

The Teachers

Mr. Antonio Castellani has more than twenty years of experience in Reliability and Logistics Engineering. He is involved both in technical and management activities in Space and Defense Projects. As Reliability Engineering Manager, he was involved in large programs, like IRIDIUM, Astrolink, Cosmo SkyMed, Cosmo Second Generation, GÖKTÜRK.



The Company

Since 1974, INTECS has been operating at the forefront of the software market, where safety, reliability, innovation, and quality are essential ingredients 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. Moreover, Intecs Defence and ATC Divisions were positively appraised at **CMMI® Maturity Level 3**.



General Information

Location

Courses may be arranged in-house at the customer site upon request.

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the Brainware company

Failure Mode, Effects, (and Criticality) Analysis (FMEA/FMECA)

A two-days modular course

FMEA/FMECA

FMEA (Failure Mode and Effect Analysis) is a methodology allowing to establish for each system component the effects of the failure modes it may causes, and assign a severity ranking to them.

FMECA (Failure Mode, Effects, and Criticality Analysis) is a methodology allowing to establish for each failure mode of the system component, the effects it causes, assigning a severity ranking to it; and, in addition, based on both the severity ranking and the failure mode probability of occurrence ,it provides a criticality number too.

FMEA/FMECA are addressed by ECSS-Q-ST-30-02C - Failure modes, effects (and criticality) analysis (FMEA/FMECA).

MIL standards also address system FMEA/FMECA, providing suitable methods and models to evaluate failure mode severity and criticality (MIL-STD-1629A).

The Course

The objective of the course is to provide a detailed knowledge of the FMEA/FMECA methodology for systems, from early design phases up to operation.

The course is organized in two days:

- Day 1: FMEA and FMECA objectives are introduced and the details of FMEA and FMECA application are presented.
- Day 2: All the relevant process and design concepts for FMEA are discussed.

Examples and exercises are significant part of the lessons.

Intended audience

At least large part of Day 1 should be attended by:

- Project Managers and System Engineers who need to understand how to manage Reliability, Maintainability, Availability requirements in their projects.

Day 1 and Day 2 should be attended by:

- Dependability Analysts who need to understand the approaches and models to be applied in Reliability Assurance process to be carried out within a system design and development project.
- System Designers and Developers who need to understand how to integrate actual design activities

with Reliability requirements assurance process.

Prerequisites

Participants are required to know system engineering basics.

Benefits

Most of Day 1 will primarily familiarize managers and engineers with Failure Mode definition and analysis methods. They will then be able to interact with own customers, higher-level project managers, their development teams, and suppliers (if any). Moreover, they will know where to find more information, when necessary.

In Day 2 Dependability Analysts and System Designers and Developers will be provided with analysis tools and methods to be applied in complex system projects.

Material

The participants are provided with a copy of course handouts, including examples and exercises

Course Outline

Day 1

System FMEA and FMECA objectives

Input and output data for system FMEA and FMECA

FMEA and FMECA Analysis

Elimination/Mitigation actions of severe and critical failure modes

FMEA and FMECA reports

Critical Item List (CIL)

Day 2

Process/Design FMEA

Identification of Process Functions and Elements

Identification of Possible Failures for Each Failure Function and Element

Failure Effects Identification

Severity Assessment

Failure Causes Identification

Failure Frequency Evaluation

Identification of Failure Inspection Control, Methods

Detection

Risk Priority Number (RPN) Evaluation

Criticality Based Failure Selection at Corrective Action Establishment Purposes

Evaluation of Occurrence Frequencies and RPN following corrective action implementation