

EAM to AFT linking plug-in - Workflow for 2025 & Demo

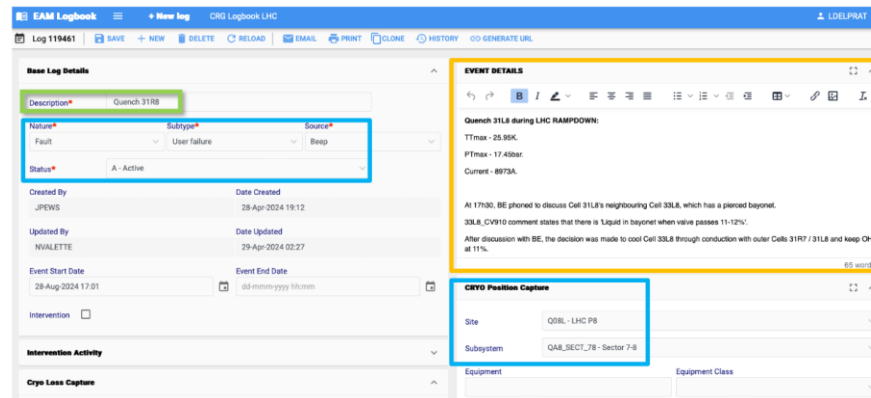
EAM/AFT Integrations Meeting

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Re-cap on EAM & AFT Integration

- Started out ~1 year ago
- Discussed integration requirements with CRG, CV, EL, TIOC, AFT, EAM & RAWG
- Motivations:
 - Less workload – avoiding double bookkeeping & reviewing
 - Added value from combining information of both databases
 - Beam impact in AFT, equipment code from EAM,...
 - Opportunity to homogenize data recording and build common tools for data analysis/KPI definition

First proposal from CRG:



“Editable by CRG sh...
the time the link with
active”

Read from AFT once
linked?

“Always editable by CRG shifter”

“Populating AFT” (i...
comment in the Acti...
the AFT event)

Do not track in AFT

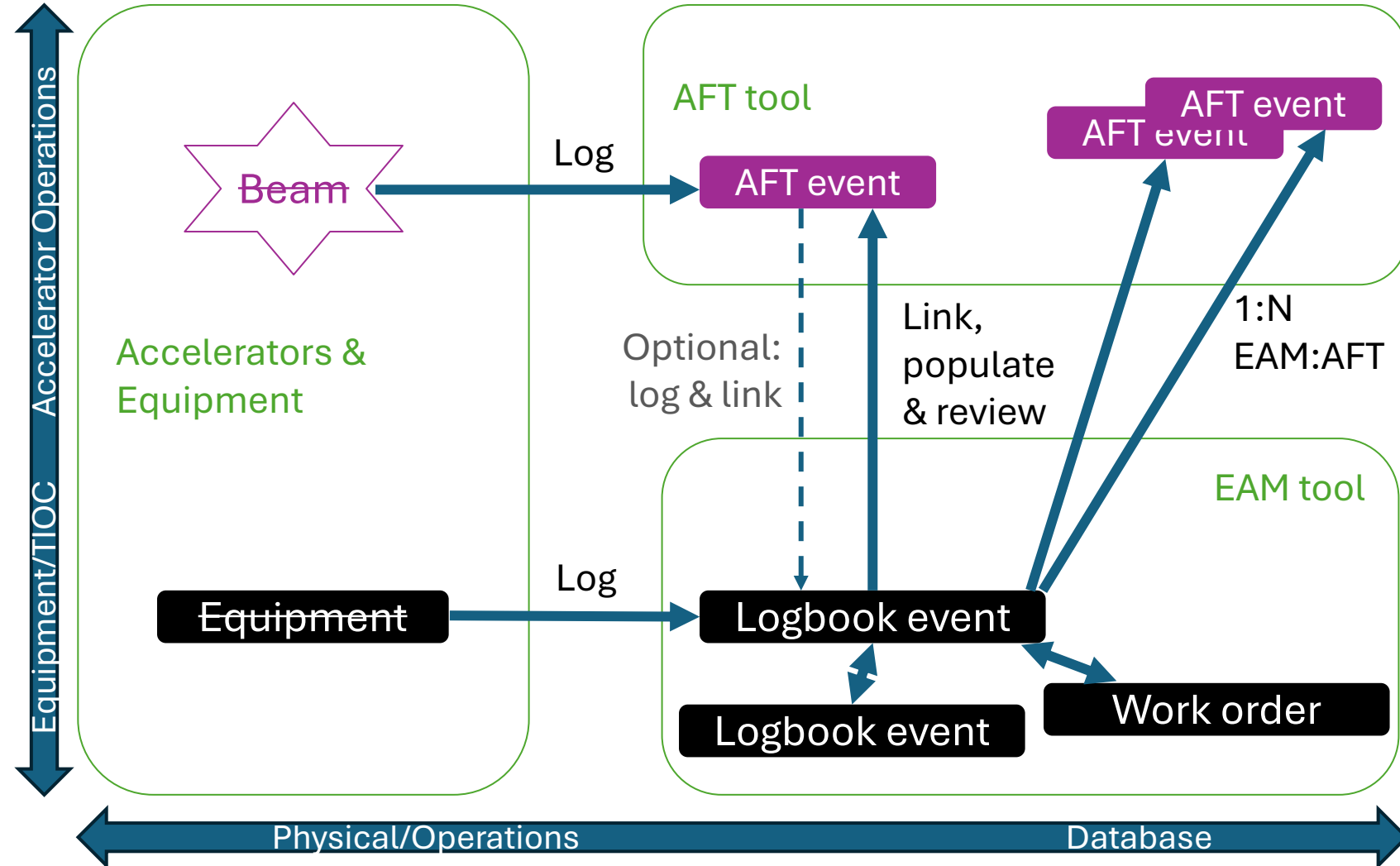
“Populated from AFT...
by the CRG shifter”

Do not track in EAM

To be removed from the CRG logbook
(useless)

Vision

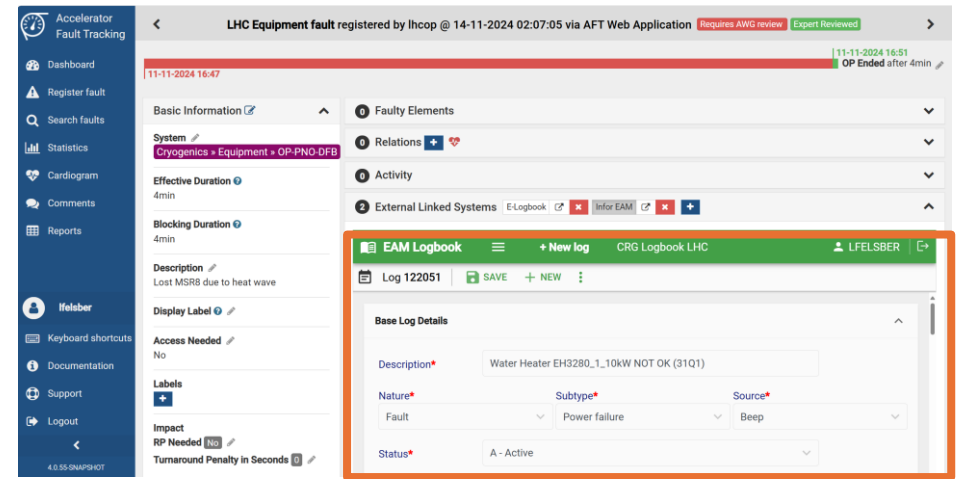
- AFT owns operations impact data
- EAM owns equipment fault data
- 1:N link - 1 EAM log links N AFT events
 - useful for infrastructures
- Linking primarily from EAM logbook to AFT events.
 Link is key - basis for:
 - Combining data
 - Populating AFT/EAM
 - Auto-review
- High degree of automation



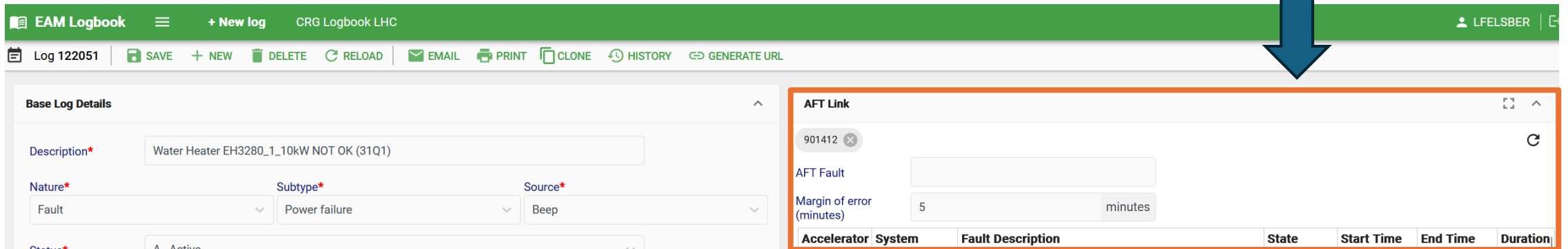
Available for 2025: EAM Linking Plug-In

Allows efficient linking from EAM to AFT:

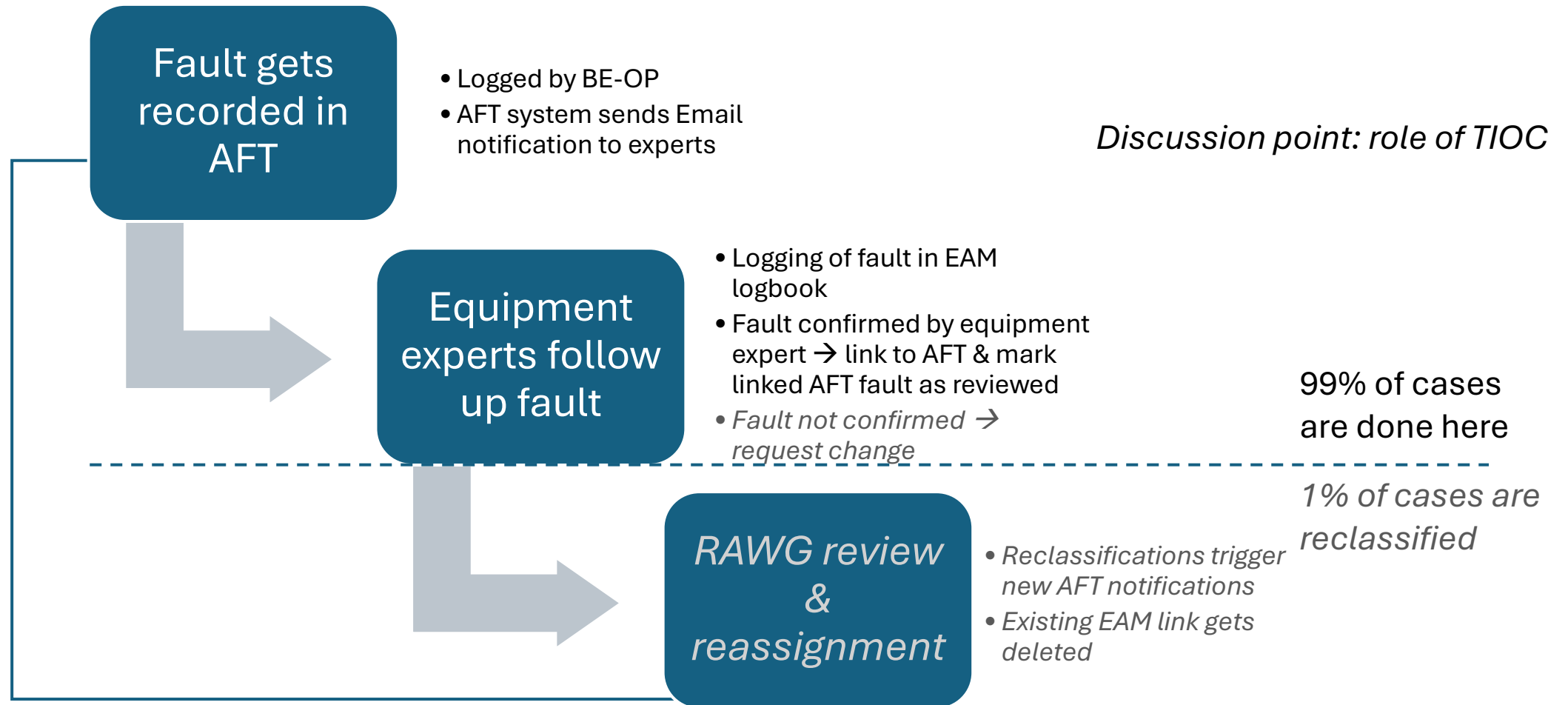
- Systems pre-filtered for each logbook & by time
- Time filter can be fine-tuned
- Search results ordered by start time
- Generates link on both EAM & AFT & prevents double linking



Can be deployed to production version of logbooks!



Workflow, Demo & Discussion



What could be the next steps?

Auto-Review

- Consider an EAM 'claimed' AFT fault to toggle automatically reviewed
- Would save manual step

Auto-Log

- AFT to publish pre-filled logbook events to EAM
 - 1:N relationship problematic for infrastructures across machines
- Would save manual step

Auto-Populate

- Idea remains to separate information between EAM (equipment) & AFT (beam) instead of duplicating
- Nevertheless, certain fields useful in both EAM & AFT. E.g.
 - EAM description as comment into AFT, Functional position/equipment code, Sub-systems
 - System specific properties (*implemented by group*) – e.g. CRG timestamps, EN-EL glitch dip/swell & duration

Why not implemented yet?

Clarification of data modification rights and rules

- AFT APIs need to grant different rights to different EAM logbooks
 - Avoids EAM integration of system X modifying AFT log of system Y
- AFT API extensions to access review state and change requests
- How to handle links under reassignment of fault from system X to system Y?
 - Not considering all edge cases can have big impact when tool is operational

Resource allocation

- AFT tool essentially feature frozen
- Currently, no development resources allocated

Request Fault Modification

Start Time


18-05-2023 16:30:00

OP End Time

18-05-2023 17:42:31

System

Magnets » Auxiliary Magnets

Remember that as a system expert, you can modify the sub-system yourself by clicking on  next to the current system.

Description

T9 quadrupole magnet

Additional Explanation

It was a magnet problem.

✕ Cancel

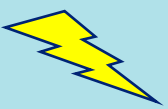
✓ Send Request

Next steps

- RAWG, EAM & AFT team to
 - Narrow down next integration steps (roles & rules)
 - Look for resources
- EAM logbook users have linking plug-in available for 2025 operation
 - Please share your experience and feedback – eam.support@cern.ch
 - Review of added value mid-2025

Many thanks for the inputs provided and efforts put into development by all involved teams!

Machines control rooms or Experiment control rooms (CCC-PS, CCC-SPS, CCC-LHC, Isolde control room,..)



Fault potentially linked to infrastructure

Create AFT faults with the suspected equipment in agreement with TI

Infrastructure control room (CCC-TI)



Create an Event for TIOC analysis linked to the AFT fault

Equipment expert (AA, ACE, CV, EL, HE)

Request modification of attribute



Pass to status Fault reviewed

AFT Working Group

Assess equipment responsible in collaboration with groups concerned, and TIOC

Contact TI

Contact Machines / Exp

Automatic notification

Yes

No

Yes

Machines control rooms or Experiment control rooms (CCC-PS, CCC-SPS, CCC-LHC, Isolde control room,..)

Fault potentially linked to infrastructure

Contact TI

Infrastructure control room (CCC-TI)

Check problem alarms

Contact Machines / Exp

Create AFT faults with the suspected equipment in agreement with TI

Automatic notification

Equipment expert (CV, EL, HE)

Request modification of attribute

No

Fault confirmed for the equipment

Yes

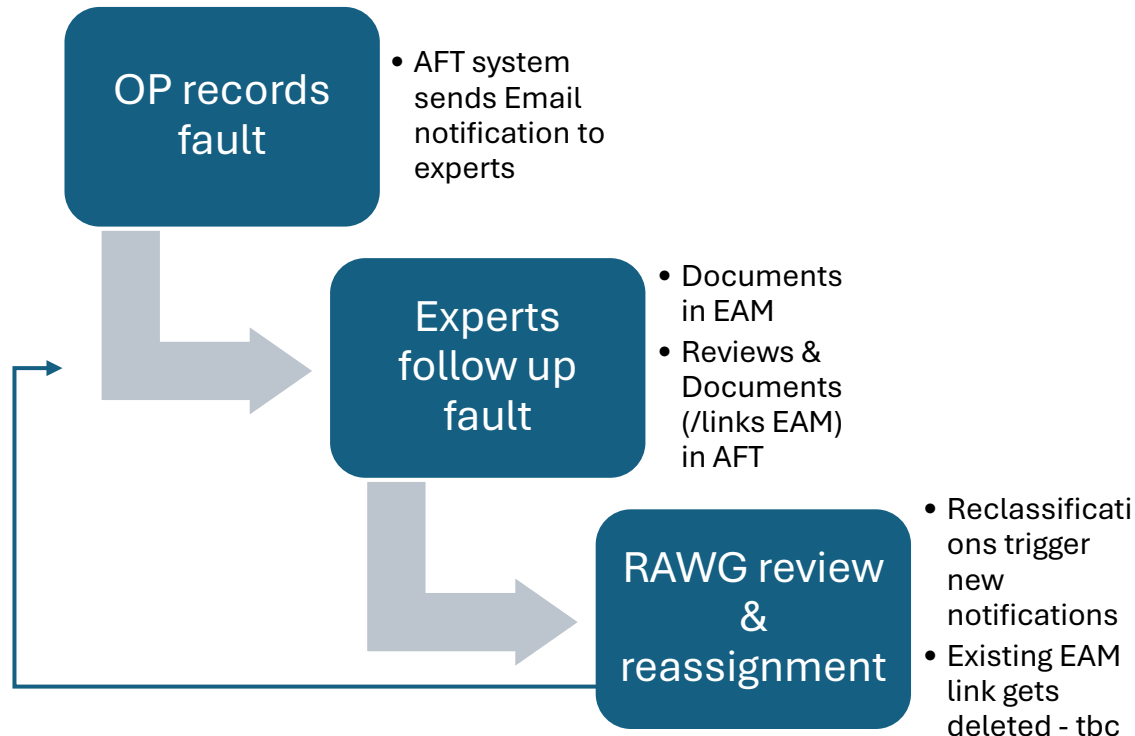
- Change the status of AFT Fault (reviewed)
- Fill the logbook event (filling automatically the AFT)
- Create additional work orders
- Define action plan (followed at the TIOC)

AFT Working Group

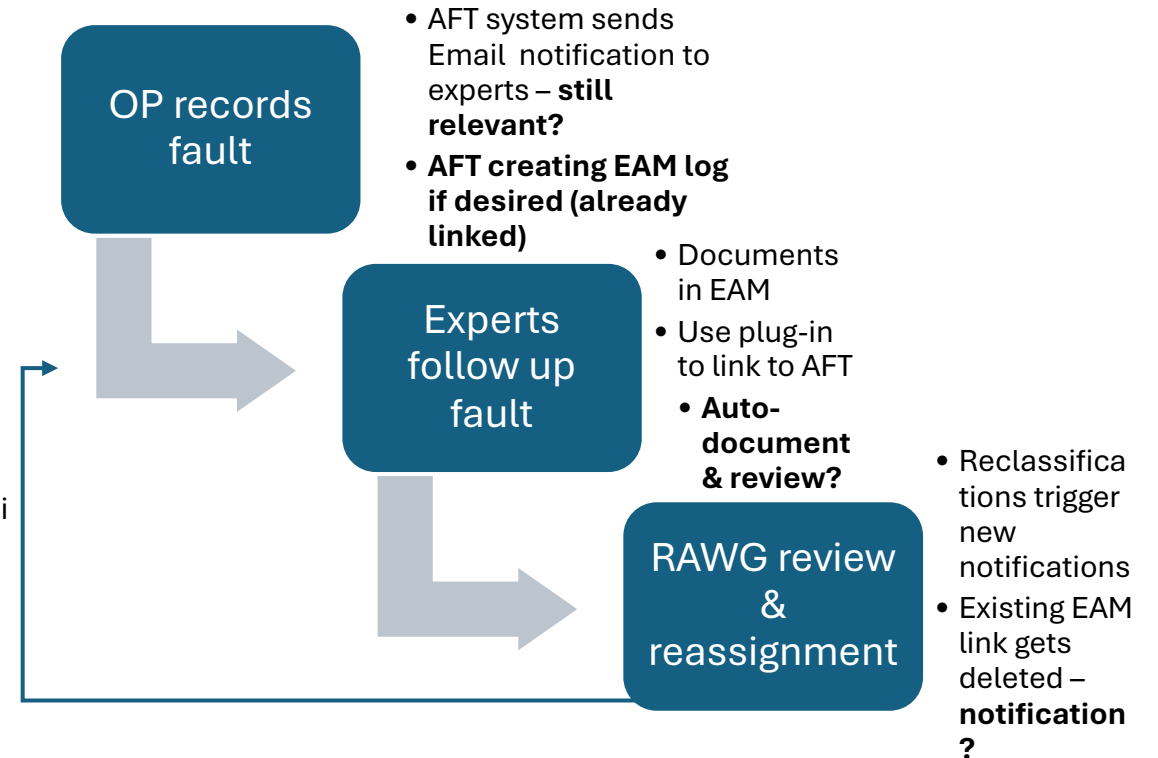
Assess equipment responsible in collaboration with groups concerned, and TIOC

Workflows with and without plug-in (experts' point of view)

Currently



With EAM/AFT integration



Plug-in to link to AFT

Feedback received

- Lionel (CRG)
 - It does not take into account the Site/Subsystem/equipment : for instance, in the LHC logbook, we may have the following Accelerators: LHC, ELENA, PS, AD, EA, etc.
 - For the LHC Cryogenic logbook, we have all systems: Injector Complex, Radio Frequency, etc.
 - It looks like the margin of error takes into account the start date and the end date as well.
 - The same AFT id can be recorded multiple time whenever the logbook is saved.
- Jesper (TIOC)
 - Limit the list of AFT events to those within the same time frame. Perhaps with the possibility to manually expand the list - **done**
 - Group the list by machine, then order by start time ?
 - Remove from the list the ones you have already attached
 - Perhaps add more description when the AFT is attached. You see only the ID now, perhaps it could be useful to see also the description from the AFT inside EAM? - **next slide**

What could we propose?

- System filter for each logbook
 - Egroup based
 - Long-term: integration with IT egroups - grabber
 - Mapping (how to maintain? Put reference on start page of eam logbook & send yearly reminder)
- Ordering search results - done
- Avoid double linking - easy
- Fine-tuning of duration - unclear