

Objectives of the measure

- **At measure level:**

- Improve data quality, data processing, and data storage
- Create added value use-cases from data science applications

- **Contributing to city level objectives of:**

- Increasing efficiency of mobility planning and operation, reducing costs and gaining awareness for data-driven decision making.

Description of the measure

- **Situation before:**

The amount of data, rnv as PT operator is generating has grown exponentially over the last years. While selected elements of this data are used for specific use-cases, a large part of data is not been used.

Further, transportation planning has historically been dominated by men and often ignores the needs of women and vulnerable groups, even though mobility behaviours differ by gender. However, these differences were not adequately reflected in the data and do not reflect certain perspectives and movement patterns. In addition, individual factors were often neglected in mobility decisions.

- **General description:**

The rnv wants to make better use of the large amount of available data and gain important additional insights and results through pointed approaches. To implement the necessary approaches, rnv must first improve the general data quality, data processing, and data storage. Based on this, rnv will develop solutions for different use cases. In doing so, rnv stresses the importance that the data is not falsified, and that mobility is a basic right of all citizens.

First, rnv will improve data governance by extracting, creating and persisting available and relevant metadata from sources. Designating responsible and accountable Data Owners and providing an easy and handy access to this information will create a single source of truth. Second, relevant data sources will be permanently integrated to rnv's cloud environment, ensuring a continuous and reliable data input as foundation for the data platform. Based on this, rnv will develop solutions for different use-cases and problems at hand.

A first step to improve data usage and to overcome certain barriers, is to use simple statistical models that provide dashboard results, such as monitoring the duration of barrier closures at railroad crossings. In a second step, more complex Machine-Learning approaches can be tested and used, e.g., for demand forecasting or predictive maintenance.

The Gender Mobility Data Gap will also be further highlighted in the data analysis and gender-specific gaps in data collection will be further recognized.

- **Measure outputs:**

This measure will deliver:

- Integration of at least two data sources connected to rnv's cloud environment
- Implementation of at least three basic statistics use-cases
- Implementation of at least one complex machine-learning use-case

- **Interaction with other city measures: UPPER and non-UPPER measures**

This measure is not related to other measures.

Target groups and/or geographical impact areas

- **Target groups:**

Primarily rnv itself, profiting from data-insights, use-case solutions etc. Depending on the specific use-cases implemented, PT-users will profit indirectly through improved, quality of service, reliability, and availability of service, etc.

- **Geographic impact area:**

The measure will have a direct effect on rnv and its operations. This will impact both the city of Mannheim and rnv's service region, covering the metropolitan area of Rhein-Neckar with the three cities of Ludwigshafen, Mannheim, and Heidelberg.

Stakeholders

The following stakeholders will be required for the implementation of this measure.

- **Rhein-Neckar-Verkehr GmbH** (rnv) - project lead: IT-Department

U-tools support

This measure will not be actively supported by the IT tools from the UPPER toolkit.

Link to other UPPER measures

This measure is not similar to UPPER measures implemented in other cities.

Process of implementation of the measure

Stages	Description	Intermediate milestones
Design	Set-up data governance principles	- Define principles
Preparation	Implement data governance and integrated data sources	- Extract and persist metadata. - Integrate data sources
Implementation	Implement basic statistic use-cases. Implement Machine-Learning use-cases	- Improved data quality and usage. - Implement uses-cases.

Sub-measures and preliminary indicators

Measure	Sub-measure (<i>if applicable</i>)	Impact indicators
MAN_03	N/A	<ul style="list-style-type: none">- Number of data sources integrated.- Number of use-cases implemented.