



HARMONY

Holistic Approach for Providing Spatial & Transport Planning Tools and Evidence to Metropolitan and Regional Authorities to Lead a Sustainable Transition to a New Mobility Era

## D9.3 HARMONY areas engagement activities and demonstrations – First version

Submission date: 30/11/2020



[@Harmony\\_H2020](https://twitter.com/Harmony_H2020)

[#harmony-h2020](https://twitter.com/Harmony_H2020)



<https://www.linkedin.com/company/harmony-h2020/>



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 815269



Part of:



THE CIVITAS INITIATIVE  
IS CO-FINANCED BY THE  
EUROPEAN UNION

## SUMMARY SHEET

### PROJECT

<b>Project Acronym:</b>	HARMONY
<b>Project Full Title:</b>	Holistic Approach for Providing Spatial & Transport Planning Tools and Evidence to Metropolitan and Regional Authorities to Lead a Sustainable Transition to a New Mobility Era
<b>Grant Agreement No.</b>	815269 (H2020 – LC-MG-1-2-2018)
<b>Project Coordinator:</b>	University College London (UCL)
<b>Website</b>	<a href="http://www.harmony-h2020.eu">www.harmony-h2020.eu</a>
<b>Starting date</b>	June 2019
<b>Duration</b>	42 months

### DELIVERABLE

<b>Deliverable No. - Title</b>	D9.3 - HARMONY areas engagement activities and demonstrations – First version
<b>Dissemination level:</b>	Public
<b>Deliverable type:</b>	Report (public)
<b>Work Package No. &amp; Title:</b>	WP9 - Validation areas: orchestration, engagement, and demonstrations
<b>Deliverable Leader:</b>	TNO
<b>Responsible Author(s):</b>	Charoniti, E. (TNO), Rooijen, T. van (TNO)
<b>Responsible Co-Author(s):</b>	Gorgogetas, G., Domański M., Economides, G., Estivo G., Fermi, F., Marella, A., Patatouka, E., Raman, S., Streng, J.M.A., Tzivelou, N., van der Wulp, R.
<b>Peer Review:</b>	City of Rotterdam
<b>Quality Assurance Committee Review:</b>	Maria Kamargianni (UCL)
<b>Submission Date:</b>	30 November 2020

### DOCUMENT HISTORY

Version	Date	Released by	Nature of Change
0.1	28/09/2020	TNO	Structure
0.2	17/11/2020	TNO	Input from partners and review
0.3	18/11/2020	TNO	Draft version
0.4	30/11/2020	UCL	Final version for submission

# TABLE OF CONTENTS

<b>LIST OF ABBREVIATIONS .....</b>	<b>4</b>
<b>EXECUTIVE SUMMARY.....</b>	<b>5</b>
<b>1. Introduction.....</b>	<b>6</b>
<b>1.1 Aim of the project.....</b>	<b>6</b>
<b>1.2 Objectives of the deliverable.....</b>	<b>6</b>
<b>1.3 Structure of the deliverable.....</b>	<b>7</b>
<b>2. Orchestration approach of the co-creation labs and demonstrations .....</b>	<b>8</b>
<b>2.1 Setting up the co-creation labs .....</b>	<b>8</b>
<b>2.2 Operation of the co-creation labs .....</b>	<b>9</b>
<b>2.3 Evaluation of the co-creation labs .....</b>	<b>9</b>
<b>2.4 Knowledge exchange.....</b>	<b>10</b>
<b>3. Case studies' set-up, management and cross-metropolitan activities .....</b>	<b>11</b>
<b>3.1 Rotterdam.....</b>	<b>11</b>
3.1.1 The Rotterdam co-creation lab.....	11
3.1.2 Changes in the objectives and scope of the activities.....	12
3.1.3 Activities carried out.....	12
3.1.4 Barriers in relation to the activities carried out.....	12
3.1.5 Crucial success factors and lessons learnt.....	12
3.1.6 Key stakeholder engagement moments .....	13
<b>3.2 Oxfordshire.....</b>	<b>13</b>
3.2.1 The Oxfordshire co-creation lab .....	13
3.2.2 Changes in the objectives and scope of the activities.....	13
3.2.3 Activities carried out.....	14
3.2.4 Barriers in relation to the activities carried out.....	14
3.2.5 Crucial success factors and lessons learnt.....	15
3.2.6 Key stakeholder engagement moments .....	15
<b>3.3 Trikala .....</b>	<b>15</b>
3.3.1 The Trikala co-creation lab.....	15
3.3.2 Changes in the objectives and scope of the activities.....	16
3.3.3 Activities carried out.....	16
3.3.4 Barriers in relation to the activities carried out.....	17
3.3.5 Crucial success factors and lessons learnt.....	17
3.3.6 Key stakeholder engagement moments .....	17
<b>3.4 Turin.....</b>	<b>18</b>
3.4.1 The Turin co-creation lab .....	18



3.4.2 Changes in the objectives and scope of the activities..... 19

3.4.3 Activities carried out ..... 19

3.4.4 Barriers in relation to the activities carried out ..... 19

3.4.5 Crucial success factors and lessons learnt..... 20

3.4.6 Key stakeholder engagement moments ..... 20

**3.5 Athens..... 20**

3.5.1 The Athens co-creation lab ..... 20

3.5.2 Changes in the objectives and scope of the activities..... 21

3.5.3 Activities carried out ..... 21

3.5.4 Barriers in relation to the activities carried out ..... 22

3.5.5 Crucial success factors and lessons learnt..... 23

3.5.6 Key stakeholder engagement moments ..... 23

**3.6 Katowice (GZM)..... 24**

3.6.1 The Katowice co-creation lab ..... 24

3.6.2 Changes in the objectives and scope of the activities..... 24

3.6.3 Activities carried out ..... 24

3.6.4 Barriers in relation to the activities carried out ..... 24

3.6.5 Crucial success factors and lessons learnt..... 25

3.6.6 Key stakeholder engagement moments ..... 25

**4. Summary of process evaluation ..... 25**

**References ..... 26**

**Annex: Periodic process evaluation report template..... 27**



## LIST OF ABBREVIATIONS

Abbreviation	Explanation
AV	Autonomous Vehicle
BEB	Battery electric bus
CAA	Civil Aviation Authority
CAV	Connected and Autonomous Vehicle
DRT	Demand Responsive Transit
KPI	Key Performance Indicator
MaaS	Mobility-as-a-Service
OASA	Athens Urban Transport Organisation
OCC	Oxfordshire County Council
SUMP	Sustainable Urban Mobility Plan
UAM	Urban Air Mobility
UAV	Unmanned Aerial Vehicle
UoA	University of Aegean
UTM	Unmanned Traffic Management

## EXECUTIVE SUMMARY

Aligned with the main goals of the project, HARMONY WP9 envisages and works towards efficiently organized demonstration activities. In this framework, task 9.1 (T9.1) specifically focuses on setting up the HARMONY case studies and managing cross-metropolitan activities. It covers all preparatory steps, which are necessary to set-up and coordinate the demonstrations, as well as the stakeholders' engagement activities, the primary and secondary data collection and the evaluation of the case studies.

In line with deliverable 9.1 (D9.1), which describes general guidelines for the setting up, operation, evaluation and knowledge exchange of the six HARMONY co-creation labs, the current deliverable 9.3 (D9.3) aims at presenting and evaluating the results of the engagement activities and demonstrations, across with any potential political or governance barriers faced, which is the main content of tasks 9.2 to 9.7. This pertains to the activities carried out until the moment of the deliverable submission, considering that a second version of it will follow for the final presentation and evaluation. All the co-creation labs contain a set of activities aiming at contributing to the further development of the innovative approaches to the mobility services on the local level, as well as to contribute to the HARMONY modelling activities. Next to it, three of the co-creation labs will carry out physical demonstrations of the drones or autonomous vehicles.

The main input for deliverable 9.3 relates to the case studies' set-up, management and cross-metropolitan activities and more specifically to changes in the objectives and scope of the co-creation lab and/or demonstration, activities carried out, barriers (in relation to the activities carried out), crucial success factors, the lessons learnt and key stakeholder engagement moments. A summary is also included, focusing on the process evaluation and the impact of COVID-19 pandemic, as well as other external or internal factors, on the activities so far.

# 1. Introduction

## 1.1 Aim of the project

Nowadays, new mobility services and technologies are presented as possible solutions to reduce greenhouse gas emissions and energy consumption in metropolitan areas. However, authorities face several challenges when it comes to harmoniously integrating these developments into spatial and transport plans to improve citizens' wellbeing and achieve environmental targets. Given rapid technological advances and the emergence of new mobility services, metropolitan authorities are often in need of expertise, knowledge and tools for multiscale spatial and transport planning.

In the view of this background, HARMONY's vision is to enable different city or regional authorities to lead a sustainable transition towards a low-carbon new mobility era. This will be guided by its harmonised spatial and multimodal transport planning tools, which comprehensively model the behavioural and operational dynamics of the changing transport sector as well as metropolitan areas' spatial organisation.

HARMONY has set ambitious targets for the co-creation of metropolitan scenarios, informing updated spatial and transport planning tools. Therefore, a strict and stable planned coordination is mandatory to ensure the quality of the results and findings of each area and also to allow comparisons across the six different geographic areas. The consortium's intention is to ensure the best experience of the implementation of the HARMONY concept in each area and its exchange, not only across the HARMONY metropolitan areas, but also across other EU and international areas.

## 1.2 Objectives of the deliverable

Within HARMONY, WP9 is responsible for ensuring that demonstration activities are efficiently organized, contributing to the main goals of the project. Specific objectives of WP9 are:

- To develop the guidelines on setting up the co-creation labs, the stakeholder engagement activities and the demonstrations, to make sure that all the areas follow the same approaches and can be comparable;
- To organise the aforementioned activities and demonstrations, and assist in their operation;
- To organise cross-metropolitan activities for experience and knowledge exchange;
- To collect the secondary data and recruit participants for the primary data collection. To evaluate the engagement activities, the demonstrations and the barriers faced in each area.

In this framework, task 9.1 specifically focuses on setting up HARMONY case studies and cross-metropolitan activities. It covers all preparatory steps, which are necessary to set-up and coordinate the demonstration as well as the stakeholders' engagement activities, the primary and secondary data collections/surveys, the demonstrations and the evaluations of the case studies. A strict and stable planned coordination is necessary to ensure the quality of the results and findings of each area and also to allow comparisons across the six different geographic areas. Task 9.1 also manages the knowledge and experience exchange across the HARMONY metropolitan areas but also across the HARMONY areas and other EU and international areas.

In line with the above, the main objective of the current report is to present and evaluate the results of the engagement activities and demonstrations, across with any potential political or governance barriers faced, as raised in the context of tasks 9.2 to 9.7. Other objectives relate to the factors that had an effect on the flow of the activities carried out by the six HARMONY metropolitan areas, such as impact of COVID-19 during the current year, delays in demonstrations due to technical or other reasons and internal re-organization issues.

### 1.3 Structure of the deliverable

Deliverable 9.3 includes the following parts. First, a summary of the orchestration approach of the co-creation labs and demonstrations, as initially reported in D9.1, is presented. Second, the main part of the deliverable pertains to the case studies' set up, management and cross- metropolitan activities. More specifically, for each HARMONY metropolitan area, the following issues are discussed: (any) changes in the objectives and scope of the co-creation lab and/or demonstration; activities carried out; barriers (in relation to the activities carried out); crucial success factors; the lessons learnt; key stakeholder engagement moments. The deliverable is complete by the section on summary, including an overall evaluation of the processes so far. Lastly, an annex is provided showing the periodic progress evaluation report template, which was filled in regularly by the six HARMONY metropolitan areas.

## 2. Orchestration approach of the co-creation labs and demonstrations

In this chapter, we provide a summary of D9.1 related to the current state of the art of the HARMONY co-creation labs and what had to be orchestrated there. All of the HARMONY metropolitan areas will develop co-creation labs, varying in objectives and scope, depending on the area. Alongside modelling use cases, physical pilots with demonstrations will take place in Rotterdam, Oxfordshire and Trikala. HARMONY co-creation labs in the above-mentioned areas and in Turin, Athens and Katowice (GZM) will focus on stakeholder engagement activities necessary to fulfil their identified scope of activities.

### 2.1 Setting up the co-creation labs

The objectives and scope of each co-creation lab have been clearly defined and presented in D9.1, including information on the core co-creation lab team, the selection of an appropriate governance model and the preparation of the co-creation lab, identifying the potential demonstrations and activities to carry out, with an indicative planning.

Once the preliminary ideas were identified, team members needed to further develop them within a co-creation lab. Thus, per each of them it is necessary to have a clarity on:

- Concrete objectives and ambitions;
- Expected result;
- External to co-creation lab stakeholders necessary to fulfil the demonstrations (who, why, what do we expect from them, their input and their benefit from the pilot);
- Planned co-creation strategies/sessions during the demonstration;
- Stakeholder engagement milestones (why, who, where, expected result);
- Demonstration location and test environment preparation (what is necessary to prepare there, who is involved, planning);
- Operational preparation for the demonstration (what is necessary, concrete actions, who is necessary for it);
- Potential risks, barriers and mitigation strategies;
- Potential facilitators;
- Baseline measurement (if any, based on the evaluation framework developed).

Analysis of the ecosystem defined by the above allows to identify early enough what are the potential risks and opportunities from the direct co-creation lab environment. It is also necessary to carry out the analysis of legal and ethical issues and mitigation measures that can be undertaken. It serves as a check whether the co-creation lab goals can be developed and achieved in real life without raising legislative, social, political or ethical issues.

The whole setting up phase was finalised with the development of the indicative planning for the co-creation lab. It should encompass both demonstrations carried out in the labs, as well as activities supporting them. This action plan documents key agreement points: objectives, scope, expected results to be achieved, operational and geographical scope of the lab, core co-creation lab team, concrete ideas for the demonstrations and activities to be carried out within the lab, risks and opportunities that were identified and which should be monitored throughout the whole lab process. The pre-selected demonstrations are documented via the process evaluation forms (see Annex for the template).

In this deliverable, we focus on what has possibly changed with respect to the objectives and scope of each co-creation lab, the key activities that have been carried out so far, the barriers faced (in relation to the activities carried out), the crucial success factors and the lessons learnt during the first period of the operation of the co-creation lab, as well as the key stakeholder engagement moments.

## 2.2 Operation of the co-creation labs

The steps necessary to operate the co-creation lab, with some concrete steps to be performed, have been described in D9.1, specifically for each approach, regarding a) the operation of the physical demonstration (for Rotterdam, Oxfordshire and Trikala) and b) the operation of other activities of the co-creation lab. Stakeholder engagement processes are important in both cases and are at core to operation of any co-creation lab as well as an essential requirement for a successful co-creation process.

## 2.3 Evaluation of the co-creation labs

The evaluation is a step necessary to draw conclusions on the experiences of the co-creation labs and their activities, as well as lessons learnt from them. In task 9.8 of HARMONY project, evaluation of the validation area activities takes place. To enable a proper evaluation and comparison across the labs, it is necessary to establish concrete procedures and processes according to which the evaluation processes will be organized during the HARMONY duration. The character of activities performed within HARMONY co-creation labs suggests two types of evaluation processes. For each of the co-creation labs a process evaluation is applied, that allows to reflect on the experiences of the co-creation lab and get the lessons learnt from their processes. Next to it, Rotterdam, Trikala and Oxfordshire will develop a set of KPIs in order to evaluate the results of the physical demonstration. Considering the current progress of the demonstrations, as will be presented in the next chapters of this deliverable, the specific KPIs will be described in one of the following deliverables on the HARMONY areas engagement activities and demonstrations (D9.4 or D9.5). Evaluation of the co-creation lab includes three key steps:

- Development of the evaluation framework;
- Data collection processes;
- Data collection analysis.

The key objective of the HARMONY task 9.8 will be to conduct evaluation of the six co-creation labs. Looking at the character of activities performed, within each co-creation lab, the evaluation framework, as has been presented in deliverable 9.1, consists of two main pillars: (1) Periodical progress evaluation of the co-creation lab, and (2) Evaluation of the physical demonstrations.

Periodic progress evaluation has been established for all the co-creation labs, in the form of the open questions form (see Annex), reflecting on:

- Progress on the objectives and expected results of the co-creation lab;
- Activities carried out during the established period;
- Barriers and facilitators encountered during this period;
- Key stakeholder engagement moments;
- Activities planned for the next progress report period.

Objectives and expected results from the co-creation labs, as well as concrete activities that are planned to be carried out in order to achieve those, are the starting point of the progress evaluation. At the end of the project, it will be assessed, whether these objectives and results were achieved and what was

the process, facilitating factors and barriers that led to it or not. Chapter 4 of the current deliverable assesses the overall progress so far on these topics for each co-creation lab.

Evaluation of the physical demonstrations (2) will be performed according to the set of the co-creation performance indicators developed on the level of each individual demonstration. Indicators to evaluate the results of the physical demonstrations might include, for example:

- Performance indicators;
- Public acceptance and adoption indicators;
- Business model indicators,
- Technological readiness of solutions.

**Data collection processes** differ in form and timing for either physical demonstration or other activities carried out within co-creation lab. For the overall co-creation lab activities, each 6 months the process evaluation form has been sent to and collected from the HARMONY co-creation labs core partners. Regularity of the data collection from the physical demonstration depends on the specific demonstration case and can take the form of interviews, on-site counting's, automated data collection, etc. It is also possible that physical demonstration evaluation might require baseline measurements data collection, in order to be able to compare business as usual situation, with the situation after the introduction of the innovative solution.

**Data analysis** is performed throughout the co-creation lab in order to make sure that the lessons learnt from each evaluation period are well integrated into the future development of the lab.

For the physical demonstration specifically, the findings will be assessed in order to compare the before and after situations. Based on the suggested evaluation framework, the following assessments are considered as useful to perform:

- Of the co-creation indicators to evaluate the efficiency of the solution/ technology compared to the co-creation lab goals;
- Of the adoption indicators to evaluate users' feedback and public acceptance of the innovative solution/ technology;
- Of the business model and technological maturity of the solution/ technology.

## 2.4 Knowledge exchange

As mentioned in D9.1, several activities and physical demonstrations are running in parallel within co-creation labs. Therefore, the operation of the co-creation lab needs to consider how the knowledge from individual activities, within individual co-creation lab, is combined and transferred to other project co-creation labs, as well as how the knowledge generated in the different co-creation labs will be exchanged beyond the HARMONY project. The main objective of the knowledge and experience exchange is to liaise with different stakeholder groups and to ensure interoperability of the project results with other innovative solutions in the field of sustainable transport and mobility. The knowledge and experience exchange activities are closely linked to WP10 Dissemination, Exploitation and Innovation Management, more specifically to T10.1 communication and dissemination activities and 10.3 Engagement activities and collaborations. Detailed and concrete approach to the envisaged knowledge exchange strategies and activities within HARMONY is therefore described in the corresponding to these tasks' deliverables. In summary, in relation to the knowledge exchange, HARMONY commits to:

- Avoiding duplication of work with other projects and platforms, especially within the CIVITAS network, aiming mostly to align our evaluation related work with the other CIVITAS projects, in order to exchange knowledge and experience;

- Aligning with other activities in order to integrate HARMONY in the wider field of sustainable regional mobility and spatial and transport planning;
- Allowing others to build on HARMONY results.

With respect to the abovementioned points, a number of CIVITAS special sessions have been organized, where HARMONY has participated and presented the evaluation framework, as well as the activities carried out so far in terms of evaluation.

Regarding internal communication, knowledge and experience exchange among the different cities, regular WP9 meetings are being organized, with all the six HARMONY areas and the partners involved in co-creation and demonstration activities, being present. In addition to that, the template progress report (see Annex) is being regularly filled in by the areas in order to provide their updates and make an archive of those.

## 3. Case studies' set-up, management and cross-metropolitan activities

### 3.1 Rotterdam

#### 3.1.1 The Rotterdam co-creation lab

In order to support (and promote) the further integration of the automated vehicles (AVs) into the local mobility system, the municipality of Rotterdam needs to have a clear picture of the potential effects and

impacts from the AVs integration: e.g. in terms of the economic growth, jobs market, impact on the total vehicles within city borders, infrastructure and urban space requirements, impact on the IT and public communication systems capacity. The objective of the Rotterdam co-creation lab is to understand this potential impact of the AVs integration into the local mobility system, specifically the urban freight transport component. This will be done through: 1) the Harmony modelling activities (application of the tactical freight simulator to the city logistics system of Rotterdam and identification of the impact of the AVs on the Rotterdam city transport network) and 2) physical pilots with AVs.

### 3.1.2 Changes in the objectives and scope of the activities

Due to COVID-19 it is not possible to have the physical pilot finished before the modelling has started. Next to that, also the development of the AVs is delayed to some extent. Therefore, it is expected that it will be difficult to finish the project on time due to those reasons. Now partners will work simultaneous and in close contact to finish the actions and learn from each other's findings. However additional time is available to collect and analyse data from stakeholders which can be applied to improve the design of the physical pilot.

### 3.1.3 Activities carried out

Partner ARRIVAL develops the vehicles to be applied in the physical pilots in Delft and Rotterdam, which will be electric and autonomous. Since the beginning of the project, ongoing discussions with the Dutch national vehicle and road authorities are in place, in order to get the necessary permits. Plenty of documentation and details need to be provided to get the desired permission to perform the pilots on the Dutch roads.

Much effort went into finding a carrier which would like to participate. Several were not interested in being part of the experiment in the current time. The discussions with one large international transport operator look promising and it is expected that this operator will join the demonstration.

The other Dutch WP9 partners have been busy preparing other activities which relate to the pilot design. A group of master students from the TU Delft developed, under supervision of the TU Delft and TNO HARMONY project team, a report in which they describe what can be demonstrated and tested during the pilots in the Rotterdam area. Also, partners have been involved in finding test locations, creating test scenarios etc.

### 3.1.4 Barriers in relation to the activities carried out

During the project, the obvious barrier is the limitations due to COVID-19 pandemic. More specifically for the pilot are the restrictions with testing an AV on the public road. In the Netherlands, there are laws regulating when it is allowed to use a vehicle on the road or not. Regulations limit the possibilities to test AVs in the road. To obtain the necessary permits, a lot of discussions are necessary.

### 3.1.5 Crucial success factors and lessons learnt

A professional partner such as Arrival is important. It has experience in the field of introducing vehicles on the road and implement the vast amount of EU and national rules about vehicles.

Moreover, the experience in the city of Rotterdam with EU projects is very useful. In a large number of EU projects, Rotterdam also hosts pilots and use cases. Municipalities need to have a good network/community of companies with frequent communication opportunities to find or identify partners for a demonstration, which is the case in Rotterdam.

For engagement of (private) stakeholders, either an independent interest in technological means, such as automated delivery vehicles, is required, or a potentially feasible business case has to be available.

### 3.1.6 Key stakeholder engagement moments

First and foremost, the involvement of national road and vehicles authorities is needed for setting up the physical pilot.

In addition to the city, the regional authority is involved which is more experienced in autonomous vehicle testing and they are also responsible for public transport in the city and region.

During the partner meeting in Rotterdam, there was also a broad stakeholder meeting for the project, with the emphasis on stakeholders from The Netherlands.

The use case for the tactical freight simulator is the analysis of the effects of introducing a Zero Emission zone for city logistics. Rotterdam has chosen to close a covenant with companies and other stakeholders representing the logistic landscape. A communication strategy for the community of covenant partners will be launched along with the public signing of the covenant, planned for December 2020. In the late spring of 2021, a co-creation lab meeting will be scheduled, in which one of the workshops will take the shape of a serious game, developed as part of HARMONY. The serious game will facilitate the interactions and discussions between the engaged stakeholders. Participants from the stakeholder group of logistic service providers, as potential users of automated delivery vehicles and/or services, will provide insight in their attitude regarding the transition towards zero emission city logistics and to the role AV could play in it. As reported in section 3.1.3, this information may help to improve the design of the physical pilot.

## 3.2 Oxfordshire

### 3.2.1 The Oxfordshire co-creation lab

The demonstration plan for Oxfordshire is to conduct freight trials of autonomous vans and drones and passenger trials of autonomous buses. These trials will be conducted at Milton Park, a business park near Didcot, Oxfordshire.

The freight trials will be conducted in partnership with a logistics operator to showcase facilitation of delivery using Connected and Autonomous Vehicles (CAVs) and Unmanned Aerial Vehicles (UAVs). The route of the drone will be within the confines of the business park. The flight management of the drone provided by GRIFF Aviation, will be done using AIRBUS' UTM (Unmanned Traffic Management) platform. The integration with the autonomous vans provided by ARRIVAL will be a scenario that highlights the speed and efficiency of freight delivery using a combination of future mobility technologies.

The passenger trials will be conducted using the autonomous bus provided by ARRIVAL. Frequent visitors within the business park will use these buses for journeys and their progress will be tracked using a mobile application to better understand their commuter patterns and behaviour models.

The facilitation of these trials will require a close interaction with the Urban Traffic Management Centre who will also be part of a co-creation workshop in the future to understand the integration between road and air traffic. Transport planners within OCC will provide input to the modelling partners to help fine tune the different models.

### 3.2.2 Changes in the objectives and scope of the activities

The initial proposed demonstration plan for Oxfordshire was around medical supply transfer within Oxford city. But due to legislative restrictions on operating drones within busy traffic and in a densely populated area, the location of the demonstration was moved to Milton Park, a business park in

Oxfordshire. After multiple on-site meetings and discussions on use cases for the UAV and CAV trials, there have been changes in the timelines of conducting of these demonstrations due to various factors such as:

- Delay in availability of vehicles needed for the demonstration;
- Potential challenges in approval process for drones due to varying payload weight restrictions.

### 3.2.3 Activities carried out

This is the list of activities carried out so far in Oxfordshire, as part of the demonstrations and co-creation activities:

- Initiation of meeting with all stakeholders (OCC, UCL, AIRBUS, GRIFF) at proposed site for demonstration – Milton Park (MP). Multiple discussions on use cases for CAV and UAV trials to help identifying use cases and zone of operation and to create a template (along with UCL) to help manage the demonstrations.
- Discussion with Civil Aviation Authority (CAA) on regulatory approval application process.
- Discussion with planners – transport, land use, strategic.
- Literature review of strategic planning documents, review of EU guidelines on SUMP appraisal.
- Performing methodologies suggested by EU on OCC SUMP.
- Identification of KPIs based on review of planning documents and multiple collaborative meetings with planners.
- Review of focused Steering Group documents (Active Travel, Cycling, etc.) to identify stakeholder needs.
- Discussions on data-access and data-sharing - Involved in meetings with different organisations within the County Council such as: GIS, land use, demographics and external partners.
- Participation in Atkins Digital Survey on UAV demonstration: Comprehensive questionnaire on goals, challenges, details of UAV and CAV demo at Milton Park.
- Details on questionnaire and survey for primary data collection: needed for raising procurement requests at OCC – MOBY.
- Completion of data-sharing agreements for secondary data.

### 3.2.4 Barriers in relation to the activities carried out

One of the initial use cases for the drone trials faced a significant barrier due to restrictions on conducting them:

- Weight of drone along with payload needs to be within certain regulatory limits;
- Flying of drone over a railway line requires additional permission that is hard to get.

Regarding the collection of secondary datasets for modelling purposes, though they have been going on smoothly as there is no need of any physical meetings, the process for primary data collection might be hindered, especially in terms of raising tenders and inviting survey companies.

Also, planning of co-creation workshops with Urban Traffic Management Centre and demonstrations at Milton Park would need face-to-face meetings that are slightly hard to organise due to COVID-19 restrictions.

There is also the concern that a lot of the data from traffic management and other sources might be less meaningful because of the lockdown period.

### 3.2.5 Crucial success factors and lessons learnt

The main success factors that have helped the progress of this project so far are:

- Synergies with other projects running in parallel;
- Convergence of region's long-term urban mobility plans with objectives of the project.

Some of the lessons learnt as part of this project are:

- Be prepared to have contingency plans for locations of demonstrations;
- Identify multiple partners from other projects as well that can provide complementary and supplementary benefits.

### 3.2.6 Key stakeholder engagement moments

These are some of the key stakeholder engagement moments that have taken place:

- Initiation of meeting with all stakeholders (OCC, UCL, AIRBUS, GRIFF) at proposed site for demonstration – Milton Park (MP);
- Multiple discussions on use cases for UAV and CAV trials;
- Discussion with CAA on regulatory approval application process;
- Meeting with UAV and CAV partners along with MP to discuss freight trials;
  - Help identify use cases and zone of operation;
  - Creation of template (along with UCL) to help manage the demonstrations;
- Set up a regular meeting with transport planners within OCC to provide inputs to model development and other co-creation activities.

These are the key stakeholder engagement activities planned for the coming months:

- Help UAV partners make approval applications to the regulatory body (CAA);
- Finalise primary data collection methodologies and means of conducting surveys;
- Set up workshop to facilitate integration between different transport management control centres;
- Help UAV partners perform safety case assessment and community engagement with pilot area;
- Organisation of online workshop with planners, modellers;
- Contact survey companies to begin primary collection exercise.

## 3.3 Trikala

### 3.3.1 The Trikala co-creation lab

The Trikala co-creation lab is focusing on the city pilot in HARMONY. The aim of the co-creation lab is to foster cocreation, social embracement and public acceptance. The local pharmaceutical warehouses and the pharmacies are crucial stakeholders in the project that shape the community of the co-creation lab. In this direction, the demonstration is co-created by them along with the technical team and the

Municipality of Trikala. In particular, the Medical Association of Trikala and the Medical Association of Greece have provided requirements for the design of the demonstration. Along with the Medical Association of Trikala, the geographical routes served by drones have been planned. The demonstration has been shaped through their input and, thus, the process is characterized as bottom-up rather than a technical top-down procedure. It should be highlighted that for the safe and successful implementation, different stakeholders and authorities that have never worked together in the past, must collaborate. In that context, co-creation lab is the only methodological tool to be used in order to have tangible results.

### 3.3.2 Changes in the objectives and scope of the activities

Continuous bilateral contacts and consultations with several stakeholders have taken place. In particular, engagement processes with the National Union of Pharmacists and Union of Pharmacists in Trikala, as well as specific pharmacists, have taken place. The goal was to promote and boost (i) the pharmacists' acceptance in transferring medicines served through the use of urban air mobility (UAM) services and (ii) the pharmacists' agreement on which villages should be served through the use of drones. In addition, their input has been collected regarding the number of urgent cases per day that could be served by drones.

The objective and scope of the activities is to provide improved mobility systems and services to older and vulnerable groups that live in rural areas. By using UAM Systems and Services and going to the 3rd dimension, freight transportation could be improved in a very efficient way in the city of Trikala. UAM could be useful for the bypass of some routes for medical supply delivery for urgent cases. This use-case could later on be extended to similar fields that are time-critical. Handling the transferring of crucial goods (such as medicines) by air, decreases the delivery time, since no traffic congestion is confronted in the third dimension and the route is optimized to a straight line if possible. Cost is reduced since the delivery is conducted by electric self-piloted drones.

It should be noted that there is a new short-term objective added to the objectives agenda, which is the aim to provide a COVID-19 response in the mobility sector in order to create societal confidence in shared services and healthcare. By using autonomous drones with remote operation from a support Control Room, everyone is kept safe, ensuring social distancing. This is currently important in order to quickly face the COVID-19 crisis and any other crisis that could emerge in the future and transform the everyday life of elderly population to a much safer and convenient landscape. Concluding, UAM is a safer, greener, smarter, cheaper and faster solution that will replace the traditional freight mobility regime.

### 3.3.3 Activities carried out

The activities carried out so far can be split into different categories as presented below. The ones related to stakeholder engagement moments are presented in section 3.3.6.

#### Technical requirements identification

- Ongoing process for identifying the technical specification and the equipment of drones needed in this pilot with UCL, GRIFF and UAEGEAN.
- UAEGEAN preparation of technical requirements for potential drone and review by e-Trikala
- 13/4/2020: First bilateral Discussion with Dronesolutions, private operator located in Athens, as suggested by UAEGEAN.
- Identification of technical requirements of routes, landing plots in the selected villages and institutional complexities.
- 16/4/2020: Offer on e-Trikala's potential training on drone operating, towards which fact we are positive.

- Negotiation of the number of drones and the duration of the pilot in order to have results and data for KPIs.

### Setting up a business model

- First trial to set up a business model in collaboration with the Municipality of Trikala with special attention to the financial model. The aim is the transformation of the pilot demonstration towards a self-financed, permanent service for the citizens.

### Dissemination activities

- Publication of Trikala's use case in CIVITAS Newsletter (<https://civitas.eu/news/using-drones-deliver-medical-supplies-trikala>) on 31/7/2020

### Data collection

- Feedback sent for questionnaires and conducting interviews and online surveys, feedback expected from Mobyx

### Sustainable Urban Mobility Plan - SUMP

- Consultation with SUMP's Technical Team of the Municipality of Trikala
- 26/7/2019: Contribution to the Task 1.2, for the review and evaluation of SUMP's of the HARMONY area of Trikala.

#### 3.3.4 Barriers in relation to the activities carried out

The general lockdown has been an essential barrier given that trips between different regions are not allowed and physical meetings with stakeholders are not allowed. This has been a bottleneck for our potential operator and drone provider as well as for engagement activities. Physical meetings and workshops have taken place virtually.

This has further contributed to low participation in stakeholder engagement activities/co-creation labs and surveys and also a multi-phased authorisation process by the Civil Aviation Authority. The risk is owned by the co-creation lab coordinator in the city of Trikala, in our case e-Trikala. The capacity to engage stakeholders in this context is under question. E-Trikala has strong networks with stakeholders that will be used to maximise participation in workshops and ensure the right stakeholders attend. Letters of support have been gathered before the start of the project and several steps have been already initiated.

#### 3.3.5 Crucial success factors and lessons learnt

The importance of co-creation is a lesson learnt. The knowledge that can be shared until this point is the initial integration of Urban Air Mobility solutions and services into the transport planning framework. Another lesson learnt has been the process of building public acceptance in the field of urban air mobility, correlating with the medical sector.

In addition, the public engagement with the citizens and stakeholders, which is the only way to develop and implement a UAM project, given the multitude of stakeholders that take part, has been a success factor so far, despite the complexity of the process.

#### 3.3.6 Key stakeholder engagement moments

The key stakeholder engagement moments have been the following:

- Identification of stakeholders of the local and national mobility ecosystem (mobility authorities, urban transport providers and users, elderly people, people with disabilities, pedestrians, cyclists).
- Open call published on 20/9/2019 – public survey through the social media of e-Trikala (e-trikala.gr, twitter, fb), that aimed to collect interest from local pharmacists and received mixed reactions.
- Co-creation of the pilot demonstration with the local ecosystem: namely the Union of Pharmacists in Trikala and the National Union of Pharmacists has been initiated by e-Trikala and some potential routes for the drone flights have emerged.
- Continuous communication with the Civil Aviation Authority (informally structured) for their constant engagement, since it is regarded as a key stakeholder.
- E-Trikala facilitated initial liaison between GRIFF and UAegean and the Greek Aviation Authority for the drone equipment.
- Continuous bilateral contacts and consultations with several stakeholders have taken place in order to cocreate the pilot and have public acceptance.
- The Union of Pharmacists has identified the villages (Megalo Kefalovriso, Leptokaria, Raksa) as potential targets.

Until today, as described above, stakeholder engagement has been carried out through small focus groups. Different stakeholders with different interests, expertise and perceptions have been consulted in order to understand the potential problems or opportunities. Methodologically, small focus groups have been established in order to shape a shared perception of the technology and the opportunities that it could enable. Larger public acceptance and co-creation of the pilot have been the result of these consultations with the multiple stakeholders. Different actors from the aviation sector (for example the Civil Aviation Authority) and from the healthcare sectors (for example the local and national pharmacists) have been engaged to a dialogue with the coordinator of the local pilot, e-Trikala, focusing on UAM aspects and on the disruptive characteristics of this mobility system and service.

Key stakeholder engagement moments planned in the coming months are the following:

- Qualitative interviews will take place with stakeholders and citizens.
- Quantitative data deriving that will derive from online surveys. This data collection processes will be conducted before and after the pilot demonstration, so that comparisons are able to be made.
- In addition, workshops with multiple stakeholders will be conducted and they will be asked to provide opinions and preferences to structured scenarios. Due to the new lockdown (November 2020) in Greece and the unpredictable conditions, this action will take place virtually.

## 3.4 Turin

### 3.4.1 The Turin co-creation lab

The Turin municipality pursues the goal of rebalancing the demand for transport between collective and individual, in order to reduce congestion and improve the accessibility to the various urban functions. The SUMP of the Turin municipality in 2010 has been designed to embrace this vision, that is likely to be continued in the new SUMP, covering the whole metropolitan area, which is currently under definition and planned to be presented in 2021.

The Turin pilot goals within the HARMONY project are focused on the territorial impacts generated by the new public transport infrastructure (such as the new metro line) and the new MaaS mobility paradigm on the Turin Urban Functional Area, with particular reference to its integration with the Metropolitan Railway System (known as SFM).

Furthermore, the HARMONY MS could be used to simulate some of the specific strategies and scenarios of the new SUMP of the Metropolitan City of Turin. In this sense, the engagement of stakeholders is in progress and the topics mentioned above would be integrated by the outcome of the co-creation labs. The upcoming co-creation labs will focus on two main aspects: on the one hand,

analysing the Turin mobility in the wider context of the city's emerging trends and vision for the future, on the other hand, exploring the potential opportunities offered by the MaaS mobility paradigm from various points of view.

### 3.4.2 Changes in the objectives and scope of the activities

The overall objectives and scope of the co-creation labs have remained the same as described in D9.1, although some small adjustment has been necessary due to this year's pandemic. In fact, the COVID-19 emergencies slowed down the possibility to physically meet and get in contact, as well as some activities to be carried out by the partners were delayed.

Therefore, the co-creation labs were delayed and are now planned in two steps, through interviews and focus groups, which will take place in November/ December 2020.

Finally, due to the pandemic, also the activity related to on-site primary data collection, using the HARMONY smartphone-based travel survey tool, has been postponed and it is now planned to take place in the first half of 2021.

### 3.4.3 Activities carried out

In the first months of the project, stakeholders have been engaged to define the scope of the Turin pilot through in-person and virtual meetings. In fact, synergies with the update of the SUMP of the Turin Metropolitan Area have been explored (although the timing of the planning process is not fully compatible with the HARMONY project schedule), as well as the identification of the topics of interest for the city. In the end, the theme of the new MaaS paradigm has been selected, together with a list of new public transport infrastructure and services. The connection with the new SUMP has been kept open for further integration in the next months of the project. The main contacts were related to authorities such as GTT (Turin metropolitan area public transport company), 5T (in-house company of the city of Turin, Piedmont Region and Turin Metropolitan area) and AMP (Public transport Authority of the Piedmont Region), also with the aim to define official agreements for the purposes of sharing data and modelling applications.

With reference to secondary data collection, a specific data warehouse has been set up in order to collect all data from different Turin partners. The data collection from available open access sources has been completed and includes data on economy, demography, land use, housing and buildings, as well as transport demand and transport network data. This information is currently under integration with several data with restricted access (such as data from the modelling applications or other sources, e.g. matrices, traffic control data, sharing mobility data, etc.). Concerning primary data collection with the HARMONY smartphone-based travel survey tool, the tender to select the firm in charge for the filed survey is under definition and the plan is to publish it in January. In November, the demo of the App will be tested internally. Over the last weeks, support has been provided to tailor the questionnaire included in the App considering the Turin context.

As a first step for the co-creation labs activities, a list of more than 60 stakeholders from different organizations has been prepared (including authorities, public transport providers, university, NGO, associations, sharing mobility companies, foundations, etc.) and has been organised according to the different topics where their expertise is more relevant (MaaS, Autonomous vehicles, cycling plans, micro-mobility, electric mobility, etc.).

### 3.4.4 Barriers in relation to the activities carried out

The preparation of the Sustainable Urban Mobility Plan of Turin metropolitan area is still at an early stage, also due to postponements related to the COVID-19 emergency, and, therefore, little information

is now available. As a consequence, the integration of Turin use cases with scenarios and visions of the new SUMP are postponed to 2021.

On a separate note, the agreement process to access data and modelling applications by the technical experts of Turin municipality took longer than expected, worsened also by COVID-19 emergency.

### 3.4.5 Crucial success factors and lessons learnt

A success factor of the project is the possibility to exchange knowledge and lessons learnt with the other HARMONY metropolitan areas, in particular with reference to co-creation labs and stakeholder engagement. In addition, the case study is taking benefit of finding synergies and sharing information with other research projects that are currently exploring new mobility services in Turin. These projects are the BIPforMaaS, MaaS vouchers, Smart Mobility (Smarter Italy).

The main lesson learnt is that COVID-19 pandemic has reduced the possibility of stakeholders' engagement and many people were often unavailable due to job retention period. Business contacts and public participated events, that are typical situations where sharing opinions and ideas is possible, have been strictly limited and this has affected the activities related to co-creation labs.

### 3.4.6 Key stakeholder engagement moments

So far, the key stakeholder engagement moments allowed addressing the definition of the scope of the Turin pilot, as well as the interactions related to data collection and modelling applications (see paragraph 3.4.3).

In addition, the synergies with other projects allowed taking part in several meetings with stakeholders related to the MaaS paradigm, namely aiming to define technical and commercial requirements of service providers to be part of a test case of MaaS platform in the municipality of Turin. So far, the meetings involved taxi, e-scooter sharing and motorcycle sharing services.

In the short term (November and early December 2020), as mentioned in paragraph 3.4.2, co-creation labs in the form of interviews with stakeholders and focus groups will take place.

The first topic to be addressed will be related to the analysis of the Turin context, exploring current and emerging trends from e.g. demographic, economic, social, territorial points of view. Future plans and visions will also be investigated, as well as acceptance for new mobility technologies and services. This topic will be addressed through interviews to stakeholders, which will be performed in virtual form due to the current circumstances and published online.

The second topic concerns the MaaS paradigm, exploring the subjects involvement (service providers, MaaS operator and users) and the feasibility in the Turin context. In this sense, synergies with other on-going projects in Turin have been identified. Within HARMONY, stakeholders will be involved in on-line focus groups to discuss this topic.

## 3.5 Athens

### 3.5.1 The Athens co-creation lab

The objectives and associated activities of the Athens pilot in the context of the HARMONY project may be summarized as follows:

- Delineate the mobility solutions proposed by the municipalities located within the greater Athens metropolitan area in the context of their Sustainable Urban Mobility Plans (SUMPs) preparation.

- Propose novel mobility solutions that may not be part of the municipality SUMP's but are deemed to be in position of enhancing the efficiency of transportation services provided in their area of application.
- Update the existing Athens transport model in all of its elements (demand and supply attributes), in order to provide a sophisticated background for the subsequent running of analyses.
- Simulate the proposed mobility solutions in order to assess the impact of their application over the Athens network.
- Recommend possible improvements in the associated transportation planning strategy to be implemented over the greater Athens metropolitan area.

As no physical demonstrations are foreseen, the Athens pilot has proposed the organization of two co-creation labs, that are expected to substantially help in understanding the stakeholders' view on transportation-related subjects and engage a greater share of the interested parties, as well as of the society, in the formulation of the new transportation planning strategy.

### 3.5.2 Changes in the objectives and scope of the activities

There are no essential changes to be reported with respect to the scope and objectives of the Athens co-creation lab. Currently, the municipalities located within the greater Athens metropolitan area are in the process of preparing their own Sustainable Urban Mobility Plans (SUMP's); these will contain various, area-specific mobility measures, which will attempt to alleviate some of the transportation-related problems and barriers that the citizens, the travellers and the commuters, to and from those areas, experience. In addition, over the next 18 months, the new Athens Transport Plan is expected to be finalized, updating the supply and demand parameters of the greater Attica region which, unfortunately, remained stagnant since 2009. The impact from the aforementioned measures should also be assessed and evaluated within the context of this plan.

### 3.5.3 Activities carried out

Two distinct types of activities have been carried out so far, which may be summarized as follows:

- The first Athens co-creation lab, which was successfully completed in a virtual form due to the COVID-19 outbreak.
- The update of the Athens metropolitan area transport model, which is an ongoing activity.

Considering the aim of the co-creation lab, the responses by the stakeholders are deemed to assist in terms of more effective elaboration of the scenarios that will be implemented as part of the HARMONY project over the greater Athens metropolitan area. As for the update of the Athens transportation model, this is a prerequisite for the application of the scenarios, since it sets the associated background.

With respect to the co-creation lab, the organizing partners (OASA, UoA), taking into account the adverse circumstances (imposition of restrictions on the allowable movements, recession of economic and business activities, prevailing uncertainty surrounding this pandemic) decided on a virtual, instead of a physical form for the lab. As such, questionnaires were sent by e-mail to the stakeholders in order for them to fill them out. The questionnaires were formulated on the basis of four scenarios (case studies) that it would be for the benefit of the Athens metropolitan area to be examined. These included the electrification of public transport, operation of autonomous bus fleets, operation of demand responsive transit and application of micro-mobility schemes.

The stakeholders were first identified with respect to their role and expected contribution. Municipalities, ministries, transport operators, infrastructure providers etc. were included. Approximately, one or two questionnaires were sent to each of the stakeholders. Feedback was received on a 37% response rate, with varying response rates across the scenarios. The questionnaires have been statistically processed,

in order to extract valuable conclusions with respect to the scenarios examined and the stakeholders' needs and preferences. The respective key findings may be summarized as follows:

- Transportation-related challenges mainly focused on inter-modality issues and the reduced use of Intelligent Transportation Systems (ITS). Clear impact of these challenges on the quality of life, as well as on various economic and business aspects. Lack of coordination between the entities, followed by restrictions on the available budget and the different objectives that the involved entities aspire to fulfil, lead to delayed resolve.
- Most stakeholders have, however, already collaborated with other entities in the past in the context of a mobility scheme and deem their experience as successful.
- All the examined scenarios (battery electric buses (BEBs), demand responsive transit (DRT), autonomous vehicles (AVs) in bus lines, micro-mobility schemes) appear to be well-accepted by the general public, for the promotion of the city's contemporary image.
- The provision of financial incentives is argued to be important for the transition to the new mobility era.
- Different advantages and disadvantages may be identified when considering the application of each of the individual scenarios. The most important issues include:
  - BEBs: bus line range limitations, cost of the infrastructure
  - DRT: flexibility of the booking policy and the service in general; promotion of social equity (ability to provide better services to special groups e.g. the elderly, mobility-challenged people etc.).
  - AVs: safety and security concerns
  - Micro-mobility: inefficiencies of the regulatory framework, users' compliance to the traffic regulation laws
  - Application of each of the scenarios may have an impact on other modes of transport (e.g. taxis, private cars).

Finally, the Athens transportation model, is being updated with respect to the network's geometrical characteristics (addition of new nodes and links, correction of the network's layout where necessary), the network's functional characteristics (road segments' capacities, maximum speeds and allowable modes of transport) and the bus network characteristics (operating bus lines and their routes and schedules, existing bus lanes). Elaboration on the Athens transportation model will continue with an update to its demand-related parameters.

### 3.5.4 Barriers in relation to the activities carried out

The COVID-19 outbreak has been a major impediment in the planning and organization of the first Athens co-creation lab. The imposition by the Greek government of restrictions on the citizens' allowable business activities and movements, along with the justified fear that accompanied the pandemic and its associated economic and social consequences, mandated that the partners (OASA and UoA) cancelled the co-creation lab in its physical form in order to direct themselves towards the organization of a virtual workshop.

Despite this, the first Athens co-creation is deemed to be successfully held, with questionnaires sent to the stakeholders identified depending on the scenario examined. However, the following issues may be noted:

- Hesitance by stakeholders in replying. The ones that responded, did so after many phone calls asking for clarifications and after emphasizing that the responses received reflect their own (the respondent's) standpoint and are not indicative of the opinion that their organization holds. In this context, skype interviews, although initially planned, were not carried out.
- The organizations that were most willing to participate were those that would not be directly involved in the implementation of the scenarios examined.

- The municipalities were the most difficult ones to engage. This may be attributed to fear that their responses would somehow oblige them to apply certain types of measures in the context of the SUMP.
- Certain types of questions (open questions, questions regarding the collaboration with other entities) were not answered.

The hesitance expressed by the stakeholders in replying to the questions set along with the difficulty in engaging them altogether into the process possibly implies that the stakeholders are not yet ready to participate in such type of activities, and even more so in the organization of a co-creation lab. Absence of knowledge over the examined subjects, lack of coordination within each individual entity, unclear intentions and policy on behalf of the stakeholder's leadership as well as other possible complications may be to blame for this outcome.

### 3.5.5 Crucial success factors and lessons learnt

As already explained, the strain imposed by the COVID-19 pandemic, made the first Athens co-creation lab partners quickly realize that, under the present circumstances, the lab could not be held as initially planned. As such, the partners started exchanging ideas about the optimal way that the lab should be organized in order to satisfy the project's objectives, and also ensure the stakeholders' engagement. Identification of the stakeholders was facilitated by the extensive communication network that both partners retain, while the formulation of the whole workshop structure was enabled by the substantial experience that both partners have gained from their participation in analogous research projects with exploitation of various data collection methods.

It is a fact that the difficulties encountered during this period forced the partners to work even more closely together in order to overcome them. This resulted in increased communication between them, with vivid exchange of opinions and better problem-solving capabilities along with compromising skills, in order to find the middle ground between the different ideas. Ultimately, this has led to better and closer collaboration among the partners.

### 3.5.6 Key stakeholder engagement moments

Considering the virtual, rather than a physical, form of the co-creation lab, stakeholder engagement activities took place mostly in terms of their identification by the co-creation lab partners and their participation in the virtual workshop by filling out the questionnaires that were sent to them.

Stakeholder engagement is expected to continue with the organization of the second Athens co-creation lab. This was initially planned to be held during October - November 2020. However, the partners (OASA, UoA) suggest postponing it until the spring of 2021, when two initiatives that are currently taking place in the city of Athens will have completely unfolded, thus, more feedback could be provided by the stakeholders for further discussion. These initiatives are directly related with two of the HARMONY scenarios that were described earlier on in this deliverable. In particular:

- OASA, along with the municipality of Chaidari, is planning to implement a DRT line in the area. The line is designed to be semi-flexible and will be set in operation by December 2020.
- OASA is also in the last stages for a bus fleet procurement, part of which will be composed of BEBs. The respective implementation plan (bus and infrastructure type and technical standards, number of buses, spatial location of the infrastructure etc) is expected to be completed in the first quarter of 2021. The invitation to tender will be published immediately afterwards. The whole process is supervised by the European Investment Bank (EIB), which provides the funding. At the same time, pilot demonstrations of BEBs from different companies are conducted in the city of Athens.

## 3.6 Katowice (GZM)

### 3.6.1 The Katowice co-creation lab

The main objective of the HARMONY GZM co-creation lab is to have a citizen-driven approach to the process of SUMP creation, with a focus on the social acceptance of Urban Air Mobility use cases. Next to it, within GZM co-creation lab, the opportunities of transport modelling software for the public transport network planning are being investigated. In line with this, expected results from the co-creation lab are:

- Created SUMP reflects the needs of citizens in terms of the problems and challenges addressed and solutions proposed;
- There is a clear picture on the mobility patterns within and between different districts of the GZM agglomeration (urban, rural, intercity);
- Knowledge about transport modelling software and its potential application for GZM is produced;
- Transport modelling software is tested with input data from GZM and concrete user experience results are available;
- HARMONY MS is tested by GZM.

There is no physical demonstration planned within GZM co-creation lab, but a set of concrete activities will be performed, as described in DoW:

- To engage and work with stakeholders and citizens to investigate their requirements in terms of spatial and transport planning and new mobility services (WP1, WP9);
- To transfer results from the HARMONY MS application to assist the authority to plan for the metropolitan-wide transport, introduce new forms of mobility and update their SUMP (WP8).

### 3.6.2 Changes in the objectives and scope of the activities

The topic and the scope of the co-creation lab in Katowice had to be reinvented to align to its SUMP process. Specifically, topics of social acceptance research have been narrowed to Urban Air Mobility.

### 3.6.3 Activities carried out

The main activities related to the GZM co-creation lab pertain to a general preparation and investigation phase that will lead to a proper design of it, aligned with the overall scope of the project and the objectives of the SUMP of the city.

So far, the specific objectives of the co-creation lab and the definition of the framework are being explored in collaboration with UCL and discussed during online workshops with several stakeholders. On this basis, a survey for planning and testing citizens participation phase of SUMP, including topics related to new technologies and new mobility, is also being created.

### 3.6.4 Barriers in relation to the activities carried out

A barrier that has been identified in the process of developing a co-creation lab is that there is not enough support and knowledge on how to actually start it. The area of interests in initial plans has been too wide which hinders the procedures. Further, there have been internal changes with resource management in GZM, which required rethinking of goals of the co-creation lab. It was also hard to start with any activities since leadership was changed inside GZM and there was no plan for activities

previously. Lastly, there have been some technical issues for workshops, related to translation and the need for a better tool for online workshops.

### 3.6.5 Crucial success factors and lessons learnt

A crucial success factor for GZM has been the continuous knowledge and experience exchange with the rest of the HARMONY areas, especially the ones dealing with UAM.

An important lesson learnt is that strong support from scientific partners is needed to start anything. Further, the current constraints due to COVID-19 have offered a good opportunity to learn how to better deal with such issues during big European projects like HARMONY.

### 3.6.6 Key stakeholder engagement moments

Some of the needs to explore social acceptance have been met during general research of mobility habits in the SUMP process. In addition, several deep interviews were performed during the European Mobility Week, including discussions about new and future mobility. Several meetings of Council for New Mobility and three workshops with citizens as a part of SUMP meeting have taken place.

## 4. Summary of process evaluation

Deliverable 9.3 outlined the most important events and activities which have been carried out so far, in the process of initialization, development and operation of the co-creation labs in the six different HARMONY areas, including key stakeholder engagement moments, barriers faced, as well as success factors and lessons learnt. Overall, what should be noted is that the COVID-19 pandemic has been a major barrier in the planning and organization of several activities of the HARMONY areas. Issues related to stakeholder engagement have been raised, as well as changes to the planning of data collection activities have been made in order to make sure that the information collected is meaningful (during a lockdown period, the validity of travel-related data would definitely decrease).

Some of the co-creation labs are currently still in the process of setting up, identifying concrete activities they are going to carry out in order to achieve the expected results, as well as, where relevant, making necessary arrangements and further shaping the physical demonstrations. Others, such as the Athens co-creation lab, are already further in the process, with the first co-creation lab to be already successfully completed, even in virtual form.

Stakeholder engagement processes are at the core of each co-creation lab and are of crucial importance to reach its results. Currently, all of the co-creation labs are continuously in the process of contacting stakeholders and reflecting on other to the core lab team stakeholders that they need to involve. In the upcoming period, they will further shape their co-creation and stakeholder engagement strategies, looking into how to increase potential efficiency of the whole process, collecting the feedback and integrating the views of the key stakeholders into their co-creation lab activities. Although the communication with many stakeholders has been hindered due to this year's circumstances, with COVID-19 pandemic having a strong impact on physical meetings, still interviews have been held and surveys have been distributed successfully. Regarding the physical demonstrations, some of the HARMONY areas had issues with on-site visits, however, it has been possible to plan the geographical routes served by drones in the case of Trikala, and change the location of the demonstration to make it eligible for operating drones in the case of Oxfordshire.

Regarding barriers in the co-creation lab processes, the different HARMONY areas have indicated similar experiences. In particular, several regulations limitations for AVs and drones' operations have been mentioned. Further, the difficulty in having physical meetings as well as the low participation in stakeholder engagement activities has been an important barrier. Lastly, several agreement processes

for data access have taken longer than expected. As success factors, cities have mentioned the possibility to find synergies and share knowledge with other projects. The importance of collaborating with professional and experienced partners has been identified as well. With respect to lessons learnt, the cities recognized the importance of having contingency plans for the locations of the demonstrations but also the importance of identifying multiple partners from other projects as well that can provide complementary benefits. Further, the knowledge that can be shared via a co-creation lab and the process of public engagement with the citizens and stakeholders is proven to be the only way to develop and implement a demonstration activity. Lastly, a main lesson learnt is that a pandemic such as COVID-19 has a huge effect when it comes to stakeholders' engagement, due to job retention periods and also to general sharing of opinions which would normally take place in several physical meetings and events.

Each of the co-creation labs has developed an indicative planning for the upcoming months. Regular communication among the WP9 partners will remain a priority to cope with the second phase of the co-creation labs and demonstration activities processes as effectively as possible. Progress evaluation reports will continue being sent to each of the co-creation labs in order to verify where the co-creation lab is standing in the process of reaching its expected results and objectives, what are the activities that were carried out during the reporting period, what are the barriers encountered and which facilitators helped to achieve positive results. Next reporting period plans and follow-up of relevant milestones set before, in order to monitor and evaluate the progress of the co-creation labs, will also be requested. Another important upcoming step for the HARMONY areas is the identification and definition of the relevant KPIs, to evaluate the demonstration activities taking place in each specific case.

## References

HARMONY D9.1 The HARMONY area's orchestration, engagement plan and data collection guidelines.

## Annex: Periodic process evaluation report template

City/ area:	
Partner:	
Name:	
Date:	
Reporting period:	
Were there any <b>changes</b> in the objectives and scope of the <b>co-creation lab and/or demonstration</b> ?	
Please describe the <b>activities</b> carried out during the reporting period:	
Which <b>barriers</b> (in relation to the activities carried out) have you experienced during this period?	
Please identify crucial <b>success factors</b> (if any) that helped you to achieve the results during this period:	
What were the <b>lessons learnt</b> during this period?	

<p>Please <b>list</b> and <b>describe</b> the key stakeholder <b>engagement moments</b> that took place during this period (stakeholder groups, quantity, co-creation strategy, results achieved, etc):</p>	
<p>Please provide an indicative <b>planning</b> for the upcoming period of the project (3-6 months).</p>	



[@Harmony\\_H2020](https://twitter.com/Harmony_H2020)

[#harmony-h2020](https://twitter.com/harmony-h2020)



<https://www.linkedin.com/company/harmony-h2020/>

For further information please visit [www.harmony-h2020.eu](http://www.harmony-h2020.eu)