euMOVE 2025 – Autonomous Vehicles in Europe

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Rural-Suburban

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ABSTRACT

This report presents the evolving landscape of autonomous vehicle (AV) development by drawing on stakeholder insights and practices observed in Tallinn and Helsinki to inform context-sensitive strategies for AV deployment in Munich. The project proposal is built on extensive desk research and over 15 expert interviews conducted online and in person. These included conversations with researchers, policymakers, public authorities, CEOs, NGO representatives, and field-level practitioners. The goal was to understand the systemic conditions, institutional actors, and socio-technical challenges shaping AV implementation in Northern Europe.

Initial benchmarking of pilot projects helped define the scope of the research. A subsequent field visit to Tallinn and Helsinki in June 2025 enabled the research team, comprising Mr. Meyer, Mrs. Hernandez, and Mr. Rivera, to conduct 11 expert interviews and five supplementary conversations with local practitioners and residents. These interviews focused on uncovering barriers and enablers in regulatory adaptation, public perception, technological readiness, and inclusive design. Observations from the field were later triangulated with literature and policy reviews to formulate recommendations tailored to Munich's urban and peri-urban context.

The findings presented here form the empirical and conceptual basis for a proposal submitted within the framework of MCube Phase 3. While centered on AV technologies, the report addresses broader questions of innovation governance, stakeholder alignment, and regional adaptability in mobility transitions.

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List of Abbreviations

Abbreviation	Definition
Alt	Alternatives
AVs	Autonomous Vehicles
SAEVs	Shared Autonomous Electrical Vehicles
Tbc	To be confirmed

01

MOTIVATION

Problem Description & Project Justification

Affordable and accessible public transport is essential to achieving national and European climate goals. However, Munich and cities across Germany face severe staff shortages, forcing difficult decisions. As recently confirmed in the "Anpassungsprogramm der MVG 2026" (Arbeitskreis Attraktiver Nahverkehr, 2025), bus services in Munich will again be reduced, particularly in rural and suburban areas. The decision seems paradoxical as these are precisely the areas where mobility poverty is most prevalent, and where demographic shifts mean a growing number of residents, especially senior citizens, will depend on reliable public transport in the future. Shared Autonomous Electric Vehicles (SAEVs) represent a potential response to these challenges. In addition to lower emissions and improved safety, AVs offer the possibility of reducing dependence on human drivers, thus enabling more consisten service provision in understaffed and disconnected regions.

Despite this potential, real-world evidence on autonomous vehicle deployment in rural and suburban contexts remains scarce. The few existing companies that specialize in low-density areas, such as the Estonian AuveTech, operate mainly in tightly regulated environments like tourist sites. This situation presents a unique opportunity for Munich and its surrounding municipalities to take the lead, building on successful local initiatives like the WiesnShuttle or MINGA to become a pioneering region in next-generation rural mobility. Crucially, this endeavor must focus on local needs and public participation within the design process. Numerous critical studies have highlighted the tendency of technological innovation to begin with the solution, rather than with a clear understanding of where, for whom, the local social and cultural relations, and under what conditions it should be applied (Seelos, C., & Mair, J., 2016). To counter this, a radically upstream approach to AV implementation is required - an orientation systematically embedded in this project proposal's conceptual framework.

02

STATE OF THE ART

What do others already work on?

A notably early initiative in autonomous public transport in Europe was the Sohjoa Shuttle Bus project (2016–2022), which tested self-driving electric minibuses in cities like Helsinki and Tallinn, as well as in low-density areas. The aim was to explore how AVs could be integrated into public transport, especially for first- and last-mile connections. However, the pilots did not produce scalable models for rural mobility. This reflects the current state of the industry: even AuveTech, a spin-off from Tallinn's Technical University and current market leader in Japan, focused on shared AVs, only operates in controlled environments such as airports, tourist zones, or campuses.

The coherent research that is the basis of this proposal indicates that no shared AV service currently operates profitably in rural or suburban areas. Key barriers include low population density, long distances, infrastructure gaps, limited public familiarity, and demand-side challenges in AV technology.

A more mature application of autonomy is found in delivery robots. Tallinn is a key R&D and deployment hub for Starship Technologies, a global leader in autonomous delivery of food and groceries. Companies like CLEVON, also operating in Tallinn, extend this capability by delivering medium-sized goods (up to 100 kg) over distances of up to 100 km. This shows clear potential for scaling such technologies from urban to peripheral areas. Shared AVs and delivery robots have strong prospects for suburban and rural regions, especially where mobility solutions are lacking. Field visits and interviews revealed significant findings about the technological aspects and the social dimensions of deployment, such as measures to build trust, the involvement of underrepresented groups, and best practices of co-creation processes to develop context-sensitive solutions. These insights, together with advancing practice-oriented knowledge in a new field of AV deployment, form the foundation of this proposal.

03

CONTRIBUTION TO MOBILITY IN MUNICH

Project Description: *weMOVE* – a Rural AV Testbed for Bavaria

weMOVE critically examines traditional approaches to transportation systems. It redefines mobility, infrastructure, and public space not just from the standpoint of technical feasibility, but also through local communities' lived experiences and creative potential. The initiative envisions the integration of autonomous vehicle technologies in rural and suburban areas, guided by the fundamental principle of strong local ownership and inclusive co-creation. In this framework, public participation is not an afterthought but the driving force behind mobility innovation.

The project aims to:

1. Empower municipalities to become one of Europe's most exciting testbeds for purpose-driven next-generation AV technology,

2. Serve as a participatory tool to surface demand, gather data on contextual knowledge, and community-driven priorities for mobility innovation, and to

3. Provide a responsible mobility solution for the awarded town.

The target regions include small municipalities in the Greater Munich & Bavaria´s Oberland area, specifically selected due to two factors: their limited public transport coverage and demographic characteristics, including an above-average proportion of older residents. The initial group of eligible municipalities includes: Oberhaching, Unterhaching, Taufkirchen, Moosburg, Sauerlach, Brunnthal, and Aying.

The municipalities will apply for a project grant of up to 1.000.000,00 euros in goods and support, which includes: either five delivery robots or two AV shuttles, a 6-month phase of preparation, and a 1-year phase of deploying the AV pilot.

Application and project management need close collaboration with local actors **(**civil society groups, cultural organizations, hobby clubs, etc.) to define specific local mobility needs and

co-develop deployment strategies. As read above, participating municipalities may choose between two fundamentally different AV models, both of which have proven particularly promising in recent research: shared on-demand shuttles (focused on passenger mobility) or autonomous delivery robot systems (focused on the transport of essential goods such as medicines or groceries).

The selected model will be adapted to reflect socio-cultural specifics, with comprehensive support provided by the funding organization in two innovative focus areas inspired by best practices from AV pioneers in Tallinn and Helsinki.

1. The first focus area is Participation Processes, which includes organizing "citizen talks" and local engagement events to gauge public attitudes and gather community feedback. Additionally, training programs will be offered during the first eight weeks of the pilot, specifically designed to assist individuals who are less digitally literate.

2. The second focus area is Technological Implementation, which ensures that inclusivity is integrated into the design and operation of AV services. Experts in inclusivity will help shape user interfaces and service design, while features for human-like interaction will be collaboratively developed to enhance trust, ease of use, and user acceptance.

Additionally, the project will conclude with an evaluative research component in cooperation with students and researchers from the Technical University of Munich (TUM). Empirical surveys and qualitative assessments will be conducted to evaluate user acceptance, ownership, behavioral adaptation, and socio-technical integration of the AV service.

Figure 1. Competition poster; source: Own elaboration with ChatGPT

Application requirements

To participate in *weMOVE,* each municipality must submit a coherent application specifically outlining how it intends to implement and adapt an AV service in accordance with local lived

realities. The application must address two key components that are essential for achieving context-sensitive and co-creative results:

1. Action Framework:

   Municipalities must define the specific transport-related needs the AV service will address - such as limited access or gaps in the necessities supply chain (such as medicines) and describe the target areas and user groups. The proposal should explain how the service will improve access, enhance quality of life, and promote social equity in everyday mobility. Additionally, it should include testimonials and evidence-based arguments to ensure that applicants are not just seeking prestige by hosting an AV pilot.

2. Implementation Strategy:

   Municipalities must outline how they will involve proxies of key user groups, and how they plan to coordinate routes and operations with local authorities and emergency services. The strategy should also describe how local stakeholders will actively engage throughout the project to support trust, continuity, and user integration. As the pilot progresses, these aspects will be calibrated and modified through measures of co-development, and responsibilities will be shared.

Proof of concept

Project grants and competitions have historically played a key role in catalyzing breakthrough technologies. The DARPA Grand Challenges of the early 2000s laid the foundation for the contemporary AV revolution, transitioning autonomous driving from the realm of science fiction into a viable field of engineering and applied research. *WeMOVE* builds upon this legacy of innovation driven by curiosity and experimentation, but reorients it toward purposeful, locally embedded technological development. Rather than pursuing autonomy for its own sake, the project leverages the creative potential of communities to co-develop AV solutions that address concrete, region-specific mobility needs. At the same time, major societal trends, such as the aging population and labor shortage in the transport and logistics sectors, are becoming particularly acute in non-urban regions.

For example, Figure 2 showcases the expected trend of population age distribution until 2043 in Bavaria. The working age population from 50-65 years is expected to increase the number of senior citizens, whereas the working age population is expected to maintain the current distribution. Ultimately, this phenomenon will generate new cultural and technical requirements throughout Bayern. Furthermore, and as explained before, in 2025 the City of Munich is experiencing a shortage of drivers (Arbeitskreis Attraktiver Nahverkehr, 2025). This will be accentuated in the coming years, making new bus routes more challenging to create and maintain current or better frequencies. According to the results of the pilot projects in the city of Tallinn, they have improved the accessibility of residents by the implementation of AV routes

(L. Luts & E. Liinar, personal communication, June 25, 2025). Although these services were within the urban grounds of the city, they present the benefits of connecting disconnected residential areas with the main routes. In other words, solving the last mile problem is usually experienced in new complexes or within vast urban Soviet style urbanizations, which increase satisfaction and accessibility.

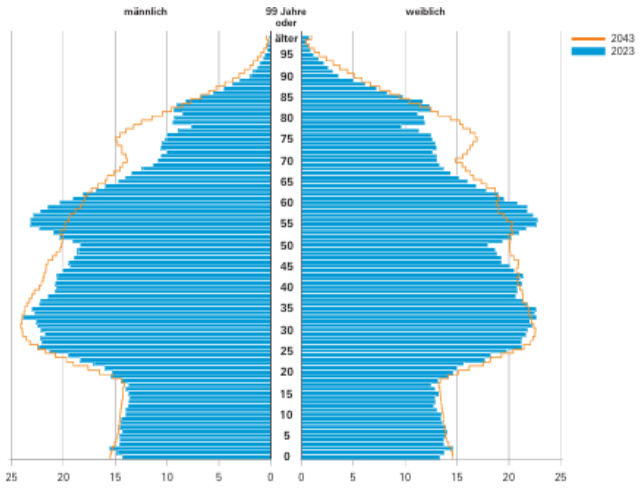

Figure 2. Population trend Bavaria - change 2043 compared to 2023 Source: Bayerische Landesamt für Statistik

As one expert succinctly mentioned during our interviews:

> *"Autonomous vehicles are most deployable where they are least needed, and least deployable where they are most needed."*

This paradox was articulated by a leading scholar in automotive systems from the University of Applied Sciences in Helsinki, and it captures the central challenge the project seeks to address. Thus, this project explores uncharted technological territory, as there are currently no fully operational, long-term AV systems specifically designed for rural areas in Europe. While several high-profile pilot projects have gained attention in recent years, most AV developments remain urban-centric and lack scalability or sustainability in low-density regions (Milakis et al, 2017).

Anticipated challenges

As part of the project framework of *WeMOVE*, several key challenges that may arise during implementation have been analyzed. This reflection draws on both literature and stakeholder interviews, and it seeks to frame these challenges not as roadblocks, but as important design constraints that can guide a more inclusive and adaptive implementation strategy.

Community Participation and Local Ownership
One of the central aims of *weMOVE* is to enable active community participation. Engaging local actors requires careful planning, especially in smaller municipalities where digital experience may be limited. It is essential to provide low-barrier formats and offer technical support. Participation should be treated not merely as outreach, but as co-creation that empowers local voices. However, maintaining sustained engagement is a challenge, as many citizens face time constraints or competing priorities. Still, long-term involvement promotes trust and meaningful impact.

Digital Literacy and Access
Given the demographic profile of many rural areas in Upper Bavaria, particularly the high proportion of senior citizens, digital literacy represents a significant variable in adopting AV systems and their associated apps or platforms (Eurostat, 2021). Digital exclusion could undermine the equity goals of the project. Tailored workshops, printed guides, and peer support (e.g., intergenerational learning formats) could bridge this gap and foster trust in the technology.

Administrative and Legal Constraints
Gaining support from local governments is not guaranteed, as municipalities often face competing priorities, risk aversion, or resource constraints. Clear communication of the benefits and legal and logistical support will be needed to secure municipal buy-in. Equally important is early coordination with state-level regulatory bodies to ensure that AV operation remains compliant with current German and EU legislation. As one expert interviewee noted, “Priorities among different stakeholders must be aligned; only in this way can smooth collaboration be ensured” (Greta Elva-Jõemaa, Head of Public Policy & Innovation, Accelerate Estonia). *WeMOVE* aims to achieve this by involving municipalities at an early stage and demonstrating their participation's impact.

Infrastructure Limitations
Some rural areas lack the digital and physical infrastructure needed for AV operation, from poor roads to weak mobile coverage. Feasibility checks are essential when selecting pilot locations. Infrastructural gaps should be acknowledged not as failures, but as part of the broader rural mobility challenge. Additionally, AVs require a charging infrastructure, which must be provided. *weMOVE* addresses this by leasing or buying vehicles from providers that supply the necessary infrastructure.

Long-Term Sustainability
The AV pilot could be perceived as a one-off experiment unless long-term sustainability is planned. This means identifying future operators, potential funding streams (e.g., local transit authorities or regional development programs), and even cooperative ownership models. Stakeholder interviews suggest that sustainability is one of the primary concerns among municipalities.

Measuring Impact and Acceptance

The project's evaluative component, co-designed with TUM researchers, must be rigorous and sensitive to local contexts. Senior citizens may hesitate to complete online surveys or share feedback without in-person interaction. A mixed-methods approach, involving interviews, direct observation, and analog formats, will yield a more accurate picture of acceptance and behavioral change.

Ideal Partners & Engagement of Society

The project depends on strong collaboration across various sectors to address these challenges. Eight main stakeholder groups were identified as key stakeholders within the project. A further detailed analysis is presented below. The success of the project and structure is rooted in the close collaboration between all stakeholders to guarantee engagement, impact, and acceptance from civil society.

Figure 3: Stakeholder map (Source: own elaboration)

1. Municipal Governments

Pilot sites such as Taufkirchen, Oberhaching, or Sauerlach are key operational partners. Their willingness to host a pilot, allocate space, and engage citizens will determine the initiative's reach and resonance.

2. Bavarian State Ministries

The Bavarian Ministry for Housing, Construction & Transport is a crucial partner for regulatory support, integration into regional mobility plans, and funding alignment. Likewise, Bavaria's Ministry for Digitalization holds expertise in policy, infrastructure, and funding to position the state as a leading hub for AV innovation.

3. Academic Institutions

Universities such as TUM, LMU, and Hochschule München provide research support, student engagement, and scientific validation, ensuring the project's insights contribute to the broader AV discourse.

4. **Public Transit Providers**

   Local and regional operators, including MVV and MVG, must be involved to ensure that AVs are not isolated pilots, but integrated into sustainable, multimodal mobility ecosystems. The information should also be shared with local and regional operating companies, and not only public entities, to guarantee complete dissemination of the proposal.

5. **Civil Society Organizations**

   Institutions like Neighborhood Help Oberhaching e.V., Social Support Ring Brunnthal e.V., and AWO Senior Residential Park Moosburg are invaluable allies in reaching senior citizens and organizing inclusive participation formats.

6. **Technology Providers and AV Developers**

   Partnerships with providers like EasyMile, AuveTech, Goggo, Starship, or Schaeffler will be critical for ensuring technical feasibility, safety, and on-site support during deployment. It is also important to reach out to internationally based companies with proven experience to bring high-tech solutions that allow for better results. Some of the most renowned companies now are Auve-tech from Estonia, Starship, Kiwibot, and Waymo from the US.

7. **Local Media**

   Look for local media partners through diverse communication channels like Münchner Merkur or community radio stations like Antenne Bayern. These are vital channels for promoting the competition, sharing success stories, and inviting public dialogue.

8. **Inclusive Mobility Experts**

   Engaging experts in inclusive mobility is essential to ensure that AV services meet the needs of people with disabilities, senior citizens, and other mobility-impaired groups. Professionals like Deborah Ruth, who specialize in barrier-free transport and participatory design, can provide guidance on accessibility standards, usability, and social impact. Their input strengthens the project's commitment to equity and user-centered development.

Target groups

The abovementioned project aims to target municipalities as the primary group to encourage them to apply for the grant. Ultimately, the goal is to benefit the residents of rural and suburban municipalities in Greater Munich and Bavaria´s Oberland, particularly focusing on:

a. Senior Citizens (65+)

b. People with permanent or temporary limited mobility or no car access

c. Digitally less experienced users, community members with an interest in local development (e.g., active in associations or clubs)
d. Local municipal administrations (mayors, transport planners)
e. Community organizers, hobby/culture groups, and civil society actors
f. Families and young people (as indirect beneficiaries and digital intermediaries)

Strategy for embedding the concept beyond the project timeframe

Ensuring the system's long-term viability requires a successful pilot project deployment and a clear path toward financial sustainability. Many pilot projects are reduced to existing when external funding runs out. To address this, *weMOVE* integrates various potential funding models depending on the selected technology. These alternatives should be explored during the early development phase and iteratively adapted based on the pilot's reception, performance, and acceptance.

Delivery robots allow the implementation of usage-based charges. For example, an additional cost, as it would typically be paid for any home delivery nowadays. In contexts like the United States, delivery fees are around $2 per trip, referenced as a benchmark for achieving operational viability (Zielinski, 2021). These costs can be embedded within the price of the delivered goods, directly billed to users, or assumed by the local companies providing the goods making the model adaptable to different local contexts and business requirements.

For public transport applications, user-facing services such as autonomous shuttles could be integrated into existing fare systems or supported through optional subscriptions or micro-fees to enhance cost recovery. Long-term financial stability will likely require some degree of municipal or regional co-funding, particularly during the scaling phase. Public investment is common in mobility innovation pilots and often essential in securing equitable access, supporting infrastructure deployment, and mitigating early operational deficits. Combining user contributions with public support, a hybrid funding approach offers the most promising pathway for sustainable deployment.

Cost calculation for the project

The project has three main cost components that run within different phases. The project's overall cost is subject to the size of the fleet implemented. Alternative acquisition methodologies like leasing could serve as a cheaper alternative in upfront costs for the project. A brief description of the different components is provided below.

Project Management, Media Coverage, and Mobility Expert Advice

Successfully implementing any project relies on the human resources appointed to plan, structure, and follow up on the implementation. Within the cost structure, the project contemplates a Project Management Office (PMO) that will be responsible for planning,

launching, engaging with different stakeholders, ensuring awareness of the project with media companies, and coordinating and hiring the needed experts and fleet.

Local Customization, Training & Setup

During Phase 3 and Phase 5 of the project, the machinery is customized to local socio-cultural needs. This is the backbone of the project's impact and acceptance strategies. The objective and fund direction relies on the different engagement tables between all stakeholders, but having a bigger focus on the people, as it is conceived as designed by and for the people.

Fleet Launch

The fleet launch corresponds to the selected alternative based on the conditions needed and requested from the previous step.

WeMOVE Budget per Phase

BUDGET	EUR
Phase 0: Competition Planning	**10,000**
Design and concept development	2,000
Website	3,000
Local media outreach	2,000
Coordination and administration support	3,000
Phase 1: Competition Launch	**5,000**
Launching event with municipalities to showcase the prizes and motivate them to participate (Includes refreshments and venue)	5,000
Phase 2: Application and Selection	**10,000**
Revising proposals	
Infrastructure feasibility assessment (external company)	10,000
Selecting the awarded town	
Phase 3: Local Customization & Setup	**5,000**
2-4 Citizen talks and/or focus group discussions (incl. venue, snacks & refreshments)	1,500
Surveys conducted by a student group	100
	1,500

Co-design sessions with developers 2 On-site presentation of development and prototypes with a feedback session	1,900
Phase 4: Launch	**10,000**
Media coverage	5,000
Event with snacks and refreshments	5,000
Phase 5: Training Sessions and Support	**5,000**
Trainer fees (2 trainers, 3 times within 2 months)	2,500
Transportation costs	600
Training materials	400
Snacks & refreshments	300
Participant recruitment	500
Venue	0
Insurance and permission	700
Phase 6: Year Pilot	
Alt. 1: Fleet of 3-Delivery robots (Purchase)	**36,000**
Purchase three Level 4 delivery Robots[1]	15,000
Installation	15,000
Maintenance per year[2]	6,000
Alt. 1.1: Fleet of 3-Delivery robots (Lease)	**29,600**
Lease three Level 4 delivery Robots per month[3]	29,600
Alt. 2: SAEV shuttle (Purchase)	**585,000**
	500,000

[1] Information extracted from Engineering for Change (Engineering for Change, 2024)
[2] Taken from Forbes.com (Elliott, 2021)
[3] The estimated value for the lease of One Kiwibot is 899 USD/month

Two vehicles[4] Maintenance[5]	85,000
Alt. 2.2: SAEV shuttle (Lease) Lease two vehicles[5]	**459,000** 459,000
Alt. 3: Use EDGAR vehicle Maintenance of the vehicle[6] Operating costs (Does not include staff)[7]	**50,000** 40,000 10,000
Advice from Inclusivity experts and chamber representatives	**15,000**
Project Management 2 project leaders, full-time gross salary: €4,700 (30 months)	**282,000** 282,000
Total	**392,000 – 1,000,000[8]**

Table 1. Budget estimation for the project

The Budget of 1.000.000 € includes all professional services, workshop moderation, expert engagement, coordination, rolling stock acquisition and maintenance, and reporting, and is exclusive of VAT and third-party costs such as travel.

Time Planning

Figure 4 presents the structured six-phase roadmap designed to guide the development and deployment of the *WeMOVE* AV pilot project. The roadmap consists of over 30 months and reflects a deliberate effort to combine technical innovation with local ownership, institutional coordination, and citizen inclusion. The framework and work plan prioritize the participatory process rather than a purely top-down approach. It starts with an early engagement stage and culminates in a long-term, community-embedded AV deployment.

[4] Value obtained from Enotrans.org from the US. Other values may arise from differences in technology or providers.
[5] Assumption based on 50,000 km per year and a 2 Euro per km cost, based on the California Air Resources Board
[6] Costs assumed to be half of the costs of a shuttle due to size
[7] Assuming a total run operating distance of 50,000 km and a gas cost of 2 Euros per liter of gasoline with an efficiency of 10 km per liter of gasoline
[8] Calculation varies according to choice of alternative or combination of alternatives

Phases 0 to 2 focus on strategic preparation, stakeholder engagement, and the competitive selection of a suitable testbed municipality. These stages generate visibility, build municipal interest, and ensure local authorities are motivated to host the pilot. **Phase 3** starts the co-creative component, where awarded municipalities receive financial and technical support to co-design the AV according to local social, cultural, and mobility needs. This phase emphasizes customization, ensuring the technology responds to real and place-specific needs.

Phases 4 to 6 transition from co-creative design to implementation. The pilot launch is accompanied by public showings and media engagement to foster transparency and trust. As indicated in one of the interviews conducted, the acceptance of digitalization has come with "brutal transparency" from the government (Park, Rannar, personal communication, June 25, 2025). Citizen training ensures that technological innovation is inclusive and accessible, particularly for less-experienced digital users. The final phase consists of a one-year operational pilot of AV shuttles or delivery robots, allowing for real-world data collection and long-term evaluation.

Figure 4: Roadmap timeline of WeMOVE (Source: own elaboration)

04

INTENDED IMPACT OF THE PROJECT

What is the permanent outcome of the project?

The pilot project aims to generate lasting value on multiple levels. First, it will provide concrete evidence of local demand and desirability for autonomous mobility solutions, helping identify where deployment could benefit society and where it may be needless. Second, it will serve as an active engagement tool, fostering participation and dialogue within rural communities. Third, and perhaps most importantly, it will open up a sustained conversation around autonomous mobility by facilitating direct interaction between users and experts from the earliest design stages.

This co-creative process is designed to build more inclusive tools and systems, particularly for often-overlooked user groups such as senior citizens, individuals with mobility impairments, parents with small children, pregnant women, and youth. By shifting the development perspective away from the traditional, engineer-led approach, which, as one of our interviewees thoroughly explained, is "typically shaped by younger male designers". This project emphasizes the critical importance of inclusive design in public mobility systems.

In the long term, the pilot sets the stage for structural improvements in rural mobility by offering scalable, user-informed solutions that respond directly to the needs of currently underserved populations. Through this, the project tests technology and builds the social and institutional foundations for equitable mobility innovation.

Key Performance Indicators (KPIs)

A set of qualitative and quantitative evaluation criteria has been defined to assess the long-term value and societal impact of *WeMOVE*. These indicators aim to capture not only the

technical performance of autonomous mobility systems but also the social, behavioral, and institutional dimensions of their implementation.

WeMOVE KPIs

Dimension	Key Performance Indicators (KPIs)	Target
1. Municipality Engagement & User Participation	- Number of applications submitted (e.g., number of municipalities) - Retention of attendance at info/training sessions - User demographics reached (age, gender, accessibility needs)	5 80% 3 different groups
2. Public Acceptance & Trust	- Increased % of users expressing confidence in AVs (pre/post surveys) - % of users willing to use the services again - Change in perception before vs. after usage - Number of user complaints or safety concerns reported	Increase 50% 90% Qual. assessment Decrease of 50%
3. Inclusivity & Accessibility	- % of senior citizens and mobility-impaired users engaging with AVs - Accessibility audit score (vehicle & digital tools) - Satisfaction ratings by user group - Qualitative feedback from focus groups and interviews	80% of the town Qualit. assessment 70% 10 focus group discussion
4. Operational Performance	- Number of completed rides or deliveries - On-time arrival/departure rate (punctuality %) - Number of downtime/interruption events per week - Number of technical incidents or system resets	Tbc (based on type) 90% 1 1
5. Community Impact	- Number of local partnerships formed (schools, clubs, town halls, etc.) - Media mentions / local press coverage - Number of community-led follow-up projects or ideas - Stakeholder satisfaction (municipalities, partners, users)	5 partnerships 3 non-funded 1 80% based on surveys
6. Environment & Mobility Impact	- Estimated km of replaced car trips - Estimated reduction in CO_2 emissions - Evidence of modal shift (car to AV usage)	15,000 km 2 tons CO_2/year 15–25% of users

7. Scalability & Long-Term Potential	- Number of inquiries from other municipalities - Completion of feasibility/cost-benefit reports - Commitments to co-funding or continuation - Proposals for integration into public transport systems	5 formal inquiries 1 2 funding pledges 1

Table 2. WeMOVE KPIs (Source: own elaboration)

CONCLUSION

Two critical insights about AV deployment were revealed based on the fieldwork and interviews conducted across Northern Europe. First, AVs are often implemented in locations with limited added value. Second, there is a lack of input from diverse social groups in making AVs accessible, therefore affecting their acceptance. Technology has focused on the best-suited user groups for deployment (healthy males), but the most impact is seen when this technology can serve other user groups.

The *WeMOVE* project responds directly to these challenges by enabling community participation in customizing AV solutions based on local needs, such as e-shuttles and delivery robots. This approach increases the technology's relevance and usability and fosters public trust and long-term adoption.

Germany faces important mobility challenges, including a growing shortage of drivers and an aging population that will increasingly depend on inclusive, reliable transport services. AVs could play a vital role in supporting independent living, particularly for individuals with reduced or temporary mobility restrictions.

The proposed project highlights a crucial reality, that is, the importance of long-term funding of the system. Pilot AV programs in Finland and Estonia were discontinued despite strong initial results due to the lack of continued funding. *WeMOVE* aims to address this by promoting conversations with stakeholders to ensure economic feasibility through different operating schemes beyond the pilot phase. Ultimately, *WeMOVE* positions AVs as a long-term public service tool, designed by and for the communities they serve. It helps bridge mobility gaps in rural and suburban areas while laying the foundation for inclusive future transport systems.

Deploying AV technology in rural areas involves more than technical implementation; it is also a social and organizational undertaking. The success of *WeMOVE* will rely not only on vehicle performance but on how inclusively and transparently the introduction process is handled. With a thoughtful and respectful approach, the project can go beyond providing mobility to fostering trust, local ownership, and long-term community involvement in shaping rural innovation.

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APPENDIX

QR to our prototype

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