

A-STPA : An Open Tool Support for System-Theoretic Process Analysis

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A-STPA (Automated STPA)

A-STPA is an open tool to help transform STPA (Systems-Theoretic Process Analysis) to an executable STPA which automates the activities of STPA.

Context: A-STPA is an open-source tool based on the Eclipse platform which is developed as a student project in the software engineering programme of the University of Stuttgart. The student project started in April 2013 and will finish in February 2014. Our team consisted of 9 students and 3 teaching assistants.

Research Objectives

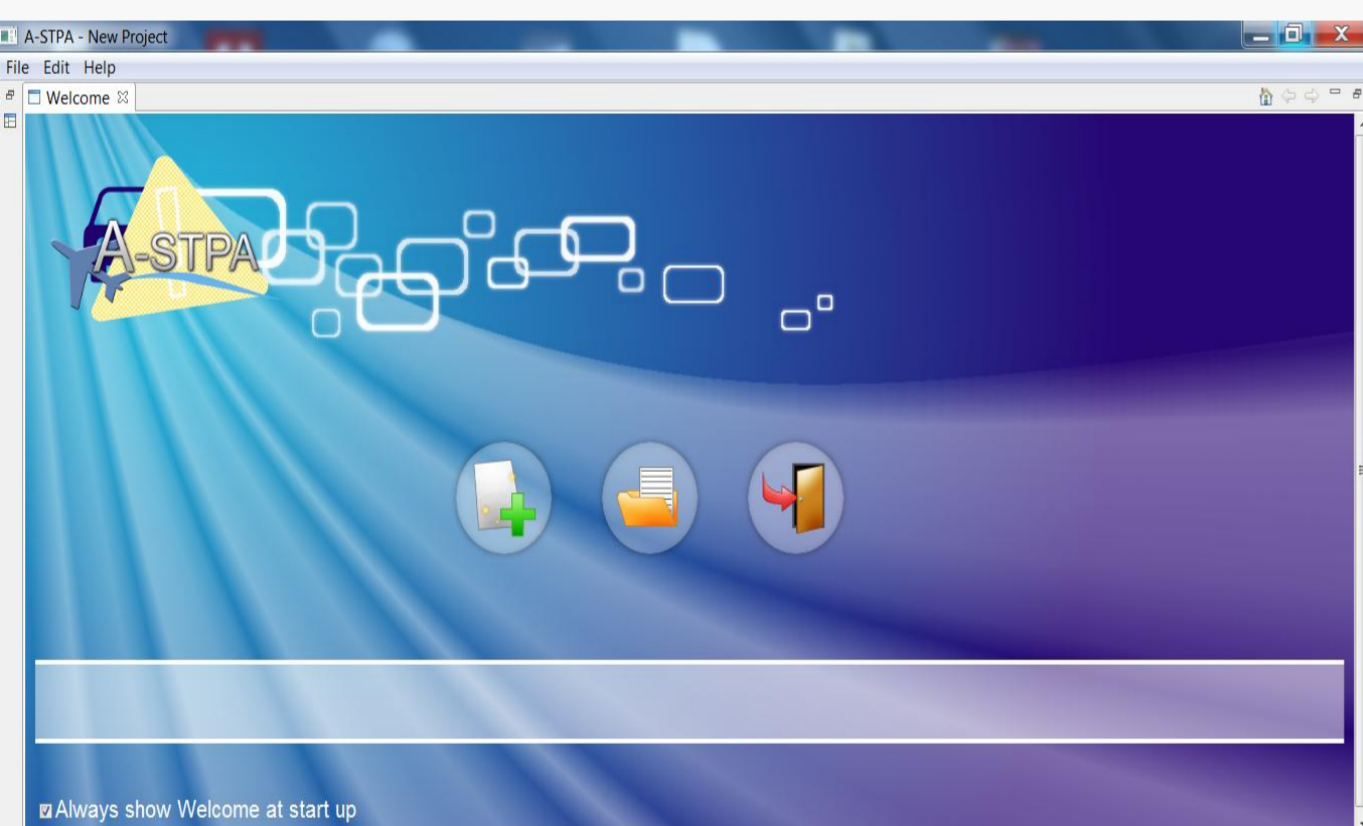
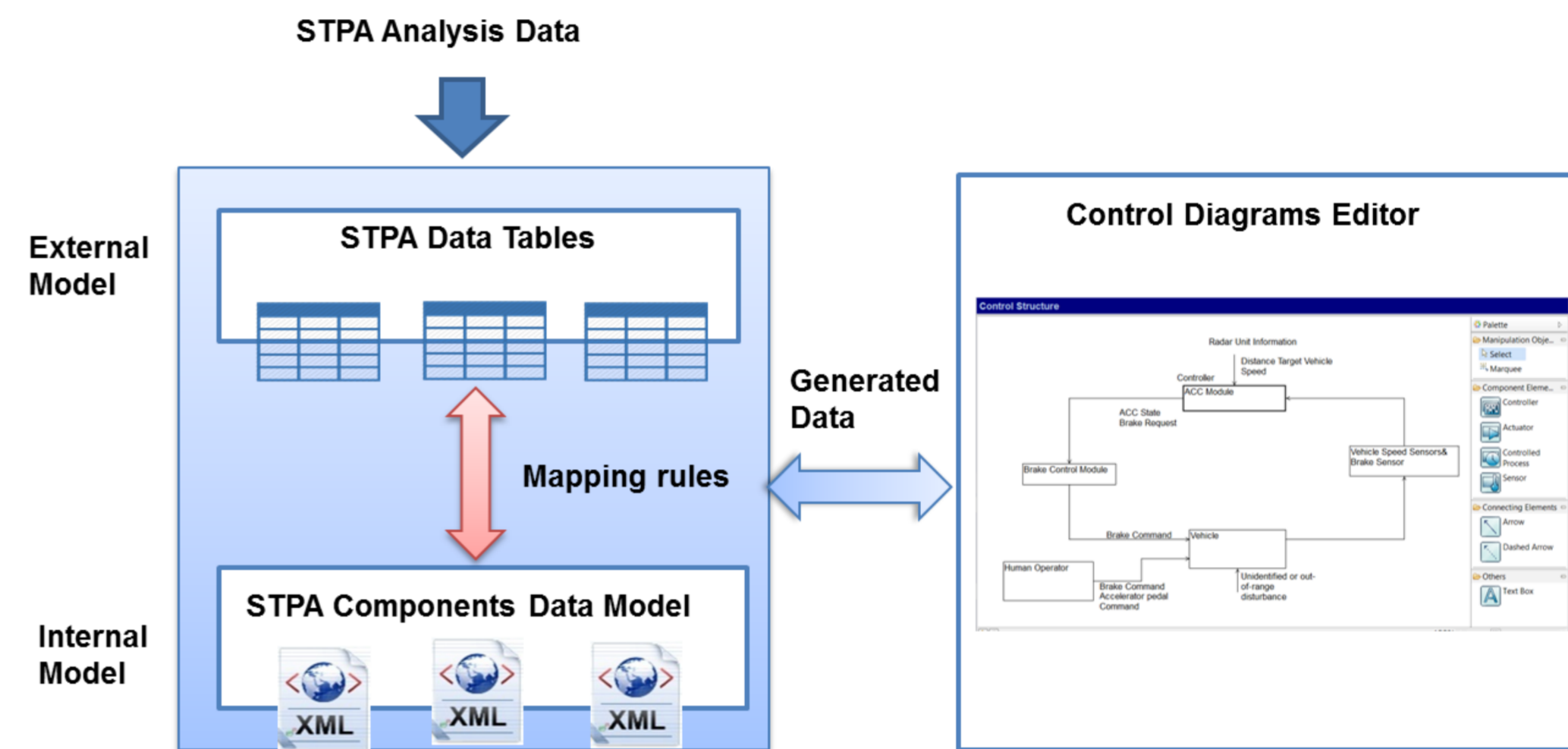
The overall objective of our research is to better understand hazard analysis with STPA and improve its application in practice. In this paper, we concentrate on providing tool support to make using STPA more efficient. Hence, the goal is to develop tool support to automate the STPA approach as far as possible.

A-STPA User Interfaces/Views

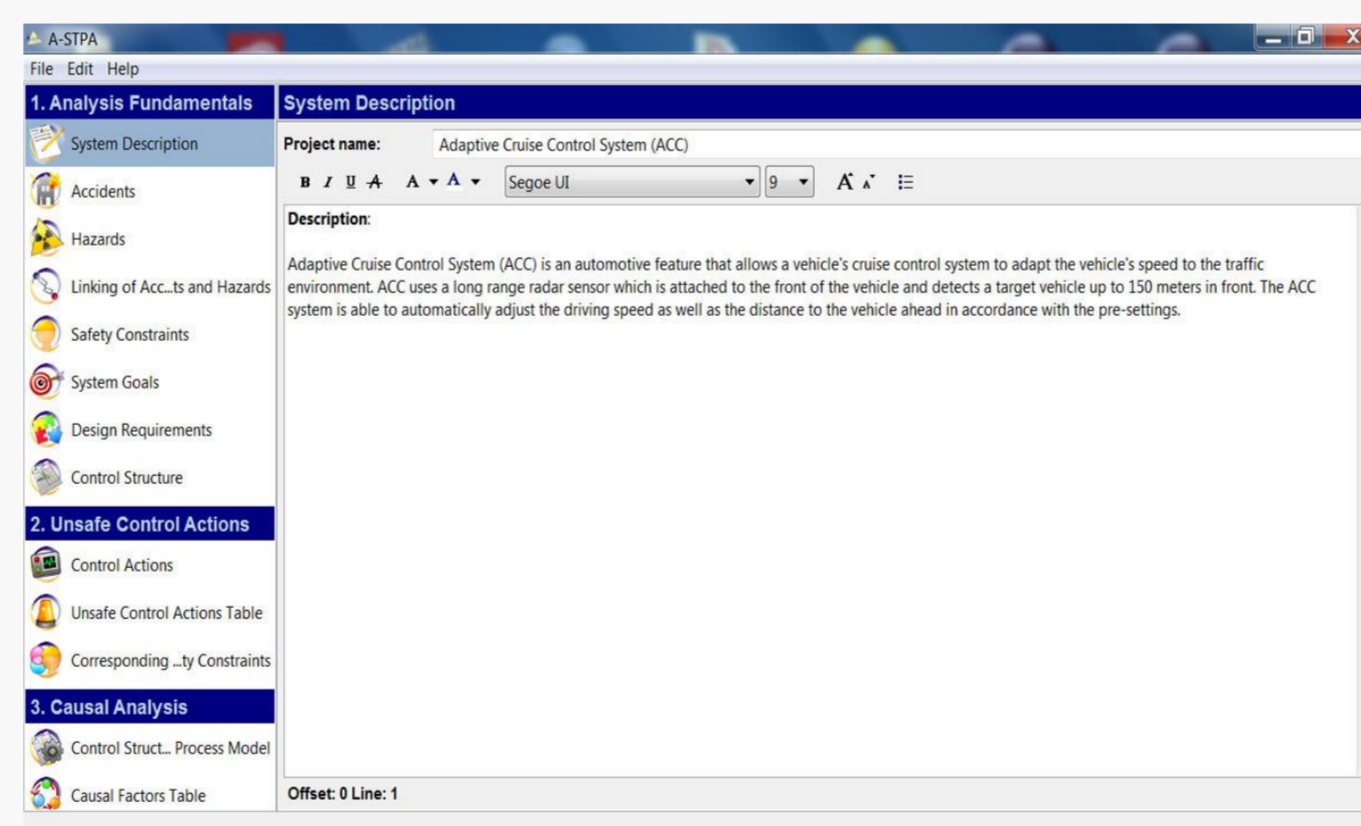
Main Functions of A-STPA

- Edit the fundamentals of the analysis
- Link the conducted information during step 1 to the other components in the next steps such as the hazards link to the accidents and safety constraints which are derived from the hazards.
- Draw the control structure diagram
- Edit tables such as the control actions table, unsafe control action table and causal factors table
- Augment the control structure diagram with a process model
- Export and import the STPA hazard analysis results

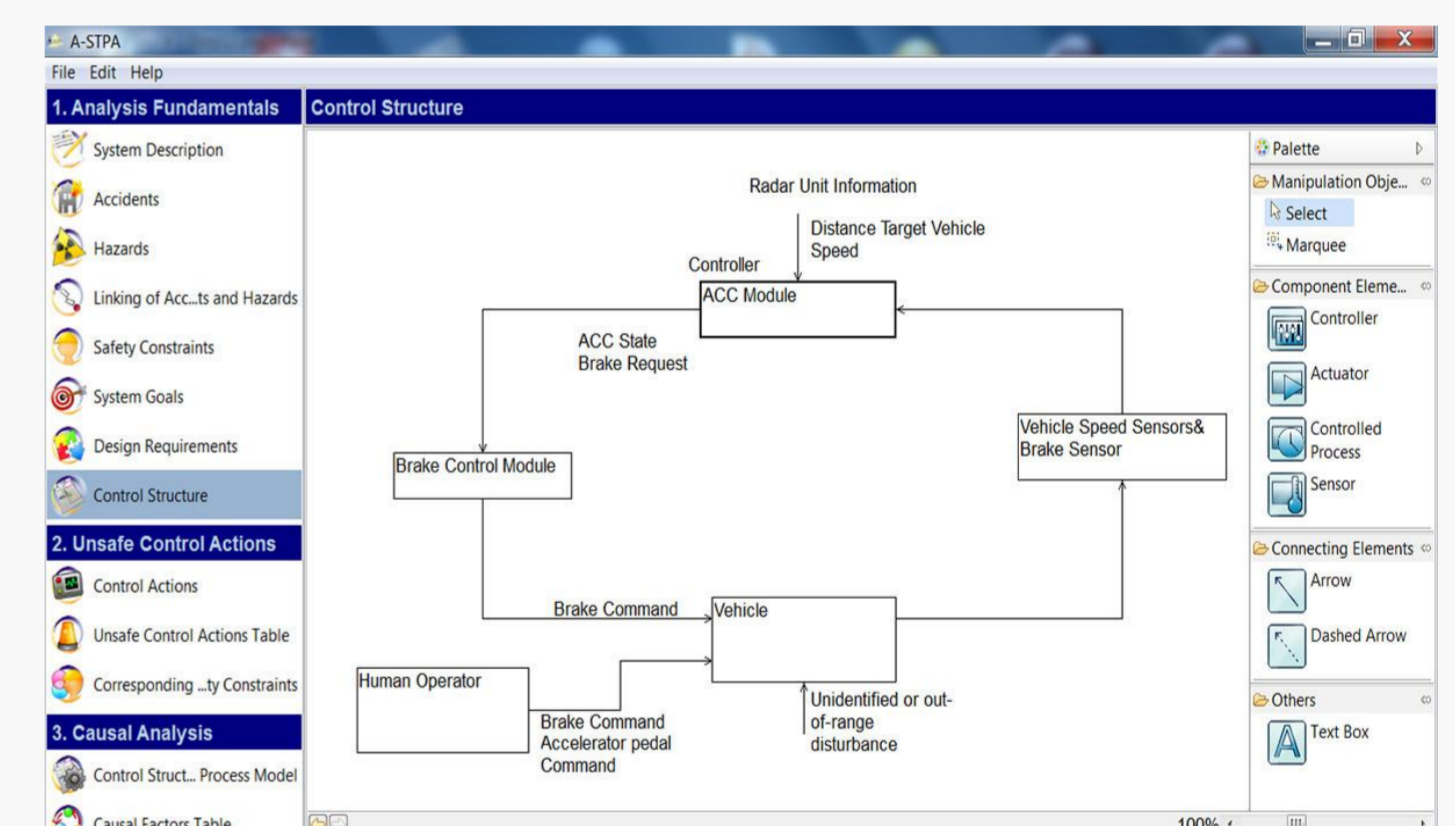
A-STPA Structure



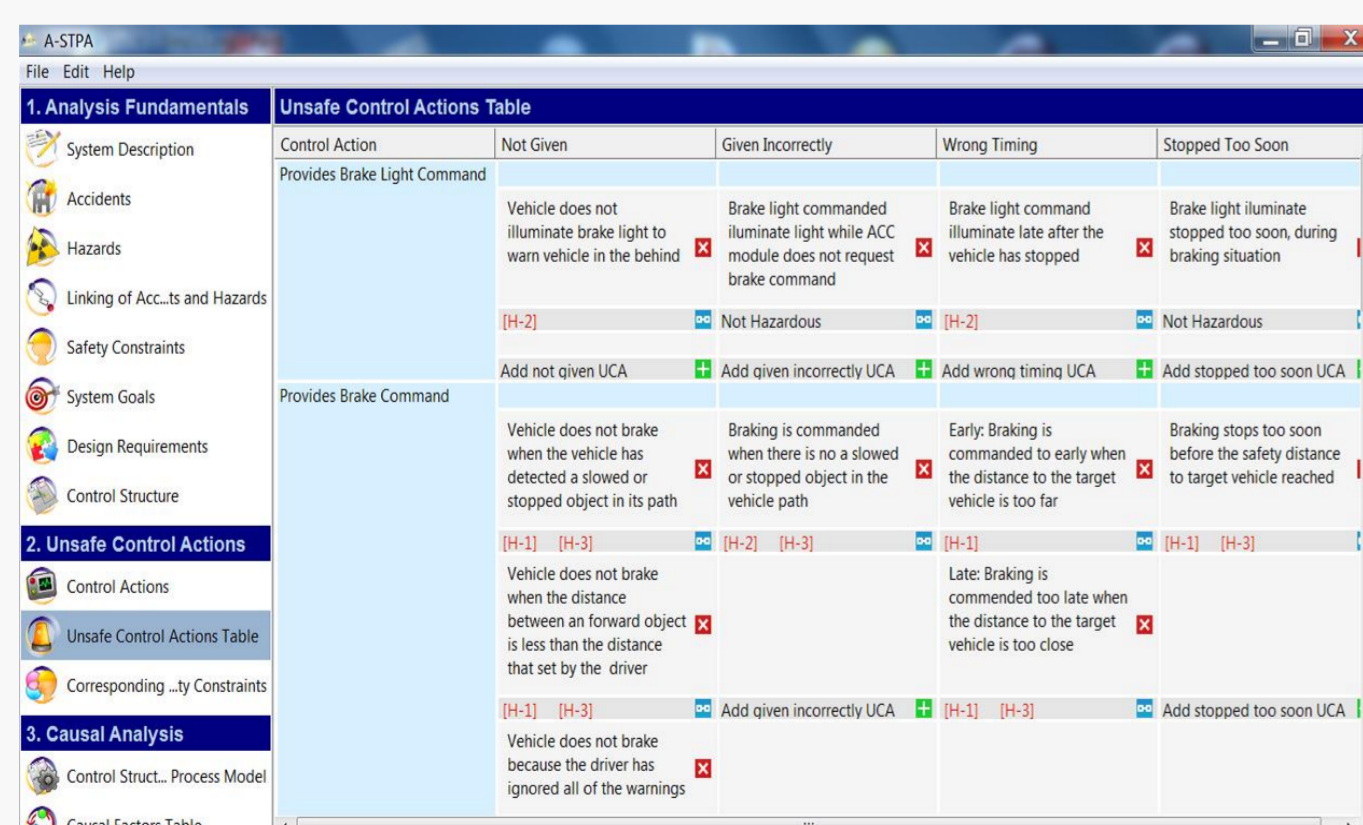
Welcome Screen



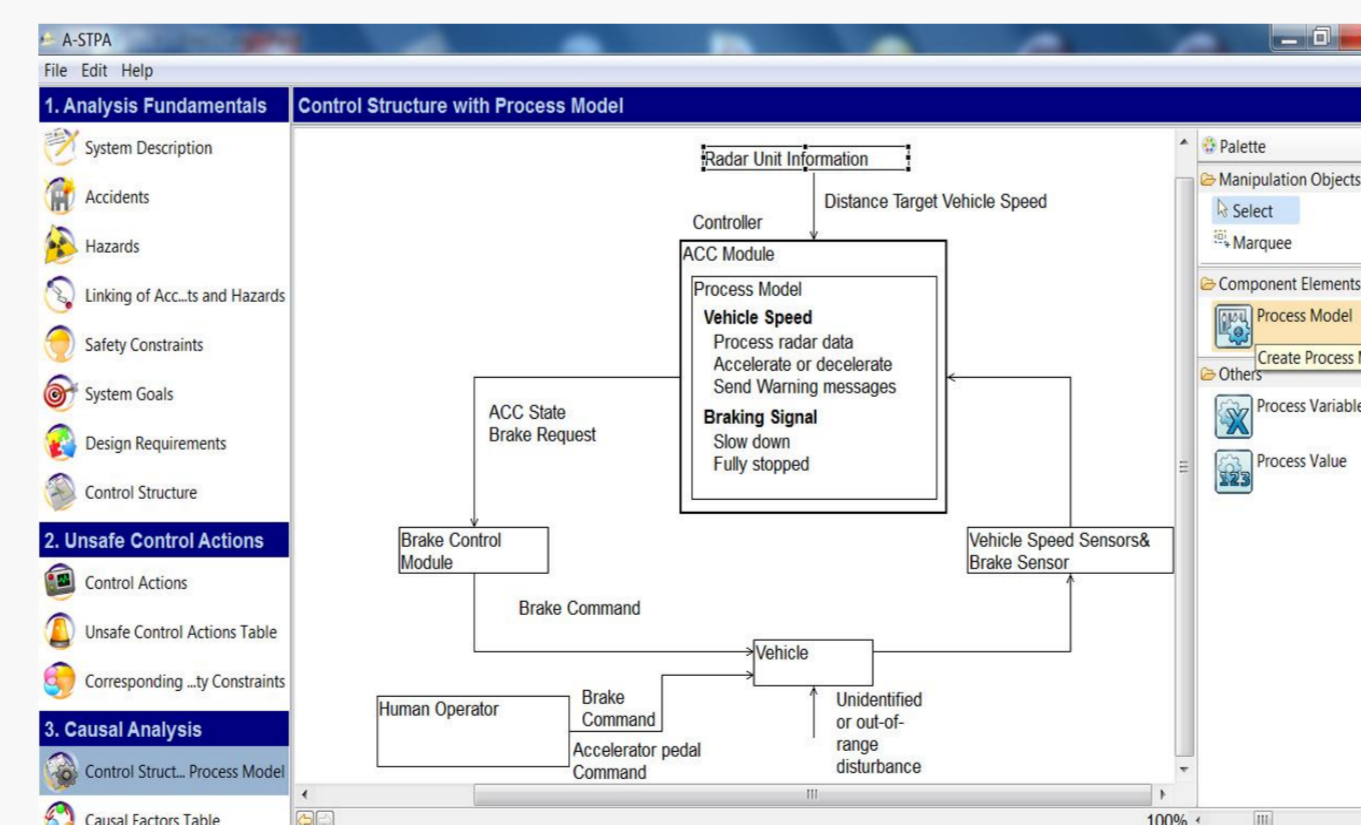
Editing Fundamentals View



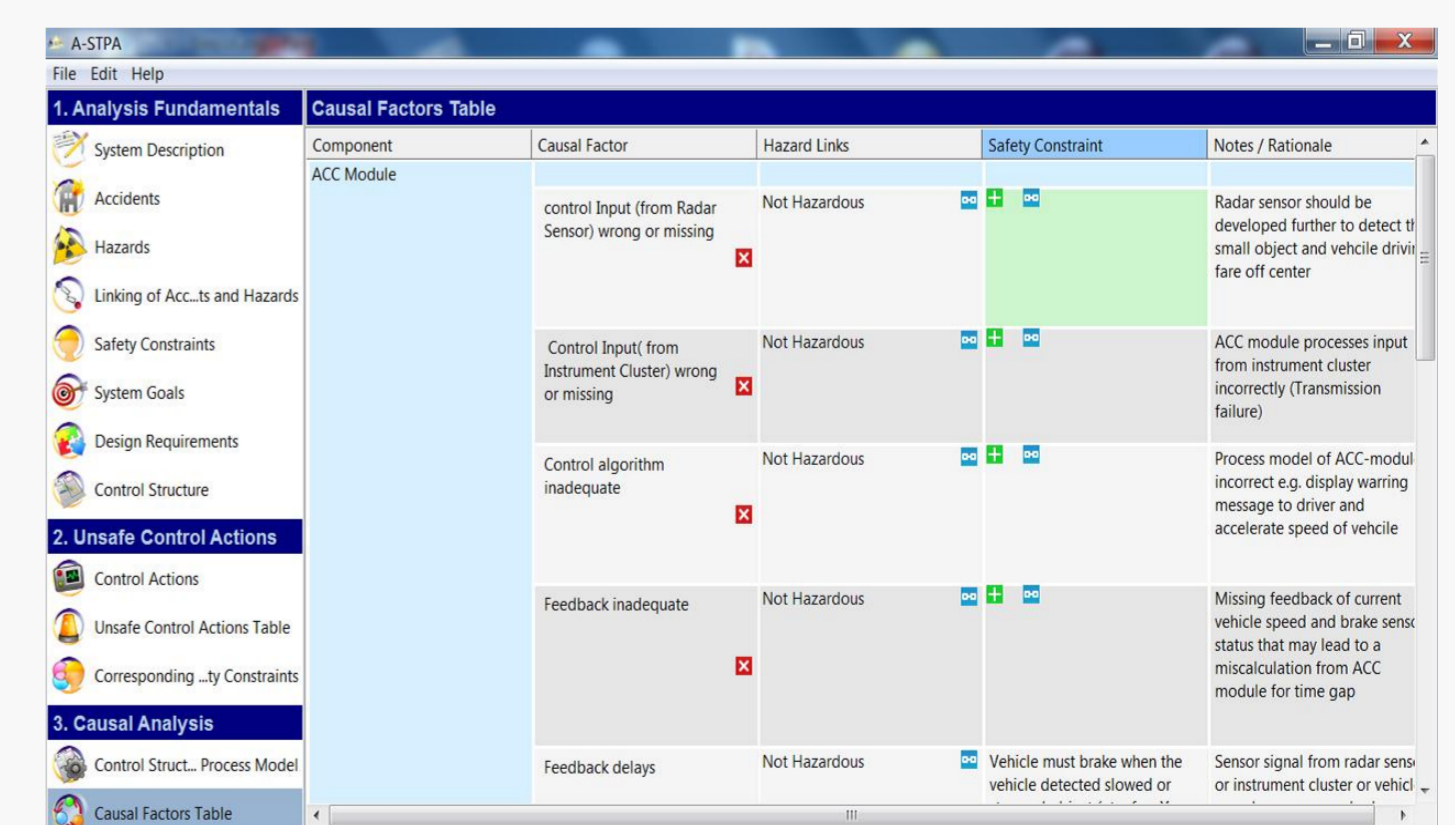
Drawing Control Structure View



Unsafe Control Actions View



Drawing the Process Models View



Causal Analysis View

A-STPA Website

<http://www.iste.uni-stuttgart.de/se/werkzeuge/a-stpa.html>

A-STPA is developed by:

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