



Tir radio

(radiographic testing)

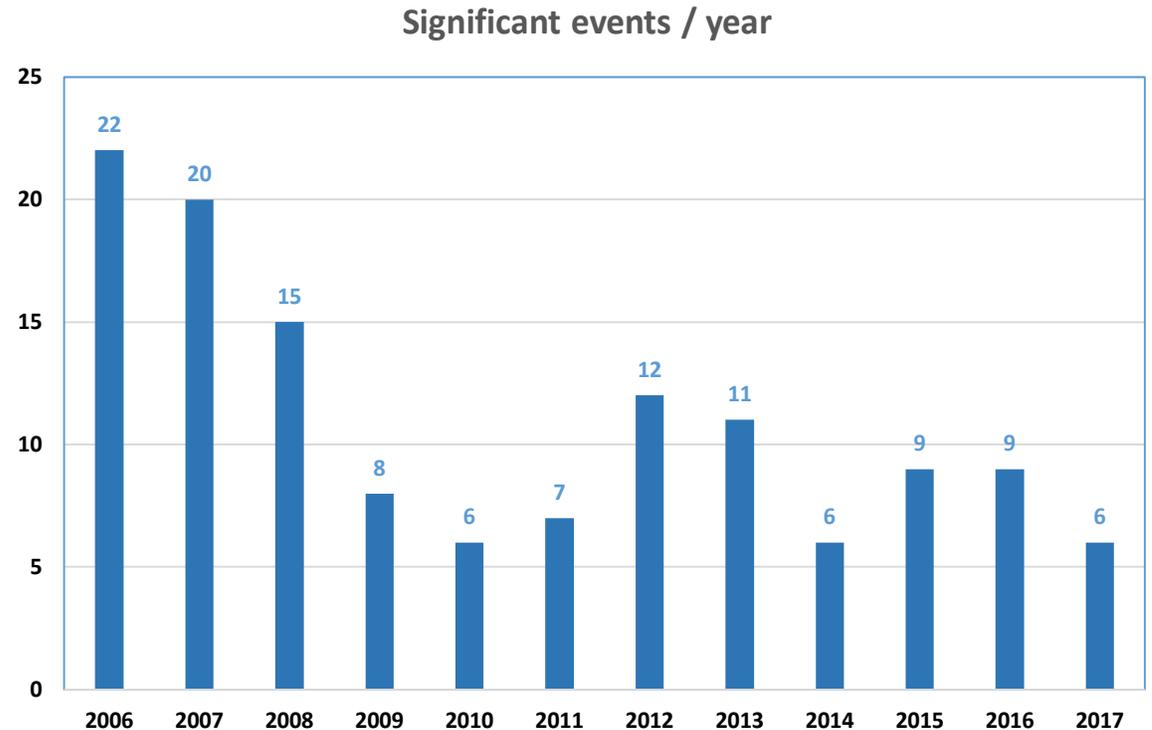
An application protecting operators
from irradiation

28/06/2018



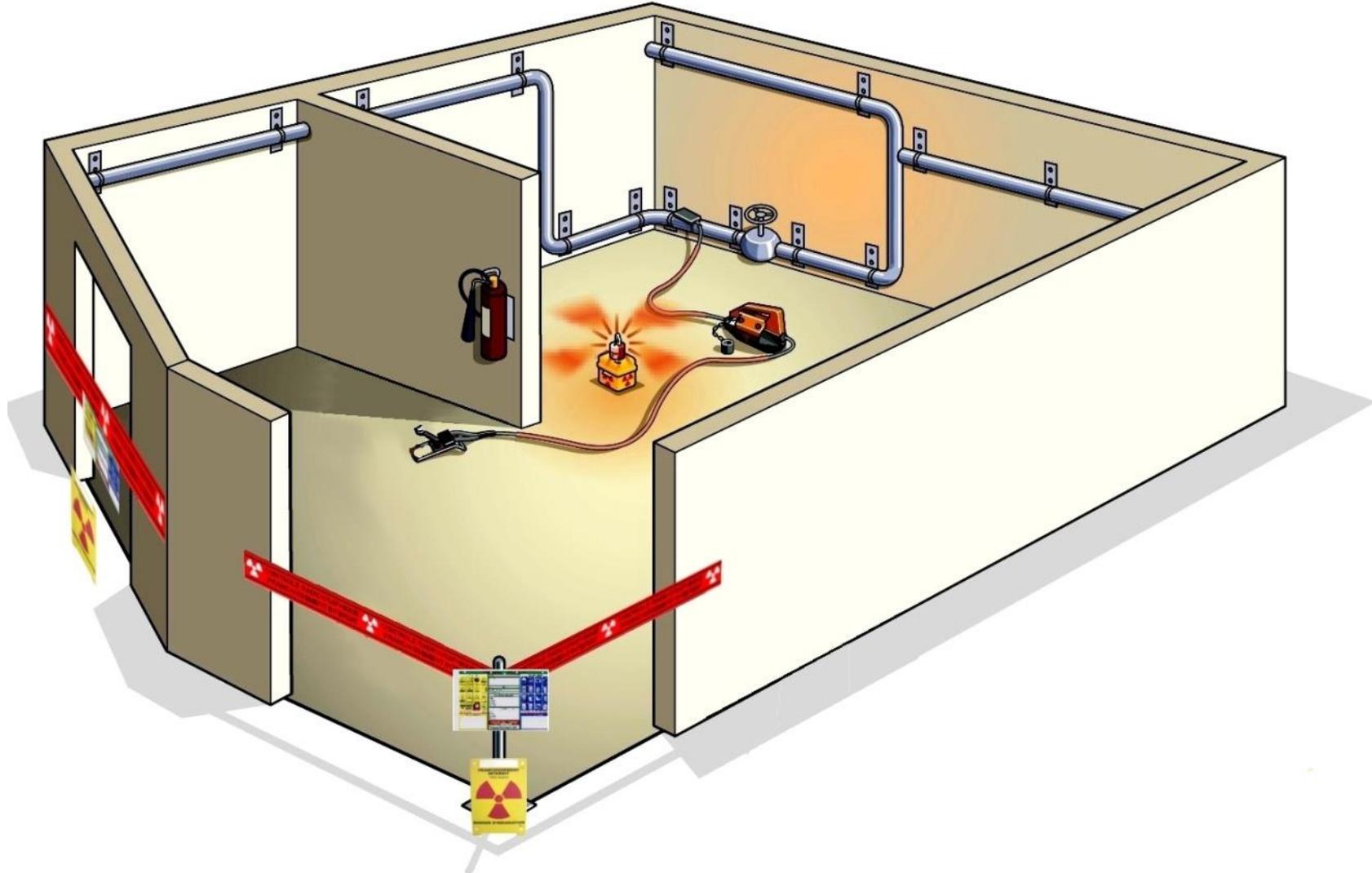
History and state of play

- At the beginning of 2000's : some incidents and significant events were declared on our sites.
- 2003 to 2006 : new French legislation.
- 2007 : internal prescriptions guiding and monitoring the activity.
- RP department is responsible on our sites for the implementation of radiography activities



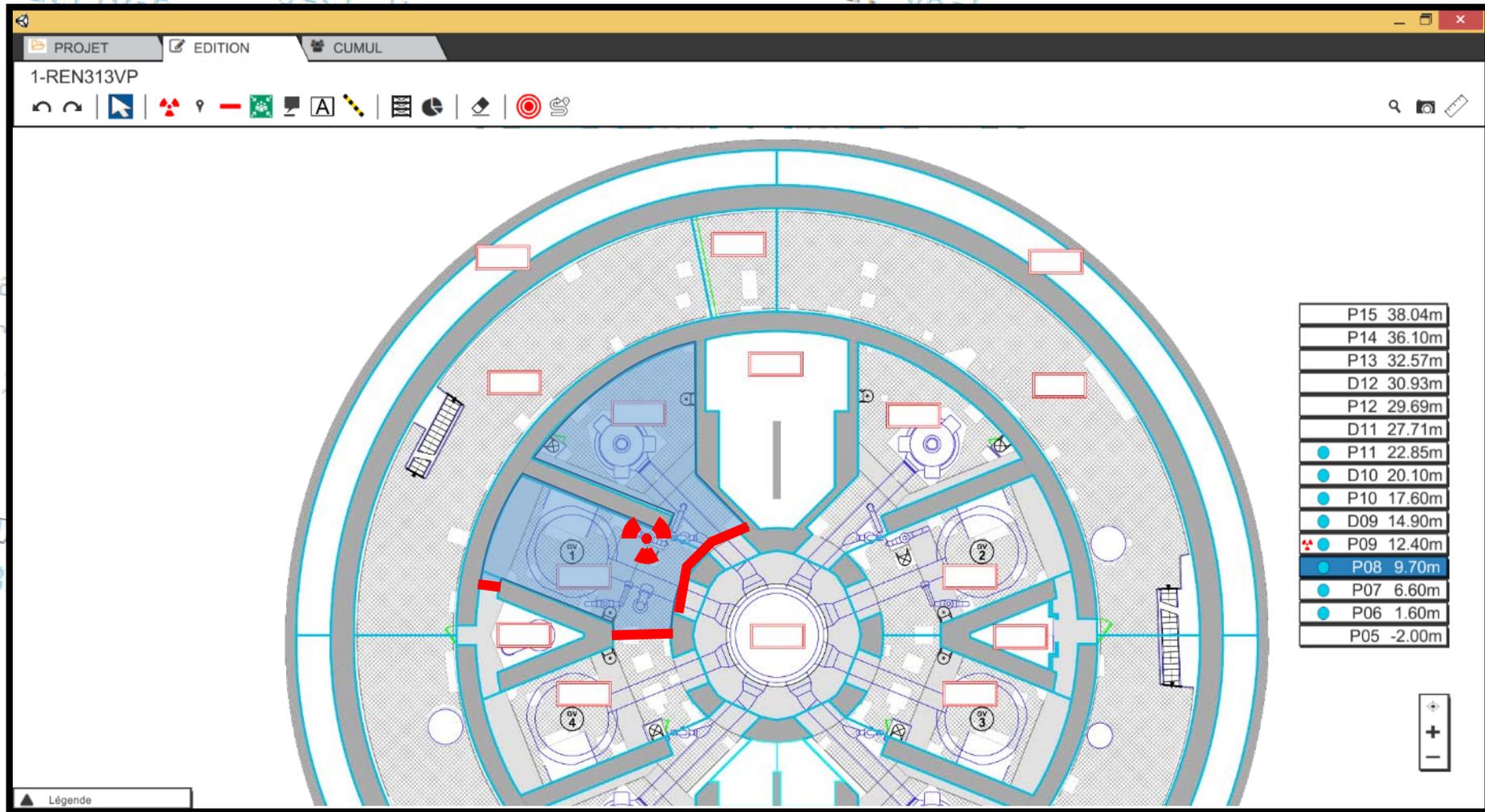
About 100 000 ejections - insertions / year on EDF nuclear sites and about 400 workers in 10 firms are directly concerned.

Demarcating the boundary of a controlled area for radiographic testing



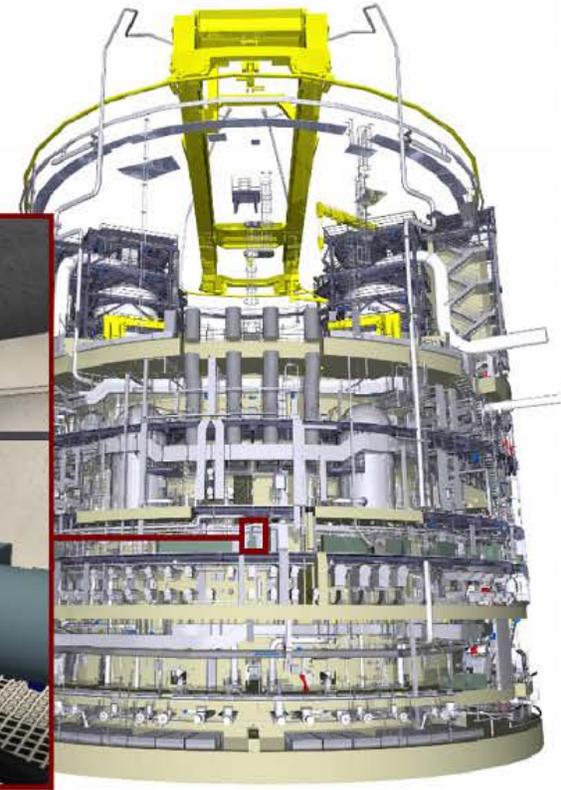
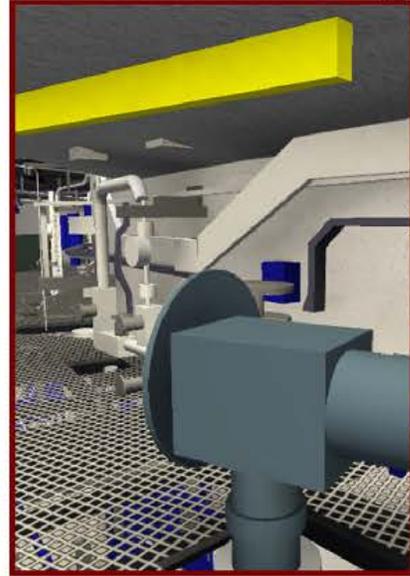
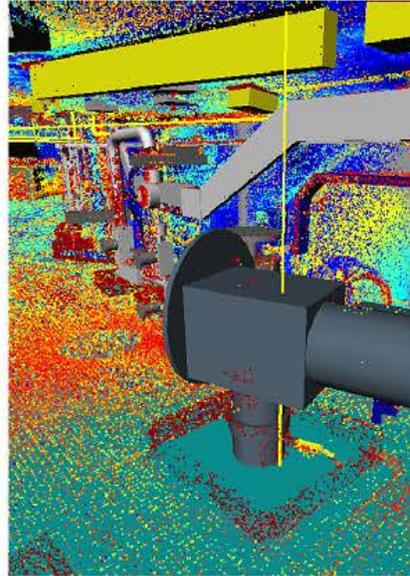


The App : Tir Radio

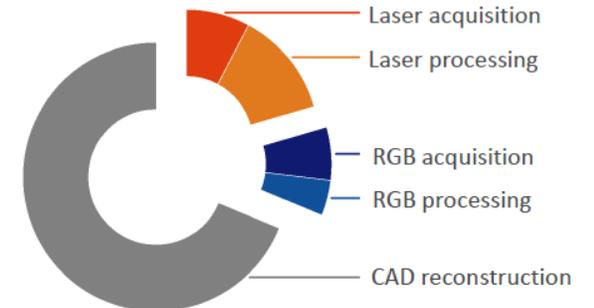


Based on as built digital mockup

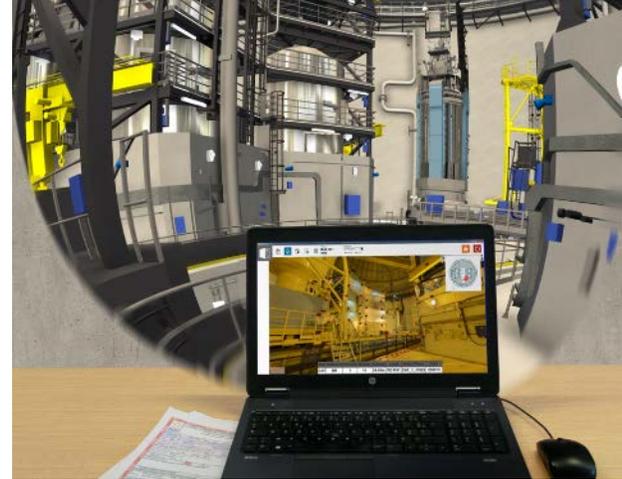
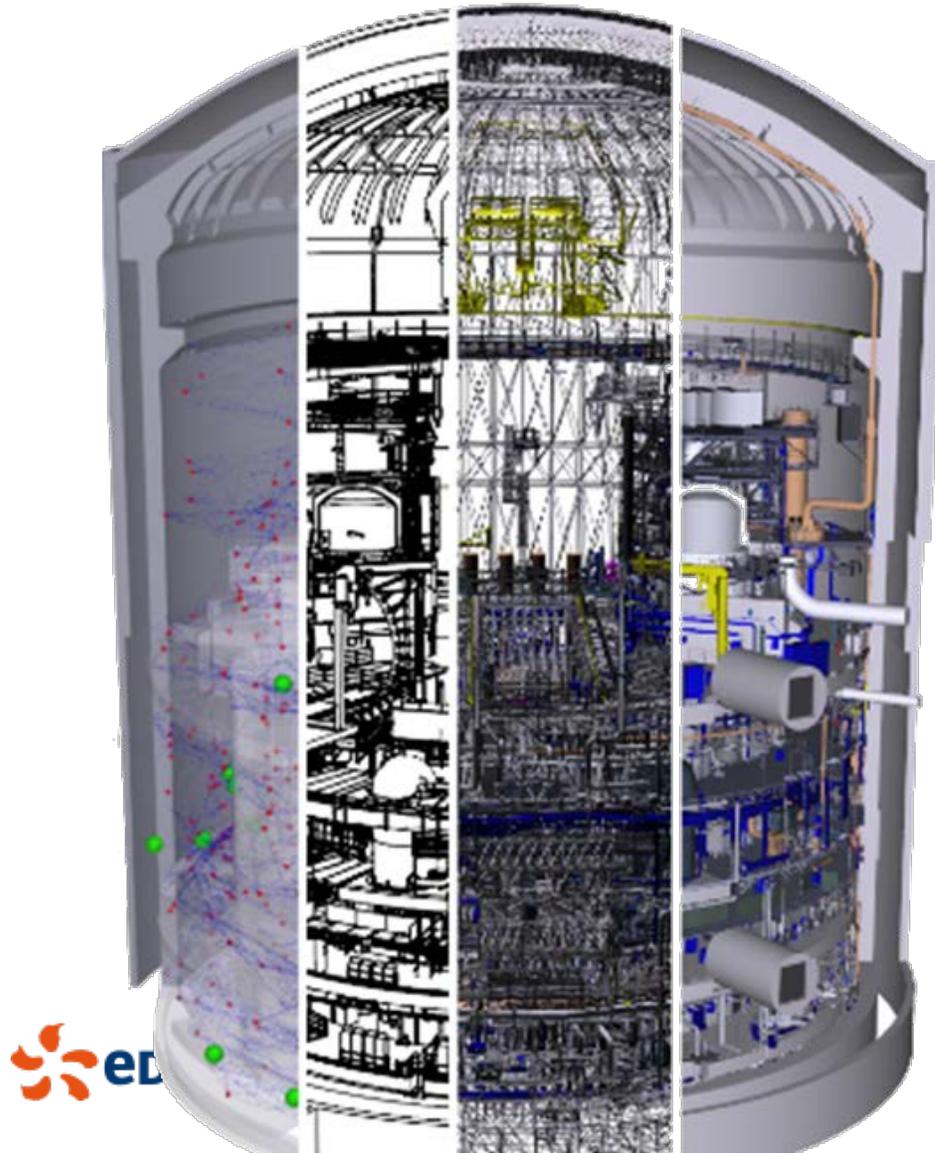
Accurate to a few centimetres



GLOBAL TIME ALLOCATION

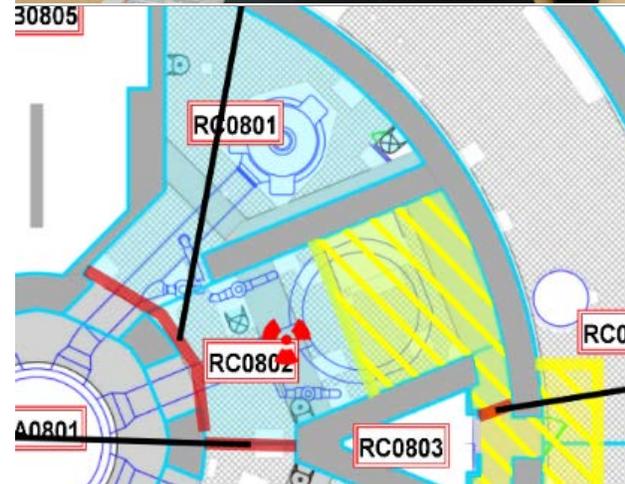


Shared data



edf pulse

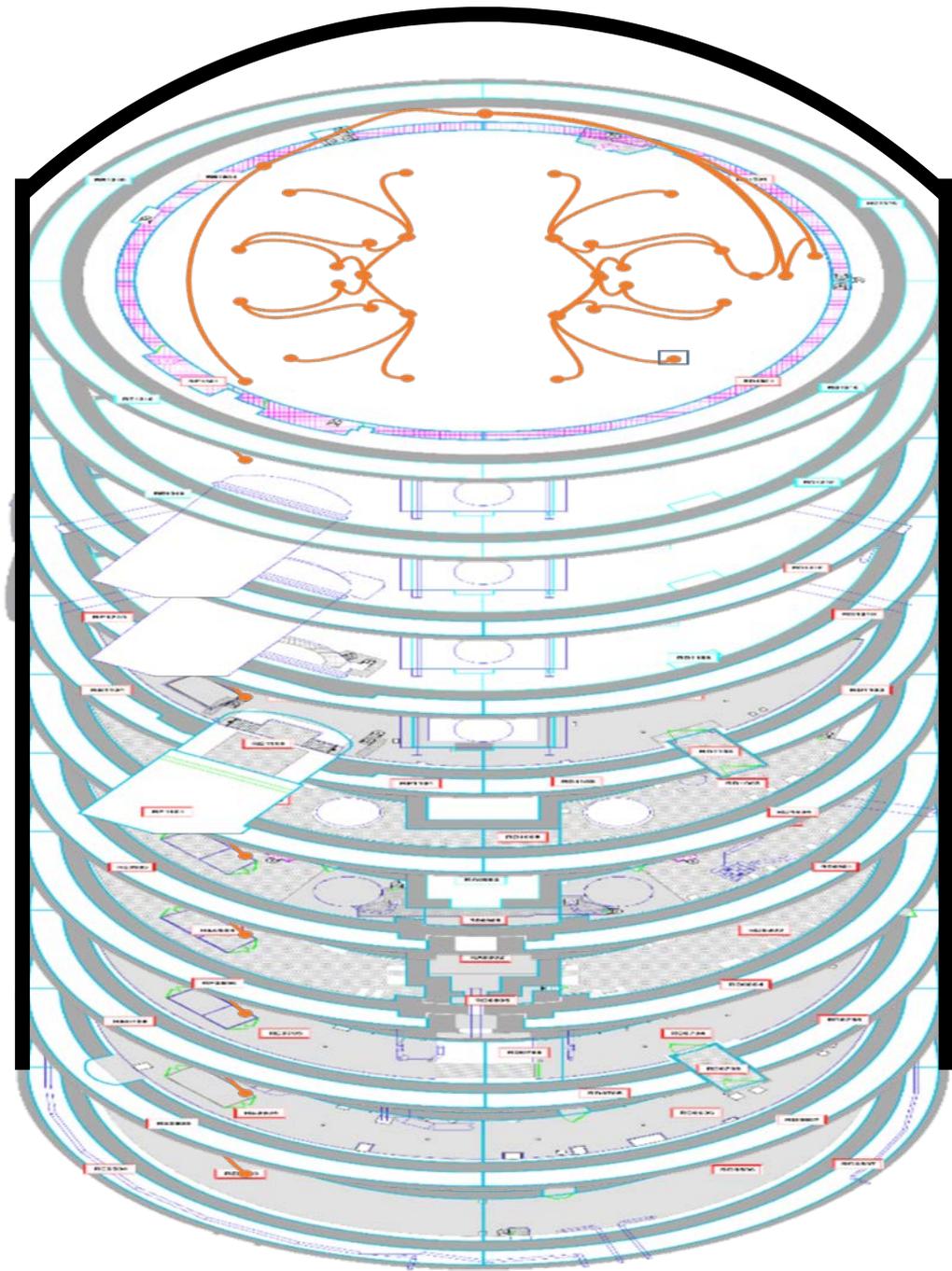
VVProPrépa

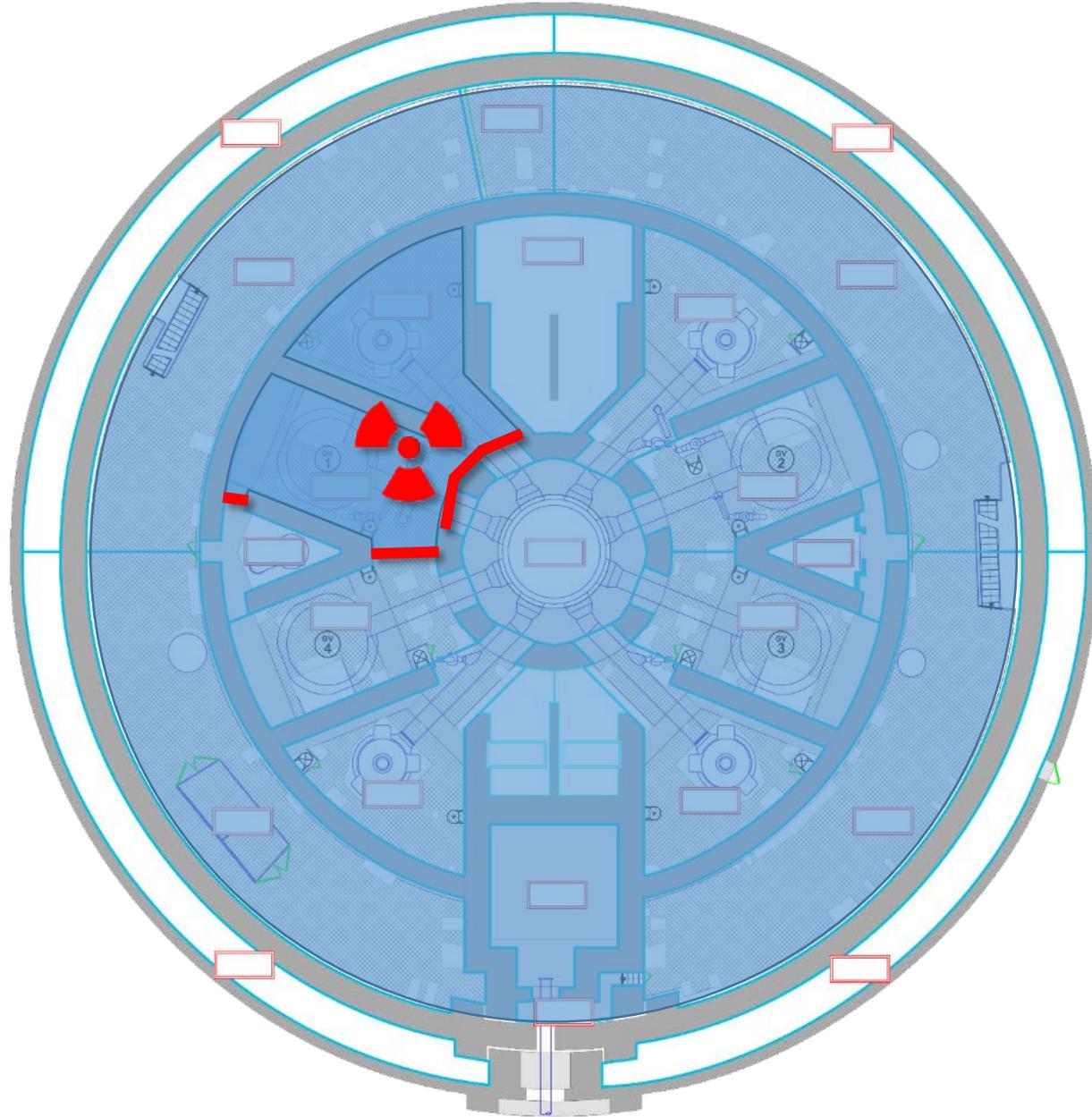


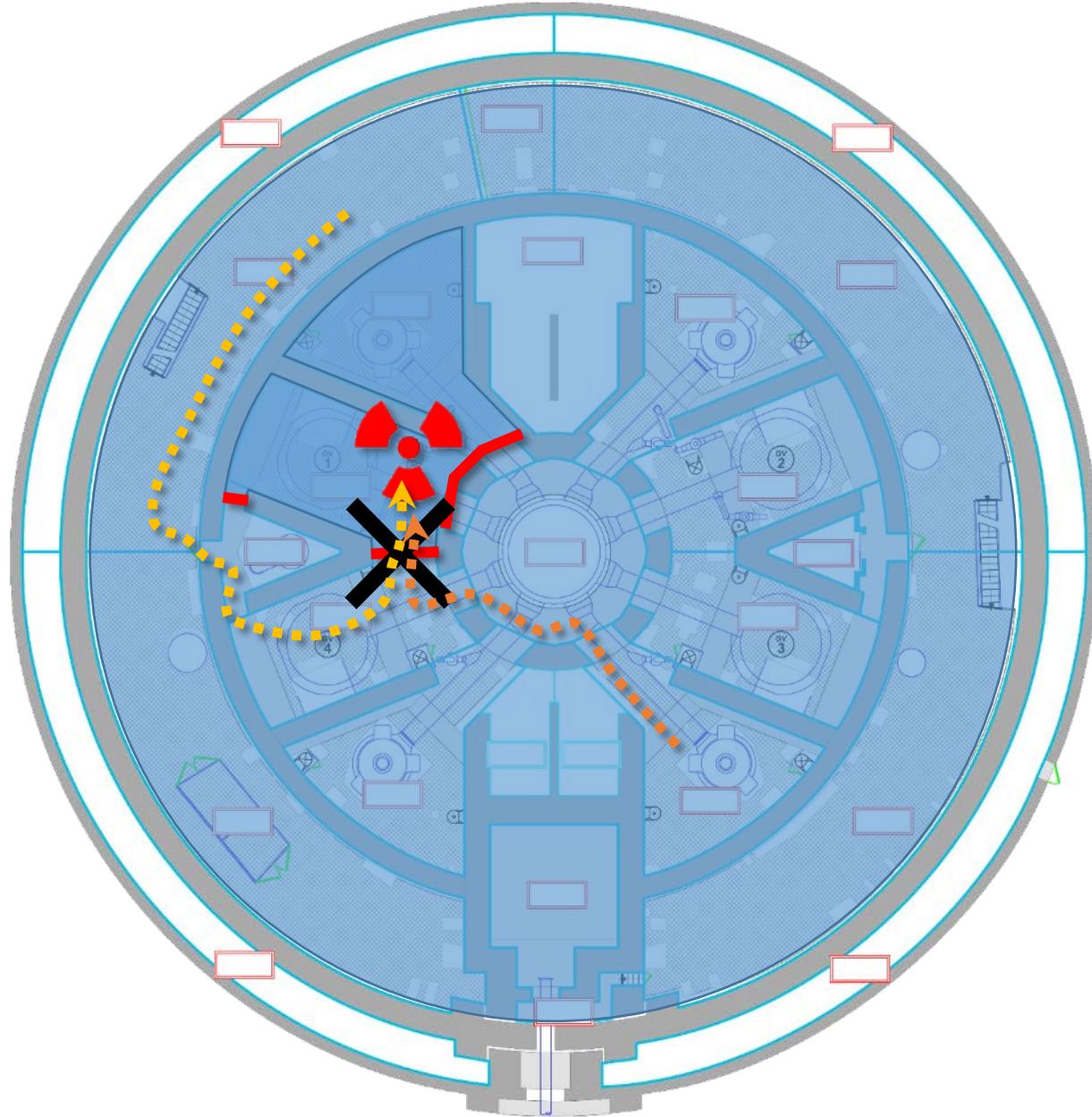
Tir Radio



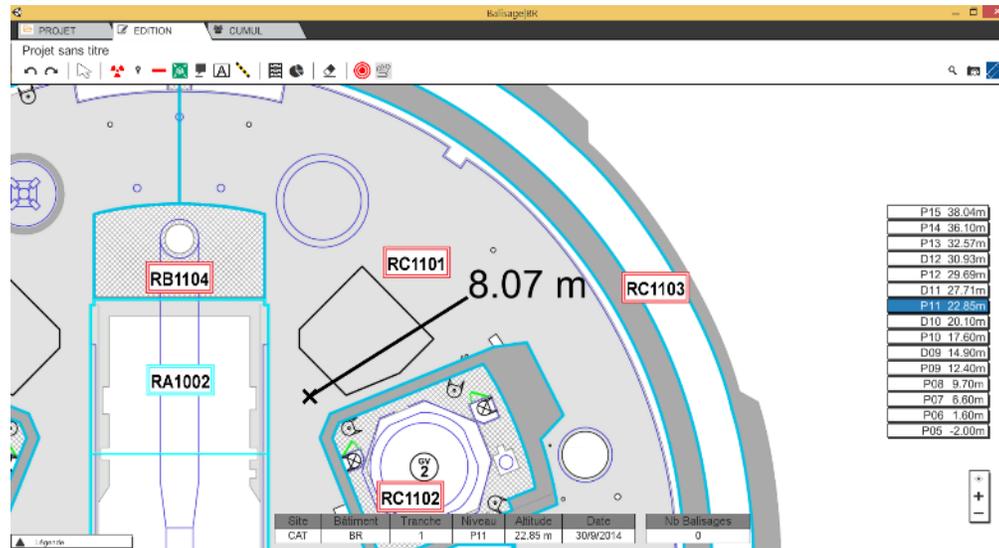
VVProPréjob



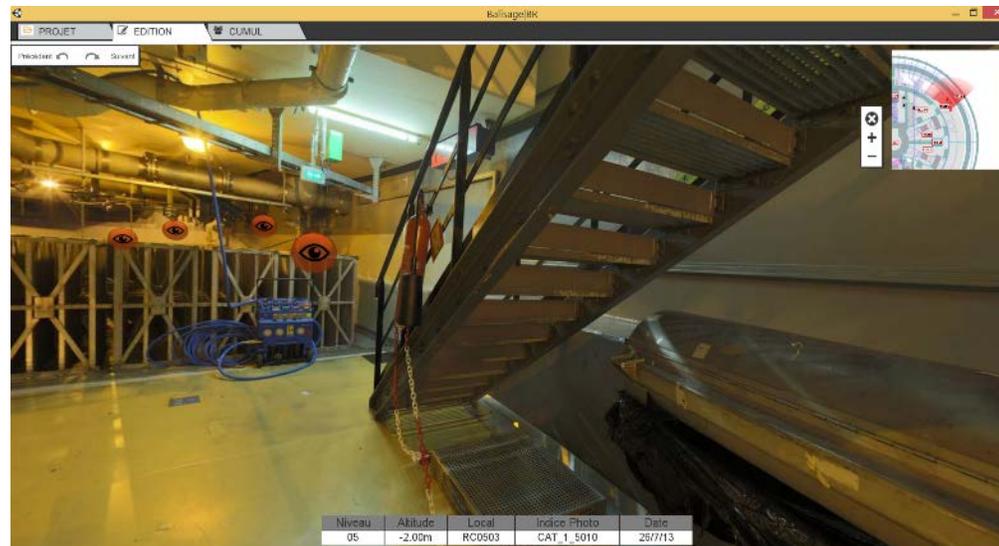




Understanding the building layout

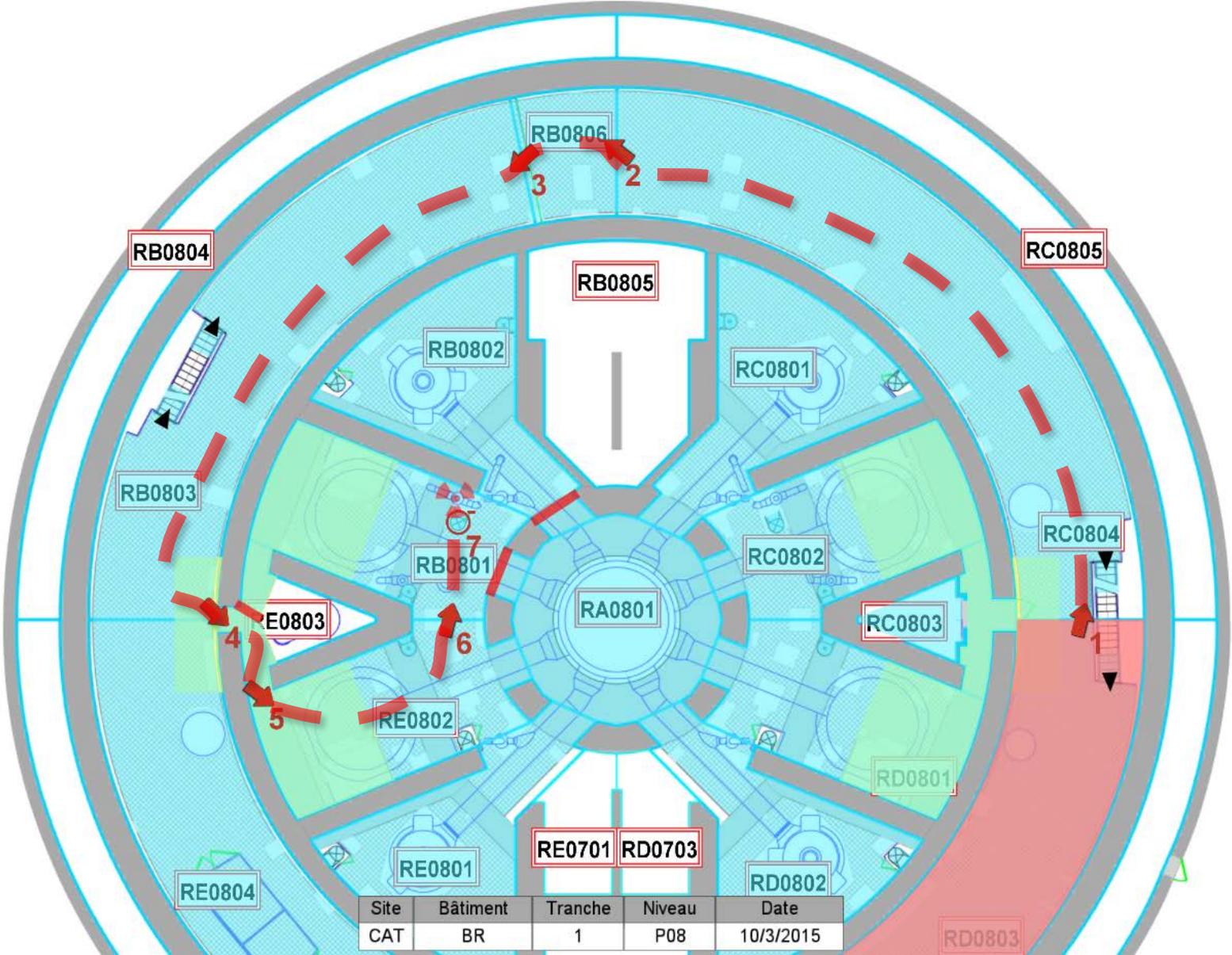


- Accurate maps featuring all accesses (stairs, ladders, elevators, doors)
- Simple measuring tools



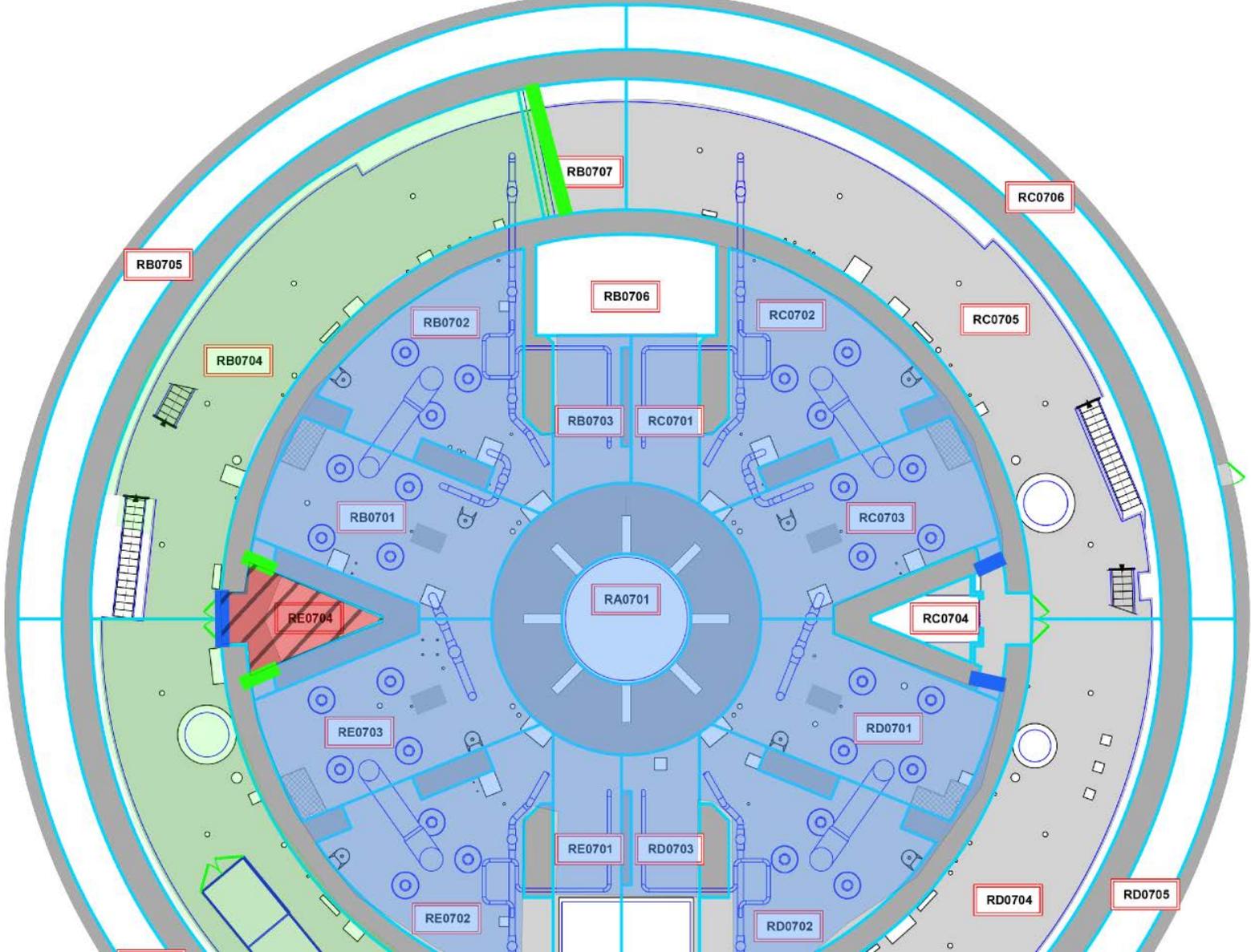
- Panoramic views

Finding all paths leading to the radioactive source

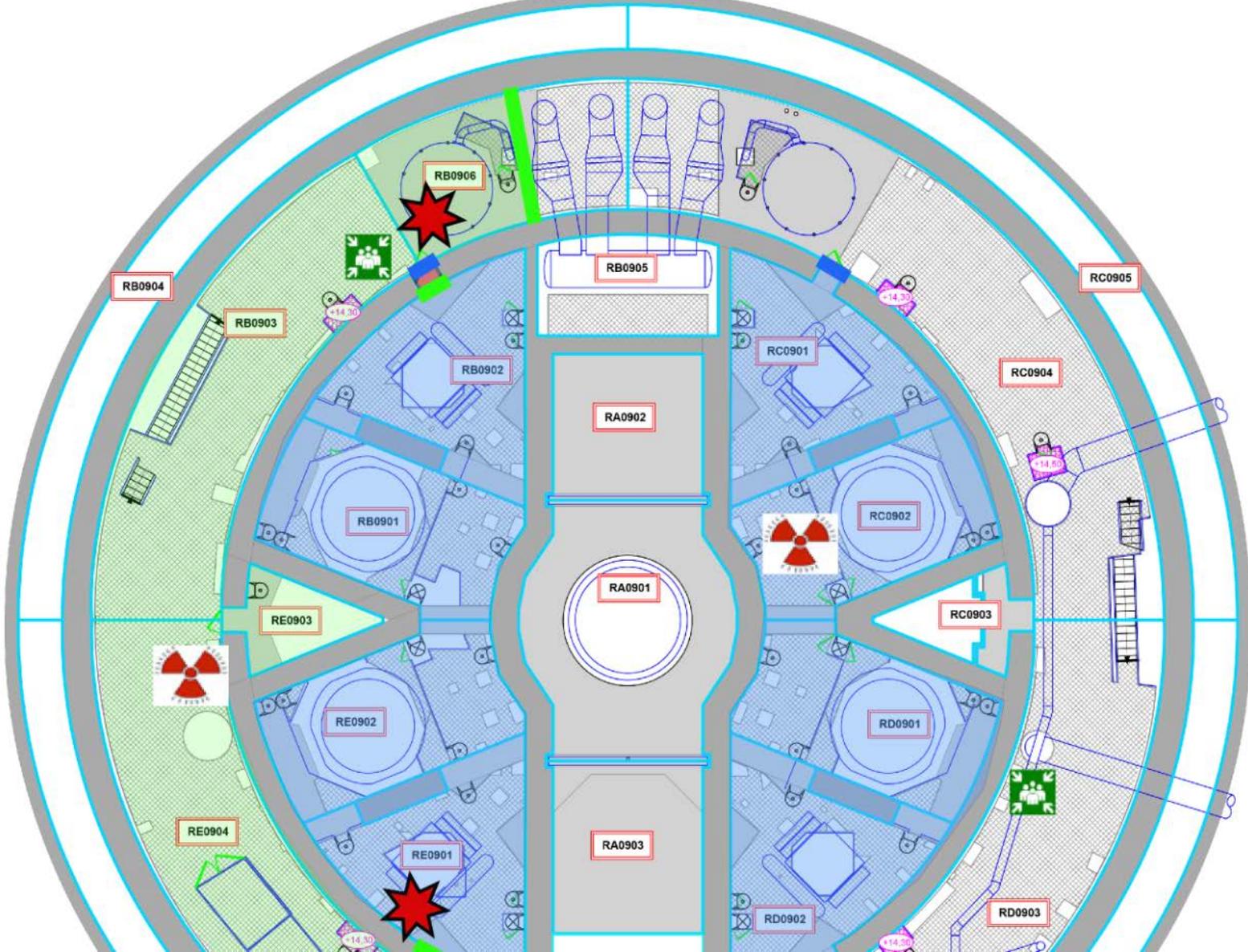


Site	Bâtiment	Tranche	Niveau	Date
CAT	BR	1	P08	10/3/2015

Simultaneous radiographic tests : detection of overlapping controlled areas



Simultaneous radiographic tests : detection of overlapping controlled areas



Expected gains and feed-back

Main expected gains for the EDF fleet :

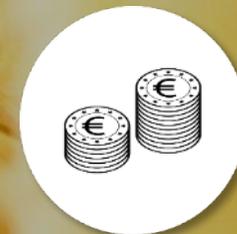
- Serenity and gain when planning activities in the reactor building
- 400 k€ due to non-cancellation of radiography activities if a path is detected in the boundary at the last moment
- At least, 1 significant event avoided per year
- **No overexposure of a worker**

First feed-back :

- Repeatability for the next outages
- Pre-visualization of boundary plans, virtual visits during preparation (reactor building closed)
- Acceptance of all actors of the process

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