PANDA Mechanics

Lars Schmitt, FAIR

CM XLVII, GSI, Dec 9 2013

Agenda

PANDA Hall Status

Racks and Services

Hall Planning Steps

MEC Agenda

Mechanics Workshop at CM XLVII.

Monday 09 December 2013 from **09:00** to **16:00** (Europe/Berlin)
at GSI (TSR)

Monday 09 December 2013

09:00 - 10:30 Status of Integration

- 09:00 **Overview of CAD Status** *30'*
  Speaker: Jost Lühning (GSI Helmholtzzentrum für Schwerionenforschung GmbH(GSI))
- 09:30 **Individual System CAD Status** *30'*
- 10:00 **Discussion** *20'*

10:30 - 11:00 Break

11:00 - 13:00 Details of Target Spectrometer

- 11:00 **Issues in Forward Endcap Integration** *30'*
  Speaker: Jost Lühning (GSI Helmholtzzentrum für Schwerionenforschung GmbH(GSI))
- 11:30 **Discussion** *30'*
- 12:00 **Layout of Target Platform** *20'*
  Speaker: Alexander Täschner (Institut für Kernphysik, Westfälische Wilhelms-Universität Münster)
  Material: **Slides**
- 12:20 **Discussion** *20'*

13:00 - 14:00 Lunch

14:00 - 16:00 Planning

- 14:00 **Hall and Installation Planning** *30'*
  Speaker: Lars Schmitt (Gesellschaft für Schwerionenforschung mbH)
- 14:30 **Discussion** *30'*
- 15:00 **Beam Pipe and MVD** *20'*
  Speakers: Giuseppe Giraudo (INFN Torino) , Daniela Calvo (Instituto Nazionale di Fisica Nucleare (INFN) (INFN-Torino))
- 15:20 **Discussion** *10'*
- 15:30 **Status of Lumi Mechanics** *20'*
  Speaker: Prometeusz Jasinski (Kernphysik Mainz)

PANDA Hall Status

Architectural plans

- In August 2D hall plans were acknowledged
- Placement of GHe tank, gas line routing and position of dipole power supply are communicated
- Open issue: Cryo system requires pressure bottles for He recovery, placement of small recovery compressor
- Phase 5 (execution plans) can only be finalized next year

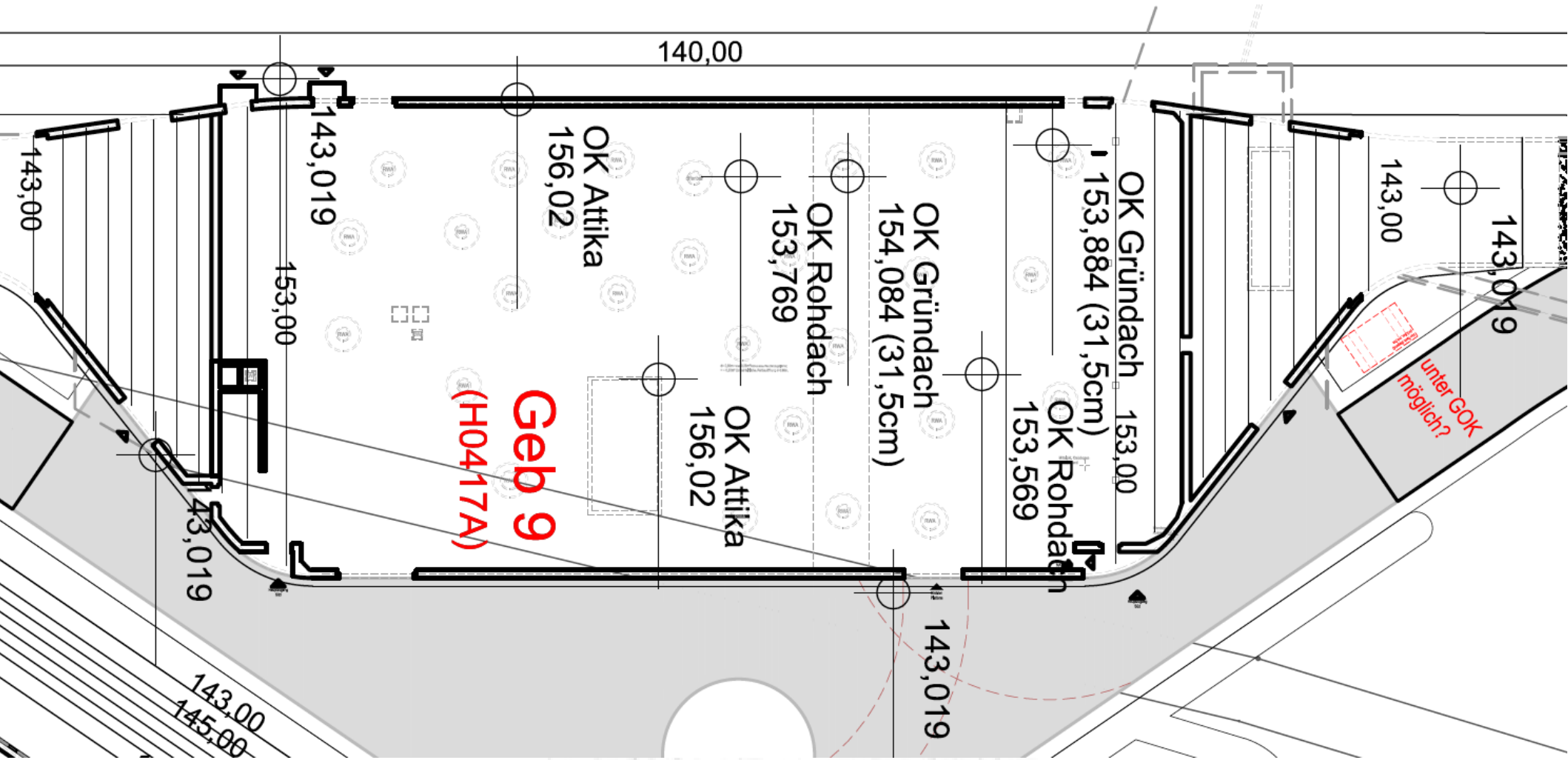
Cables and supplies

- Cables and supplies routing follow next year
- PANDA routing should not collide with hall infrastructure
- Some issues related to magnet supplies (power, cooling, LHe)

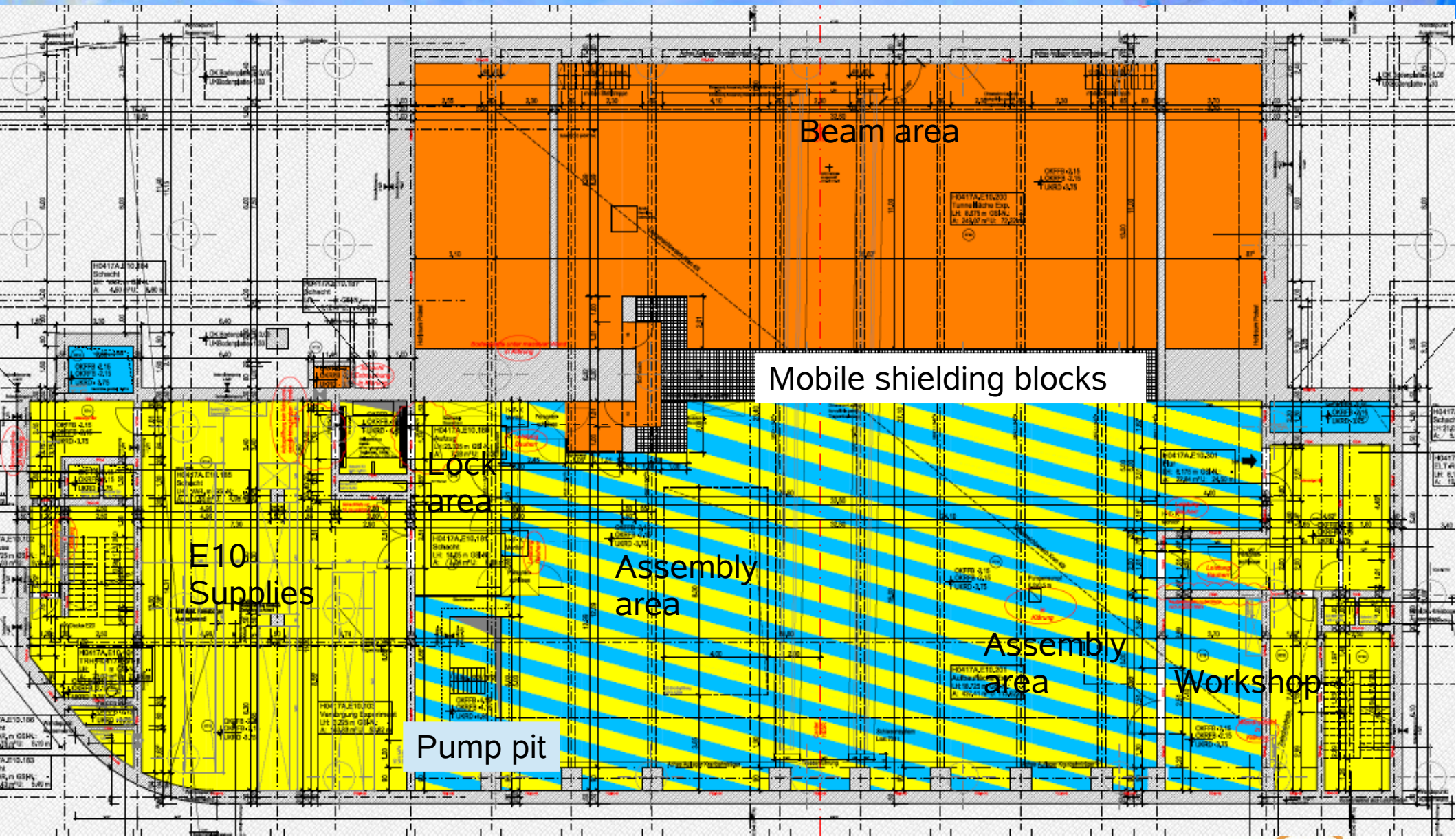
Technical infrastructure

- Ventilation and temperature control of apparatus: tent in hall
- Cooling concept for racks and equipments

PANDA Hall Status



Radiation Zones



Total Available Rack Space

Counting house:

- E10: Supply area, 45 racks
- E20: DAQ floor, 61 racks
- E30: Online computing, 59 racks, (not for detectors)

Availability (1 rack = 47 U)
E10: 45 racks, 2115 U
E20: 61 racks, 2867 U
E30: 59 racks, 2773 U
Area TS: 14 racks, 658 U
Area FS: 8 racks, 376 U
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187 racks, 8789 U

Beam area:

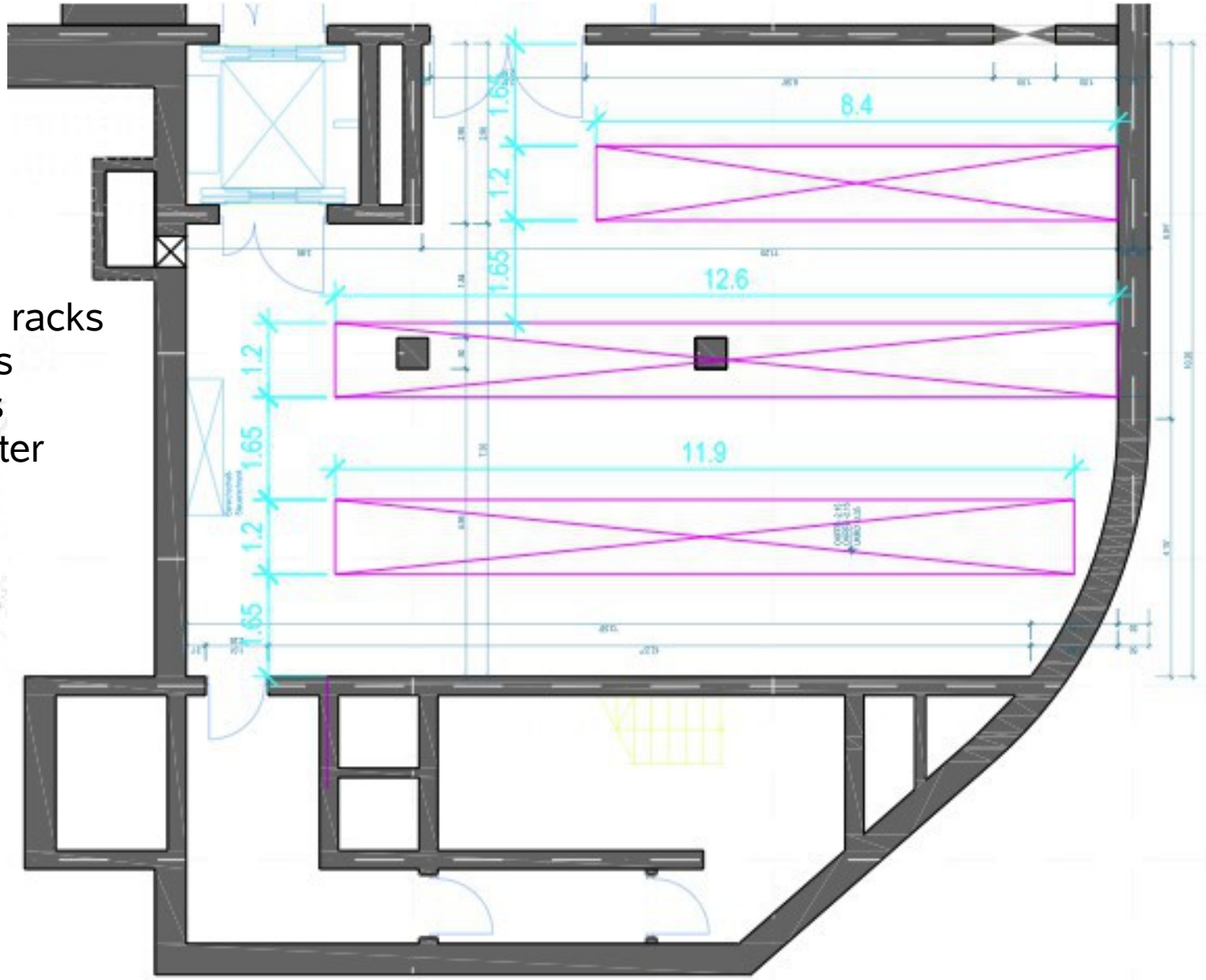
- Target Spectrometer: 14+6 racks
  - 6 racks on auxiliary platform
  - 8 racks attached to solenoid yoke
  - 6 racks (only 2m high) on top of solenoid (reserved for target and solenoid power supply)
- Forward Spectrometer: 8 racks on platform

➔ As many supplies as possible in E10

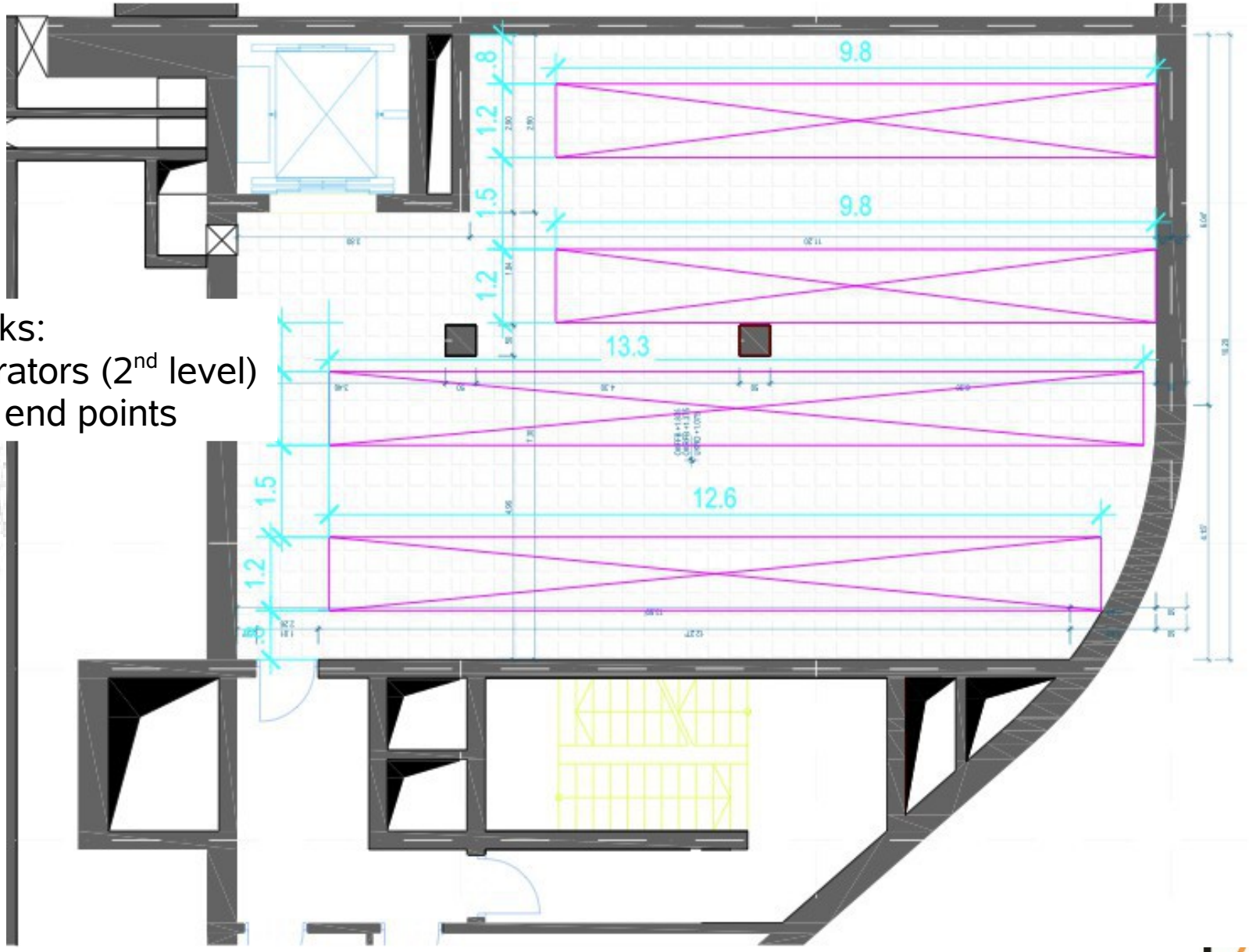
➔ At TS/FS only electronics where long cables are not advisable

PANDA Counting House: E10

- Gas mixing racks
- HV supplies
- LV supplies
- Cooling water



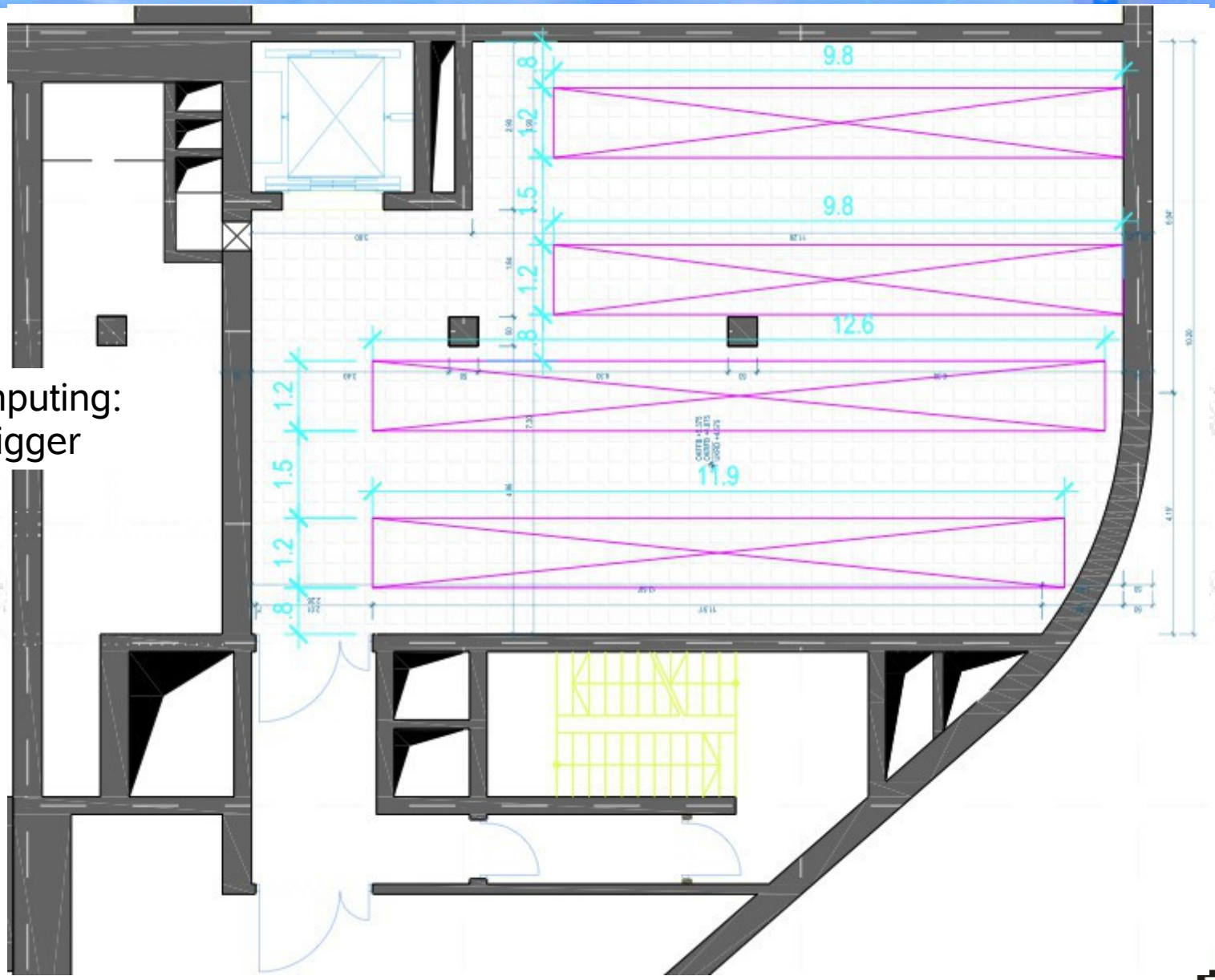
PANDA Counting House: E20



- DAQ racks:
  Concentrators (2nd level)
- Controls end points

PANDA Counting House: E30

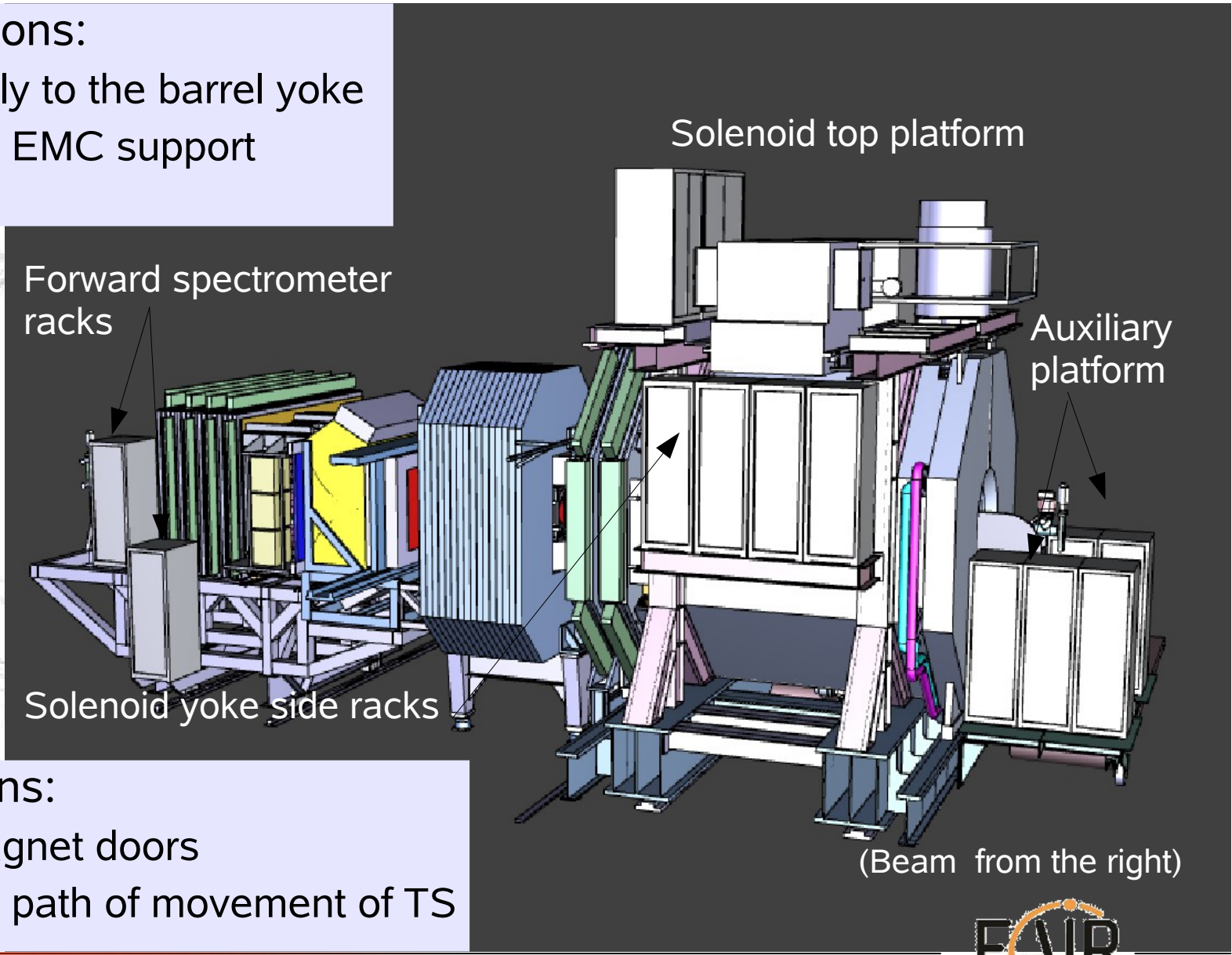
- Online computing: Software trigger



PANDA Beam Area

Exceptional locations:

- Mounting directly to the barrel yoke
- Mounting to BE EMC support
- …



Forbidden locations:

- Mounting to magnet doors
- Mounting in the path of movement of TS

Present Rack Requirements

Subsystem	Infos by	19 " U					Specials	Sum	Racks
		E10	E20	E30	TS	FS			
Forward endcap	Fritz-Herbert Heinsius				81		1xATCA crate (13U)	94	2
Forward Tracker 1-4	Jerzy Smyrski					67		352	8
Forward Trackers 5,6	Jerzy Smyrski					59			
Forward Tracker	Jerzy Smyrski					226			
MVD pixel	Daniela Calvo				112			442	10
MVD strip	Daniela Calvo				90				
MVD general	Daniela Calvo				20				
MVD counting room	Daniela Calvo				220				
Target	Alfons Khoukaz	1x47	2PCs		3x47		- Cryo-compressor 1x1m + water cooling pipes - forepumps 2x1m for beam dump		3(TS) 1(E10) 2PCs
GEM Trackers	Bernd Voss	32	20		10			62	2(Mixed)
STT	Paola Gianotti				2x47			94	2(TS)

Recommendations for Placement

Counting house:

- E10 Supply area:
  - HV/LV Supplies
  - Gas mixing units
  - Heat exchange for cooling circuits
- E20 DAQ floor:
  - Concentrators with optical input
  - Other DAQ units with long cables

Beam area

- Target Spectrometer:
  - Solenoid supply
  - Target racks
  - Analog electronics
  - Compact power supplies
- Forward Spectrometer:
  - Analog electronics
  - Separate FSC crates
  - Compact power supplies

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Missing information:

- **Barrel EMC, BW EMC, Muon**
- Small needs: DIRCs, TOFs, Lumi
- Separate: FSC

Beam area

- Target Spectrometer:
  - Solenoid supply
  - Target racks
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Further Planning Steps

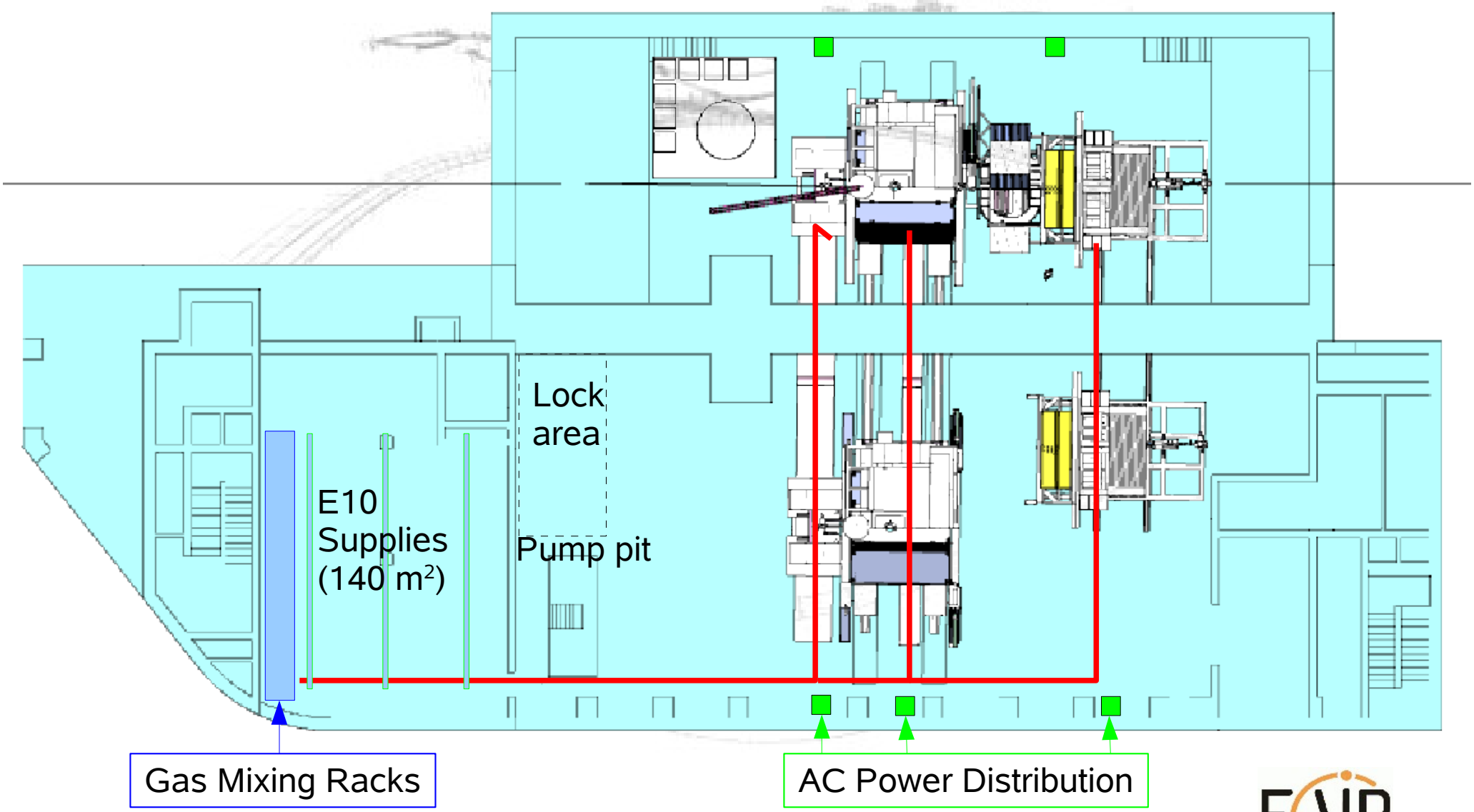
Hall planning

- Details of equipment placement
- Details of PANDA cables and supplies routing

Installation planning

- Plan area needs for first mounting/installation, leave out shielding, use beam area and maintenance area
- Overall installation sequence, individual procedures

Power and Cable Routing



Assembly phases

- Phase 1: pre-assembly of components → at the institutes
- Phase 2: pre-assembly of modules
- Phase 3: test of modules
- Phase 4: storage of modules

} at pre-assembly sites (FZJ, GSI, …)

- Phase 5: assembly on-site

Assembly Areas in PANDA Hall