Grant Agreement Number: 723016

Project acronym: **INFRAMIX**

Project full title: INFRAMIX - Road INFRAstructure ready for MIXed vehicle traffic flows

D6.10

Networking and Engagement activities plan – M34 update

Due delivery date: 31/03/2020
Actual delivery date: 14/04/2020
Organization name of lead participant for this deliverable: **ATE**

Project co-funded by the European Commission within Horizon 2020		
Dissemination level		
PU	Public	x
PP	Restricted to other programme participants	
RE	Restricted to a group specified by the consortium	
CO	Confidential, only for members of the consortium	

Project funded by the European Union's Horizon 2020 Research and Innovation Programme (2014 – 2020)

Document Control Sheet

Deliverable number:	
Deliverable responsible:	ATE
Work package:	6
Editor:	Hatun Atasayar

Author(s) – in alphabetical order		
Name	Organisation	E-mail
Hatun Atasayar	ATE	Hatun.atasayar@austriatech.at
Martin Dirnwöber	ATE	Martin.dirnwoeber@austriatech.at
David Quesada	ENI	David.quesada@enide.com
Stamatis Manganiaris	ICCS	stamatis.manganiaris@iccs.gr
Nikoletta Karitsioti	ICCS	Nikoletta.karitsioti@iccs.gr
Jakob Reckenzaun	VIF	Jakob.reckenzaun@v2c2.at
David Porcuna	AAE	David.porcuna@autopistas.com
Yannick Wimmer	ASF	Yannick.wimmer@asfinag.at

Document Revision History			
Version	Date	Modifications Introduced	
V0.1	17/02/2020	First draft by ATE	ATE
V0.2	24/02/2020	Consolidated input by partners	ATE, ENI, ICCS, VIF, AAE
V0.3	26/02/2020	Modifications according to the comments by partners	ATE
V0.4	28/02/2020	Review by ICCS	ICCS
V0.5	24/03/2020	Review by ASF	ASF
V0.6	27/03/2020	Submitted for approval to all partners	ATE
V0.7	14/04/2020	Final version ready for submission	ATE

Legal Disclaimer

Abbreviations and Acronyms

Acronym	Definition
EC	European Commission
PO	Project officer
GA	Grant Agreement
WP	Work Package
Dx.x.	Deliverable
Tx.x.	Task

Contents

Executive Summary 6
1. Introduction 7
1.1 Aim of the project 7
1.2 Purpose of Document 7
1.3 Intended audience 7
1.4 Document overview 7
2. Objectives and approach 8
2.1 Objectives 8
2.2 Approach 8
2.3 Confidentiality aspects 9
2.4 Link to INFRAMIX dissemination activities 10
3. Key topics for networking and relevant stakeholder groups 11
3.1 INFRAMIX key topics for networking 11
3.2 Groups of stakeholders relevant for interaction with the INFRAMIX project 11
3.3 Stakeholder engagement process 14
3.4 INFRAMIX Networking activities 15
3.4.1 Online presence 15
3.4.2 Online survey on new visual signs for CAD 16
3.4.3 Stakeholder Workshop in Barcelona 16
3.4.4 The INFRAMIX interoperability event in Girona 17
3.4.5 Joint Stakeholder Workshop with TransAID 19
3.4.6 Interviews with the End User Core Group 22
3.4.7 INFRAMIX Final Conference 23
4. Interaction with projects, platforms, groups and networks 23
4.1 Objectives for liaison activities 23
4.2 Strategic discussion of infrastructure elements 24
4.3 TISA 24
4.4 C-Roads 25
4.5 ERTRAC CAD roadmap 25
5. Key performance indicators for assessment of networking and user engagement activities 26
6. Summary 28
Annex A: Mapping of the INFRAMIX End Users Group 29
Annex B: Documents used during test days in Girona and Graz 34
1. Background Questionnaire 34
2. Consent form 36
3. Information Sheet 38
4. Pre-Briefing for Scenario 2 Use Case 1 40

List of Figures

Figure 1: Impressions from the INFRAMIX interoperability event in Girona 18
Figure 2: Impressions from the INFRAMI interoperability event in Girona 2 18
Figure 3: overview of workshop participants by country 19
Figure 4: overview of workshop participants by affiliation 20

List of Tables

Table 1: Modes of engagement from D5.1 issues. 9
Table 2: Overview of the INFRAMIX End Users Core Group 12
Table 3: Stakeholder engagement process 14
Table 4: KPIs for assessment of networking and user engagement activities 26
Table 5: Performed stakeholder workshops and demonstration activities 27

Executive Summary

Nowadays, the functionalities for automated driving and the potential interactions with vehicles and infrastructure are evolving in a very dynamic way. Interactions between road infrastructure and vehicles of various automation levels (e.g. conventional, highly automated) and communication capabilities are complex. In such a complicated environment, there are many different stakeholders involved. Therefore, cooperation is vital for development and implementation of solutions for mixed traffic scenarios.

The purpose of this document is to describe the approach for networking and engagement activities carried out within the INFRAMIX project, as a basis for effective and efficient interactions with stakeholders to get involved.

Two versions of this deliverable have been provided within the project. The first version was due in M9 and this final version has been provided in M34 of the project. In the first version, mainly the approach and first findings were presented. In the second and revised final version the approach as well as a description of the networking and engagement activities have been provided.

The objective of the activities described in this document is to involve all related INFRAMIX stakeholders to exchange information, experiences and best practices and efficiently disseminate project results. Accordingly, an INFRAMIX End Users Group has been established and continuously expanded during the project runtime. The group was open to join and facilitated receiving information or active involvement in INFRAMIX deployment. The latter comprised the core members of the End Users Group. These core members were requested to provide direct feedback (i.e. through participation at INFRAMIX Stakeholder Workshops), to assist the INFRAMIX consortium to efficiently evaluate the proposed technologies and perform the required corrections according to the End User needs and expectations.

1. Introduction

1.1 Aim of the project

INFRAMIX, an H2020 project, helps to prepare road infrastructure for mixed traffic flows and aims to support the community and stakeholders through the infrastructure classification scheme. Its main target is to design, upgrade, adapt and test (in simulation and in real-world) both physical and digital elements of the road infrastructure, to enable the coexistence of automated, connected and conventional vehicles, ensuring an uninterrupted, predictable, safe and efficient traffic. The key outcome will be a “hybrid” road infrastructure able to handle the transition period and become the basis for future automated transport systems.

INFRAMIX addresses major traffic management opportunities arising from the emergence of a variety of automation and connectivity capabilities with various penetration rates. This includes the design and implementation of novel strategies for traffic estimation, monitoring and control strategies, which are dynamically adapted to:

- the different penetration levels of automated and connected vehicles,
- the infrastructure equipment and
- the overall traffic status.

To achieve its objectives INFRAMIX selects a bottom-up approach. It builds on three specific high value traffic scenarios, namely “dynamic lane assignment”, “roadworks zones” and “bottlenecks”. Although INFRAMIX is targeting mainly highways, its key results can be easily transferred to urban roads.

1.2 Purpose of Document

The purpose of this document is to describe the networking and engagement activities carried out in the INFRAMIX project. The detailed description of these activities and the clustering of stakeholder groups and areas of cooperation are the basis for effective and efficient interactions with stakeholders. The procedure of the stakeholder approach and the initial activities carried were already presented in the first version of this deliverable (D6.3 Networking and Engagement activities plan), which was due in month 9 of the INFRAMIX project.

In this revised, expanded version of this document a detailed description of the networking and engagement activities for the whole duration of the project as well as the adaptations on the approach defined at the beginning, is provided.

1.3 Intended audience

The intended audience for this deliverable is primarily the INFRAMIX project partners but also all organizations, which are interested in networking and user involvement activities of INFRAMIX. In order to have effective interactions with stakeholders, a common approach has been developed in Task 6.3 and is presented in this document.

1.4 Document overview

The document starts with the description of the objectives and the approach of the project in Chapter 2. Then the identified topics and the stakeholder groups relevant to address these topics as well as the stakeholder engagement process are presented in Chapter 3. While chapter 3 further focuses on the performed INFRAMIX Networking activities, Chapter 4 gives an overview on interactions with projects, platforms, groups as well as networks and

performed liaison activities. Finally, an impact assessment of the networking and users' engagement activities is carried out in Chapter 5 and conclusions are provided in the summary.

2. Objectives and approach

2.1 Objectives

The main objective of Task 6.3 is the interaction with different stakeholder groups to ensure knowledge exchange and interoperability of developed systems. The objectives are to:

- accelerate INFRAMIX developments by knowledge exchange, avoid duplication of work, align developments and ensure heading in the right direction.
- increase the impact of INFRAMIX through:
  - fostering the added value of INFRAMIX developments by identifying the needs of the various stakeholder groups and giving them due consideration,
  - allow others to build on INFRAMIX results,
  - and align with other activities: Integration of INFRAMIX developments in the European ITS long-term strategy.

2.2 Approach

To gain the necessary feedback from each stakeholder group there were different ways of interaction based on each stakeholder's expertise, established liaison processes and dissemination activities, location etc. A list of stakeholder groups is provided in chapter 3.2 and the entire list of stakeholders in the Annex A.

An efficient interaction with stakeholders depends strongly on the expected output of the interaction and the topic to be addressed. Consequently, the following key aspects were considered in every networking and engagement activity:

- objective of the interaction ("What is needed from others" e.g. input of developments of other projects, input of future plans and problems to be addressed, inputs of the view of the users, alignment of activities, evaluation proposed technologies, support in performing corrections),
- stakeholders to be addressed and the role of each stakeholder (involved in the development, decision makers, etc.),
- way of interaction (questionnaire, meetings, specific activities of INFRAMIX partners like international conferences, workshops, etc.) and
- timeline/schedule (defined specific month of the project based on the respective tasks, etc.,)

The way of interaction with stakeholders is clearly distinguished by the two categories of stakeholders:

- the INFRAMIX End Users Group and
- Liaison activities with projects, platforms, groups and networks.

While the aim of the INFRAMIX End Users Group is to address stakeholders, which are directly affected by the developments of INFRAMIX, the aim of liaison activities is the strategic exchange and collaboration with projects, platforms, groups and networks. The networking and user engagement activities for both categories of stakeholders are described in the chapters 3.2 and 4.

Furthermore, dissemination and communication to the community was done through:

- presentations and demonstrations in various conferences and events,

- special sessions, workshops and meetings in the framework of international events,
- publications in scientific journals and industrial magazines,
- the project's website and
- through the INFRAMIX main events
    - INFRAMIX Stakeholder Workshops, which were held on both demonstration site (in Girona, Spain in M28 and in Graz, Austria in M29) as well as in Barcelona in M24 and
    - INFRAMIX Final Event and demonstration to be held in M36 in Graz, Austria.

Within the scope of these possibilities, INFRAMIX partners can call attention to the project and set the course for future cooperation.

2.3 Confidentiality aspects

Depending on the topic and the stakeholders involved, modes of interaction have been elaborated to allow an exchange of information. The main mechanisms, which have been used to involve the target groups of INFRAMIX to the user engagement process, are described in the table below. A detailed description of this table is provided in D5.1.

The way of collaboration and the resultant confidentiality aspects were decided based on strategic considerations with the involved partners. If, subsequently, the exchange of non-public data/information become necessary, a respective agreement would be drawn up individually between all involved organizations. Until month 34, however, no confidential information was released as the collaborations could be solved without confidentiality

Type of interaction	Intended outcome of the interaction	confidentiality	Approach
Communication	Engage as many stakeholders as possible to inform/ educate stakeholders	public	Marketing Communication
Consultation	Gain information and feedback from stakeholders and inform about decisions made internally	public	Stakeholder workshops, meetings, f2f interviews
Dialogue	Work directly with stakeholders to ensure their concerns are fully understood and considered in decision making	public	bidirectional communication; Stakeholder workshops, meetings, f2f interviews
Partnerships	Partner with or convene a network of stakeholders to develop mutually agreed solutions and actions	Agree on a data exchange policy for future developments e.g. sign confidentiality agreement for Common developments or joint ownership	e.g. Strategic discussion of infrastructure elements with H2020 projects and the EU-ITS Platform

Collaborations	Agreed-upon collaboration between stakeholders to speed up developments. Allowing others to build on INFRAMIX elements and avoid doing things double.	Agree on a data exchange policy for future developments e.g. sign confidentiality agreement for Common developments or joint ownership	E.g. data exchange between DGT & University of Zaragoza concerning signaling and new signs
Monitoring	Monitor stakeholders' views	public	Research Media coverage

Table 1: Modes of engagement from D5.1 issues.

2.4 Link to INFRAMIX dissemination activities

The activities carried out in Task 6.3 “Networking / Users’ involvement” are closely linked to the dissemination activities in the INFRAMIX project, particularly to Task 6.1 “Communication, dissemination and exploitation”, Task 6.2 “Dissemination and communication to community”, and Task 6.4 “Business ecosystem definition and exploitation of results”. These tasks and their links to Networking / Users’ involvement are presented below:

Task 6.1 Communication, dissemination and exploitation
Task 6.1 manages the dissemination and communication strategy as well as the preparation of dissemination material. For the strategy, it was necessary to establish bidirectional communication with Task 6.3 to align both visions (general and focused communication) as well as to detect potential actions; while in the second case, it was necessary to produce specific material for the activities in Task 6.3.

Task 6.2 Dissemination and communication to community
In case of Task 6.2, as it’s outcome is crucial for the preparation and coverage of the dissemination actions, it was highly coordinated with Task 6.3 in order to detect and organize common activities so as to maximize the impact, as in case of: ´

- Events, sessions, technical meetings;
- Stakeholder workshops;
- Final event demonstration.

Task 6.4 Business ecosystem definition and exploitation of results
The dialogue among Task 6.3 and Task 6.4 will be of key importance in defining and validating the results of this task (D6.4 Roadmap towards fully automated transport systems and D6.5 Exploitation plans). Particularly, the following aspects are important in this regard:

- To define the role of each member (of the End User Group) in the context of hybrid infrastructure for autonomous driving (ecosystem);
- To fully understand objectives and motivations as well as potential concerns and risks;
- To increase the user acceptance of the INFRAMIX concept as well as to ensure its wide market penetration ;

3. Key topics for networking and relevant stakeholder groups

As described above, the different stakeholder groups were addressed specifically according to the topics and the specific questions to be answered. In this section, the topics relevant for interaction with stakeholder groups will be presented followed by an overview of the stakeholder groups relevant to the INFRAMIX project in general.

3.1 INFRAMIX key topics for networking

After identifying the most urging challenges regarding connected road infrastructure, INFRAMIX focused on the development and testing of effective improvements and solutions.

After an analysis of each INFRAMIX work package, significant topics for interaction with stakeholders have been identified. These thematic clusters relevant for exchange with stakeholder groups, projects, platforms or initiatives are:

- Use cases and business models;
- Physical Infrastructure;
- Traffic management measures;
- Bidirectional communication V2X;
- Digital infrastructure;
- Infrastructure Classification scheme;
- Safety performance criteria;
- Roadmap;
- Standardisation bodies

While identifying the most important topics for networking activities, our attention was concentrated on ensuring that all areas, which could benefit from stakeholder interactions, were addressed within Task 6.3. The result of this analysis consisted the basis for the detailed definition of stakeholder interactions as described in chapters 3.2 and 4.

3.2 Groups of stakeholders relevant for interaction with the INFRAMIX project

One of the core activities of this Task was to establish the INFRAMIX End Users Group by involving all related INFRAMIX stakeholder groups. Thus, exchanging information, experience and best practices with the project partners as well as an efficient exchange of the project's dissemination results, will be possible within this group. We should highlight that there is a distinctive difference among the End Users Group and end users. Members of the End Users Group are all these who are affected by the developments of INFRAMIX, e.g. by using INFRAMIX control strategies and/or outputs, while end users are people using conventional and connected automated vehicles on the road.

The projects' technical results and findings were primarily disseminated through presentations and demonstrations in various scientific and industrial conferences and other events. To this end, road infrastructure, autonomous driving, ITS and transport related conferences and congresses were targeted for raising project awareness and presenting technical project advances. INFRAMIX special sessions, workshops, technical meetings, exhibitions etc. were organised in the framework of renowned international events. Detailed information on the INFRAMIX dissemination activities performed during the first 18 months of the project can be found in Deliverable 6.6 Communication Strategy and Plan, which will be revised at the end of the project in M36.

INFRAMIX partners used these occasions to approach the right stakeholders, so as to:

- inform them about the projects progresses,
- gain information and feedback from them,
- work directly with them to ensure that their concerns are fully understood and considered in decision making,
- partner with or convene a network of stakeholders to develop mutually agreed solutions and actions,
- collaborate (e.g. data exchange between a partner and a member of the End User Group)

The stakeholders who actively collaborated with the project are called INFRAMIX End Users Core Group (Table 2: Overview of the INFRAMIX End Users Core Group). Depending on the topics and the needed output within each task, these core members were addressed with factual tasks in order to assist the INFRAMIX consortium to efficiently evaluate the proposed technologies and perform the required corrections according to the end users' needs and expectations. The way of collaboration and confidentiality aspects was decided depending on the strategic reasons and after consultation with partners.

Table 2: Overview of the INFRAMIX End Users Core Group

	INFRAMIX topics					
	Bidirectional communication	**Digital road infrastructure and**	**New forms of visual and electronic**	**Classification of road infrastructure**	**Roadmap guidelines and safety criteria**	**User appreciation**
European road transport organisations / associations / platforms						
CEDR Conference of European Directors of Roads www.cedr.eu		✓		✓		
ERTRAC European Road Transport Research Advisory Council www.ertrac.org	✓	✓		✓		
ERTICO - ITS Europe https://erticonetwork.com/	✓	✓	✓		✓	
AIPCR The Italian group of the world road association https://www.piarc.org/en/		✓				
ASECAP European Association of Operators of Toll Road Infrastructures **www.asecap.com**	✓	✓		✓		
European R&I projects						

MAVEN Managing Automated Vehicles Enhances Network www.maven-its.eu			✓		✓	✓
TransAID Transition Areas for Infrastructure -Assisted Driving www.transaid.eu	✓		✓		✓	✓
CoExist Preparing the transition phase during which automated and conventional vehicles will co-exist on cities' roads. www.h2020-coexist.eu			✓		✓	✓
Public Road Operators						
DARS Slovenian Public Road Operator https://www.dars.si/	✓	✓				
MAGYAR KÖZÚT Hungarian Public Road Operator **https://internet.kozut.hu/en/**	✓	✓				

The INFRAMIX End Users Group expanded continuously during the project runtime through the use of several channels. For these reasons, the user engagement activities were carried out according to the process defined in Task 5.1.

The identified stakeholder groups of interest for interaction with the INFRAMIX project are:

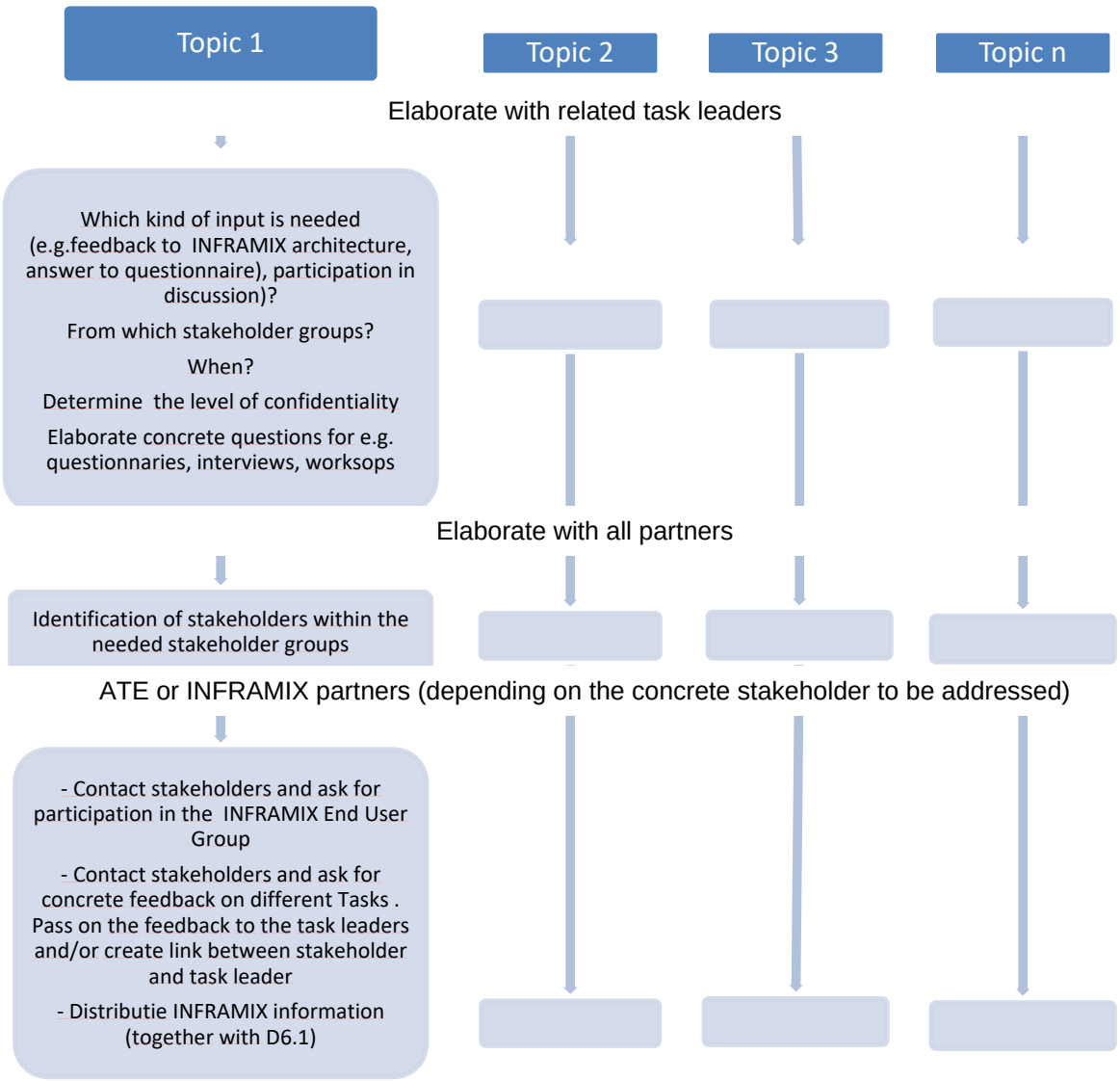
- Industry: vehicle manufacturers, vehicle technology suppliers, infrastructure technology suppliers, ICT solution providers;
- Infrastructure and road authorities;
- Public administration: policy makers, city planners and other public authorities (local, regional, national and international);
- Scientific and research community;
- Standardisation bodies;
- Projects, groups and networks;
- European and international organisations and technical communities

3.3 Stakeholder engagement process

After the identification of important topics relevant for an exchange with stakeholder groups or projects, platforms or initiatives, Task 6.3 elaborated each topic together with the leaders of the related tasks in order to define:

- the kind of the required input (e.g. technical feedback, answer to questionnaire, conversation etc.),
- a key list of stakeholders across the entire stakeholder spectrum (identify sources who may have important knowledge about or perspective on the issues) and
- the timeline of the interaction.

Table 3: Stakeholder engagement process



After obtaining this information, each topic was discussed with all partners in order to supplement the right stakeholders within the required stakeholder groups. Depending on the

targeted stakeholders to be addressed, the establishment of contact and the exchange of information with each stakeholder was carried out in coordination with Task 6.3 (ATE) and the Task leader who is directly involved in the topic to be addressed. ATE leads the process behind stakeholder engagement and will elaborate each topic individually with the involved task leader and organise the first contact.

The confidentiality aspects as described in chapter 2.3 were also discussed during the stakeholder engagement process. All these measures are meant to ease initial contact and the possibility of future cooperation.

3.4 INFRAMIX Networking activities

In addition to discussions of single partners with relevant stakeholders, first ideas of the INFRAMIX infrastructure classification scheme were presented to a group of important stakeholders at the AVS 2017 in San Francisco. At the ITS World Congress 2017 in Montreal the INFRAMIX approach was presented together with the two other ART - 05 projects, CoEXist and TransAID to an audience of ITS experts from several stakeholder groups. Furthermore, the INFRAMIX project was presented during the TRA 2018 in Vienna during the session “Connected and Automated Transport – Automated transport enabling methods and technologies” by ICCS. Topics such as automated driving, digitalisation and innovations in infrastructure were presented to an audience of scientific, EC and EU stakeholders. In addition, AustriaTech presented important aspects of INFRAMIX with regard to automated driving and digital infrastructure as a panellist in the session on “Managing the transition to greater automation” at the TRA 2018.

Dissemination activities continued in 2019, including, but not limited to, the CAD Conference, ARCADE Joint Stakeholder Workshop, ERTRAC Annual Conference, GSVF 2019, ASECAP Days 2019, ITS Europe, IEEE ICCVE IV 2019. INFRAMIX was also disseminated outside Europe, i.e. TRB Annual Meeting in Washington, Automated Vehicle Symposium 2019 in Orlando, ITS World Congress in Singapore. The main topics of the presentations given revolved around mixed traffic control strategies, ISAD levels, hybrid infrastructure and road safety. Finally, INFRAMIX participated in a joint seminar organized by ECTRI Thematic Group on Traffic Management. Furthermore, INFRAMIX collaborated with L3Pilot and InterACT during the ITS European Congress 2019 in a Special Interest Session attracting a wide and important audience. Last but not least, ICCS presented INFRAMIX during the International Symposium on frontiers of Road and Airport Engineering (iFRAE2019) through a presentation about the intelligent infrastructure and the future of ITS.

The above-mentioned performed activities have been an opportunity for INFRAMIX partners to reach out for various stakeholders and exchange ideas, get feedback and engage them. Even more important was the exchange with other projects in order to submit these common sessions.

A detailed description of the main networking activities is given below and the INFRAMIX dissemination activities performed during the first 18 months of the project can be found in deliverable 6.6 Communication Strategy and Plan, which will be revised at the end of the project in M36.

3.4.1 Online presence

INFRAMIX had a strong online presence throughout the whole project duration. This includes the official INFRAMIX website providing details on the project vision, concept, objectives, proposed technologies, consortium members, test sites and expected impact. The projects website has also been used for regular updates on INFRAMIX developments and key-findings to keep interested stakeholders up to date and to let them have access to public deliverables,

open access publications, presentations, newsletters, press articles and communication material.

In addition, INFRAMIX social media channels, such as LinkedIn and Twitter, have been actively used to reach target stakeholders and expand the INFRAMIX End Users' Group. To attract as much attention as possible while fostering knowledge exchange and discussion, two social media campaigns have been organised Before the INFRAMIX Workshops in Barcelona and Graz. The project social media activities have been reposted and reused on the personal and corporate social media channels of the consortium members.A detailed description of the INFRAMIX social media activities are to be found in deliverable 6.6 Communication Strategy and Plan.
Last but not least, INFRAMIX released four newsletters between July 2018 and February 2020. Additional e-blasts were sent to the INFRAMIX subscribers promoting important milestones, such as the INFRAMIX Stakeholder Workshops.

3.4.2 Online survey on new visual signs for CAD

In order to conduct a preliminary assessment of the previous designs and with the objective of selecting just one of them for the user appreciation evaluation of WP5, INFRAMIX created a survey in Google Drive with the questions rating the designs, and their visualization in on-road panels and VMs, and in an in-vehicle app. The survey has been shared through INFRAMIX consortium to the most relevant stakeholders such as road operators and road authorities. The list of contacted institutions, where the survey was further distributed included the EU ITS Platform and ASECAP members. Finally, the survey was also distributed to the End Users Group including technology providers, driver associations, research institutions, OEMs, etc.
The survey lasted for 5 weeks, i.e. between March 7th and April 12th. 225 people from 13 European countries participated in the survey. A complete list of contacted institutions and the collected results of the survey as well as the final design are included in the INFRAMIX deliverable 3.5.

3.4.3 Stakeholder Workshop in Barcelona

INFRAMIX organised its first interactive workshop "Preparing road infrastructure for the introduction of Automated Driving" at Automobile Barcelona on 14th May 2019.
Automobile Barcelona is one of the major trade fairs in the world and by far the biggest in Fira Barcelona, Spain. The fair in 2019 was particularly significant as the first century of the fair was celebrated. Due to the renown of the exhibition and its targeted audience, INFRAMIX organized a side event within the fair to promote its visibility and to reach stakeholders in the field of automated mobility. The workshop consisted of project presentations, a panel discussion of experts and an interactive session.

The goal of the workshop was to increase the visibility of the project among targeted stakeholders, such as road operators, car manufacturers, but also institutions. Furthermore, it represented a valuable occasion to foster mutual knowledge and best practice exchange among different European projects and working groups focusing on automated mobility. The workshop, which attracted 45 participants, was a great opportunity to collect constructive feedback from drivers regarding their user perception and experience.

After a short welcome by Xavier Daura from Abertis Autopistas and a brief introduction to INFRAMIX by the coordinator Martin Dirnwöber from AustriaTech, the main session revolved around a fruitful exchange among experts. The speakers on the panel were representatives of different European projects and working groups, namely ARCADE, CARTRE. ERTRAC,

MAVEN and TransAID. The panel discussions focused on two main topics:

- Infrastructure Support Levels for Automated driving (ISAD)
- New methods for managing traffic in the infrastructures.

An interactive session followed the panel discussion, where the attendees were invited to register their reaction to INFRAMIX scenarios (bottlenecks, dynamic lane assignment and roadworks) through some polls and questionnaires. These questionnaires have been analyzed and published in deliverable 5.2 Users' appreciation results.

3.4.4 The INFRAMIX interoperability event in Girona

The INFRAMIX Interoperability event in Spain took place from 12 to 15 September on the motorway AP7. The purpose of the tests was the evaluation of all three INFRAMIX scenarios.

Abertis Autopistas called for users to participate in the Spanish INFRAMIX demonstrator. Institutions of public administration, traffic management, research and innovation institutions and automotive industry were addressed. It was also extended to Autopistas' staff not involved in the INFRAMIX project, who were told about the project in the company's internal media and were asked to participate in the tests, receiving very good acceptance.

During the interoperability event, users' experience was evaluated through questionnaires. At the end of every test, participants were asked to fill some questionnaires in order to elaborate on their experience. The goal of this activity was to collect feedback from users in order to grasp their acceptance of new technologies and traffic management measures. The results of these questionnaires are included in deliverable 5.2.

A press conference, organized by Abertis Autopistas, led to a remarkable resound in the local, regional and national press, totaling 25 accredited journalists from more than 15 media and communication agencies. The Catalan minister of Digital Policies and Public Administration Jordi Puigneró, the Catalan Director of Innovation and Digital Economy Daniel Marco, and the Abertis Autopistas' CEO Anna Bonet were also present.

Figure 1: Impressions from the INFRAMIX interoperability event in Girona

Figure 2: Impressions from the INFRAMIX interoperability event in Girona 2

In order to comply with data protection regulations and compliance issues, the following documents have been prepared and signed by the participants of the questionnaires:

- Informed Consent Form for the collection, storage and protection of personal data and
- an INFRAMIX information sheet.

Other documents that were prepared for this event were a background questionnaire with demographic questions to help us understand the participants' characteristics and a pre-briefing to inform them about the scope and purpose of the tests.

The participants were given the opportunity to ask questions. Above-mentioned documents

are in Annex B.

3.4.5 Joint Stakeholder Workshop with TransAID

INFRAMIX and TransAid organised a joint Workshop on infrastructure requirements and traffic control strategies for automated driving on 9th October 2019 in Graz. The Workshop took place in the facilities of the Virtual Vehicle research centre. The goals of the workshop were to:

- Explore in detail how **increasing automated vehicles** are likely to behave in various traffic situations and how this may affect the traffic management task;
- Provide insight to the role that communication technology (**digital infrastructure**) can play in the shorter term of connected transport and the longer term of automated transport;
- Promote reflection and knowledge sharing among technology stakeholders on **proposed solutions**, especially regarding their role and responsibilities as automated driving evolves.

The workshop consisted of two plenary sessions, one in the morning and one in the afternoon, which were split by two breakout sessions and a poster session for the coffee breaks. The workshop participants also had the opportunity to meet and join the INFRAMIX testing team during several tours along with the INFRAMIX Austrian test site.

There were 39 participants at the workshop and more than half of the attendees were international guests. The majority of the participants (49 %) were Austrian, which is due to the location in Graz. (see Figure 3)

In addition, the affiliation of the attendees was very diverse, too. The list comprises a cross section of important stakeholder groups from Industry (26 %) to Infrastructure and Road Authorities (20 %) as well as Public Administrations (23 %). This ensured valuable input and laid out a base for interesting discussions in the breakout sessions. (see Figure 4)

Figure 3: overview of workshop participants by country

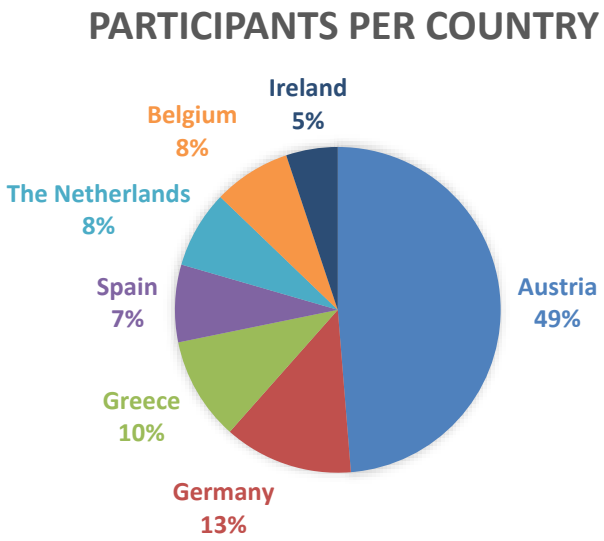
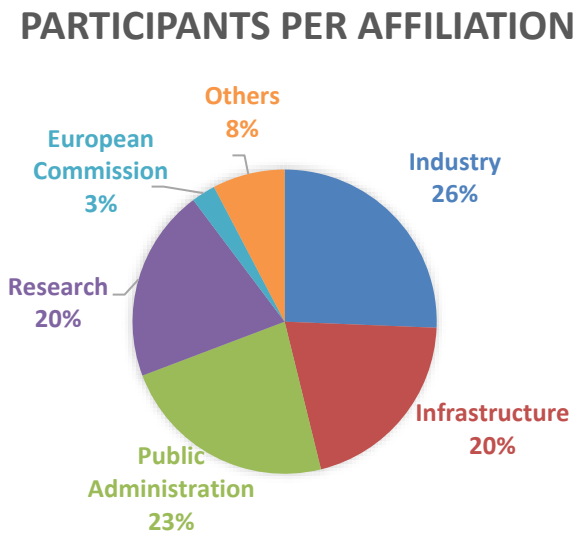


Figure 4: overview of workshop participants by affiliation



After the first welcome by Eva Hackl (ASFINAG) and Aldo Ofenheimer (Virtual Vehicle), Rafal Stanecki (DG MOVE) gave an insight into the European perspective and the **strategic directions** of the Horizon2020 research programme. Consequently, Wolfram Klar (AustriaTech) and Julian Schindler (DLR) presented INFRAMIX and TransAID respectively.

The main discussion session ran simultaneously (twice) and revolved around:

Session A: Limitations of automated driving – ODD

This session was held by Alexander Frötscher (AustriaTech) from INFRAMIX and Julian Schindler (German Aerospace Center) from TransAID. In two sessions, the concept of Operational Design Domain (ODD) and its implementation concerning the requirements of both projects were discussed. Having in mind that digital and physical infrastructure is crucial for both INFRAMIX and TransAID, the discussion on who should define the ODD was one of the key questions of the sessions. It was also discussed whether the ODD should be defined by the OEM internally or commonly to guarantee an independent automation readiness. This also included a discussion on the ODD definition itself.

The discussions have once again shown that the definition of an ODD is a complex issue with many parameters, especially with regard to sensors. To sum up the discussion, it can be said that it is difficult to have a common definition, which is valid for all vehicles regardless of the sensor arrangement. In the second break-out session however the main focus was on the city, as there was no OEM representation involved in the discussion. During this discussion, the need for a common understanding of the ODD was stressed. The cities showed great interest in gaining insight into the ODD limitations of OEMs and defining criteria for ODDs. The aim is to be able to use vehicles with different automation capabilities on specific roads and to be able to control the use or number of automated vehicles in specific areas. As a lesson learned from the first break-out session, the number of parameters might be too large for a common definition of ODDs, it was agreed that it would be helpful to focus on driving skills instead of sensor capabilities. It was suggested to develop AV readiness classes of infrastructure rather than defining low parameters for each sensor, the classes should formulate more abstract scenarios. Even though abstract descriptions currently leave much room for interpretation, the

abstraction generally leads to the statement that OEMs are responsible for ensuring that their vehicles have sensor setups that guarantee driving in the defined class contexts. Further discussions are of course necessary to get a more complete definition of all aspects of such classes and to develop such classes.

Session B: Modelling infra-assisted automated driving and simulation findings

Selim Solmaz (Virtual Vehicle Research Center) from INFRAMIX and Evangelos Mintsis (CERTH) from TransAID presented in this session (sub)microscopic traffic modelling approaches with respect to connected and automated driving (CAD). TransAID focused on modelling the motion of connected and automated vehicles (CAVs) (i.e. car-following, lane changing, gap acceptance and downward control transitions) in the microscopic traffic simulator SUMO, while INFRAMIX introduced a co-simulation framework (VSimRTI & ICOS) that allows the simulation of real vehicle dynamics and Advanced Driver Assistance Systems (ADAS) functions (i.e. virtual vehicle or coupling actual vehicle(s) with simulation) in a microscopic traffic simulation environment. Challenges pertaining to modelling of CAD in microscopic traffic simulation tools were subsequently discussed with the session's participants. Initially, car-following behaviour of CAVs was examined in the context of cut-in situations induced by legacy vehicles.
After introducing both projects, the following question was put upon discussion.

- Is simulation-only study enough for testing mixed traffic scenarios?
- What level of realism is required in simulation to ensure complete testing of ADAS functions and/or TMC control measures?
- Should we adopt new traffic rules to enable AVs to cope with certain situations?
- What do you think about separating automated traffic from 'manual' traffic (dedicated lanes / infrastructure)?

The majority of the participants deemed that CAVs (even of lower automation levels) could handle these situations in automated driving (AD) mode (CAVs could resume in AD mode even after emergency braking events), and should be modelled as such in simulation tools. It was agreed that lane change behavior of CAVs can be expected more conservative (in terms of safe gaps) compared to manually driven vehicles. However, in order to avoid increased heterogeneity in mixed traffic conditions (legacy – automated – connected and automated vehicles) (C)AVs could be developed to adopt a human-like approach in terms of lane changing. Nonetheless, determining human-like lane change behaviour (which may vary according to several different factors) might be a rather challenging task[1] . With respect to modelling/simulating control transitions and minimum risk manoeuvres (MRMs), the participants argued that drivers should be allowed to take-over vehicle control during MRMs, but the vehicle should always be guided to a safety harbour (side-street location) to prevent safety-critical situations on the mainline lanes (e.g. rear-end collisions due to stop in lane after MRM). It was also discussed that the level of details required in modelling CAD depends on the scope of each study. Thus, modelling of actual vehicle dynamics is required when testing individual ADAS functions on a vehicle basis, but the simulation of mixed traffic streams can be conducted with less detail when it comes to the vehicle/driver models due to resource constraints. Moreover, it was pointed out that new traffic rules should be adopted with respect to CAD, to enable (C)AVs to cope with certain situations (disobeying existing rules might be even necessary in safety-critical situations). Finally, the session's participants agreed that traffic separation (based on automation capabilities) should be mainly warranted according to the penetration of (C)AVs in the fleet mix.

[1] https://www.mobileye.com/responsibility-sensitive-safety/

Session C - Traffic control strategies for mixed traffic

During both rounds the session was moderated by Anton Wijbenga (MAPtm) and Michele Rondinone (Hyundai), both from TransAID.Several topics were introduced to the audience. During both rounds there were 9 different stakeholders present from several backgrounds (i.e. universities, companies such as Intel and Siemens, and road authorities such as POLIS and Rijkswaterstaat). The idea of the session was for stakeholders to share their view on TransAID measures and to discuss advantages and risks.

Discussed items are the following:

- Limitations of and restriction to AD
- The new role of traffic management in the era of AD: Measures, risks, opportunities, vehicles support
- Legal frameworks and current implementations of traffic measures, sometimes limit the advantage of technical development. And there is a need to adapt traffic rules for automation.

Session D: ISAD – how can infrastructure support automated driving?

During both rounds of the breakout session, Stamatis Manganiaris (ICCS) presented the INFRAMIX ISAD approach to the audience. The topic raised great interest, and the session was well visited both times with approximately 15 participants in each of the sessions. Below are the highlights of both sessions:

- The necessity for infrastructure classification is strong since it will promote the cooperation between critical ITS stakeholders. It can be perceived as an essential requirement for smooth and efficient ITS development.
- The ISAD classification is a dynamic work with many interactions and further discussions are needed. Especially, but not limited to, with respect to HD maps.
- A detailed specification is needed in terms of automated functionalities.
- Governance Models (Global or Local) and a Regulatory Framework are topics of great importance, since liability and (cross-countries) management issues are complicated and undefined.

Poster Session

A poster session ran throughout the workshop. Both INFRAMIX and TransAID elaborated posters to convey information regarding demonstrations and expected results. The poster session raised awareness among the workshop attendees regarding the status of automated mobility and the innovations introduced by INFRAMIX and TransAID.

In parallel to the joint stakeholder workshop, the INFRAMIX project was tested on the test track around Graz using the infrastructure provided from ASFINAG and Alp.Lab. Throughout the day, there was the possibility for workshop attendees to join a test run in the C-Roads Vehicle, a chance which nearly half of the attendees used. At the end of the workshop, attendees could examine different test vehicles on the parking lot.

In the following chapters an overview of the demonstrated scenarios is given. For further details about the tests can be found in D 4.2., which contains a detailed summary.

3.4.6 Interviews with the End User Core Group

To enhance and develop the road infrastructure support levels for automated driving (ISAD Level Taxonomy), five subject matter experts of the End User Core Group have been

interviewed. Since the task of classifying the infrastructure into different categories of automated capabilities is a rather new effort in ITS industry, it was not easy to find many experts having been involved in the topic. The identification and contact with the experts was carried out as explained in Chapter Stakeholder engagement process.

Interviews have been conducted with:

- Dr. Stephan Dreher
  Senior Manager, Connectivity and Automation, Blockchain
  ERTICO

- Jaap Vreeswijk
  Traffic Architect C-ITS
  MAPtm

- Federico Di Gennaro
  Head of Strategic Projects
  AISCAT Servizi (Italian Association of toll motorways)
  Member of AIPCR the Italian group of the world road association (PIARC)

- Fabio Cartolano
  Innovation Manager
  Fit Consulting srl
  Member of AIPCR the Italian group of the world road association (PIARC)

- Tamás Tomaschek
  Head of Section for Traffic Management
  Magyar KÖZÚT

The specific methodology and interviews with the Advisory Board on the infrastructure classification scheme have been provided in Chapter 4 of deliverable 5.2 Infrastructure Classification Scheme.

3.4.7 INFRAMIX Final Conference

The INFRAMIX final conference was planned to take place on 4th of May in Graz including demonstration events. Due to restrictions related to measures against the spread of coronavirus, the final conference was changed to a virtual conference, which is planned to take place end of May 2020.

4. Interaction with projects, platforms, groups and networks

4.1 Objectives for liaison activities

Liaison activities with projects, platforms, groups and networks were carried out in addition to the interaction with the different stakeholders within the INFRAMIX End Users Group. The aim was to benefit from past findings, to align activities, if possible, in order to integrate INFRAMIX in the big picture of the activities in the field of automated driving. Particularly the results of INFRAMIX shall be provided to relevant projects and platforms and shall be proposed to standardisation bodies.

The way of interaction depends on the topics to be addressed and the organisations involved. The concrete way of interaction has been elaborated with the involved task leaders and the partner for specific projects, platforms, groups and networks as described in Stakeholder engagement process).

A mapping of the INFRAMIX End Users Group divided into different stakeholder groups is to be found in the Annex A: Mapping of the INFRAMIX End Users Group. Interactions with these stakeholder groups have taken place through different accessions. These included besides bilateral discussions, collaborations to prepare common sessions at congresses, as well as discussions in working groups, workshops and demonstrations on topics such as use cases for automated driving, digital and physical infrastructure, infrastructure classifications scheme, visual and digital road signs, connectivity, standardisation activities and more.

Detailed description of selected liaison activities can be found below. The Networking activities as well as joint organisations have been described in Chapter 3.4.

4.2 Strategic discussion of infrastructure elements

As input for Task 6.4, INFRAMIX joined forces with EU ITS Platform and H2020 and CEDR projects, Co-Exist, TransAID, ARCADE, STAPLE and DIRIZON, to discuss a strategic approach for infrastructure elements.

A joint workshop of H2020, CEDR projects and the EU ITS Platform related to CAVs and infrastructure was held on 3rd March 2020 at FEHRL premises in Brussels.

During the first part of the workshop representatives of the projects ARCADE, CoEXist, TransAID, EU ITS Platform, INFRAMIX, STAPLE and DIRIZON shared their insights and results. The presentations showed that the projects examined a very broad range of physical and digital infrastructure elements. It was possible to identify common elements of the projects. At the same time, it was obvious that each project has to make specific assumptions to be able to carry out the planned work. In this respect, many valuable scenarios and assumptions were developed and investigated.

In the afternoon, a workshop discussion took place, in which the views of the projects and other participants were discussed on the basis of the two scenarios “road works” and “urban applications”.
Even in the case of the provision of relevant data, processes and responsibilities for a specific support by physical and digital infrastructure in work zones (i.e. very specific use case), the need for more clarity on the next actions to be taken by NRAs and service providers became apparent. In the case of DTI for urban areas, it was obvious, that a way to achieve automated drivability of urban roads depends heavily on a business case perspective with regard to multi-purpose usability of PDI. The discussion finally confirmed that many infrastructure aspects are covered by several different approaches in the different projects. For example, it would be beneficial to further structure the discussions on the physical and digital infrastructure of the area by the functionalities required by the vehicles, e.g. by differentiation by applications/targets such as direct vehicle support, traffic management, maintenance and enabling new mobility services. A key element is that the discussions and activities are carried out at a very concrete level.

4.3 TISA

INFRAMIX partners were also involved in several task forces of TISA to extend the TPEG-TEC (Transport Protocol Experts Group) applications. The collaboration included the following aspects:

- Establishment of a standard for lane numbering for TPEG-Applications (Generation 2);
- Creation of a new TPEG Application (Generation 2): SPI for Speed including typical SAE Level 2+ Features (speed recommendation and distance control, as well absolute distance as time gap [ACC]), as setup in INFRAMIX. This document will be send to ISO for standardization;
- Preparing a 3rd Generation of TPEG focusing on autonomous vehicles. The results of this working group have been published (Technical white paper and Business white paper)[2].

4.4 C-Roads

A strong collaboration between INFRAMIX and C-Roads is ongoing on topics such as hybrid connectivity and use cases for road information for automated vehicles. The task of the C-Roads platform is to harmonizes C-ITS for immediate deployments in all C-Roads member states. For this reason, the INFRAMIX use cases, which have been pilot implemented and tested in Girona and Graz, are being discussed to be included into the new C-Roads use case release in mid of 2020. In this case, a new message-container in the upcoming 2020 revision of the ISO/TS 19320 IVIM standard called “Automated Vehicle Container” (AVC) has been tested for the first time to cover INFRAMIX scenarios, which enclose traffic information (regulations or recommendations) for automated vehicles.

4.5 ERTRAC CAD roadmap

INFRAMIX is mentioned in the ERTRAC Roadmap 2019 “Connected and Automated Driving Roadmap” in different sections:

- Acknowledgements;
- ISAD classification (wrt Carreras et al., “Road infrastructure support levels for automated driving”, 25th ITS World Congress, Copenhagen, Denmark, 17-21 September 2018: Presents the status quo of the road infrastructure and the tendency for digitization of the infrastructure in order to support the automated driving);
- European research projects.

[2] http://tisa.org/newsroom/position-papers/

5. Key performance indicators for assessment of networking and user engagement activities

The following performance indicators have been selected to assess the elaborated networking and users' involvement approach. The assessment has been carried out after the end of each period, so that the developed approach and procedures can be adapted early, if it turns out that they are not effective enough.

Table 4: KPIs for assessment of networking and user engagement activities

Activity and criteria	Description	Expected performance Year 3	Current result achieved (M34)
No. of **End User Group participants**	End Users are all those who are affected by the developments of INFRAMIX e.g. by using INFRAMIX control strategies and/or outputs.	≥ 100	- 84 participants at INFRAMIX Stakeholder workshops in Barcelona and Graz - 130 LinkedIn group members - 55 INFRAMIX newsletter subscribers
No. of **industry representatives** involved	Industry representatives are OEMs/ vehicle manufacturers, Vehicle technology suppliers, Infrastructure technology suppliers and other ICT solution providers.	≥ 15	- 10 industry representatives involved → see Annex A: **Mapping of the INFRAMIX End Users Group**
No. of **associations & organisations** involved		≥ 6	- 9 associations & organisations involved → see Annex A: **Mapping of the INFRAMIX End Users Group**
No. of **projects** contacted		≥ 10	- >20 projects contacted → see Annex A: **Mapping of the INFRAMIX End Users Group**
No. of **liaison activities** performed	Liaison activities with projects, platforms, groups and networks are carried out in addition to the interaction with the different stakeholders within the INFRAMIX End User Group. The aim is to benefit from findings, to align activities wherever reasonable, and to integrate INFRAMIX in the big picture of the activities in the field of automated driving. A liaison is communication or cooperation which facilitates a close working relationship between people or organizations.	≥ 10	- Liaison activities have been performed with ALP.Lab, Co-Exist, TransAid, DGT, University of Zaragoza, Servei Catala de Transit (SCT), Maven, ASECAP, TISA, ARCADE and ETSC
No. of **discussions in fora, committees & organisations**		≥ 5	- >20 discussions in for a, committees & organisations →see Communication strategy and Plan
No. of **Standardisation bodies** reached		≥ 2	- 3 standardisation bodies reached

The basic purpose of task 6.3 was to involve all related stakeholders for the exchange of (bilateral) information, experiences and best practices and efficiently disseminate project results together with all partners. In order to achieve this goal, the opportunity to access materials of the project, provide direct feedback in discussions, workshops, conferences and through partnerships and collaborations have been evaluated as listed in Table 4.

Information on the strategies to reach these numbers is provided in D6.2 Communication Strategy and Plan in M18 and later on M36 in a revised and updated form. Based on these numbers the networking and users' involvement has been assessed and modified, as necessary.

Table 5: Performed stakeholder workshops and demonstration activities

Actions (workshop/ demonstration)	Topics	Engagement procedure	Interaction method	Total target	No. reached	Target profiles
Workshop Barcelona	Classification scheme	Invitation of external experts	Panel discussion	>40	70 registrations, 45 attendees	Industry, Infrastructure and Road authorities, Associations, Public administration, Decision makers, Service providers
	Visual signs Perceived Traffic Safety Perceived Traffic Efficiency User appreciation	Invitation of external experts	Questionnaire	>40	40 participants	External experts (representing final users, Industry, Infrastructure and Road authorities, Associations, Public administration, Decision makers, Service providers.)
Workshop Austria	Classification scheme	Invitation of external experts	Panel discussion	>40	63 registration, 39 attendees	Industry, Infrastructure and Road authorities, Associations, Public administration, Decision makers, Service providers
	Visual signs Perceived Traffic Safety Perceived Traffic Efficiency User appreciation	Invitation of external experts	Questionnaire	>40	39 participants	External experts (Industry, Infrastructure and Road authorities, Associations, Public administration, Decision makers, Service providers
Demonstration at the Spanish test site	Visual signs Perceived Traffic Safety Perceived Traffic Efficiency User appreciation	Participants involved in the test	Questionnaire	>40	69 participants	Final users (as individual drivers and passengers)

Demonstration at the Austrian test site	Visual signs	Participants involved in the test	Questionnaire	>40	20 participants	Final users (as individual drivers and passengers)
	Perceived Traffic Safety					
	Perceived Traffic Efficiency					
	User appreciation					

Table 5 gives an overview of the performed stakeholder workshops in Barcelona and Graz as well as of the demonstration events on both sites. Furthermore, it clarifies the topics, the engagement process, the interaction methods and the target numbers and profiles for each activity. As the number of participants reached shows, it was not always easy to achieve the ambitious target numbers. One of the reasons for that was the fact that no additional budget for travel expenses or accommodation for the End Users Core Group was available. Even though there was great interest to participate in our stakeholders workshops and demonstration events, there were often financial difficulties.

6. Summary

The interactions between road infrastructure and automated, connected and conventional vehicles are very complicated. There are many different stakeholders involved and both, the functionalities for automated driving and potential interactions with vehicles and infrastructure are developed currently in a very dynamic way. Therefore, cooperation is vital for the development and implementation of solutions for mixed traffic scenarios. Different topics for interaction with stakeholders have been identified and are listed in this document and an approach for the interactions and next steps has been defined. Several networking and users' involvement activities have been carried out up to now.

Annex A: Mapping of the INFRAMIX End Users Group

The mapping of the INFRAMIX End Users Group is based on the identified stakeholders and their differentiation into stakeholder groups for interaction. The nature and level of interactions with these stakeholder groups is described in Chapter 3 of this document. With some of these stakeholders, concrete exchange of information and results has taken place. These stakeholders are highlighted green. Others have received information about INFRAMIX through different channels and events. These stakeholders are highlighted orange. We assume that we reached many more stakeholders than indicated here, but cannot always state this explicitly.

End User Group			
Road transport organisations, associations, platforms and fora			
ERTICO – ITS Europe European Road Transport Telematics Implementation Coordination Organisation-Intelligent Transport Systems & Services Europe https://erticonetwork.com/	**ERTRAC** European Road Transport Research Advisory Council. https://www.ertrac.org	**ASECAP** European Association of Operators of Toll Road Infrastructures http://www.asecap.com/	**ALP.Lab GmbH** Austrian Light Vehicle Providing Region for Automated Driving https://www.alp-lab.at/
Amsterdam Group Strategic alliance with the objective to facilitate joint deployment of cooperative ITS in Europe https://amsterdamgroup.mett.nl/	**TM2.0 Platform** Traffic Management 2.0 https://tm20.org/	**PIARC** World Road Association https://www.piarc.org/	**FEHRL** Forum of European National Highway Research Laboratories http://www.fehrl.org/
AVS Automated Vehicle Symposium, Orlando https://www.automatedvehiclessymposium.org/	**AASHTO** American Association of State Highway and Transportation Officials https://www.transportation.org/	**EU EIP** European ITS Platform - Sub-activity 4.2 https://eip.its-platform.eu/	**AEC** Asociación Española para la Calidad https://www.aec.es/
C2C-CC Car 2 Car Communication Consortium https://www.car-2-car.org/	**ADASIS** Advanced Driver Assistance Systems https://adasis.org/	**NDS** Navigation Data Standard https://nds-association.org/	**EUCAR** European Council for Automated R&D https://eucar.be
CEDR Conference of European Directors of Roads www.cedr.eu	**ERF** European Union Road Federation https://erf.be/	**POLIS Network** Network of European cities and regions cooperating for innovative transport solutions https://www.polisnetwork.eu/	**ETSC** European Transport Safety Council: https://etsc.eu/
AIPCR		**EuroCities**	**FHWA**

The Italian group of the world road association https://www.piarc.org/en/		http://www.eurocities.eu/	Federal Highway Administration https://highways.dot.gov/
IRU World Road Transport Organisation https://www.iru.org/			
R&D or implementation projects			
ARCADE previously CARTRE Aligning Research & Innovation for Connected and Automated Driving in Europe https://connectedautomateddriving.eu/about/‘arcade-project/	**DIRIZON** Advanced options for authorities in light of automation and Digitalisation Horizon 2040 https://www.dirizon-cedr.com/	**PROVIDENTIAA** pro-active video-based use of telecommunications technologies in innovative Autobahn scenarios https://www.fortiss.org/forschung/projekte/detail/providentia	**TrustVehicle** Improved Trustworthiness and Weather-Independence of Conditionally Automated Vehicles in Mixed Traffic Scenarios https://www.trustvehicle.eu/
C-Roads Platform of Harmonised C-ITS Deployment in Europe https://www.c-roads.eu/platform.html	**TransAid** Transition Areas for Infrastructure-Assisted Driving https://www.transaid.eu/	**vi-DAS** Vision Inspired Driver Assistance Systems http://www.vi-das.eu/	**SENSKIN** SENsing SKIN' for Monitoring-Based Maintenance of the Transport Infrastructure http://www.senskin.eu/
L3Pilot SAE Level 3 Driving Automation https://l3pilot.eu/	**STAPLE** SiTE Automation Practical Learning http://stapleproject.eu/	**AVENUE** The use of Autonomous Vehicles in public transport https://h2020-avenue.eu/	**Trustonomy project** trust + autonomy https://h2020-trustonomy.eu/
interACT Designing cooperative interaction of automated vehicles with other road users in mixed traffic environments https://www.interact-roadautomation.eu/	**AutoMate** Automation as accepted and trusted TeamMate to enhance traffic safety and efficiency http://www.automate-project.eu/	**Dragon** Development of resource efficient and advanced underground technologies http://www.dragonproject.eu/	**HEADSTART** Harmonised European Solutions for Testing Automated Road Transport https://www.headstart-project.eu/
RADAR Risk Assessment on Danube Area Roads http://www.interreg-danube.eu/approved-projects/radar	**AdaoptIVe** Automated Driving Applications and Technologies for Intelligent Vehicles http://www.adaptive-ip.eu/	**MAVEN** Managing Automated Vehicles Enhances Network http://www.maven-its.eu/	**BRAVE** Bringing Gaps for the Adoption of Automated Vehicles https://www.brave-project.eu/
Aspern.mobil LAB https://www.mobillab.wien/	**AutoDrive** https://autodrive-project.eu/	**ConVeX** Connected Vehicle (V2X) of Tomorrow http://convex-project.de/	**Catalonia Living Lab** http://catalonialivinglab.com/
AVENUE 21 http://avenue21.city/	**Connecting Austria** https://www.connecting-austria.at	**TransAID** Transition areas for infrastructure-assisted driving	**CoExist** Working towards a shared road work – enabling cities to get “automation-ready”

		https://www.transaid.eu/	https://www.h2020-coexist.eu/
PRYSTINE https://prystine.eu/	**3M** https://www.3m.com/		
Groups and networks			
Trilateral EU-US-Japan Automation Working Group in Road Transportation https://connectedautomateddriving.eu/	**AUVSI** Association for Unmanned Vehicle Systems International https://www.auvsi.org/	**TRB** Transport Research Board (relevant committees and sub-committees) http://www.trb.org/	**ITS Europe** https://itsineurope.com/
Coordination and Support Action on Vehicle and Road Automation (VRA) https://cordis.europa.eu/project/id/610737/de	**ITS Spain** Intelligent Transport System https://www.itsspain.es/	**ITS Hungary** Intelligent Transport System https://old.its-hungary.hu/	**ITS Ireland** Intelligent Transport System https://www.itsireland.ie/
European Single Platform CCAM Working Groups https://connectedautomateddriving.eu/	**ITS United Kingdom** Intelligent Transport System https://its-uk.org.uk/		
Road operators / authorities			
Abertis Autopistas https://www.autopistas.com/	**Autostrade per l'Italia** http://www.autostrade.it/it/home	**DARS** Slovenian Public Road Operator https://www.dars.si/	**EU ITS Platform** https://www.its-platform.eu/
ASFINAG Autobahnen- und Schnellstraßen-Finanzierungs-Aktiengesellschaft www.asifnag.at	**Qualcomm** https://www.qualcomm.com/	**MAGYAR KÖZÚT** Hungarian Public Road Operator https://internet.kozut.hu/en/	**DGT** Dirección General de Tráfico http://www.dgt.es/es/
BaSt German Federal Highway Research Institute http://bast.de/	**CTAG** Automotive Technology Center of Galicia https://ctag.com/	**SCT** Servei Català de Trànsit the Catalan Administration responsible for Traffic Management. http://transit.gencat.cat/ca/inici/	**Ferrovial / Cintra** https://www.ferrovial.com/en-us/cintra/
Standardisation bodies			

ETSI – European Telecommunications Standards Institute https://www.etsi.org/	**SAE** Society of Automotive Engineers https://www.sae.org/	**TISA** Traveller Information Service Association https://tisa.org/	**ISO-CEN** International Organization for Standardization – European Committee for Standardization https://www.cen.eu/Pages/default.aspx
User Associations			
FIA Fédération Internationale de l'Automobile https://www.fia.com/	**ÖAMTC** Österreichischer Automobil-, Motorrad- und Touring Club https://www.oeamtc.at/	**IRU** World Road Transport Organisation https://www.iru.org/	**ARBÖ** Auto-, Motor- und Radfahrerbund Österreichs https://www.arboe.at/
FEMA https://www.fema.gov/			
Research / academia / consulting			
VTT Technical Research Centre Of Finland Ltd https://www.vttresearch.com/	**Politecnico di Milano** https://www.polimi.it/	**ARUP Group Limited** https://www.arup.com/	**DCAITI** Daimler Center for Automotive Information Technology Innovations https://www.dcaiti.tu-berlin.de/
VUB Vrije Universiteit Brussels https://www.vub.be	**The Urban Institute** https://www.urban.org/	**University of Virginia** https://www.virginia.edu/	**RISE** Research Institutes of Sweden https://www.ri.se/en
Beia Consult International http://www.beiaro.eu/	**BRRC** Belgian Road Reseach Centre https://brrc.be/nl	**Imperial College London** https://www.imperial.ac.uk/	**I2CAT Foundation** The Internet Research Center https://www.i2cat.net/
Deloitte https://www2.deloitte.com/at/de.html	**Salzburg Research Forschungsgesellschaft m.b.H** https://www.salzburgresearch.at/	**VEDECOM** Cybersecurity R&D engineer http://www.vedecom.fr/	**Albrecht Consult** https://albrechtconsult.com/
SWOV Road Safety Research https://www.swov.nl/	**FIT Consulting srl** https://www.fitconsulting.it/	**Bertrandt AG** https://www.bertrandt.com/	**LINKS Foundation** https://linksfoundation.com/
ISenseGroup Research Groups of the Institute of Communication and Computer Systems	**Technical University of Vienna** https://www.tuwien.at/	**University of Zaragoza** https://www.unizar.es/	**TML** Transport and Mobility Leuven https://www.tmleuven.be/nl/

https://i-sense.iccs.gr/			
CIRIAF University of Perugia http://www.ciriaf.it/	**Bauhaus University Weimar** https://www.uni-weimar.de/de/universitaet/start/		
Industry			
BMW Bayerische Motoren Werke Aktiengesellschaft https://www.bmw.com/de/index.html	**GTT** Volvo Group Trucks Technology https://www.volvogroup.com/en-en/home.html	**ACEA** European Automobile Manufacturers' Association https://acea.be/	**JENOPTIK Robot GmbH** Light & Safety https://www.jenoptik.com/
Siemens Mobility https://www.mobility.siemens.com/global/de.html	**Sensefields** http://startupshub.catalonia.com/startup/barcelona/sensefields/1883	**CLEPA** European Association of Automotive Suppliers https://clepa.eu	**HERE Technologies** https://www.here.com/
TomTom https://www.tomtom.com/de_at/	**Volkswagen Group Espana Distribucion** https://www.volkswagengroupdistribucion.es/		
Public Administration			
BMK Austrian Federal Ministry of Transport, Innovation and Technology https://www.bmvit.gv.at/	**Greek Ministry of Infrastructure and Transport** http://www.yme.gr/	**RWS** Dutch Ministry of Infrastructure and the Environment http://www.rijkswaterstaat.nl/	**TRAFICOM** Finnish Transport and Communication Agency https://www.traficom.fi/en/
MPA Maritime and Port Authority of Singapore https://www.mpa.gov.sg/web/portal/home	**NHTSA** National Highway Traffic Safety Administration https://www.nhtsa.gov/	**DG Move** The Commission's Directorate-General for Mobility and Transport responsible for EU policy on mobility and transport. https://ec.europa.eu/transport/home_en	**BMVI** Federal Ministry of Transport and Digital Infrastructure https://www.bmvi.de/EN/Home/home.html

Annex B: Documents used during test days in Girona and Graz

1. Background Questionnaire

Participant ID: _____

Instructions for the respondents:
Please answer the following demographic questions to help us understand your characteristics.

AGE

1. What is your age?						
18-20	21-30	31-40	41-50	51-60	61-70	Over 70

PROFESSION / EMPLOYMENT STATUS

2. Are you currently…?							
Self-employed, entrepreneur	Manager	Expert/office worker/ scientist	Employee	Student	Unemployed	Retired	Other (please specify)

EDUCATION

3. What is the highest degree or level of education you have completed?						
No education completed	Elementary school	Middle school	High school or other secondary education	University Bachelor	University Master	PhD

DRIVING EXPERIENCE

4. For how long have you had a car driver's license? *If you don't have a driving license leave it blank and jump to next section*
_____ years

5. Do you have a driver's license also for other types of vehicles? *Tick all that apply*				
Yes, motorcycle	Yes, light truck/lorry	Yes, heavy truck/lorry	Yes, bus	No

6. In total how many kilometers do you personally drive on average per year? *Include private as well as work related driving*				
Less than 5000 kilometers/year	5001-10000 kilometers/year	10001-20000 kilometers/year	20001-30000 kilometers/year	More than 30000 kilometers/year

7. How do you describe yourself in terms of driving experience?				
Very inexperienced driver	Inexperienced driver	Neither inexperienced, nor experienced	Experienced driver	Very experienced driver

EXPERIENCE WITH TRAFFIC MANAGEMENT FUNCTIONALITIES

8. Which traffic management functionalities (via road signs or in-vehicle application recommendations) are you experienced with?	Not at all	I know what it is but never used it	Some use experience	Considerable use experience
Real time traffic information				
Real time incident information				
Real time speed limit information				
Real time adaptive speed limit information				
Navigation with real time traffic/incident information				
Navigation with real time speed limit information				
Navigation with real time speed adaptation recommendation				

DEVICES AND FUNCTIONS

9. Please indicate how familiar you are with the following devices?	Not at all	I know what it is but never used it	Some use experience	Considerable use experience
Navigation device				
Smartphone				
Tablet PC				
In-vehicle integrated control / information screen				

Thank you very much for your valuable responses!

2. Consent form

Grant Agreement Number: 723016

Project acronym: **INFRAMIX**

Project full title: INFRAMIX - Road INFRAstructure ready for MIXed vehicle traffic flows

Informed Consent Form for the collection, storage and protection of personal data

The INFRAMIX project requires that anyone who participates at the INFRAMIX testing days on the Spanish site in Girona give explicit consent to do so.

Please take time to read and understand the following, and if you agree with the content sign the consent form overleaf.

Types of data collected
The personal data that will be collected during this activity can include the name, email address, profession/employment status and education of participants. The consortium will aim to minimise the amount of personal data collected through this activity.

Data storage and retention
Your personal data will be collected by the INFRAMIX consortium, stored at the INFRAMIX members' storage systems and maintained until the end of the project. Your collected data will be handled as confidential. We may share the data we collect from you, for use in future studies, publications and/or with other researchers. If we share this data, any personally identifiable information will be removed before publishing/presenting.

Data processing and lawful basis for processing
The INFRAMIX consortium members will process your data, collected based on your consent, via the present questionnaire.

Voluntary Participation
Participation at the INFRAMIX testing days on the Spanish site in Girona is voluntary. You may choose not to take part or subsequently cease participation at any time.

Right to withdraw consent

You have the right to withdraw your consent at any time by emailing to stamatis.manganiaris@iccs.gr your contact details (i.e. name, email address), using as subject "*Request to withdraw consent from the project*". The provided data can be used in the project until the time of withdrawal of consent. If you wish to revoke your consent, data processing will be terminated. However, you cannot withdraw consent to processing that has already taken place.

Right to lodge a complaint
You have the right to lodge a complaint, without prejudice to any other administrative or judicial remedy, if you consider that the processing of your personal data infringes the provisions of GDPR regulation.

Right of access
You have the right to access your personal data and supplementary information (i.e. purposes of processing, the data types collected, etc.) at any time, by emailing to stamatis.manganiaris@iccs.gr your relevant request and contact details (i.e. name, email address) and, using as subject "*Request to data access from the project*".

Right to rectification
You have the right to obtain from the INFRAMIX project and without undue delay the rectification of inaccurate personal data concerning yourself, by emailing to stamatis.manganiaris@iccs.gr your relevant request and contact details (i.e. name, email address) and, using as subject "*Request to data rectification from the project*".

Right to erasure
You have the right to request the deletion or removal of your personal data without undue delay, by emailing to stamatis.manganiaris@iccs.gr your relevant request and contact details (i.e. name, email address) and, using as subject "*Request to data erasure from the project*".

Right to restrict processing
You have the right to 'block' or suppress processing of your personal data, by emailing to stamatis.manganiaris@iccs.gr your relevant request and contact details (i.e. name, email address) and, using as subject "*Request to data restrict processing from the project*".

Right to data portability
You have the right to obtain and reuse your personal data for your own purposes across different services. In case you need a copy of your personal data, you have to email to stamatis.manganiaris@iccs.gr your relevant request along with your contact details (i.e. name, email address), while using as subject "*Request to data portability from the project*". In such cases, we will provide you with your personal data in a structured, commonly used and machine-readable form, free of charge and within 1 month upon reception of your relevant request.

Contact Person
The main contact point for more information about this project is Xavier Daura Albeldo, Abertis Autopistas España, S.A.

Participant:

_____	_____	_____
Name of Participant	Signature	Date

INFRAMIX:

_____	_____	_____
Name of INFRAMIX partner	Signature	Date

3. Information Sheet

Grant Agreement Number: 723016

Project acronym: **INFRAMIX**

Project full title: INFRAMIX - Road INFRAstructure ready for MIXed vehicle traffic flows

INFRAMIX information sheet

INFRAMIX is an EU funded project in the framework of ART-05-2016 ‘Road infrastructure to support the transition to automation and the coexistence of conventional and automated vehicles on the same network’. Its full title is ‘Road Infrastructure ready for mixed vehicle traffic flows’ and its duration is 36 Months (June 2017–May 2010). Within the project, 11 partners collaborate targeting to design, upgrade, adapt and test both physical and digital elements of the road infrastructure, ensuring an uninterrupted, predictable, safe and efficient traffic.

To meet this high-level objective INFRAMIX is working on different technologies, combining simulation, traffic flow modelling, traffic estimation and control algorithms etc. This work includes ways of informing all types of vehicles about the control commands issued by the road operator and the proposal of new kind of visual and electronic signals for the needs of mixed scenarios.

The outcomes will be assessed via simulation and in real stretches of advanced highways. Key aspects considered throughout the project will be to ensure that the proposed adaptations will not jeopardize safety, quality of service, efficiency and will be appreciated by the users.

To achieve its objectives INFRAMIX selects a bottom-up approach. Instead of working in generic solutions with questionable impact, it builds on three specific high value (in terms of importance for traffic efficiency and safety) traffic scenarios, namely “dynamic lane assignment”, “roadworks zones” and “bottlenecks”.

For more information, please visit our project’s website: https://inframix.eu/

This activity to which you are invited to participate today relates to the evaluation of real simulations of highway scenarios.

You will receive detailed instructions and guidance during the activity by a member of Abertis Autopistas España, S.A. Please take time to read and understand the following, and if you agree with the content sign the consent form overleaf.

Your personal image and identity will not be stored nor will it be used somehow by the project. You will be also asked to answer some questionnaires. The data collected will be processed by INFRAMIX consortium partners listed below and will be made available to other partners of the INFRAMIX consortium for the following purposes in line with the research objectives of the INFRAMIX project explained to you in the INFRAMIX Consent form.

For these purposes, the collected data may be shared with the organizations of the INFRAMIX consortium: You can find the whole list of the consortium on our projects' website: https://www.inframix.eu/consortium/. You will receive a copy of this consent form.

BY SIGNING AND RETURNING THE PRESENT CONSENT FORM, YOU AGREE THAT:

- You have read and understood the information about the project,
- you have been informed of and understand the purposes of this activity,
- you have been given the opportunity to ask questions,
- your participation at the INFRAMIX testing days on the Spanish site in Girona is voluntary,
- you agree to the way the information collected during the testing day(s) is going to be collected by audio, video and through questionnaires,
- you have been informed about and agree to the way the information collected during the INFRAMIX testing days on the Spanish site in Girona will be used during the project,
- the information gathered during the INFRAMIX testing days on the Spanish site in Girona will be used for research purposes within the project,
- the information gathered during the INFRAMIX testing days on the Spanish site in Girona may be archived for the duration of the project,
- the information gathered during the INFRAMIX testing days on the Spanish site in Girona can be used for publication either in an anonymized/ non-anonymized fashion,
- you either agree/ not agree to the use of your name after the INFRAMIX testing days on the Spanish site in Girona for documentation/reporting purposes,
- you understand you can withdraw your participation and consent at any time without prejudice and
- you consent to the collection and processing for the abovementioned purposes, during and after the activity, and of your responses to questionnaires by the INFRAMIX partners listed below.

Name of volunteer:

Signature:

Place and date:

4. Pre-Briefing for Scenario 2 Use Case 1

INFRAMIX

Testing days on the INFRAMIX Spanish site

Girona, Spain, 12-15 September 2019. Organized by Autopistas

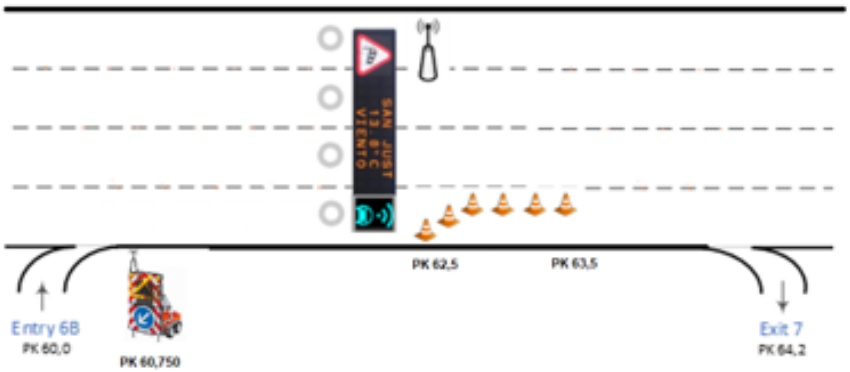
Introduction of INFRAMIX

The EU project INFRAMIX aims to prepare the road infrastructure to support the coexistence of conventional and automated vehicles, targeting the transition period when the number of automated vehicles will gradually increase. Therefore, INFRAMIX will advance future automated transport systems. After defining the necessary upgrades and adaptations of the current road infrastructure as well as designing and testing novel physical and digital elements, a "hybrid" road infrastructure will be the project outcome. In order to ensure the objective of the project, three pre-selected traffic scenarios have been designed, namely "dynamic lane assignment", "roadworks zones" and "bottlenecks".

Scenario 2: Roadworks – Use case 1 / Thursday 12 (10 am – 1 pm)

Dear participants,

You are about to participate in the evaluation of real simulations of highway scenarios. In this case, the situation to be evaluated is a lane closure for work or maintenance on the highway. Please pay attention to road signs that you will meet during the track (the digital panels on the gantries that you will cross, the trolley on the berm at the beginning of the work, the signs of the work itself and, depending on your assigned vehicle, either the vehicle's screen or a tablet). At the end of the track, you will be submitted a survey to provide us with your evaluation. Thank you.



Join INFRAMIX

www.inframix.eu @inframix INFRAMIX project info@inframix.eu

THIS PROJECT HAS RECEIVED FUNDING FROM THE EUROPEAN UNION'S HORIZON 2020 RESEARCH AND INNOVATION PROGRAMME UNDER GRANT AGREEMENT NO 723016.