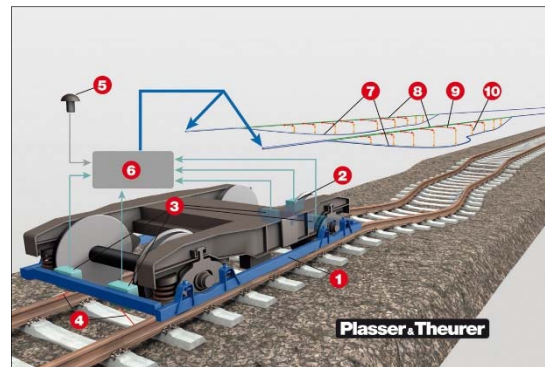




Master Thesis

Deriving Geometric Parameters of Railway Lines from Open Data

Measuring Trains are equipped with high-tech sensor systems, track scanners, and a high-resolution camera to assess the condition of railway tracks. However, it's extremely high cost and restricted measurement clearances on busy railway tracks do not support an extensive nationwide or even European wide usage. Therefore, Siemens Mobility is looking for a low cost application from which basic geometrics can be derived, like the track curvature, on a large scale. The company plans to extract geometric properties in order to forecast the load spectrum of train cars.



Track Geometry Recording © Plasser & Theurer (2019)



Mapped OSM railway data

This Master's Thesis aims to test the usage of Open Data to derive basic track geometrics. In a first step, the usefulness of OpenStreetMap (OSM) data to derive the horizontal track curvature and the number of switches is to be evaluated by estimating achievable spatial accuracies. Then, further open data and low cost data sources are to be investigated that can give knowledge on vertical gradients and curvature. A highly accurate measurement train dataset will act as reference to determine the accuracy of deriving geometric properties from open and low cost data.

The candidate should have an interest in analysing and harmonising various spatial data sources. Furthermore, a basic knowledge of German is welcomed for communicating with our partners, Siemens Mobility.

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