CRP consortium meeting: 19/01/2022

General Information

Speaker: Dominique Duchesneau (LAPP, CNRS-IN2P3)

Updates on anode design, edge connectors

Speaker: Bo Yu (Brookhaven National Lab)

Update to the 2nd 3-...

Bottom CRP support structure design

Speaker: Ian Jentz (University of Wisconsin)

CRP parallel session organisation at DUNE collaboration meeting

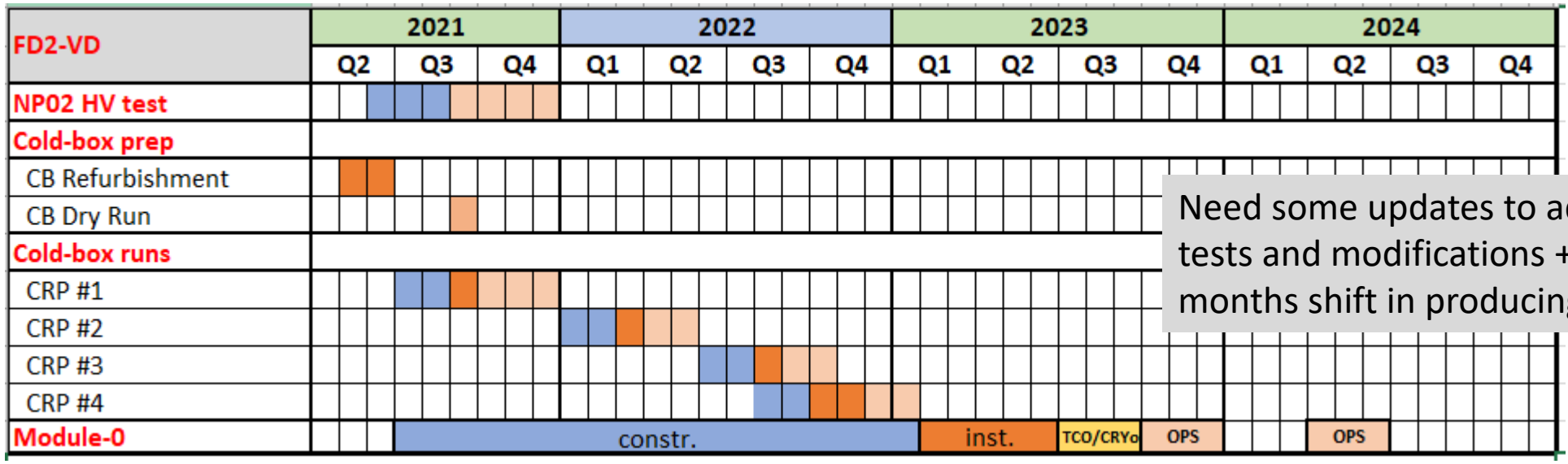
Speakers: Dominique Duchesneau (LAPP, CNRS-IN2P3) , Serhan Tufanli (CERN)

Originally there was a topic on the CRP factory news: this will be summarized at the CRP parallel session next week

A few main activities to address in 2022:

- CRP1 dedicated test period to trace and solve some observed issues and some modifications to apply
- 50L test of new 3view + edge connectors
- Build and test 3 new CRPs in 2022 => as close as possible to the FD final design

Reference schedule from last year : https://edms.cern.ch/document/2659987/1



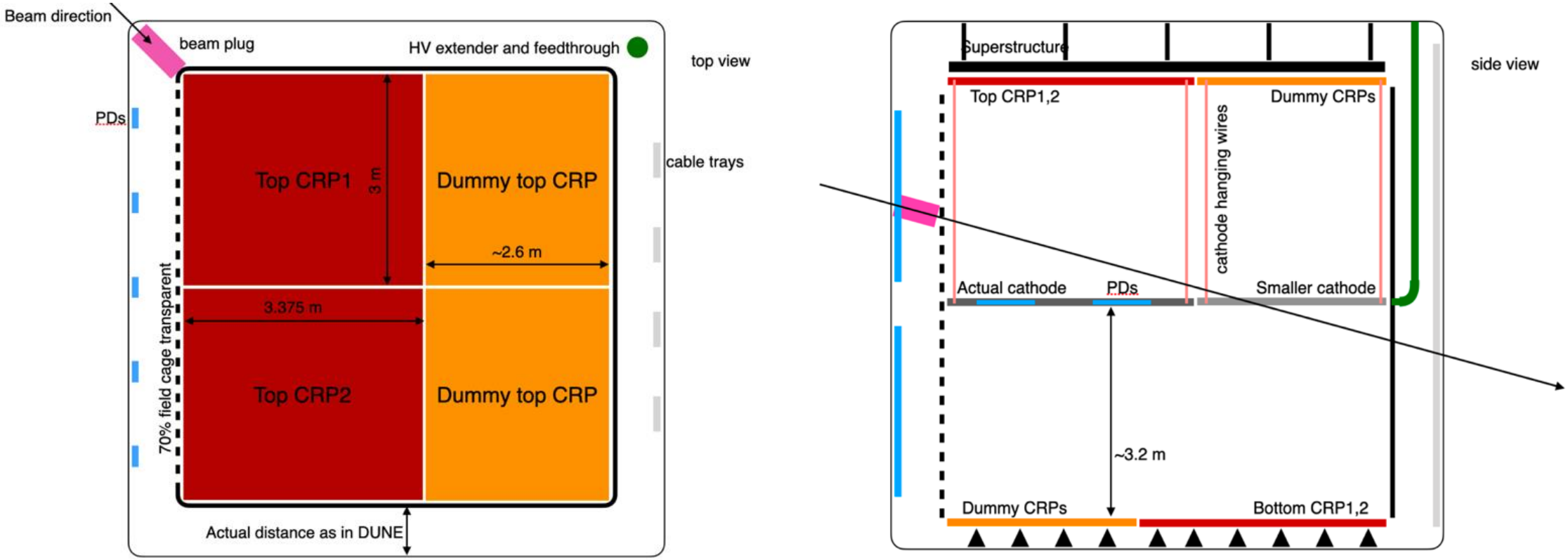
Need some updates to add CRP1 tests and modifications + few months shift in producing the CRPs

- Prepare the CRP Preliminary Design Review for the FD2 VD detector => second half of March 2022
- Design and integration for the far detector
- Design the additional components for Module-0 (supports, superstructure) when the configuration will be defined

Making detailed engineering of the module-0 layout

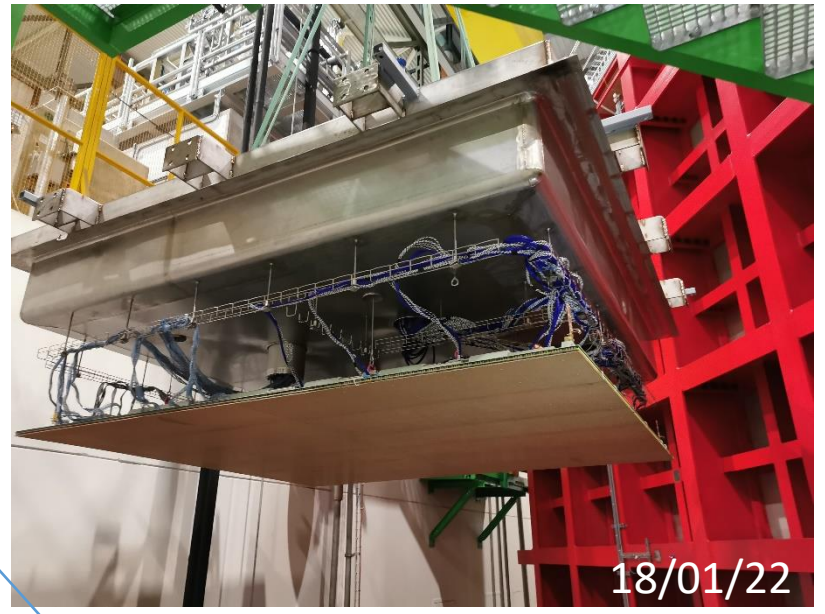
- The 4 CRP constructed and tested in 2022 will be placed in module-0 (NP02 cryostat)

  CRP1 : BDE , CRP2 : TDE, CRP3 : TDE, CRP4 : BDE



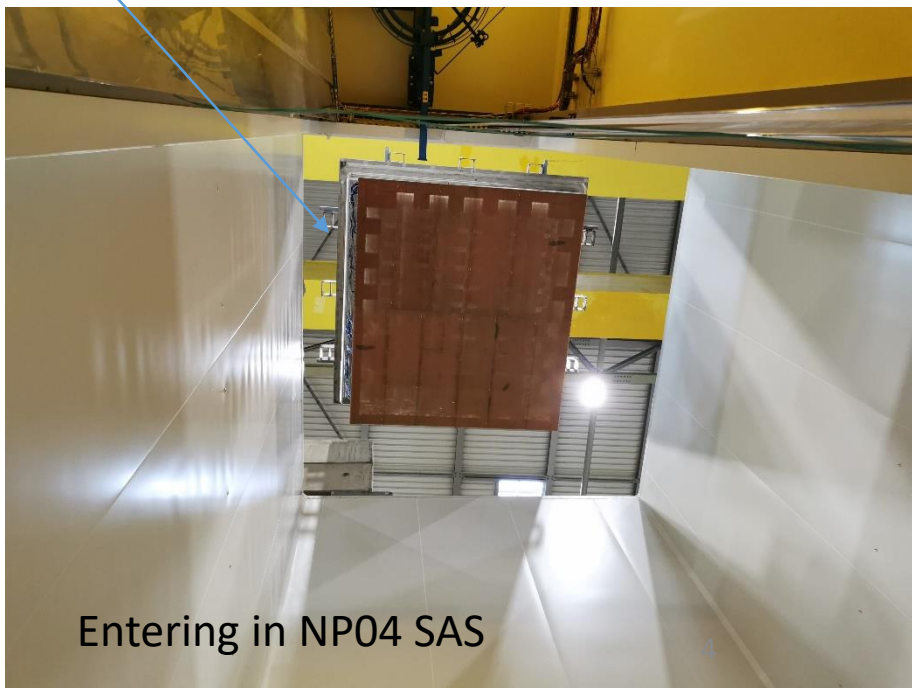
CRP1 activities in 2022

- CRP1 moved from cold box to NP04 SAS (18/01/22)
- Tests with TDE to study the coherent noise and bad connection to adapter boards and shield plane connection => define the needed modifications for filtering and improving shield plane perfomance
  - Reminder => in December a new coherent noise appeared on Induction2 Saleve Side which is easily amplified if we generate an accoustic vibration around 1kHz => probably some weak or bad connection to find



When tests are completed in NP04 SAS:

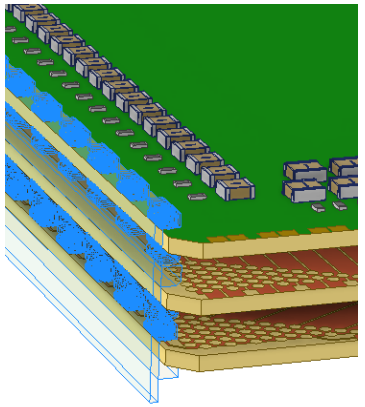
- Put the CRP1 in its transport frame and move to 185 (week 7, mid Feb.)
- Dismount the CRUs from the composite frame in 185
- Adapt a metallic surface layer between the composite frame and the CRUs on the full CRP (March)
- Produce eventually corrected adapter boards (depends on the results found in the SAS) for top and new filtering cards?
- Remount the CRP to be ready for new tests in NP04 SAS when the cold box roof is made available (April)

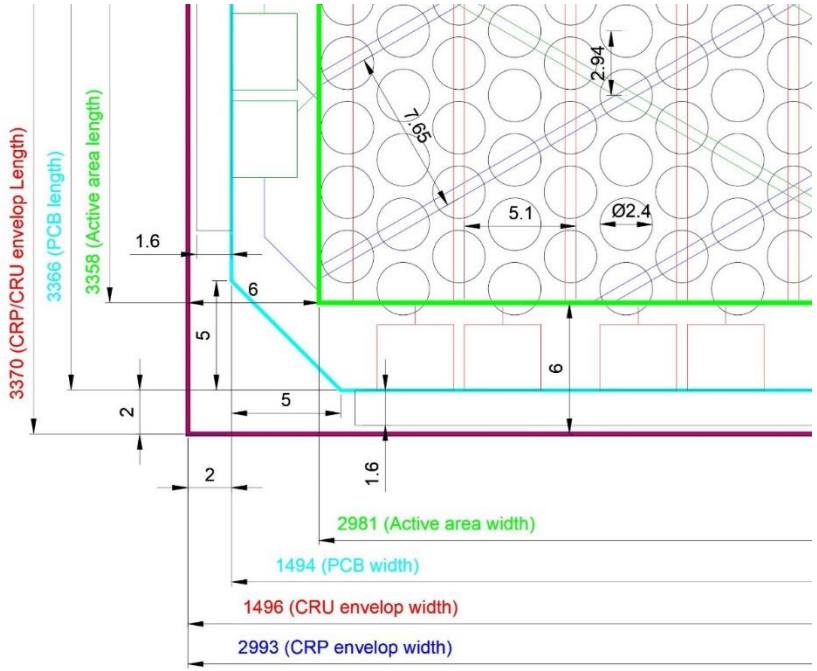


CRP2 design and production:

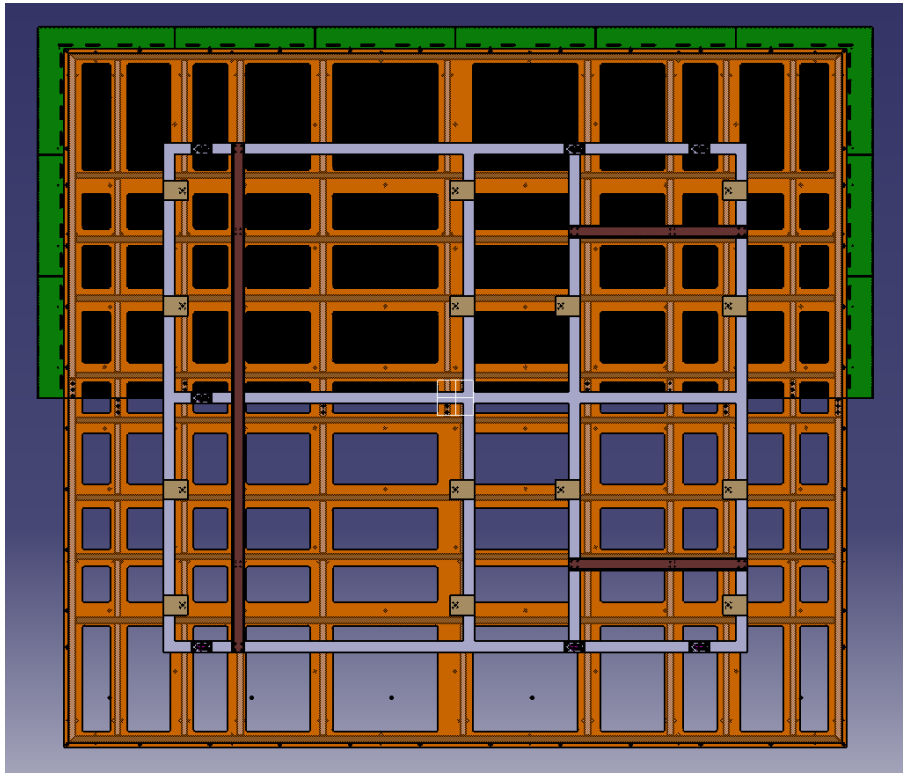
- New Anode
- New Adapter boards

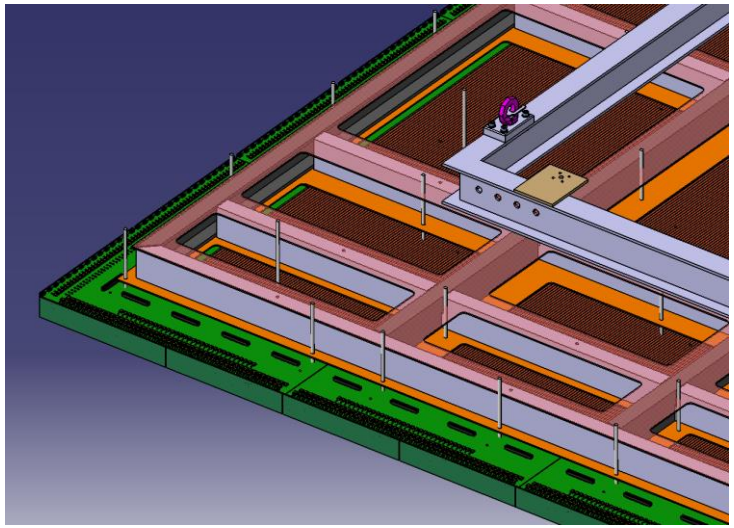
Bo's presentation





- New structure (Benjamin's presentation next week)





Raw material for the PCB anodes and the composite structures have been ordered end of last year

Summary and details at next consortium meeting next week

CRP Preliminary Design Review preparation :

- In this **Preliminary Design Review** we will focus on the CRP design status and progresses from the CDR. Reminder the Conceptual Design Review was in April 2021 https://edms.cern.ch/project/CERN-0000217212
- However it is too early to have a review for the design changes which will be validated only in April-May with CRP2

Main subjects to cover:

- CRP requirements / dimensions / interface with cryostat roof
- Perforated anode design / production plan
- CRP Mechanical structure design / production plan
- CRP Assembly process (from anode panel to CRP) and factories
- Top CRP superstructures design (include prototyping program and production plan); integration and installation
- Bottom CRP support structure design (include prototyping program and production plan); integration and installation
- Engineering safety analysis plans / FEA calculation validation plan (in agreement with DUNE compliance office)
- FD2 CRP integration in cryostat (Top and Bot including cabling and interfaces with TDE and BDE)
- Interfaces: mechanics with cathode, integration of BDE, cabling of TDE, Level meters to Calci
- Risks and Schedule

CRP Preliminary Design Review preparation :

Foresee at most 3 x ½ days in the weeks from March 17th to March 28th

- All the teams to be involved in this exercice and be able to provide all the necessary documentation, drawings, calculations etc…
- A list of documents and prerequisite exists and some updates are needed (ref: DUNE required PDR documents. https://edms.cern.ch/document/2374096/1)

CRP Design teams:

- CERN: anodes, adapter boards , PCB assembly (contact: Serhan)
- BNL: anodes , adapter boards , PCB assembly (contact: Bo)
- LAPP Annecy: CRP mechanics, CRP assembly /integration: top superstructures (contact: Benjamin)
- Wisconsin: Bottom CRP support (contact: Brian)
- LPSC: CRP instrumentation, assembly (contact: Jean-Sébastien)
- Chicago: CRP assembly (contact Ed.)
- Yale: CRP assembly (contact B. Fleming)
- Iowa: Engineering in some activities for factories /installation (contact Y. Onel)

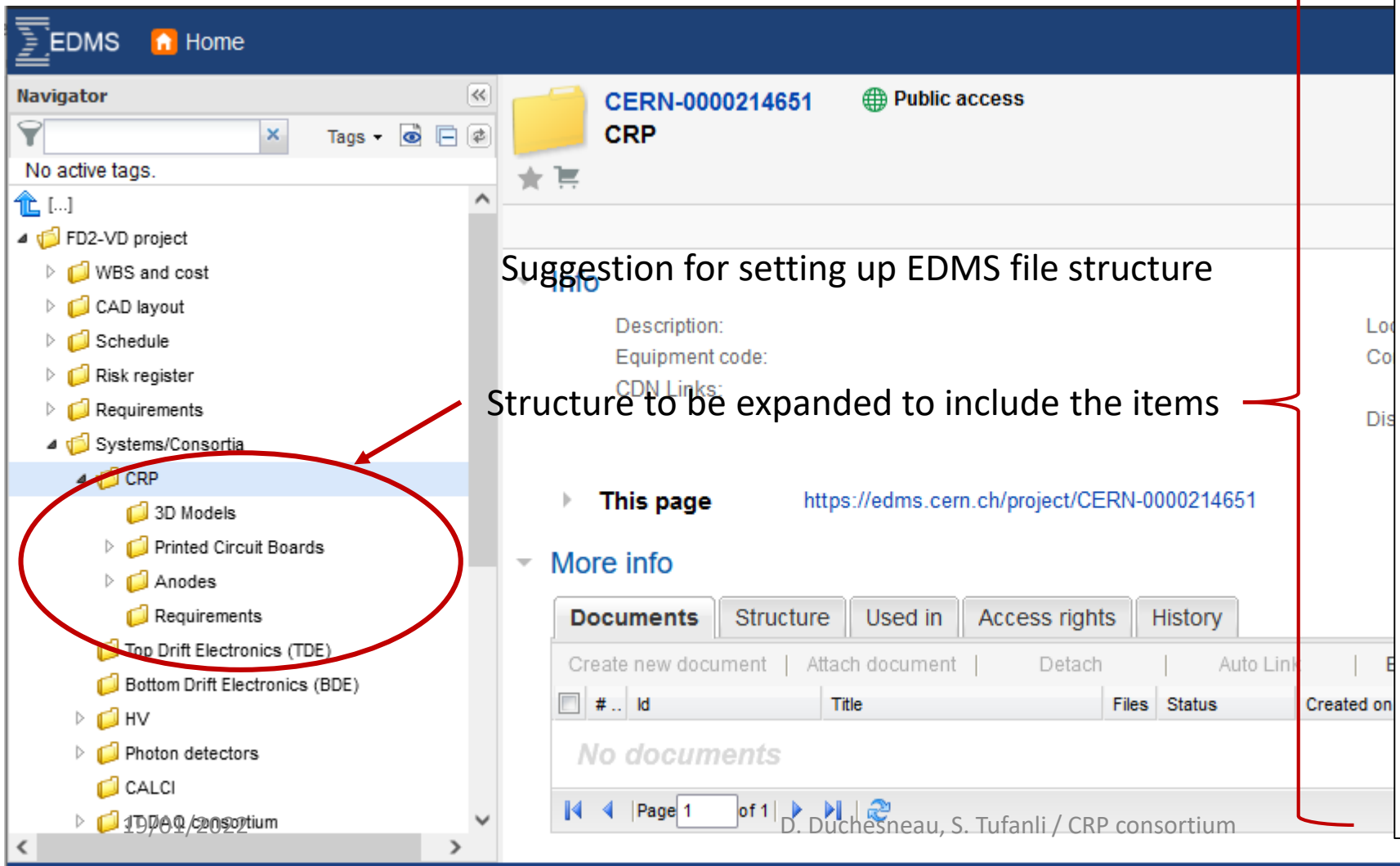
+ for interface teams (cathode, TDE and BDE)

- IJCLab (cathode structure) contact: Fabien/Philippe
- IP2I Lyon (TDE) contact: Dario
- BNL (BDE) contact: Cheng-Ju
- I&I teams: superstructure and CRP installation contact: Jim

In view of the PDR preparation :

For the drawings, specs, requirements, models etc.. of the CRP we will use the EDMS structure under the CRP area: https://edms.cern.ch/project/CERN-0000214651

Several files with presentations, drawings, updates of the different CRP components exist and will be loaded.



Example: but may have to follow the TC suggestions

CRP:

- 3D Models
  - Anode
  - Adapter Boards
  - Mechanical frame
  - Top CRP superstructure
  - Bottom CRP support
  - CRP Transport Boxes
  - CRP tooling
- Part drawings
- Engineering notes
- Requirements
- Interface Documents
- Integration and installation
- Instrumentation

DUNE Collaboration meeting next week 24-28/2022:

We have 2 parallel session slots for the CRP consortium:

Wednesday Jan 26 : 8:00am-9:30am and 10:00am-11:30am CT

(15:00-16h30 and 17h-18h30 Geneva time)

Preliminary agenda

- - General information: schedule, CRP1, CRP1mod, CRP2, PDR
- - CRP1 tests summary and possible future modification plan (Chris)
- - Design updates for the second CRP:
  Anodes, edge connectors and adapter boards (Bo)
  Composite frame (Benjamin)
- - Short update for component procurement, status of purchases and maybe plan (schedule) for the CRP2 production (Serhan/DD)
- - 50L tests with +-30 and edge connectors (TBC)
- - Bottom CRP support structure design (Ian)
- - Top CRP super structures integration (Nicolas)
- - CRP factory activities (Yale, Chicago, Grenoble?)
- - PDR preparations, status of documentation, etc (DD/Serhan)

The END