



Deliverable 3.1

Report for activities in the Groups of
Interest



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Executive Summary

This deliverable presents the participatory engagement activities conducted within the four Groups of Interest (GOI) established in the SINFONICA project in four research sites: Trikala (Greece), Noord-Brabant (Netherlands), West Midlands (United Kingdom), and Hamburg (Germany). These activities aimed to gather insights from citizens and stakeholders, particularly people with mobility challenges—regarding their mobility needs, perceptions, and expectations related to Connected, Cooperative, and Automated Mobility (CCAM) solutions.

Through three structured rounds of engagement—consisting of structured interviews, focus groups, and stakeholder workshops, the project involved over 280 citizens from diverse backgrounds and more than 100 stakeholder representatives. This participatory process was designed to ensure inclusivity and local relevance, and it was adapted to the specific socio-demographic characteristics of each GOI. These local activities were complemented by a broader EU-wide survey, which collected over 4,900 responses across multiple countries, further enriching the dataset with a wider range of user perspectives.

The report documents both the methodological approach and the practical implementation of these engagement activities, highlighting successful stories, challenges encountered, and lessons learned for each of the research sites involved. Key findings include the importance of accessibility, trust, affordability, and clear communication in shaping public attitudes toward CCAM. The work also underscored the value of tailored engagement strategies, cross-sectoral collaboration, and the early involvement of local actors and vulnerable communities.

The qualitative and quantitative data collected through these activities contributed directly to several core components of the project:

- **Simulation Tool:** GOI and survey data informed the construction of four context-specific simulation use cases, representing realistic travel demand patterns and user heterogeneity (including different types of people with mobility challenges). These simulations are key to assessing the performance and inclusiveness of CCAM scenarios in real urban contexts.
- **Knowledge Map Explorer (KME):** The insights gathered through interviews, focus groups, workshops, and the EU survey were systematically analysed and integrated into the *Research Results* section of the KME. GOIs also played a key role in the design, testing, and iterative improvement of the tool, helping to define user requirements and thematic navigation pathways. Their feedback ensured that the KME reflects real-world needs and allows policymakers and practitioners to explore evidence in an accessible, user-driven way.
- **Recommendations and Guidance:** The findings from the GOI activities were critically reviewed and synthesised into an initial set of strategic recommendations. These address systemic enablers and barriers to inclusive CCAM, such as data privacy



concerns, the need for transparent governance frameworks, and the importance of aligning technological innovation with social equity and accessibility objectives.

The deliverable also presents site-specific success stories, demonstrating the added value of localised, human-centric engagement. Among these, the creation of durable stakeholder networks, early policy uptake of results, and test planning for CCAM pilots stand out as concrete impacts of the GOI activities.

Overall, this document provides a comprehensive overview of how participatory research was operationalised across diverse European contexts and how it is contributing to the societal readiness of CCAM technologies through inclusive, context-aware innovation.

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Abbreviations

CCAM	Cooperative, Connected, and Automated Mobility
CAAV	Centre for Connected Autonomous Vehicle
EBNS	East Birmingham to North Solihull
EU	European Union
GDPR	GDPR General Data Protection Regulation
GOI	Group of Interest
ITS	Intelligent Transport System
KPIs	Key Performance Indicators
LGBTQIA+	Lesbian, Gay, Bisexual, Transgender, Queer, Intersex, Asexual
PMC	Person with Mobility Challenges
SCALE	Solihull and Coventry Automated Links Evolution
UI	User Interface
UX	User Experience
WP	Work Package

1. Introduction

1.1. Purpose of this document

The purpose of this document is to provide a comprehensive overview and critical reflection on the activities undertaken in Tasks T3.1, T3.2, T3.3 of the SINFONICA project, particularly in relation to the implementation and evolution of the 'Groups of Interest (GOI)'¹ throughout the project development. Anchored in the foundational work of Task T1.4 and aligned with the engagement strategies and data collection methodologies of WP2, the document serves as a vital instrument in demonstrating how participatory approaches implemented in the GOI are operationalised within the project.

By documenting the active involvement of GOI—comprising diverse groups such as individuals with mobility challenges, citizens, and key stakeholders—the document underscores their central role in co-creating inclusive, equitable, and sustainable Connected, Cooperative, and Automated Mobility (CCAM) solutions. It showcases how this participatory structure not only enables a deep, localised understanding of community needs and concerns but also reinforces the project's broader objective: to support decision-makers in crafting responsive, human-centred CCAM policies and tools. Furthermore, through case examples from Trikala, Noord Brabant, West Midlands, and Hamburg, the document reports effective bottom-up engagement strategies, offering critical insights into successes, challenges, and actionable recommendations. It serves not only as a record of past activities but also to feed forward-looking guides to inform future participatory processes in CCAM development across Europe.

1.2. Structure of the report

The present document is structured to guide the reader through the foundational concepts, strategic framework, and practical implementation of the SINFONICA project, with particular reference to the role and field-experience of the GOI. The *Executive Summary* offers a concise overview of the report's content and purpose, followed by a general *Introduction* which outlines the document's objectives, its structure, the deliverable's scope within the broader context of the SINFONICA project and its interrelation with other Work Packages (WPs) and Tasks. Chapter 2: *From the Beginning of SINFONICA* delves into the conceptual foundation of the GOI, emphasising their relevance in engaging both citizens and stakeholders. This section also explains why specific municipalities—Trikala, Noord Brabant, West Midlands, and Hamburg—were selected as key sites of implementation. Chapter 3: *The Role of the Groups of Interest in the Different Work Packages* maps how the GOI are involved across all the projects' WPs. Follows Chapter 4: *Connecting the Dots*, which explores the dynamic relationship between local contexts and the evolution of CCAM, highlights how local insights shape broader innovation trajectories. Moreover, Chapter 5: *Stories from the Field* presents detailed,

¹ Groups of people involved in the co-creation activities; comprised of certain users from the research groups, users without mobility challenges, as well as relevant stakeholders; can be different for the four municipalities / regions; defined in T1.4 (defined by project consortium)

location-specific accounts from each GOI—Trikala, Noord Brabant, West Midlands, and Hamburg—summarising activities, key outcomes, successful stories, lessons learned, and forward-looking recommendations and steps. The last chapter concludes, synthesising the main findings and reflecting on the implications for inclusive, accessible, and sustainable CCAM development, grounded in local engagement and participatory processes.

1.3. Scope of the deliverable and relations with other WPs and tasks of the project

As the final output of the activities performed in T3.1 (Trikala) – T3.2 (Noord Brabant) – T3.3 (West Midlands) – T3.4 (Hamburg), the scope of the present document is to delve and illustrate how such activities have been carried out in the four research sites², contributing to the implementation of the participatory approach at the base of the SINFONICA project.

D3.1 is in strict relation with the two outputs released after completion of T1.1: “Mobility needs and requirements of European citizens” and T1.4: “Definition of the research groups and creation of GOI”, namely: D1.1 “Mobility needs and requirements of European citizens”, identifying the relevant user groups for SINFONICA, and the Internal Report on Task 1.4, defining the research groups, and the creation of the GOI.

As part of the activities foreseen in WP1 “Setting the SINFONICA Framework”, T1.4 ‘Definition of the SINFONICA research groups and creation of the GOI’, defined the categories of citizens, the future users and the stakeholders – with particular attention to people with mobility challenges – that need to be involved in the co-definition and co-creation activities of the project. Its outcome, which coincides with MS3 *Creation and organization of Group of Interest*, fully contributed to the definition of a participatory approach to involve and engage citizens and relevant stakeholders in the design and creation of an inclusive C-ITS system. Furthermore, T1.4 task team formulated the Research Questions (RQs) subsequently indagated through the participatory approach developed by the GOI.

Likewise, it is remarkable the connection between D3.1 and T2.1 “Stakeholders’ engagement strategies” and T2.2 “Participatory methods to capture mobility needs and future expectations from CCAM”, and their related deliverables - D2.1 “Engagement guidance for CCAM solutions”, and D2.2 “Participatory methods to capture mobility needs and future expectations from CCAM process”.

Furthermore, D3.1 is also in strict connection with the Task 3.5 which carried out the evaluation of the participatory approach, presented in D3.2 “Evaluation of engagement and data collection activities”. On the other hand, the data collected during the activities described in the present document were analysed and the results presented in D3.3 “Data analysis, enrichment and systematization”, which finally contributed to Task 3.7 *Scaled up impacts on mobility* with quantitative and qualitative data regarding attitudes and

² Realities within the SINFONICA project: the cities of Trikala and Hamburg, the province of Noord-Brabant, and the metropolitan area of West Midlands (defined by project consortium)



expectations towards CCAM, useful to the development of the four context-specific simulation use cases portrayed in D3.4 “CCAM local simulations”.

2. The vision of SINFONICA and the importance of citizens and stakeholders' engagement within the Groups of Interest

2.1 Approach to the Groups of Interest

The SINFONICA project aimed to develop innovative methods and tools to actively engage a wide range of stakeholders in the CCAM ecosystem, including citizens, service providers, and authorities. Its core objective is to understand the needs and concerns of future users, especially those with mobility challenges, through a participatory approach, co-designed and tested with targeted GOI, duly identified in four European regions: Trikala, Hamburg, Noord-Brabant, and the West Midlands.

By directly involving these groups through structured interviews, focus groups and workshops, SINFONICA gathered valuable insights to co-create decision-making tools that support local and regional authorities in planning inclusive, equitable, and sustainable CCAM solutions. The project's activities were piloted across a diverse European network, to ensure that the knowledge generated could be adapted and applied at the local level.

Therefore, citizens and stakeholders played a central role in shaping inclusive, equitable, and effective CCAM solutions. Their importance is highlighted through the project's co-creation framework, which relies heavily on their active involvement and input to guide the development and implementation of CCAM technologies.

Citizens, particularly those with mobility challenges, were recognised as key future users of CCAM and as such they actively contributed to identifying their own needs, concerns, and expectations.

To effectively study CCAM solutions through a co-creation approach, the Consortium' partner UNIMORE developed a detailed **citizen categorisation strategy**. Since no universal model for categorising citizens pre-existed in the literature, the project adopted a multi-criteria framework based on:

1. *Age Groups*: Citizens were divided into five age categories: 18–25, 26–35, 36–45, 46–65, and 66+. Representatives for each age group (e.g., school reps, retirement associations) were selected across the four pilot regions: Trikala, Hamburg, Noord-Brabant, and West Midlands.
2. *Income Levels*: Stakeholders were also classified into low-, medium-, and high-income groups to better understand their habits and perspectives related to wealth.
3. *Access to Public Transport*: Citizens were split into two groups—those with easy access to public transport (typically in city centres) and those living farther away with limited access.

The participatory process established in SINFONICA included the creation of **Focus groups**, which were carried out during the **three rounds of engagement** foreseen in accordance with the guidelines provided by WP2, formerly scheduled as follows:

1. *First Round*: between September and November 2023, for a period of three months.
2. *Second Round*: between January and February 2024, for a period of two months.
3. *Third Round*: between April and May 2024, for a total period of two months

In each GOI, representatives of the citizens were engaged through the formation of nine focus groups. During the 1st Round, four focus groups were conducted in each GOI, categorised by participants' age. In the 2nd Round, three focus groups were held in each GOI, based on income levels. During the 3rd Round, two focus groups were organised in each GOI, according to the type of access to public transport.

Also, five categories of **people with mobility challenges** were identified and included in all the GOI, in accordance with the following definitions:

1. *Elderly*: People aged 66 and over, who are especially vulnerable to social isolation and health issues due to transportation barriers.
2. *People with Cognitive Disabilities*: Individuals with impairments in intellectual and adaptive functioning, including those with conditions like Alzheimer's, dementia, stroke, or traumatic brain injuries.
3. *Digitally Vulnerable People*: Those without access to or who struggle to use information and communication technology, such as computers, smartphones, and the internet.
4. *Gender-related Vulnerabilities*: People affected by gender-based violence, harassment, or unsafe mobility patterns. This category includes individuals of all gender identities, including women, men, transgender, non-binary, and LGBTQIA+ individuals.
5. *Youth*: Individuals between the ages of 18 and 25 who are transitioning from childhood to adulthood, particularly in the context of education and employment.

Additionally, within the co-creation framework developed in T1.4, each GOI identified both the groups of people with mobility challenges to be involved in accordance with their priorities, associating the potential categories with a level of priority classified as *high*, *potential*, or *no priority*.

Besides the five aforementioned categories, at least **two additional categories** of people with mobility challenges have been identified for each GOI, according to its specific characteristics and needs, which could be summarised as follows:

- **Trikala**: People living in rural areas, University students/Young people.
- **Hamburg**: Cyclists' associations, People with physical disabilities.
- **Noord Brabant**: Single parents' families, People living in rural areas.

- **West Midlands:** People with physical disabilities, Low-income people.

During these three rounds, the categories of people with mobility challenges defined above has been involved by means of **interviews** aimed at assessing people needs, desires and concerns toward CCAM. More specifically, a total of 290 interviews among the four GOI were conducted with the related group representatives, which were distributed according to the table below:

Table 1: Distribution of the interviews in the assessment of the groups of people with mobility challenges during the rounds of engagement

Round	Number of interviews	GoI	Total interviews
1st Round (September- November 2023)	5 interviews for each group of people with mobility challenges.	Trikala	35
		Hamburg	35
		Noord Brabant	40
		West Midlands	35
2nd Round (January-February 2024)	3 interviews for each group of people with mobility challenges.	Trikala	21
		Hamburg	21
		Noord Brabant	24
		West Midlands	21
3rd Round (April- May 2024)	2 interviews for each group of people with mobility challenges.	Trikala	14
		Hamburg	14
		Noord Brabant	16
		West Midlands	14
		Total interviews	290

The SINFONICA framework also defined **five main stakeholder user groups** whose perspectives on CCAM were subsequently explored through *engagement activities*. These groups included:

1. *Service Providers* – Public and private entities offering transport and logistics services, such as mobility operators, ride-hailing companies, infrastructure owners, and insurers.
2. *Government/Institutional Entities* – Policymakers, transport authorities, and public agencies managing roads, infrastructure, and emergency services at various administrative levels.
3. *Industry* – Companies providing products and digital services, including automotive manufacturers, telecom providers, AI and ITS solution developers, and data/cloud service operators.
4. *Non-Profit Organizations & Representative Bodies* – Advocacy groups and associations related to mobility, such as cyclist organizations, consumer groups, and trade associations.

5. *Universities & Knowledge Institutions* – Academic and research entities specialising in transport, mobility, and logistics, contributing expert knowledge and insights.

In each of the GOI, three targeted workshops were held with the ecosystem's relevant stakeholders:

- Workshop 1 – A critical assessment of current mobility systems, identifying barriers and opportunities for CCAM based on insights from focus groups and interviews.
- Workshop 2 – A discussion on how CCAM can address mobility needs, gathering expectations, concerns, and desires.
- Workshop 3 – A collaborative session to define requirements for inclusive and accessible CCAM, considering both user needs and the capabilities of industry and policymakers.

Each workshop involved specific stakeholder groups, with mandatory participants defined per topic and one optional group chosen by each GOI.

Citizens and stakeholders were essential to SINFONICA's participatory and co-creative approach, serving as both the beneficiaries and co-designers of CCAM solutions. Their engagement shall ensure the development of mobility systems that will be innovative, equitable, inclusive, and tailored to real societal needs.

2.2 Setting the SINFONICA Framework in collaboration with the Groups of Interest

TUD led the first Work Package aiming to build the theoretical foundation for the SINFONICA project with a strong emphasis on including the research sites. The groups of interest being presented by the representatives of the research sites were included in all subtasks of this work package by being regular members of the biweekly WP1 meetings. With this procedure, the constant involvement of the GOI was ensured. The individual contributions to the tasks are listed below.

Task 'T1.1-Mobility needs and requirements of European citizens', led by TUD, and Task 'T1.2-CCAM vocabulary and stakeholders' needs and requirement for CCAM solutions', led by ICCS provided several overviews of projects that concern CCAM and had a rather theoretical, scientific approach. However, to involve the research sites, they were able to share their previous experiences and projects.

The theoretical framework that was established in T1.1 and being reported in Deliverable 1.1 "Mobility needs and requirements of European citizens", was regularly discussed regarding the requirements and experiences of the research sites via online meetings, and collaboration work via MIRO platform. With this strategy, the interests of different stakeholders being affected by CCAM services, were considered.

Within T1.2, an overview of the needs and requirements of different stakeholders were defined including the help of the research sites. These cover (1) CCAM deployment aspects, (2) developing technology tailored to citizens need and requirements, (3) legal and regulatory aspects of CCAM, (4) financial aspects of CCAM and (5) social aspects of CCAM. All results can be found in Deliverable 1.2 “CCAM vocabulary and stakeholders needs and requirements for CCAM solutions.

Especially, task ‘T1.4 - Definition of the research groups and creation of groups of interest’ was predominantly driven by the research sites, to build up the GOI. It aimed to (1) identify the research groups, (2) create the groups of interest (including people with mobility challenges, citizens representatives and stakeholders) and (3) define the research areas. This was achieved by co-creation processes lead by UNIMORE. Results of this task were published as [milestone report](#) that is published online. Monthly meetings, led by task leader UNIMORE included the constant feedback of the research sites. Descriptions of categories of people with mobility challenges were made, as well as the groups of people with mobility challenges have been identified in the Groups of Interest of Trikala, Hamburg, Noord Brabant and West Midlands, including the Elderly, People with cognitive disabilities, Digital Vulnerable People, Gender-related vulnerable people, Youth, plus different specific categories for each Group of Interest. This process of T1.4 strongly emphasises the co-creation process of SINFONICA. Finally, in T1.4 the different categories of stakeholders have been identified among service providers, government, industry, Non-profit organizations, universities and research institutions. They were later involved in the participatory process (WP3) thanks to the organization of three workshops, that focused on specific categories of stakeholders among the aforementioned fields.

The results of WP1 were very important for building up the methodologies of WP2, doing the research activities in WP3, bringing the information together in the Knowledge Map Explorer of WP4, and the deriving conclusions and recommendations of WP5.

2.3 Choice and overview of the four Group of Interest locations

The SINFONICA GOI were selected due to their geographical, demographical and cultural characteristics, their differences in digital advancements, their experience in managing European projects and their familiarity with CCAM solutions.

2.3.1 Trikala (Greece)

Before the beginning of the project, through its Municipal Developmental Company, e-Trikala, the City of Trikala had already participated in several co-creation mobility projects involving groups such as the elderly, youth, migrants, and residents of poorly connected areas. Past initiatives, like the wheelchair scooter service proposed by a disabled persons’ association and implemented via a sustainable mobility app provided by the SMARTA2 project, demonstrated long-term impact. Trikala has also contributed valuable experience from EU projects like CityMobil2, HARMONY, and SHOW. Notably, the Horizon2020 project *Cities4People* led to the creation of the Citizen Mobility Lab and the Citizens Mobility Kit—tools that promote community engagement and supported SINFONICA activities.



2.3.2 Noord Brabant (NL)

The Province of Noord-Brabant played a key role in SINFONICA, building on its experience from previous projects like FABULOS. They developed an internal "learning agenda" to explore how CCAM can address mobility challenges, especially in rural areas where traditional public transport is limited and sometimes relies on aging volunteer drivers. Already before the start of SINFONICA, the region's focus was on ensuring inclusive CCAM solutions addressing the needs of vulnerable groups who face barriers to full participation in society. Noord-Brabant could also rely on a strong framework for citizen engagement, including a panel of 6,000 residents used for surveys, consultations, and real-life mobility service testing. This panel has been working on tracking tools to monitor travel behaviours. The province also collaborated with an independent passenger advisory network and various citizen organizations representing groups such as the elderly and people with disabilities which were consistently involved in mobility planning and innovation.

Furthermore, in SINFONICA, the Noord-Brabant Group of Interest served as a bridge with the Horizon Europe Move2CCAM project, particularly through the City of Helmond, which was part of both the initiatives. This collaboration help deepen the understanding of user needs and enhanced the societal impact assessment of CCAM solutions.

2.3.3 West Midlands (UK)

West Midlands conducted short-term CCAM trials over the past five years, mainly focusing on technology. It provided insights to understand, according to the citizens and future users, how demonstrations can ensure a starting point for real, long-term implementations: to get this, they used a customer segmentation model dividing the public into 14 groups based on factors like age, income, car access, and public transport use. With reference to public input, the West Midland GOI already had an online panel of around 1,000 people, allowing targeted surveys from demographics and mobility habits to customer-segmented features (socio-economic status, preference for public transport, level of car ownership) for deeper insight into user expectations and concerns.

2.3.4 Hamburg (Germany)

The Free and Hanseatic City of Hamburg is one of Europe's largest cities and at the same time a German state. It has a complex administrative structure with various authorities impacted by the introduction of CCAM. To ensure comprehensive stakeholder involvement, Hamburg's Group of Interest engaged stakeholders from the above-mentioned groups. The Metropolitan Region is a frontrunner and has served as a testbed for CCAM in the past (e.g. HEAT in HafenCity and TaBuLa in Lauenburg) with ongoing research in this field. The opportunities for engagement of groups of people with certain vulnerabilities were manifold, and the experience gained from participating in activities can serve in the city and beyond. With the ITS World Congress in 2021 and the upcoming UITP summits in 2025 and 2027, Hamburg is a model city for new mobility while inclusion plays a major role in future development.

2.4 Engagement strategies and participatory approach evaluation framework

Work Package 2 (WP2) played a central role in the SINFONICA project by developing the participatory strategy used to identify mobility needs and expectations for CCAM among Groups of Interest (GOI) and beyond. The core objective was to actively engage stakeholders (Task 2.1) and to establish a methodological framework for collecting user data through qualitative research methods (Task 2.2). Led by ISINNOVA, WP2 activities were conducted with the continuous involvement of GOI, who were instrumental in tailoring strategies and tools to local contexts.

The key methodology underpinning this process was the co-creation approach, which guided the selection of participant categories for the data collection phase. The engagement strategy was then tested in several rounds from October 2023 to June 2024, with changes made after each round based on what worked and what didn't according to GOI.

Practical guidelines were developed for data collection, comprising interviews, focus groups, and workshops, (see Deliverable D2.2). These were also continuously refined based on feedback from GOI and implementation partners. After each round of data collection, the approach was reassessed and adjusted to better align with local practices and challenges.

Feedback from WP3 showed that the engagement methods worked well. GOI played an important role not only in designing and testing the tools, but also in solving challenges—such as recruiting people from harder-to-reach groups (like older adults, low-income communities, and people with limited digital access, especially in the West Midlands and Noord-Brabant). In some places, like Hamburg, concerns about privacy and audio recordings also had to be addressed. Flexible planning and close cooperation with GOI helped the team deal with time limits and the need to adapt to local conditions.

In the end, it has been created a strong, flexible, and inclusive engagement strategy. The use of qualitative methods led to deep insights that might have been missed with surveys alone. These insights included different attitudes toward CCAM across age groups and hidden barriers that some people face in their daily travel. Most importantly, this approach helped make sure that people from underrepresented groups had a voice in shaping future CCAM solutions.

SINFONICA also showcased the value of community engagement and co-creation, with GOI playing a critical role in shaping data collection tools, interpreting local realities, and building trust with participants.

To ensure the quality, inclusiveness, and effectiveness of this participatory approach, it has been introduced a **comprehensive evaluation framework** (see Deliverable 3.2)., which aimed to assess the *Design and Planning, Implementation, and Results and Impacts phases of the engagement* strategies across the three participatory rounds in each GOI. Using a mixed-method approach—questionnaires, bilateral discussions, and collective reflection sessions—the evaluation captured feedback from GOI representatives, allowing iterative improvements



to the engagement process. Key findings from the evaluation highlighted the importance of tailoring engagement to local contexts, maintaining transparent communication with participants, and creating safe, inclusive environments for participation.

The activities carried out to shaping the SINFONICA strategy to capture the mobility needs of citizens and CCAM challenges, along with the monitoring and evaluation of the engagement and data collection activities in the four groups of interest demonstrated how participatory research in mobility innovation can be systematically assessed, improved, and scaled—ensuring societal readiness, trust, and impact in future CCAM deployment.

3. Stories from the field: the experience of the Groups of Interest in SINFONICA

3.1 Trikala

3.1.1 Activities implemented

In Trikala, several participatory activities were conducted to engage citizens and stakeholders in the SINFONICA project. They used interviews, focus groups, workshops and an on line survey, in order to examine issues such as transport habits, use of technology in transport, motivations behind transport choices, special mobility needs, knowledge/experience of CCAM and future expectations for transport, citizens' attitudes towards connected, automated transport (CCAM), the different levels of automation they would like as well as the priorities & features they would choose for transport services in general.

These included:

- 70 interviews across 9 categories of vulnerable people.
- 9 focus groups with a total of 50 participants, representing diverse demographics and urban/rural populations. (4 focus groups of different age group, 3 focus groups of different income and 2 focus groups of rural and urban area citizens)
- workshops with stakeholders such as, public transport operators, mobility providers, transport authorities, road authorities, municipality authorities, IT solution providers, driver's associations, cyclists, NGOs etc (all workshops were co-organised with relevant projects like IN2CCAM and SHOW)
- An online survey which gathered 508 responses nationwide.

Overall, targeted groups of interest included the elderly, mobility-challenged citizens, digitally vulnerable individuals, women, young people, rural residents, and university students.

Tailored engagement approaches ensured inclusivity (e.g., visits to elderly centers, partnerships with youth councils, local NGOs, and universities).

Lastly all workshops were designed to be interactive and thematic, addressing current findings and promoting co-creation of CCAM solutions.

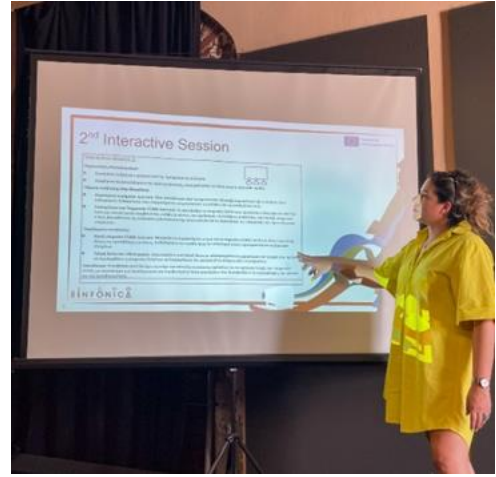


Figure 1: Workshop held in Trikala, Greece, 2024

3.1.2 Main results

The engagement process in Trikala produced a wealth of insights into both citizen perceptions and stakeholder priorities concerning Connected, Cooperative, and Automated Mobility (CCAM). The findings reveal a city with high awareness of smart mobility technologies but also a clear gap between awareness and active adoption.

1. High awareness, limited adoption: One of the most notable findings is that more than half of the citizens were aware of existing CCAM initiatives in Trikala, particularly the automated shuttle services piloted under projects like CITYMOBIL2. This awareness was largely due to strong local and international media coverage and the city's history as a testbed for smart mobility solutions. However, while awareness was relatively high, actual use of these services remained limited. Many citizens expressed familiarity but had never tried them, highlighting a disconnect between knowledge and behavioural change.

2. Mixed emotions: interest vs. scepticism. Citizens generally responded to CCAM with a combination of curiosity, interest, and scepticism. While many expressed excitement about the possibilities of automation and digital transformation, concerns around safety, reliability, and the unknown consequences of automation were common. These emotions were echoed

by stakeholders, who correctly predicted the dominant feelings reflected in the public survey and focus group data.

3. **Diverse prioritization of CCAM values:** When asked to prioritize values in future CCAM services, both citizens and stakeholders consistently highlighted the "4 As": Accessibility, Affordability, Availability, and Acceptability. However, there was no clear consensus on the order of importance — reflecting the complexity and diversity of user needs. For instance, while elderly participants emphasised ease of use and safety, younger participants were more focused on affordability and digital integration.

4. **Desire for inclusive and tailored services:** Focus groups and workshops underlined that one-size-fits-all solutions are inadequate. Vulnerable groups — such as the elderly, people with disabilities, and digitally excluded individuals — require CCAM services to be designed with specific adaptations. Participants articulated a strong desire for safe, simple, and low-cost services, as well as clear information on how to use them.

5. **Trust as a critical enabler:** A recurring theme was the importance of trust — in the technology, in service providers, and in regulatory institutions. Participants emphasised the need for clear safety protocols, a transparent legal framework, and ethical standards to govern automated mobility. Citizens indicated they would be more likely to use CCAM services if they were convinced that emergency procedures and liability were clearly addressed.

6. **Systemic and structural challenges identified:** Stakeholders and citizens alike recognised that system-level changes are required for CCAM to flourish. This includes integrating CCAM into existing public transport systems, addressing regulatory gaps, and ensuring the digital infrastructure is in place. Concerns were also raised about the potential negative impact on jobs in sectors like taxi and bus driving, with some stakeholders proposing innovative models where drivers transition into remote monitoring roles.

7. **Encouraging policy and innovation synergy:** Finally, the engagement confirmed that Trikala's ongoing involvement in European smart city initiatives (e.g., 100 Climate Neutral Cities, IN2CCAM, SHOW) is an asset. These projects complement each other and enable the city to build a cumulative understanding of mobility challenges and solutions. The synergy between local innovation efforts and broader EU initiatives was perceived positively by both citizens and stakeholders.

3.1.3 Success stories

1. **Strong synergy with ongoing smart mobility projects:** One of the most notable success stories from Trikala is the strategic alignment of SINFONICA with existing and ongoing mobility projects such as IN2CCAM, SMARTA2, ELABORATOR and SHOW. By organising joint events and workshops, the Trikala team leveraged resources and shared objectives to create broader engagement and deeper impact.

For example:



- The 2nd SINFONICA workshop was co-hosted with IN2CCAM, giving stakeholders a more integrated view of how local smart mobility applications (like the SMARTA2 app) are evolving.
- The 3rd workshop coincided with the final event of the SHOW project, drawing high-level participants from ministries, universities, IT companies, and mobility manufacturers. This greatly expanded SINFONICA's visibility and reach.

This approach allowed Trikala to present CCAM as part of a long-term strategic vision, rather than a one-off pilot, increasing stakeholder buy-in.

2. Empowerment of local stakeholders to act: Several stakeholders expressed intent to act upon the insights gathered from the SINFONICA activities:

- The public bus company acknowledged user criticism during workshops and committed to using SINFONICA data to restructure their schedules and improve accessibility, particularly for rural areas and people with mobility challenges.
- The local Development Company, which oversees the smart parking app and public parking spaces, requested the focus group results to inform the redesign of digital services, aiming to better address real user needs.

This demonstrates that SINFONICA didn't just inform but activated local actors to take responsibility for improving mobility systems.

3. Activation and reinforcement of the local mobility community: Trikala already had an established "mobility community" due to its previous involvement in smart mobility pilots. SINFONICA successfully reactivated and re-engaged this community, drawing participation from a diverse array of stakeholders including:

- Cyclist associations
- Youth councils
- Local NGOs supporting the elderly and people with disabilities
- Technology startups and app developers

This continued engagement across multiple years and projects has transformed the mobility community into a locally grounded ecosystem, capable of co-designing and influencing transport policy.

4. Inclusion of marginalised voices: A powerful outcome of the project was the real inclusion of hard-to-reach groups, such as:

- Elderly citizens, who were interviewed in familiar community centres and assisted in filling surveys
- People with disabilities, who participated in home interviews facilitated through NGOs
- Digitally excluded individuals, who were engaged through offline means rather than being excluded due to lack of internet skills

These tailored approaches ensured that the perspectives of often-overlooked citizens were documented and elevated, improving the inclusivity of CCAM discussions.

5. Productive cross-sectoral dialogue: Another success was the productive dialogue achieved between user groups and technology developers. For instance, during the third workshop:

- Participants from vulnerable user groups directly discussed their needs with automobile suppliers and ITS developers.
- A shared understanding emerged about designing CCAM features for specific groups (e.g., a panic button for the elderly, affordability mechanisms for students, or remote driver models to avoid job loss among professional drivers).

This cross-sectoral exchange helped to co-create more socially acceptable and user-focused innovation pathways, moving from theory to potential implementation.

These success stories illustrate how SINFONICA in Trikala not only generated valuable data but also fostered momentum, accountability, and forward movement across the entire local mobility ecosystem.

3.1.4 Lessons learned

1. Human-centric facilitation is essential: One of the strongest takeaways from Trikala's experience is the importance of having qualified, empathetic facilitators to lead participatory activities. The city noted that interviewers and moderators with a background in social sciences or community engagement were far more effective at managing diverse groups, building trust, and eliciting genuine responses. Successful facilitation required:

- Emotional intelligence and the ability to read group dynamics
- Skills to moderate discussions fairly, ensuring that quieter voices (e.g., elderly, mobility-impaired) were heard
- Capacity to handle sensitive topics, like automation's impact on employment or fears around surveillance

→ Key Insight: *The quality of participation depends heavily on the quality of the facilitator.*

2. One size does not fit all: Trikala's engagement strategy underscored the need to tailor methods and settings to the characteristics of each Group of Interest. This included:

- Conducting home interviews for elderly and mobility-challenged citizens
- Using youth councils and universities to reach younger participants
- Adapting workshop materials and tools to the digital maturity and mobility habits of each audience

Additionally, Trikala found that even within a single group, cultural and psychological differences (e.g., rural vs. urban elderly) could influence communication styles, openness, and perceived barriers.

→ Key Insight: *Inclusivity is not only about who you reach but how you reach them.*

3. Representation must be actively managed: Achieving demographic and experiential balance across focus groups and surveys was a constant challenge. It was not enough to send out general invitations; instead, quota-based monitoring and targeted outreach were needed to ensure equal participation across gender, age, income levels, and geographical location (urban vs rural). For example:

- Weekly reporting on survey demographics helped the team adjust dissemination tactics in real time.

- Open calls were supplemented by partnering with local NGOs to reach underrepresented groups.

→ Key Insight: *Equitable representation requires planning, flexibility, and persistence.*

4. Trust is built, not assumed: Some citizens — particularly older or digitally vulnerable people — initially showed hesitancy or distrust toward engagement activities. Common concerns included data privacy, the relevance of their input, and skepticism about whether their opinions would be taken seriously.

To counter this:

- Facilitators took time to explain the process, goals, and confidentiality policies in plain language
- They emphasised why each person’s input mattered, particularly in shaping services that affect their daily mobility

In many cases, this personalised approach led to higher quality and more honest feedback.

→ Key Insight: *Spending extra time on relationship-building pays off in better engagement outcomes.*

5. Flexibility is a critical success factor: Unpredictable challenges — like the catastrophic flood in September 2023 — tested the resilience of the engagement process. Despite delays, Trikala was able to stay on track by:

- Activating its existing “mobility community” for rapid coordination
- Rescheduling activities while maintaining participant momentum
- Being adaptable in how workshops and surveys were delivered (e.g., hybrid formats, in-person visits)

This adaptability extended to workshop content as well. For instance, moderators were trained to adjust discussion flows on the spot depending on group dynamics and participant energy.

→ Key Insight: *Successful engagement requires operational flexibility and real-time problem-solving.*

6. Group dynamics can shape outcomes: During focus groups, Trikala observed that certain patterns consistently emerged:

- Elderly participants tended to conform to group consensus, requiring facilitators to gently encourage personal views.
- Young participants were more vocal and individualistic, often leading to debates rather than convergence.
- In mixed groups, dominant personalities sometimes skewed the conversation unless well-managed.

Moderators had to learn how to steer discussions to ensure equal participation and prevent groupthink or derailment.

→ Key Insight: *Understanding and managing group psychology is crucial for extracting meaningful insights.*

7. Engagement as a cultural practice: Finally, one of the most profound lessons is that citizen engagement is not a one-off event but a long-term cultural process. Trikala's long-standing involvement in EU projects and participatory mobility planning (via platforms like Smart Trikala) helped normalise civic involvement in innovation.

As a result, citizens and stakeholders alike were more receptive to engaging with complex topics like CCAM. The city now sees participatory design as a core component of public service development, not just a box-ticking exercise for EU compliance.

→ Key Insight: *Embedding participation in local governance builds long-term resilience and innovation capacity.*

3.1.5 Conclusions and Outlook

Here the main conclusions from the implementation of the SINFONICA activities and actionable insights for Trikala are resumed:

Design for inclusivity from the start: CCAM services must be built with accessibility, affordability, and ease of use as core design principles—not add-ons. Engage vulnerable groups early to avoid exclusion by design.

Build trust through transparency: People are more willing to accept automation when safety measures, data privacy, and liability protocols are clear and visible. Communicate these elements simply and often.

Invest in public education and digital literacy: Awareness does not equal understanding. Public information campaigns and hands-on demos can reduce scepticism and help people see CCAM as useful and safe.

Ensure multi-stakeholder collaboration: Transport operators, app developers, city authorities, and user groups must co-create services. This collaboration builds ownership, reduces fragmentation, and improves integration with existing systems.

Develop a strong legal and ethical framework: Policy and regulation must keep pace with technology. Clear rules on safety, accountability, job transitions, and data use are essential for public acceptance and fair deployment.

Use engagement as a long-term governance tool: Embed participatory processes into city governance structures. Continuous feedback loops—beyond the life of a single project—help cities stay responsive and adaptive.

The City of Trikala, after the conclusion of the project, will:

- Leverage outcomes from SINFONICA to inform local policies and update the city's Sustainable Urban Mobility Plan (SUMP).
- Continue engagement activities through ongoing projects like IN2CCAM and local platforms such as Smart Trikala.
- Use citizen feedback to guide future pilots and optimise integration of CCAM into existing services (e.g., SMARTA2 app).
- Advocate for national-level policies on liability, employment transition, and digital infrastructure to support CCAM adoption.

3.2 Noord Brabant

3.2.1 Activities implemented

In Noord-Brabant, various participatory activities were carried out to involve citizens and stakeholders from different disciplines in the SINFONICA project. For example, we organised interviews, focus groups, workshops and an online survey to investigate topics such as transport habits, use of technology in transport, motivations behind transport choices, specific mobility needs, knowledge/experience with CCAM and future expectations for transport, the attitude of citizens towards CCAM, specifically aimed at ensuring that everyone can continue to use it. With special attention for people from vulnerable target groups, such as the elderly, people with disabilities and digital illiterates.

In total, the following numbers of activities were organised:

80 interviews with 8 categories of vulnerable target groups. For Noord-Brabant specifically, these were single-parent families, migrants and people from rural areas.

- 9 focus groups in various compositions. For example, there were 4 focus groups with different age categories, there were 3 focus groups with a division based on income and there were 2 focus groups based on the proximity of public transport (city / countryside).
- 3 workshops with stakeholders such as public transport companies, mobility providers, transport authorities, road managers, provincial council members, consultancies, travel associations and representative organisations for cyclists and motorists.
- An online survey completed by 544 Dutch respondents.



Figure 2: Workshop with stakeholders held in Noord Brabant (NL), March 2024

A workshop was also organised in January 2025, during which the local group of followers received an update on the SINFONICA project, and the Knowledge Map Explorer was tested. The composition of the group of participants was largely the same as that of the workshops described above.



Figure 3: Workshop held in Noord Brabant (NL) with the local Group of Followers, January 2025

Colleagues in Noord-Brabant working on mobility were twice updated on the project, raising awareness of CCAM and linking it to related topics like road safety.

3.2.2 Main results

The participation process in Noord-Brabant has yielded many new insights and a new network of organisations that want to be involved in the future implementation of CCAM in public transport in Noord-Brabant.

By organising the workshops, stakeholders from various levels have joined the SINFONICA project and we now have more sessions with these stakeholders about CCAM in our province. Bringing these different actors together is a major gain for us as a province.

If we look at what the interviews and focus groups with residents of Noord-Brabant have yielded, we can rightly say that people are not nearly as sceptical about CCAM as we had expected in advance. Many people in Brabant are negative about public transport. This has to do with the high-ticket prices and the cancellation of buses through smaller villages. The trend is that public transport is only getting worse and never better.

We were afraid in advance that people would not appreciate this innovation. There is no longer a driver for information, and it can also be seen as a cutback. But after proper information, many people still saw CCAM in public transport as a positive opportunity. Perhaps this will make public transport easier to drive in places where it does not (anymore) drive.

People see opportunities instead of threats. We also incorporate these insights into our current accessibility policy for public transport. It has given us better insights into what people



from vulnerable target groups need to be able to travel pleasantly and safely by public transport. Although the focus here was on applications aimed at CCAM-driven vehicles, there are also recommendations that we can already incorporate into our policy, such as an app that allows people to indicate at which stop they want to get off via their phone instead of pressing the stop button on the bus.

Another benefit is people's curiosity and interest in this subject. Many people have never been in a self-driving vehicle but are curious about it. This is mainly because this phenomenon is new to many people. But it is also because more and more people are realising that technological developments can help us move forward. For example, it can help us solve the staff shortage in public transport.

The last most important result is that the results of the various studies have given us reason to start a self-driving shuttle at the Efteling amusement park in the middle of our province. This amusement park has various holiday parks, which means that various vulnerable target groups as described in our project will also be potential users of the shuttle. This allows us to test the results of the SINFONICA project with reality. This will hopefully provide additional substantiation to optimise our accessibility policy regarding (self-driving) public transport, among other things.

3.2.3 Success stories

There are two success stories to share based on all the activities that have been organised within the framework of the SINFONICA project. On the one hand, the local network that has been set up and on the other hand, the improvement that it has delivered regarding our accessibility policy in public transport.

The local network that has been created by organising the workshops has brought us a lot. Often, CCAM-related matters were fragmented throughout the organisation and now this has brought together colleagues, organisations and politics. The different fields of knowledge ensure interesting knowledge sharing and insights and visions in the field of CCAM and its implementation. In particular, the social aspects of the implementation of CCAM have enormous added value for this network. Because it is ultimately the traveller who must experience it as a positive progress. Input from the cyclists' association, but also from traveller organisations provide very interesting insights that go beyond the technical side. These two worlds are brought together in this Brabant network.

When we talk about this with other PTAs, they are very interested in this, because these networks do not yet exist elsewhere in the Netherlands. It is quite unique to have politics, (technical) developers and travellers and other road users together in one network. As mentioned, this provides input from various angles, but also different ways of thinking among the various stakeholders.

This network will definitely be maintained after completion of the SINFONICA project. And perhaps we can also use this network for other (technological) developments in public transport to test matters.

The other success story is the input it has provided with regard to our accessibility policy for public transport. During the focus groups and in particular the interviews, we spoke to various vulnerable target groups that use public transport. Although the focus of these discussions was mainly on the introduction of CCAM in public transport, participants also mentioned matters that could be improved in the current public transport. Below are two examples of these that we are now working on implementing in the current accessibility policy.

1. The walking route in the bus. Normally, people get on the bus at the front with the driver and when they get off, they do so at the back door. Unfortunately, this is not always adhered to. Sometimes a bus is very full and people get off at the front door for convenience. But for people with a visual impairment, this is undesirable. They get confused when people do not adhere to the agreements made. That is why we want to agree with the current public transport companies that the bus drivers will enforce this measure. We also want to draw extra attention to this through a campaign. So that people get on at the front again and only get off at the back door.

2. The stop button on the bus. When you want to get off, you press the stop button on the bus. But this stop button is not always easy for people with a visual impairment to find. Sometimes they do not know exactly where they are driving and therefore they do not know exactly when to press the stop button. That is why we want to develop an app that people can use to indicate at which stop they have to get off. The driver sees this on his display and can then stop at the correct stop. In addition, we want to monitor more closely that the announcement system at the stops works, so that everyone can hear what the next stop is.

3.2.4 Lessons learned

Approach organisations that work with people from your target group. As mentioned above, we interviewed people from 8 different target groups in Noord-Brabant. It was not always easy to find enough participants from each target group. Ultimately, it helped to contact organisations that work for those target groups. In this way, we found enough participants from each target group.

Find people in their own environment. The informal setting makes for a pleasant conversation and the participant feels at ease. During the research, we noticed that interviewees spoke more freely when the interview was conducted in an environment that was familiar to them. Talking to a complete stranger about your disability and travelling by (self-driving) public transport can be experienced as a barrier. By sitting in a familiar setting, the participant quickly feels at ease.

Bring photos or videos of concepts that people are unfamiliar with. This helps them to understand it more quickly and therefore answer questions more easily. Not all participants in the study were familiar with the phenomenon of self-driving vehicles, let alone self-driving public transport. It therefore helped enormously to show images and videos of these concepts. This allowed the participants to form a better picture of what a CCAM vehicle entails. This obviously did not help people with a visual impairment, but for them the interviewer took the time to explain everything in detail, so that they too could form a picture.



Inform participants about what we do with the information collected. And also involve/inform them about the continuation of the project. This not only ensures transparency, but also more involvement of participants. For example, we are also going to inform them about the self-driving shuttle at the Efteling. Who knows, they might want to try it out and we will also ask them for feedback.

Do not give digital illiterates a gift voucher that can only be spent online. We unfortunately made this mistake, but fortunately we were able to correct it in time by purchasing other gift vouchers for this target group.

To keep your network of stakeholders together, it is good to organise a meeting every now and then with an informal drink or lunch. This ensures that people get to know each other better and can also find each other outside of the network meetings.

3.2.5 Conclusions and Outlook

CCAM services are new and therefore the ideal opportunity exists to build fully inclusive vehicles from the start. Through a project like SINFONICA we gain the insights that are needed for this. The advice is to continue this way of working and to involve vulnerable travellers in the developments around the CCAM services in addition to regular travellers.

Involve (local) politics in this process in good time. Ultimately, you need politics to get rules and legislation in place. By involving them from the start in the development of CCAM in public transport, you can create more political understanding, and you can also implement their wishes more easily.

Ensure that public transport is accessible to everyone. In addition to physical accessibility, also in terms of affordability and understandable travel information. In fact, this should already be the case for current public transport, but when technology becomes more dominant and human assistance fades into the background, there is a risk that these two components will be forgotten. Be alert to this.

A final recommendation is that you do not have to constantly reinvent the wheel. With this we want to indicate that many similar developments are already underway that take into account certain things such as inclusivity. Just adopt that knowledge if it is comparable and applicable to CCAM services. That saves unnecessary research and therefore delay.

The local network will be actively maintained. A local final event will be organised in autumn 2025 to present the final results of the SINFONICA project. The deployment of a self-driving shuttle at the Efteling will serve to test the project's research outcomes in a real-world setting. Participation in the Interreg Europe project *Next Ride* supports the exploration of the regulatory and legislative frameworks necessary to enable self-driving public transport within the province, as well as the identification of policy areas that may require revision. Work is also underway on an updated accessibility policy for public transport, aiming to integrate as much collected input as possible to ensure that, with the introduction of CCAM, public transport remains inclusive and accessible to all.

3.3 West Midlands

3.3.1 Activities implemented

The West Midlands region, as with the other three Groups of Interest, conducted several participatory activities, in line with the specifications in the project. This was achieved utilising a series of interviews, focus groups and workshops. A variety of participants and stakeholders were involved to discuss and elaborate on mobility behaviour, barriers and needs regarding mobility and expectations for mobility services including CCAM.

The following participatory activities took place:

- 69 interviews involving citizens with different needs regarding mobility, with 7 categories involved. Apart from the 5 categories common for all the GOI (Elderly, cognitive disabilities, digital vulnerable people, gender-related vulnerabilities, youth), these additional categories were involved in West Midlands GOI: people with physical disabilities and Low-income people.
- 9 focus groups with a total number of 73 participants, in which people from different demographic and socioeconomic backgrounds were involved.
- 3 workshops with various stakeholders, e.g. public transport operators, mobility providers, local authorities, research institutes, CCAM OEMs, accessible mobility providers, C-ITS providers.



Figure 4: One of the Workshops held in West Midlands (UK), 2024

- An online survey which gathered 513 UK participants with 506 from the West Midlands.

- In the West Midlands, the interviews and focus groups were held at different locations and with different approaches, which was particularly required when interviewing digitally vulnerable residents who were hard to reach using our traditional methods.
- Through interviews and focus groups, we gained a deeper understanding of the mobility challenges impacting vulnerable populations and explored how current digital tools could encourage greater inclusivity. While some participants expressed concerns about new forms of mobility, they valued the opportunity to articulate their views within a supportive environment.

3.3.2 Main results

Relationship with technology

Most participants reported a high level of digital confidence, particularly in the context of journey planning. Travel apps were widely used, with Google Maps being cited as the most trusted and frequently accessed tool. However, the Transport for West Midlands (TfWM) app received criticism for its usability. Older participants and individuals with limited access to advanced mobile technology expressed greater difficulty when required to adapt travel plans in real time while in transit.

Trust in technology was generally pragmatic. Participants indicated a willingness to use digital tools they are familiar with—such as banking apps, Uber, and GPS systems—but were cautious about sharing personal data. Data privacy emerged as a concern, with individuals avoiding platforms perceived to collect unnecessary information or engage in marketing-driven data use.

Travel habits and perceived limitations

The sample included a diverse mix of transport users, though the majority had access to a private car. Car users, as well as pedestrians and cyclists, typically did not feel restricted in their travel options. In contrast, public transport, particularly buses, was less frequently chosen, and mainly used out of necessity rather than preference.

Limitations were most commonly associated with bus services, including irregular schedules, cancellations, limited operating hours, and the need to change modes during a single journey. Rail and tram options were generally preferred over buses, especially when they helped avoid traffic congestion. The lack of door-to-door service was also cited as a barrier to public transport use.

Awareness of local CCAM examples

Awareness of local Connected, Cooperative, and Automated Mobility (CCAM) initiatives in the West Midlands was limited. Some confusion existed, with participants mistakenly associating CCAM with guided transport systems at airports or demand-responsive transport (DRT) services in other UK cities like London.

Nevertheless, the concept of CCAM was broadly understood in theory. Participants were familiar with international examples such as automated vehicles in the United States, truck

platooning, or intelligent traffic systems. When asked to describe CCAM, they used a wide range of terms—both positive and negative—including: *automation, cautious, creepy, dangerous, excited, hopeful, misguided, murder, safety concerns, sceptical, unsure, and worried.*

The "Four A's" Framework

Participants evaluated future CCAM services using the "Four A's" framework—Accessibility, Affordability, Availability, and Acceptability:

- Acceptability: Safety and security were overwhelmingly cited as the most important factors.
- Accessibility: Services requiring minimal technological interaction were preferred, particularly by digitally vulnerable users.
- Affordability: The majority of participants emphasised the need for low or capped fares.
- Availability: Opinions varied, though “reachability” (the ability to connect to desired locations) was slightly prioritised.

Importantly, many respondents found it difficult to rank these dimensions, noting that all four are essential and interdependent. A recurring theme was that a successful CCAM system must address all aspects equally, without compromising one to favour another.

3.3.3 Success stories

The West Midlands is rapidly establishing itself as a leading hub for Connected & Automated Mobility (CAM) in the UK, driven by a series of innovative projects demonstrating the region's commitment to future transport solutions. These initiatives are not only pushing technological boundaries but also focusing on practical implementation, public acceptance, and economic growth. One significant endeavour is the [Blythe & Rural Automated Vehicles Operations \(BRAVO\)](#) study. Completed in November 2024, BRAVO specifically investigated the feasibility of operating a CAM service along the M42 between Blythe Valley Park and Birmingham International Rail Station. The study delved into critical aspects such as safe motorway integration for CAM vehicles, on-board passenger safety, public perception of CAM services, and the cost-demand dynamics of such a route. The insights from BRAVO are crucial for informing future CAM deployments, particularly those involving strategic road networks, and contribute to the understanding needed for scaling automated mobility nationwide.

Another key project is the [East Birmingham to North Solihull \(EBNS\) Automated Shuttle Feasibility Study](#). Concluded in November 2023, this study, funded by the Centre for Connected Autonomous Vehicle (CCAV), assessed the operational feasibility of an automated transport system along a complex route from Digbeth in East Birmingham to Birmingham International Rail Station. The study meticulously examined how CAM vehicles could operate safely in mixed traffic without inconveniencing local residents, ensuring on-board passenger safety, gauging public views, and analysing costs and demand. With 11 of 21 feasibility



questions assessed as 'Green' and 10 as 'Amber' (with no 'Red' ratings), the study provided a strong foundation for the future implementation of such services in urban and suburban environments.

The [Solihull and Coventry Automated Links Evolution \(SCALE\)](#) project exemplifies the region's hands-on approach to CAM. This collaborative initiative, led by Solihull Council, aims to deeply understand the role of self-driving vehicles in the future transport landscape. SCALE involves a fleet of three electric self-driving shuttles, manufactured by Ohmio, ferrying passengers along a 7km route connecting Birmingham International rail station, the NEC, and Birmingham Business Park. Building on earlier successful passenger trials in Solihull (which became the first local authority to purchase its own autonomous shuttle in 2021), SCALE is specifically addressing the commercial viability of self-driving operations, passenger experience, and crucial operational factors like insurance and maintenance. The project, which is set to run until at least June 2025, is generating invaluable real-world data and experience that will inform future rollouts across the region and beyond.

Finally, the [Cultural Road](#) project contributes a vital human-centric dimension to CAM development. While a broader European initiative, its principles are highly relevant to the West Midlands' approach. Cultural Road focuses on establishing new guidelines for the equitable and effective deployment of Cooperative, Connected and Automated Mobility (CCAM) services, taking into account cultural and geographical diversity. It champions a unique bottom-up participatory approach, involving all stakeholders, including citizens. The project's "Five-Pointed Star Rating System" assesses mobility equity based on five key pillars: inclusivity, acceptance, network optimisation, safety, and psychological factors. This holistic approach ensures that technological advancements are aligned with societal needs and public trust, a critical success factor for the widespread adoption of CAM.

Together, and alongside the work that has been done with SINFONICA, these projects demonstrate the West Midlands' comprehensive strategy for CAM development, spanning from large-scale feasibility studies and real-world commercial trials to essential considerations of public perception and equitable deployment. This integrated effort positions the region at the forefront of the autonomous transport revolution, promising safer, more efficient, and inclusive mobility for the future.

3.3.4 Lessons learned

The West Midlands can draw significant lessons from the SINFONICA project, particularly in encouraging effective and inclusive engagement for future mobility initiatives, especially those involving complex concepts like Connected, Cooperative, and Automated Mobility (CCAM).

Prioritising human-centric engagement

A key takeaway is the absolute necessity of a human-centric approach to engagement. This means more than just gathering feedback; it's about building trust and understanding. The West Midlands should invest in highly-skilled facilitators with strong emotional intelligence and a background in social sciences. These individuals can navigate diverse group dynamics, ensure all voices are heard – especially those of vulnerable groups – and address sensitive



topics with empathy. For example, when discussing the impact of automation on employment or privacy concerns, an empathetic facilitator can foster a more open and honest dialogue.

Tailoring engagement strategies

The project highlighted the importance of adapting engagement methods to different target groups. For the West Midlands, this could mean conducting interviews in familiar, informal settings for elderly or mobility-challenged citizens, or leveraging existing youth councils and universities to reach younger demographics. When introducing abstract concepts like self-driving vehicles, visual aids and videos are crucial. For those with visual impairments, dedicated time for detailed verbal explanations is essential to ensure comprehension. Furthermore, acknowledging and addressing **digital literacy** is vital; offering non-digital alternatives for incentives, like physical gift vouchers, avoids inadvertently excluding participants.

Building and maintaining networks

Recruitment can be challenging, especially without an established network. The West Midlands has proactively forged strong relationships with organisations that work directly with target groups, such as disability associations or community outreach programs. This not only streamlines recruitment but also ensures diverse representation. To maintain these valuable networks, regular, informal gatherings like lunches or drinks can foster stronger relationships and encourage collaboration beyond formal project meetings.

Transparency and trust

Finally, transparency builds trust. Participants should be clearly informed about how their feedback will be used and how it contributes to the project's continuation. This ongoing communication, perhaps including updates on pilot projects or opportunities to experience new services, fosters greater involvement and a sense of ownership among participants. By embedding citizen participation as a core component of public service development, rather than a mere compliance exercise, the West Midlands can cultivate a long-term culture of innovation and resilience.

3.3.5 Conclusions and Outlook

The West Midlands stands at a pivotal juncture for CCAM, with key insights from SINFONICA underscoring a crucial human-centric approach. The region's conclusions point towards a need for **empathetic, skilled facilitation** in all engagement activities, ensuring that diverse voices, especially those of vulnerable groups, are actively sought and heard in familiar settings. This involves the adept use of visual aids for complex CCAM concepts and a keen awareness of digital literacy, ensuring incentives are inclusive. The upcoming **bus franchising** presents a significant opportunity to integrate these learnings, allowing the West Midlands to build and leverage strong, transparent networks with community organizations. This strategic shift can enable a more coordinated and effective recruitment of participants for future CCAM trials and services, embedding public involvement from the outset. Furthermore, hosting the **ITS World Congress in Birmingham in 2027** serves as a vital milestone. It offers an unparalleled



platform to showcase the region's commitment to inclusive CCAM development, demonstrating how feedback shapes tangible solutions. This global event can act as a catalyst, reinforcing the importance of continuous, transparent engagement and solidifying citizen participation as a core cultural practice in the West Midlands' journey towards intelligent and sustainable mobility.

3.4 Hamburg

3.4.1 Activities implemented

In Hamburg, as in the other three Groups of Interest, several participatory activities have been conducted, according to the specifications in the project. In a series of interviews, focus groups and workshops a variety of participants and stakeholders has been involved to discuss and elaborate on mobility behaviour, barriers and needs regarding mobility and expectations for mobility services including CCAM.

The following participatory activities took place:

- 65 interviews involving citizens with different needs regarding mobility, with *7 categories involved. Apart from the 5 categories common for all the GOI (Elderly, cognitive disabilities, digital vulnerable people, gender-related vulnerabilities, youth), these additional categories were involved in West Midlands GOI: people with physical disabilities and Low-income people.*
- 7 focus groups with a total number of 47 participants, in which people from different demographic and sociographic backgrounds were involved;
- 3 workshops with various stakeholders, e.g. public transport operators, mobility providers, municipality authorities, research institutes, cyclists' association, NGOs, C-ITS providers;
- An online survey which gathered over 870 responses nationwide.

In Hamburg, the interviews and focus groups in particular were held at different locations and with different approaches in order to create an interesting and appealing space for exchange and discussion for as many people as possible.



Figure 5: Guest contribution at a workshop on CCAM solutions for people with visual impairments (SharedGuideDog project of the Hamburg university of applied sciences)



Figure 6: Implementation of a joint focus group with the Hamburg transport association hvv

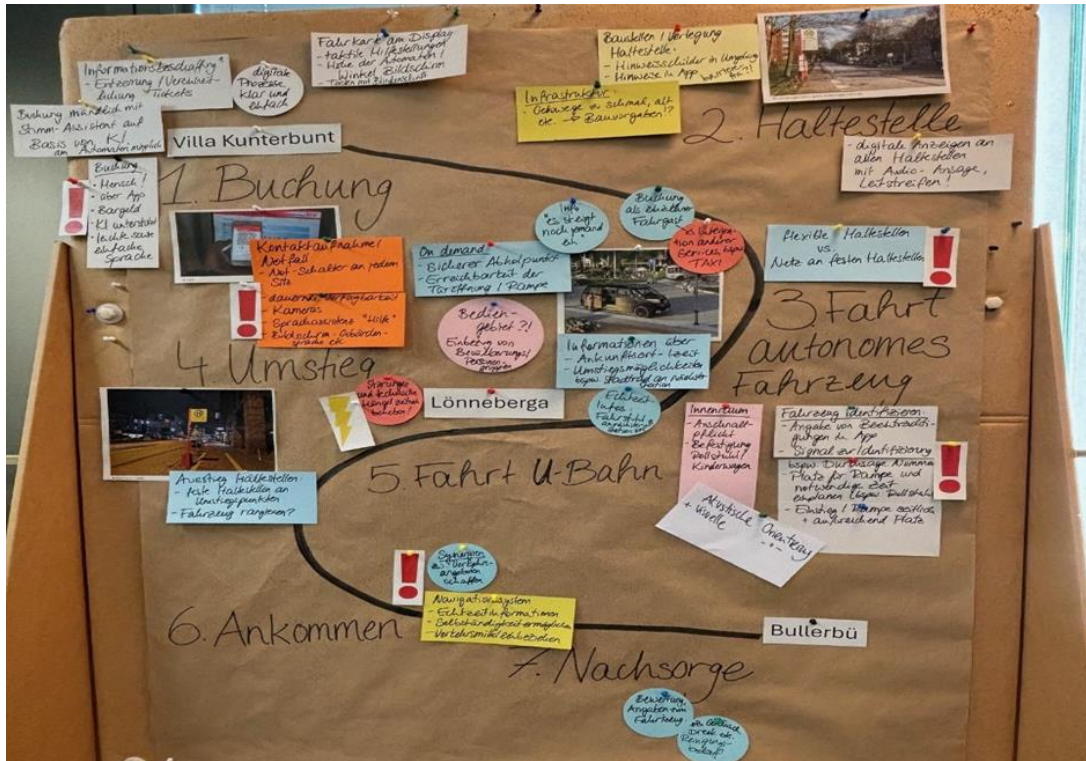


Figure 7: Development of a customer journey in the third stakeholder workshop

The interviews and focus groups provided deeper insights into the challenges faced by vulnerable groups and the potential of existing digital tools to improve inclusiveness in mobility. Despite some concerns and reservations against unknown forms of mobility, participants appreciated the opportunity to voice their views in a supportive environment.

The workshops provided a good atmosphere for stakeholders to present and discuss various contents on the topic of CCAM, but also to network and build relations with various stakeholders related to mobility in Hamburg.

3.4.2 Main results

The various participation formats conducted in Hamburg have provided a wide range of data and information and given valuable insights for the questions posed. Although many of the people and stakeholders involved are open to the topic of CCAM, there are some reservations and barriers that need to be taken into account for the successful introduction and integration of future CCAM services in Hamburg.

Accessibility

The topic of accessibility was frequently discussed in all participation formats. The focus was not only on physical accessibility, but also in particular on accessibility with regard to the use of digital devices and systems. When integrating new CCAM services, the entire customer journey must be taken into account. For example, a service should have physical and virtual stops in order to meet the different needs of users as well as possible.

Trust in CCAM

Fears and insecurities of potential users must be considered at an early stage and allayed, for example through information events. In addition, it is sensible to introduce future users to new services in the context of training sessions or courses. This applies in particular to older people and people with physical or cognitive impairments. Trust in CCAM services can be significantly increased if compliance with technical standards and guidelines is clearly communicated. In participation formats, it was also expressed that a public institution appears more trustworthy as a service provider than a commercially operating company.

Data privacy

In the participation formats held in Hamburg, the issue of data protection was frequently raised. Some potential users fear excessive surveillance and non-transparent handling of the data collected, e.g. via the monitoring of vehicle interiors with the aid of cameras. Here too, transparent handling of the collected data is important.

CCAM services for real needs

In the future, a needs analysis should be carried out to ensure the sensible integration of CCAM services into urban public transport. The future service should be orientated towards actual demand and be based on a target group analysis. Cities and municipalities should lead the way here and support the integration of new services.

3.4.3 Success stories

The interviews as well as the focus groups offered a good opportunity to inform citizens about the topic of CCAM and the related projects and activities in Hamburg. Especially in the focus groups, the participants were made aware of the mobility barriers and requirements of the other participants. And the interviews with advocates of individual groups of people with mobility restrictions in particular allowed their voices to be heard.

When organising the participation formats, great importance was attached to keeping the hurdle for participation as low as possible. Individuals, e.g. senior citizens or schoolchildren were visited at their respective institution (senior citizens' residence/school) to conduct the interviews.

The focus groups were generally non-political, with participants being considered as private persons. Due to a misunderstanding of the announcement of one of the focus groups, the participants were representatives of the political parties at local level. However, once the purpose and the rules of the event were clear, everyone focused on the questions given and left their political agenda more or less out of the discussion. The outcome provided us with some universal insights.

The workshops were a good opportunity for the participating stakeholders to network with other institutions - also across disciplines. This has already brought great added value to some stakeholders as well as to the SINFONICA GOI Hamburg. The workshops also offered several associations and organisations the opportunity to explicitly present their views and to be

heard, which also provided deeper insights into the needs of different groups of people regarding mobility. Moreover, Hamburg as coordinator of various European funded mobility projects benefitted from an extended network of stakeholders. Personal contacts from the SINFONICA project are of great value to local CCAM pilot projects [ahoi](#) and [ALIKE](#) as well as for Horizon Europe projects [InclusiveSpaces](#) and [AMIGOS](#). In both ahoi and ALIKE, autonomous shuttles are being integrated into a mixed fleet in the centre and in the southern area of Hamburg. Input from SINFONICA was provided to a working group in the ahoi project focusing on accessibility.

3.4.4 Lessons learned

Regarding the implementation of activities for the participation of citizens, users and stakeholders, various insights were gained from the participation formats that have been conducted in Hamburg. During the participatory activities unique challenges were encountered in the GOI Hamburg. Recruitment efforts were complicated by different factors, e.g. the lack of an established network of citizens to reach out to, requiring significant resources to reach potential participants.

Abstract character of CCAM

Often the topic of CCAM is still too abstract and intangible for surveyed individuals, especially when they have no point of contact with it in their daily lives. Projects in which autonomous shuttles are used in Hamburg only started after the participation formats were conducted, so here an idea of a CCAM service had to be created using visual material and detailed descriptions. Depending on the available resources, simulations or visualizations using virtual reality could be used for this purpose.

Use of existing citizen panel or network

There is currently no existing large-scale citizens 'panel in Hamburg that deals specifically with mobility issues. For future participation formats that do not relate to individual neighbourhoods or are aimed at specific groups of people, it would make sense to set up a citizens' panel to which requests for participation in different formats can be sent.

In addition, there is no network that brings together all associations for people with different disabilities in a single point of contact. This means that more resources are needed to gather information about the associations and involve them in the activities. In the future, a central contact point is to be created for Hamburg in order to create synergies and reduce the resources required on all sides.

Collaboration with ongoing activities

Unfortunately, no test drives or similar activities on autonomous driving took place in Hamburg during the participation formats, so that local citizens had no real points of contact on this topic. In future projects or activities with participatory activities, care should be taken to link them – if possible – to ongoing projects or activities e.g. related to autonomous public transport, so that it is easier to involve citizens.

It is also helpful to work together with other projects that are related to the topic of research. In Hamburg one joint focus group was conducted together with the cities' transport association, hvv. By joining forces, a productive focus group was organised, which produced important results for both SINFONICA and hvv.

3.4.5 Conclusions and Outlook

As part of the project, a lot of experience was gained in the implementation of participation formats, so that valuable recommendations for future participation formats could be derived.

Participatory methods in general

To maximise the benefits of participation formats during a project, it is advisable to involve stakeholders and citizens as early as possible and to enable co-creation methodologies and collaboration to achieve the most holistic findings possible.

It is important to make use of different channels to reach the target groups that should be involved in the participatory activities. This includes working with local networks, associations and clubs, as well as using social media channels, advertising at public events etc.

Furthermore, it is crucial to adapt participatory methods to local contexts. For example, it was important to use the correct wording and inclusive language (gender) when organising the formats in German - unlike in English.

As the implementation of participation formats can be costly and resource-intensive, it is advisable to collaborate with other initiatives and projects and to leverage synergies.

Participatory activities for citizens

It is crucial to keep the barriers for participation as low as possible and to provide inclusive formats, e.g. regarding organisational aspects like the organisation of registration for participation formats, inclusive and gender-appropriate language but also aspects like location and accessibility of premises.

Also creating incentives can encourage people to participate and contribute to the discussion. Incentives can increase the number of participants especially when the discussed topic has (yet) little impact on their everyday lives.

Furthermore, it is important to make the topic as approachable and experiential as possible, for example through visual aids, simulations, etc. Participation works well when the topic is tangible or effects participants' reality.

Participatory activities for stakeholders

Involving different stakeholders from the mobility sector was a good experience in all workshops held in Hamburg. Stakeholders had the opportunity to present project-related topics and initiatives and to network with other stakeholders. Valuable contacts were established for the SINFONICA project, as well as for other initiatives in CCAM and parallel European projects coordinated by the City of Hamburg.



The results and lessons learned from the participation formats in Hamburg were presented to the projects [ahoi](#) and [ALIKE](#) as well as to stakeholders from transport operators and mobility service providers and a working group focusing on accessible mobility transition in the city of Hamburg.

Furthermore, the specific datasets collected were made available to both projects and relevant stakeholders for further use. Currently, Hamburg's transport operator HOCHBAHN together with the Ministry of Transportation and Mobility Transition is working on an app (project CUSTOM funded under the European Urban Initiative) specifically designed for the needs of people with mobility challenges.

There is clearly potential for a continuous working group with associations and organisations in order to jointly discuss and promote various topics in the realm of CCAM.

4. Connecting the Dots: The Interplay Between Local Contexts and CCAM Development

4.1 Feeding SINFONICA knowledge management tools

One of the project's goals is to build CCAM simulation use cases for the SINFONICA research sites: West Midlands, Hamburg, Trikala, and Noord-Brabant. These simulation-use cases are meant to be included within a user-friendly tool providing an intuitive graphical interface that allows non-expert users to exploit simulation models and assess the performance of CCAM services and their impact on users as detailed in D3.4: CCAM local simulations.

A core focus of this activity is the inclusivity implications of CCAM services, namely the potential differences in service quality observed for PMC travellers (Person with Mobility Challenges) and non-PMC ones. One scenario parameter that users can configure is the proportion of PMC users in the overall travel demand.

Building localised simulations requires location-specific data on the transport infrastructure and the travel demand. While generic information on the study areas, their road networks, their populations and their travel specifications can mostly be obtained through open data and openly available reports, data regarding PMCs and their travel behaviour can seldom be found.

The data collection activities of the SINFONICA project allow to fill this gap by specifically addressing the topic of user heterogeneity and investigating the characteristics of users and their travel patterns. In particular, the structure of the online surveys conducted during the project includes questions on the user types (elderly, disabled, living in rural area...), their travel habits, and their attitude towards CCAM services.

In SINFONICA these data are used to build a travel demand for CCAM that reflects the tendencies observed in the research sites. Moreover, the distribution of user characteristics in the surveyed population is used to propose coherent options for the share of PMC travellers parameter within the tool.

Another key aspect is how data collected by GOI are feeding into the Knowledge Map Explorer (KME) tool. Data collected through the SINFONICA participatory sessions have been systematically analysed and integrated into the *Research Results* section of the Knowledge Map Explorer. These insights capture the diverse needs, expectations, and concerns of stakeholders regarding CCAM deployment, and directly inform the thematic areas explored in the KME. The resulting knowledge base supports evidence-based policymaking and the design of inclusive mobility solutions by highlighting key societal priorities and barriers identified during the engagement process.

As a matter of fact, the involvement of the groups of interest has been significant throughout the designing and testing of the SINFONICA Knowledge Map Explorer. These stakeholders



played a critical role in defining the user requirements, encompassing both functional and non-functional dimensions, and contributed directly to the conceptualization and refinement of the user interface (UI) and user experience (UX) design.

During the early phases of Work Package 4, they participated in the creation of user stories, which are detailed narrative scenarios that helped translate real-world needs into specific design and functionality requirements. These stories enabled the development team to better understand how different user profiles, from policymakers and public authorities to transport operators, researchers, and end users, would interact with the tool, ensuring a user-centred design approach.

Moreover, their contributions extended into Task 4.4: Knowledge Map Explorer Assessment and Validation. This task focused on evaluating the Knowledge Map Explorer from both a practical-functional and user experience standpoint. Stakeholders from the Groups of Interest (identified in Task 1.4) and the Groups of Followers (identified in Task 6.4) have collaborated in structured testing sessions. These sessions aimed to validate the tool based on Key Performance Indicators (KPIs) specifically established to provide an objective framework for assessing usability, accessibility, and effectiveness. The feedback collected through this validation process has been essential for identifying imperfections and proposing targeted improvements. These insights were iterative refinements that were carried out to ensure the tool is fully aligned with user expectations and operational needs.

Beyond user experience design and validation, the GOI also made contributions during the initial stages of SINFONICA in the domain of data systematization and standardization (Task 3.6 “Data analysis, enrichment and systematization”). Early in the project, structured reporting templates were disseminated to the groups of interest to ensure that all data submissions followed a consistent data format. The scope of this initiative was due to minimise data heterogeneity, reducing errors, and ensure comparability across different data sources.

4.2 Building guidance and recommendations

The SINFONICA work on Strategies, methodologies and recommendations for an inclusive equitable and accessible future CCAM (WP5) initially worked on best practices in equity for mobility with reference to CCAM (reported in SINFONICA Deliverable D5.1) and on limits and possibilities of CCAM solutions (D5.2). These initial outputs did not rely on the Groups of Interest, but rather analysed other projects, operations and experiences in Europe.

However, tasks on a Vision for inclusive and equitable CCAM in Europe and on long-term strategies and recommendations included inputs from the GOI. Deliverable D5.3 on Vision policy recommendations for user-centric CCAM drew information from results from the GOI (in terms of engagement of users and stakeholders), as well as from analysis of EU projects dealing with CCAM services (D5.1) and the analysis of CCAM services (D5.2). The GOI input comprised analysis of the contributions from SINFONICA workshops which gathered relevant



stakeholders (e.g. citizens, operators, policy makers) to discuss how CCAM services could be deliverable in more equitable and inclusive way.

An internal workshop on policy recommendations was held in Birmingham in September 2024. The session “Shaping User-Centric Recommendations for CCAM” collected perspectives of the GOI partners in order to build the above-mentioned D5.3. Preliminary recommendations from policy makers in the four GOI cities/regions were discussed, which came from previous consultation activities with local stakeholders and user groups.

In general, policy priorities centred around safety and inclusivity. Other considerations included defining the appropriate scale for managing CCAM services (e.g. local or regional scales), limitations from local situations or contexts, perspectives of different stakeholders (public authorities, operators, users).

This workshop in Birmingham was followed up by feedback the CCAM Platform (Cluster 6 Societal aspects and people needs), and from two local workshops: one with operators working with disability (Pontevico, Italy) and one entitled “Research Insights into an Autonomous Future” (Birmingham, UK).

In addition, three other SINFONICA workshops on policy recommendations and/or guidelines were held in early 2025, one of them at a GOI location, at Den Bosch, Noord Brabant, and the others at ERTICO premises in Brussels and during the EUCAD Conference in Ispra, Italy. These discussed recommendations aimed at public transport operators, municipalities and road authorities, and about apps, communication and public engagement.

These led to:

- Policy recommendations for equitable and inclusive CCAM (described in D5.3)
- Recommendations on CCAM implementation (which will be part of D5.4: Guidance and recommendations for demonstrating and implementing user-centric CCAM)
- Recommendations for CCAM demonstration projects (also part of the upcoming D5.4)
- Recommendations on communications (also part of the upcoming D5.4).

5. Conclusions

The activities carried out within Task 3.1, 3.2, 3.3, and 3.4 of the SINFONICA project have demonstrated the effectiveness and relevance of participatory methods in capturing the needs, expectations, and concerns of citizens and stakeholders regarding Connected, Cooperative, and Automated Mobility (CCAM). Through a structured and locally adapted engagement approach implemented across the four Groups of Interest (Trikala, Noord-Brabant, West Midlands, and Hamburg), the project succeeded in involving a wide range of societal actors, including people with mobility challenges, digitally vulnerable citizens, youth, elderly, and service providers—in a meaningful co-creation process.

The multi-round engagement structure, which included interviews, focus groups, and stakeholder workshops, enabled the collection of rich, qualitative data that provided deep insights into both individual and systemic mobility needs. These findings were not only instrumental for guiding the project's simulations and policy recommendations but also directly contributed to the Knowledge Map Explorer's Research Results section, supporting the identification of priority areas for inclusive CCAM development.

Key conclusions can be summarised as follows:

- **Local context matters:** Each GOI site offered unique insights shaped by cultural, geographical, and institutional factors. Tailored strategies were essential to reach diverse groups and ensure inclusivity.
- **Inclusivity is a process, not an outcome:** Engaging vulnerable groups required intentional design, flexible tools, and trust-building mechanisms. Successful outreach often depended on working through trusted community organisations and meeting people in familiar settings.
- **Trust and understanding drive acceptance:** Concerns around safety, data privacy, and accessibility were prominent across all sites. Transparent communication and opportunities for experiential learning (e.g. through pilot demonstrations) were critical enablers of trust.
- **Stakeholder networks were strengthened:** The co-creation process activated and reinforced local networks of mobility stakeholders, which are expected to continue beyond the project lifetime and support future CCAM-related initiatives.
- **Participatory engagement can lead to actionable change:** In several cases, the insights generated have already been integrated into ongoing policy revisions (e.g. accessibility policies in Noord-Brabant), pilot planning (e.g. Efteling shuttle), and stakeholder initiatives.

The outcomes of this deliverable confirm that participatory research, when methodologically sound and context-sensitive, can enhance the societal readiness of CCAM technologies. The insights generated have not only enriched SINFONICA's scientific outputs but have also laid



the groundwork for ongoing dialogue, implementation, and evaluation of inclusive mobility solutions across Europe.



For more information

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