APIS Software Training /Consulting

IQ-Software

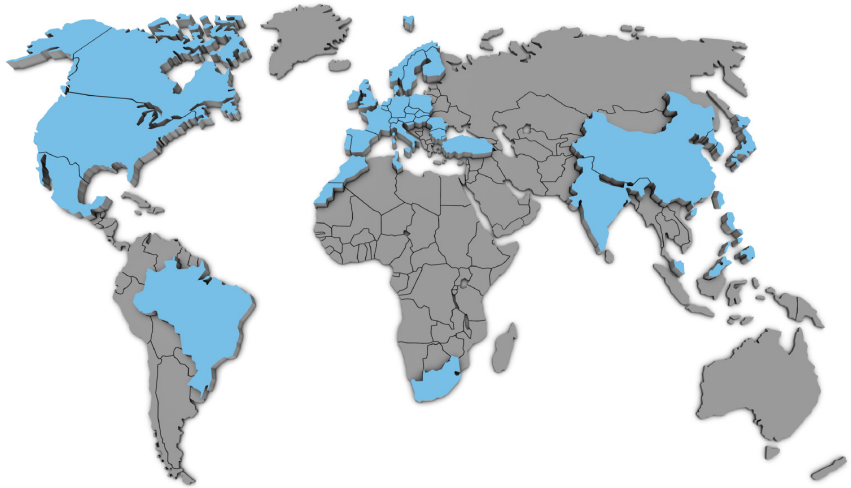
Services

12th edition, february 2018

APIS Informationstechnologien GmbH

Contents

* TR01 & TR02 are offered in combination as compact training course TR03 "Two-in-One".



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Introduction

Welcome to ***APIS IQ-Software*** (IQ: Integrated Quality), the software for FMEA, DRBFM, Risk Analysis, Functional Safety and Requirement Management.

The APIS IQ-Software family includes the APIS Server software and the APIS Client software.

As well as training sessions on the use of our software tools, we also offer seminars in FMEA methodology and FMEA moderation. In addition, we are also happy to offer our services as a partner for moderation services and coaching.

We believe it is very important that the working conditions in our seminars are perfect, whether at your facilities or in one of our bright and modern training rooms for up to 12 participants. The participants will be guided by an experienced course instructor and will work with a dedicated computer, which is for their individual use only. Below you can find out a little bit more about the different seminar variants we offer, together with information about the topics covered in each of them.

We wish you a lot of success in using the APIS IQ-Software and will be happy to help with any queries you may have.

Your APIS trainer team

Upcoming training dates:

https://www.apis-iq.com/services/training

TR01 FMEA Methodology

- **Introduction to FMEA methodology (VDA, AIAG)**
- **Tips how to organize FMEA projects**
- **Concrete examples (S-/K-FMEA, and D-FMEA)**

The FMEA serves to identify potential weaknesses of a product, a system, or a process, recognize their significance, evaluate the risks, and initiate suitable actions to prevent and/or detect such weaknesses in good time. In the training, you will learn how to create a FMEA in a methodically correct way by means of concrete examples from your company.

The seminar focuses exclusively on the understanding of the FMEA methodology, it does not deal with operating the APIS IQ-Software to create a FMEA. When you are interested in **both** topics, please book the seminar *TR03*.

Target group	This seminar is intended for future participants in FMEA sessions and future FMEA facilitators from the fields of design and development, process planning and quality management, but also for managers to learn more about the FMEA methodology.
Prior knowledge	- none required –
Seminar duration	1 day
Seminar fees	*In-house training:* We conduct this seminar only on-site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.

Seminar content and schedule	*9:00 a.m. to 12:00 p.m.* • Introduction of various FMEA types • Definition of FMEA scope • Team assembly for FMEA • Evaluation catalogs • Introduction to FMEA methodology (VDA, AIAG): 1) Structure analysis 2) Function analysis and function nets 3) Failure analysis and failure nets 4) Action analysis and rating 5) Optimization and documentation *1:00 p.m. to 5:00 p.m.* • Development of concrete examples of design FMEA and process FMEA • Implementation and measurement of success • Final discussion

TR02 Basic training

- **FMEA preparation using APIS IQ-Software (VDA/AIAG)**
- **One concrete example (D-FMEA or P-FMEA)**
- **Action tracking**
- **Search for and reuse information**
- **Printing and statistical analysis of FMEA**

The APIS IQ-Software is one of the leading tools to easily prepare a FMEA. In the seminar, you will learn step by step all the software functions you need to structure, maintain, and analyze the FMEA.

💡 The seminar focuses exclusively on the software operation, it does not deal with the FMEA methodology itself. When you are interested in **both** topics, please book the seminar *TR03*.

Target group	Beginners *with prior knowledge* of FMEA methodology, who are to learn the safe handling of the IQ-Software so that they are able to solve FMEA tasks independently.
Prior knowledge	Knowledge of FMEA methodology according to VDA or AIAG, as imparted e.g. in training on FMEA-methodology (TR01).
Seminar duration	2 days
Seminar fees	*In-house training:* We conduct this seminar optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.

Seminar content and schedule	
Day 1	*9:00 a.m. to 12:00 p.m.* • Development of **one** concrete example (D-FMEA or P-FMEA) • Introduction to APIS IQ-Software: 1) File structure (project, structure) 2) Data organization (object hierarchy) 3) Data views (editors) 4) Creation of libraries (e.g. persons) 5) Important settings • Data input step by step to create a FMEA (system elements, functions, failures) • Administration dialogs *1:00 p.m. to 5:00 p.m.* • Creation of function and failure nets by cause and effect • Creation of the FMEA form
Day 2	*8:30 a.m. to 12:00 p.m.* • Input of actions with responsibility and deadline • Risk assessment *1:00 a.m. to 4:30 p.m.* • Action tracking and efficiency control • Data output (export options and print) • Search for and reuse information • Possibilities of statistical analysis of FMEA

TR03 Two-in-One

TR01 + TR02 combined in a compact training course

- **Introduction to FMEA methodology (VDA, AIAG) with two concrete examples (D-FMEA and P-FMEA)**
- **Tips how to organize FMEA projects**
- **FMEA preparation using APIS IQ-Software (VDA/AIAG)**
- **Action tracking**
- **Search for and reuse information**
- **Process Flow Diagram and Control Plan**

On the first day of the training course, you will learn how to create a FMEA in a methodically correct way by means of concrete examples. On the other two days, you will learn step by step all the software functions you need to structure, maintain, and analyze the FMEA. Furthermore, we will show you how to create a Process Flow Diagram and/or a Control Plan as well as their interfaces to the process FMEA.

This seminar is our *bestseller*, because it imparts the necessary knowledge of the methodology and software operation in a compact way, applying the new knowledge on methodology directly in the software.

Target group	The training is intended for FMEA beginners without prior methodical knowledge, who are to learn the safe handling of the IQ-Software so that they are able to solve FMEA tasks independently.
Prior knowledge	- none required -
Seminar duration	3 days
Seminar fees	*Group seminar:* Please refer to the list of seminar fees and dates. *In-house seminar:* We conduct this seminar optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.

Seminar content and schedule	
Day 1	*9:00 a.m. to 12:00 p.m.* • Introduction of various FMEA types • Definition of FMEA scope • Team assembly for FMEA • Evaluation catalogs • Introduction to FMEA methodology (VDA, AIAG): 1) Structure analysis 2) Function analysis and function nets 3) Failure analysis and failure nets 4) Action analysis and rating 5) Optimization and documentation *1:00 p.m. to 5:00 p.m.* • Development of concrete examples of Design FMEA and Process FMEA • Implementation and measurement of success • Final discussion
Day 2	*8:30 a.m. to 12:00 p.m.* • Introduction to APIS IQ-Software: 1) File structure (project, structure) 2) Data organization (object hierarchy) 3) Data views (editors) 4) Creation of libraries (e.g. persons) 5) Important settings • Data input step by step to create a FMEA (system elements, functions, failures) using the **example of D-FMEA** • Administration dialogs • Creation of function and failure nets by cause and effect

Day 2	*1:00 p.m. to 5:00 p.m.* • Creating the FMEA form • Input of actions with responsibility and deadline • Risk assessment
Day 3	*8:30 a.m. to 12:00 p.m.* • Action tracking and risk assessment continued • Action tracking and efficiency control • Data output (export options and print) • Search for and reuse information • Possibilities of statistical analysis of FMEA • Repetition of data input step by step (verification of learning success) using the **example of P-FMEA** *1:00 p.m. to 3:00 p.m.* • Interrelations of Process Flow Diagram, FMEA, and Control Plan • Creating a Process Flow Diagram • Creating a Control Plan • Final discussion

TR04 PFD/CP Workshop

- **PFD: Process Flow Diagram**
- **CP: Control Plan**
- **Consistent file maintenance across three documents (PFD, P-FMEA, CP) in one file**

The APIS IQ-Software provides users with optimal support in their work in the field of risk management by closely interlinking the three documents *Process Flow Diagram*, *Process FMEA*, and *Control Plan*. Given the non-redundant shared dataset within one file, changes need to be applied only once and consistently affect all three documents. It is therefore not necessary anymore to align the files retroactively.
The seminar will show you the interrelations between the three documents and refer you to the particularities during their creation. There will be furthermore time for individual problems and questions.

Target group	This workshop is intended for employees working in quality management, process planning, and work preparation, who create QM documents.
Prior knowledge	Knowledge of operating the APIS IQ-Software. Such knowledge is imparted e.g. in training course *Two-in-One (TR03)*.
Seminar duration	1 day
Seminar fees	*In-house seminar:* We conduct this seminar only on-site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.

Seminar content and schedule	*9:00 a.m. to 5:00 p.m.* • Interrelations of Process Flow Diagram, Process FMEA, and Control Plan • Developing a concrete example • Creation of a Process Flow Diagram • Correct preparation of the Process FMEA for the later Control Plan • Creating a Control Plan including catalogs of machines and inspection equipment • Consistency of changes in all three documents (consistent data)

TR05 DRBFM Workshop

- **What is DRBFM?**
- **What are the differences between DRBFM and FMEA?**
- **Procedure to create DRBFM**
- **Concrete examples**

Besides *FMEA*, the APIS IQ-Software also incorporates the *Design Review Based on Failure Mode* (*DRBFM*) method that was developed and successfully applied by Toyota.

DRBFM requires a robust design of your product, which is assured for instance by means of a Design FMEA. The *DRBFM approach* then analyzes all other *product changes* for possible risks. Various forms help the developer and later the team of reviewers to assess every change with regard to different questions. Similar to FMEA, actions are defined with regard to the detected risks.

In the seminar, you will learn step by step the different DRBFM functions of the IQ-Software, which enable the efficient and team-oriented creation of DRBFM.

Target group	The seminar is intended for employees from all divisions, who want to work with DRBFM or want to know the differences between DRBFM and FMEA.
Prior knowledge	Knowledge of operating the APIS IQ-Software. Such knowledge is imparted e.g. in training course *Two-in-One (TR03)*.
Seminar duration	1 day
Seminar fees	*In-house seminar:* We conduct this seminar only on-site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.

Seminar content and schedule	*9:00 a.m. to 5:00 p.m.* • DRBFM: origin, principles, objectives • DRBFM & FMEA - similarities and differences • DRBFM in practical work • Possible applications in the product lifecycle • DRBFM and the integrated approach of the IQ-Software • Development of various examples • Enhanced DRBFM functions in the IQ-Software

TR06.1 ISO 26262 - Introduction to the hardware safety analysis (FMEDA)

- **Brief overview of ISO 26262 and classification of the hardware safety analysis (ISO 26262-5)**
- **Hazard and risk analysis: Definition of safety goals including ASIL classification**
- **Validation of hardware draft including interfaces (e.g. software) using the system FMEA**
- **FMEDA using MS Excel: Structure and calculation of training example "low beam light" (SPFM, LFM, PMHF)**
- **Definition of suitable safety mechanisms using Diagnostic Coverage (DC)**
- **Analysis of multiple-point failures by means of fault tree analysis (FTA)**
- **Review-fit documentation of results**

Systems with electrical and/or electronic components that carry out safety functions are to be assessed with regard to safety aspects (so-called *hardware safety analysis*). In this seminar, you will be introduced to a procedure using the example of "low beam light" that you can use to systematically derive safety goals for your item, validate the hardware draft using a system FMEA, and calculate the quantitative parameters (SPFM, LFM, and PMHF) in an Excel FMEDA. You will learn how to define suitable safety mechanisms and analyze multiple-point failures in a fault tree analysis (FTA). We will give you recommendations how to structure the results documents to make them fit for reviews.

Note on group seminar:
In collaboration with our partner TÜV-Süd, we offer the seminar *Functional Safety according to ISO 26262* in two blocks (*ISO 26262-5: Theory* and *ISO 26262-5: Practice using the IQ-Software*). You can book the blocks separately or as a package at a discount price.

TR06.1: ISO 26262 - Introduction to the hardware safety analysis
TR06.2: ISO 26262 - Hardware safety analysis using the IQ-Software

Target group	All participants in a Functional Safety project, who have to analyze their item systematically for single-point and multiple-point failures and calculate the quantitative parameters according to ISO 26262.
Prior knowledge	Basic knowledge of standard ISO 26262
Seminar duration	2 days or 3 days (package including IQ practice)
Seminar fees	*Group seminar:* Only *TR06.1* (2 days): net 1,600€ or *TR06.1* and *TR06.2* in one package (3 days): three-day seminar at the package price of net 2,115 €. You save about 5 percent compared to booking both seminars separately. *In-house seminar:* Our partner TÜV-Süd conducts this seminar only for groups at our company's facilities.

Seminar content and schedule	
Day 1	*9:00 a.m. to 5:00 p.m.* • Brief overview of ISO 26262 • Important terminology and procedures • Introduction to hardware safety analysis according to ISO 26262-5 • Step-by-step development of example "low beam light" • Derivation of safety goals including ASIL and hazard and risk analysis • Validation of hardware draft using the System FMEA
Day 2	*8:30 a.m. to 4:30 p.m.* • Presentation of important reference books for failure rates (e.g. SN29500) • Calculation of Functional Safety metrics in FMEDA (Excel) • Definition of suitable safety mechanisms for single-point failures • Analysis of multiple-point failures using fault tree analysis (FTA) • Definition of suitable safety mechanisms for multiple-point failures • Tips/recommendations by TÜV Süd with regard to documentation of results in different Functional Safety documents to make them fit for reviews

TR06.2 ISO 26262 - Hardware safety analysis (FMEDA) using the IQ-Software

- **Brief introduction to quantitative safety analysis according to ISO 26262: Analysis of single-point and multiple-point failures (note: detailed introduction in seminar TR06.1)**
- **Important terminology and procedures: ASIL, SPFM, LFM, PMHF**
- **Tool-assisted calculation of Functional Safety metrics and comparison of actual/target performance**
- **Consistent, systematic analysis of the item from FMEA to FMEDA and to fault tree analysis (FTA)**
- **Modelling of safety mechanisms (diagnoses) and their malfunctions (latent failure, false failure)**
- **Practical implementation of a Functional Safety project using the training example of "low beam light"**

Systems with electrical and/or electronic components that carry out safety functions are to be assessed with regard to safety aspects (so-called *hardware safety analysis*). For this purpose, you need to create a FMEA (often a System FMEA). Depending on the ASIL classification of the safety goal, you need to additionally calculate the quantitative parameters of the random hardware failures (SPFM, LFM, and PMHF) and verify the compliance with the required target values.

In this seminar, you will be presented an IQ-Software procedure using the example of "low beam light" to use the already modelled system behavior (function and failure nets) from your (System) FMEA to calculate the Functional Safety (FMEDA). Furthermore, you will learn how to use the single-point failures from the FMEA analysis as the starting point of a fault tree analysis (FTA). All three analyses (FMEA, FMEDA, and FTA) are based on a database. Thus, you avoid redundant data management and tool disruption.

Note on group seminar:
In collaboration with our partner TÜV-Süd, we offer the seminar *Functional Safety according to ISO 26262* in two blocks (*ISO 26262-5: Theory* and *ISO 26262-5: Practice using the IQ-Software*). You can book the blocks separately or as a package at a discount price.

TR06.1: ISO 26262 - Introduction to the hardware safety analysis
TR06.2: ISO 26262 - Hardware safety analysis using the IQ-Software

Target group	All participants in a Functional Safety project, who have to analyze their item systematically for single-point and multiple-point failures and calculate the quantitative parameters according to ISO 26262.
Prior knowledge	Knowledge of standard ISO 26262 (in particular part 5). To get such knowledge, you can book the seminar ISO 26262 - Introduction to the hardware safety analysis (TR06.1) offered by our partner TÜV Süd at our company's facilities. Basic knowledge of operating the APIS IQ-Software. Such knowledge is imparted e.g. in seminar *Two-in-One (TR03)*.
Seminar duration	1 day or 3 days (package including introduction to theory)
Seminar fees	*Group seminar:* Only *TR06.2* (1 Tag): net 625 € or *TR06.1* and *TR06.2* in one package (3 days): three-day seminar at the package price of net 2,115 €. You save about 5 percent compared to booking both seminars separately. *In-house seminar:* We conduct the seminar *TR06.2* optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.

Seminar content and schedule	*9:00 a.m. to 5:00 p.m.* • Brief introduction to ISO 26262-5: Important terminology and procedures of the hardware safety analysis • Step-by-step development of example "low beam light" from the S-FMEA to the FMEDA to the fault tree analysis • Presentation of calculation methods for Functional Safety in the IQ-Software • Input of safety goals including ASIL and target values (SPFM, LFM, PMHF, FTT) • Modelling of nets for single-point and multiple-point failure analysis • Input of FIT values in FMEDA (actual values) • Use of standard component catalogs (e.g. SN29500) for FIT assignment in FMEDA • Integration of safety mechanisms (DC values) and their malfunctions (latent failure, false failure) • Calculation of Functional Safety metrics in the APIS IQ-Software using the example of "low beam light" in various scenarios and analysis of results (traffic lights) • Derivation of a fault tree from the FMEA • Modelling of multiple-point failures in the fault tree and minimal cut set

TR07 CARM Server

- **Configuration of the most important server and client settings**
- **Procedure how to use the different modules**

Similar to MS Word, the IQ-Software applies a file-based memory concept. That means: every APIS file (fme file) is a separate database by itself. Some application concepts require to work with the data across files though. For this purpose, APIS provides the sister product *CARM Server*. The server is modularly structured and can be customized individually. There are, for instance, modules for reusing standard FMEA contents (CSS modules) or for action tracking via web interface (CSS action tracking). The customer must purchase the CARM Server and the required modules in addition to the IQ-Software. The contents are uploaded to the server from the client software and later also vice-versa.

💡 Depending on which module you use, the schedule of the seminar will be adjusted individually. The following schedule therefore is only an example.

Target group	This workshop is intended for CARM Server administrators as well as FMEA coordinators and APIS IQ-Software users, who want to learn more about the possible applications of the CARM Server.
Prior knowledge	Knowledge of IQ client (APIS IQ-FMEA or APIS IQ-RM), basic network knowledge (with TCP/IP support), host requirements as specified in the CARM Server installation manual
Seminar duration	1 day
Seminar fees	*In-house seminar:* We conduct this seminar optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.

Seminar content and schedule	*9:00 a.m. to 5:00 p.m.* • Server configuration • Instruction regarding administrative tasks • Starting the first IQ client (master client) • Instruction regarding IQ Client operating options • Development of concrete example • CSS cataloges • CSS modules • CSS action tracking

TR08 Facilitator workshop

- **Tasks of the FMEA facilitator**
- **Targeted implementation of questioning techniques**
- **Handling of conflicts and difficult participants**
- **Role-playing to simulate difficult facilitation scenarios**
- **Presenting a FMEA**

Knowing the FMEA methodology and the APIS IQ-Software well is often only half the battle. Our experience shows that especially the facilitator's skills contribute considerably to the smooth creation of a FMEA. This is exactly where the workshop comes in and provides tips regarding the following problems:

What questions should the facilitator ask to stimulate the discussion or simply get the necessary facts?

How does he/she close lengthy discussions?

How does he/she act smartly when dealing with difficult participants?

How can he/she recognize arising conflicts early and react to them?

Role plays will help you to practice various facilitation scenarios in hands-on situations. During the following feedback discussion, you will be given useful tips regarding possible improvement.

Work on your facilitator skills and save up to 50 percent of time and money during the FMEA creation.

Target group	The seminar is intended for employees from all divisions, who want to facilitate FMEA sessions in the future. The participants will be enabled to conduct the FMEA facilitation efficiently and in a result-oriented way.
Prior knowledge	Knowledge of methodology and experience in FMEA according to VDA and AIAG as well as knowledge of operating the APIS IQ-Software. Such knowledge is imparted e.g. in the seminar on FMEA methodology (TR01) and in the IQ-Software training courses (TR02/TR03/TR09).
Seminar duration	2 days
Seminar fees	*Group seminar:* Please refer to the list of fees and dates. *In-house seminar:* We conduct this seminar optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.

Seminar content and schedule	
Day 1	*9:00 a.m. to 5: p.m.* • Tasks of a FMEA facilitator • Preparing a FMEA facilitation (required documents, estimated time) • Assembly of the FMEA team • Selecting concrete example for the exercises • Structural set-up using the concrete example to practice the facilitation • Questioning techniques to create a FMEA • Visualization techniques • Functional analysis using the concrete example to practice the facilitation
Day 2	*8:30 a.m. to 16:30 p.m.* • Handling of conflicts between the FMEA participants • Approaches to solve difficult facilitation situations • Failure analysis using the concrete example to practice the facilitation • Creative techniques within the scope of the FMEA • Targeted presentation of most important FMEA contents • Action analysis using the concrete example to practice the facilitation including role play • Optimization using the concrete example to practice the facilitation including role play • Proven tips and tricks for a successful FMEA facilitation

TR09 Expert workshop

- **Brief repetition of question of basic functions**
- **Helpful additional settings for FMEA facilitation**
- **Targeted use of the template file for standards**
- **Hidden champions: other editors for special tasks**
- **Creation of reusable print jobs**
- **Making of to-do lists (list of open issues)**
- **Targeted navigation in large FMEA**
- **Further tips & tricks regarding the familiar editors**
- **Targeted analysis of FMEA (statistics)**
- **Tips & tricks regarding action tracking**
- **...**

The APIS IQ-Software has become one of the leading FMEA tools on the market since 1992, comprising an extremely broad range of functions that you should learn step by step. That is why the courses for beginners on the IQ-Software (*TR02/TR03*) initially impart only those basic functions that are absolutely necessary to create and maintain a FMEA. It is recommended to use these basic functions for a while to consolidate their handling.

When the basic functions are confirmed, users usually claim more from the IQ-Software: *Can we do this and that faster or in a more convenient way, etc.?*

This is where the seminar comes in by providing further tips and tricks regarding familiar editors and dialogs and introducing further editors and concepts. Furthermore, we give recommendations regarding typical FMEA working scenarios (e.g. *input of a customer complaint*). You will thus become an advanced user of the APIS IQ-Software.

The schedule is open for individual problems and questions to a certain extent.

Target group	The seminar is intended for users, who use the basic functions of the IQ-Software and want to take the next step to become advanced users.
Prior knowledge	Knowledge of methodology and experience in FMEA according to VDA and AIAG as well as safe handling of the basic functions of the APIS IQ-Software. Such knowledge is imparted e.g. in the seminar *Two-in-One (TR03)*.
Seminar duration	2 days
Seminar fees	*Group seminar:* Please refer to the list of fees and dates. *In-house seminar:* We conduct this seminar optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.

Seminar content and schedule	
Day 1	*9:00 a.m. to 5: p.m.* • If necessary, brief repetition of the basic functions • Helpful additional settings for FMEA facilitation • Save packages of settings for different working scenarios (several configuration files) • Administrate standards in the template file • Reuse of FMEA contents • Work with reusable print jobs • Work with several windows • Targeted navigation of large FMEA • Translate FMEA into other languages • Further tips & tricks regarding familiar editors • Tips & tricks on action tracking • Work with individual number ranges (item code, ID number)
Day 2	*8:30 a.m. to 16:30 p.m.* • Brief introduction of variants (detailed in *TR11*) • Brief introduction of filters (detailed in *TR15*) • Set-up of individual tables (user-defined view) • Targeted analysis of FMEA (statistics) • Process Flow Diagram and Control Plan in detail • Everything in view (advantages of the Object Inspector) • Making of individual to-do lists (PIM) • Complex queries in one or more APIS files: the IQ Explorer is the solution • Broaden your perspective: cross-structure working • Derivation of cause-effect diagram from the FMEA • Answering of questions from participants

TR10 Workshop - documentation and presentation

- **Locate essential issues of a FMEA**
- **Document essential issues of a FMEA**
- **Present a FMEA successfully to various interest groups (internal/external)**

Creating a FMEA is one thing, the targeted documentation of the essential FMEA results and presenting them in a smart manner to the customer and/or auditor is the other. This is where this seminar comes in by introducing the various possibilities of analysis and documentation of the IQ-Software step by step and giving recommendations.

Target group	The seminar is intended for FMEA supervisors, FMEA editors, and FMEA facilitators.
Prior knowledge	Knowledge of methodology and experience in FMEA according to VDA and AIAG as well as knowledge of operating the APIS IQ-Software. Such knowledge is imparted e.g. in the seminar *Two-in-One (TR03)*.
Seminar duration	1 day
Seminar fees	*In-house seminar:* We conduct this seminar optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.

Seminar content and schedule	*9:00 a.m. to 5:00 p.m.* • Locating the essential issues of a FMEA using filters (e.g. *list of special characteristics*, *list of most critical risks*) • Statistical analysis of the FMEA (e.g. *risk matrix*, *Pareto analysis*) • Intra-file and cross-file analysis using the IQ-Explorer • Overview of outstanding actions (*deadline tracking*) and of overdue actions • Documentation of essential issues in the FMEA cover sheet or the Personal Information Manager (*PIM*) • Presentation of various export options (e.g. *HTML, Excel*) • Definition of a documentation standard by means of a print batch (*PDF: presentation print; HTML: web publisher*) • Internal and customer presentation strategies (e.g. apply *notes categories*; *translation tables* (internal/customer) for symbolism of special characteristics)

TR11 Workshop - variants and reusing concepts

- **Handling of product/process variants in the FMEA**
- **Working across structures**
- **Benefits and limits of FMEA templates (basic FMEA, generic FMEA, etc.)**

Especially when dealing with very similar designs or similar manufacturing processes of different products or components, the question arises, how to make smart use of this fact in the FMEA. FMEA participants will probably point this out by saying something like: "This is the same as FMEA *XYZ*, why do we have to do all the work again?"

The workshop will introduce several procedures and concepts for this purpose for you to be able to create and maintain your FMEA with as little effort as possible in the future.

Target group	This seminar is intended for FMEA supervisors, who have to create FMEA for similar products and/or processes and need a solution for this problem that requires little effort.
Prior knowledge	Knowledge of methodology and experience in FMEA according to VDA and AIAG as well as knowledge of operating the APIS IQ-Software. Such knowledge is imparted e.g. in the seminar *Two-in-One (TR03)*.
Seminar duration	1 day
Seminar fees	*In-house seminar:* We conduct this seminar optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.

Seminar content and schedule	*9:00 a.m. to 5:00 p.m.* *1. Variants* • Introducing the concept of variants • Creating structure variants • Show/hide objects using the der *variant matrix* • Variant-specific net connections • Use and maintenance of variant-specific, e.g. using the *Object Inspector* • *Variant transition matrix* for cross-structure nets and forms • *IQ-Explorer*: Cross-file search options (variant filter and others) *2. Working across structures* • Creation of nets across several structures • Creation of forms (e.g. *FMEA form*) across several structures • Use (type) catalog entries across several structures *3. FMEA templates, reuse concepts* • Comparing structures using the *function/failure analysis* • What is a FMEA template? • Defining a reasonable level of detail for a FMEA template • What are the limits of a FMEA template? • Concrete examples • Discussion

TR12 Consolidation

- **Introduction of simultaneous engineering**
- **Creating clones and interface documents**
- **Consolidating two documents**

Similar to MS Word, the IQ-Software applies a file-based memory concept. That means: every APIS file (fme file) is a separate database by itself. Therefore, only one editor with *write access* can edit the file at the time, meanwhile other editors can only *read* the file.

While development cycles become shorter and shorter, the need for *simultaneous editing* of an APIS file increases. APIS has developed the so-called *consolidation* for this purpose. It provides for the possibility of several users editing the same file at the same time (simultaneous engineering) and later merging (consolidating) the various revision states. You can decide in the beginning, whether you want to make the whole file (so-called *clone*) or only part of the file (so-called *interface*: e.g. structure or sub-structure) available to you colleagues for simultaneous editing.

The seminar teaches at first the most important principles of consolidation and then introduces the various options.

Target group	This workshop is intended for FMEA coordinators and FMEA facilitators, who want to learn about the possibilities of simultaneous engineering.
Prior knowledge	General knowledge of operating the basic functions of the APIS IQ-Software. Such knowledge is imparted e.g. in the seminar *Two-in-One (TR03)*.
Seminar duration	1 day
Seminar fees	*In-house seminar:* We conduct this seminar optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.

Seminar content and schedule	*9:00 a.m. to 5:00 p.m.* • Introduction to *simultaneous engineering* • Creating clones • Administration of clones and interfaces • Simultaneous engineering • Comparing two documents (show differences/conflicts) • Consolidating two documents to become the new results document • Working with *structure interfaces/sub-structure interfaces* • Working with *variant interfaces*

TR13 Update training

- **Compact overview of essential differences and improvements in case of version update**

To solidify our leading position on the market for *FMEA*, *risk analysis*, and *functional safety* software and to extend our lead over competitors, a multitude of improvements and additional functions are integrated in every new program version of the APIS IQ-Software.

To make the upgrade from the previous version to the new software version easier for you, this seminar provides you with a compact overview of the most important improvements and changes. Thus, you will be able to work with the new version in a purposeful manner.

Target group	FMEA supervisors and FMEA facilitators
Prior knowledge	Knowledge of and experience in handling the previous version of the APIS IQ-Software as well as knowledge of and experience in FMEA methodology as imparted e.g. in the seminar *Two-in-One (TR03)*.
Seminar duration	1 day
Seminar fees	*In-house seminar:* We conduct this seminar optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.
Seminar content and schedule	*9:00 a.m. to 5:00 p.m.* • Redesigned settings dialogs • Background color of system elements • Working with risk matrixes • Improved *FMEA form* • Improved *Control Plan* • Improved export and import • Improvements in *mechatronics* • Analysis options in the new *Graph Editor* • Etc.

TR14 Mechatronics FMEA

- **Characteristics of mechatronic systems**
- **Structure of mechatronic systems**
- **Mapping of system behavior *without* and *with* diagnosis in the FMEA (unsecured path/secured path)**
- **Analysis of diagnoses for possible malfunction (robust diagnosis)**

Mechatronic systems facilitate novel and/or improved product functions by combining *mechanics*, *electrics/electronics*, and *software* in a smart way, but they also increase the complexity of the product and thus the number of possible failures. Special attention hereby is paid to the *safety-critical* product failures. Design cannot finally resolve all *safety-critical* product failures identified in the risk analysis (FMEA), but these have hazardous consequences for the user and/or his environment when they occur while the product is used. That is why a suitable diagnosis (so-called *failure detection*) must be defined for such failures during product development (risk analysis), which recognizes the failure in time. Furthermore, the transition of the diagnosed failure into a safe state (so-called *failure reaction*) must be provided for. This may be the deactivation, partial deactivation (degradation), or user alert. In complex systems, the necessary diagnosis and the related reaction often also depend on the available type of operating condition.

The *Mechatronics FMEA* therefore maps the system behavior *without* diagnosis (*unsecured path*) and also *with* diagnosis (*secured path*). For this purpose, the APIS IQ-Software provides you with the possibility of extending your failure nets by *operating conditions*, *failure detections*, and *failure reactions*.

The seminar will impart step by step how to capture the following items in the *Mechatronics FMEA*:

- Identification of safety-critical failures and their effects without diagnosis (so-called *unsecured path*)
- Definition of suitable diagnosis and reaction leading to reduced effect (so-called *secured path*)
- Ensuring *robust* diagnosis and reaction by analyzing possible failures and defining possible counteractions

Target group	FMEA supervisors and FMEA facilitators, who create FMEA for mechatronic systems and want to map the system behavior realistically including the integrated diagnoses and their effects.
Prior knowledge	Knowledge of methodology and experience in FMEA according to VDA and AIAG as well as secure handling of the basic APIS IQ-Software functions. Such knowledge is imparted e.g. in the seminar *Two-in-One (TR03)*.
Seminar duration	1 day
Seminar fees	*In-house seminar:* We conduct this seminar optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.
Seminar content and schedule	*9:00 a.m. to 5:00 p.m.* • Characteristics and structure of mechatronic systems • Identification of *safety-critical* failures • Extending the *conventional FMEA* by operating conditions, failure detections (diagnosis), and failure reactions • Deriving suitable diagnoses and failure reactions, considering the different operating conditions • Representation of the system behavior *without* diagnosis and *with* diagnosis • Ensuring the *robust* diagnosis and failure reaction

TR15 Filter workshop

- **Filter FMEA data specifically by certain criteria**
- **Basics of creating filters and highlighting**
- **Theory and practice of filtering in structures, FMEA forms, and nets**

The amount of data in a risk analysis usually is large, so that is often required to filter (reduce) the whole dataset by means of defined criteria. The workshop will introduce the different types of filters in the IQ-Software to begin with. Then, you will be given tips on how to proceed properly to create filters. In practical exercises regarding structure filters, FMEA form filters, and net filters, you will broaden the previously acquired knowledge.

Target group	FMEA supervisors and FMEA facilitators, who want to locate certain data in the FMEA in a targeted way.
Prior knowledge	Knowledge of methodology and experience in FMEA according to VDA and AIAG as well as knowledge of operating the APIS IQ-Software functions. Such knowledge is imparted e.g. in the seminar *Two-in-One (TR03)*.
Seminar duration	1 day
Seminar fees	*In-house seminar:* We conduct this seminar optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.
Seminar content and schedule	*9:00 a.m. to 5:00 p.m.* • Essential basics of the IQ-Software • Introduction of the different types of filters • Difference between *filtering* and *highlighting* • Procedure to create filters • Practical example of *structure filter* • Practical example of *FMEA form filter* • Practical example of *net filter*

TR16 Logistics FMEA

- **Differentiation of Logistics FMEA from Process FMEA: What is the Logistics FMEA? Which issues does it analyze?**
- **Structure of the Logistics FMEA**
- **Characteristics to be observed**

When creating Process FMEA, there is always the same discussion: Besides the value-added work processes, should each Process FMEA also analyze the non-value-added work processes (e.g. incoming goods inspection) and logistics issues (e.g. stock-keeping, material provision, transportation)? More and more companies say *no*.

They analyze in the Process FMEA only the valued-added work processes and analyze the other issues mentioned above in a separate Logistics FMEA. The Logistics FMEA later is an applicable document to the Process FMEA. Logistics issues therefore need to be analyzed and updated only in one FMEA.

In the workshop, you will learn how to implement the concept and set up a Logistics FMEA. For this purpose, you will develop an example step by step and learn about the characteristics of the Logistics FMEA.

Target group	FMEA supervisors and FMEA facilitators, who analyze processes comprising logistical processes.
Previous knowledge	Knowledge of methodology and experience in FMEA according to VDA and AIAG as well as knowledge of operating the APIS IQ-Software. Such knowledge is imparted e.g. in the seminar *Two-in-One (TR03)*.
Seminar duration	1 day
Seminar fees	*In-house seminar:* We conduct this seminar optionally on site at your company. We will be glad to prepare an individual offer for you, dates to be arranged.
Seminar content and schedule	*9:00 a.m. to 5:00 p.m.* • Introduction to the subject of *Logistics FMEA* and differentiation to conventional *Process FMEA* • General structure of the *Logistics FMEA* • Characteristics of the *Logistics FMEA*, i.e. which issues to observe and to consider in the analysis • Developing a *Logistics FMEA* example • Practical tips • Discussion

Moderation Services

- **FMEA moderation**

The process of preparing an FMEA (Failure Mode and Effect Analysis) is a challenging and potentially difficult task for the persons involved. In the process, lack of experience can often significantly increase the workload, resulting in additional costs and loss of motivation on the part of those involved.

For an FMEA to be performed efficiently and in the best possible way, not only must the moderator have full control over the methods used, but he or she must also be aware of and take into account all of the options and limitations of these methods. The moderator must be familiar with the software functions of the employed tool and be able to apply a range of different moderation techniques.

Optimized moderation during the teamwork can reduce outlay and time requirements by up to 50 %. Ultimately, the outcome of an FMEA should be a fault-free product, so it is therefore an important pre-requisite for creating success in the marketplace.

Goals:

Moderation is provided to mentor the team on its way to arriving at the outcome of the FMEA. The moderator highlights potential failure areas and demonstrates how the end product can be affected.

Our aim is to enable the participants to perform efficient and prompt FMEAs. As a general rule, after around 1-3 days of moderation the participants are usually capable of continuing the analysis independently. In addition to helping you obtain the actual required FMEA results, our FMEA moderation service also offers great learning value in terms of the performance of FMEAs.

Advantages:

- Understanding of the methodology
- Understanding of the software
- Moderators' expertise
- Neutral moderation
- Resource savings

Our services comprise:

- Optional: Preparation of the FMEA on the basis of existing records *(e.g. preparation of the system structure on the basis of multi-level bills of materials, work schedules etc.)*
- Presentation of the basic knowledge required to prepare FMEAs for non-trained members of the team *(in the form of a short introduction of around 30 minutes, only if required)*
- Parallel documentation with the APIS IQ-Software
- Moderation of the working group towards a targeted and efficient (system-) FMEA with the following work steps:
  - *Definition of the goals of FMEA*
  - *Definition of the system elements and the system structure*
  - *Definition of the relevant functions*
  - *Definition of the relevant potential failures*
  - *Performance of the failure analysis*
  - *Evaluation of the risks*
  - *Development and documentation of the avoidance and detection measures which accompany the development*
  - *Definition and assignment of responsibilities, deadlines and processing status for the actions*
  - *Evaluation of the improved status*
  - *Follow-up processing of work results (e.g. optimization of the system structure, preparation of a Control Plan etc.)*
  - *Documentation and presentation of the FMEA results*
  - *Project tracking*

Target group	Employees from corporate areas affected by the FMEA process. The key here is to find a good compromise – for reasons of communication and motivation it is best to include as many of the experts as possible, but this competes with the opposed requirement of performing the analysis with minimal employee resources. If necessary, suppliers of key system components can also be involved.
Previous knowledge	- None -
Seminar duration	The length of time required depends on the complexity of the product and the level of detail required for the analysis. An estimate can be provided before the start of a concrete FMEA. Each day of this service can be ordered or canceled on an individual basis.
Seminar fees	We would be happy to prepare a quote for you; dates by arrangement. Invoicing will be based on actually provided days of moderation.

Coaching

- **Providing advice on *individual* problems from the fields of FMEA methodology and IQ-Software**

Coaching for us means dialog

Exchanging ideas and views with our coaches and facilitators will help you to find out by yourself where the specific business context holds potentials for optimization in the application of the IQ-Software. You will benefit, on the one hand, from a *neutral* perspective and, on the other hand, from our colleague's wealth of experience. With the expert's aid, you can thus achieve a great deal within one to three days already.

Possible coaching approaches

How do you introduce the FMEA methodology to the company in an effective and efficient manner?

This comprises, for example, the formulation of company-specific procedures, valuation catalogs, the handling of special characteristics and/or the training of employees.

Do you need expert advice on individual problems with regard to your FMEA work?

Such problems may be both methodical and software-related. Whatever the problem may be, one of our experts will support you with his many years of competence in the FMEA methodology and the IQ-Software. He will analyze the problem together with you and develop possible solutions that enable you to perform the FMEA even more effectively in the future. Thus, for, example, your facilitation skills can be developed step by step, starting with a guided facilitation to us sitting in on your facilitation to role-playing.

Advantages:

- Save resources
- Expert advice on FMEA methodology and IQ-Software
- Individual solutions for your requirement(s)

Our services comprise:

Whatever you may require, we will find customized solutions together with you within a reasonable period of time. For this purpose, your individual needs are determined in an initial briefing and an individual offer will be submitted. Furthermore, we can provide the advisory services to build up skills step by step. That means we accompany your projects and can thus answer further questions. Simply contact us and we will find a solution!

Target group	FMEA supervisors
Prior knowledge	Depends on the project
Seminar duration	The time necessary depends on the project scope and will be estimated in the initial briefing.
Seminar fees	We will be glad to prepare an individual offer for you, dates to be arranged. Invoicing will be based on actually provided days of coaching.

Contact

Registration: Formless or using the attached form.

Benefits: Seminar documents,
group training: lunch (café/restaurant) and refreshments during seminar.

Contact:

APIS Informationstechnologien GmbH
Wolfenbütteler Straße 31 B
D-38102 Braunschweig
GERMANY

Tel.: +49-531-70736-0
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E-Mail: training@apis.de

General Terms of Business

APIS Informationstechnologien GmbH

Registration

All registrations for our seminars must be received in writing – by letter, fax or e-mail. By registering for one of our seminars, customers agree to be bound by our General Terms of Business.

Due to the limited number of places available for our seminars, they are awarded on a "first come, first served" basis. Registrations only become effective once they have been confirmed in writing.

If the minimum number of participants is not attained for a particular seminar then we will notify you immediately and offer an alternative date if required.

Cancelation

A cancelation fee of 20% of the attendance fee is payable if cancelation notification is received between 8 weeks and 2 weeks before the start of the seminar. If the cancelation is received less than 2 weeks before the start of the seminar then the full attendance fee is payable. We appreciate your understanding in this matter. However, it is possible to appoint a substitute participant by arrangement. You will be notified immediately if an event needs to be canceled.

In all cases the liability of APIS Informationstechnologien GmbH is limited exclusively to the attendance fee. The course instructor and the seminar program are subject to change without notice.

Fees

For details of our seminar fees, please refer to the list of seminar dates and fees. All prices are quoted per participant and are subject to VAT. The seminar fee is payable without deductions after the invoice is issued.

Scope of Validity

These General Terms of Business apply to the running of seminars and training courses in the training facilities of APIS Informationstechnologien GmbH and in external training facilities. Any changes will only be valid if they are agreed in writing.

Data Protection

By registering for a place on one of our courses you agree to your data being electronically stored and processed for the purpose of dealing with your registration.

Teaching Materials

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REGISTRATION

Please send to:

APIS Informationstechnologien GmbH
Wolfenbütteler Straße 31 B **Fax: +49-531-70736-25**
D-38102 Braunschweig

Seminar title	Date	Location

Participant(s):

(Title) Surname, First name	E-Mail

Information for the invoice (please fill in completely):

Company address:

Billing address (if differently from company address):

Order No.:

Tel. /Fax:

Tax ID Number:

Location /Date:

Signature: