



# Rail4Future

Projekttitel:	<b>Resilient Digital Railway Systems to enhance performance</b>
Projektnummer:	<b>882504</b>
Deliverable:	<b>1.2.4 Evaluation Report Of Visual Analysis Concept</b>

This document reports the evaluation of the visual analysis framework for the Rail4Future platform.

The evaluation is based on a qualitative user study to gain in-depth understanding of the participant's experiences, perceptions, and behaviors. The user study includes five researchers that work in the fields of visual analytics, computer graphics and virtual reality. We conduct semi-structured interviews, during which the participants have to work on different tasks regarding the three implemented use cases (wear and tear of tracks, bridges and switches) and we ask the participants to lead us through their thought processes and to comment on everything they notice besides the specific tasks, while setting up and performing the tasks.

For the use case Switches the task is to leverage the views SwitchSimulation and Switches in order to explore and explain the AS parameter value changes. For the use case Tracks the task is to leverage the views TrackSimulationResult and TrackMap in order to explore the wear over time and the correlation between wear of track segments and track positions. For the use case Bridges the first task is to create a load scenario in the view LoadScenario and the second task is to analyze the life span and location of detail points, using the views Details and ThreeD.

The tasks were successfully performed by all the participants. During the interviews regarding the Switches use case all the participants were able to draw the conclusion that the parameter changes correlate with the wear over time and maintenance work. During the interviews regarding the Tracks use case the participants observed the consistent wear over time and were able to formulate hypothesis on the wear distribution across the track using the TrackMap view. The creation of a Load Scenario for the Bridges use case was intuitive to all the participants and all participants leveraged the life span threshold to analyze the remaining time span of the detail points and were able to determine the remaining life span of the weakest detail point.

Suggestions for additional features of the participants are collected for future work.