

## The Teachers

**Andrea Musone** Management and Technical consultant in industrial and R&D projects, and to international organizations, in System and SW engineering and Safety. Domains: Avionic, Air Traffic Management, Space, Defence, Automotive, and Railways. Teacher of several standards: ECSS standards (E-40, Q-80 and M-series), Avionic DO-178B/C, and Railways EN 5012x. Mastering of system and SW life-cycles, related standards, SW QA according to ISO 9001, improvement models (Automotive-SPICE®, CMMI®), and ISO 26262. Author of a number of Intecs internal procedures and standards.



**Aida Jaku** has 14 years of experience in on-board software verification and validation, safety engineering and assessment, and software engineering. Tester of on-board and ground railways software for safety critical systems first, then involved in System Assessment activities for Italcertifier on Railway projects and in Safety Analysis on avionic subsystem.



## The Company

Since 1974, INTECS has been operating at the forefront of the software market, where safety, reliability, innovation, and quality are essential for success. INTECS provides leading-edge software technologies to support the major European and Italian organisations in the design and implementation of advanced electronic systems for Defence, Space, and Civilian markets.

Intecs is ISO-9000 certified since 1994. Currently it holds **ISO 9001:2008** quality certification for software development in Defense, Space, and Civilian domains. Intecs is **SEI Partner**. Moreover its Defence and ATC Divisions were certified **CMMI® Maturity Level 3**.

## General Information

### Location

Upon request, the course may be held at Customer premises.

### Contact

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## EN 50128 Software for Railway Control and Protection Systems

*A two days intensive course*



## The CENELEC 50128 Standard

This European Standard specifies procedures and technical requirements for the development of programmable electronic systems for use in railway control and protection applications. It is aimed at use in any area where there are safety implications. These may range from the very critical, such as safety signalling to the non-critical, such as management information systems. These systems may be implemented using dedicated microprocessors, programmable logic controllers multiprocessor distributed systems, larger scale central processor systems or other architectures.

### The Course

A comprehensive one-day course provides participants with all the major features of the standard, together with an overview of proposed implementation techniques both effective and efficient.

### Intended audience

Software Engineers (Development and Verification), Quality Engineers, Configuration Managers, Test Engineers, and Project Managers.

### Methods and Media

Classroom presentations with Power Point slides and actual examples from INTECS experiences.

## Course Outline

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### Day 1

**Introduction and Normative References**

**Terms and Definitions**

**Software Safety Integrity Levels**

**Personnel and Responsibility**

**Lifecycle Issues and Documentation**

**Software Requirements Specifications**

**Software Architecture**

**Software Design and Implementation**

**Software Verification & Testing**

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### Day 2

**Software/Hardware Integration**

**Software Validation**

**Software Assessment**

**Software Quality Assurance**

**Software Deployment and Maintenance**

**Systems configured by Application Data**