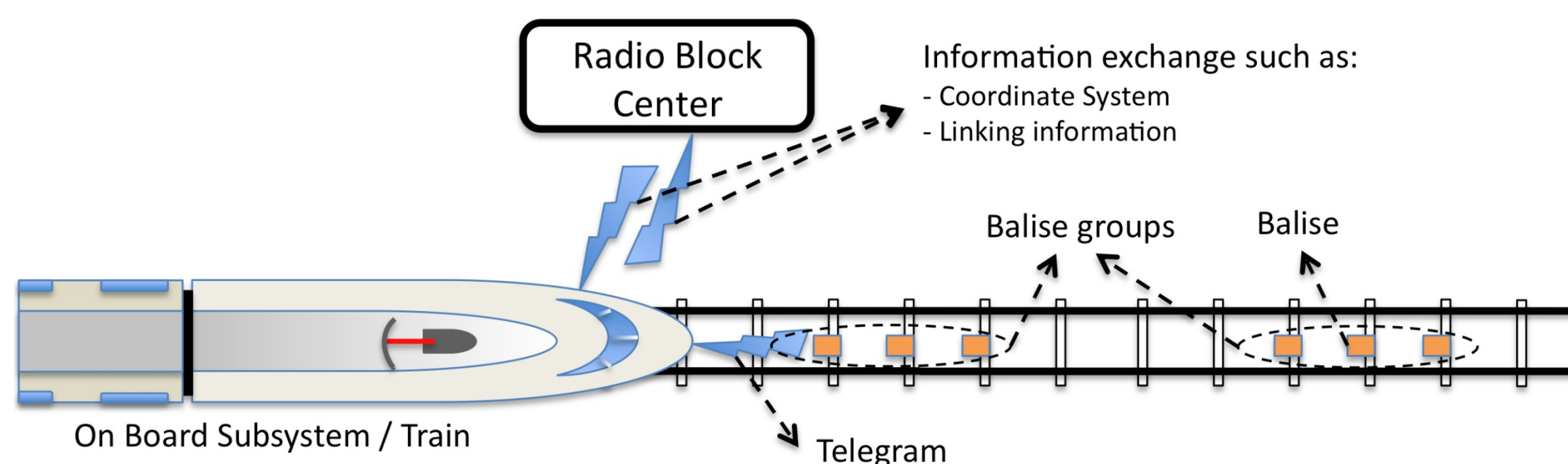
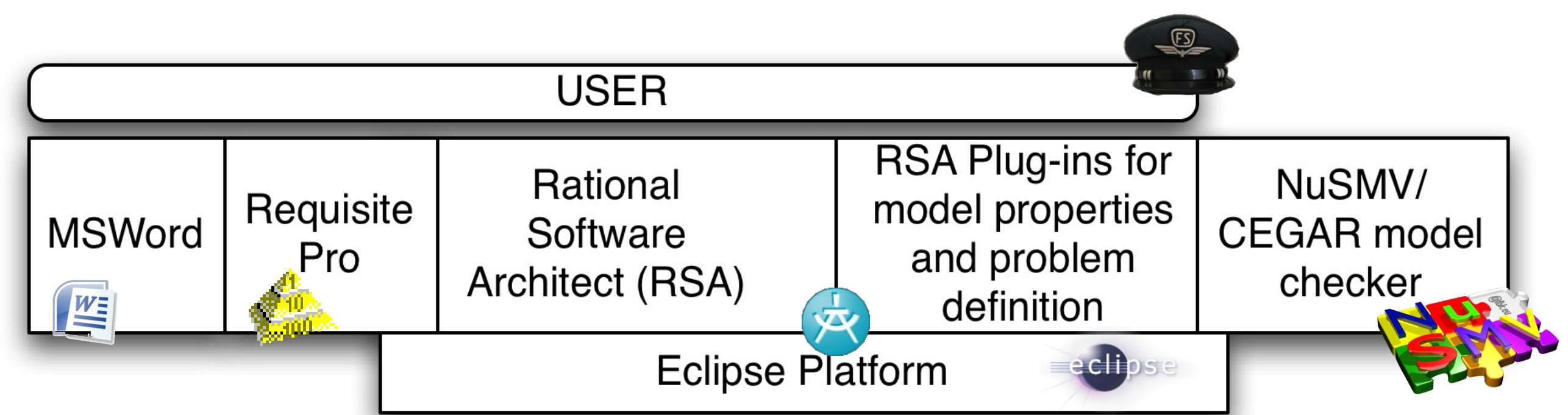


## THE PROBLEM

Formalization and the validation of the European Train Control System (ETCS) specification



## TOOL ARCHITECTURE



## TOOL SUPPORTED METHODOLOGY

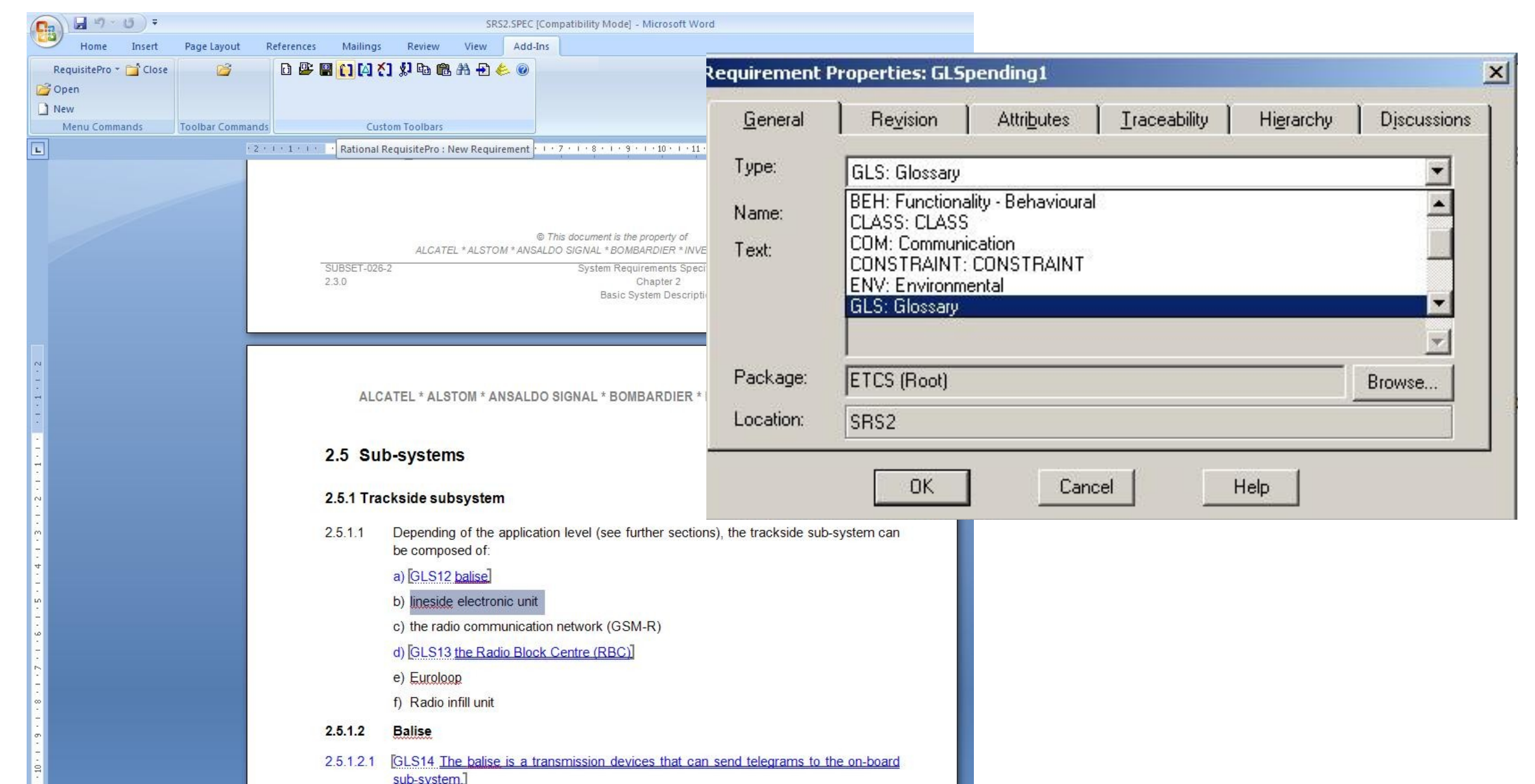
### 1. Requirements Fragmentation and Categorization Phase

#### 1.1 CATEGORIZATION

The user identifies and categorizes the informal requirement fragments

#### 1.2 DEPENDENCIES

The user can create dependencies among the categorized requirement fragments



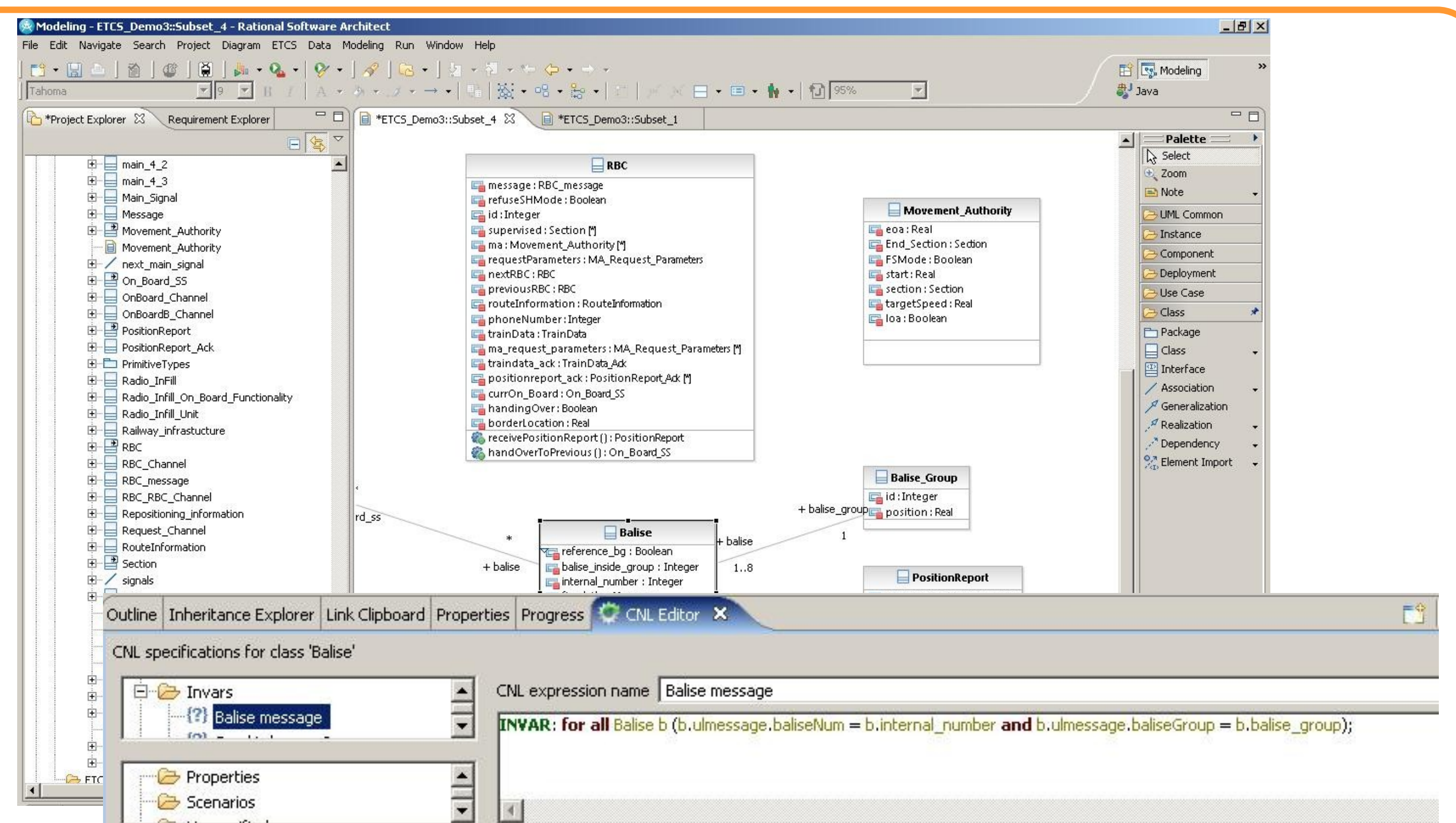
### 2. Formalization Phase

#### 2.1 FORMALIZATION

The user formalizes each categorized requirement exploiting Unified Modelling Language (UML) constructs and a Controlled Natural Language based on Property Specification Language

#### 2.2 TRACEABILITY LINKING

The user links the elements of the formalization to the textual requirements



### 3. Formal Validation Phase

#### 3.1 REQUIREMENTS SELECTION

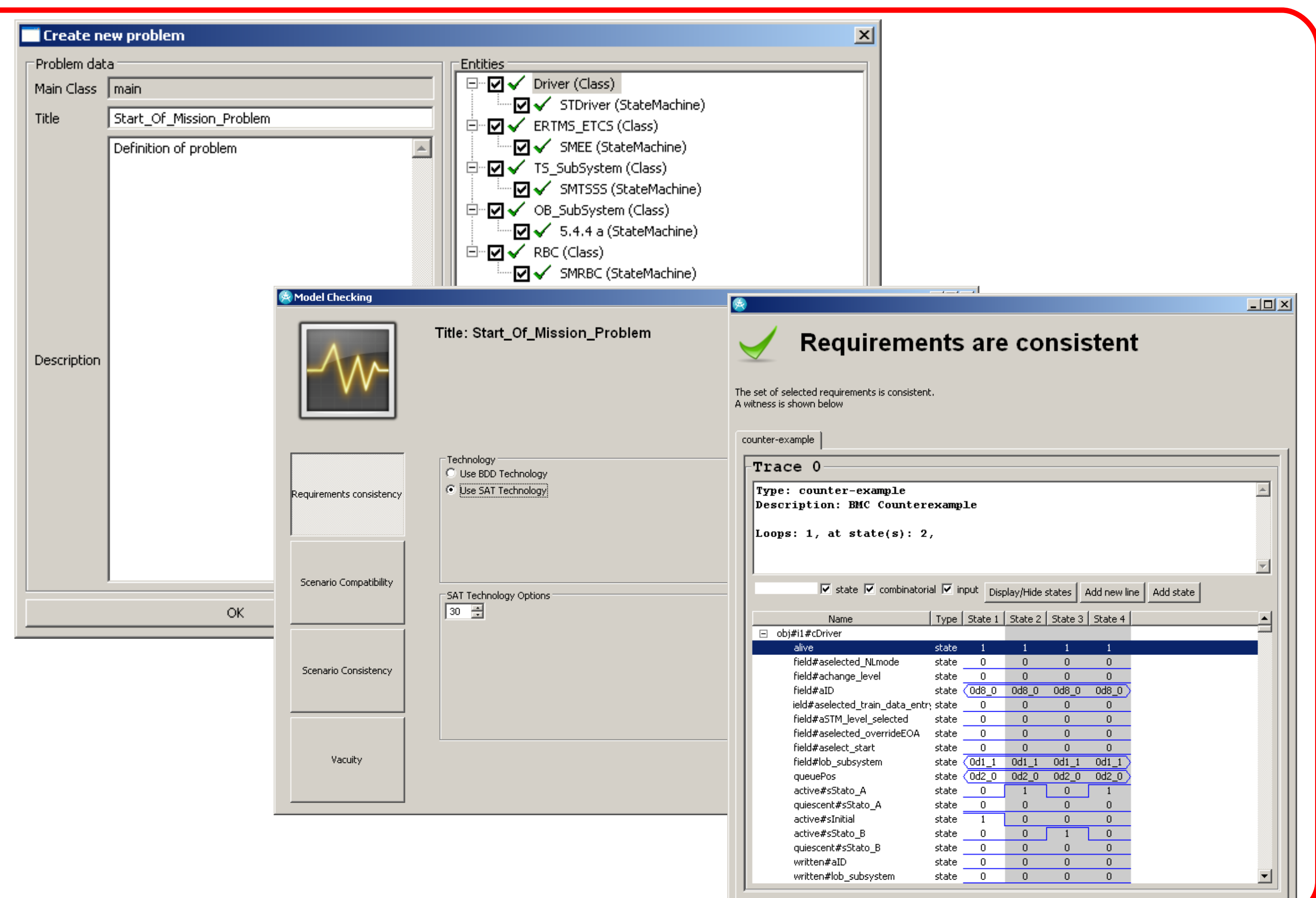
The user chooses a set of requirements to focus the validation on particular aspects of the specification

#### 3.2 PROBLEM DEFINITION

The user defines a set of problems, each one consisting of a set of objects and a set of scenarios and of properties

#### 3.3 CHECKING

The user checks the defined problems and analyzes the results



## PROPERTIES OF THE APPROACH

- Rich specification language
- Availability of an automatic engine
- Focus on usability (validated by several domain experts)

## REFERENCES

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