CITYAM Urban Air Mobility (UAM) Replication plan

Deliverable of A.3.1. CITYAM Replication plan for UAM

City of Riga for CITYAM

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Summary

This deliverable report, as part of transferring the solutions developed as part of the CITYAM project "funded by Interreg Baltic Sea Region", serves as a comprehensive guide for replicating Urban Air Mobility (UAM) solutions in replicator cities—Riga, Tartu, and Gdansk. The report builds upon two years of knowledge, tools, and methodologies developed and tested by the lead cities Helsinki, Hamburg and Stockholm, with a focus on transitioning these insights into practical applications. The report highlights the roadmap for implementing UAM strategies, addressing the unique challenges and opportunities in each replicator city.

The report gives insight into CITYAM tools, such as the Public Acceptance Toolkit, Landing Site Selection Tool, and UAM Strategy Framework, showcasing their adaptability to diverse urban contexts. These tools provide replicator cities with actionable methodologies for integrating UAM into spatial planning, public engagement, and policy frameworks. Additionally, tailored plans for each city outline use cases, stakeholder engagement strategies, and infrastructure considerations, such as integrating GIS tools for UAM landing site planning with local systems like GeoGdansk and GeoRiga.

Key activities in the replication process include repeating public acceptance surveys to evaluate the progress of public acceptance of UAM, piloting use cases like traffic surveillance and safety audits, and advancing the integration of UAM into city-level strategic documents, such as Sustainable Urban Mobility Plans (SUMPs). Capacity building within municipal administrations ensures that staff and stakeholders are equipped to manage and sustain UAM activities.

While the document focuses on the three CITYAM replicator cities, its guidance and methodologies are broadly applicable to other cities exploring UAM replication. It can therefore also serve as an inspiration for cities outside the CITYAM consortium who are starting with planning, policies and pilots related to drones. By addressing regional regulatory gaps, fostering public-private collaboration, and leveraging lessons learned from pilot cities, this report lays the groundwork for scalable and sustainable UAM solutions. It emphasizes the importance of aligning UAM initiatives with urban development priorities while promoting long-term innovation and cooperation across the Baltic Sea Region and beyond.

1. Introduction to A.3.1.

If the first two years of the CITYAM project have been all about the preparation of the solutions and testing and piloting them in the lead cities, then year 3 is - in addition to active dissemination locally as well as beyond the consortium - all about the replicator cities and the start of project solution replication in their local context, as well as ensuring solutions serve as inspiration beyond the project timeline. The aim of activity 3.1. is to further the work done throughout the CITYAM project and at the core of this report is the need to set forth thought-out plans on what activities and tasks should be carried out by the replicator cities in this final project year.

Replication and transnational cooperation is at the core of the CITYAM project as it helps to ensure the successful integration of Urban Air Mobility (UAM) across multiple cities and regions. As UAM is a relatively new field, the ability to replicate successful approaches, strategies, and tools developed in one city, or in the case of this project – 3 cities, will provide a valuable roadmap for others. By transferring knowledge and best practices, cities can avoid duplication of effort and accelerate the adoption of sustainable UAM solutions. Cooperation among cities, national authorities, and private sector stakeholders is vital in fostering this knowledge exchange. Through collaborative platforms, workshops, and joint initiatives, we can create a unified approach to UAM integration, ensuring that cities across the Baltic Sea region are equipped with the skills, tools, and frameworks to successfully incorporate UAM into their transport systems. This transfer of knowledge not only drives innovation but also strengthens the capacity for long-term sustainable development in UAM.

The CITYAM project aims to support and empower cities in facilitating a responsible and acceptable increase in urban air mobility via transnational Baltic Sea Region cooperation, in order to achieve a cleaner and more sustainable transportation system.

1.1 The current challenge with Urban Air Mobility

As Urban Air Mobility (UAM) continues to evolve, replicating the achievements of Stockholm, Helsinki and Hamburg in Work Package 1 "Preparing solutions" and Work Package 2 "Piloting and evaluating solutions" presents distinct challenges. These arise from the diverse characteristics of cities, regulatory variability, infrastructure gaps, and market readiness differences. The CITYAM project aims to bridge these disparities within the Baltic Sea Region, fostering a harmonized approach to UAM development. Overcoming these challenges is vital for successful UAM integration into urban ecosystems. The Baltic Sea Region is uniquely positioned to lead in integrating drone technology across sectors, making it an ideal testing ground for innovation, regulation, and collaboration between cities, companies, and national institutions. This chapter explores the current hurdles, potential pitfalls, and strategies to address them.

Integration into Spatial and Mobility Planning

Every city has distinct spatial, economic, and social dynamics that influence its approach to UAM. Factors such as population density, urban design, and governance frameworks mean that strategies successful in one city may require significant adaptation in another. To address these challenges:

- Customized Solutions: Cities must align UAM strategies with their unique land use policies, transport networks, and urban development plans. This involves crafting localized frameworks that support seamless integration.
- Regulatory Alignment: Harmonizing UAM operations with existing aviation rules, zoning laws, and urban planning practices is essential to prevent legal or operational conflicts. The adoption of European Union Aviation Safety Agency (EASA) guidelines, adapted to national requirements, and the implementation of U-Space systems under European Commission Regulation 2021/664, are paving the way for safe and coordinated urban airspace management.

Market Demand and Offering

Market demand for UAM services is shaped by urban population needs, economic priorities, and public acceptance. Strategies for successful deployment hinge on understanding these local factors and adapting accordingly.

- Market Analysis: Comprehensive studies are essential to understand demand for passenger transport, logistics, and emergency response services. This ensures UAM solutions meet specific urban needs rather than speculative opportunities.
- Service Adaptation: Offerings such as drone deliveries, air taxis, and medical logistics must be flexible enough to align with local requirements while remaining economically viable. Emerging trends, such as Drones-as-a-Service (DaaS), will further enhance the accessibility of drone applications, allowing businesses and cities to leverage on-demand drone services for tasks like inspections, surveillance, and deliveries.

Infrastructure Challenges

Urban Air Mobility requires significant infrastructure investment, which varies based on a city's existing resources and physical constraints. Each city must adapt to these challenges to enable safe and effective operations.

- Landing Sites: Developing vertiports and landing zones in dense urban areas poses logistical and financial challenges. Identifying suitable locations that could host dedicated drone hubs with landing pads integrated into existing infrastructure, such as rooftops and mobility points.
- Flight Corridors: Establishing regulated and safe drone corridors demands careful planning to avoid conflicts with existing air traffic and ground activities.
- U-Space Implementation: U-Space, as a comprehensive traffic management system, is vital for integrating large numbers of drones into the lower urban airspace safely and efficiently.

Future Needs and Technological Evolution

The rapid evolution of UAM technologies calls for forward-looking strategies to anticipate and meet future requirements. Cities must prepare to embrace innovations while aligning them with urban priorities.

- eVTOL Adoption: Electric Vertical Take-Off and Landing (eVTOL) aircraft require advancements in battery performance, noise reduction, and regulatory certification to become viable urban transport solutions.
- Digital Infrastructure: Robust digital frameworks, including geospatial data systems and digital twins, are necessary for managing UAM operations and enhancing safety.
- Innovation Hubs: Cities can become centers of UAM innovation by fostering dedicated spaces for testing and collaboration. These hubs will accelerate the adoption of cutting-edge technologies and services. In the Baltic Sea Region, cities are poised to become drone innovation hubs, hosting test grounds, innovation centers, and collaborative projects to accelerate the adoption of advanced technologies.

Vision for the Drone Ecosystem

The integration of drones into urban ecosystems offers transformative opportunities for cities. Automation and artificial intelligence are enabling drones to independently plan and execute missions, from deliveries to emergency response. The focus on energy-efficient and environmentally friendly technologies aligns well with the Baltic Sea Region's environmental priorities, fostering the development of electric drones and sustainable charging infrastructure.

The potential of UAM to transform urban mobility is immense, but cities must navigate significant challenges to scale and replicate pioneering efforts effectively. Addressing regulatory inconsistencies, infrastructure disparities, and public concerns is essential for realizing UAM's full potential. By fostering collaboration, harmonizing frameworks, and investing in targeted infrastructure, cities in the Baltic Sea Region can lead the way in sustainable and integrated UAM development. This collaborative effort will also establish the region as a global leader in drone innovation and application, setting a benchmark for other regions worldwide.

2. Guidance for analyzing the local situation

This chapter gives an overview of how to evaluate the current status of UAM in your local context.

All of the advice in this chapter reflects the work done in Year 1 of the project and is meant to introduce all the advice covered in detail in D1.1. - CITYAM - Regulations and integration of Urban Air Mobility in city planning and is publicly available on the Project website - https://interreg-baltic.eu/project/cityam/

Every case and situation is different, so make sure to adapt the advice to your local context.

2.1 Inventory stakeholders

When preparing an overview of stakeholders for Urban Air Mobility (UAM), it is best to identify and map relevant entities across all levels—national, regional, and local. The key is to ensure broad engagement and recognize each stakeholder's potential input into various facets of UAM development. Start by analyzing stakeholder roles in areas such as policymaking, infrastructure, public perception, and economic contribution. Collaborate at the city level while accounting for regional and national perspectives, and tailor your approach to the unique context of each case.

Based on Deliverable 1.1, consider these guidelines for identifying stakeholders:

- **Political-Administrative:**
  - Assess awareness and support for UAM among policymakers, government officials, and municipal administrators.
  - Identify stakeholders involved in drafting local, regional, and national policy plans that reference UAM or automated mobility.
  - Map stakeholders responsible for urban planning, regulatory enforcement, and city-level governance.

- **Economic:**
  - Look for stakeholders who manage funding instruments or investment sources for pilots, infrastructure, or UAM deployments.
  - Identify organizations or individuals with insights into innovative UAM business models, benchmarking efforts, and successful use cases.

- **Social:**
  - Explore stakeholders who have conducted or could provide insights into public acceptance of UAM through surveys or other data collection.
  - Identify those responsible for adapting existing transport, energy, and networks to future UAM requirements.

- ○ Map educational institutions with study programs, research groups, or vocational training focused on UAM or drone-related technologies.

- **Environmental:**
  - ○ Engage stakeholders conducting environmental impact analyses for UAM.
  - ○ Identify organizations or regulators responsible for defining spatial limits for drone operations and monitoring airspace usage.

- **Legal:**
  - ○ Consult with stakeholders involved in drafting, implementing, or interpreting UAM-related regulations at all levels.
  - ○ Look for entities responsible for ensuring alignment with international standards.

- **Public and Interest Groups:**
  - ○ Include citizen groups, community organizations, and advocacy groups that can provide insights into societal concerns or opportunities related to UAM adoption.
  - ○ Explore partnerships with professional associations or industry coalitions in sectors relevant to UAM.

- **Technological Infrastructure:**
  - ○ Engage stakeholders managing digital systems like geospatial data, digital twins, and air traffic management solutions.
  - ○ Look for entities responsible for developing and maintaining tools critical for UAM operations, such as weather forecasting, mapping, or data-sharing platforms.

For more detailed information, refer to [Deliverable 1.1](). This document provides further insights into stakeholder engagement and their roles in UAM development.

2.2 Inventory of local regulations

When assessing local regulations related to UAM, start by identifying the local, regional, and national legislative bodies that oversee or influence what is permitted within your jurisdiction. Collaboration with these bodies is critical for understanding the regulatory framework and ensuring compliance while addressing potential gaps or opportunities for alignment with broader standards.

Using insights from Deliverable 1.1, consider discussing the following questions with stakeholders:

- **Regulatory Compliance:** What UAM-specific regulations does your organization need to follow? Are there any areas where compliance is lacking, and what measures are required to address these gaps?

- **Influencing Factors:** What external conditions—such as technological readiness or stakeholder coordination—affect your organization's ability to meet regulatory requirements?

- **Regulatory Impact:** What current or upcoming UAM regulations might impact city operations? Assess their potential effects and assign a significance rating to each.

- **U-space Participation:** Is there a U-space observatory at the national, regional, or local level? If so, are you involved, and if not, would your organization benefit from participating?

- **UAS Zones and USSPs:** How many UAS zones, U-spaces, or USSPs are operational in your region or country, and what are the plans for future expansion?

- **Alignment with EU Standards:** Are local regulations consistent with EU requirements?

2.3 Inventory financial resources

When creating an inventory of financial resources, it is essential to identify the key local, regional, and national stakeholders responsible for funding or influencing UAM-related activities. Engage in discussions at the city level to understand existing budgeting frameworks and uncover potential funding gaps or opportunities. Each city's financial landscape is unique, so it is crucial to explore specific mechanisms that suit local needs and priorities.

To ensure a thorough understanding, consider exploring financial mechanisms already in place within your city or region, as well as potential external funding sources such as public-private partnerships, subsidies, or grants. Collaboration with key stakeholders—such as city planners, transport authorities, and private sector representatives—can provide valuable insights into feasible funding models.

Building on the insights from Deliverable 1.1, use the following guiding questions and activities to shape the inventory process:

- **Tenders and Procurement:** How will your organization manage the selection of candidates in UAM-related tenders or procurements? Are there existing rules or regulations governing this process?

- **Financing Mechanisms:** What methods for subsidizing or financing UAM activities currently exist, and what new mechanisms could be implemented?

- **Responsibility Assignment:** Who should bear the financial responsibility for key activities, such as flight operations, infrastructure development, environmental assessments, data management, and research? Specify organizations where applicable or identify areas suited for market-driven funding.

2.4 Inventory infrastructure

When preparing an overview of infrastructure for UAM, it is crucial to identify existing resources, ongoing developments, and areas requiring enhancement. The best practice is to start by evaluating what infrastructure—both physical and digital—is currently available, understanding its capacity to support future UAM operations, and identifying gaps. Consider engaging with relevant stakeholders at the city, regional, and national levels to ensure a comprehensive analysis. Look for information in planning documents, public databases, and urban development reports. Pay special attention to potential partnerships with infrastructure providers and organizations that influence urban planning.

Based on Deliverable 1.1, the following questions and activities can help guide the process of inventorying infrastructure:

● **Physical Infrastructure:** Does your organization have existing infrastructure capable of supporting large-scale UAM operations? If not, what modifications or new developments are needed, and at what cost?

● **Digital Infrastructure:** What digital systems, such as 3D maps or geospatial databases, are available to support UAM operations? If gaps exist, what additional tools or resources are required?

● **Readiness and Plans:** For infrastructure currently under development, what is its readiness level, and what are the timelines for completion?

● **Data Access:** Does your organization have access to all necessary data sources (e.g., geospatial data, population density, or traffic patterns)? If not, which organization should provide this information?

● **Urban Planning Integration:** Are there tools available to assess locations suitable for TOLAs (Take-Off and Landing Areas) or vertiports? Do your city maps contain necessary data like vegetation, rooftop surfaces, or zoning details?

● **Infrastructure Suppliers:** Which organizations supply your digital and physical infrastructure? Are there plans for retrofitting existing systems, and what externals influence this?

● **Urban Definitions:** How are degrees of urbanization and functional urban areas classified in your region? Are international definitions (e.g., from the European Commission or OECD) used, and how frequently are they updated?

Further detailed considerations on topics such as flight data storage, urban typologies, and real estate use in UAM are provided in Deliverable 1.1. Addressing these aspects ensures a robust foundation for integrating UAM into your urban environment.

4. CITYAM tools useful for UAM planning

This part of the report presents an overview of the many tools developed throughout the Project.

4.1 Public acceptance survey/toolkit

This toolkit is for assessing the public acceptance of using commercial and municipal drone services in the city. Social acceptance of UAM gauges the willingness of communities to support the integration of aerial vehicles and accompanying infrastructure into urban transportation systems. The toolkit is meant for the municipalities or other stakeholders to understand the social acceptance of the UAM.

Acceptance includes attitudes toward UAM technologies, considering factors like environmental impact, safety, privacy, visual and noise pollution, trust in technology and authorities, and perceived benefits. The toolkit, adjusted from existing models of social acceptance, evaluates general acceptance of UAM and use-case-specific acceptance of drone services in leading cities. The toolkit consists of four sections: 1) Survey invitation, 2) Sociodemographics, 3) General acceptance, 4) Use case acceptance. Each section is meant to be translated into the native language where the survey is being disseminated. The questionnaire is meant to be set up in a preferred survey platform by the municipality or the stakeholder who is collecting the data.

The toolkit is in english and is meant for municipalities or other UAM stakeholders to be translated into their native language for implementation. Additionally it has been translated to finnish, swedish, german, polish, latvian and estonian. Instructions are provided to foster the process from translating to survey rollout. The toolkit is modular and can be adjusted to address various circumstances cities might have when piloting their use cases. The toolkit can be found at the [CITYAM project page](#).

4.2 Landing site selection tool

The launch and landing site selection tool, entitled "FGI Web Collaborative GIS (CGIS) for CITYAM", is a web map platform for collaborative spatial planning of drone operation sites (see CITYAM Output 2.1.) GIS tool is available online: https://vm2425.kaj.pouta.csc.fi/ . It is a Spatial Decision Support System (SDSS) in which participants can work together on a shared map workspace each on their own devices (see Figure 1). The key features of the CGIS are:

- map user interface,
- workspace manager,
- data manager,
- layer manager,
- map drawing tools,
- analysis tool to run weighted multi-layer analysis for assessing suitability of locations for drone landing sites.

For example, the CGIS platform can be used by multiple people working together to discuss, plan, and decide the locations of drone-in-a-box sites, where drones are recharged and stored.
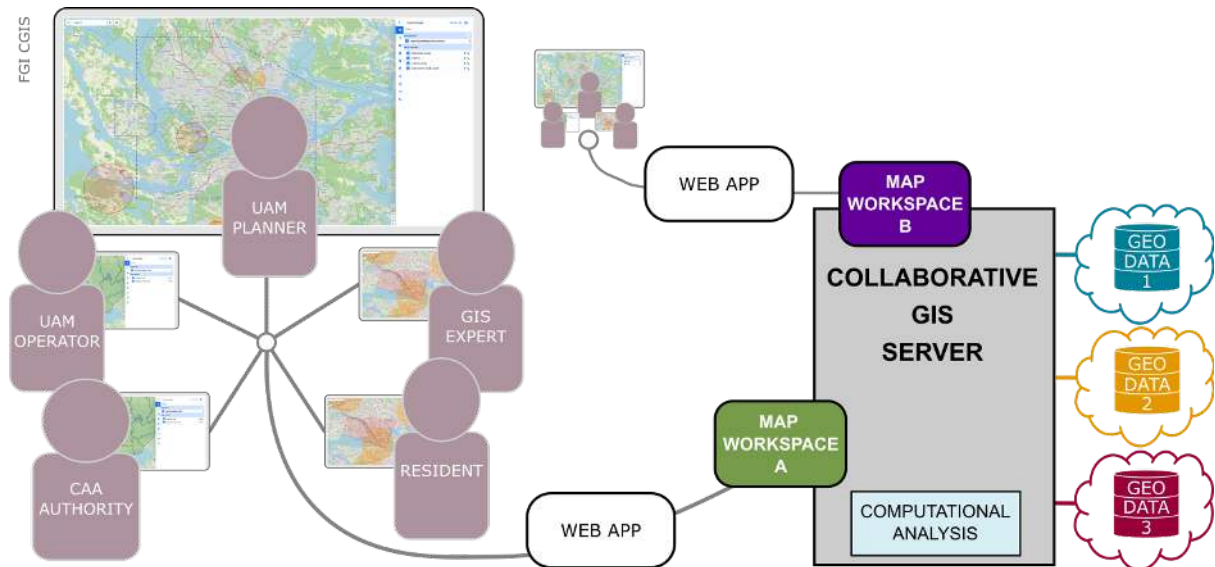

Figure 1: Concept of the Web Collaborative GIS

4.3 UAM strategy framework

The UAM Strategy Framework will consist of a few different elements that aim to help cities integrate UAM in existing city policies. It will include 1) a list of commonly available policy documents such as mobility plans & urban planning strategies, 2) a list relevant public authority stakeholders, and ways to engage with them based on our experiences and 3) a matrix of UAM elements that need to be considered, including the division of responsibilities of city depts., applicable regulations, air traffic management, landing site planning, business models/ownership/investments, physical and digital infrastructure, and public acceptance/engagement etc.

The output will be in the format of a step by step planning graphic and a report to help provide more detailed guidance for the replicator cities and beyond. It will include an optional survey developed in Hamburg for public authorities in order for a city to get a picture of whether authorities are using drones, plan to use them, or still need information on drone usage in urban areas. Based on those responses, cities can choose if they would like to host workshops/information sessions to educate and look for solutions together with their public stakeholders on city UAM integration. The goal of this framework is that cities will have an idea of which authorities/departments they should contact, how they should engage with them, which policies will need to be updated, and what other steps and processes they should consider.

The report titled "Urban Air Mobility strategy framework including Roadmap for Replicators in and beyond the project" is expected to be published via the project website and LinkedIn channel in July 2025.

5. Roadmap for replication plans in each city (UAM development plan for project year 3, January - December 2025)

This chapter provides the opportunity for each replicator city to provide insight and describe their plans for CITYAM's final year and what, how and when will the different replication activities take place.

The following paragraphs represent the most up-to-date information as of writing this report, however, as with any innovative project, there might be some adjustment to the planned activities, both to the scope as well as the timing.

5.1. Tartu

The aim of the roadmap is to transfer piloted solutions to the city of Tartu (Estonia) as the replicator city with defining the step-by action plan to strengthen the capacity, capabilities and business opportunities related to UAM. Planned activities ensure transfer and uptake of the solutions by the target groups. We aim to engage city planners and private sector representatives to ensure broad applicability and integration of the roadmap.

Tartu is leading the project task 3.2 that aims to implement replication roadmaps of 3 replicator cities – Riga, Gdansk and Tartu.

The three replicators are active already from the start of the project. Within the first work package (WP1) the baseline analysis from local and national perspective was performed and during the second work package (WP2) last year, the UAM Public Acceptance Toolkit was replicated.

Based on results and the outcomes and outputs of WP1 and WP2, the focus of this roadmap includes:

- Consolidated UAM strategy, including Roadmap for Replicators
- Relevant local use cases for drone operations
- Step-by-step action plan for local UAM strategy and policy development
- GIS tool for landing site selection
- Communication with various city departments for defining an optimal division of responsibilities, as well as with the national authorities and neighbouring municipalities for future work.
- Mapping the way UAM can be integrated into city planning, based on the experiences of the 3 Pilot cities.
- Drone pilot-flights for selected use cases

The following section outlines the key components of the roadmap for Tartu, including the planned approach and timeline.

5.1.1 Timeframe

- Piloting of Landing Site GIS tool – January-June 2025
- Replication of Public Acceptance Toolkit – started in 2024, finalized by September of 2025.
- Replication of decision making tools – January-September 2025
- Planning and piloting of drone operations – February-September 2025
- Report on replication activities (input to D3.2) – March-October 2025

5.1.2 Public acceptance survey

In 2024, we conducted the public acceptance survey (including use-case survey) and the results of this survey were analyzed within WP2 activities. Tartu used in the survey the following use-case description:

„In 2025, the city government plans to start testing the use of drones and artificial intelligence in the daily work of the city government. The first tests will be carried out in the road works oversight, to explore the possibilities and benefits of using drones in the daily work of the city government. During the test flights, the data gathered by filming the road construction status is analysed and its usability will be evaluated in regards to the construction project documentation drawings."

In 2025, we plan to conduct the survey again, maintaining the general focus on oversight of construction works as the primary use case. However, the specific description of the use case will be updated to align with the final details of the planned drone operations pilot.

Repeating the questionnaire will enable us to compare results with those from the previous survey and gain insights into how public opinion on UAM has evolved.

The survey will be conducted via the city official web-page to reach the target audience and achieve the desired sample size. Information about the survey will be communicated via different channels (press-release, city web-page, social-media, mailing-lists etc.) in order to ensure reaching an appropriate audience, including the general public and citizens..

5.1.3 Stakeholder engagement

The stakeholder engagement programme in Tartu aims to actively engage all key stakeholder groups through targeted outreach and in-depth discussions. General meetings with stakeholders will be organized monthly. Depending on the roadmap topic (GIS tool pilot, drone operations pilot, decision making tool pilot), working groups will be formed, inviting specialists and experts from various city government departments and external organisations. National authorities (Transport Administration, Ministry of Economic Affairs and Communications, Ministry of Climate) will be included in the working groups as needed. Several stakeholders (politicians, city officials from different departments, EAVA, Estonian Aviation Cluster, Tartu Science Park, general public) have already participated in project-related activities before. Therefore, we do not need to do additional stakeholder mapping and can create working groups using existing contact networks.

To ensure the effectiveness of the working groups, it is necessary to include politicians/decision-makers who impact the shaping of UAM policy in the city. The

involvement and support of politicians is particularly important in shaping the UAM strategy and action plan in the project.

5.1.4 Landing site GIS tool – mapping locations

Replication of landing site selection is based on the experiences of the pilot cities of applying the Landing Site Selection GIS Tool developed within the project. We will apply a step-by-step approach on landing site selection, decision-making and development as part of the city planning activities.

In cooperation with city planners and technical specialists we will in 2025 test the usability of the landing site tool by evaluating its practical application in identifying suitable launch and landing sites for drones.

At first we shall define clear selection criteria and their weights in cooperation with stakeholders, considering different factors such as geographic constraints, infrastructure limitations and needs, traffic density and other aspects. Selection weights will be tailored to the local context, ensuring that the tool aligns with the specific conditions and needs of Tartu City.

In cooperation with the creators of the tool, a workshop will be organized at the beginning of 2025, where the tool will be introduced to various city specialists, after which the specialists will be able to test the tool independently. After the end of the tests, we will organize a seminar where we will introduce the tool and its functionalities to a wider circle of experts along with practical training and a discussion on how to effectively use the tool in city planning activities.

5.1.5 Use cases

When defining the use cases, we developed them based on the experiences of the pilot cities in the project and the needs of the city of Tartu. User guides have been observed and discussed at the project level, as well as locally in Tartu with various interest groups.

The primary focus in Tartu is on the use of drones in the city's public services with the aim of increasing the efficiency and ease of use of these services for city residents. We see various monitoring activities as the main use cases.

Insights gathered from a survey done in Tartu among city officials and relevant departments will be critical in shaping the final shortlist of use cases. This survey helped identify the best potential use cases by highlighting areas of high impact, interest and feasibility within the city. From these results, we will carefully define and prioritize the most viable options that align with the city's needs. Our focus will be on ensuring these use cases reflect practical applications that can be realistically implemented within the urban environment.

In Tartu, cooperation is being carried out with the project "Smart Skies" supported by the ERDF Estonia-Latvia programme to conduct drone pilot flights. It has now been agreed that pilot flights in Tartu will be carried out in the second half of 2025 and the „drone in the box" solution will be piloted in the area of construction oversight.

In cooperation with the private sector representatives we will define next use-cases (health-care, delivery services, infrastructure monitoring etc.) for future piloting.

5.1.6 Capacity building within city administration

Tartu has been working on building the capacity of the organization during previous project periods. So far, mainly in defining possible use cases for drones and replicating the public acceptance toolkit.

In 2025, we will make significant progress in this regard as we implement this replication plan. Specialists of the city government from the fields of urban planning, land management, traffic, IT and public relations will participate in the capacity building program through various working groups. In addition, politicians/decision-makers will be involved in the process.

During the period we will introduce established CITYAM tools, results and learnings so far. A local workshop will be organised.

We aim to provide to all parties needed knowledge in order to agree on the organisational level how to proceed (timetable / commitments / investments / responsibilities) with UAM focused activities within the city.

The result is a UAM strategic plan for the city of Tartu, based on the project outcomes, replication activities and cooperation with local stakeholders. The plan will be completed by autumn 2025.

5.1.7 Integrating UAM into city planning - UAM strategy/policy

In 2025 we will continue communication with various city departments and define an optimal division of responsibilities, as well as with the national authorities, neighbouring municipalities and private sector for future work.

Data and experiences gathered from replication activities will be used in local planning and design activities related to UAM. During the period we will map how to integrate UAM in city planning, based on the experiences of the 3 Pilot cities. As a result, the UAM Strategy/policy plan will be drafted by the end of the period.

Within the period, together with policy makers and specialists from the city government we will review and identify existing city planning documents and policies that could benefit from the inclusion of UAM perspectives. This process will involve assessing which documents are due for revision and how UAM considerations (landing site integration, airspace management etc.) can be effectively incorporated. Understanding these timelines will ensure UAM is seamlessly integrated into ongoing and future urban developments.

5.1.8 Future developments – vision

Beyond the project lifetime, our aim is to repeat the public acceptance survey on a regular basis (at least every third year). Main questions of the survey remain the same in order to ensure comparability of results. Adapted survey will be used when the city initiates new use-case pilot flights.

To ensure transparency in communication and enhance the visibility of UAM, we plan to actively communicate with the general public and stakeholder groups through various city channels (including social media). Information about the project, including project outcomes, will be continuously presented in the city web-page on a dedicated project page.

After the project ends, we will continue to implement the UAM strategy and pilot new use cases. We aim to maintain discussions with city officials, national regulators, and other stakeholders beyond the project to ensure sustainable and scalable UAM development in the City of Tartu.

5.2. Riga

In 2025, the third and final year of CITYAM, the City of Riga plans to continue the work laid out in the first years of the CITYAM project, building upon the foundation established throughout the project, incl. early public engagement, stakeholder collaboration, and strategic planning. This phase focuses on integrating UAM initiatives into the everyday processes on the city level, by incorporating lessons learned, refining use-cases, and enhancing public acceptance efforts in and beyond the project. With a clear roadmap and dedicated action plans, Riga aims to solidify the path forward, ensuring that innovative solutions align with the city's long-term transportation goals and environmental commitments.

The following section outlines the key components of Riga's roadmap, including the planned approach and timelines. While these plans reflect the most current strategies at the time of this writing, this document is intended to be dynamic, evolving as the city's priorities shift. Updates, refinements, and adjustments should be made to ensure alignment with emerging needs and objectives.

5.2.1 Guidelines for integrating drones into the urban mobility ecosystem

During 2025, we will develop guidelines for the integration of drones in the city of Riga, which include:

1) Vision for the development of the future drone ecosystem in Riga;

2) Recommendations for the integration of drones for commercial use Beyond Visual Line of Sight (BVLOS) and Visual Line of Sight (VLOS) flights;

3) Analysis of legal framework for commercial flights on the national and municipal level;

4) Proposals for improving the legal framework of the city of Riga in the municipality for commercial flights;

5) Unmanned aircraft infrastructure and approval procedure proposals in order to facilitate the approval process of commercial flights, reduce ground and air risks and achieve compliance with European Aviation Safety Agency (EASA) regulations.

5.2.2 Public Acceptance Survey

In 2025, we plan to conduct the Public Acceptance Survey again, utilizing the updated and streamlined General Survey along with the Use-case Survey. This will enable us to compare results with those from the Year 2 survey and gain insights into how public opinion on UAM has evolved.

Beyond the project, our aim is to establish a recurring cycle, repeating the survey every few years or more frequently when the city initiates use-case pilot flights. Alternatively, the survey questions could be integrated into the city's annual large-scale general survey.

The survey approach will mirror the process from Year 2, involving careful preparation, the use of the city's survey platform, and leveraging the city's communication channels to reach the target audience and achieve the desired sample size. The strategy for engagement will be reviewed to ensure an objective demographic representation and a balanced understanding of UAM exposure.

To ensure transparency in communication and enhance the visibility of results, we plan to actively communicate with the public and stakeholders through various City channels, including media outlets, social platforms, and internal and external newsletters. This multi-channel approach will help broaden outreach, ensure that information is accessible, and encourage meaningful public participation throughout the project's progression.

5.2.3 Landing site tool

During the first part of 2025, the city of Riga will prioritize the active development and replication of the Landing Site Selection Tool, and during the second part of the year piloting of the decision making tool will take place. Throughout 2024, Riga Technical University in partnership with City of Riga has been developing a GIS platform, collecting and gathering data and working on frameworks to best prepare for the final project year, where, based on data and feedback from the lead cities, we will be able to integrate their findings and technical scripts into our platform. This will enable us to start piloting the practical application of the Landing site planning tool.

Through this process, we will thoroughly test the usability of the landing site tool by evaluating its practical application in identifying suitable launch and landing sites. We will define clear selection criteria, considering factors such as geographic constraints, infrastructure needs, and urban density. Selection weights will be tailored to the local context, ensuring that the tool aligns with the specific needs of Riga. To refine the tool, we will organize a workshop with the city's urban and transport planners to test it and gather insights on its functionality collaboratively. In parallel, we will hold discussions at the more senior level to explore how best to integrate this tool into the city's existing transport planning frameworks. As part of these conversations, a discussion will be on what kind of data, in what format and how often should be exported from the tool and integrated into the city's provided online GIS platform – GEORIGA. Finally, we will define two practical application cases that demonstrate the tool's effectiveness in potential real-world scenarios.

5.2.4 Use Cases

Primarily, we will build on the foundational work completed in 2024, utilizing the existing inventory list of potential UAM use-cases and the practical learnings from the Lead cities and their pilots. The data and insights gathered from a survey done in Riga among city officials and relevant departments will be critical in shaping the final shortlist. This survey helped identify the best potential use-cases by highlighting areas of high impact, interest and feasibility within the city. From these results, we will carefully define and prioritize the most viable options that align with the city's needs. Our focus will be on ensuring these use-cases reflect practical applications that can be realistically implemented within the urban environment.

A significant opportunity lies in the potential partnership with a private sector company interested in piloting a medical material delivery use-case between hospitals. This partnership would not only test the technical and logistical capabilities of UAM but also address critical healthcare needs. We plan to collaborate closely with national authorities and the Civil Aviation Authority to navigate regulatory challenges and ensure quick exchange of information. Furthermore, we will actively monitor and engage with the piloting activities of the parallel 5GForLives project, which focuses on 5G-enabled solutions. By aligning our efforts and learning from their outcomes, we aim to enhance the effectiveness and scalability of UAM use cases, ensuring they are well-integrated into the city's future mobility landscape.

5.2.5 UAM integration into city planning and developing a UAM strategy

In 2025, we plan to initiate discussions on capacity building at the city level, focusing on evaluating the necessary specialists and planners and their skills and knowledge to manage and integrate UAM into urban planning. This will involve identifying relevant departments and stakeholders, such as the urban and mobility department, city development department and others, who will need to be trained in UAM technologies, regulations, and infrastructure planning. Additionally, we aim to review and identify existing city planning documents—such as transport plans and urban plans and policies—that could benefit from the inclusion of UAM perspectives. This process will involve assessing which documents are due for revision and how UAM considerations, such as landing site integration, airspace management, and safety protocols, can be effectively incorporated. Understanding these timelines will ensure UAM is seamlessly integrated into ongoing and future urban developments.

Beyond the scope of the project, we aim to maintain these discussions through continued collaboration with city officials, national regulators, and other stakeholders. During the next revision cycle of the city's strategic and long-term planning documents, we will work to integrate UAM into key policies, ensuring that UAM becomes a bigger part of the city's future mobility and infrastructure plans ensuring sustainable and scalable UAM development. Guidelines for the development of UAM will be prepared with the involvement of an aviation expert.

5.2.6 Stakeholder engagement

Our main goal for the last project year is to actively engage all key target groups through targeted outreach and in-depth discussions. We aim to host at least two project discussion and dissemination sessions to foster dialogue on the project's progress, challenges, and potential solutions. These sessions will bring together local stakeholders, including urban planners, public authorities, and representatives from various sectors, to ensure a well-rounded exchange of ideas. Additionally, we will conduct focused discussions within the City Council's departments, facilitating cross-departmental collaboration on key topics, such as integrating CITYAM project tools into existing urban planning processes. This internal engagement will ensure that all relevant departments are aligned with UAM goals and prepared to implement its solutions effectively.

Additionally, engagement will also extend to national public authorities, as we plan on having focused discussions with the Ministry of Transport and our Civil aviation agency, to explore what lessons learned from the CITYAM project can best help guide any legislative or strategic plans, amendments or other national plans that they might be working on.

5.3. Gdansk

5.3.1. Public Acceptance Survey

The first public acceptance survey had been carried out in March 2024 resulting in 2610 filled in questionnaires and an impressive marketing impact for the CITYAM project in Poland. The information on the survey was shared with no less than 100 000 people via Citizen's Card newsletter addressed to residents and via media publicity in local and national media. Since this approach was highly effective, the next public acceptance survey will follow the same approach.

The Research and Analysis Unit of the Municipality of Gdansk and the Gdansk Tourist Organisation, which is responsible for the above mentioned newsletter, the most effective information channel for reaching residents, will again be involved in the preparation of the interactive survey based on the tools provided by the project. In addition, a press release will be sent out, information will be posted on the City Hall website and on the city's social media channels.

Although the city has not decided to carry out a second round of surveys in the same calendar year, the surveys are still planned. It was decided that it was not worth asking residents for their opinions on hypothetical cases of drone use, but to organise a pilot study as part of a replication exercise in Gdansk and then conduct surveys during or immediately afterwards. As preparation for the pilot, the city will be able to address the views expressed by residents in March 2024 and adapt communications to adequately address their needs and expectations.

5.3.2 Stakeholder engagement

The UAM ecosystem in Gdansk is growing with now having 22 public servants (e.g. local stakeholders working in municipal units, including: roads management, urban planners, City Guard, Police, The Gdansk Real Estate Agency, municipal land surveying, Department of Infrastructure, Social Development Department, Research and Analysis Unit etc.) to advance UAM in our city. A local steering committee with representatives of mentioned units was formalized through Gdansk Mayor's order (local law act) in April 2024, as a constitution of the team, mentioned above, that already meets.

So far, the committee members have received general training on drones from the Civil Aviation Authority, followed by more advanced training on drones and an exam for drone operators, so that persons working in various municipal departments and units can back up their theoretical knowledge with practice and understanding before starting to develop concrete solutions. In addition to the training sessions, the committee members have met several times, online or off-line.

In addition to the formalized municipal team, representatives of the local police, the local branch of the Association of Polish Town Planners and two hospital operators managing hospitals in Gdansk are involved in the same communication.
As part of the action plan, the frequency of meetings and communication will be increased, in particular for representatives of those departments whose knowledge is most needed in the course of using GIS tools.

5.3.3 Landing site tool

The mapping tool will be of most interest to urban planners and surveyors. The local steering committee includes one person from the Gdansk Development Office (urban planners) and three people from the Land Surveying Department who will first familiarise themselves with the tool's features and then advise the local project leader on the most appropriate way to test and implement it in Gdansk.

The key challenge is to bring the tool developed in the project into synergy with the Spatial Information System of Gdansk - GeoGdansk. It is a project in which the city of Gdansk brings together a considerable amount of spatial information. Thanks to GeoGdansk the municipality collects, shares and exchanges spatial information and is up to date.

First, the municipality has been offering an interactive map delivered in web browsers, finally replaced with system, which includes:
- the internal system at https://gis.geogdansk.pl requiring a login
- and the public external service launched for all (without login) at https://geogdansk.pl .
It will gradually be developed with, among other things, some of the tools already available on the internal system.

The GRoT tool ('Gdańsk Land Report') has also been developed and improved. It is available from the GeoGdansk application in a web browser. It allows to generate in one file (pdf, docx) a set of information presented in GeoGdańsk for a selected plot of land or area indicated on a map.

The GeoGdansk based on standardised spatial data, integrates information from departments and units into a single database, supporting internal processes and providing information for residents. The project also presents on the map data that until now was stored in excel, documents or in separate files with different update frequencies.

To sum up, as a part of replication activity, it will be determined how and to what extent the landing site tool can be integrated into GeoGdansk. The land surveyors will test the tool, assessing its functions as to identifying take-off and landing sites and finally presenting this information within GeoGdańsk. Similarly, as with charging stations and with help of urban planners, the criteria of planning the UAM infrastructure will be listed.

5.3.4 Use cases

In the summer of 2024 the City of Gdansk clarified potential use cases to be implemented as one of replication activities. The use-cases were shortlisted as a result of following the work of the lead cities and learning about their process of preparation as well as obstacles they came across throughout the project lifetime. The knowledge we gained through peer-learning was shared with the local steering committee and a following consultation with local stakeholders and associated organisations who shared their ideas for the pilot.

Three ideas were selected, with an intention of implementing at least two. The ideas were as follows:

1. Tree stand monitoring - Gdansk Roads and Greenery Authority carries out such activities year-round, with particular intensity during the growing season, and drones could be used in this process.
2. Completion of a safety audit around primary schools regarding the volume of car traffic and the danger this poses to children.
3. In cooperation with police - which is interested in the use of drones for traffic surveillance, securing mass events (major matches and concerts) and possibly as part of exercises for officers preparing for field searches. - It seems that securing mass events is a preferred pilot use case.

Following further consultation with a project leader, joint secretariat and respective beneficiaries of the pilots the municipality decided to proceed with two use-cases as follows:

1. Completion of a safety audit around primary schools regarding the volume of car traffic and the danger this poses to children concluded with a report of spotted situations and data on the volume of traffic.
2. Traffic surveillance, with a special focus of tackling speeding and preventing road races.

As far as the form of implementation is concerned, the municipality abandoned the idea of purchasing a drone and would like to outsource the entire responsibility to an external company that has a fleet of drones and know-how.

5.3.5 Capacity building

It is to be expected that topics related to UAM will continue to be coordinated by the city's electromobility officer, who will oversee this topic in connection with the restructuring as of January 2025 from the Active Mobility Unity of the Public Transport Managing Authority. This person will continue to work closely with the city's representatives on the local steering committee, and especially with the Department of Security and Emergency Management, the Department of Economic Policy and the Department of Land Surveying, Gdansk Roads and Greenery Department and the office of the City of Gdansk.

The persons involved in the implementation of the CITYAM project in the city and at the same time in the subject of mobility will also report on the development of the state of knowledge and the work on the UAM in the city, the Civil Aviation Authority and the Polish Air Navigation Services Agency.

5.3.6 UAM integration into city planning and developing a UAM strategy

UAM is not currently included in the city's strategic documents, but an approach has been developed among mobility and transport practitioners that it will initially be considered as part of logistics rather than mobility.

The key documents at this point at city level are:
- Gdańsk Development Strategy - Gdańsk 203 Plus and related development programmes i.e.: Green City, Common City, Accessible City, Innovative City;
- Strategy for Electromobility Development in Gdansk until 2035;
- Sump Sustainable Urban Mobility Plan - adopted in 2018 and awaiting update.

It is most likely that UAM will be included in the SUMP update, which is expected in the third quarter of 2026, with an outlook to 2040. This will give the opportunity to use the conclusions in the implementation of the CITYAM project in this document.

A Sustainable Urban Logistics Plan (SULP) has not yet been developed for the city and, given the scope of this challenge, there is a working deduction that this work could be proceeded with provided external funding is obtained, e.g. through the implementation of an EU project. It would then certainly also look at the issue of supplies and services using the potential of the UAM.

In addition, through the presence of representatives of various key municipal departments and units on the local CITYAM steering committee, it can be expected that awareness of the UAM will increase and ultimately be present in urban planning.

At the regional level, UAM is also not present in strategic documents. A Metropolitan SUMP was created in December 2023, but UAM is not included in it. However, the city will share information and provide assistance, in case of future updates to this document.

The overarching strategic document in the city is the aforementioned Development Strategy for Gdańsk and, in line with the current approach, we try not to multiply further strategic documents, especially those with the status of local law, as this is not efficient.

However, the city's representatives participating in the work of the CITYAM consortium provide local input into the results so that further approaches to shaping the UAM in the city can be based on them.

In the same way that a procedure has been developed for the provision of sites in the road lane for vehicle charging stations, it can be expected that a procedure will be developed for the provision of sites in the road lane, on the roofs of municipal buildings and on publicly accessible non-roadway municipal plots for drone take-off and landing sites.

5.3.7 Additional plans for public engagement

In connection with the planned pilots, communication of both intentions and results is planned through press releases and municipal social media profiles. In addition, it will be possible to use the city's TV studio, where interviews on the topic will be recorded and made available via the gdansk.pl website.

There is also the possibility to organise workshops for citizens to learn about the effects of the CITYAM project in Gdansk and to help develop solutions for the UAM in our city, for example, by expressing their opinions on the emerging approaches in the city. Such a workshop could be organised within the framework of the European Mobility Week.

6. Suggestions on how to evaluate the success of UAM activity implementation

Description of a methodology on how to evaluate the replication work of year 3 – introduce D2.5.

To assess the impact of the CITYAM project, four survey questionnaires were prepared as part of D1.5 Setting up the evaluation framework and based on the societal embeddedness assessment framework initially developed for the DigiMon project. The framework itself is based on the Technology Readiness Assessment Framework and helps to determine readiness in four dimensions: environment, stakeholder involvement, policy & regulations, and market & resources. The original framework has 74 milestones with 234 questions to assess the societal embeddedness of a technology. After adjusting the framework for the CITYAM project, the four questionnaires cover a total of 217 questions organised under 67 milestones.

The assessment is carried out for all six CITYAM partner cities. The first assessment round took place in Spring 2024 to see the current readiness of the cities in the context of drone adoption. The second assessment round will take place in Autumn 2025 and will allow the partner cities to see how the CITYAM project has impacted drone adoption in their cities.

The four questionnaires prepared for the CITYAM project each covering one specific dimension also function as checklists of activities that cities should carry out to ensure the adoption of drones will take place in a socially responsible manner. These questionnaires can be used by any city interested in supporting urban air mobility and the adoption of drones in urban airspace.

Conclusion

In conclusion, the CITYAM project paves the way for the responsible and sustainable adoption of Urban Air Mobility across the Baltic Sea Region. By leveraging shared knowledge, harmonized regulatory frameworks, and innovative technologies, cities like Riga, Tartu, and Gdansk can effectively integrate UAM solutions into their urban ecosystems. Through collaboration, public engagement, and strategic planning, this initiative not only advances mobility but also strengthens the region's position as a leader in drone innovation. The insights and methodologies outlined in this report serve as a valuable foundation for future UAM development, ensuring long-term impact and scalability beyond the project's timeline.