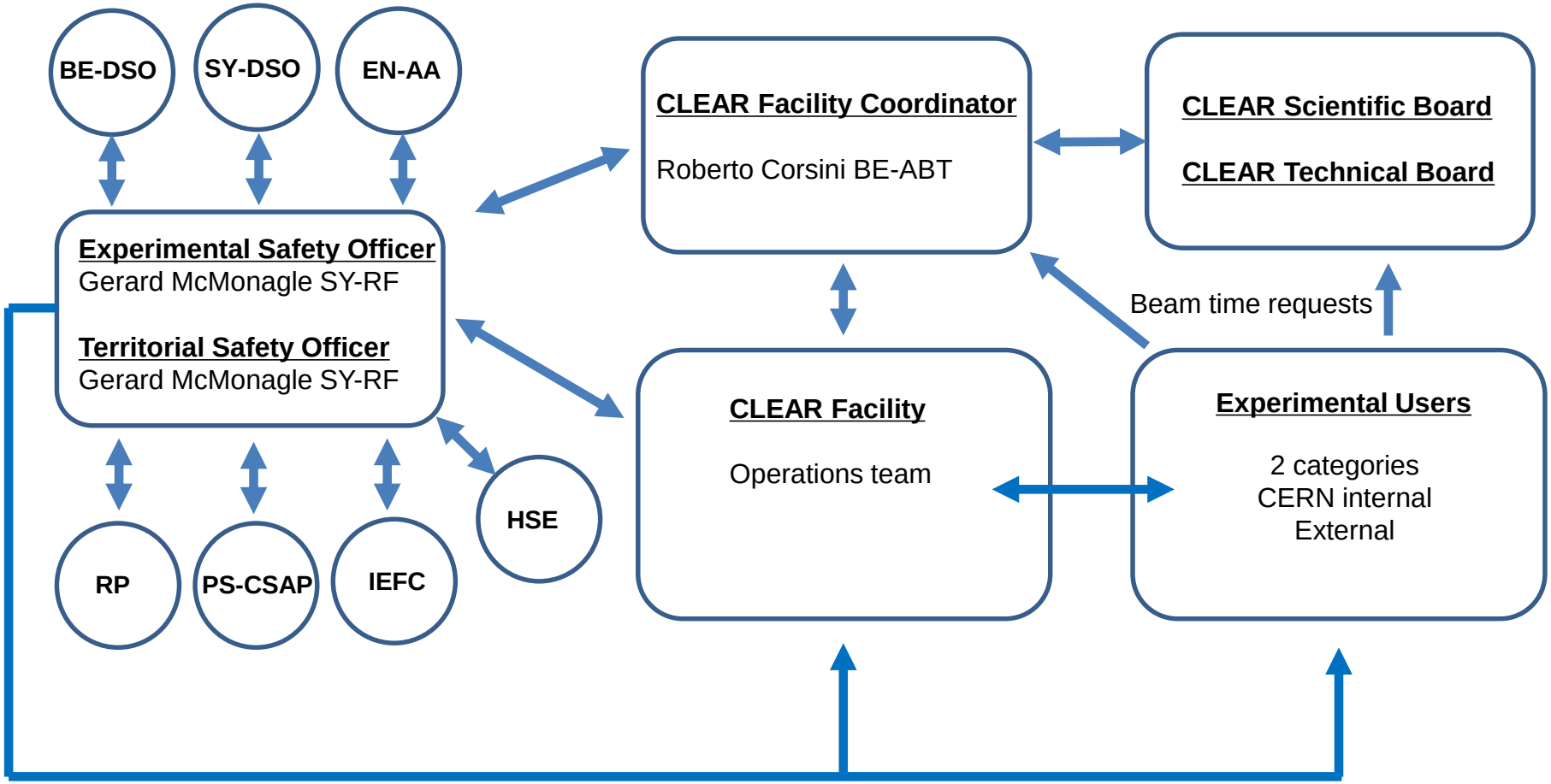
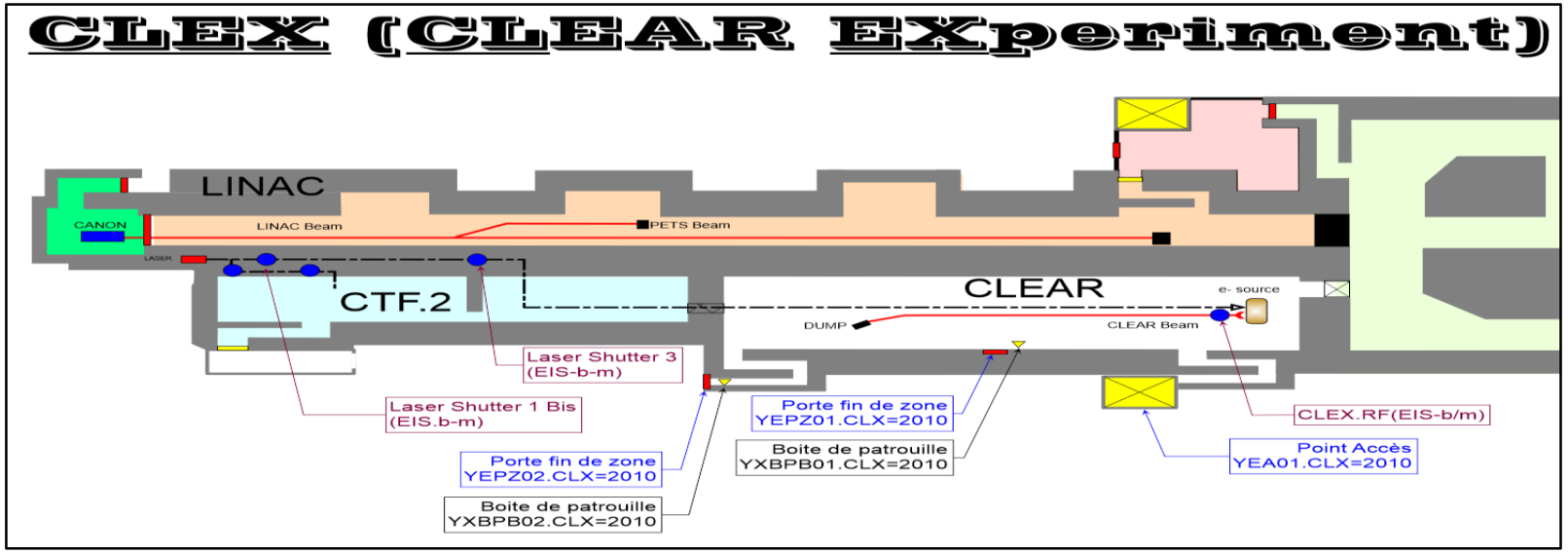
General Overview of Safety Matters in CLEAR Facility

Safety Organigram



Safety recommendations after approval
(Approval procedure in later slide)

Main Safety Hazards in CLEAR



The radiation hazards associated with the CLEAR experiment, which involves accelerating a high-intensity electron beam when the LASER and RF are in operation, are taken into account in the personnel protection system.
Details can be found in links below

Modification of CLEX (CLear EXperiment) access safety system due to exposure to radiations related to the CLEAR Beam
https://edms.cern.ch/document/2332247/1

CLEAR functional specification before ECR
https://edms.cern.ch/document/990217/1.3

Other risks such as electricity, use of gases and ergonomics require the users and operators to follow the appropriate training required by CERN before access is authorized.
Appropriate PPE must be worn.
All equipment for experiments installed or removed from facility is registered in RP TREC tool.

Further security measures

- Beam operation only allowed when operator presence in CLEAR control room
- Additional Laser shutter installed, operated manually with key in control room
  - Shutter closed if operators need to leave control room for short time (e.g. Toilet or lunch break)
- Operations Instructions memo to CLEAR operations team
  - EDMS Document 2507888 https://edms.cern.ch/document/2507888/1

EDMS Number 2507888 11th March 2021

MEMORANDUM

To : CLEAR operations team

From : G. Mcmonagle SY/RF

Objet : Operational procedures for CLEAR facility while awaiting ECR change

In order to allow the CLEAR facility to run while awaiting the implementation of the ECR to the personal protection system, the following instructions shall be implemented when the machine is in beam mode (i.e. beam permit).

1. Setting up of beam, beam experiments.

An operations team must always be present in the control room, (Building 2008), supervising beam activities. Minimum two persons (one can be remote connected by zoom). In case of absence of the operator in the control room, the following actions must be performed to prevent the possibility of unsupervised beam.

Short absence (e.g. Toilet break, lunch)
Use the designated key in the control room to close the shutter on the laser during absence or put RF systems to standby.

Overnight
Use the designated key in the control room to close the shutter on the laser during absence and if beam is not necessary immediately the next day turn off the RF systems (inform CCC operations have ceased for the day).

If RF conditioning is required overnight, or a stable RF for beam is necessary the next morning, leave RF on but assure that the designated key for the laser shutter is used to close the shutter (inform CCC operations have ceased for the day).

2. Special Access for Laser experts

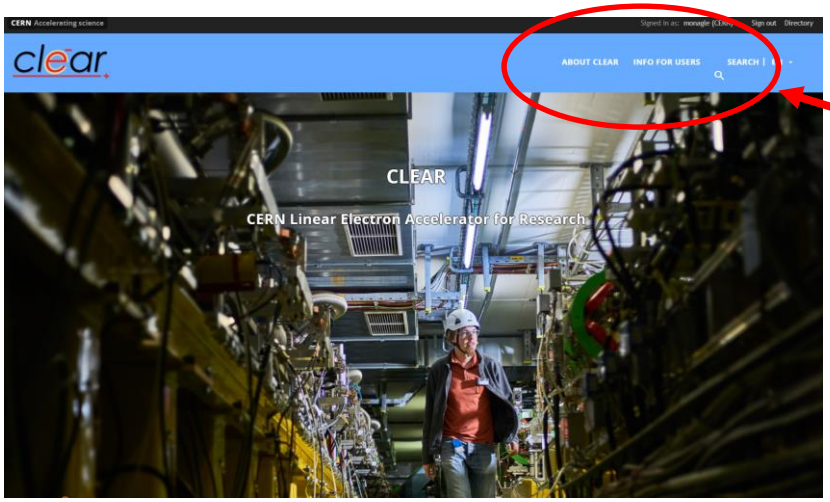
As an extra security turn off the RF systems and ask the RF experts to lock off the power supplies.

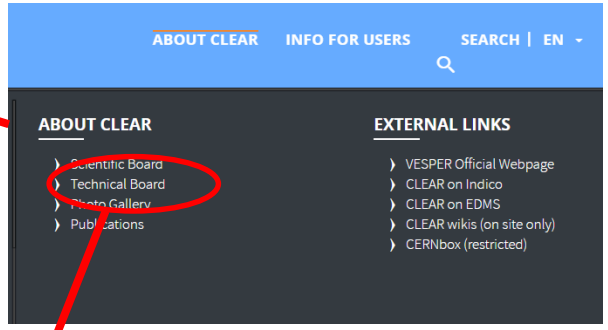
3. Access to machine immediately after beam

For short access to machine put RF systems to standby and implement the laser shutter key.
Contact RP for survey before entry.

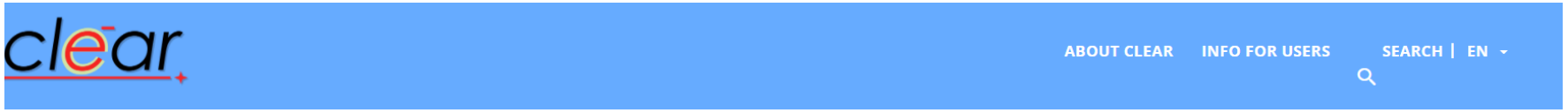
For longer access, turn RF systems off and implement laser shutter key
Contact RP for survey before entry.

G.McMonagle





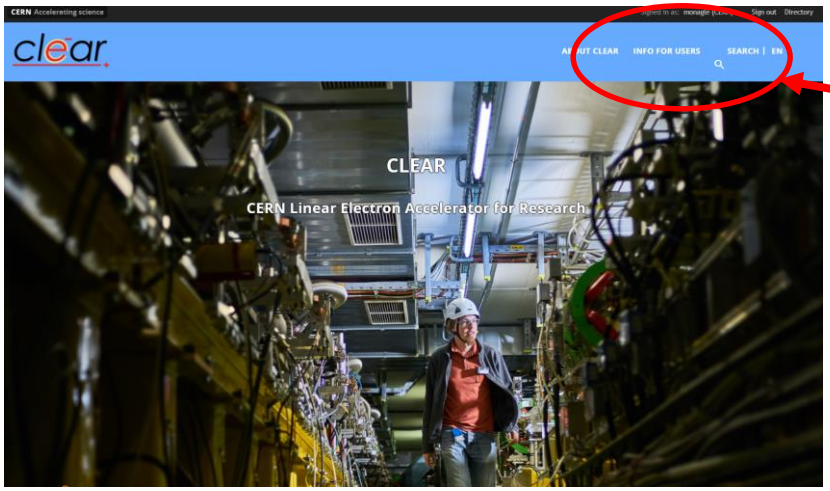
Dedicated web page for CLEAR information https://clear.cern

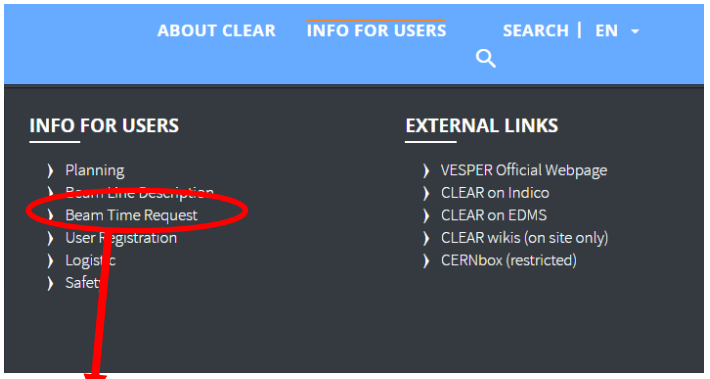


Technical Board

The CLEAR Technical Board meets several times per year to review the technical, safety and radioprotection issues of the proposed experiments and to define the detailed experimental program following the recommendations by the Scientific Board. The board gives the final authorization for the installation of the experiments, needed to get the beam permit within the agreed conditions, and allocate the scheduled beam time.

Members:
Roberto CORSINI (BE-ABP), Facility Coordinator
Gerard MCMONAGLE (SY-RF), Facility Safety Officer
Wilfrid FARABOLINI (BE-ABP and CEA), Beam Expert, Operation
Davide GAMBA (BE-ABP) Beam Expert, Technical Support
Kyrre SJOBAK (BE-ABP and Oslo University) Beam Expert and User Representative
Thibaut LEFEVRE (SY-BI), User Representative
Ruben GARCIA ALIA (SY-STI) , User Representative





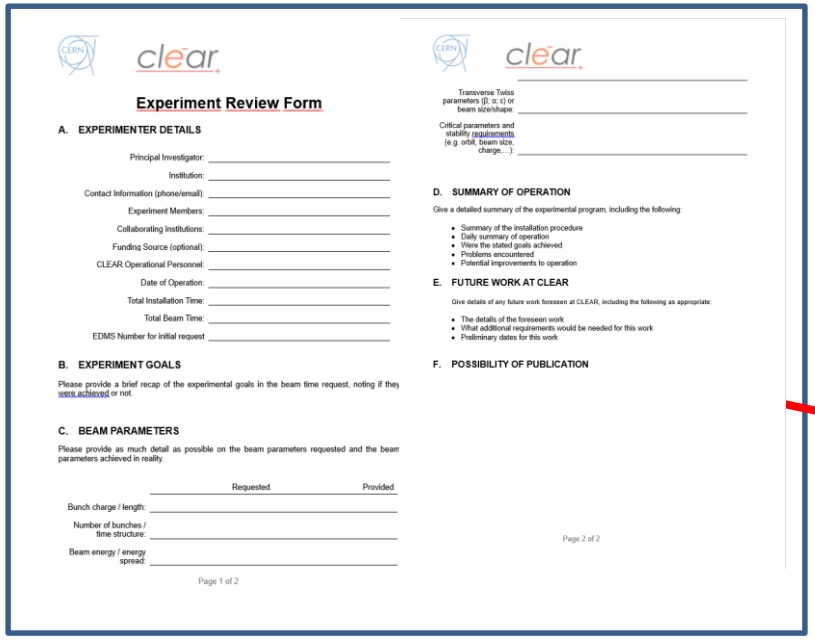
Dedicated web page for CLEAR information https://clear.cern

Beam Time Request

If you need additional informations about the facility, or if you wonder if CLEAR could fit your experimental needs, please contact us at CLEAR-Info@cern.ch.

If you already have a clear idea of the experiment you would like to perform, please download and fill the attached "CLEAR experiment request form" and send it to CLEAR-Info@cern.ch

Attached File(s)
CLEAR experiment request form



Experiment Review Form

A. EXPERIMENTER DETAILS

Principal Investigator:
Institution:
Contact Information (phone/email):
Experiment Members:
Collaborating Institutions:
Funding Source (optional):
CLEAR Operational Personnel:
Date of Operation:
Total Installation Time:
Total Beam Time:
EDMS Number for initial request

B. EXPERIMENT GOALS

Please provide a brief recap of the experimental goals in the beam time request, noting if they were achieved or not.

C. BEAM PARAMETERS

Please provide as much detail as possible on the beam parameters requested and the beam parameters achieved in reality.

	Requested	Provided
Bunch charge / length:		
Number of bunches / time structure:		
Beam energy / energy spread:		

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Transverse Twiss parameters (β, α; ε) or beam size/shape:
Critical parameters and stability requirements (e.g. orbit, beam size, charge,...):

D. SUMMARY OF OPERATION

Give a detailed summary of the experimental program, including the following:

- Summary of the installation procedure
- Daily summary of operation
- Were the stated goals achieved
- Problems encountered
- Potential improvements to operation

E. FUTURE WORK AT CLEAR

Give details of any future work foreseen at CLEAR, including the following as appropriate:

- The details of the foreseen work
- What additional requirements would be needed for this work
- Preliminary dates for this work

F. POSSIBILITY OF PUBLICATION

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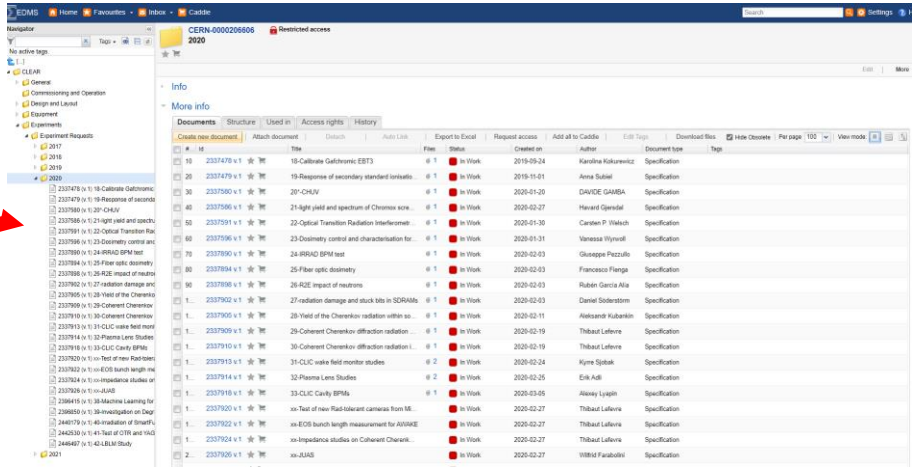
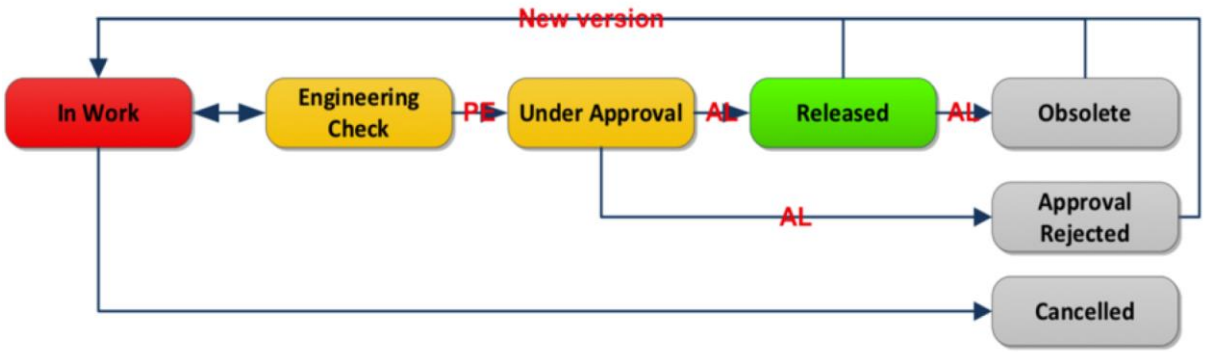
All approved experiments registered in edms



New Experimental request procedure for 2021

- Approval will be done electronically by EDMS
- User application, by email using experimental request form
- EDMS document creation (by designated CLEAR team)



- All stakeholders will be included in approval procedure including safety, RP and HSE as necessary

- Upon approval experiment will be registered in CLEAR planning schedule

Safety Objectives 2021

- Update organigram with new department responsibilities
- Update facility safety files
- Complete information on web interface for users
  - e.g. Recent memorandum on Electrical hazards in Accelerator Complex infrastructures

Thank you for your attention

any questions?