D.T2.1.2 – Tribute Action Plan Zagreb

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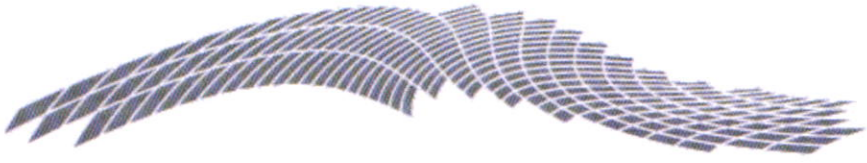
TRIBUTE



PP5 – City of Zagreb

Document Control Sheet

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0. INTRODUCTION

The WP T2, called the *Identification of Action Plans supporting the implementation of innovative and sustainable mobility measures,* englobes the Action Plan development (Act.T2.1) and the Pilot Action implementation (Act. T2.2). Regarding the Action Plan development (Act.T2.1), this document accounts specifically for the ***Deliverable T2.1.6_Tribute Action Plan_PP5-City of Zagreb.***

This document is based in a documentational state of the art research (Annex 1 Please annex the deliverable of the methodology for the action plan) to understand key projects and plans within the city of Zagreb that contribute to enhance alternative mobility modes in a national scale with the revision of the PNRR (National Recovery and Resilience 2021 - 2026), at a local level with the revision of the Master plan along with the learnings from the Zagreb pilot action deployment phase. The following figure illustrates the Action Plan framework and base elements:

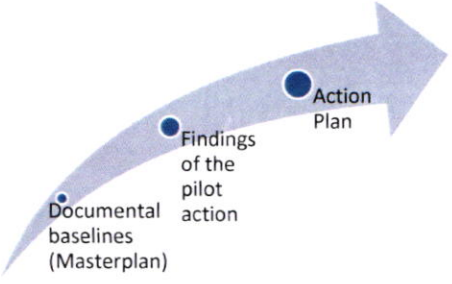


Figure 1 Action plan framework elements

1. Scope of the action plan

The primary objective of this action plan is to provide technical and implement technological support for a real-time adaptive traffic management system. Through the iterative process of establishing the living lab, existing challenges were identified, and the best solutions for real-time tracking of traffic entities were analyzed. Based on the testing of the traffic counting methodology, the results of traffic counting effectiveness were presented, and the ultimate outcome provides input data used in optimizing the traffic process through adaptive management.

Recognizing that traffic counting alone cannot be the sole goal, secondary Qualitative objectives were formulated. A total of six categories of descriptive objectives (one primary and five secundary), were determined each encompassing SMART objectives that can be measured through key performance indicators. This entire process also resulted in the creation of a document titled 'Guidelines for the Implementation of Utilized Technologies,' which has emerged as the one of final product of The Zagreb Living Lab.

Methodological Approach

The methodology encompasses essential parameters and the procedures for conducting activities within the Living Lab aimed at developing the transportation corridor along Vukovar Street in Zagreb. These are outlined through the following nine steps:

1. Defining objectives: Clear SMART goals, accompanied by key performance indicators -KPIs, have been defined for the improvement of the transportation corridor. These objectives include improving safety, reducing the use of personal vehicles, and increasing the utilization of other transportation modes, such as public tram transport, pedestrian, cycling and micromobility transportation.

2. Stakeholder Collaboration: Involving various stakeholders, including the Zagreb City Administration, the Trnje city district, relevant committees within the district, transportation companies, the academic community, and citizens themselves, ensures diverse expertise and enhances the dissemination of the Living Lab concept. It also supports the implementation of pilot project along the identified corridor.

3. Testing and Innovation: By utilizing the transportation corridor as a 'living laboratory' for testing innovative technologies and solutions, such as smart infrastructure. Primary objective: To provide technical and technological support for a real-time adaptive traffic management system. Secondary objectives:

- To improve Safety along the test corridor

- To establish convenient, efficient, and accessible Public transportation
- To improve Cycling and Micromobility infrastructure
- To improve Pedestrian infrastructure
- To improve Road infrastructure

4. Sensor Technology: Installing sensors along the corridor that monitor all traffic flows and their indicators (whether it's motorized, tram, pedestrian, cycling, or micromobility traffic). Relevant parameters guarantee continuous data collection, serving as the input assessment for key performance indicators.

5. Data Analysis: Analyzing the collected data will identify patterns and potential issues upon which strategies for improving traffic management on the test corridor will be developed.

6. Iterative Testing of Pilot Projects: The implementation of pilot projects, incorporating new technologies and traffic strategies, along with monitoring their impact on the corridor through iterative activities, results evaluation, and strategy adjustments, will facilitate a high-quality process leading to the optimal traffic management strategy and the achievement of the set objectives.

7. Citizen Involvement: Engaging citizens in decision-making processes and testing through advisory boards, workshops, or online feedback platforms allows a more comprehensive perspective on problems and positively impacts the project itself. It also raises public awareness and education about the activities, benefits of innovation, and traffic improvements within the Living Lab.

8. Privacy and Data Protection: The foundation of traffic management, and consequently its improvement, is tracking and data collection on traffic entities, which presents a high ethical risk. It is essential to ensure that all activities within the Living Lab adhere to high standards of security and ethics, especially concerning privacy and data protection.

9. Scaling and Implementation: Based on successful experiences and results from pilot projects, consider scaling innovations and implementing improvements over a wider area of the transportation corridor or applying the proposed methodology to similar corridors within the city.

2. Bottom up approach to implement this action plan

The process in which cities could define the actions and measures need to be aligned with the local context of each city. In order to define the measures that best suits each context is important to select and complement from the list of measures from the previous section (1 Action plan to Promote the use of cycling and improve Public transport service) the ones that could suit best the local context

and then discuss with the citizenship about their willingness to use those proposed measures. After that process is done is paramount to involve and engage key stakeholders that are interested in cooperating for the definition in more detail of the prioritized measures. The following sections explore how to explore citizens willingness to use the proposed measures and the way in which key stakeholders could be engaged by using a bottom up approach.

3. Stakeholders engagement process through a living lab

The stages of Living Lab implementation are aligned with the principles of the methodological approach, incorporating the Test Site Cycle. This implies that the stages of Living Lab implementation are more focused on strategic processes and consist of following six stages.
Stages of The Zagreb Living Lab:

1. Explore, Select and Collect,
2. Identify, Form snd Co-create
3. Develop and create
4. Implement and test
5. Analyse and Re-Test
6. Finalize

Explore, Select and Collect
Stage 1 has start with planning frequent meetings with our case owners. During these meetings, potential transportation corridors suitable for the implementation of the Living Lab concept can be explored. The data collected will later serve as input data for the initial state. The data included in the analysis process cover:

1.1 Safety conditions - Adapting and appropriately marking infrastructure to cater to all participants in traffic, particularly emphasizing pedestrian and cycling infrastructure, including micro-mobility infrastructure. Also, evaluating its suitability for individuals with reduced mobility, the blind, and visually impaired individuals. Additionally, assessing the frequency and severity of traffic accidents, including their impact in terms of property damage, injuries, and fatalities.

1.2. Geometric conditions - the type of area in which the intersection is located, the number of lanes on approaches, lane width, longitudinal slope, special or shared turning lanes for left and right turns, and existing parking space in the intersection zone.

1.3. Traffic conditions - traffic counting, basic saturation flow, peak-hour factor, the impact of heavy-duty vehicles, pedestrian traffic, bicycle traffic, micro-mobility traffic, and public transport

1.4. Signalization conditions - cycle length, the number and sequence of phase movements, effective green times, safety margins, and existing traffic management strategy.

1.5. Connectivity and accessibility conditions - interconnected bicycle and pedestrian paths, connectivity of paths with other modes of transportation.

2.2. Identify, Form and Co-create

In Stage 2, key stakeholders can be identified, and working groups formed. During the working group meetings, issues can be identified, data on deficiencies supplemented, and an approach to problem-solving agreed upon. The end product resulting from the working group meetings will be well-structured Qualitative goals that incorporate SMART objectives measurable through KPIs, reflecting a co-creation effort. At this stage, the stakeholders are responsible for achieving the set goals will be identified, which included traffic experts, technical implementation teams, responsible for equipment maintenance, as well as local authorities and organizations that can utilize the collected data.

2.3. Develop and create

The stage of development and creation of a traffic counting system through video surveillance involves careful planning and implementation to ensure the accuracy and efficiency of the system. Throughout this, key performance indicators play a crucial role in ensuring that the system meets the goals and needs of stakeholders and contributes to improved traffic safety and management. This process is of an iterative nature. Based on the goals and requirements, a plan for implementing the video surveillance system will be created. Necessary cameras, sensors, data processing technology, and communication will be determined here.

4. Policy or protocol that could be adopted to assure a sustained implementation of this action plan

Qualitative Objectives (QO) of The Zagreb Action plan are:

QO1: Modernization of the traffic counting system on the observed traffic corridor,

QO2: Improving safety at intersections within the observed corridor,

QO3: Convenient, efficient, and accessible public transportation,

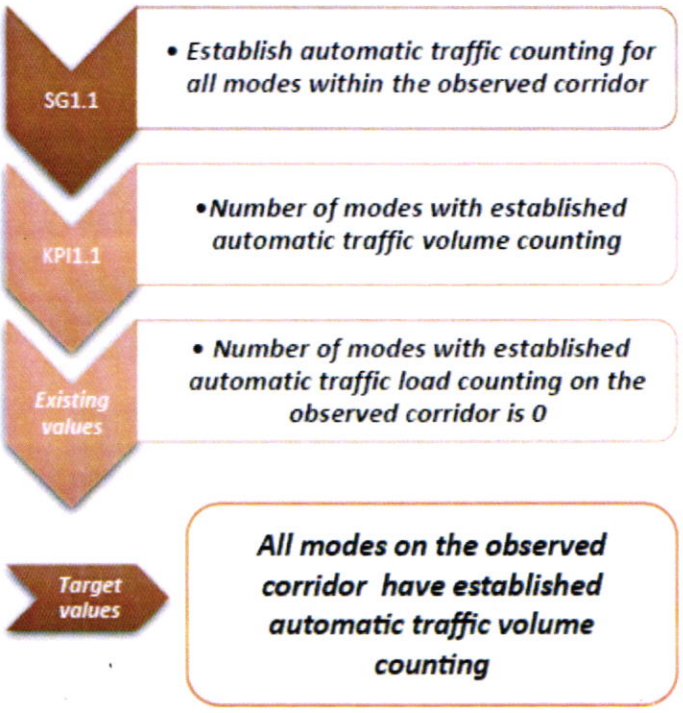
QO4: Improving cycling infrastructure and micromobility infrastructure,

QO5: Improving pedestrian transportation,

QO6: Improving road transportation.

QO1: Modernization of the traffic counting system on the observed traffic corridor

This objective significantly improves the accuracy of traffic data collection, streamlines data accessibility, reduces the time required for data collection and analysis, and effectively cuts down on data collection expenses. As a result, it yields highly accurate analytics and enhances our understanding of traffic patterns.



QO2: Improving safety at intersections within the observed corridor

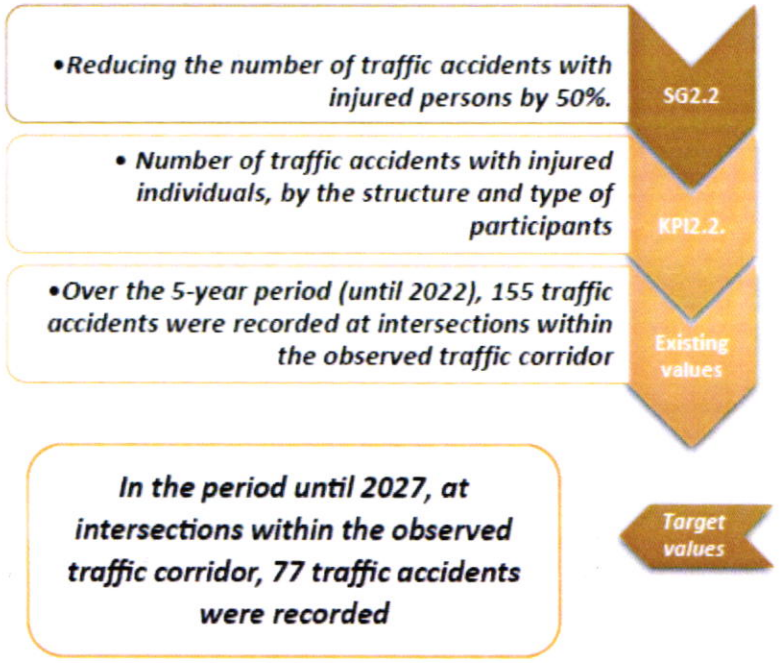
This objective is primarily centered on improving safety at intersections and traffic junctions, a pivotal aspect in mitigating and lowering the occurrence of accidents. In order to achieve increased safety at intersections, the following actions are planned:

1. Accessibility: Through careful planning, intersections are designed to allow easy and safe mobility for individuals with disabilities, such as pedestrians with disabilities or wheelchair users.

2. Visibility: In the described approach, special attention is given to the proper placement of traffic signs, lights, and traffic signals to make them visible and comprehensible to all road users, including those with visual or hearing impairments.

3. Safe Pedestrian Space: In order to enhance safety at intersections, safe zones for pedestrians and marked pedestrian crossings should be implemented.

These actions are key components of our plan to increase safety at intersections and ensure that all traffic participants have equal opportunities for a safe crossing, regardless of their personal characteristics or abilities.



QO3: Convenient, efficient, and accessible public transportation

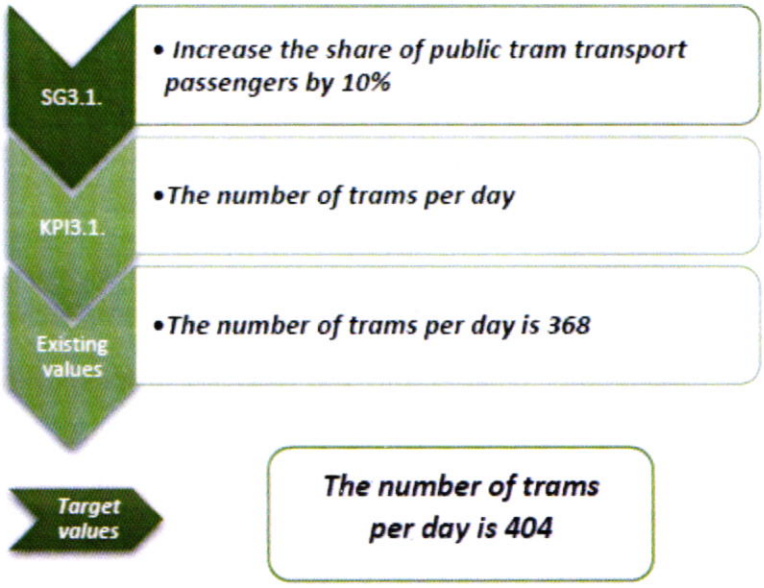
The emphasis of this objective is on the comfort, efficiency, and accessibility of public transportation, which are important aspects of urban mobility. In order to achieve this objective, the following actions are planned:

1. Enhanced Public Transportation Infrastructure: Collaboration with stakeholders, in order to take measures to improve tram infrastructure: ensuring well-lit stations and accessibility, installing new, more modern stops, and modernizing existing ones

2. Expanded Services: Collaboration with stakeholders to expand public transportation networks by potentially adding new routes, extending existing ones, and providing frequent and dependable services to accommodate a wider range of passengers.

3. Digital Services: Collaboration with stakeholders to expand digital solutions such as real-time tracking, mobile ticketing, and trip planning apps to provide convenience and real-time information to passengers.

These actions can help improve the comfort, efficiency, and accessibility of public transportation, making it an attractive and reliable choice for urban mobility.



QO4: Improving cycling infrastructure and micromobility infrastructure

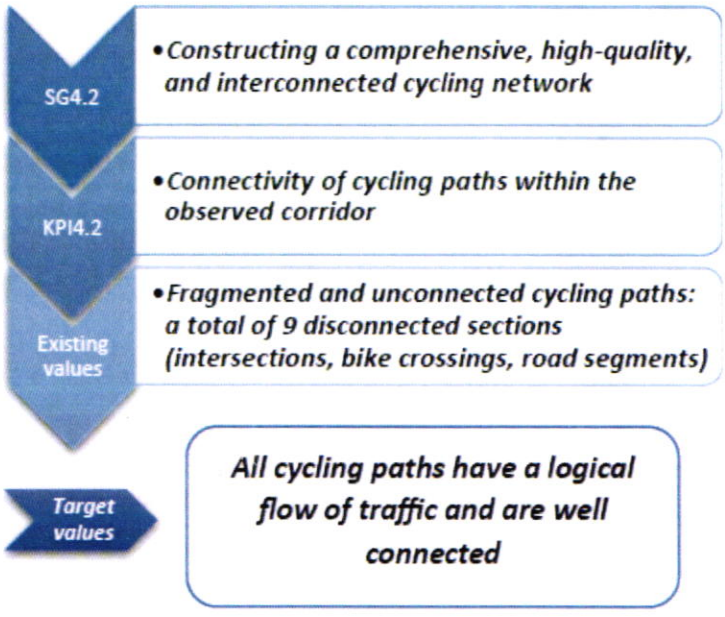
This objective is aimed at improving infrastructure for cyclists and micromobility users, which is becoming increasingly important in urban environments. There are three main action steps to address issues in bicycle and micromobility transportation:

1. Connecting Existing Infrastructure: Creating linkages between current cycling and micromobility infrastructure to ensure a seamless and interconnected network for users.

2. Aligning Existing Infrastructure with Current Laws, Regulations, and Standards: Ensuring that the existing infrastructure complies with the latest laws, regulations, and standards to enhance safety and functionality.

3. Enhancing the Quality of Bicycle Crossings: Elevating the quality of bicycle crossings by improving design, visibility, and safety features to provide a more convenient and secure experience for cyclists and micromobility users.

The ultimate goal behind these actions is to promote safer, more accessible, and interconnected cycling and micromobility systems that cater to the needs of users while adhering to regulatory standards.



QO5: Improving pedestrian transportation

This objective focuses on pedestrians, their safety, and accessibility to pedestrian areas. There are three main action steps to address issues in pedestrian traffic:

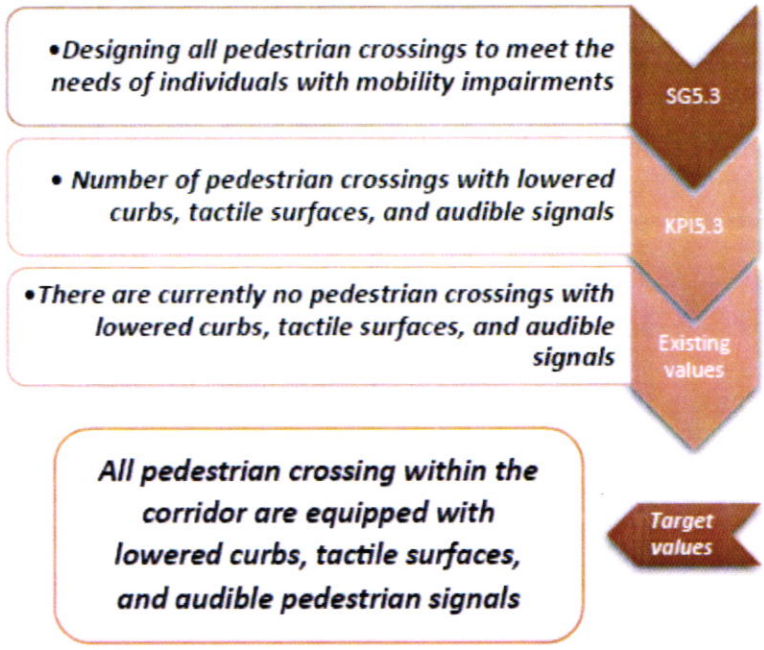
Actions for addressing issues in pedestrian Transportation:

1. Sidewalk Maintenance: Regularly maintain and repair sidewalks to ensure they are free from hazards, and obstacles, and in good condition for pedestrians.

2. Accessible Infrastructure: Implement accessible infrastructure such as ramps, curb cuts, and tactile paving to aid individuals with disabilities in navigating pedestrian areas.

3. Crosswalk Improvements: Improve pedestrian crosswalks with clearly marked lines, adequate signage, and well-lit crossings to enhance safety.

By implementing these steps, a safer and more accessible environment for pedestrians can be created, thereby enhancing the overall quality of life on the corridor and promoting sustainable, active modes of transportation.



5.

QO6: Improving road transportation

The objective of Improving road infrastructure is essential for enhancing the quality of transportation, reducing traffic bottlenecks, and improving overall road safety and sustainability. Within this objective, there are steps aimed at providing better quality for other modes of transportation and reducing the share of personal vehicles in overall traffic within the corridor. It is important to understand that this implies that the goal of 'Improving road infrastructure' is not solely focused on the physical quality of roads but also on promoting sustainable modes of transportation and reducing reliance on personal vehicles. Incorporating measures that encourage the use of other means of transportation, such as public transport, cycling, and walking, can contribute to reducing traffic congestion, improving the environment, and

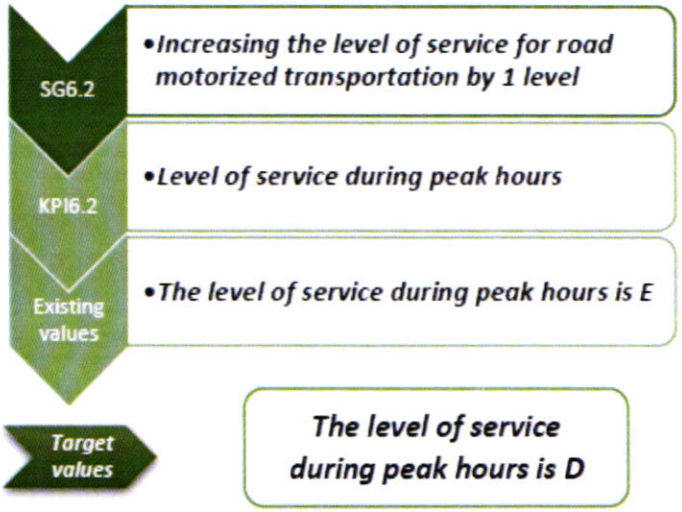
enhancing the quality of life in urban areas. There are four main action steps to address issues in road infrastructure.

1. Maintenance and Repairs: Regular upkeep, resurfacing, and repairs to fix potholes, cracks, and other wear and tear, ensuring smooth and safe driving conditions.

2. Safety Measures: Implementing safety features like guardrails, signage, lighting, and traffic calming measures to reduce accidents.

3. Technology Integration: Integrating advanced technologies like smart traffic management systems, sensors, and real-time data analysis to optimize road use and improve safety.

4. Adaptive traffic management: Coordinating road improvements with public transit services to provide efficient traffic. In this context, the main emphasis is on managing a system that prioritizes public transportation while taking into account the demand for personal vehicle traffic.



These qualitative objectives collectively reflect a comprehensive approach to enhancing transportation infrastructure and services. The emphasis on modernization, safety, sustainability, and accessibility of public transportation, cycling and pedestrian infrastructure, and the overall transportation network signifies a deep commitment to creating a better and more sustainable transportation environment. All of these objectives together form the foundation for the future

transportation infrastructure that will serve citizens in a safe, efficient, and environmentally-friendly manner.

5. Conclusion

Throughout all phases, the action plan is focused on stakeholder involvement, continuous monitoring, and evaluation, enabling an iterative improvement process. The ultimate product of this project is a well-structured strategy based on qualitative goals, Smart objectives, and KPIs. The pilot project and the general guidelines derived from it form the basis for creating sustainable and efficient transportation solutions in urban environments. The Living Lab Zagreb project brings a fresh approach to transportation challenges, combining innovation, technology, and stakeholder collaboration to shape a better transportation future for Zagreb.

NAME MR. TOMISLAV TOMAŠEVIĆ

Position of signatory Mayor

Signature

Official stamp of the institution (if applicable)

30 -09- 2023