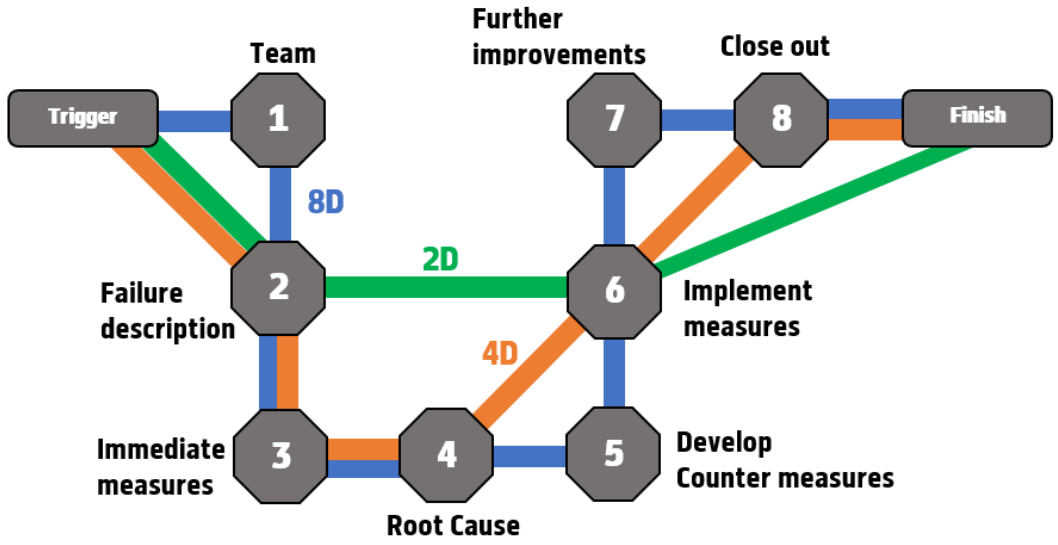
Failure Management I

Initiate a Failure Analysis with logbook, qBase. and 8D

Special edition for operators

- How to handle failures with the logbook by well known requirements
- How to initiate the failure analysis with our database qBase using the standard methodology 8D



Siegfried Köpke

Hamburg, 2026-01-05

HELMHOLTZ

DESY.

Failure Management I : Initiate a Failure Analysis with logbook, qBase and 8D

Scope of Application

Excursus: M division

This training is applicable for the following accelerators

MXL

XFEL

Winfried Decking

Z-Beschleunigerphysik

PITZ

Frank Stephan

FS-LA

Laser Forschung und Entwicklung

Hartl

MFL

FLASH

Schaper

coming soon

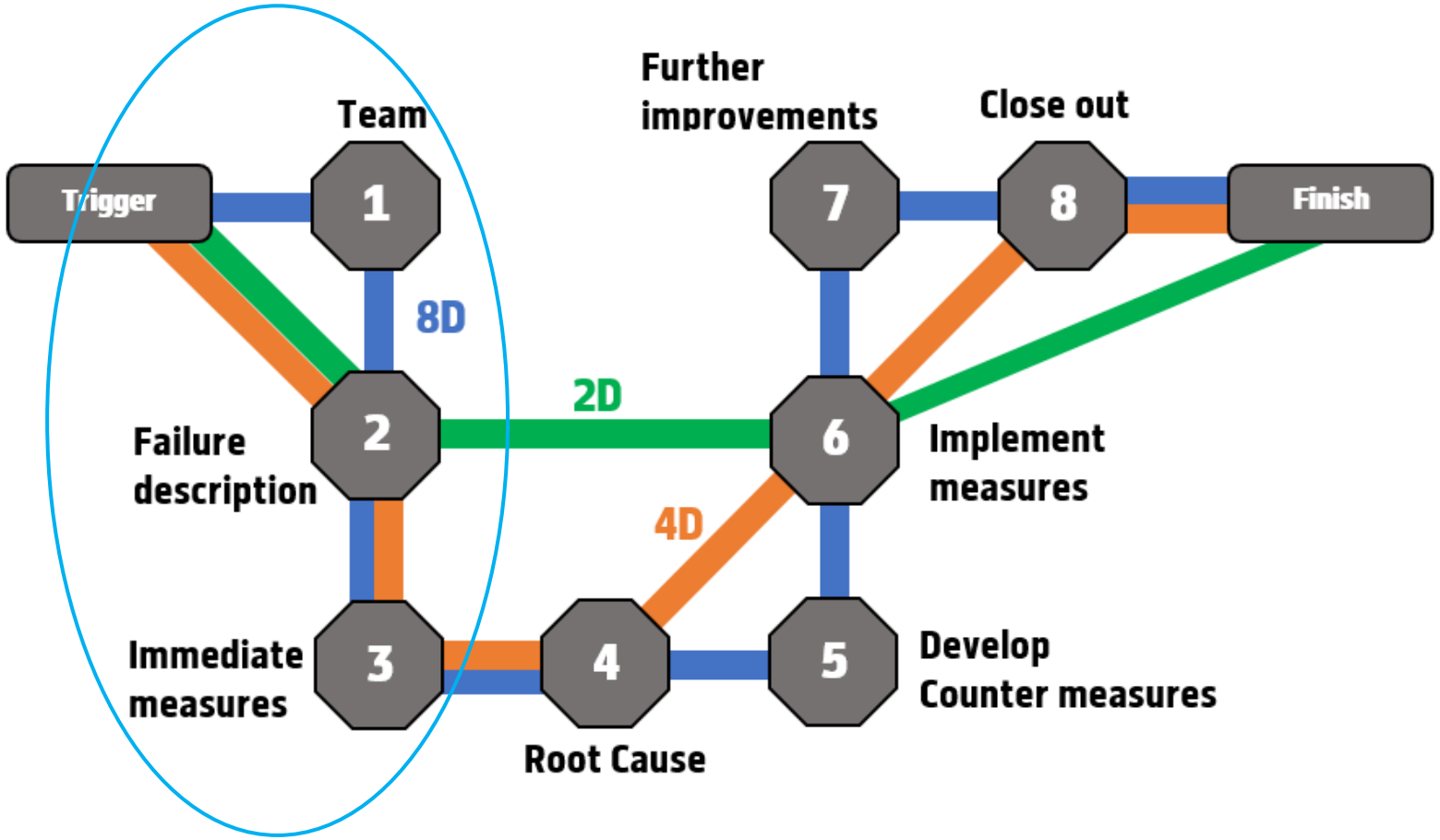
MBB

Beschleunigerbetrieb

Arne Brinkmann (kommissarisch)

Failure Management I : Initiate a Failure Analysis with logbook, qBase and 8D

Where do you think you're going?

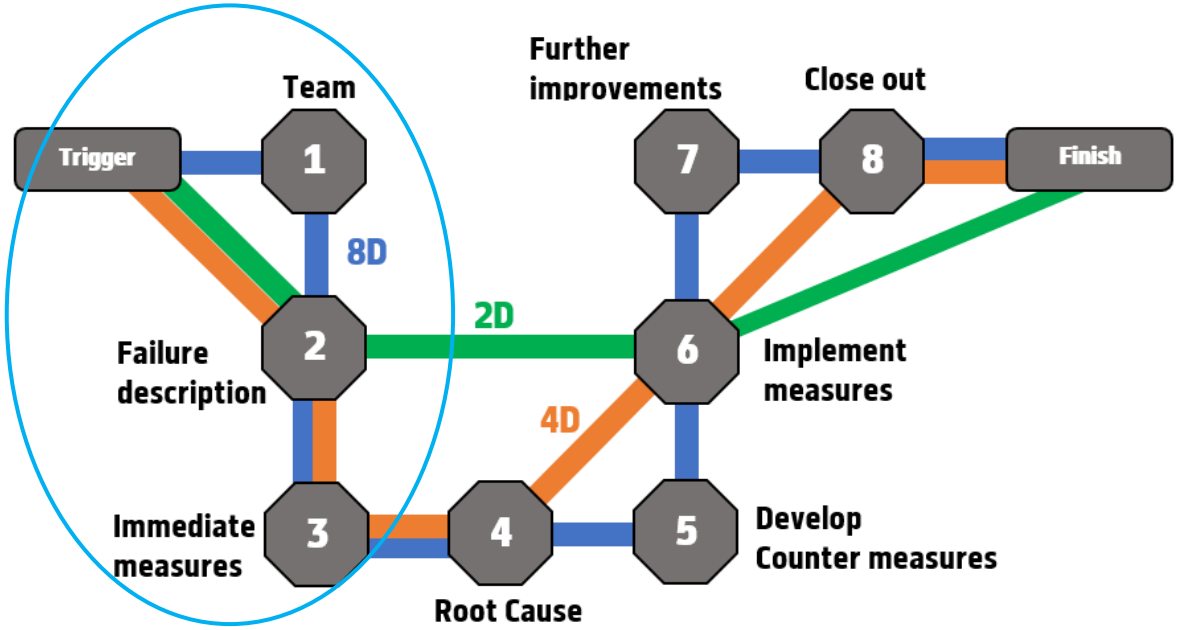


Failure Management I : Initiate a Failure Analysis **with logbook, qBase and 8D**

Failure management is an essential part of Quality Management!

The 8D method consists of three aspects

- a unified approach to resolve technical issues
- a non-sequential process, based on eight disciplines (steps)
- reduction of the number of disciplines under special circumstances



Blue Line :

- Probably new, unknown root cause, complex issues
- Obviously big impact for operation
- down time greater than 4 hours expected

Orange Line :

- Known, but already analyzed failures
- Same root cause confirmed
- Effective counter measures known

Green Line :

- Known, simple failure
- Can be handled and solved by the operator
- No down time expected

The 8D-Analysts decides how to proceed, the operator prepares the decision.

Failure Management I : Initiate a Failure Analysis with logbook, qBase and 8D

Excursus: Quality

What exactly is Quality Management?

What is Quality?

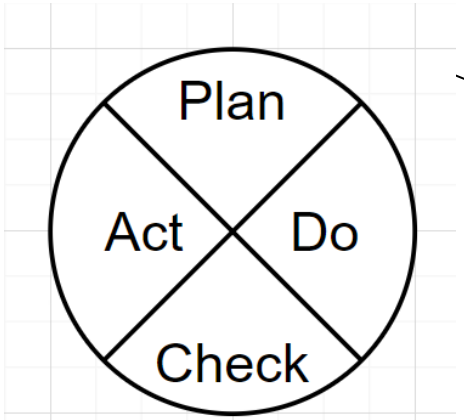
- Theory: „Grad, in dem ein Satz inhärenter Merkmale eines Objekts Anforderungen erfüllt."
  → DIN EN ISO 9000:2015-11
- Technical: Ein Maß zur Beschreibung der Differenz zwischen Vorgabe und Zielerreichung.
- **A measure describing the difference between the target and the actual achievement.**

What is Management?

Defined processes and guidelines for a specific topic within the institute, group, organization.

DESY: Procedures for EuXFEL accelerator operation

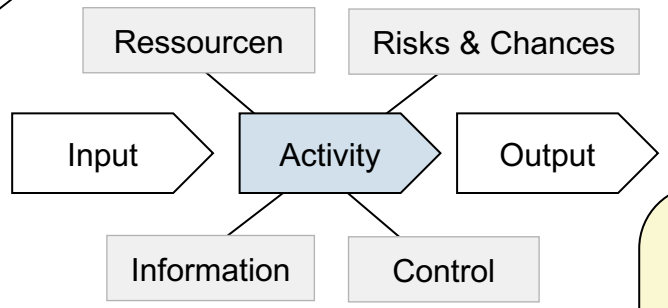
Quality Management



Nach: Edward Deming, amerik. Physiker u. Statistiker (1900-1993)

ISO 9001:2015

Everything is a process!



What you should remember:

- Use **Plan-Do-Check-Act (PDCA)** for repetitive tasks
- Keep in mind: every activity is a process. Think about: input, output, risks and chances.

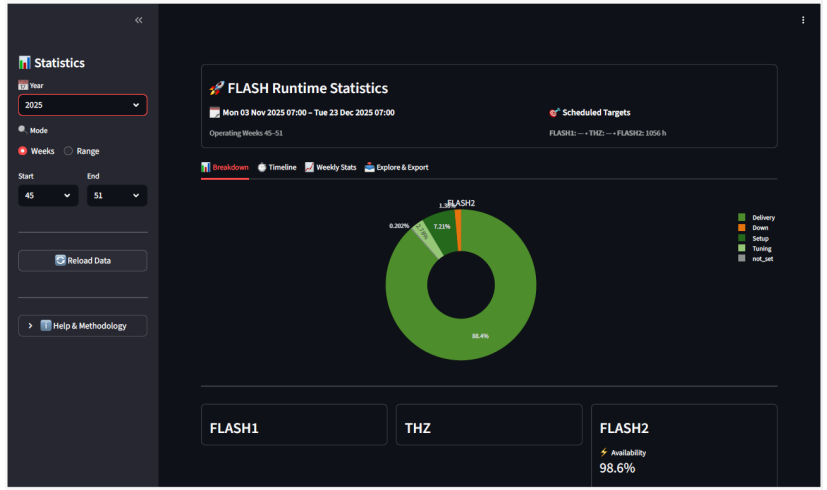
The manual to reach the goals a bit closer !

Failure Management I : Initiate a Failure Analysis with logbook, qBase and 8D

Best practise for operators (1/5): The very first step is statistic!

EuXFEL:

FLASH:



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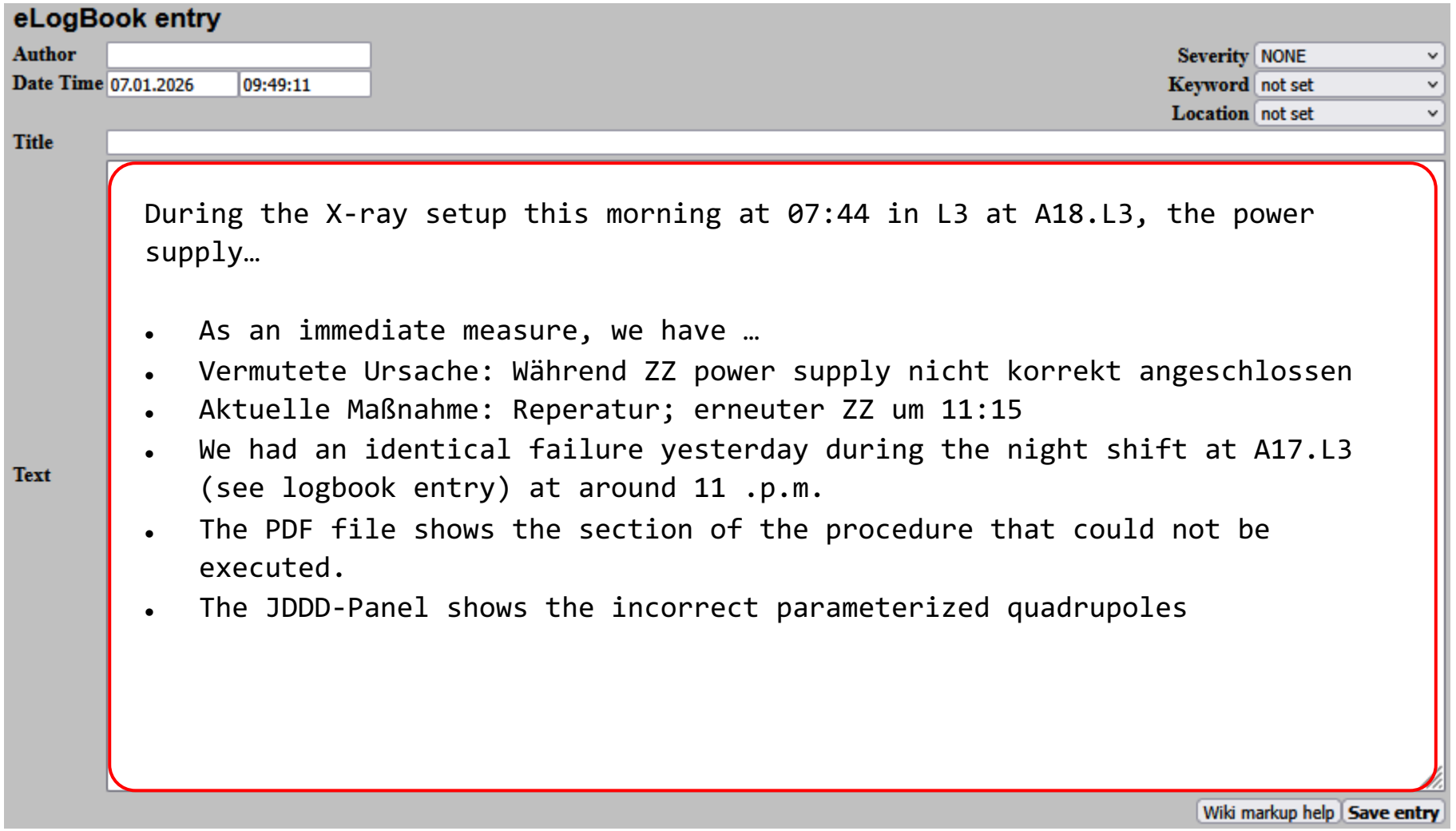
Best practise for operators (2/5): Writing the core message



- Write in English or in German – it doesn't matters
- Write in complete sentences in keywords or in telegram style, as you like
- → Perfect spelling and grammar are not the ultimate goal but… it must be understandable.

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Best practice for operators (3/5): Title and Author

Error reports in the logbook

Last modified by Matthias Scholz on 2025-02-24 10:51

Feb 04 2021

Dear all, I would like to kindly remind you that error reports to experts and mailing lists should meet certain standards.

It is crucial to fill the author field! Otherwise the expert(s) will not be able to reach you for further information.

The title will show up as subject in the expert's mail and should give him/her an idea about what the problem is. Please fill it out.

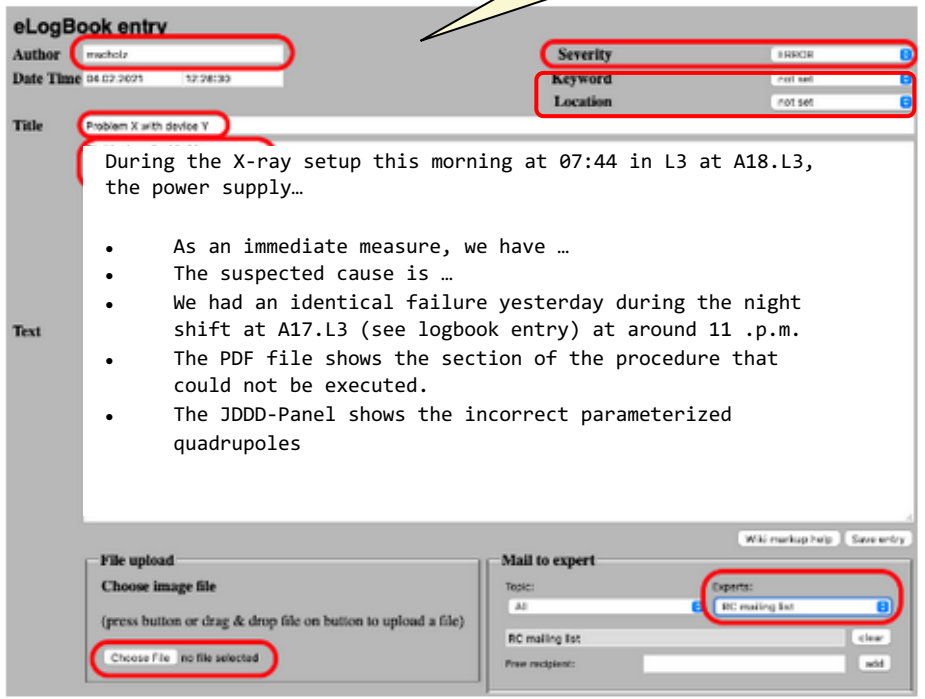
Describe the problem with the necessary precision! If it is a problem with a specific console in the control room, add the console's name.

If the text field is left empty and no author is noted, it is understandable that the problems can repeatedly not be processed, because it is not clear from a single screenshot, for example.

Add a screen shot or something similar to the logbook entry to describe your problem. Remember, just a screenshot without additional information is not enough.

Die Logbucheinträge können auch in Deutscher Sprache verfasst werden. Eventuell muss der Experte dann den Text online übersetzten oder einen Kollegen fragen, aber das ist immer noch viel besser als keine Information zu erhalten.

Posted by Matthias Scholz · Permalink · Comments (0)



What you should carry in your operator heart:

- Give your Name in and
- a specific title,
- a detailed description and
- don‘t forget keyword and location

Btw: It‘s not an option to do so (or not), it‘s expected and best practice!

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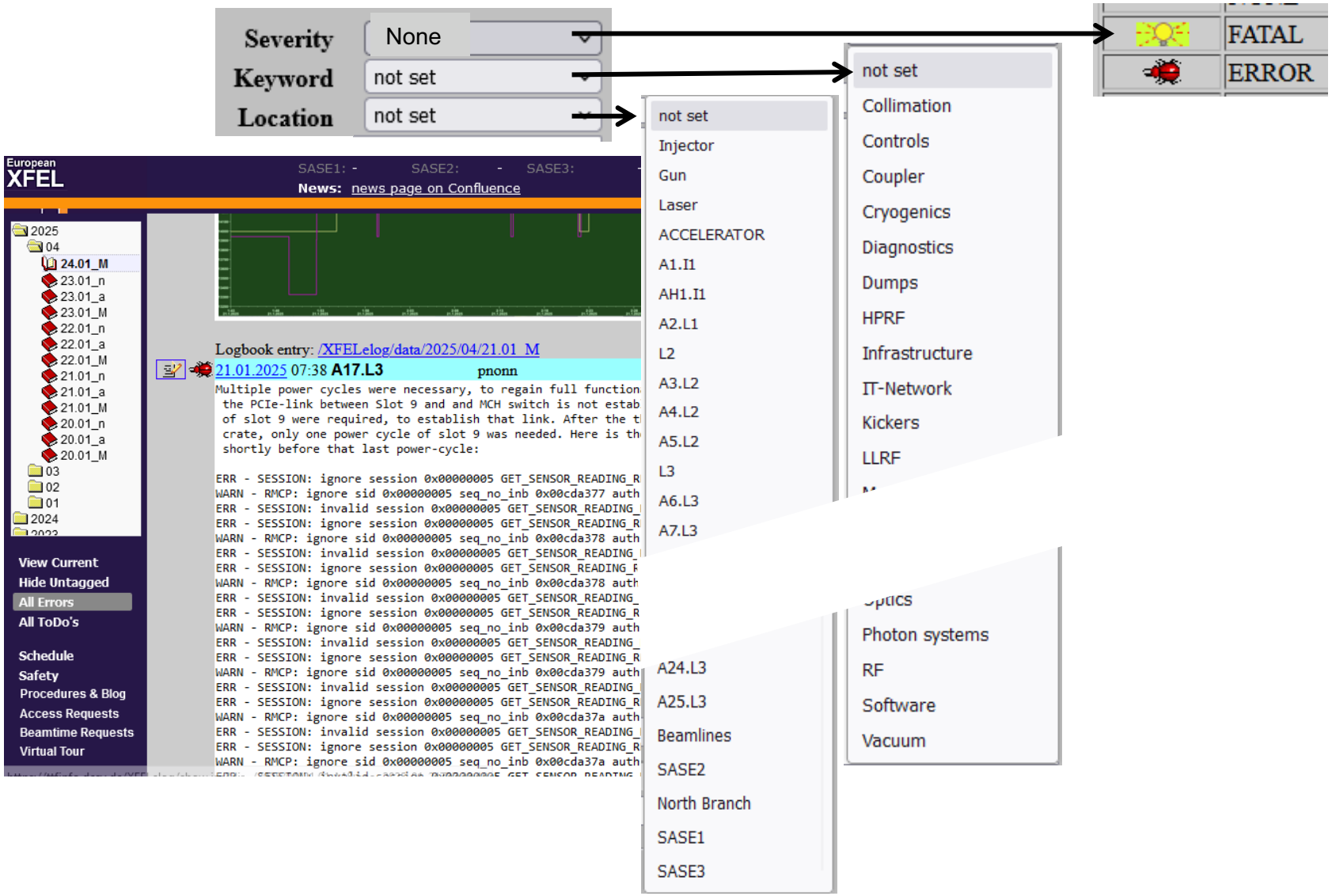
Best practice for operators (4/5): Severity and Meta Data



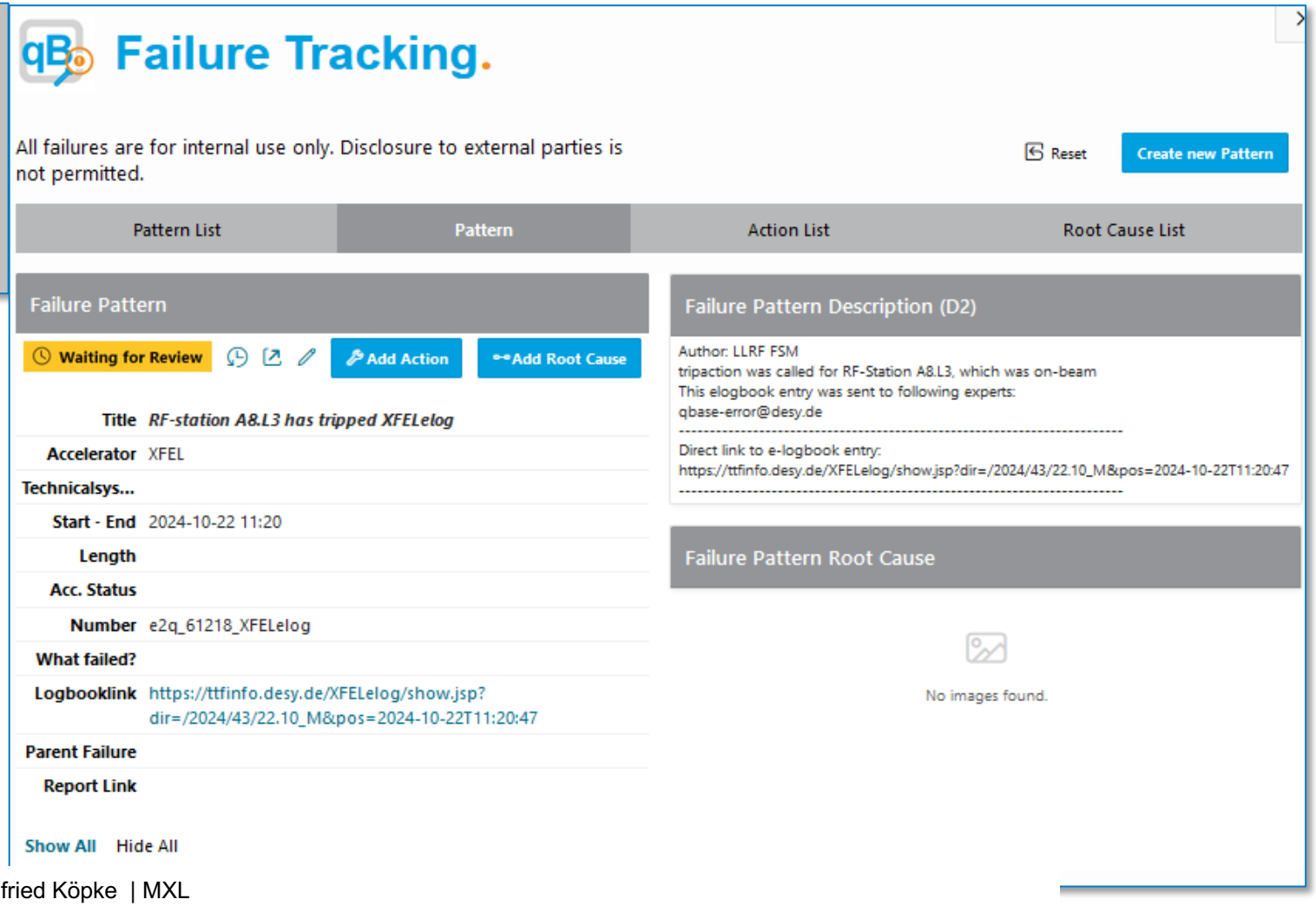
- **Severity** as the identifier for a the weigt of the failure
- **Keywords** as identifiers for technical systems,based on our established labels and descriptions
- **Locations** as the functional section of the accelerator

Keep in mind:

- Give Information, if you expect support.
- It is for free
- It costs you only some seconds

Failure Management I : Initiate a Failure Analysis with logbook, qBase and 8D

Best practice for operators (5/5): Send the completed failure entry from the e-logbook to the failure database



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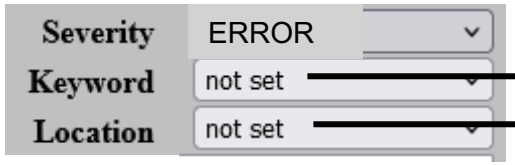
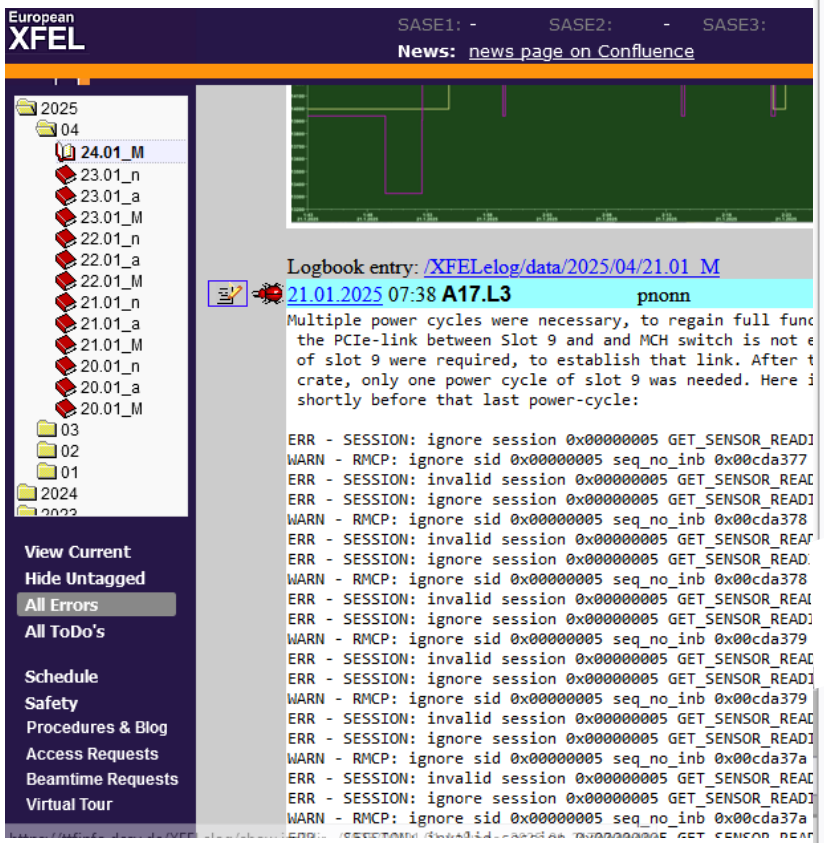
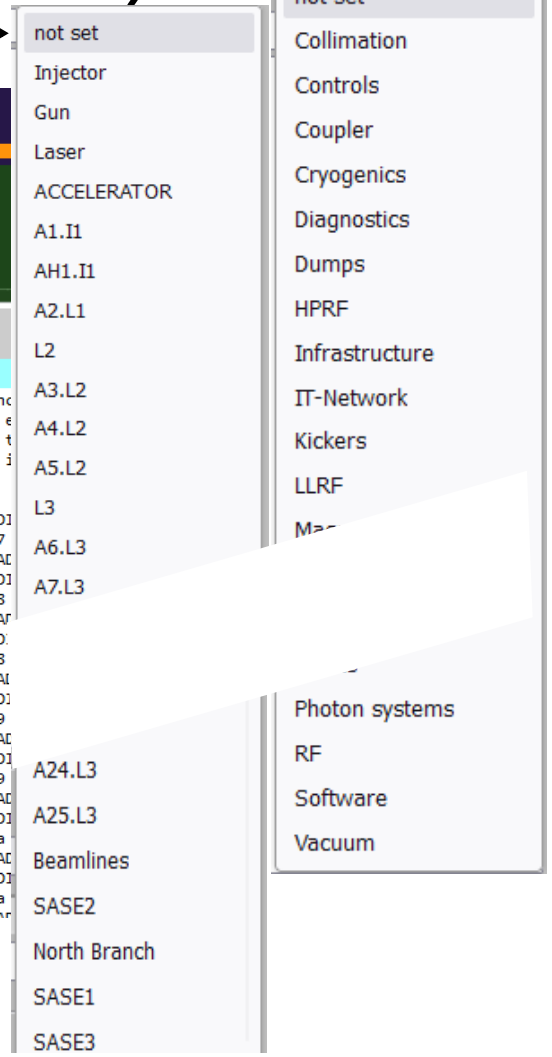
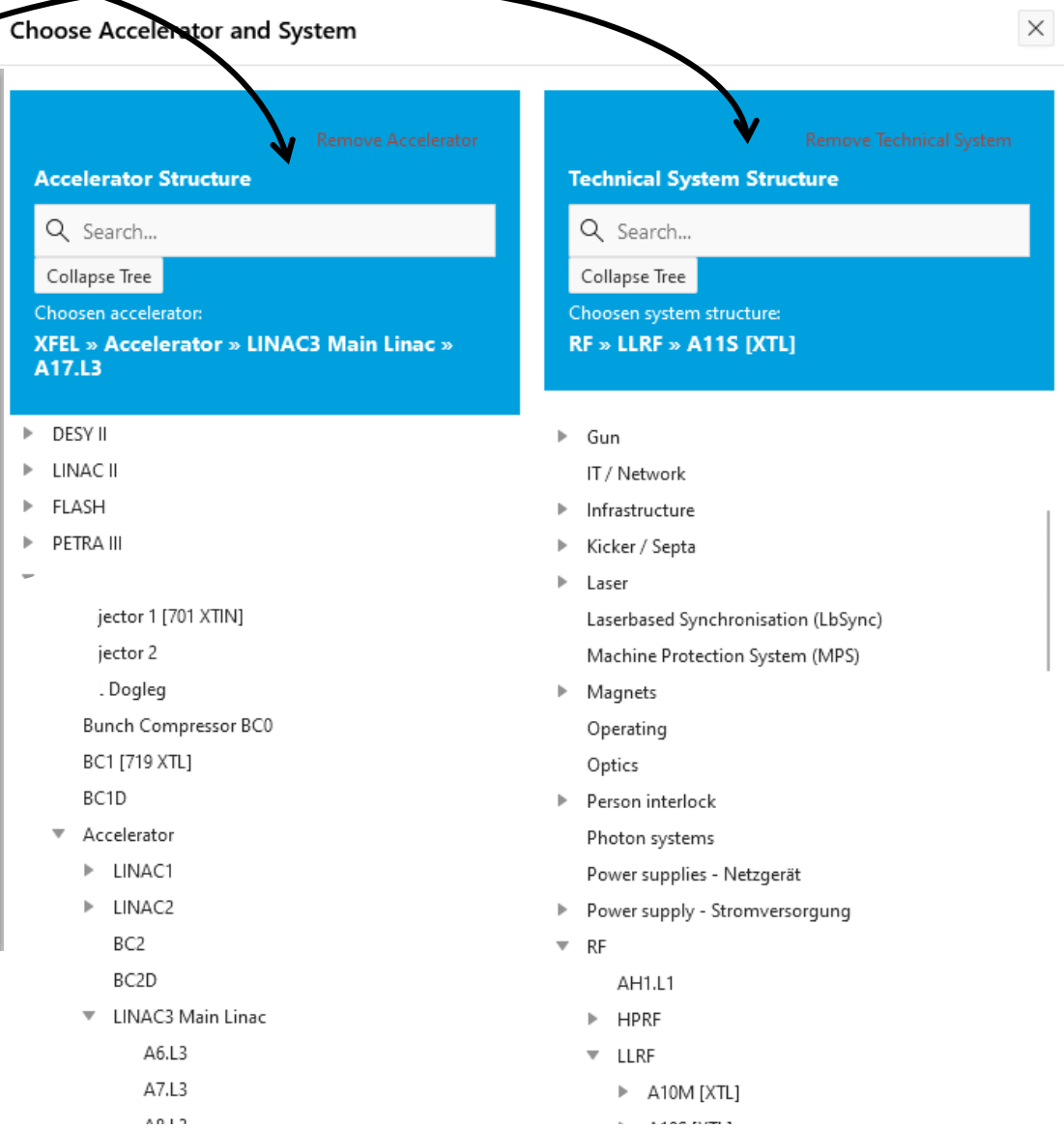
And what happens with all these keywords now?









Failure Management I : Initiate a Failure Analysis with logbook, qBase and 8D

Automated reporting from database into the Run Coordination Meeting: The Pending Issue List (MXL)

Google Chrome isn't your default browser

qBase: Failure Reports

Search: All Text Columns | Search

Edit	View	Title	Abstract	Logbook	Person to contact	Report Created	Status	Report Closed
		Fire extinguisher in MPC rack of A5 is empty	**Pending Issue List:** The smoke detector is active again. Access to XTL required to replace the bottle -> was replaced on Mon 10. March 2025					
		BLM.2047.TLD masked in MPS	**Pending Issue List:** Frank Mayet: "The shift crew called at 22:52 because BLM.2047.TLD was sporadically showing "HV t starting at around 22:30. This lead to TLD bunches being cut by the MPS and subsequently a drop of performance in all beam lines for 1 min periods max; sometimes shorter. The BLM HV level would recover on its own; no intervention necessary. This happened every ten min affecting the user experiments. Due to the low loss level at 2047.TLD. I decided to mask this BLM in t now. BLM experts are informed via mailing list. The BLM state will be monitored." *Update 24.2.2025 (mscholz): Needs access, will be repaired at the next opportunity.*					
		KL.1999.TL kicker off	**Pending Issue List:** *Update 24.2.2025 (mscholz): Needs access, will be repaired at the next opportunity.*					
		Gun RF coupling sensor	**Pending Issue List:** This sensor had to be masked in order to prevent further shut downs of the gun. It looks like the sens working properly. Replacement at next access option.					

LIMP25
xfel.desy.de
FEL R&D
Physics Exchange
Minutes 2025

Edit Space Shortcuts Page

Recently Visited

MXL XWiki Space

MXL XWiki Space

- 01 Management
- 02 Group
- 03 Process Map
  - Leading Processes
  - Core Processes
  - Supportive Processes
  - Information to Maps, Processes, QM
- 20 Projects
- 30 XFEL Operations
  - Blog
  - 20 Operations Wiki
  - 30 Procedures for EuXFEL

60 Pending Issues List

Edit | Create | Followed

Last modified by Matthias Scholz on 2025-08-04 15:01

This is a list of pending issues concerning XFEL operation, to keep track of the current situation and work through the issues one by one.

Categories: Software, Hardware or Procedure

Urgencies: 1 HIGH 2 MEDIUM 3 LOW 4 CHECK Best case: 5 SOLVED

Issue	Details	Reporting person	Contact person	Date added	Urgency
Slow trajectory FB response matrices	We observed issues with the calculation respectively with using new response matrices for the slow trajectory feedbacks in the undulator sections. This was found in a week with an electron beam energy of 12 GeV (-> different rel. quad strengths in the undulators and upstream). This issue was described in the logbook.	@Matthias Scholz	@Raimund Kammering	2025-05-02	
A11M communication	Cooling unit communication problem in LLRF rack A11M. Update 13.5.2025 (mscholz): Same issue appeared also in A13S Both, will be fixed by MKK during the shutdown.	@Matthias Scholz	LLRF	2025-04-28	
BPMR.309.L2 shows wrong position	BPMR.309.L2 displays wrong vertical beam position; fix probably requires access; ignore BPM for now.	@Matthias Scholz		2025-04-28	
B2 TDS timing	Suspected wrong timing of TDS prevents parasitic bunch profile measurement; running TDS meas. tool causes beam loss on BLMs at a location which is not masked in MPS --> beam cuts.	@Matthias Scholz	@Bolko Beutner	2025-04-28	
Lasers X1 and X2 should be as similar as possible	General statement that we have to have the possibility to switch between injector laser X1 and X2 without the need for long tuning sessions	@Matthias Scholz @Siegfried Koepke	FS-LA	2025-04-28	

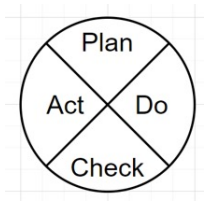
Failure Management I : Initiate a Failure Analysis with logbook, qBase and 8D

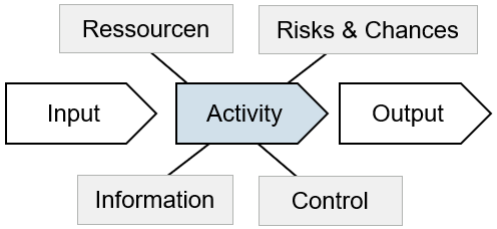
Sum up (1/2): Plan → Do → …

What to do:

- If e-logbook-entry = failure_message
  Fill out:
  - **author**
  - **title**
  - **precise description**
  - **severity, keyword, location**
  - **sent to qbase-error@desy.de**

What to remember:





Plan → Do → Check → Act & **Everything is a process**

Why am I required to do this?

- Short: As an operator, it's your duty!
- If we don't deal with our failures properly, we won't improve! But that's exactly what failure management is all about.
- Your logbook-entries are training data for an internal AI that will support all of us in operating the accelerator in the near future.
- We generate structured and linked data in our failure database qBase. in order to make the AI's responses more reliable in accordance with the MAC's recommendations.

Failure Management I : Initiate a Failure Analysis with logbook, qB

Sum up (2/2): … Check → Act

Can we monitor our success?

- We measure the completeness of the entries and also the quality of the analysis based on your meta data and the content of the entries (fig.1)…
- **NEW:** We promote the level of qualification of employees in the area of failure management (this training) and trainings at ias-intern.desy.de…
- We already introduced performance metrics like failure recurrence, repair times, … for evidence based improvements (fig.2, fig.3).

What if we are not successful ?

- **Try (Just a Little Bit Harder) !**

fig.1 Completeness

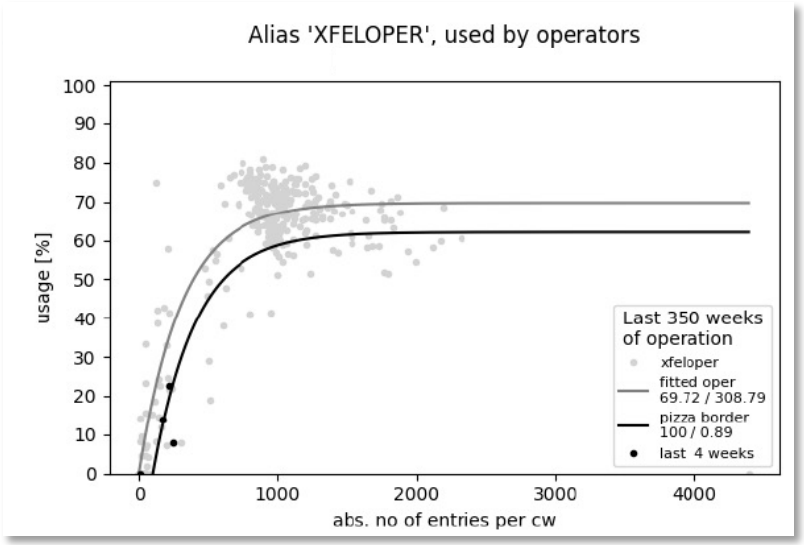


fig.2 Repair time

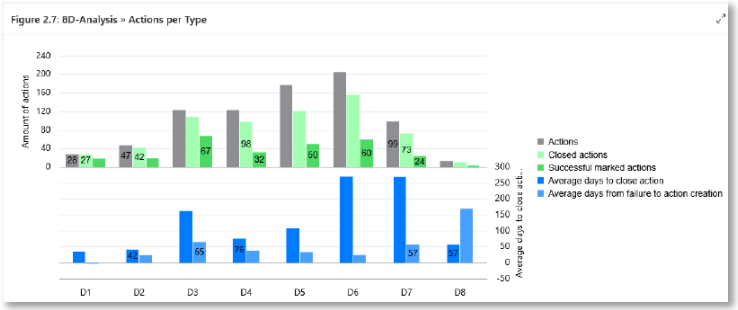
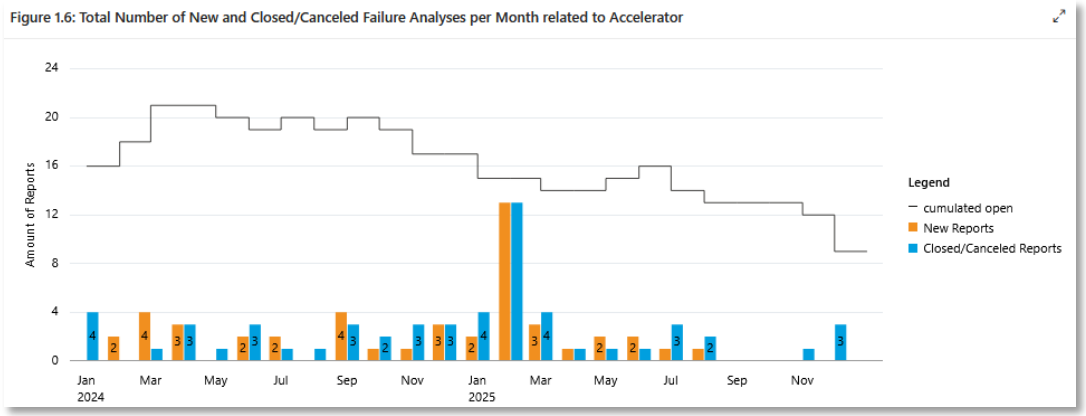


fig.3 Failures



Failure Management I : Initiate a Failure Analysis with logbook, qBase and 8D

More Trainings about Failure Management available

I : Initiate a Failure Analysis

Course Information

Übersicht

Eine knappe Einführung in wesentliche Aspekte des Qualitätsmanagements bildet das Fundament für das Fehlermanagement bei DESY. Im Folgenden liegt der Fokus auf der **praktischen Fehlererfassung** mit unseren **e-logbooks** und der Vorbereitung und Unterstützung der weiteren Analyse in der **Fehlerdatenbank qBase**.

Ihr Nutzen

- Grundlegende Kenntnisse zum Qualitäts- und Fehlermanagement allgemein und bei DESY.
- Anlegen vollständiger und hilfreicher Fehlermeldungen in den Logbüchern.
- Versenden der Logbucheinträge an die Fehlerdatenbank qBase zur Vorbereitung der Fehleranalyse.
- Unterstützung derAnalyse mit Hilfe von qBase.

Inhalt

- Begriffe und Aspekte zum Qualitätsmanagement (QM): Was bedeutet
- QM bei DESY, im M-Bereich und

Zusätzliche Einzel- oder Gruppentermine können auf Anfrage individuell organisiert werden.

Dauer: 1 Stunde

Ort: Gebäude 24 / Raum 246

II : Perform 8D Failure Analysis

Course Information

Übersicht

Eine knappe Einführung in wesentliche Aspekte des Qualitätsmanagements bildet das Fundament für das Fehlermanagement bei DESY. Im Folgenden wird intensiv auf die etablierte **Analyse-Methode 8D** und ihre Anwendung in der **Fehlerdatenbank qBase** eingegangen. Dabei wird der Fokus besonders auf die systematische Analyse gelegt. Die 8D-Methode erfordert in der Regel auch eine Moderation der einzelnen Schritte. Dazu ist eine genaue Kenntnis der Methodik notwendig, und gleichzeitig die Fähigkeit die Schritte den Erfordernissen bei DESY und dem jeweiligen Fehler anzupassen und mit weiteren Methoden wie z. B. 5-Times-Why, Ishikawa oder statistischen Methoden zu unterstützen.

Die Teilnahme an der Schulung Fehlermanagement I ist nicht zwingend nötig, fördert aber das Verständnis.

Ihr Nutzen

- Effektives Organisieren aller Aktivitäten zur Fehlermeldung.
- Sicheres Anwenden der 8D-Methode zur Fehleranalyse.
- Anwendung unterstützender Methoden wie PDCA, FTA, ETA, SIPOC, ...

Inhalt

...anlegen und analysieren, also insbesondere Koordinatoren, QS/QM-...techn. Gruppen allgemein.

Termine

Zusätzliche Einzel- oder Gruppentermine können auf Anfrage individuell organisiert werden.

Dauer: 1,5 Stunden

Ort: Gebäude 24 / Raum 246

Get more information under
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and book your course via
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Thank you

Contact

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Synchrotron DESY

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