

# **INSTRUMENTATION FOR EXPERIMENTATION IN LIGHT MACHINES AND IN ESS**

**F. d'Acapito**

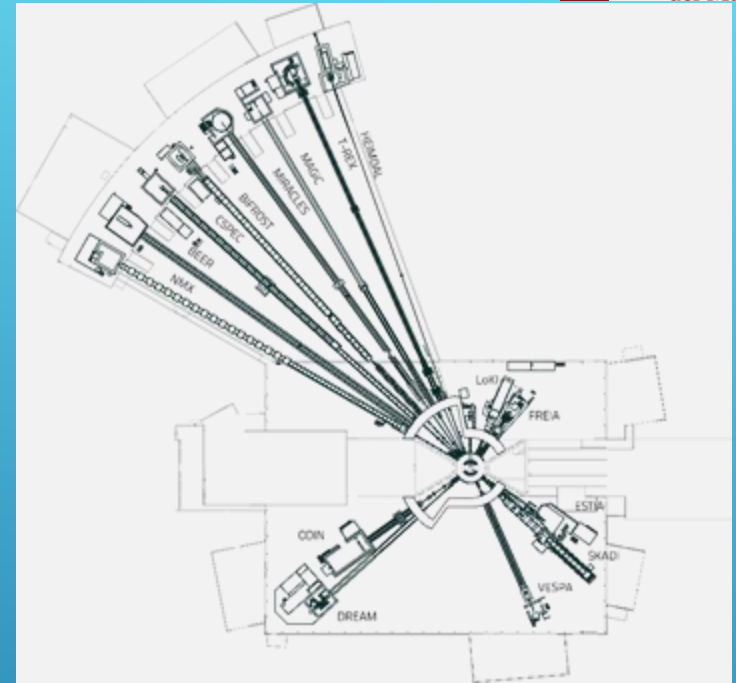
**CNR-IOM-OGG Grenoble**

**[francesco.dacapito@cnr.it](mailto:francesco.dacapito@cnr.it)**

# BEAMLINES AND SOURCES

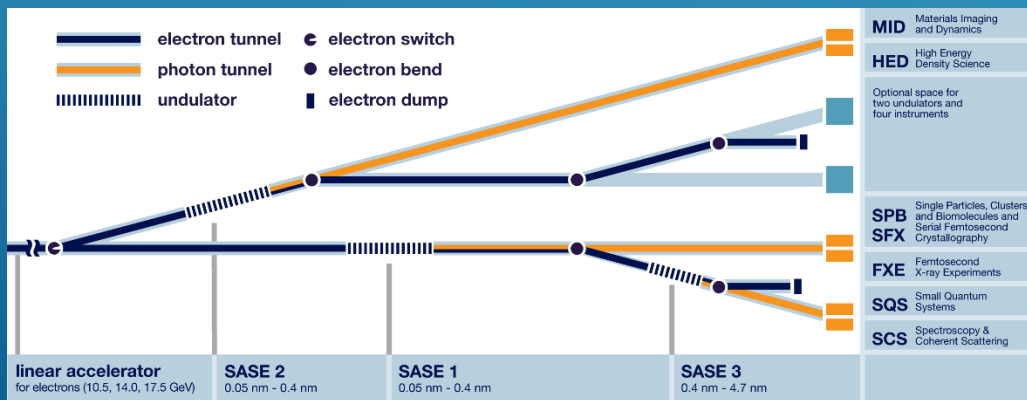


Synchrotron



Neutrons  
(Spallation Source)

## X-FEL

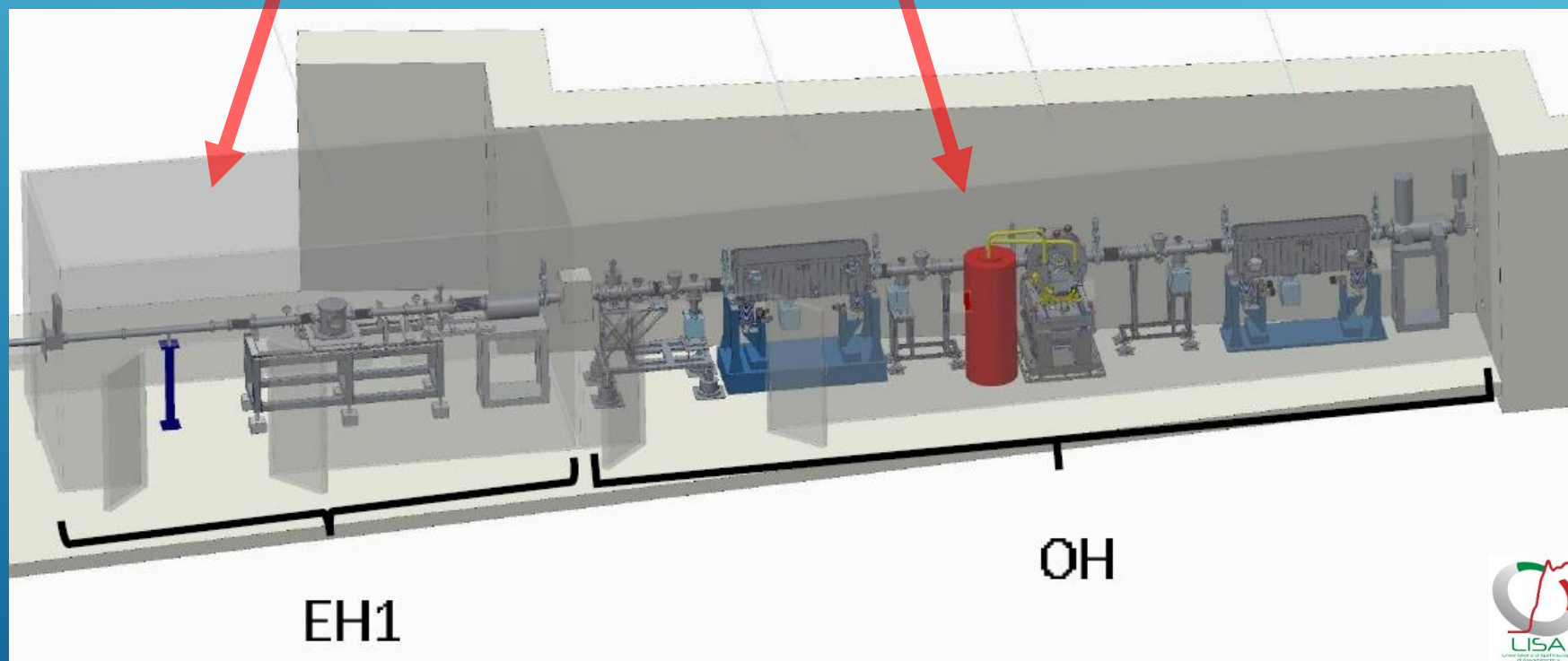


- Main points**
- Budget: a few MEE
  - 10-40 BLs per source
  - High variability of products

# INFRASTRUCTURES

Hutches  
X-ray, neutron shielding

Distribution networks:  
LN2, Fluids, gases, electricity,  
high speed Ethernet.

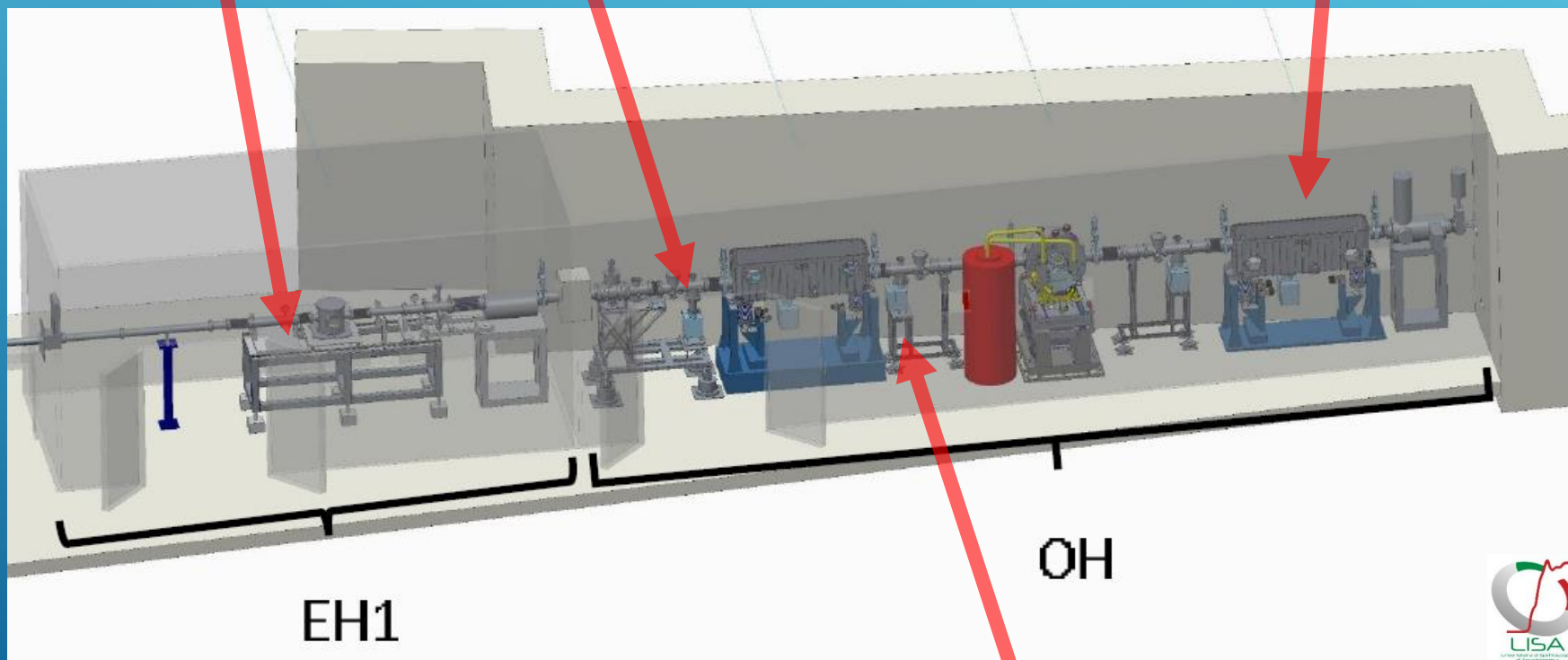


# VACUUM AND MECHANICS

Motorized  
Benches

Fixed  
girders

Vacuum chambers  
High – moderate  
vacuum



EH1

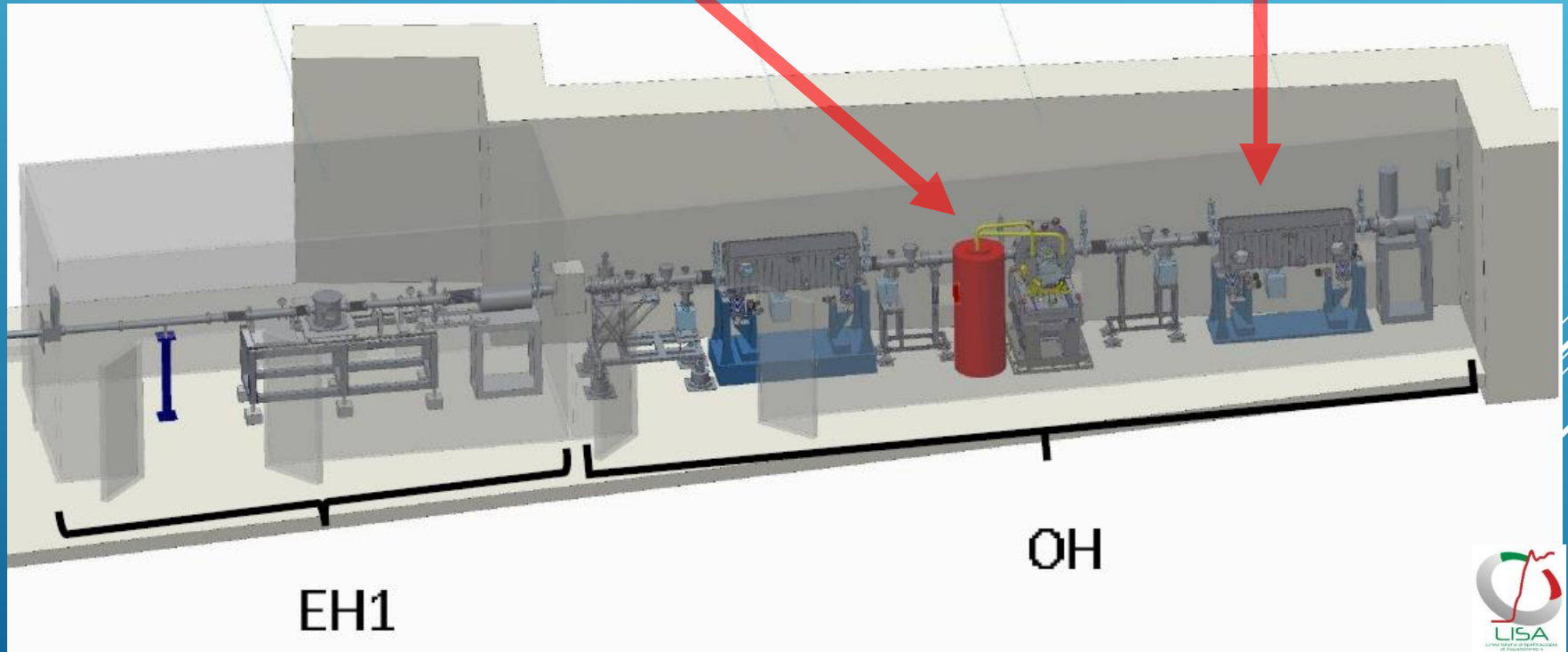
OH

Pumps and  
vacuum monitoring

# OPTICAL ELEMENTS

Monoch. Crystals  
Silicon, Ge, InSb  
Gratings

Mirrors & guides  
Flat, cylindrical, elliptical  
High aspect ratio  
Cooling needed

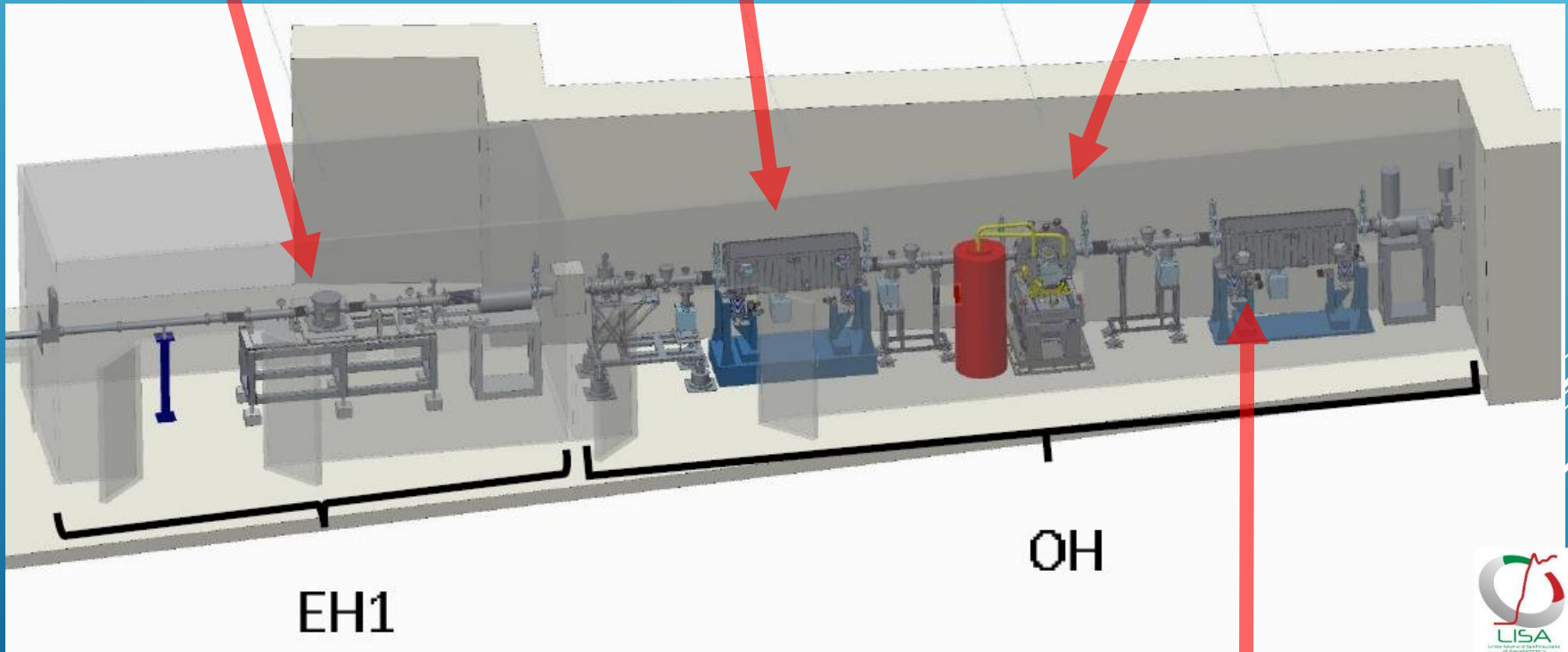


# PRECISION MECHANICS

Sample  
(micro-nano)  
positioning

Mirror  
benders/coolers

Monochromators  
Repro.  $< 1\mu\text{rad}$ ,  $1\mu\text{m}$



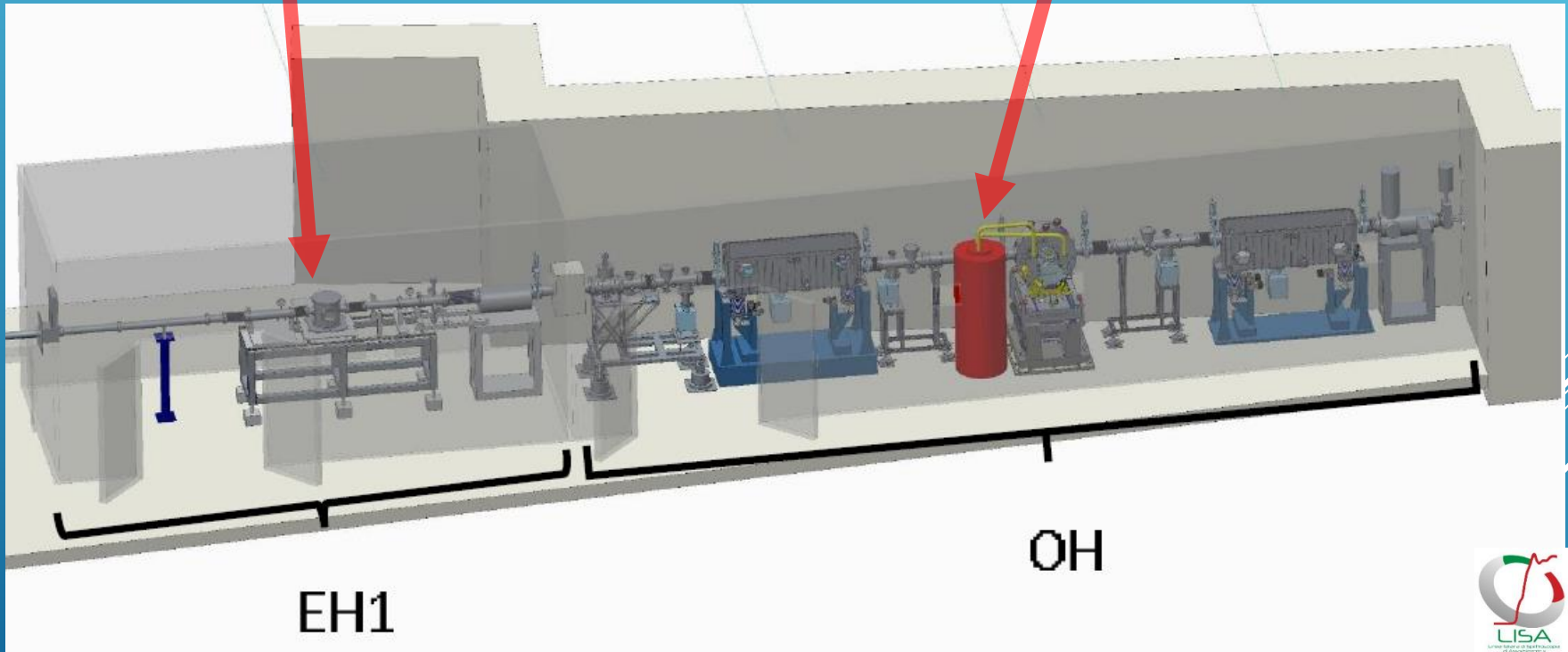
OE positioning



# CRYOGENICS

Sample cooling  
(LNT, LHe, below 1K)

Monochromators  
Cooling (LNT)

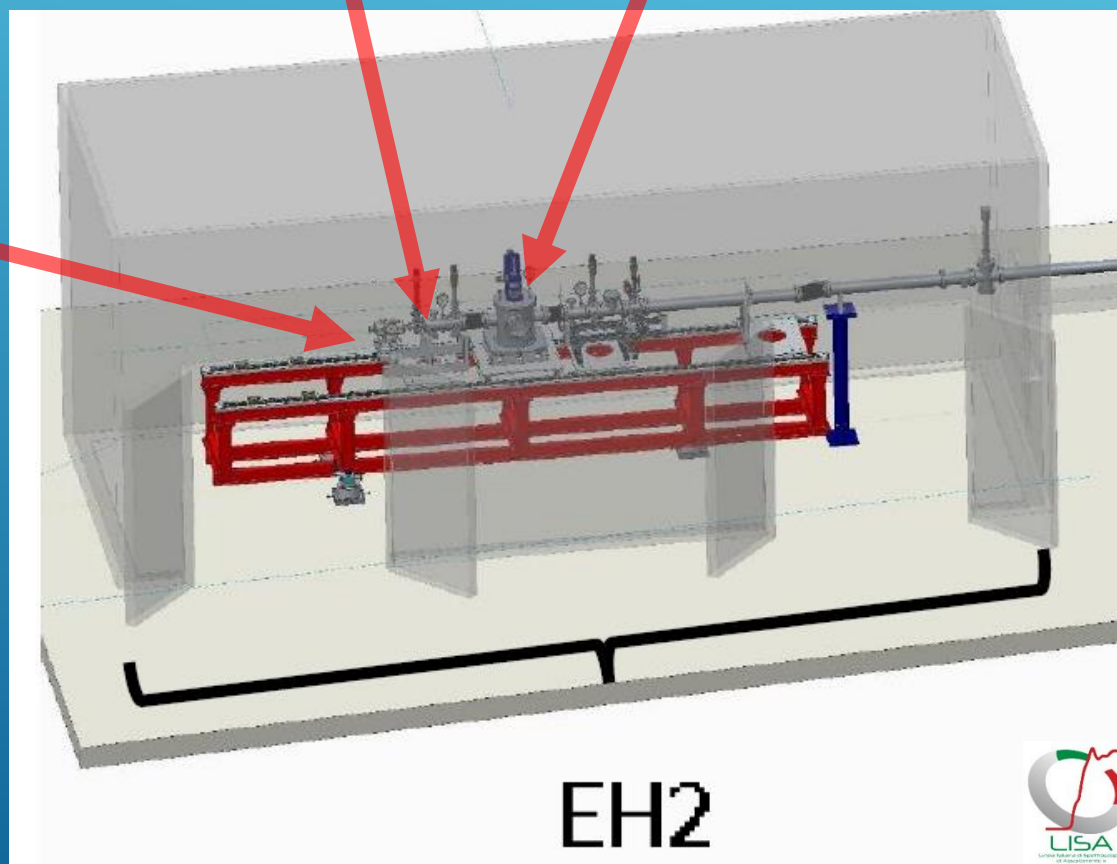


# DETECTORS & ELECTRONICS

Ion chambers  
p-Amperometers

HP-Ge or SDD  
Peak analysis  
electronics

2D detectors  
Image  
analysis



**EH2**



# CONCLUSION

- **Several production sectors involved**
  - **Small productions, highly customized**
  - **Peak load periods ahead**
  - **Continuous beamline upgrades**
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