

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

Fault Tree Analysis (FTA)

A two-days modular course

FTA

FTA (Fault Tree Analysis), is a methodology allowing to identify the combinations of causes determining the most undesirable events that may occur for a system.

FTA is addressed by ECSS-Q-ST-40-12C Fault tree analysis.

From a general perspective, a good reference in MIL Standards is MIL-STD-1553 – Designer's Guide.

The Course

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

The course is organized in two days:

- Day 1: FTA objectives are addressed, introducing Fault Tree concept and application.
- Day 2: *Fault Tree* application detailed description is discussed.

Examples and exercises are significant part of the lessons.

Intended audience

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 course will primarily familiarize managers and engineers with Fault Tree 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 course 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

Basic Concepts

FTA objectives

Fault Tree

Boolean Algebra

Cut Set

Minimal Cut Set

Elimination/Mitigation actions of severe and critical failure modes

Top Event Definition

Intermediate Event Definition

Day 2

Fault Tree building

Quantitative Analysis

Qualitative Analysis

Common Mode Failure

Evaluation of Top Event and Intermediate Events Probability of Occurrence

Minimal Cut Set Determination

Comparison Between Reliability Block Diagram and Fault Tree methodologies