MSc internship project proposal

1. **Title**: Automation of Hazard Analysis and Risk Assessment Setup

2. **Sponsor**
   - [TNO, IVS] [Function: Assignment provider]
   - [TU/e, ASD, MSD and ST] [Function: Facilitators]

3. **Context**
   TNO is the leading research organization in the field of automated driving technologies in The Netherlands. The Integrated Vehicle Safety (IVS) department is part of TNO working in the automotive domain. The primary focus program of IVS is the “Automated Driving” program which focuses on cooperative automation of driving task in order to reduce fuel consumption, CO2 emission, and human error. The Operational and Functional Safety (OFS) team (part of IVS) is active in the field of functional safety and architecture design. This team is focused on development of methods and tools to support related activities in the mentioned fields.

4. **Assignment description**
   Hazard Analysis and Risk Assessment (HARA) is one the most important safety analysis, usually performed in early phases of a project. This analysis method is strongly recommended by ISO 26262, and the results set up the rest of the activities during development of an automotive system.

   Usually, a safety experts sets up the structure of HARA prior to the analysis, and then the analysis is performed with all the stakeholders present. Currently, all the steps are performed manually in an Excel document. These tasks are laborious, and keeping consistency of the artifacts is always difficult. Automating these steps saves considerable amount of time for safety engineers and increases the trust in created results.

   The assignment is to study these steps, and identify the activities that could be automated, and create an environment in Enterprise Architect to perform HARA.

   **Tasks:**
   1. Implement an import/export script from Excel to EA
   2. Implement script in EA for checking design corresponding rules
   3. Write down use cases of the HARA automation tool
   4. Identify the required functionalities of the HARA automation tool

   In case of successful completion of this internship assignment, there are strong possibilities to extend towards a MSc graduation assignment.

5. **Goal of the assignment**
   1. Reducing effort required for safety engineering, especially with respect to safety analysis activities.

6. **Deliverables**
   1. Report
   2. Script for automated activities
   3. EA environment for performing HARA

7. **Required skills and knowledge**
   MSc candidate, Programming skills, knowledge of scripting languages (C#, Python, Java), affinity with safety standards (ISO 26262) and safety engineering