Rail4Future

Projekttitel:	**Resilient Digital Railway Systems to enhance performance**
Projektnummer:	**882504**
Deliverable:	**Deliverable 1.2.1 Report of Requirement Analysis**

This document outlines the requirements of the visual analysis framework for the Rail4Future platform. The framework should be adaptable, integrating new insights and knowledge as the project progresses. It should adhere to principles such as the use of permissive licenses for third-party tools, facilitating extension for new use cases and data types, and enabling feature restrictions for different user groups.

The main interface of the framework will be a flexible dashboard, allowing users to arrange and resize components to their preference. The dashboard should support linked data views, interactive visualizations, smooth transitions between overview and detailed views, and visualizations in different geospatial reference systems.

Specific visualization capabilities should include point cloud data visualization, interactive maps with zooming and panning, charts for analysis such as scatter plots, bar charts, time series, and heat maps, as well as visualization for simulation steering and exploring results.

Simulation planning should provide an interface for configuring parameters and initiating simulations, with communication to the rest of the platform through the JSON format and REST. The framework should be designed in a generic way to accommodate future use cases and support metadata for various scenarios.

The framework should also enable the visualization of simulation results across different modalities, with interactive tools for comparing simulation runs. Emphasis should be placed on communicating the provenance of simulation results and considering data provenance for simulation inputs when available.

In summary, the visual analysis framework for Rail4Future needs to be adaptable, user-friendly, and capable of integrating new insights and data. It should offer a flexible dashboard, various visualization capabilities, and simulation planning features while ensuring the transparency of results and data provenance.