Training Catalog

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Presentation

The group was created in 1991 and belongs to associate employees to ensure independence to industrial groups and complete impartiality in the missions carried out and the recommendations made.

The LGM group aims to provide its clients, operators and contractors, with a global solution to their high-tech system development needs.

The group is united around the same dynamics, based on a strong synergy between companies, offering a wide range of solutions to their clients. The diverse and complementary expertise of its resources enables LGM to offer a wide scope of interventions ranging from turnkey studies to methodological expertise and industrial project management of entire systems.

Group strategy

The group’s strategy is to offer its clients a comprehensive approach to the management and design of systems related to high-tech industrial projects.

In order to respond both to the technical and organizational complexity of such projects, the group provides complete mastery of niche markets, in which a European or even worldwide leadership is highlighted, and a combination of know-hows that enables us to take on complete management of entire projects.

From a managerial standpoint, LGM supports its clients in managing organizations and their projects: LGM’s methods and techniques deal not only with managing projects and organizations, but also with «system» components, such as security, availability and support for developed systems.

From a technical standpoint, the LGM group provides electronic and mechanical expertise to its client in order to support them in their technological developments.

Training

For over 20 years, the diversity and quality of services provided by engineers and project managers in our group forged within the company a unique expertise in the practical and effective implementation of management and engineering techniques suited to major projects in many different industries.

The training seminars we offer provide advice and expertise within the various business sectors of the LGM Group entities.

One proposition combining expertise and pragmatism!

The continuing evolution of techniques, practices and know-how constantly forces each manufacturer and contractor to adapt to and anticipate new developments. Continuous training of human resources is the key to success in meeting these challenges.

Equipped with a training facility with training courses in all aspects of management and engineering of major projects, LGM offers inter-company training.

We also carry out intra-company training sessions to meet the needs of our customers. In this case, we analyze your needs and specifications in detail to offer you an optimized training plan.

Do not hesitate to contact us if you have specific training requirements.

Contact

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Our training courses are:

**Maintenance Engineering - Integrated Logistic Support - Logistic Support Analysis**

- ILS_01: Understand the benefits and principles of the ILS concept .................................................. 4
- ILS_02: Specify the Logistics Support for the acquisition of a durable good ........................................... 5
- ILS_03: Create an ILS program adapted to the client’s needs ................................................................... 6
- ILS_04: Create and optimize the logistic support .......................................................................................... 7
- ILS_05: Acquire expert knowledge of logistic data management (LSD) ....................................................... 8
- ILS_06: Introduction to the ASD S3000L ........................................................................................................ 9

**RAMS (Reliability, Availability, Maintainability, Safety) / Dependability Studies**

- RAMS_01: Introduction to RAMS engineering .............................................................................................. 10
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**Systems Engineering**

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**Quality**

- QUA_01: Benefits and Principles of Quality Assurance within a project ...................................................... 24
- QUA_02: Understand the standard EN 9100: 2016 ......................................................................................... 25
Understand the benefits and principles of the ILS concept

Course objectives
Discover techniques and tools to apply Integrated Logistic Support (ILS) to the system design and development.
› Understand the impacts of technical choices on the performances of support and costs.
› Have expert knowledge of the proceedings of the maintenance engineering process (Logistics Support Analysis studies).
› Understand all logistic products and their contribution to system performance and the costs.

PROGRAM

Day 1
› Definition of Logistics Support
  - Issues,
  - The life cycle of a product,
  - Definition and history of ILS.
› Support performances
  - Reliability,
  - Maintainability/Testability,
  - Availability.
› Activities and products of Logistics Support
  - Maintenance,
  - The different activities of Logistics Support,
  - The 9 products of Logistics Support.
› Practical exercises

Day 2
› Introduction to Total Ownership Cost
  - Definition and history,
  - Role of LCC,
  - The Basics of LCC.
› Logistics Support Analysis
  - Basic concepts of KSA,
  - The LSA process,
  - The methodological tools of LSA,
  - The LSA database,
  - LSA-RAMS interfaces.
› Organization of Integrated Logistic Support
  - ILS actors: Roles and interfaces,
  - Functional organization of an ILS program,
  - ILS management.
› Practical exercises

Profile
Project Managers, Business Managers, High-level Logistics or After Sales Service Engineers and Technicians, Maintenance Managers, Sales Managers, Industrial Decision-Makers, Future contributors to Support Services.

Duration
2 days

Locations/Dates/Price
Upon request
Specify the Logistics Support for the acquisition of a durable good

Course objectives

Have the expert knowledge to specify the logistics support for the acquisition of a durable good and to factor it in during the design.

› Learn how to define and convert one's need in terms of logistics support.
› Have expert knowledge of the contractualization of activities related to Integrated Logistic Support and to Live System Support.
› Know the techniques to control the design activities of Logistics Support.

PROGRAM

Day 1

› Acquisition strategy
  - Highlight and comment upon the cost variations of the different phases in the life of a product.

› Identification of needs
  - Adaptation of the expected service,
  - Identification of the constraints related to support,
  - Definition of key support performances,
  - Constraints of Availability/Total Ownership Cost.

› Specification of support
  - Definition of key requirement performances,
  - Typical content of a support specification.

› Practical exercises

Day 2

› Selection and contractualization
  - Criteria for evaluating support offers,
  - Transition, from offer to contract,
  - Establishment of a steering committee.

› Monitoring ILS activities
  - Verification plan,
  - Checkpoints,
  - Documentary consistency,
  - Demonstration phase to show suitability for the Support.

› Evolutions of Logistic Support
  - The tasks of Live System Support Engineering,
  - The evolution of logistic data,
  - Logistics Support Analysis database (LSD) and Logistics Information System (LIS).

› Practical exercises

Profile


Duration

2 days

Locations/Dates/Price

Upon request
Create an ILS program adapted to the client's needs

Course objectives

Get expert knowledge of building an Integrated Logistics Support program consistent with the client's needs.

› Know how to identify the important support levers which allow adapting the positioning of the company and the effort during the Response to a Call for Tender phase.
› Master the management aspects of a logistic support program.
› Measure the importance of logistic data management and the issues of configuration management.

PROGRAM

Day 1

› Strategic positioning
  - Positioning of the company regarding Logistics Support,
  - «Support» know-how,
  - Measuring effort and gain throughout the LCC.
› The Response to a Call for Tender phase
  - Understanding the client’s needs,
  - Requirements analysis,
  - Job profile,
  - Using the experience feedback,
  - Using the LCC during the Response to a Call for Tender phase.
› ILS program management
  - Integrated Logistics Support Plan,
  - ILS Steering Committee,
  - The organization of Integrated Logistics Support,
  - The ILS actors: Roles and interfaces,
  - Functional organization of an ILS program,
  - ILS management.

Day 2

› LSA strategy
  - Evaluation of the appropriate engineering effort,
  - LSA plan and links to other plans (management, ILS, RAMS),
  - Organization of the project team (business units).
› Supplier specifications
  - Allocation of support requirements,
  - Identification of verification means,
  - Typical content of a support specification.
› Managing logistic data
  - Configuration management elements,
  - Logistics Support Analysis database (LSD) and Logistics Information System (LIS).

Practical exercises

Profile


Duration

2 days

Locations/Dates/Price

Upon request
Create and optimize the logistic support

Course objectives

Get to know and gain expert knowledge of Logistics Support Analysis.
› Master running maintenance engineering processes (Logistics Support Analysis studies).
› Learn how to define the support system: Define the requirements of each logistics product.
› Ensure consistency between logistics products.
› Identify the impact of evolutions on the support system.

PROGRAM

Day 1
› Introduction
  - Context of Logistics Support,
  - Issues of the maintenance concept,
  - Constraints supportability/Total Cost Ownership.
› Supportability services
  - Reliability and job profile,
  - Definition of Operational Availability,
  - Maintainability, Testability,
  - Ergonomics and human factors,
  - Identification of other key performances.
› In-depth practical exercises

Day 2
› Total Cost of Ownership (LCC)
  - Highlighting the interactions between performance and LCC,
  - Parametric and analytical concepts,
  - Sensitivity analysis,
  - Pareto diagram.
› The LSA process
› In-depth practical exercises

Day 3
› Optimization of support
  - Analysis of the repair level of equipment (LORA study),
  - Dimensioning of spare parts, personnel, tests and support equipment,
  - Optimization of preventive maintenance.
› Logistic databases
  - Configuration management items,
  - Logistics Support Analysis database (LSD) and Logistics Information System (LIS).
› In-depth practical exercises

Profile

Industrial Support or After-Sales Services Management, Logistic Engineers or Technicians.

Duration

3 days

Locations/Dates/Price

Upon request
Acquire expert knowledge of logistic data management (LSD)

Course objectives
Understand the Logistic Support Analysis Record (LSAR) described by the standard MIL STD 1388-2B.
› Get to know the standard and how to apply it.
› Calculating the size of the LSAR activity (data acquisition, coding, output report).
› Get to know the main software on the market.
› Create a reduced logistic database.

PROGRAM

Day 1
› Presentation of the standard MIL STD 1388-2B
  - History and context of the standard,
  - Document architecture,
  - Alternatives to MIL STD 1388-2B.
› The LSAR data model
  - Understand the data model of the standard and adapt it to a program.
› Reports
  - Normative reports,
  - Specify additional reports.
› Practical exercises

Day 2
› Calculating the dimensions of the LSD
  - Select the correct necessary data,
  - Acquisition of data and coding. Main coding rules to establish,
  - How to acquire the data,
  - Write an LSAR data dictionary.
› Other Logistics Information Systems
  - Overview of alternative solutions in terms of logistic information systems,
  - How to build a reduced logistic database.
› Practical exercises

Profile
Operational Support or After-Sales Service Teams.

Duration
2 days

Locations/Dates/Price
Upon request
Introduction to the ASD S3000L

**Course objectives**

Understand how to implement the specification ASD S3000L on projects.
- Understand the general organization of ASD specifications.
- Navigate efficiently within the S3000L specification.
- Use the key chapters within the framework of the LSA program.
- Understand the main evolutions of the data model associated with the LSA.
- Understand the important contributions of S3000L regarding the issues of major programs.

**PROGRAM**

**Day 1**

- Introduction
- General overview
  - Objectives/methodology,
  - General structure of the specification,
  - Presentation of chapters and interactions.
- Presentation of the S3000L process (chapter 3)
  - User and support data,
  - Product Design and important support data,
  - Logistic model trees and selection of LSA candidates,
  - Selection of analysis tasks,
  - Initialization of logistics products.
- In-depth practical exercises

**Day 2**

- Logistic processes and analyses
  - Global management of the LSA within ILS,
  - Analysis of triggering events,
  - Other key analyses.
- In-depth practical exercises

**Day 3**

- Data management and perspectives
  - Data Model S3000L,
  - Data exchanges,
  - Initial feedback,
  - Application projects and tools.
- In-depth practical exercises

**Profile**

Managers of Industrial Support or After-Sale Support Activities, Documentation Service Managers, Technical Writers.

**Duration**

3 days

**Locations/Dates/Price**

Upon request
Introduction to RAMS engineering (Reliability, Availability, Maintainability and Safety)

Course objectives

Understand and master the techniques and tools of TAMS engineering to improve the safety and availability of your product/service and to optimize the life cycle costs.

- Incorporate RAMS requirements into a comprehensive development plan.
- Control the behavior of your system with regard to malfunctions.

PROGRAM

Day 1

- Concepts and definitions
  - Definitions of RAMS (Reliability, Availability, Maintainability and Safety),
  - Issues of RAMS (LCC, availability and safety),
  - Objectives.

- Gauging Dependability and calculation rules
  - Reliability (MTBF, MTTF, life cycle...),
  - Maintainability (testability, repairable...),
  - Availability (%),
  - Gauging safety (dreaded event, probability, minimum outages...),
  - Taking requirements into account in the design,
  - Probability and Boolean algebra,
  - The different laws of probability,
  - RAMS – ILS interface.

- Practical exercises

Day 2

- RAMS-Tools
  - Generic tasks of a RAMS-program (allocation, specifications, feedback...),
  - Preliminary Risk Analysis,
  - FMEA,
  - Fault trees,
  - Testability.

- Specific RAMS-studies
  - Software reliability,
  - Mechanical reliability (resistance/stress, Wöhler curve...),
  - Research regarding human factors.

- Practical exercises

Profile

Business Managers, Logistics Managers, LSA Engineers, novice RAMS Engineers, R&D Engineers.

Duration

2 days

Locations/Dates/Price

Upon request
Dependability (RAMS) for Electronic Systems

Course objectives

Get to know the concepts of electronic Dependability in the context of complex electronic architectural developments.
 › Get to know the particularities of electronic Dependability.
 › Learn how to specify, carry out and analyze reliability studies of electronic components.
 › Analyze the electronic malfunctions of a card.
 › Practice in numerous practical exercises

PROGRAM

Day 1
 › Reminder of Dependability concepts
   - Definition of RAMS,
   - Issues and objectives of RAMS.

 › Basic principles in electronics
   - Reminder of sizing parameters,
   - Elementary components and architectures.

 › Dependability applied to electronics
   - Specificities and challenges,
   - RAMS-methods applied to electronics,
   - Processes and standards.

 › Practical exercises

Day 2
 › Reliability calculations of an electronic card
   - Presentations and comparison of most common standards (MIL HDBK 217F, UTE 80-810, FIDES),
   - Acceleration models,
   - Calculation of equipment failure rates,
   - Life time.

 › Electronic Dependability in a project context
   - Reliability analysis,
   - FMEA,
   - Fault trees,
   - Dependability report.

 › Practical exercises

Profile

Project Managers, Hardware and Systems
Dependability Engineers, Quality Engineers, High-Level Electronic Engineers and Technicians, LSA Engineers.

Duration

2 days

Locations/Dates/Price

Upon request
Advanced Dependability Analysis

Course objectives

Master the use of Dependability tools and related results.
› Implement a safety analysis approach.
› Specify and control the parameters of Dependability (MTBF, MTTR, availability...).
› Carry out a feedback analysis

PROGRAM

Day 1
› Safety analysis
  - Objectives of different safety types,
  - Methodology of a safety analysis.
› Implementation tools
  - PRA,
  - Fault trees,
  - Integration of FMEA results.
› Examples
  - Tools to implement,
  - Presentation of tools.
› Practical exercises

Day 2
› Reliability/sustainability modeling
  - Key parameters,
  - Reliability diagram,
  - Other methods (Markov or Petri).
› Allocations
  - Objectives, types,
  - Allocations of subsystem requirements.
› Calculations
  - MTBF,
  - MTTR,
  - Availability,
  - Examples of tools.
› Practical exercises

Day 3
› Feedback management
  - Organization,
  - FRACAS,
  - Feedback report template form.
› Reliability growth
  - Objectives of the method,
  - The various tools (Duane, AMSAA, ...).
› Statistical analysis methods
  - MTBF Calculations (khi2 law),
  - Weibull method,
  - Hypothesis tests.
› Practical exercises

This training can be expanded with a module regarding «standards», please contact us !

Profile

Project Managers, ILS Managers, High-Level LSA/RAMS Engineers and Technicians, Information System Managers.

Duration

3 days

Locations/Dates/Price

Upon request
Software Dependability

Course objectives

Understand the specificities of software from the point of view of Dependability.
› Get to know the methods of Dependability to apply to a development cycle.
› Apply a software safety analysis approach.

PROGRAM

Day 1
› Why software Dependability?
  - Objectives of RAMS,
  - General definitions,
  - Specific characteristics of software.
› System/software development cycle
  - V-Cycle,
  - RAMS-actions associated with the V-cycle,
  - Implementation with the standard CEI61508.
› Software criticality
  - What is critical software?
  - The issue of COTS.
› Practical exercises

Day 2
› Methodology of software-RAMS
  - Software Quality Assurance,
  - Preliminary Risk Analysis,
  - Fault trees,
  - Software specification analysis,
  - Software AEEL/FMEA,
  - Programming rules,
  - Tests.
› Practical exercises
  - Conduct a software-RAMS study on the development of odometer software.

Profile

RAMS Engineers, Software Architects, Software Designers, System Engineers, Project Managers.

Duration

2 days

Locations/Dates/Price

Upon request
FMECA

Course objectives

Learn how to specify, conduct and use the results of an FMECA.
› Understand the context to adapt the tool to your specific needs.
› Specify the development of an FMECA.
› Get to know how to use the results for Dependability, logistic support, process analysis...

PROGRAM

Day 1
› Context of FMECA
  - Dependability (reliability, availability, safety...)
  - Logistics support,
  - Value analysis.
› Relationship with other tools
  - Preliminary Risk Analysis,
  - Reliability calculation,
  - Functional analysis,
  - Fault trees.
› Methods of FMECA
  - Functional FMECA,
  - FMECA for products,
  - FMECA for components,
  - FMECA for processes,
  - FMECA for complex systems.
› Practical exercises

Day 2
› Specification of an FMECA
  - Identification of needs,
  - Data/synthesis to produce.
› Approach
  - Functional analysis,
  - FMECA products,
  - FMES,
  - Synthesis report.
› Development of a real case scenario
  - Specifications of the product,
  - Proposal of approach,
  - Development of FA, FMECA, syntheses,
  - Conclusions.
› Practical exercises

Profile

Project Managers, ILS Managers, Senior Engineers and Technicians, LSA/RAMS Engineers, Information System Managers.

Duration

2 days

Locations/Dates/Price

Upon request
The FIDES Methodology

Course objectives

- Get to know the FIDES 2009 approach.
- Reliability models up to the first calculations by way of the construction of a FIDES mission profile.
- Introduction to reliability calculations with the dedicated tool «FIDES Expertool».
- Discover the basic and advanced functionalities of the software.

PROGRAM

Day 1

- Presentation of the FIDES 2009 methodology
  - Problem, context, and benefit of the method.
- Acceleration models and factors
- Preparation of input data
  - Components and mission profile.
- Practical exercises

Day 2

- Presentation of FIDES Expertool
  - Software architecture,
  - «Standard User» functions
  - Presentation and uses of resulting XML files,
  - «Advanced User» features (XML support).
- Practical exercises (with a laptop)
  - First set-up of the software,
  - Use of simple models (electronic components,
    RF/HF part count etc.),
  - Use of complex models (electronic cards, hybrids etc.),
  - Troubleshooting.

Profile

Project Managers, High-Level Dependability and Electronics Engineers and Technicians, Technical Managers and Electronics Designers.

Duration

2 days

Locations/Dates/Price

Upon request
Airborne Software Certification Standards: DO-178B & DO-178C

Course objectives

Standards DO-178B and DO-178C.
› Get to know the airborne software certification standard DO-178B/ED-12B (RTCA/EUROCAE - 1992) and its latest version DO-178C/ED-12C (RTCA/EUROCAE - 2011).
› Get an introduction to the supplements:
  - DO-330/ED-215 (2011) – Tools,
  - DO-331/ED-218 (2011) – MBD,
  - DO-332/ED-217 (2011) – OOT,
  - DO-333/ED-216 (2011) – FM.
› Learn how to apply these standards to critical developments in airborne systems.

PROGRAM

Day 1
› Principles of software certification
  - Interaction between failures, malfunctions and weaknesses / system of systems, systems /HW/ SW,
  - Links between the safety of software and acceptable risks,
  - The role and methods of certification authorities,
  - Historical links of subsequent standards,
  - Different environments of standards that fall within the scope of the certification (CRI, IP, CM etc.).
› Ways to demonstrate the safety of a software
  - Correlation between criticality and design effort through a qualitative approach,
  - Principles of «RBT» and Design Adjustments and Verification / Independence / CC1 and CC2.
› Presentation of the planning process
  - Put in context the objectives, activities and expected results,
  - Highlight classic but also unusual issues and alternative solutions.

Day 2
› Overview of development processes, verification, quality and configuration management
  - Put in context the objectives, activities and expected results,
  - Review of known critical points and workaround solutions.

Duration
3 days

Locations/Dates/Price
Upon request
Airborne Software Standards for ATM/CNS Systems: ED-109 & ED-109A

**Course objectives**

Standards ED-109 and ED-109A.

- Know the intrinsic links between ED-109 and DO-178.
- Get an introduction to the supplements
  - DO-330/ED-215 (2011) – Tools,
  - DO-331/ED-218 (2011) – MBD,
  - DO-332/ED-217 (2011) – OOT,
  - DO-333/ED-216 (2011) – FM.
- Learn how to apply these standards to critical developments in air traffic in ATM/CNS systems.

**PROGRAM**

**Day 1**

- Principles of software certification
  - Interaction between failures, malfunctions and weaknesses / system of systems, systems/HW/SW,
  - Links between the safety of software and acceptable risks,
  - EU-specific regulatory context - the role and methods of certification authorities,
  - Historical links of subsequent standards,
  - Environments of standards that fall within the scope of the certification (PHARE, DISCC, IR-ATM etc.).
- Means to demonstrate the safety of a software
  - Correlation between criticality and design effort through a qualitative approach,
  - Principles of «RBT» and design adjustments and verification / independence / CC1 and CC2.
- Presentation of the planning process
  - Putting in perspective the objectives, activities and expected results,
  - Highlighting classic, but also unusual issues and alternative solutions.

**Day 3**

- Presentation of issues linked to COTS
  - Planning, acquisition and configuration management of COTS,
  - Demonstration of integrity interfaces.
- Presentation of the document DO-248 / ED-94
  - Taking into account project-related considerations (deadlines, costs, contracts).
- Differences between ED-109 and ED-109A
  - Clarification of developments between ED-109 and ED-109A.
- Introduction to supplement documents shared between ED-109A and DO-178C:

**Day 2**

- Overview of development processes, verification, quality and configuration management
  - Putting in perspective the objectives, activities and expected results,
  - Review of known critical points and workaround solutions.

**Profile**

Software Managers, Quality Managers, Software Architects, Software Verifiers, Software Programmers.

**Duration**

3 days

**Locations/Dates/Price**

Upon request
Program Management

Course objectives

Get to know the methods and tools to manage projects – the basics
› Master the phases of putting the project’s framework system together (WBS, OBS and CBS).
› Get to know the planning methods and tools (PERT method, GANTT method).
› Get to know the methods for cost control (Project Curves Analysis ACWP, BCWP, BCWS/ Estimation and Cost-at-Completion calculation).
› Acquire expert knowledge of the follow-up techniques of a project (schedule, scope, cost and associated indicators).
› Manage the risks involved in a project

PROGRAM

Day 1

› Issues and basic principles of project management
  - General principles and definitions,
  - The triangle of project management (schedule, scope, cost),
  - Normative context.
› Construction of the project framework
  - Definition of the project outline,
  - Creation of the project workflow chart,
  - Development of work packages sheets,
  - Responsibility Assignment Management,
  - Calculation of the cost-at-completion,
  - CBS and account payment plan.
› Planning methods
  - GANTT and PERT representations,
  - Determination of the critical paths,
  - Logical links between tasks,
  - Planning methods,
  - Calculation of Duration = Expenses/Resources & Replanning methods,
  - Deviation Analysis.
› Practical exercises
  - Development of a WBS,
  - Creation of a planning with critical path calculations,
  - Free margins,
  - Forward and Backward Pass technique.

Day 2

› Progress analysis
  - Implementation of progress indicators (S-curve),
  - Development and use of S-curves (CBTP, CBTE, CRTE),
  - Re-calculation of the cost-at-completion,
  - Deviation Analysis and Corrective Action Analysis,
  - Reporting.
› Risk management
  - Definition of project risks,
  - Characterization, identification and estimation of risks,
  - Method of rating and prioritizing risks,
  - Risk reduction techniques.
  - Risk Management Controlling.
› Practical exercises
  - Development of S-curves, analysis of project situation (delays/head starts – additional costs/savings),
  - calculation of the project’s remaining work and estimation of cost-at-completion – Creation of a project risk matrix.
  - Case study in the form of role-play taking into account the development of a management plan, an initial planning, cost tracking and the creation of a risk portfolio.

Profile

Project Managers, Business Managers, Project Controllers, Management Controllers.

Duration

2 days

Locations/Dates/Price

Upon request
Risk Portfolio Management

Course objectives

Master the management of project risks and opportunities.
› Learn how to identify risks and opportunities.
› Learn how to characterize risks and opportunities.
› Learn how to quantify risks and opportunities.
› Learn how to set up and manage action plans to reduce risks.

PROGRAM

Morning
› Identification of risks and opportunities
  - Brainstorming & preparation steps,
  - Validation of risks and opportunities to be taken into account,
  - Drafting of a portfolio.
› Characterization of risks and opportunities
  - Creation of risk groups,
  - Characterization by nature, origin and effect.

Afternoon
› Quantification of risks and opportunities
  - Estimations of probability of occurrence and risk severity,
  - Creation of a risk matrix,
  - Prioritization of risks and opportunities.
› Risk reduction action plan
  - Identification of different types of action,
  - Management, follow-up and capitalization.
› Practical exercises

Profile

Project Manager, Controller.

Duration
1 day

Locations/Dates/Price
Upon request
Basics of Systems Engineering (SE)  
(Or how to master the development of a complex system)

Course objectives

Mastering the development of a complex system (product/service).
› Understand industrial issues when managing the development cycle.
› Share the objectives of a systems engineering approach.
› Get to know the processes that must be implemented to manage the development.
› Learn about key methods and tools to support these processes.
› Understand the role of modeling in the design phases (SysML...).
› Optimize the designed system (Value Analysis, LCC...).
› Extend this expertise to the complete life cycle (RAMS, ILS...).
› Identify the links with transversal processes (Quality, Project Management...).

PROGRAM

Day 1
› Systems engineering for dummies: What is it good for, when & why?
› Structuring a specification approach
› Systems engineering and related processes
› Needs analysis: What are services to be rendered?
› Practical exercises
› Functional requirements analysis: «Black box system», conversion of the service into a project environment.
› Practical exercises

Day 2
› Technical functional analysis
› Practical exercises
› Behavioral specifications
› Practical exercises
› Develop a solution

Day 3
› Integration, verification, validation, qualification
› Going further with Systems engineering
› Value analysis
› Making the solution durable
› Practical exercises
› Manage system evolutions: the principles of system configuration management

Profile

Program Manager, Technical Manager, Project Manager, Business Manager, Project Controller, Project Quality Manager, System Integrators, Designers.

Duration

3 days

Locations/Dates/Price

Upon request
Basics of Configuration Management
(Or how to maintain the functional and technical integrity of a system)

Course objectives
System configuration management: Basic principles.
› How to explain the need for configuration management.
› Understand the purpose of configuration management and its added value within the product lifecycle.
› Get to know the 4 key activities of configuration management.
› Be able to organize the management of technical data within a program with a process and tools approach.

PROGRAM

Day 1
› Issues and objectives of configuration management
  - Needs and issues related to the management of technical data.
› Principles of configuration management
  - Normative context, glossary and key activities to manage system configuration.
› Practical exercises
› Integration of configuration management into project processes
  - Structuring the implementation of configuration management principles within a program context.
› Practical exercises
› Rules & good practices for effective configuration management
  - Capture and identify the expected level of performance in a complex program.
› Group exercise: Application of the approach in the drafting of a Configuration Management Plan

Day 2
› Establish shared references
  - Choose configuration items,
  - Identify the reference configurations.
› Practical exercises
› Manage the system evolutions
  - Save the configuration baselines,
  - Process evolutions.
› Practical exercises
› Audit the system configuration
  - Key milestones and minimum elements of verification.
› Practical exercises
› Configuration management tools
  - From simple Excel file to PLM.
› Workshop: Which solutions are available to address the configuration management issues identified during Day 1?

Profile
Program Manager, Technical Manager, Project Manager, Business Manager, Project Quality Team, Design Team, V & V Team, LSS Manager.

Duration
2 days

Locations/Dates/Price
Upon request
 Requirement Engineering

Course objectives
Introduction to requirements engineering and its tools.
› Understand industrial challenges of managing requirements.
› Share the objectives of a requirements engineering approach.
› Put yourself into the applicable normative context.
› Get to know the key methods and tools to support these processes.

PROGRAM

Day 1
› Introduction to requirements engineering
› Basics of requirements engineering
› Integration of requirements engineering into project processes
› Starting requirements engineering in the middle of a project
› Practical exercises

Day 2
› Requirements elicitation process
› Requirements elicitation techniques
› Practical exercises
› Requirements documentation process
› Practical exercises
› Requirements engineering with models

Day 3
› Requirements validation process
› Practical exercises
› Requirements management process
› Requirements management tools

Profile
Program Manager, Technical Manager, Project Manager, Business Manager, Project Controller, Project Quality Manager.

Duration
3 days

Locations/Dates/Price
Upon request
Using DOORS/RMF and Configuration Management with an RCM extension

Course objectives

Learn how to use the main functionalities of DOORS, while fine-tuning the configuration of requirements references.
› Understand the main principles of DOORS.
› Develop a customized display of the data.
› Quickly change requirements and their traceability settings.
› Manage the configuration and the change.
› Export to Excel and Word.
Training 30% theory, 70% practical exercises.

PROGRAM

Day 1
› Introduction to the tool DOORS and its extensions
  - Issues, context and objectives,
  - Data structuring in DOORS,
  - Presentation of principles and analogies.

› Customize the display
  - Create customized displays using filters and sorting tools.

› Modify a specification
  - Create and modify the document structure,
  - Add, modify and remove requirements,
  - Create and visualize traceability.

Day 2
› Configuration management
  - Principles of the extension RCM (Requirement Configuration Management),
  - Create baselines,
  - Create change requests,
  - Visualize changes and analyze impacts.

› Execute exports
  - Export to Excel, Word,
  - Configuration of templates.

› Application of the knowledge gained during the training to a real project

Profile
System Engineers, Quality Engineers, Methodology Engineers, Tool Managers, Project Managers.

Duration
2 days

Locations/Dates/Price
Upon request
Benefits and Principles of Quality Assurance within a project

Course objectives

Know how to identify the activities that impact the «quality» of a project.
Know how to create an effective quality assurance system and adapt it to a project.

PROGRAM

Day 1

› General information regarding the issues of a project
  - Triangle Quality/Cost/Time.

› Presentation of standards that apply to a project
  - ISO 10005 – Quality plans,
  - ISO FD 10006 – Quality in projects.

Day 2

› Methods of identifying quality assurance activities specific to a project
  - Advantages,
  - Existing tools,
  - Impact on QCD,
  - Taking the client’s quality objectives into account.

› Practical exercises (practical application to two projects)

Profile

Project Managers, Quality Engineers, Project Engineers, Business Managers, Technical Sales Coordinators, Sales Representatives.

Duration

2 days

Locations/Dates/Price

Upon request
Understand the standard EN 9100: 2016

Course objectives

Connaître :
› les objectifs qualité de l’IAQG.
› la finalité de la norme EN 9100 : 2016.
Comprendre les exigences de la norme EN 9100 : 2016.

PROGRAM

Day 1
› Mission and objectives of the IAQG
  - Problems of the sector and means implemented to achieve improvements.
› Definition of the principle of an effective process
› Analysis of the general aspects of the standard
› Practical exercises

Day 2
› Analysis of the requirements specific to the standard
  - Identification of the expectations and their added value,
  - Relationship with the missions of the IAQG.
› Practical exercises
  - Development and analysis of a system based on the processes.
› Knowledge test

Profile

Project Managers, Quality Engineers and Technicians, Project Engineers, Business Managers, Technical Coordinators Aeronautics Sector.

Duration
2 days

Locations/Dates/Price
Upon request