SCIO™-FMEA

FAILURE MODE AND EFFECTS ANALYSIS
Which form is preferred – AIAG, VDA?

You can work in different forms:

- **AIAG (QS 9000)** - The current actions are displayed in a column
- **AIAG 3rd Ed.** - The current actions are displayed in two columns
- **VDA 96** - All actions are shown in chronological order in one block
- **VDA 86** - Compact assessments

(VDA = German Association of the Automotive Industry)

You can switch back and forth between the forms at any time - in the work view and in the printout.

![AIAG 3rd Edition Table]
How to perform the analysis quickly and comfortably

The FMEA form is filled in like a table. Basic functionality such as copy, edit and insert functions, among others, are set up so that they optimally meet the needs of the user when generating or presenting an FMEA.

Support for inexperienced users → Assistant:
- The actions possible are displayed depending on the context
- Actions are started directly from the Wizard

Following the basic method → Assistant:
- Contents are explained depending on the context
- Methodical tips help the user perform the analysis
Use Basic FMEA

How do you keep the amount of work needed to generate and manage FMEAs low?

- Basic FMEAs or basic systems can be created for basic modules performing common tasks. They are easy to copy and maintain.
- Individual FMEAs can be produced from these basic systems and FMEAs.
- A change to a basic FMEA causes the entries in all individual FMEAs to be updated.

Creating a new FMEA from the basic FMEA

Basic FMEA
Additional Information

How are drawings and inspection instructions documented? Where can functions be specified?

Comprehensive information on the cells in a form is documented and can be displayed directly in a cell if necessary.

- Specifications: target values, tolerances, and critical features
- Comments: additional information
- Documents: images, drawings, inspection instructions, and hyperlinks (Intranet, Internet, etc.)
- Opt. column info: specially marked
How do you make global changes to FMEAs?

Standard setting: a change only affects one term

Change management:
- Display all occurrences of a term
- Specific selection of a single FMEA to be changed
- Rules for translations, management of foreign-language FMEAs
- Change histories for every cell contain full documentation
Knowledge-based Search

Which failures are already known for precisely this function?

Search through the entire knowledge base (database)

All known relationships and interactions are searched for without any restrictions on the project. Suggestions regarding the failures related to functions, the causes of failures, etc., are provided in this manner. The knowledge stored in the database is always available and up-to-date.

Knowledge base responds with possible failures
Suggestions from CAQ lists

How are terms from lists or CAQ systems used in analyses?

Terms collected in team meetings, for example, can be integrated into SCIO™ without having to store them in the database. They are available in the form sheet as suggestions.

The CAQ system from the GUARDUS Solutions AG returns failure catalogs that are displayed as direct input aids. Failures can be copied immediately into the form.

Symbols identify the origin of lists:

= Failure catalog from GUARDUS
Standardized Assessments

What kind of support is provided to perform assessments?

Comparability

Assessment standards can be specified for the effects of failures and for causes. They ensure that the same event is not assessed differently within the company.

Statistics

A history of assessments provides information on how previous assessments were made and supports the specification of assessment standards.

Adapted Catalogs

Separate assessment catalogs are defined when required by projects, customers, or industries.

<table>
<thead>
<tr>
<th>Process Function/Req</th>
<th>Potential Failure Mode(s)</th>
<th>Potential Effect(s) of Failure</th>
<th>Severity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cut new material to length</td>
<td>Cutting length too long</td>
<td>Blank needs to be remachined</td>
<td></td>
</tr>
</tbody>
</table>
| Specifications:  
  Cutting length  
  = 250 mm (+/-1 mm)  
  Feedrate  
  = 50 mm/min  
  (+/-2 mm/min) |                          |                                |          |

Statistics provide information on assessments and standards.
### Marking Actions in the Form

Which actions endanger the project?

To what extent are actions implemented or rejected?

Categories mark actions (example based on the GYR Status Report):

- **RED** Project is in danger
- **YELLOW** Deadline is in danger
- **GREEN** Currently being processed

<table>
<thead>
<tr>
<th>RPN</th>
<th>PID</th>
<th>Recommended Action (c)</th>
<th>Responsibility</th>
<th>Target Completion Date</th>
<th>PID</th>
<th>Action Taken</th>
<th>Sov</th>
<th>Coc</th>
<th>Det</th>
<th>RPN</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>204</td>
<td>P</td>
<td>Personnel training</td>
<td>Brand M.</td>
<td>24-11-2004</td>
<td>P</td>
<td>Personnel training</td>
<td>7</td>
<td>2</td>
<td>7</td>
<td>99</td>
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<td>210</td>
<td>P</td>
<td>Shorter service intervals</td>
<td>Sunflower M.</td>
<td>08-10-2005</td>
<td>P</td>
<td>Shorter service intervals</td>
<td>7</td>
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<td>84</td>
<td>KO</td>
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<tr>
<td>304</td>
<td>P</td>
<td>Personnel training</td>
<td>Brand M.</td>
<td>24-11-2004</td>
<td>P</td>
<td>Personnel training</td>
<td>9</td>
<td>2</td>
<td>6</td>
<td>103</td>
<td>Closed</td>
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</table>
Managing Actions with SCIO™

Which deadline is due? Which actions need to be performed?

Deadline overviews show future deadlines and expired deadlines for employees.

The project leader or person responsible can send a notice via e-mail directly from his or her deadline overview.

An action is often just copied and then pasted in a variety of locations. This procedure generates linked actions. In turn, this reduces the amount of work necessary to manage identical actions.

It is possible to sort the columns.
How are FMEA actions integrated into the daily routine?

Advantages of an action management system:

- Nothing is forgotten - The system informs via e-mail!
- Easy handling - No understanding of methodology (e.g. FMEA) required!
- Effective workflow - Initiate and manage partial actions
- Security - Verification documented in compliance with standards
Where are risks in a project, where are improvements necessary?

**Graphic Evaluation**

RPN Analysis

The comparison of initial RPN values (red) and improvements (green) demonstrates the effectiveness of the actions in the FMEA.

Pareto Analysis

The risk distribution is determined to identify higher risks in the FMEA, in the entire project, or in the department of the company.
Analyzing database knowledge

Which data will be evaluated?

The complete contents of the database are available to the SCIO Manager as search and evaluation tools. Comprehensive analysis capabilities provide evaluations for:

- Management reports
- Identification and prioritization of high risks and deadlines
- Open actions in the project
- Examining failures and their causes (Fault Tree)
- Changes to existing analyses

Configurable search masks:

Preconfigured user search queries:
Search Queries and Results

Which criteria are available to perform a search?

- It is possible to search through the entire database for all data fields.
- Search queries can be combined as desired.
- The results are transferred directly to Excel or copied to the clipboard for further processing elsewhere.

Any search term can be entered

Search results: RPN values color-coded according to the threshold values
How do you print an FMEA?

MS Excel generates complete workbooks:
- Cover sheet
- Table of contents
- Function structure
- Part structure
- Specification list

Comments and images are printed.
### Publishing and exporting

**What capabilities exist to present FMEAs in an Intranet?**

| No. | Process Function/Freq | Potential Failure Mode(s) | Potential Effect(s) of Failure | Severity/Chat | Initiator | Current Process Controls | Det RPN | Recommended Action(s) | Responsibility & Target Completion Date | Action Taken | How How How How How How
|-----|----------------------|--------------------------|-----------------------------|---------------|-----------|------------------------|--------|-----------------------|----------------------------------------|-------------|---------------------
| 2   | Angle scale displayed | P. on action | | | D. | Check instead | 100 | | | | |

- **HTML documents are used to publish them in the Intranet.**
- **Other data export formats include: Excel, TXT, XML.**
- **SCIO™ files can be exported and then reimported at any time.**
Archiving Revision States

Which entries in the FMEA are new (since the last session)?

You can archive the processing status at any time.

If necessary, "old" states can be activated and processed further.

Changes between two revision states are highlighted in **color**.
How can the use of FMEA be restricted for certain individuals?

Every user has password-protected access.

The company is organized into departments and subdepartments. Employees are integrated into this structure. They receive assignments according to their data access rights. In this manner you can specify, for example, whether an FMEA can only be read by the user or if the user is also allowed to make changes.
What are the advantages of a central database?

FMEA uses - like all SCIO™ modules - the central SCIO™ database. Depending on the task, the data for a subject/system are displayed in the form of an FMEA or a production control plan, etc.

Changes and additions to the shared database are automatically propagated to all SCIO™ modules.

An application bar provides the fastest way to switch between the forms and views.
How is SCIO™ integrated into the company’s organisation?

TQE™ connects!

Development processes are documented, audited, improved.

All tasks have a follow up and are supervised.

Measures

Documents, Templates

Manage Audits

Complaints
Experienced specialists are available for the integration of SCIO™ into your company process and the practical use. PLATO supports you right in your company. In foreign locations, of course in English language.

**Project support**
- Implementing the software solution in the company
- Pilot project and Audit support

**Training**
- User- and methodology-training

**Workshops**
- Moderation (e.g. facilitation of FMEA-team-sessions)
- Individual topics