

***Training course on***  
**Formal verification of ETCS specifications**  
**EURAILCHECK**

Hosted by FBK-irst, Trento, Italy

20-24 October 2008

3-7 November 2008

24-28 November 2008

<http://es.fbk.eu/events/formal-etcs/training.html>

Aim of the five days courses is to give an introduction to the methodology and supporting tool developed during the “Formal verification of ETCS specifications” EURAILCHECK project (response to the Invitation to Tender of the European Railway Agency ERA/2007/ERTMS/OP/01).

All the lessons in the course will be divided in two major activities:

- a theoretical introduction of the methodology;
- an hands-on work on a case study exploiting the ETCS supporting tool.



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## **FIRST DAY**

After a brief recap of the objectives of the projects, an overview of the whole methodology will be given.

In this first day we will focus our attention on the languages and set of concepts of the methodology.

In particular, we will give an overview of the UML concepts and artifacts used in the methodology and an overview of the Controlled Natural Language (CNL) we defined to complement the UML language.

In parallel a general description of the supporting tool and small examples of the use of the methodology concepts, also using the tool functionalities, will be given.

## **SECOND DAY**

Here we will enter in details on the "informal analysis phase" of the methodology, focusing on the following aspects:

- categorization of the requirements
- definition of dependencies among requirements
- informal analysis of the requirements

A case study will be introduced that will be the used during the rest of the course.

The tool will be used on the requirements of the example in support of the *"informal analysis phase"*.

## **THIRD DAY**

In the third day the *"formalization phase"* will be detailed and we will focus on two aspects:

- use of UML Class Diagrams and CNL to represent some kind of requirements
- use of state charts and sequence diagrams to model Behavior and scenarios

The tool will be used to formalize the requirements in the example.

## **FOURTH DAY**

Here we will focus on the *"formal validation phase"* of the methodology detailing the following points:

- How to Check formalized requirements?
- How to define a problem to be checked on a given model?
- How to execute the formal validation?

All these steps will be applied to the example exploiting the tool functionalities

## **FIFTH DAY**

In the last session of the course, a new case study is presented that will be used to perform a complete pass of methodology exploiting the supporting tool.