugal corridor includes the following route between Vigo and OPorto:

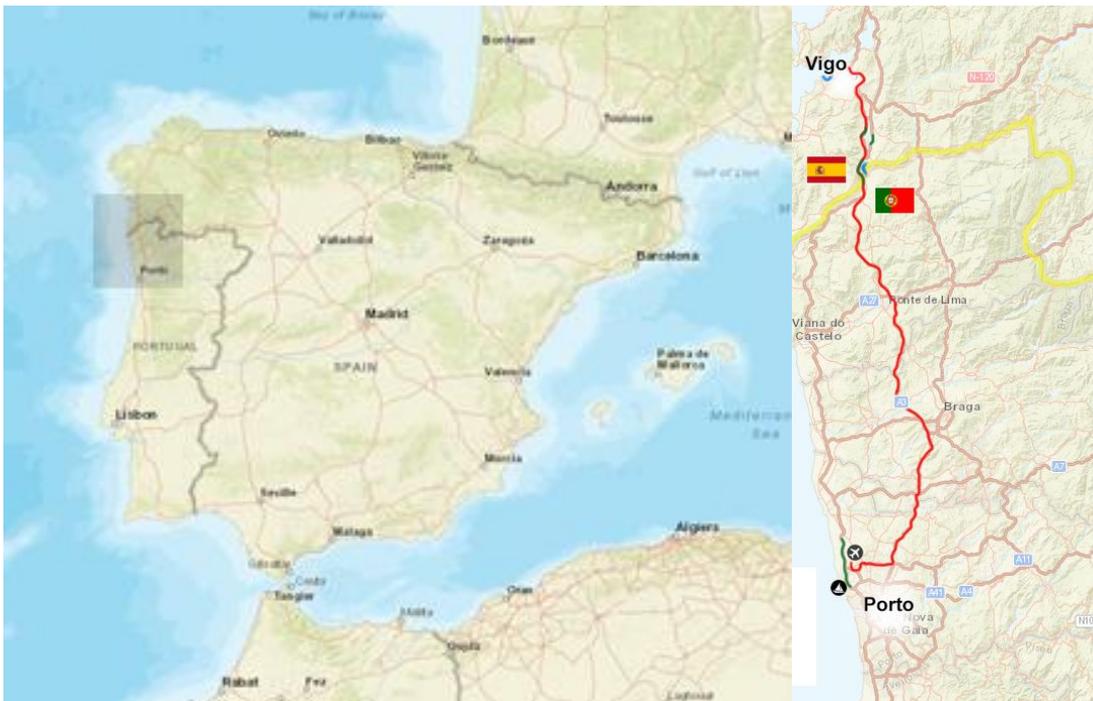


Figure 2. Spain-Portugal corridor.

Although this route must include the New Bridge between Valença and Tui at the border, it would be advisable to also include the Old Bridge in the study, which is of interest for use cases with an autonomous shuttle.



Figure 3. New Bridge and Old Bridge between Valença (Portugal) and Tui (Spain).

### 2.2.1.2. User Stories in ES-PT CBC

Table 1. User Storiors in ES-PT CBC.

UCC Id	UCC Name	US Id	US Description
AdDr	Advanced Driving	LaneMerge	Complex manoeuvres in cross-border settings: lane merge for automated vehicles
		Overtaking	Complex manoeuvres in cross-border settings: automated overtaking
		CoopAutom	Automated shuttle driving across borders: cooperative automated system
ExSe	Extended Sensors	HDMapsVehicle	Complex manoeuvres in cross-border settings: HDMaps
		HDMapsPublicTransport	Public transport: HD Maps
ReDr	Remote Driving	RCCrossing	Automated shuttle driving across borders: remote control
QoS	Vehicle QoS Support	MediaPublicTransport	Public transport: HD media services and video surveillance

## 2.2.2. Greece – Turkey (GR-TR) Cross-Border Corridor

### 2.2.2.1. GR-TR CBC Location

The GR-TR cross-border corridor constitutes the south-eastern border of the European Union providing a challenging geopolitical environment due to the existence of actual, physical borders, where customs agents perform rigorous border checks. These unique conditions comprise a commensurate testing ground for the operation of CCAM use cases at EU border conditions with heavy traffic and will help determine how the involved stakeholders should adapt to accommodate such functionality. The heterogeneity of traffic going through these borders, i.e. trucks with commercial goods, tourists, as well as the co-existence of multiple differentiated vehicles with pedestrians (security personnel, customs agents, etc.) provide ideal conditions for the execution of diversified trials to showcase the advantages offered by the 5G connectivity to CCAM use cases.

The GR-TR trials will take place on the most commonly used border crossing between Greece and Turkey in the area of Kipoi (GR) - Ipsala (TR) where the E90 (GR) highway becomes the E84 (TR) highway when crossing into Turkey. **Error! Reference source not found.** depicts the exact location of the GR-TR cross-border trials and the route to be followed by the participating vehicles, covering a stretch of 2.5 kms for testing.



Figure 4. GR-TR border-crossing trial location.

### 2.2.2.2. User stories in GR-TR CBC

Table 2. User Storiers in GR-TR CBC.

UCC Id	UCC Name	Trial Site	US Id	US Description
Plat	Vehicles Platooning	GR-TR	SeeWhatISee	Platooning with "see what I see" functionality in cross-border settings
		GR-TR	5GPlat	Platooning through 5G connectivity
ExSe	Extended Sensors	GR-TR	AssBCrossing	Extended sensors for assisted border-crossing
		GR-TR	TruckRouting	Truck routing in customs area

### 2.2.3. German (DE) Trial Site

#### 2.2.3.1. DE TS Location

Germany has one trial site located in Berlin. The Berlin corridor builds on the national flagship project Diginet-PS ([www.diginet-ps.de](http://www.diginet-ps.de)) and comprises the full dynamics of a dense urban environment. The tests and trials of the project’s use cases are conducted in a fully dynamic dense urban setting. The Berlin corridor is situated in the centre of Berlin, Straße des 17. Juni and is a 4km long road extending from Ernst-Reuter-Platz to Brandenburger Gate. The corridor is open and urban with three lanes in each direction, two complex roundabouts (with 5 roads and multiple lanes), and a high traffic intensity during working hours.

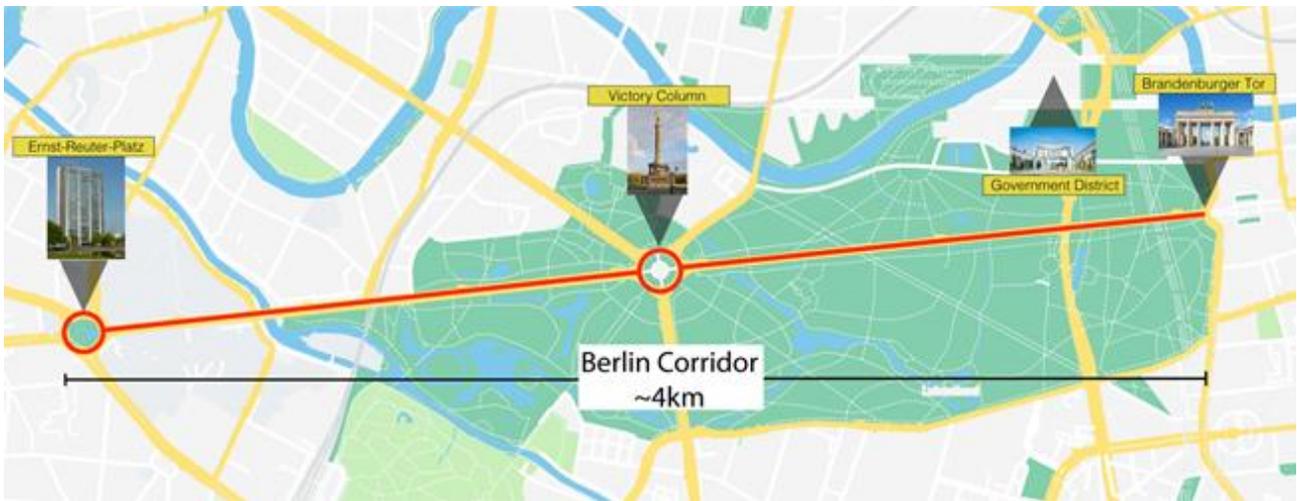


Figure 5. German (DE) trial site.

#### 2.2.3.2. User stories in DE TS.

Table 3. User Storiers in DE TS.

UCC Id	UCC Name	Trial Site	US Id	US Description
Plat	Vehicles Platooning	DE	AssRSU	eRSU-assisted platooning
ExSe	Extended Sensors	DE	EDM	EDM-enabled ES with surround view generation

## 2.2.4. Finnish (FI) Trial Site

### 2.2.4.1. FI TS Location

The Finland (Espoo) pre-deployment trial site is located within and around the Otaniemi area of Aalto University. The 5G-MOBIX testbed will build on a legacy of 4G/5G testbeds deployed in the Otaniemi area in past/ongoing national projects.



Figure 6. The FINLAND pre-deployment trial site.

### 2.2.4.2. User stories in FI TS

Table 4. User Stories in FI TS.

UCC Id	UCC Name	Trial Site	US Id	US Description
ExSe	Extended Sensors	FI	EdgeProcessing	Extended sensors with redundant Edge processing
ReDr	Remote Driving	FI	RedundantNE	Remote driving in a redundant network environment

## 2.2.5. FR TS

### 2.2.5.1. FR TS Location

The French TS is composed by two trial sites located in the suburb of Paris: Satory and the UTAC CERAM. These are closed test sites composed of 12 Km of different type of roads (highway, urban, rural, parking and braking circuits) and associated facilities.

The closed site of Satory is composed of closed roads (private test tracks). The second closed site of UTAC CERAM autodrome is situated at Linas-Monthléry.

The trial site at Linas-Monthléry provides a variety of road configurations and presents a complete road infrastructure circuit to efficiently test the proposed use cases: from highways with three lane, 2.2 Km of length and high permitted velocity to urban circuit with traffic lights and parking area.



Figure 7. French trial sites.

### 2.2.5.2. User stories in FR TS

Table 5. User Storiors in FR TS.

UCC Id	UCC Name	Trial Site	US Id	US Description
AdDr	Advanced Driving	FR	AssInfrastructure	Infrastructure -assisted advanced driving

## 2.2.6. Dutch (NL) Trial Site

### 2.2.6.1. NL TS Location

The NL trial considered is located at the motorway A270/N270 connecting the cities of Eindhoven and Helmond in the Netherlands which has road exemptions to support automated driving in mixed traffic conditions. Trials start at Technical University of Eindhoven campus in Eindhoven. AD vehicles drive towards the Automotive campus in Helmond covering road distance of approximately 10 km, of which 6km is a high speed (100 kmph speed limit) road segment on A270/N270.

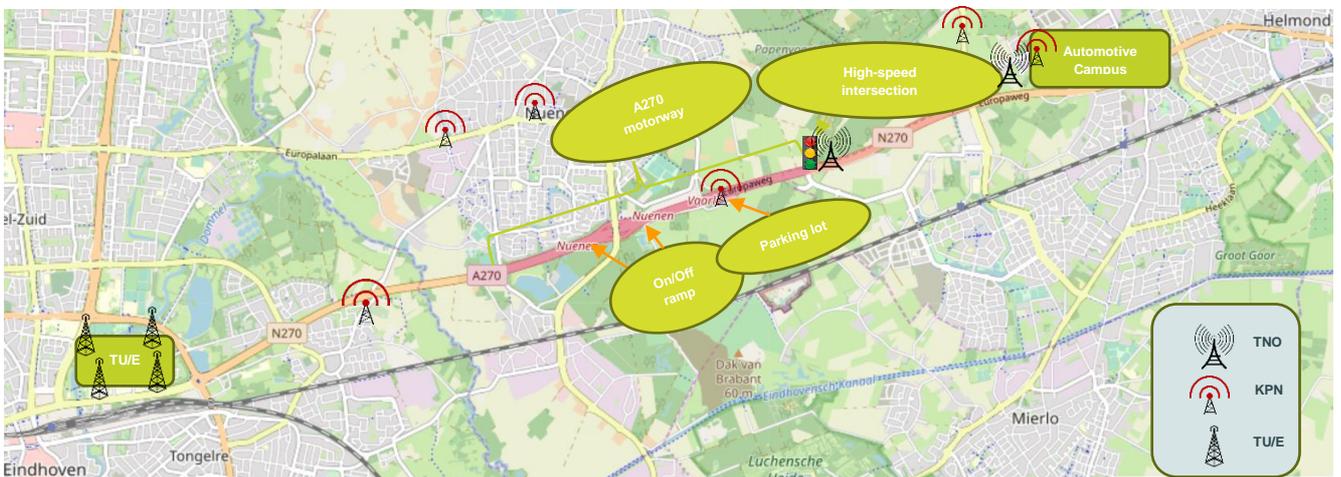


Figure 8. NL trial site.

### 2.2.6.2. User stories

Table 6. User Stories in FR TS.

UCC Id	UCC Name	Trial Site	US Id	US Description
AdDr	Advanced Driving	NL	CCA	Cooperative collision avoidance
ExSe	Extended Sensors	NL	CPM	Extended sensors with CPM messages
ReDr	Remote Driving	NL	5GPositioning	Remote driving using 5G positioning

### 2.3. Requested work

The work required by the company selected for this study is shown below:

1. **Contact/survey the different stakeholders** involved in the value chain of the deployment of 5G for CCAM technology in the different CBCs and TS. See below for the stakeholders identified by us.

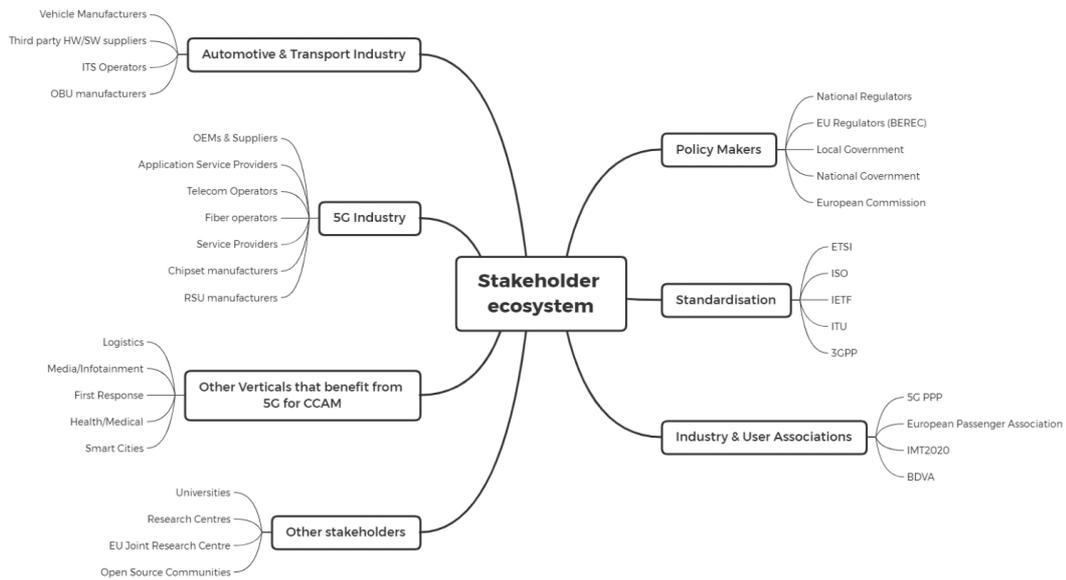


Figure 9. Stakeholders to be involved.

2. **Data collection: This phase must include the following:**

- Consolidate survey data using the cost template as initial setup (provided by 5G MOBIX).
- Execute interviews/surveys to obtain feedback to identify gaps, barriers, stakeholders' actions needed, etc.

3. **Data processing and information obtention.** The data obtained in the previous phases should be processed to obtain the following information:

- The exact needs of CCAM services at border areas and CCAM use cases detailed requirements.
- Projected data and vehicular traffic.
- Existing (or planned) 5G for CCAM infrastructure.
- Each stakeholder's role and wishes.
- Identify gaps, barriers, stakeholders' actions needed, etc.

4. **Network planning** with exact "illustrative" locations of all sites and coverage along the corridor concerned for the different scenarios.

- 5. Cost calculation** of the planned 5G for CCAM network for all relevant categories of deployment cost for each TS and CBC. "Identify the "delta" for connectivity investments needed for x-border CCAM on top of investments that are already planned 2021-2023-2025". This includes the following points:
- Aligned with investments on road infrastructure & services and automotive - to be calculated on a separate budget – not to burden 5G budget.
  - For the use-cases per CBC/TS from 5G-MOBIX, Including the following stages of deployment: - CAPEX (original investment) and OPEX (maintenance, etc). Include upgrades and migration NSA to SA.
  - For traffic scenarios based on the following:
    - Projected (estimated) data traffic over 5G (background traffic).
    - Projected CCAM vehicles penetration (based on bibliographic estimates).
    - Estimated CCAM data traffic per use case
- 6. Steps and timelines: Identify the steps and timelines between decision for and deployment of a 5G and incorporate a gantt chart for each of the CBC and TS.**

## 2.4. Expected result

The expected result is a detailed report of the work performed on each and every one of the items listed in the previous section for each CBC and TS. The report should include a detailed conclusions section for each CBC and TS. The content, as a minimum, must be as indicated in the following table:

Table 7. Report ToC for each CBC and TS.

Deployment Study Report	
1	Stakeholders identified
2	Data collection methodology
3	Data processing methodology
4.	5G for CCAM Deployment
4.1.	CCAM services and detailed requirements
4.2	Projected data and vehicular traffic
4.3	Existing (or planned) 5G for CCAM infrastructure
4.4	Network Planning for 5G for CCAM deployment
4.5	Deployment Costs. "Delta" for connectivity investments needed for x-border CCAM on top of investments that are already planned 2021-2023-2025"
4.6	Steps and timelines (including all the stakeholders participation for the deployment of 5G for CCAM) (optional - Should-have)
5	Conclusions and recommendations for the deployment

## 2.5. Interaction with the 5G-MOBIX team

For proper project execution, communication is crucial. You will organize the interaction to:

- help you during the study with our insights;
- help us understand the progress, status, etc.

To this end we expect at least:

- bi-weekly progress calls;
- a review process concluded with a review meeting.

You are required to describe your approach to this in your proposal.

## 3. PROPOSALS

This request is aimed at identifying the firm delivering the highest value for the given price. For that purpose, we have created a request form and a scoring methodology. Proposals should contain both a filled in form, an explanation of the approach and example projects.

### 3.1. Request form

To quickly assess the abilities of your firm we request you complete the form attached in o. This form is added as an Excel for your convenience as well.

In the form the following phrase is used at several locations: "... will you (be able to) ..." The meaning is that you can deliver on this and that you will deliver on this when the contract is awarded.

### 3.2. Approach and example projects

You are requested to deliver an approach on how to perform the study to prove your abilities listed in the completed request form. This proof is further extended with examples of executed projects in the fields:

- Automotive and Cooperative & Connected Automated Mobility
- Telecom operators and vendors
- Traffic and transport management

The content of both items must be brief and should be aimed at underlining and explaining what is listed in the completed request form.

### 3.3. Questions

Questions can be directed to:

- Olga Segou            Olga.SEGOU@intrasoft-intl.co
- Diana Blanco        diana.blanco@ctag.com
- Kostas Trichias     ktrichias@wings-ict-solutions.eu
- Coen Bresser        c.bresser@mail.ertico.com

### 3.4. Price & date

There is a maximum to the available budget, this maximum is related to the number of cross-border corridors offered in the proposal. The maximum budget is € 200.000,- excluding VAT. The ultimate deadline for the report is August 1, 2021.

### 3.4.1. Penalty for late delivery, a potential bonus for early delivery

Because the delivery date is part of the scoring mechanism a penalty for late delivery is necessary, otherwise it is easy to promise a delivery date and deliver later. To that end we reserve the right to place a penalty on late delivery by applying one of the following:

- € 500,- per working day, after the agreed delivery date, for the first two weeks
- € 1.000,- per working day, after the agreed delivery date, after the first two weeks
- € 2.000,- per working day, after August 1, 2021, regardless of the agreed delivery date.

In case your offered price is lower than € 200.000,- we offer a bonus of € 250,- for each working day the final report is delivered earlier. The total amount of contracted price and bonus will not exceed € 200.000,-.

### 3.5. Contracts and conditions

The contract will be firm-fixed-price.

The payment scheme will be:

- 40% upon signing of the contract to provide the contractor with a float.
- 40% after the review meeting.
- 20% when the final report is received.

The contract will be closed between your firm and one of the 5G-MOBIX partners, most likely one from your own country. This implies a two-step approach:

1. Selection of the proposal by the consortium.
2. Closing of the contract by one of the partners.

Please, note that purchasing terms may (will) be applied when closing the final contract. Purchasing terms from that partner will be considered final and binding.

All information collected must be handled confidentially and only in context of this request. Only the consolidated report will be sent to the 5G-MOBIX consortium. The reason to request this lies in the commercial sensitivity of the data and in that some of the 5G-MOBIX consortium members are considered commercial competitors of the targeted stakeholders. The stakeholders may be more willing to provide the data when the confidentiality limitation applies.

### 3.6. Proposal submission timeline

Your proposal should be sent no later than Sunday March 28, 2021 to:

- Olga Segou            Olga.SEGOU@intrasoft-intl.co
- Diana Blanco        diana.blanco@ctag.com
- Kostas Trichias     ktrichias@wings-ict-solutions.eu
- Coen Bresser        c.bresser@mail.ertico.com

We will handle your proposal confidentially and only share it within the consortium for selection purposes.

Selection will be performed in the week of Monday March 29, 2021. We aim to close the contract in April. The studies are assumed to start late April, early May.

## 4. EVALUATION OF PROPOSALS

### 4.1. MoSCoW

In o the request form is presented. This form should be completed for us to be able to assess the differences and make an objective choice between the received proposals. In the form we use the following codes:

- M - Must-have: these have either a score with a minimum or no score, these are the minimum requirements. If an item marked with M cannot be delivered, the proposal will be discarded.
- S - Should have: these items are optional. Ideally, we receive data for these items as this will increase the value of the findings.
- C - Could have: these items are optional as well, proposals can score additionally when delivering on these items.
- W - Won't-have: this code is not used.

### 4.2. Calculation of scores

Within the request form in o there is a division into 3 main groups:

- Reach, this group represents a total of 50% of the scores.
- Collection & processing, this group represents a total of 30% of the scores.
- Price & date, this group represents a total of 20% of the scores.

These groups are further explained below. When there is a difference between the text below, the appendix, and/or the accompanying Excel form, the text in the accompanied Excel form presides. When a difference is noticed that may influence the calculation of the scores, we kindly request you to inform us as soon as possible.

### 4.2.1. Reach

The group “Reach” concerns how much of the 5G-MOBIX countries will be involved. The group is split into 5 categories, each one weighing 10% of the total score.

Question	Description	Scoring	Max score
Reach What stakeholders from what countries will you (be able to) reach for the study.	Telecom Operators (mark an x in the covered countries)	At least both CBCs (M). National sites 2,5% each, max 10%.	10%
	5G Industry (indicate how many in total)	M, linear scale with from 1 for 0% to 3 for 10%	10%
	Car Manufacturers (indicate how many in total)	M, linear scale with from 1 for 0% to 3 for 10%	10%
	Public Authorities (indicate how many for the covered countries)	At least 1 for the marked countries (M), linear scale from only 1s for 0% to only 3s for 10%	10%
	Road Operators/owners of transport infrastructure (indicate how many for the covered countries)	At least 1 for the marked countries (M), linear scale from only 1s for 0% to only 3s for 10%	10%

For the first line at least all CBC countries must be checked. This will result in passing the minimum criteria with a score of 0. The maximum score of 10% is achieved when for each of the national sites you will be able to reach a telecom operator, each checked country represents a score of 2,5%.

The 5G industry and car manufacturers are not necessarily bound to a country. Therefore, only a number of reached organizations will need to be given. Marking a 1 will give a 0% score, marking a 3 will give a 10% score.

For the public authorities (ministries, regulatory bodies, etc.) and road operators (national/regional/private) road operators the score is linked to the checked telecom operators to ensure cohesion between the views from the telecom operators and the public authorities and road operators. Omitting a stakeholder will lead to a knock-out for the proposal. For each cell the score is calculated (0% for a 1, 10% for a 3), these scores are averaged over all cells to provide the total score.

### 4.2.2. Collection & processing

The group “Collection & processing” concerns the actual work that will be performed. The work is split into “collection of data” and “processing of data”. The group is split into 4 categories and represents 30% of the total score.

The first category is about the actual amount of data that will be collected. The amounts provided should correspond to the amounts provided in the first group combined with the amounts of the third category of this group. This means that if e.g. you have 10 organizations listed in the group “Reach” and 5 in the third category of this group, we expect at least 15 completed forms in total.

The second category is about “ability” and “work to be performed”. We expect that you will be able to convert the collected data, using your knowledge and expertise, into the required results. This second category lists the steps that are needed to do this alongside optional (S, C) items that can increase the value of the study results.

The third category offers an opportunity to further employ your network of organizations to i) score higher, and ii) create a better result for the study.

The fourth category is the mandatory composition of the result.

Question	Description	Scoring	Max score
What data will you (be able to) collect?	Amount of completed templates for the CBCs (initial template provided by 5G-MOBIX)	M, % of max	3%
	Amount of completed templates for the National sites (initial template provided by 5G-MOBIX)	M, % of max	3%
	Amount of interviews/surveys in the CBCs	M, % of max	3%
	Amount of interviews/surveys in the National sites	M, % of max	3%
Collection & processing What information will you (be able to) compose, based on the data from and surveys with the marked countries and stakeholders, and your expertise for the horizons 2021-2023-2025? (put an X when you can and will)	The exact needs of CCAM services at border areas and CCAM use cases detailed requirements (updates compared to 5G-MOBIX data)	M	
	Projected private and commercial cross-border traffic. Differentiate between Normal/background 5G traffic and CCAM traffic.	M	
	(Projected) public investments in (physical & digital) traffic & transport (cross-border) infrastructure	M	
	Projected CCAM vehicles penetration rate	M	
	Projected yearly CCAM market share		
	(Projected) automotive investments in CCAM	M	
	(Projected) private investments in telecom infrastructure (from MNOs, vendors, etc.)	M	
	Projected telecom services and coverage in cross-border areas	M	
	Estimated CCAM data traffic of the use cases addressed in 5G-MOBIX based on penetration rates (per use-case)	M	
	Gap Analysis between projected services & coverage and estimated service needs (background 5G + CCAM)	M	
	The delta between current investments and necessary investments to deliver full coverage for the CCAM use-cases	M	
	The generic steps and timelines between decisions for and deployment of 5G	S	4%
High-level 5G network planning for deployment scenarios in the selected sites with a visual representation (map and/or infographic), based on the 5G-MOBIX use-cases	M		

Question	Description	Scoring	Max score
	Networking, Preparation for market and bussiness risks, enablers, market analysis and competitive intelligence	S	2%
	Pricing and deployment models for the CCAM eco-system	S	2%
How many stakeholders from other (EU) countries will you (be able to) involve?	Telecom Operators	C, % of max	2%
	5G Industry	C, % of max	2%
	Car Manufacturers	C, % of max	2%
	Public Authorities	C, % of max	2%
	Road Operators/owners of transport infrastructure	C, % of max	2%
Report (put an X when you can and will)	The report should contain the conclusions of the previous tasks detailed per CBC and TS	M	

In the above group apart from the MoSCoW characters two types of calculation can be seen:

- % of max, this means that the numbers of all proposals will be used to determine the maximum amount. The individual scores are divided by that max.
  - Given five proposals {A, B, C, D, E} with amounts {0, 1, 3, 4, 4}, the resulting factors to multiply the maximum score with will be {0, 0,25, 0,75, 1, 1}.
- Normal scores, marking the line will result in the full score.

### 4.2.3. Price, date, contract

The last group “Price & date” concerns the contractual parts price and date. The total score represented by this group is 20%. This should underline the weight we put on the other items in the scoring mechanism.

	Question	Description	Scoring	Max score
<b>Price &amp; date</b>	What is the total price to deliver the study?	In Euro	M, max k€200, inverse linear scale between min and 200k	10%
	Timeline (provide a full date)	When will you be able to deliver the results	M, before August 1, inverse linear scale between earliest and August 1	10%
	Would you qualify as affiliated entity and/or linked third party? Mark Y (for yes) or N (for no).	EU fraud rules prohibit subcontracting of parties that are either affiliated entities and/or third parties with a legal link to a beneficiary ('linked third parties'). See RfQ for more information.	M, must be a N.	

The first two scores are inversely scored as follows:

- For the price, an inverse linear scale is applied. The price is limited to € 200.000,-, any proposal with a higher price will be cast aside as invalid. The proposal with the lowest price will score 10%. Proposals with a higher price will be scored linearly between the lowest price (10%) and k€200.
  - Given four proposals {A, B, C, D}, with prices {100k, 125k, 150k, 200k}, the scores will be {10%, 7,5%, 5%, 0%}.
- For the date, an inverse linear scale is applied. The time scale is limited to August 1, 2021, any proposal with a later date will be cast aside as invalid. The proposal with the earliest date will score 10%. Proposals with a later date will be scored linearly between the earliest date (10%) and August 1, 2021.
  - Given four proposals {A, B, C, D}, with delivery dates {t - 100 days, t - 75 days, t - 50 days, t} and t being August 1, 2021, the scores will be {10%, 7,5%, 5%, 0%}.

The last item for the price, date, contract group aims at preventing fraud. Our contract with the EU prevents us from subcontracting parties who are either an affiliated entity or a linked third party to any of the beneficiaries (Appendix 2). Only if this is a no (N), will we be able to close a contract with you.

For the definition of an affiliated entity, see Article 2.1(2) Rules for Participation Regulation No 1290/2013: **'affiliated entity'** means any legal entity that is:

- under the direct or indirect control of a participant, or
- under the same direct or indirect control as the participant, or
- directly or indirectly controlling a participant.

'Control' may take any of the following forms:

- (a) the direct or indirect holding of more than 50% of the nominal value of the issued share capital in the legal entity concerned, or of a majority of the voting rights of the shareholders or associates of that entity;
- (b) the direct or indirect holding, in fact or in law, of decision-making powers in the legal entity concerned.

However the following relationships between legal entities shall not in themselves be deemed to constitute controlling relationships:

- (a) the same public investment corporation, institutional investor or venture-capital company has a direct or indirect holding of more than 50% of the nominal value of the issued share capital or a majority of voting rights of the shareholders or associates;
- (b) the legal entities concerned are owned or supervised by the same public body.

A linked third party is a 'third party with a legal link to a beneficiary.' This is any legal entity that has a legal link to the beneficiary implying collaboration that is not limited to the action.

# APPENDIX 1. REQUEST FORM

	Question	Description	Cross-Border Corridor		Cross-Border Corridor		National	National	National	National	Comment	Scoring	Max score
			ES	PT	GR	TR	FI	FR	NL	DE			
Reach	What stakeholders from what countries will you (be able to) reach for the study.	Telecom Operators (mark an x in the covered countries)										At least both CBCs (M). National sites 2,5% each, max 10%.	10%
		5G Industry (indicate how many in total)										M, linear scale with from 1 for 0% to 3 for 10%	10%
		Car Manufacturers (indicate how many in total)										M, linear scale with from 1 for 0% to 3 for 10%	10%
		Public Authorities (indicate how many for the covered countries)										At least 1 for the marked countries (M), linear scale from only 1s for 0% to only 3s for 10%	10%
		Road Operators/owners of transport infrastructure (indicate how many for the covered countries)										At least 1 for the marked countries (M), linear scale from only 1s for 0% to only 3s for 10%	10%

	Question	Description	Input	Comment
Amount of completed templates for the National sites (initial template provided by 5G-MOBIX)				
Amount of interviews/surveys in the CBCs				
Amount of interviews/surveys in the National sites				
	What information will you (be able to) compose, based on the data from and surveys with the marked countries and stakeholders, and your expertise for the horizons 2021-2023-2025? (put an X when you can and will)	The exact needs of CCAM services at border areas and CCAM use cases detailed requirements (updates compared to 5G-MOBIX data)		
		Projected private and commercial cross-border traffic. Differentiate between Normal/background 5G traffic and CCAM traffic.		
		(Projected) public investments in (physical & digital) traffic & transport (cross-border) infrastructure		
		Projected CCAM vehicles penetration rate		
		Projected yearly CCAM market share		
		(Projected) automotive investments in CCAM		
		(Projected) private investments in telecom infrastructure (from MNOs, vendors, etc.)		

Scoring	Max score
M, % of max	3%
M	
M	
M	
M	
M	
M	

	Projected telecom services and coverage in cross-border areas			
	Estimated CCAM data traffic of the use cases addressed in 5G-MOBIX based on penetration rates (per use-case)			
	Gap Analysis between projected services & coverage and estimated service needs (background 5G + CCAM)			
	The delta between current investments and necessary investments to deliver full coverage for the CCAM use-cases			
	The generic steps and timelines between decisions for and deployment of 5G			
	High-level 5G network planning for deployment scenarios in the selected sites with a visual representation (map and/or infographic), based on the 5G-MOBIX use-cases			
	Networking, Preparation for market and business risks, enablers, market analysis, and competitive intelligence			
	Pricing and deployment models for the CCAM eco-system			
	How many stakeholders from other (EU) countries will you (be able to) involve?	Telecom Operators		
		5G Industry		
Car Manufacturers				
Public Authorities				
Road Operators/owners of transport infrastructure				
Report (put an X when you can and will)	The report should contain the conclusions of the previous tasks detailed per CBC and TS			

M	
M	
M	
M	
S	4%
M	
S	2%
S	2%
C, % of max	2%
M	

	Question	Description	Input	Comment
Price & date	What is the total price to deliver the study?	In Euro		
	Timeline (provide a date)	When will you be able to deliver the results		
	Would you qualify as affiliated entity and/or linked third party? Mark Y (for yes) or N (for no).	EU fraud rules prohibit subcontracting of parties that are either affiliated entities and/or third parties with a legal link to a beneficiary ('linked third parties'). See RfQ for more information.		

Scoring	Max score
M, max k€200, inverse linear scale between min and 200k	10%
M, before August 1, inverse linear scale between earliest and August 1	10%
M, must be a N.	

## APPENDIX 2. LIST OF 5G-MOBIX BENEFICIARIES

Short name	Beneficiary name	Country
<b>ERT</b>	EUROPEAN ROAD TRANSPORT TELEMATICS IMPLEMENTATION COORDINATION ORGANISATION S.C.R.L.	BE
<b>AALTO</b>	Aalto-korkeakoulusäätiö	FI
<b>AEVAC</b>	Asociación española vehículo autónomo y conectado	ES
<b>AKKA</b>	AKKA Informatique et Systèmes	FR
<b>ALSA</b>	ALSA GRUPO S.L. UNIPERSONAL	ES
<b>ATOBÉ</b>	BRISA INOVACAO E TECNOLOGIA SA	PT
<b>CATAPULT</b>	Satellite Applications Catapult	GB
<b>CCG</b>	Centro de Computação Gráfica	PT
<b>COSM</b>	COSMOTE	GR
<b>CTAG</b>	FUNDACION PARA LA PROMOCION DE LA INNOVACION, INVESTIGACION Y DESARROLLO TECNOLOGICO EN LA INDUSTRIA DE AUTOMOCION DE GALICIA	ES
<b>DEKRA</b>	DEKRA Testing and Certification S.A.U.	ES
<b>DGT</b>	DIRECCION GENERAL DE TRAFICO	ES
<b>ERICSGR</b>	Ericsson Hellas	GR
<b>FORD</b>	Ford Otosan	TR
<b>FRAUN</b>	Fraunhofer IAO	DE
<b>GTARC</b>	GT-ARC gemeinützige GmbH	DE
<b>ICCS</b>	INSTITUTE OF COMMUNICATION AND COMPUTER SYSTEMS	GR
<b>IMT</b>	Instituto da Mobilidade e dos Transportes, I.P.	PT
<b>INFRAPT</b>	Infraestruturas de Portugal	PT
<b>INTRA</b>	Intrasoft International S.A.	LU
<b>ISEL</b>	Instituto Superior de Engenharia de Lisboa	PT
<b>IT</b>	Instituto de Telecomunicações	PT
<b>KPN</b>	Koninklijke KPN NV	NL
<b>LIST</b>	Luxembourg Institute of Science and Technology	LU
<b>NOKIASP</b>	NOKIA BELL LABS	ES
<b>NORTE</b>	AUTO - ESTRADAS NORTE LITORAL SOCIEDADE CONCESSIONARIA - AENL SA	PT
<b>SENSIBLE<sub>4</sub></b>	Sensible 4 Oy	FI
<b>SIEMENS</b>	Siemens Portugal	PT
<b>TELEFONICA</b>	Telefónica Investigación y desarrollo SAU	ES
<b>TIS</b>	Tis.pt, Consultores em Transportes, Inovação e Sistemas, SA	PT
<b>TNO</b>	NEDERLANDSE ORGANISATIE VOOR TOEGEPAST NATUURWETENSCHAPPELIJK ONDERZOEK TNO	NL
<b>TUB</b>	(DAI Labor) Technische Universität Berlin	DE
<b>TUE</b>	Technische Universiteit Eindhoven	NL
<b>TURKCELL</b>	Turkcell Technology	TR
<b>UL</b>	University of Luxembourg	LU
<b>UMU</b>	Universidad de Murcia	ES
<b>VALEO</b>	VALEO Schalter und Sensoren	DE

<b>VED</b>	VEDECOM FONDATION PARTENARIALE MOV'EOTEC	FR
<b>VICOM</b>	FUNDACIÓN CENTRO DE TECNOLOGÍAS DE INTERACCIÓN VISUAL Y COMUNICACIONES Vicomtech	ES
<b>VIGO</b>	CONCELLO DE VIGO	ES
<b>VTT</b>	Teknologian tutkimuskeskus VTT Oy	FI
<b>WINGS</b>	WINGS ICT solutions	GR
<b>NOKIAPT</b>	NOKIA SOLUTIONS AND NETWORKS PORTUGAL, S.A.	PT
<b>ERICSTR</b>	ERICSSON ARASTIRMA GELISTIRME VE BILISIM HIZMETLERI A.S.	TR
<b>SISSBV</b>	SIEMENS INDUSTRY SOFTWARE AND SERVICES BV	NL
<b>IMEC</b>	Interuniversitair Micro-Electronica Centrum	BE
<b>NOS</b>	NOS Technology, S.A.	PT
<b>TUBITAK</b>	Türkiye Bilimsel Ve Teknolojik Arastirma Kurumu	TR
<b>UPM</b>	Universidad Politécnica de Madrid	ES
<b>AIIM<sup>1</sup></b>	AI in Motion	NL

---

<sup>1</sup> AIIM will join the project in the next amendment (early 2021)