East Hall under construction - 1962

East Area Renovation – CSR#3
EA Deliverables and Configuration Management

Giulia Romagnoli / EN-EA, 21-11-2019

CERN | EN ENGINEERING DEPARTMENT

EAST AREA RENOVATION

EN-EA Group Deliverables for EAR

The EN-EA group deliverables for the East Area Renovation project are mainly:

- Mixed and primary areas shielding
- Dump primary area
- Gas supply system to experimental areas
- False floor bldg. 251
- Cabling (patch panels connections between exp. areas and control rooms)
- Magnet supports
- Beamline equipment with supports: Collimators, XCET, TCX, Converters
- 4 control rooms for experimental areas
- Vacuum system of all beamlines

In addition the group is providing also project wide supports:

- Mechanical integration
- Physics optics with beatch files
- Configuration management (layout database, …)

Equipment Readiness Reviews

Equipment readiness reviews for the EA deliverables:

7 May 2019 - First Equipment readiness review https://indico.cern.ch/event/816919/
5 July 2019 https://indico.cern.ch/event/830225/
20 September 2019 https://indico.cern.ch/event/841949/
11 November 2019 https://indico.cern.ch/event/860674/

GOALS:
- Follow the status of the EN-EA deliverables
- Identify opens points and critical aspects
- Monitor eventual delay proposing alternative solutions
- Verify advancements according to the project planning

PARTICIPANTS:
- EN-EA responsibles for East Area Project and beamline equipment
- Project Safety Officer
- Project Leader
- Experts of specific fields when required

Production Readiness Reviews

GOALS: Checkpoint before big commitments in industry or with CERN services!

- Validation of drawings before launching the production
- Comparison between physics files, integration and layout before providing alignment files to survey group
- …

Equipment readiness reviews done in the past for EA deliverables:

- 02-08.2019 - Review F61 and F62 lines magnets supports
- 26-09-2019 - Technical meeting Collimators
- 01-08-2019 - BLM position verification with OP
- 27-06-2019 - Technical and safety review # 1 https://indico.cern.ch/event/830680/
- 31-07-2019 - Review Beatch files and positioning F61, F62, F63, F6D and T08 lines - EDMS 2059467
- 5-11-2019 - XCET production readiness review with main workshop and HSE - EDMS 2270959

MAIN readiness reviews needed in the future:

- Beatch files T09, T10, T11 lines verification
- Magnets supports readiness for T08, T09, T10, T11 lines
- Vacuum needs and drawings for T08 T09 T10 and T11 lines
- East Area commissioning planning with OP

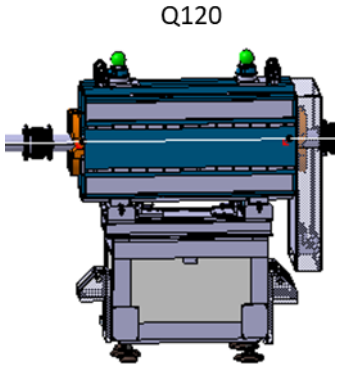
EA Deliverables Summary Status

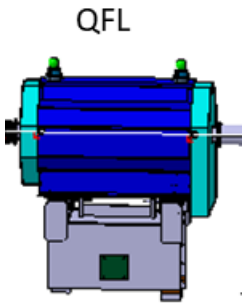
		Status	Foreseen Delivery	Urgency	Critical Points
Magnet supports	54 supports	F61 F62 Ready for installation	Installation for b.352 Dec2019 - b.157 Apr2020	High	Support plug-in Drawings folders secondary lines
Vacuum system	all East Area lines except F6D and F63	F61 and F62 under construction	Installation for b.352 Apr2020- b.157 Jun2020	High	Magnets for chamber installation Drawings folder secondary lines
Collimators	3 collimator 2-blocks 4 collimators 4-blocks	Maintenance on 4-blocks started Production of one new 2-blocks started with AP	Installation Jul2020	Normal	Re-assembling of 4 blocks collimator
XCET	4 XCET (2 on T09 and 2 on T10)	Production started	Installation May2020	Normal	HSE certification
Shielding	Dump primary area, shielding, shielding roof	Offers request	Installation for b.352 Dec2020 b.157 Mar2020	High	Leak tightness roof primary area
False floor b.251	/	Ventilation and cooling system installation, cable tray installation	Complete installation May2020	1.5 months delay on schedule	Delay for structure installation
Equipment	XBPF vessel, XTCX with support, XCON	Fabrication and offers started	b.352 Feb2020 – b.157 May2020	According to schedule	
Gas supply system	Gas supply for experimental area	Offer for building gas system received Predesign for tube supports done	Oct 2020	According to schedule	
Control Rooms	4 control room for experimental areas	Technical specification on going	Installation Jul2020	According to schedule	

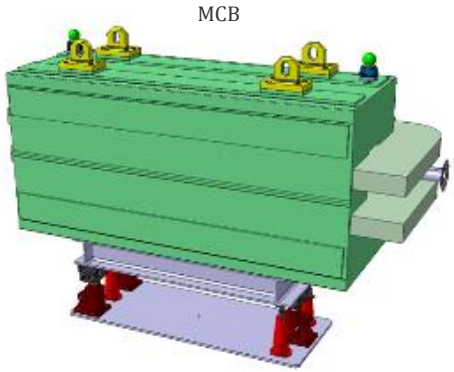
Magnets Supports

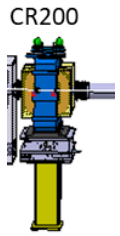
- 3D design + 2D drawings COMPLETED for primary lines
  ON GOING for other lines
- Plug-in support: priority!
- 54 supports fabrication in EA workshop: ON GOING
  - 12 metal base recovered (small modifications for angles)
  - 18 concrete base recovered + production of interface frame
  - 8 Universal supports (for 2: small modifications) in stock?
  - 13 Adjusting system support (plug-in and non)
  - 3 supports multiple components (plug-in and non)

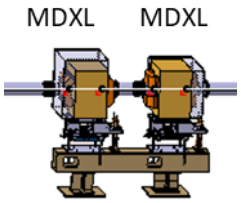
- PRODUCTION READINESS
- Primary lines supports : ready for installation

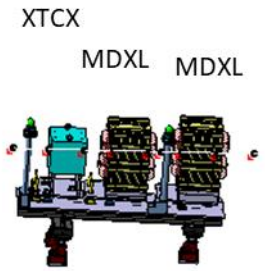


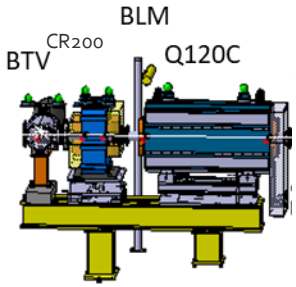












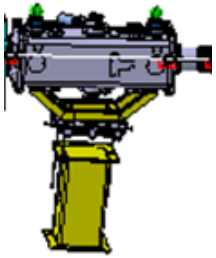
EA Equipment

- **4 Cerenkov counters**: body and support in stock, production of chambers and windows: 3D and 2D drawing finalized. Part production on going. HSE certification on going
  → **PLANNING**: assembly Feb 2020, Pressure test Mar 2020, installation May 2020.

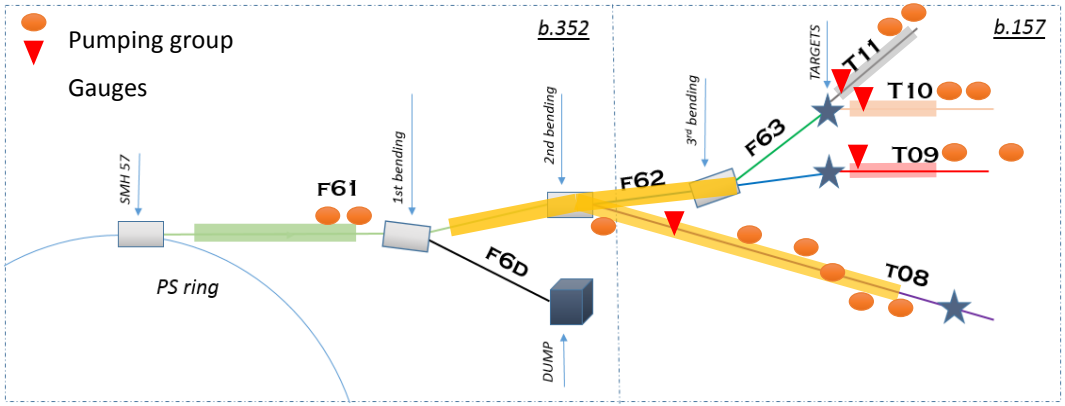
- **1 TXC fixed collimator**: 3D+2D model done, production on going..
- **3 Collimators 2 blocks**: 2 on stock, 1 to be produced in external companies: order on going with main workshop
- **4 Collimators 4 blocks**: one collimator dismounted with update of procedure, re-assemble on going
- **3 Converters**: 3D model done, technical specification on going for production in EN-EA
- **4 XBPF (beam profile monitors):** vessel ordered
- **Supports:** on stock
- **Universal tables:** 10 ordered

Collimator XCHV

Collimator XCSV



Vacuum System



Vacuum system divided in 5 sectors:

- Sector 1: from BTV in F61 until 1st bending, in green
- Sector 2: from 1st bending to 3rd bending in F62 and to IRRAD in T08, in yellow
- Sector 3: T09 line, in red
- Sector 4: T10 line, in pink
- Sector 5: T11 line, in grey

- **F61 + F62** PRODUCTION in EN-EA workshop: ON GOING, missing magnet chambers of magnets still not available
- **F63 – F6D** → no vacuum
- **T08, T09, T10, T11** → integration model on going, order for vacuum tubes done

- **Cabinets for pumping group control :** 12 cabinet production in EN-EA-AS on going, prototype done and validate, reception end Nov 2019

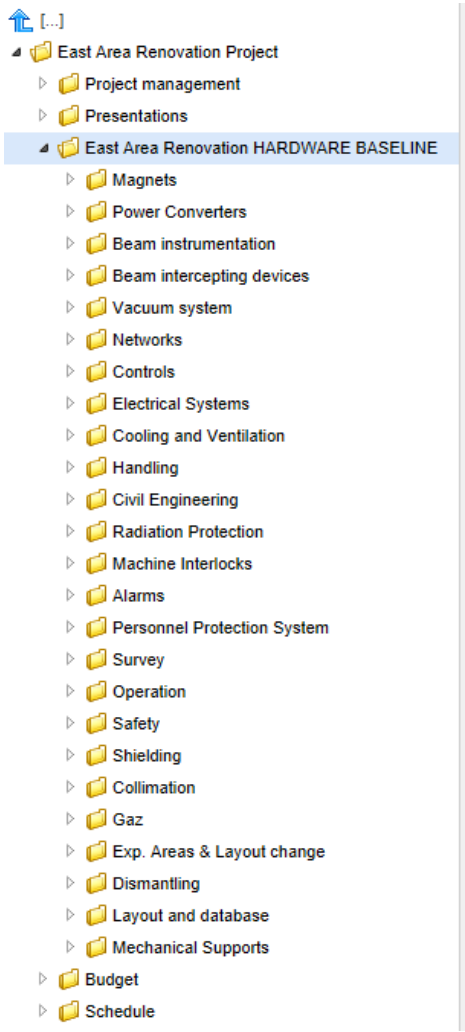
Configuration Management for EAR

Thanks to the help and following the examples of the colleagues from EN-ACE-CL, EN-EA is also implementing a configuration management approach to the East Area beamlines:

GOAL: Provides a clear and coherent picture of the status of a BEAMLINE at a given point in time!

- **Hardware Baseline:** Product Breakdown Structure in EDMS of all beamlines
- **Layout Database:** Sequence of functional positions = space management
  Integration and Installation Drawings
- **Naming:** verify and registering all EA names on Naming Portal

Hardware Baseline



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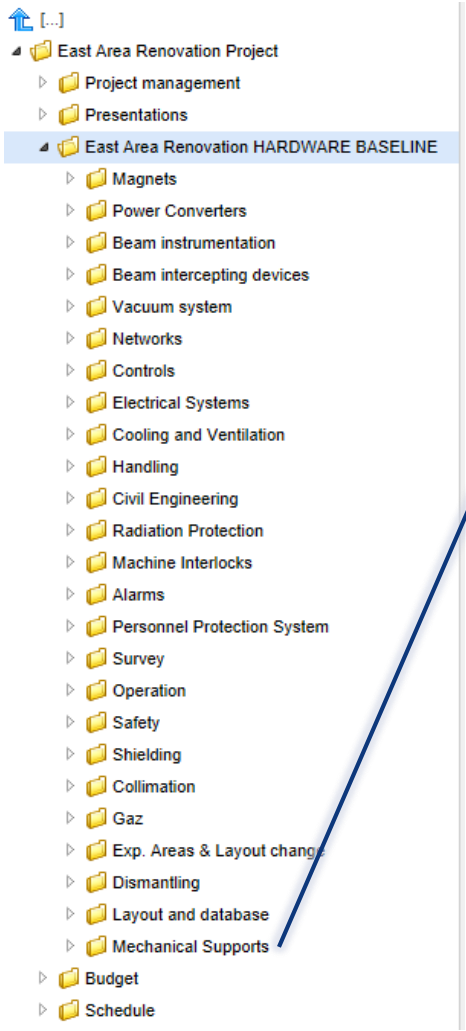
Hardware Baseline



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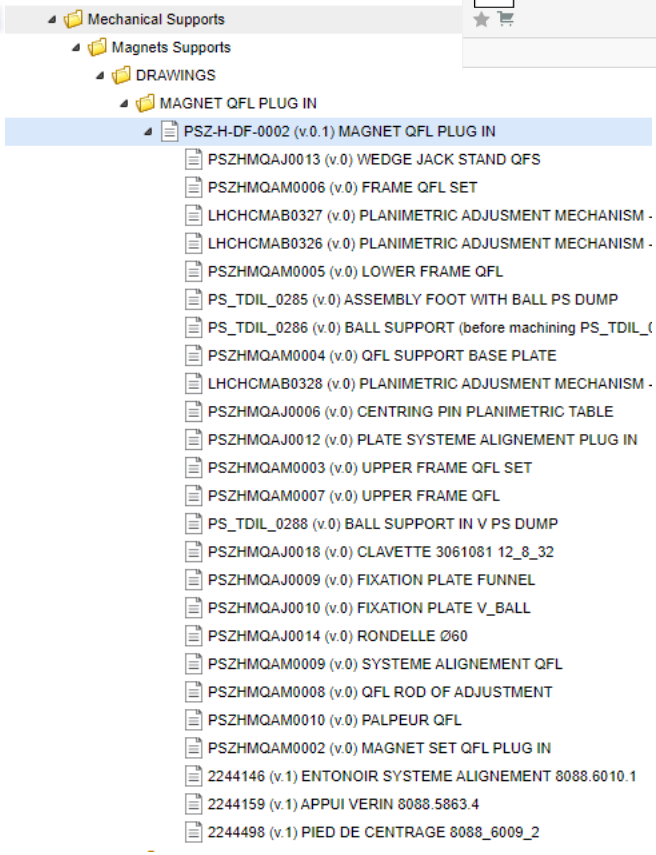
Drawing folder

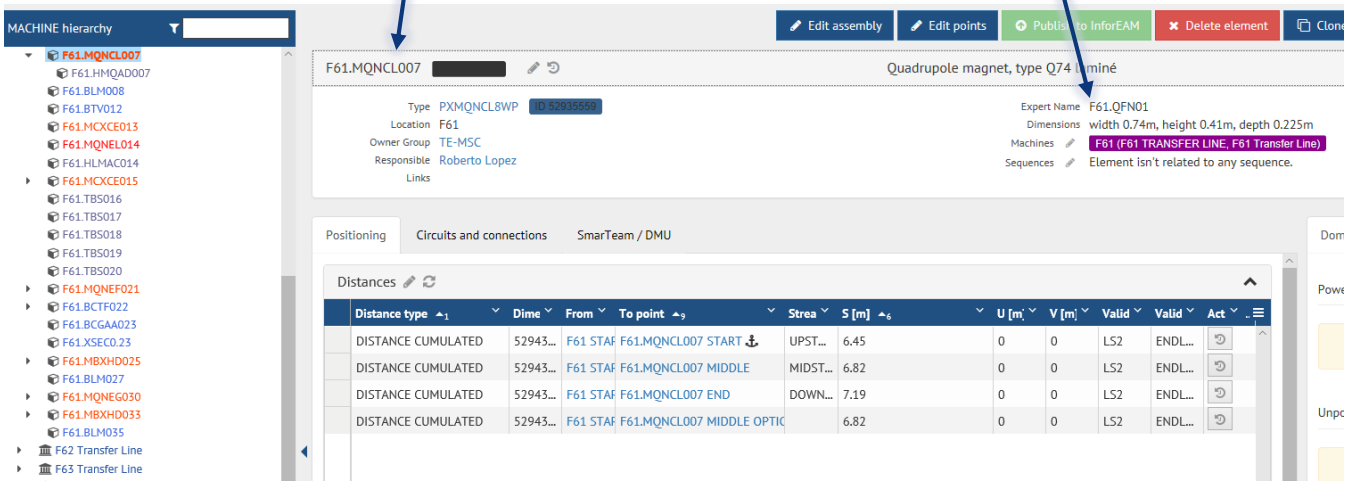


Layout Database

- PS East Hall Complex
  - F61 Transfer Line
    - F61.MQNCL007
      - F61.HMQAD007
    - F61.BLM008
    - F61.BTV012
    - F61.MCXCE013
    - F61.MQNEL014
    - F61.HLMAC014
    - F61.MCXCE015
      - F61.HMCAD015
    - F61.TBS016
    - F61.TBS017
    - F61.TBS018
    - F61.TBS019
    - F61.TBS020
    - F61.MQNEF021
      - F61.HMQAN021
    - F61.BCTF022
      - F61.HBCTF022
    - F61.BCGAA023
    - F61.XSEC0.23
    - F61.MBXHD025
      - F61.HMBAD025
    - F61.BLM027
    - F61.MQNEG030
      - F61.HMQAH030
    - F61.MBXHD033
      - F61.HMBAD033
    - F61.BLM035

Physics Name – Expert Name (chosen by physicists)
EDMS **2271129**

Functional Position (slot name)



Layout Database

https://layout.cern.ch/search

	Functional Positions	Relative Positioning	EDMS ITEMS	Drawings and Dimensions	Magnets Data for MADX
F61					
F62					
F63					
F6D					
T08					
T09					
T10					
T11					

Finished

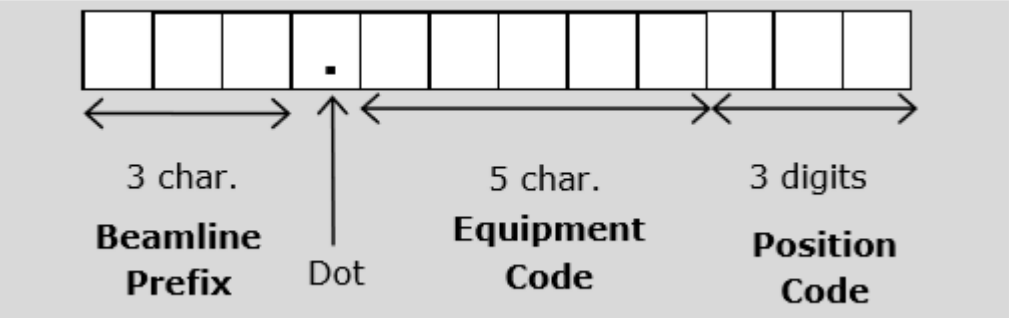
On-going

To be done

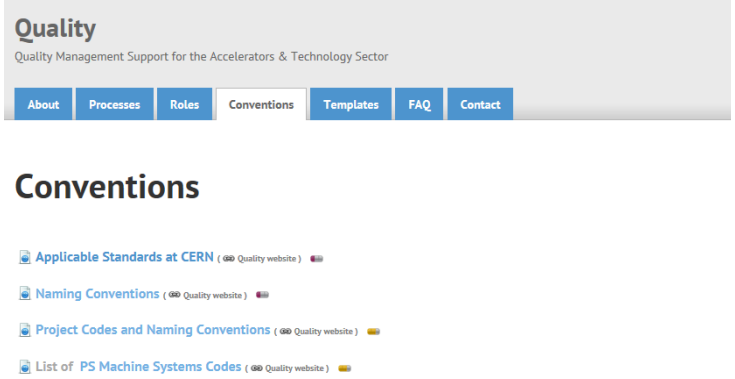
Naming

- Naming Portal https://naming.cern.ch/naming/ui/codes/PS/PX

- East Area Naming Convention https://edms.cern.ch/document/1723747/1.3



- Quality Website
  https://quality.web.cern.ch/conventions



Documents and Beatch Files

- **Beatch Files**: F61, F62, F63, F6D, T08 READY.
  Secondary beam lines: position of equipment check in progress.
  Discussion with Survey Team for alignment files.

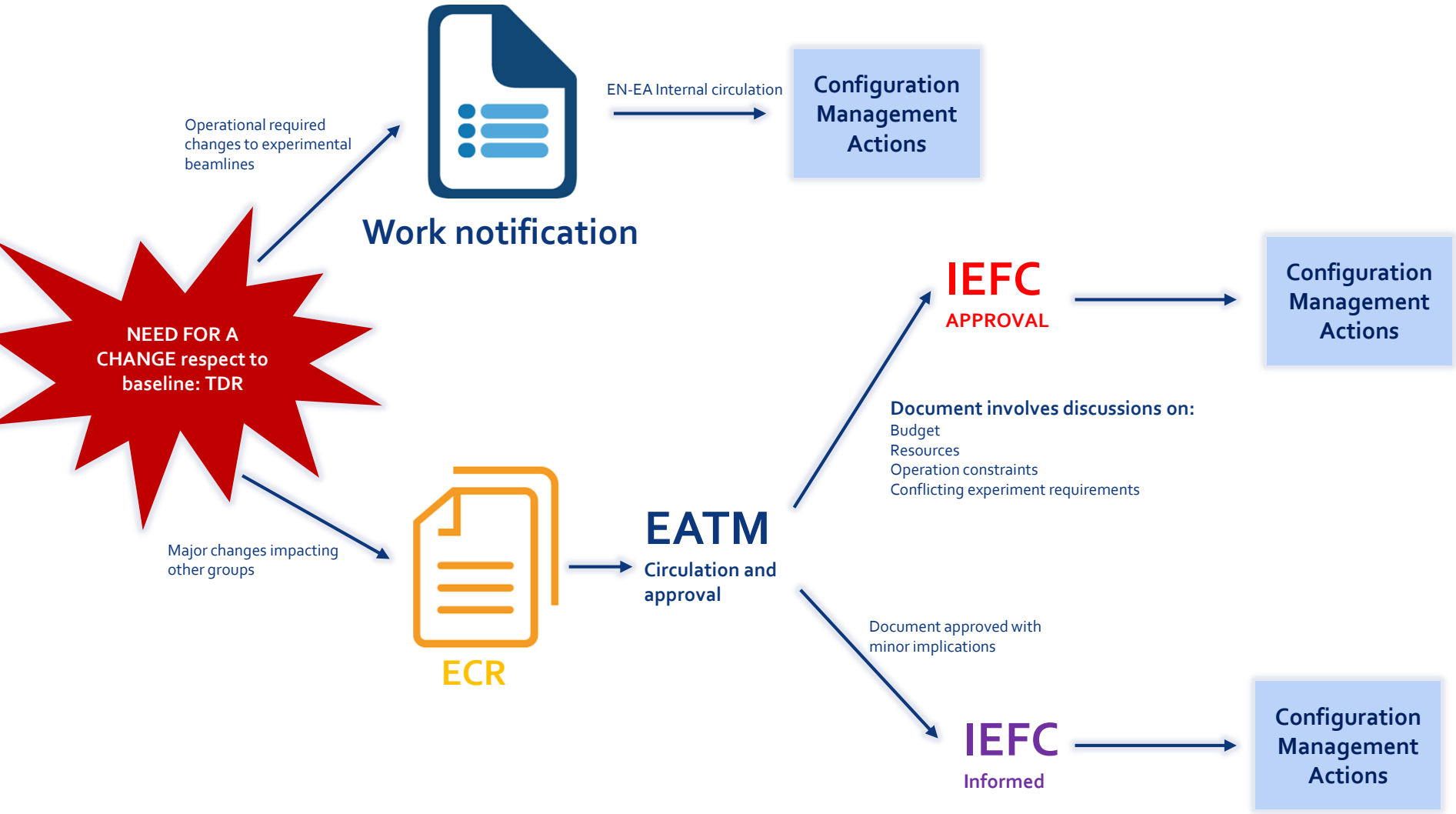
- **Documents:**
- ECR F61 Line 2038214 https://edms.cern.ch/document/2038214/1.0 RELEASED

- Access Specification EA1 990209 – New Version Under Approval
  https://edms.cern.ch/document/990209/5.1

- Access Specification IRRAD: 990210 – New Version Under Approval
- https://edms.cern.ch/document/990210/5.1

- TDR: Technical Design Report https://edms.cern.ch/document/2224589/0.2

Handling Changes → Baseline TDR

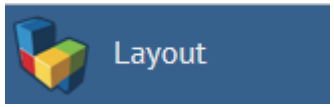


Thank you!

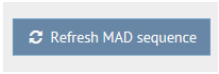
Configuration Management Actions

Configuration Management Actions

- Update of Hardware Baseline Documents/Drawings
- Registering possible new names on Naming Portal
- **Update of LAYOUT DATABASE functional position**

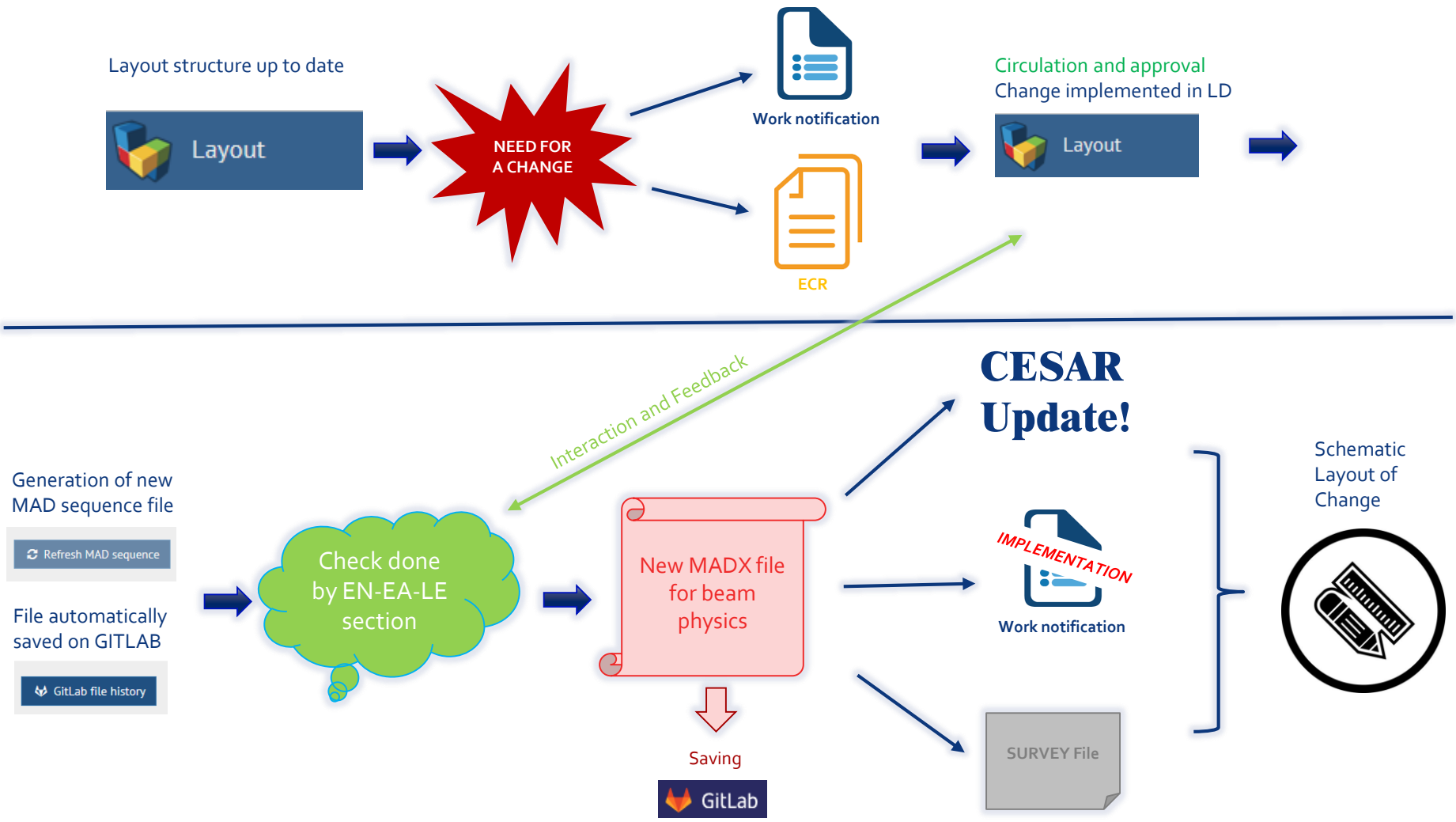


- (Creation of NEW MAD sequence file)



Creating a Work Notification or a ECR has a BIG impact!

Workflow of Configuration Management



Schematic Layout of Change

Possible automatic generation from layout database data under study