Scope

Austrian highway transportation grid.

Objective

To present a quick overview of a historical data, as well as to provide capability for a simple interaction and analysis.

Visualizations

1. Heat map of Austrian highways.
2. Bar charts or timeline series for checkpoint counters.
3. Tree chart with drilldown nodes: year -> month -> highway -> checkpoint.

Interactivity

1. Mouse: left mouse-click, mouse-over, drag-and-drop.
2. Haptics: touch click, pinch zoom.
3. Keyboard: CTRL, ESC, (possible keystroke data entry).

Use case scenarios

1. A mockup for a cross-country traffic planning.
   An international trade company performs regular products distribution with a help of truck assemblies traveling in a set of two or more. Company clients follow iterative delivery schedules on a monthly, quarterly and bi-annual basis. Business logistics requirement is to choose an optimal distribution timeframe to avoid unnecessary travel delays and expenses. This entails prospective route analysis based on available historical traffic data. An optimal visual tool would enable this company to easily learn dynamics of the prior road congestion patterns, and adjust its operations by reducing the quantity of traveling trailers or avoiding distribution altogether during heavy commute months.
2. Business entrepreneurship.
   With a limited upstart cost and a quick ROI expectation, a marketing company wants to setup multiple big-board advertisement screens alongside country highways. Initial set of big-boards would neglect audience filtering and focus primarily on exposures quantity. Nearby commute density is viewed as a key contributing factor to a future service pricing. Requested visualization tool would provide business investors with sufficiently insightful impressions in order to make necessary decisions.
3. Road maintenance and expansion planning.
   A division of a transportation authority responsible for an upkeep of a paved road grid functionality wants to have a quick, higher level overview of previously contracted highway repair job effects. A prolonged drastic drop in a traffic flow through certain checkpoints is regarded as a possible indicator of inefficiently scheduled and poorly executed maintenance routines. Therefore, a tool able to swiftly visualize historical traffic flows would enhance exploratory capabilities of this division. In a similar way such a tool can easily contribute to a road grid expansion planning, by for example visualizing sectors with a quick and steady traffic stream increase.

Datasets

1. Primary datasets.
   Located on ASFiNAG website [http://www.asfinag.at/unterwegs/dauerzaehlstellen] in a form of Excel tables. Data should be subjected to basic cleaning and transformation. Only validated records will be exported into CSV files for a further usage. Initial, monthly grouping of data files shall be preserved.
2. Secondary datasets.
   Depending on a pace of development progress towards project deadline, additional datasets shall be considered for implementation. This should facilitate visual analysis and increase depth of drill down capabilities. Examples of secondary data may be big-boards, diners, service centers, etc businesses, located alongside highways. Those could be proximity correlated to traffic checkpoints.

Novelty

1. Unlike many tools within transportation domain, our concept is developed exclusively for the Austrian market. And although it is not impossible, still it would require from existing standard software an extensive degree of effort to create matching views and perform essential data transformation to accommodate the goals of our project.
2. Our work will focus on presentation and exploration of the historical data, while other, already existing applications are designed to reflect live traffic conditions.
3. Our visualization aims to make interaction with somewhat familiar interfaces a little more intuitive and enjoyable through implementation of additional events like mouse over, drag-and-drop, as well as exciting object animations.
4. *[Optional]* From analytical perspective, idea of combining geo-layering (ex. heat-map subjects) with dependent visuals sub-filtering (ex. time-series control) shall provide additional value in metrics assessment.