Mobility Scenario Model: A model to assess design strategies robustness using explorative scenarios of future mobility

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Introduction

The project aim is to create a configurable model for future mobility scenarios. A first work package is focused on linking possible outcomes (needs) with underlying market traits and trends into configurable explorative scenarios for a mobility case. Two case studies are planned: subway trains propulsion systems (partner: Bombardier) and modular interior systems for small autonomous vehicles (partner: KTH/ITRL).

Objectives

- Provide terminology and an easy to use approach to generate explorative scenarios of future market needs for environmentally friendly and economically competitive mobility products or services.
- Provide a configurable mobility scenario model to assess ECO2 research ideas, strategies, concepts and architectures over time against likely scenarios and or robustness to multiple scenarios (windtunneling).

Methodology

Quality Function Deployment is used first to interlink desired outcomes (needs) and market traits considered relevant for the mobility case. Scenarios are formed as a trait-based definition of a future market including derived profile of outcomes importance. Connecting to downstream and new Modular Function Deployment tools will enhance modularization in situations of high uncertainty and rapid trends.

Case Study: Train Propulsion System

Rail mobility traits scored for their impact on scenario outcome, both from a train user and owner/operator perspective, were combined to reflect a reference scenario: Stockholm and a second scenario “X”. X is set to reflect an opposite to Stockholm; a developing country new mega city such as Chennai, or Tianjin.

Next step

Add configurability and extend the model to explore scenarios for design insights and link public data (population density, GDP, kWh price for grid and battery power, mobility infrastructure etc) to augment scenarios with market size between 2018 and 2033 and level of confidence.