PLATO SCIO™ - Overview

"We want to bring transparency and a systematic approach to your development process“ is the stated mission of. Product development, product variants, and the planning of production and assembly are complex quality processes. Only an all-around approach and the acquisition and representation of networked data and structures can help to successfully achieve these tasks.

With PLATO SCIO™ ,products are developed and produced according to the customer's demands. PLATO SCIO™ is a product family with practical modules that fulfill a wide range of requirements and perform numerous tasks in engineering. The success of PLATO SCIO™ is especially due to the central database shared by all modules that makes knowledge management and the ability to reuse knowledge possible in the first place.

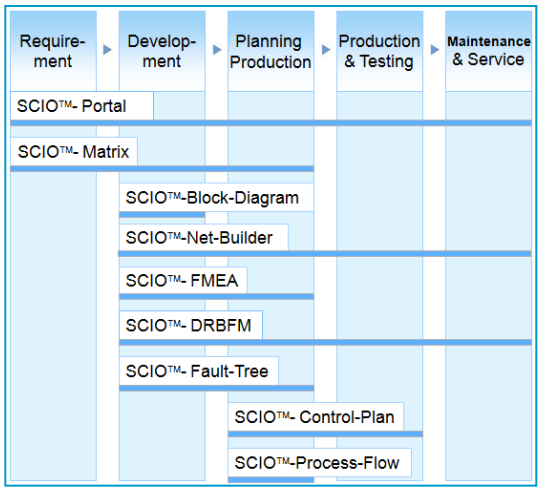


Fig.: PLATO SCIO™ in the engineering process

PLATO SCIO™ Modules and Use

SCIO™-Portal	Easy and fast access to information via the Internet
SCIO™-Matrix	System analysis with QFD, requirements analysis and variant management
SCIO™-Block-Diagram	Project documents to represent the environment, conditions, and interfaces
SCIO™-FMEA	Failure mode and effects analysis
SCIO™-DRBFM	Change management based on creative methods and FMEA
SCIO™-Fault-Tree	Fault tree and system analysis
SCIO™-Control-Plan	Production control plans according to ISO/TS 16949
SCIO™-Inspection-Plan	Inspection plans for quality assurance measurements during production
SCIO™-Process-Flow	Planning and visualization of process flows
SCIO™-Net-Builder	Creating networks and analyzing relationships in networks
SCIO™-Importer	Import data for FMEAs from Microsoft® Excel®
SCIO™-Methods	Individual Forms for Engineering Methods
SCIO™-Template-Manager	Template management for system and risk analysis

Branches and Standards

PLATO SCIO™ is not designed for any specific industry. Primary applications include the automotive, aviation, medical technology, electronics, plant and mechanical engineering, services and the food, pharmaceuticals and chemical industries.

PLATO SCIO™ fulfills the requirements for ISO/TS 16949, VDA, MPG, HACCP, GxP.

PLATO SCIO™ Database Concept

The central PLATO SCIO™ database collects and networks data, and then makes the data available to documents/forms as knowledge. In this manner, process steps in the process FMEA, the process flow chart, and the production control plan are used and the necessary "specialized" knowledge is then added – i.e. in the FMEA, failures are displayed for a process step, and in the production control plan machine data is added to this. The database ensures system relationships are known and derives the corresponding form.

Tasks of the database:

- **Global working** — Access by all company locations to FMEAs and other SCIO™ documents. Easy supply of data and analyses via the Internet.
- **Multi-user capability** — An FMEA can be processed by more than one user at a time.
- **Efficient teamwork** — Distributed and work across departments is supported, the unhindered flow of information is guaranteed.
- **Current data** — Up-to-date data is guaranteed. Changes are always propagated automatically to all relevant occurrences. Revisions and the need to maintain copies of data are eliminated
- **Consistent data** — Critical process and product features are consistently identified and updated – in all PLATO SCIO™ modules.
- **Unlimited assessments** — The database contains the entire know-how of the company is available for assessment purposes.

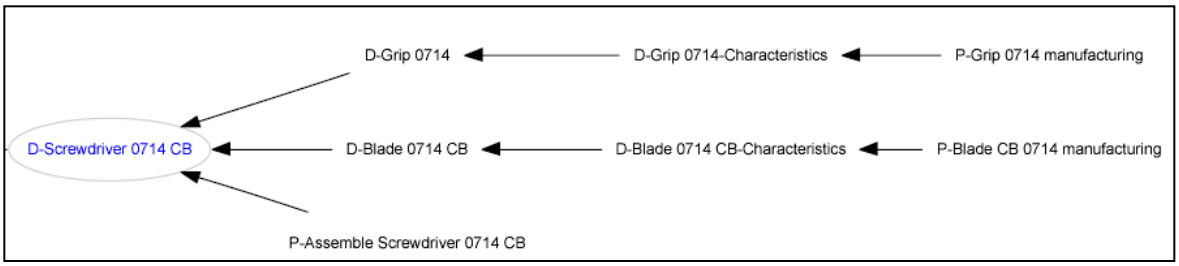
Main Features and Functions

- **Projects** — Assignment to projects and structured data storage.
- **Printing in folders** — Project folders containing all SCIO™ documents needed for a product or a customer are created at the press of a button.
- **Documentation** — Archiving of any planning or processing status (sign off).
- **Multiple languages** — Translations in foreign languages are supported in the display, when editing and in the printout.
- **Operation** — Operated according to Microsoft standards; an additional Wizard helps you operate the modules and understand the methodology.
- **Visualization** — Photos, images, drawings, and comments in SCIO™ documents support clear and unique descriptions.
- **Interfaces** — Complaint and action management, CAQ systems, SAP® etc. (please request the interface information, if required).

Detailed information on PLATO SCIO™ - Moduls

PLATO SCIO™ -Portal

The PLATO SCIO™-Portal makes the compete set of knowledge in the PLATO SCIO™ database available quickly, easily, and safely via the Internet. It displays the current information relating to the design, risks, and process planning in vivid graphical overviews and in the required forms. The responsible employees, project leaders, external suppliers, or even customers can obtain information here on the status of the development and risk management process. The comprehensive security concept of the PLATO SCIO™ database ensures that each user is only able to see the data for which he or she has access rights to view.



No.	Function/Req.	Potential Failure Mode	Potential Effect(s) of Failure	Sev	Class	Potential Cause(s)/ Mechanism (s) of Failure	Occ	Current Design Controls	Det	RPN
60	Ensure resistance to corrosion	Corrosion detected	Complaint (8) Customer dissatisfaction (7)	8	-	Blade material is not corrosion-resistant	2	P : Select material via data base D : Salt-spray test	2	32

Fig.: The structure graph shows relationships; forms document analyses

PLATO SCIO™ -Matrix

PLATO SCIO™ -Matrix is a customer-oriented product planning method. It combines the ideas and expectations of the customer with the necessary functions developed by the engineer. The result is a complete system analysis and a specification of the product to be developed together with the necessary manufacturing processes.

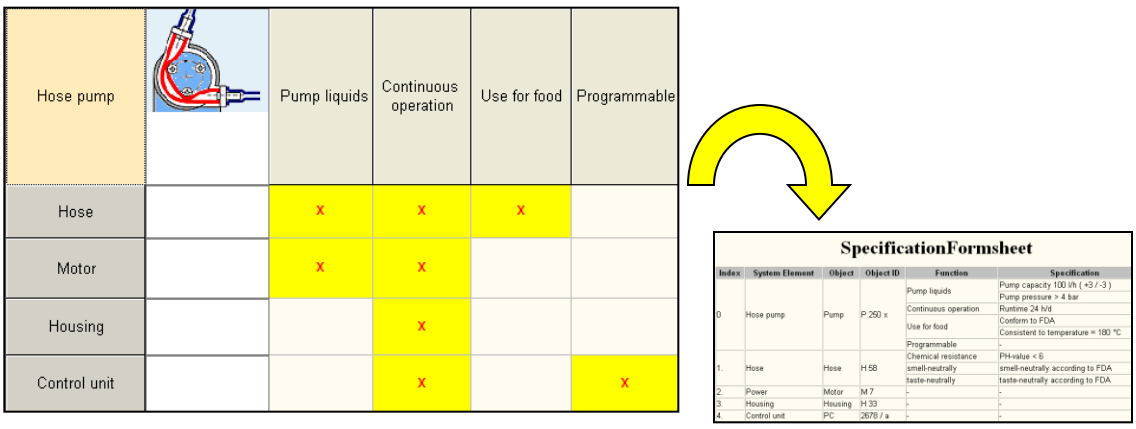


Fig.: System analysis supplies specifications for the specifications document.

PLATO SCIO™ -Block-Diagram

The PLATO SCIO™ -Block-Diagram is a central project/FMEA document created in the early phases of the engineering process and that accompanies the entire engineering process. The acquisition and visualization of system relationships, interfaces and power/energy flow results in clear and concise documentation for all involved Block structure diagrams are recommended especially as a method to prepare for and initiate an FMEA (QS 9000).

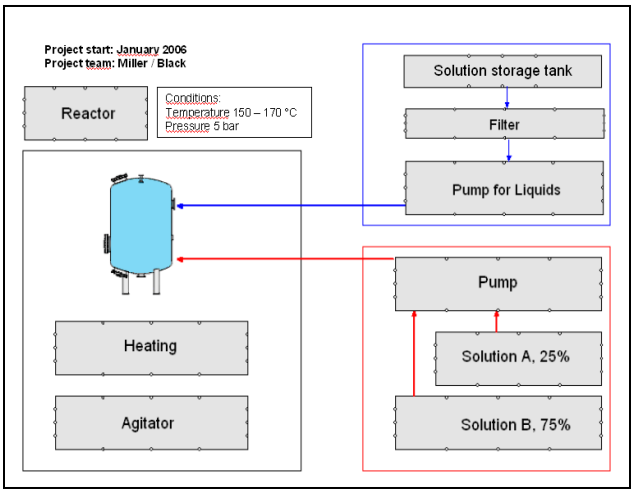
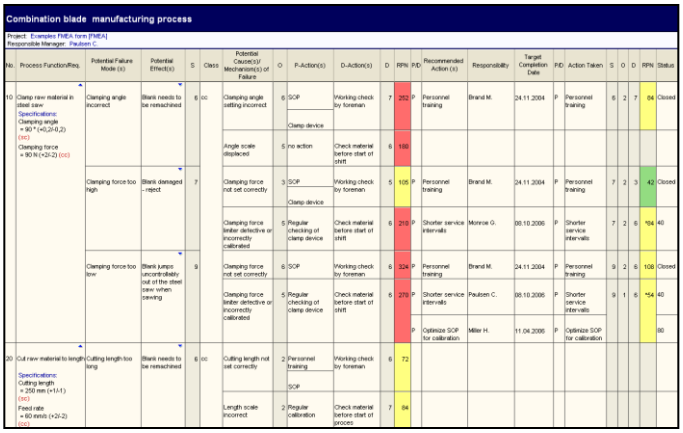


Fig.: Planning a process in process engineering

PLATO SCIO™ -FMEA

Failure mode and effect analysis (FMEA) is a preventative method used to prevent failures. Possible errors in products and processes are to be detected early and minimized or eliminated by taking suitable action. Complaint handling and development costs are reduced in this manner, and potential losses for the user of the product are avoided.



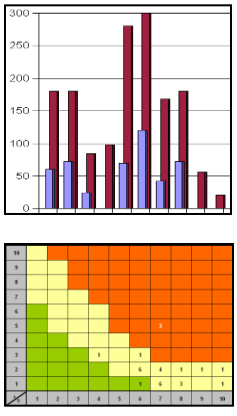


Fig.: Risk analysis determines characteristic values and displays them graphically

PLATO SCIO™ -DRBFM

PLATO SCIO™ -DRBFM (Design Review Based On Failure Mode) is a new method designed to accompany the development process that is being used more and more in industry. The goal of DRBFM is to make change management an integral part of the development process. Product changes, new customer requirements, changes to the specification, and changes to the application have led to massive problems and product recalls in the past. DRBFM provides a systematic examination of changes to products and a creative discussion method so that change processes can be successfully brought under control using teamwork.

■ **Ensure resistance to corrosion**

Change	Function	Concerns		Causes			Effects on customer	
		Loss of function and unmarketability [D]	Any other concerns?[R]	O	Causes [D] (Design Engineer)	Cause [R] (Reviewteam)		S
Ensure resistance to corrosion	Surface coating	Coating has a raw surface	.	.	.	.	.	.
		Coating is too thick	.		.	.	.	
	Stay within geometry specifications	.	.	.	.	.	.	.

Fig.: DRBFM form

PLATO SCIO™ -Fault-Tree

The fast analysis of weak spots and the finding of creative solutions is the job of PLATO SCIO™ -Fault-Tree. Fault tree and system analyses are performed with PLATO SCIO™ -Fault-Tree. Cause and effects chains are displayed graphically and selectively processed.

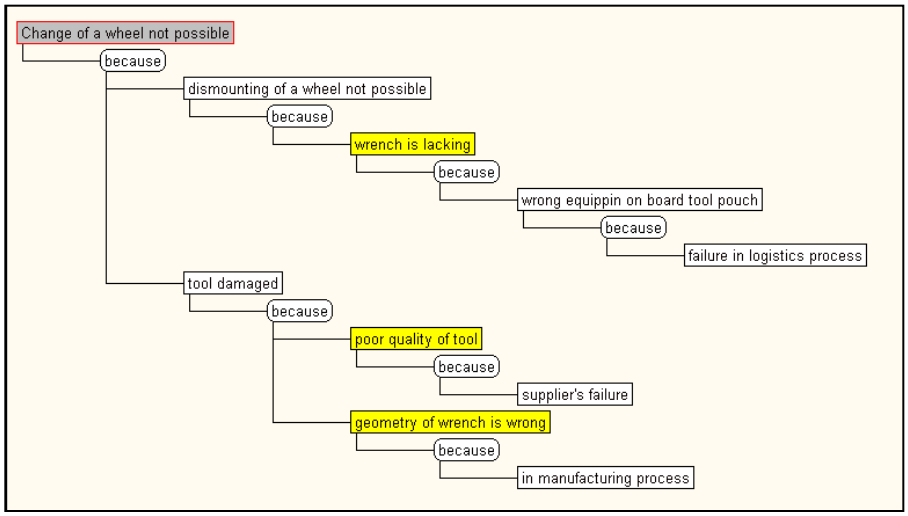


Fig.: Creative problem analysis

PLATO SCIO™ -Control-Plan

PLATO SCIO™ -Control-Plan is an instrument used to check and control production processes. In the production control plan, actions and inspection methods used to monitor product and process features are documented. The goal is to achieve stable and controllable processes, and therefore to guarantee the quality of the product.

Screwdriver blade

Process Number	Process Name/Operation	Machine, Device for Mfg.	Characteristics			Special Char. Class	Methods						Reaction Plan
			No.	product	process		Specification, Tolerances	Measurement Technique	Sample Size	Sample Freq.	Control Method		
145	Cure blades in nitrogen atmosphere	Oven 011	12	Resistance to scratching (ISO)		sc	> 50 % Haze	Test RRT 2	10 Parts	per part	Record sheet		Remove charge
		Oven 011	13	Surface hardness		sc	> 200 HB	Test KDT 3	10 Parts	per part	Check form		Remove charge
		Oven 011	P 45		Duration	sc	= 60 min (+1/-1)	Visual inspection	100 %	each charge	Cecklist		System reset
150	Cool blade in air flow	Fan F66	P 46		Air temperature	cc	= 5 °C	Sensor	100 %	each charge	Record sheet		Adjust Fan

Fig.: Control Plan

PLATO SCIO™ -Inspection-Plan

An operator inspection plan is the foundation for any measurements taken for quality control purposes in production. The inspection plan documents the features to be checked, test procedures used and persons responsible, among other things. It is the final result of the quality planning process. Data from the control plan (PLATO SCIO™ -Control-Plan) is used as the basis when creating an operator inspection plan.

PLATO AG — **Operator Inspection Plan**

No.:	454	Customer:	
Testlocation:	CNC-Milling cutter F11	Partdescription:	Blades
Version: 1	Revision: 1.0	Part-No.:	OEM
Created: 20.09.2005	by: Parker	Drawing No./Index:	12887 v
Edited: 10.10.2005	by: Black	Release: -	by: QC
Comment:		Signature:	
		Distributor:	Supplier

Drawing:

This Operator Inspection Plan is only to use in connection with a draft!

Who	How / With what	What	Basic size	Minmum size	Maximum size	Unit	When	How often	Additional doc.
	Gauge	Length	150	2	2	mm	per part	5 Parts	
	Gauge	Thickness	1,5	0,05	0,05	mm	per part	5 Parts	
	laser-optical	Phase angle	70	0,05	0,05	°	continously	100%	
	laser-optical	Crosshead length	1,1	0,05	0,05	mm	continously	100%	
	laser-optical	Crosshead thickness	8	0,1	0,1	mm	continously	100%	
	laser-optical	slotted head thickness	1	0,05	0,05	mm	continously	100%	
	laser-optical	slotted head width	8	0,5	0,5	mm	continously	100%	
	laser-optical	Phase angle	78	0,2	0,2	°	continously	100%	

Fig. : Operator inspection plan

PLATO SCIO™-Flow-Chart

PLATO SCIO™-Process-Flow forms and visualizes process flows. The logical sequence of production, inspection, and assembly steps and all other movements of a product (transport, storage, etc.) is analyzed and documented. The representation of the entire flow, including concurrent processes and their interactions, helps to detect the possible causes of a fault.

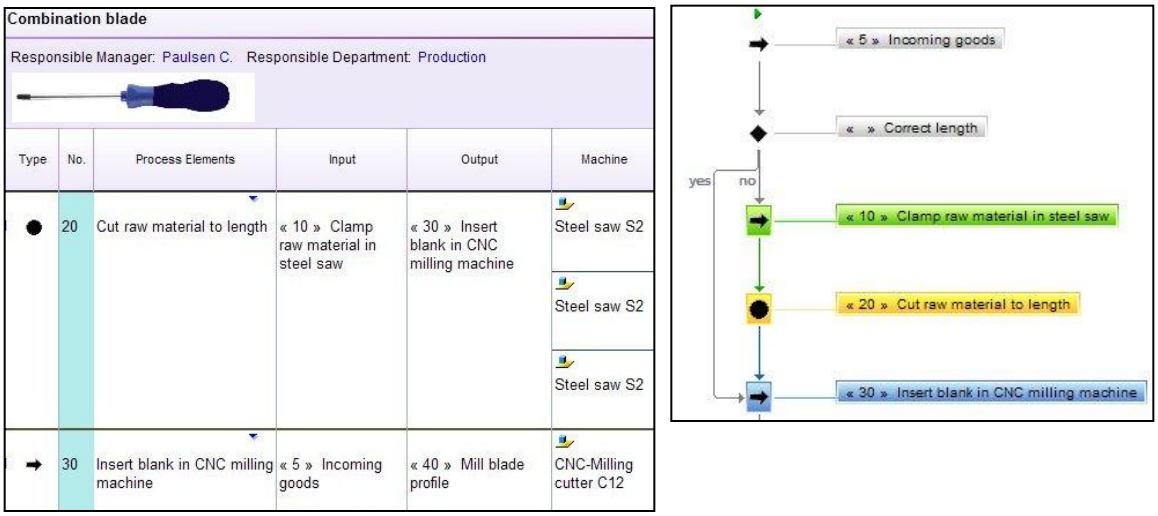


Fig.: Process flows are planned and visualized

PLATO SCIO™-Net-Builder

PLATO SCIO™-Net-Builder was developed especially for the analysis of problems and failures. PLATO SCIO™-Net-Builder places the problem at the center of attention and also shows the user of the product the surrounding environment, i.e. possible causes from all subsystems and possible effects in the higher-level systems. The users can navigate easily in the visual representations and create cause and effect chains, even in complex systems. PLATO SCIO™-Net-Builder always displays the current failure network as well as well as the corresponding function network. Of course, the FMEA forms are filled in automatically based on the resulting failure network

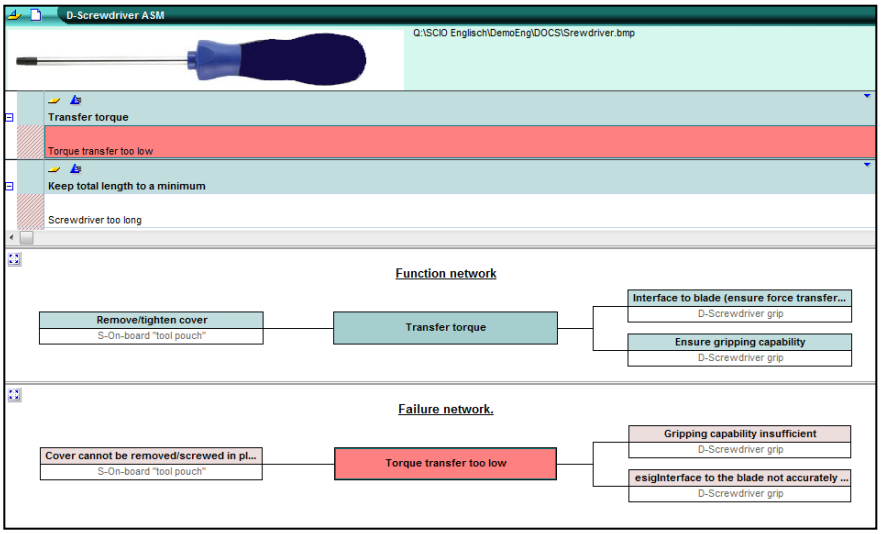


Fig.: The Failure Editor displays the current failure and function networks.

PLATO SCIO™-Importer

The SCIO™-Importer is an optional module for the PLATO SCIO™ product family. The PLATO SCIO™-Importer can import existing FMEA analyses in a company in the PLATO SCIO™ database with little effort. FMEAs are then processed further, archived, or used to build a knowledge base with PLATO SCIO™ .

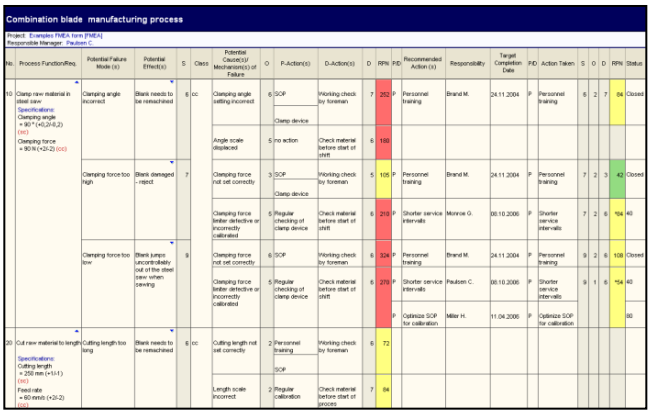


Fig.: FMEA form after importing in to the PLATO SCIO™ database

PLATO SCIO™-Methods

PLATO SCIO™-Methods provides individual forms for companies for the implementation of engineering methods and analyses in a web application.

Use individual forms and network data from different analysis methods and various sources. SCIO™ base data (e.g. FMEA, specifications, structures), method-specific data, values for calculations, and corporate data from PLM, MES, etc., are used.

When defining the engineering method, the user specifies which layout the form should have, which relationships exist between data, and from which applications data should be used.
All administration and master data as well as system elements and their data that have already been created in other SCIO™ modules are used. PLATO SCIO™-Methods focuses primarily on: adding supplemental information, implementing methods, and performing calculations.

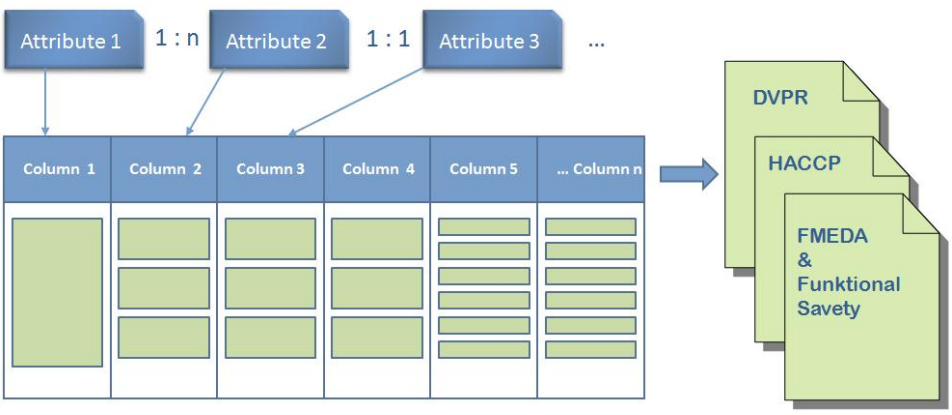


Fig.: The form and the data relationships are defined.

PLATO SCIO™-Template-Manager

Template management for system and risk analysis

It makes sense to quickly use an existing example as a template when performing a similar task. This way, you don't have to start "from scratch“ and only need to adapt the existing example to the current task at hand. The problem is: Where is the right template? And if found, it the template still valid and up-to-date? Have any changes been made in the meantime and have they been integrated into the template?
Studies have shown that the amount of work time spent searching for documents is not insignificant. PLATO SCIO™ solves this problem and uses its own professional template management system, the PLATO SCIO™-Template-Manager. It creates templates that are adapted to meet the requirements of system analyses and risk management, released the templates according to a defined procedure, and publishes them specifically for the group of users.

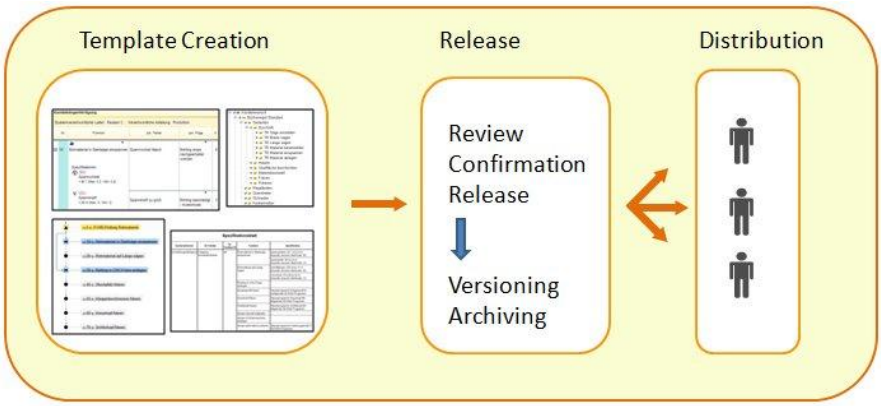


Fig.: The PLATO SCIO™-Template-Manager controls the release and publishing of templates.

Methodology, Projects, Consulting

- Internationally-oriented training organization for methods and applications
- Experienced specialists to guide projects and for pilot projects
- Workshops, FMEA presentations and individual subjects of emphasis