

# MERIDIAN Deliverable D16 – “D2.04 - Modernized traffic counting point system on TEN-T network in Latvia”

## Document Information

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### Abstract

The D2.04 project contributes to the digitalization of Latvia’s transport sector and supports safer and more efficient management of the TEN-T road network. Its primary objective is to create a modernized and harmonized traffic counting system across the core and comprehensive TEN-T network, ensuring high-quality data collection, improved accessibility and integration, and compatibility with National Access Point (NAP) services. Achieving this required three major steps: conducting a detailed study on the modernization of traffic counting points, installing and upgrading traffic, pedestrian, and cyclist counting infrastructure throughout the TEN-T network, and integrating all collected data into Latvia’s national traffic management system (SIPR) and the NAP. Together, these activities establish a modern, non-invasive and reliable traffic monitoring ecosystem that enhances road safety and supports data-driven decision-making at national and EU levels.

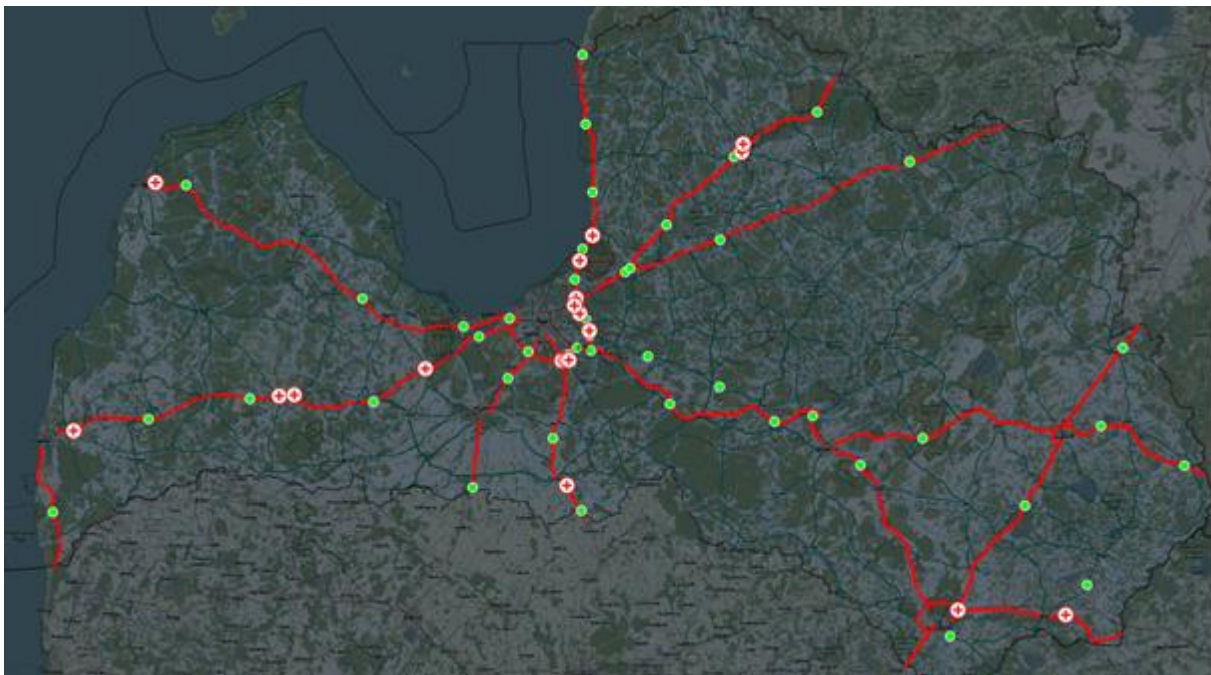
#### 1. Study on Modernization of Traffic Counting Points (MS2.04.2)

The first stage of the project focused on carrying out a comprehensive study aimed at evaluating the existing traffic counting network and defining a strategy for its full

modernization. After the completion of procurement procedures, the contract for the study (AFL/4.4/CEF/5) was signed on 27 January 2023. The purpose of the study was to assess the efficiency and coverage of the current traffic counting point layout within the Latvian TEN-T network, identify gaps, and propose practical improvements, including both new locations and suitable sensor technologies.

The study provided an in-depth analysis of five technological solutions for vehicle counting and three solutions for pedestrian and cyclist counting. These were compared in terms of accuracy, cost-effectiveness, maintenance requirements and suitability for Latvian road conditions. Based on the results, the recommended approach was to replace induction loops with radar-based sensors for vehicle traffic counting and classification, and to use AI-based video analytics for pedestrian and cyclist data collection. The study also identified where new counting points should be installed to ensure full coverage of the TEN-T segments in Latvia.

By delivering these findings, the study became the foundation for planning and budgeting all subsequent design, procurement and installation works. It also offered guidance for improving data quality across the entire national traffic counting network, not only the sites included in this project. The final version of the study was submitted on 7 May 2023.



Existing traffic counting points (green dots) and new traffic counting points (red/white dots) on the TEN-T road network in the territory of Latvia.

## 2. Modernized Traffic Counting Points (MS2.04.3)

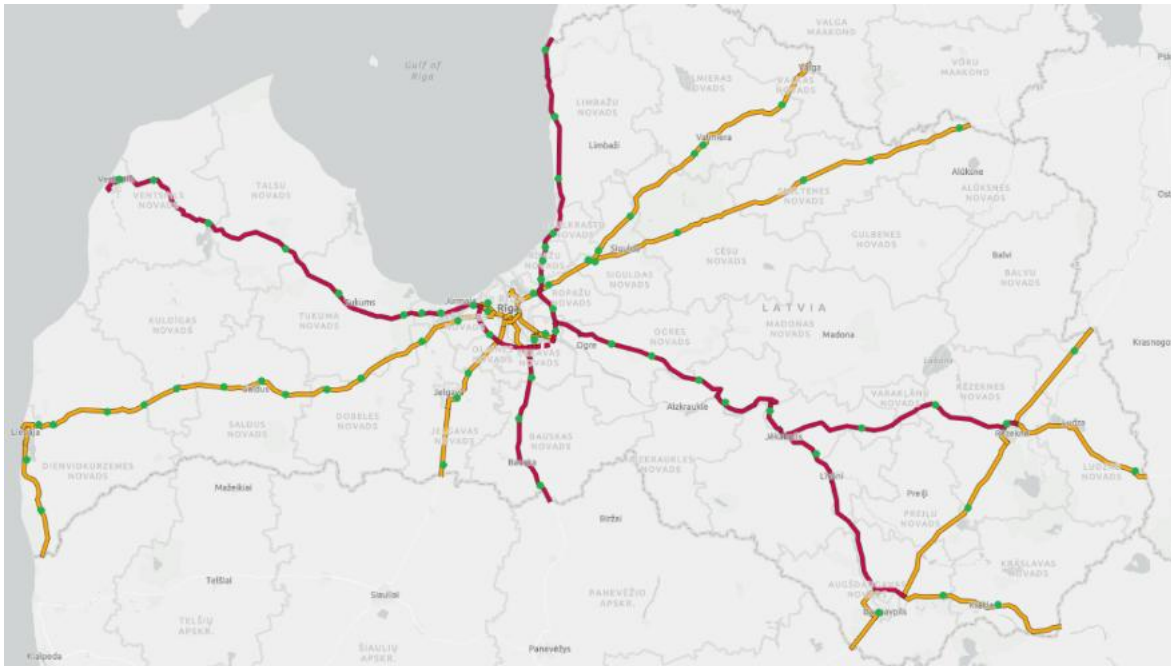
Milestone M23 covered two major tasks: the modernization and installation of traffic counting points, and the installation of new pedestrian and cyclist counting locations. Both tasks relied directly on the recommendations produced in Milestone M22.

### Traffic Counting Points

Following procurement procedures and the signing of contract AFL/5.3/CEF/3 on 13 June 2024, modernization and construction activities began across the Latvian TEN-T network. In total, seventy-one traffic counting points were built or modernized. This included the replacement of equipment at forty-six existing locations and the creation of twenty-five completely new sites, many of which required additional design and construction work. Nine new electrical connection points were also designed and installed to ensure a reliable power supply for the new sensors.

All design activities were completed by December 2024, and installation works were finalized by June 2025. The new radar-based systems now collect detailed data, including traffic volume, vehicle speed, direction of movement, vehicle length and classification across seven classes. Since all equipment is installed outside the carriageway, future maintenance is simpler, safer and significantly less costly. Data produced by these systems is structured to be compatible with DATEX II, enabling seamless integration with NAP services.

The implementation phase faced several delays due to lengthy public procurement processes, multiple supplier complaints, and later integration challenges between equipment and software. In addition, winter conditions temporarily halted construction activities. Nevertheless, all installations have been completed, and the remaining activities focus solely on integrating data streams into the information system.



Map of all the installed 71 traffic counting points on Latvian core and comprehensive TEN-T road network



External and internal view of the main traffic counting point cabinet which is mounted on roadside pole



Roadside pole with equipment and road safety barrier



Traffic counting point installation with equipment cabinet, external antenna and traffic counting sensor at the very top of the pole

## Pedestrian and Cyclist Counting Points

The second task within Milestone M23 involved creating a dedicated network of AI-enabled pedestrian and cyclist counting sites at TEN-T crossings. Procurement for this work initially concluded without bids, requiring a negotiation procedure with four potential suppliers. Two offers were received, and a contract was awarded accordingly.

Installation works were completed ahead of the contractual deadline, with ten pedestrian and cyclist counting cameras installed in December 2024. The sites were selected to represent a range of different crossing types, including locations with traffic lights, crossings marked only by signs, and dedicated pedestrian and cyclist crossing zones. The network covers both rural and urban sections of the TEN-T, allowing the system to capture highly diverse usage patterns. These devices provide valuable insight into the movement of vulnerable road users and support decisions related to safety improvements or potential energy savings through adaptive lighting.

All devices are operational. While earlier procurement-related delays extended the software integration phase into 2025 - similar to the challenges experienced with the traffic counting points - the integration process has since been fully completed. Both the pedestrian counting points and the traffic counting points are now fully integrated into the SIPR system and operating as intended.



One of the 10 installation locations, with camera, external antenna and cabinet mounted on pedestrian path light pole



Pedestrian and cyclist counting equipment mounted on traffic light base



Equipment mounted on pedestrian crosswalk light pole

### 3. Integrated Traffic Management Program (MS2.04.4)

Milestone M24 addresses the final step of the project: integrating all newly installed devices into the Latvian State Roads traffic management system (SIPR) and making traffic flow data available to the public through the National Access Point. Under contract LVC2025/AFL/5.3/CEF/3, signed on 30 April 2025, integration works progressed according to plan.

During this milestone, the SIPR system was extended to accommodate the new radar-based traffic counters through the development of a dedicated data loading adapter that enables real-time intake of traffic intensity, speed, direction, vehicle classification and length data. This information is now fully processed within SIPR's existing analytical and reporting environment. Similarly, a new SIPR module titled "Pedestrian Counting" was developed to support the AI-based pedestrian and cyclist counters. This module provides tools for visualizing movement patterns, analysing time-based data, and managing device metadata within a unified system.

Parallel improvements were also made to the Latvian National Access Point (transportdata.gov.lv). A new section was added where traffic counting data can be viewed directly on the map, together with graphical and tabular representations of traffic volumes and average speeds. This ensures transparent public access to traffic data and significantly improves the usability of the NAP platform.

The milestone has been successfully achieved with the completion of all planned activities, including the preparation of user documentation, testing procedures, and system manuals. With these elements finalized, Latvia now operates a fully modernized and fully integrated traffic monitoring ecosystem that supports both internal planning requirements and public data accessibility.



				September 19, 2025											
Device name	Linear reference	SUP subtype		11	10	9	8	7	6	5	4	3	2	1	0
A5 5.89 Riga HPP	A5_J - 5.89	RADARS		165	973	1032	1465	1303	450	173	76	73	61	60	84
				83.24 km/h	82.99 km/h	86.28 km/h	84.61 km/h	84.02 km/h	89.49 km/h	89.80 km/h	90.90 km/h	90.92 km/h	90.26 km/h	90.24 km/h	87.32 km/h
				33.33%	36.28%	30.52%	23.48%	20.26%	27.56%	45.66%	53.95%	57.53%	72.13%	36.67%	65.48%
A6 109.80 Koknese	A6_J - 109.8	RADARS		66	357	363	374	317	205	94	29	39	26	23	47
				87.13 km/h	88.65 km/h	88.51 km/h	88.28 km/h	88.67 km/h	88.77 km/h	88.90 km/h	86.98 km/h	86.44 km/h	85.61 km/h	89.40 km/h	90.24 km/h
				28.79%	23.25%	24.79%	21.66%	24.92%	29.27%	38.30%	44.83%	64.10%	42.31%	39.13%	19.15%
A6 132.00 Meadows	A6_J - 132	RADARS		69	363	374	373	309	181	86	34	32	26	27	31
				78.67 km/h	78.79 km/h	79.54 km/h	80.37 km/h	82.51 km/h	79.09 km/h	78.81 km/h	80.33 km/h	72.90 km/h	77.50 km/h	76.44 km/h	80.26 km/h
				30.43%	26.72%	28.07%	24.13%	24.92%	29.28%	45.35%	44.12%	78.13%	50.00%	29.63%	16.13%
A6 162.42 Livani	A6_J - 162.42	RADARS		41	273	267	228	264	110	59	24	19	14	20	17
				87.32 km/h	88.01 km/h	89.18 km/h	90.65 km/h	90.56 km/h	88.77 km/h	87.21 km/h	87.09 km/h	84.42 km/h	89.82 km/h	86.87 km/h	88.35 km/h
				31.71%	21.61%	22.10%	22.81%	23.48%	26.36%	32.20%	41.67%	63.16%	50.00%	40.00%	41.19%
A6 18.15 Salaspils	A6_K - 18.15	RADARS		297	1686	1860	2377	2589	1116	356	151	122	102	110	156
				82.79 km/h	79.48 km/h	82.71 km/h	83.25 km/h	82.45 km/h	83.74 km/h	79.98 km/h	79.72 km/h	79.36 km/h	77.13 km/h	80.83 km/h	79.51 km/h
				20.20%	22.18%	18.76%	15.57%	11.82%	13.98%	26.97%	29.14%	36.07%	47.06%	23.64%	32.05%

View from traffic management software with some traffic counting points displaying location, overall traffic volume in one-hour, average speed and truck %

## Conclusion

Deliverable D16 summarizes the complete modernization of Latvia's traffic counting system on the TEN-T network. Beginning with a comprehensive study that defined technological solutions and network coverage requirements, the project successfully modernized seventy-one traffic counting points, established ten new pedestrian and cyclist counting locations, and integrated all devices into the national SIPR system and the National Access Point.

As a result of the activities described in this deliverable, a numerical dataset on traffic intensity covering the TEN-T road network in Latvia has been produced. The dataset is available as a digital file in English and is accessible through the Latvian National Access Point, ensuring reuse by authorities, stakeholders and the public.

An interim status of the deliverable was presented at the Project Steering Committee Meeting in Utrecht on 16.10.2025 and the presentations are available on SharePoint.