# Bachelor's Thesis

« Indoor Maps for Navigation using SVG »

Background

Using a mobile navigation device or a smartphone equipped with a GPS receiver it is possible to navigate to almost any place outside of buildings. However, navigating inside buildings is not yet supported due to the lack of a standardized indoor positioning system. As a result there is no standard for indoor maps nor tool support for creating them.

In the context of project Airport2030 the Institute of Telematics is developing an indoor positioning system. It will be used within airport buildings to guide passengers during the process of check-in, security control, and boarding. Smartphones serve as hardware platform for end user devices. Considering the broad variety of mobile operating systems, it was decided to rely on web technologies which are available across platforms. Specifically SVG (scalable vector graphics) has proven to be suited for representation of interactive indoor maps.

A major features of a navigation system is calculating routes. It is usually done on a graph; its nodes representing way points and its edges walkable paths between way points. Conventional navigation systems store the graph topology in a data structure which can be used for both: routing and rendering. However, when relying on SVG for visual representation and an external data source for calculating routes, a mapping between both is essential.
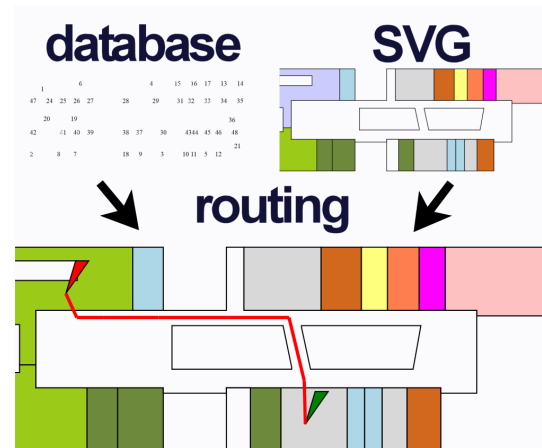
Work description

The goal of this work is to develop and evaluate possibilities for separating image data based on SVG from routing data in the context of indoor navigation for mobile devices. Afterwards, a software tool (or set of software tools) shall be developed which allows creating and maintaining indoor maps applying the best suited separation model. It shall enable the developer to create topology and visualization, as well as a routing graph and textual descriptions for points of interest of a building.

Required research includes further examining existing SVG manipulation tools, their options for extensibility, and exploring possibilities for standard-conform manipulation of SVG data.

Requirements

Knowledge of Java and/or JavaScript, and optionally SVG

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