DESY-II Testbeam Facility

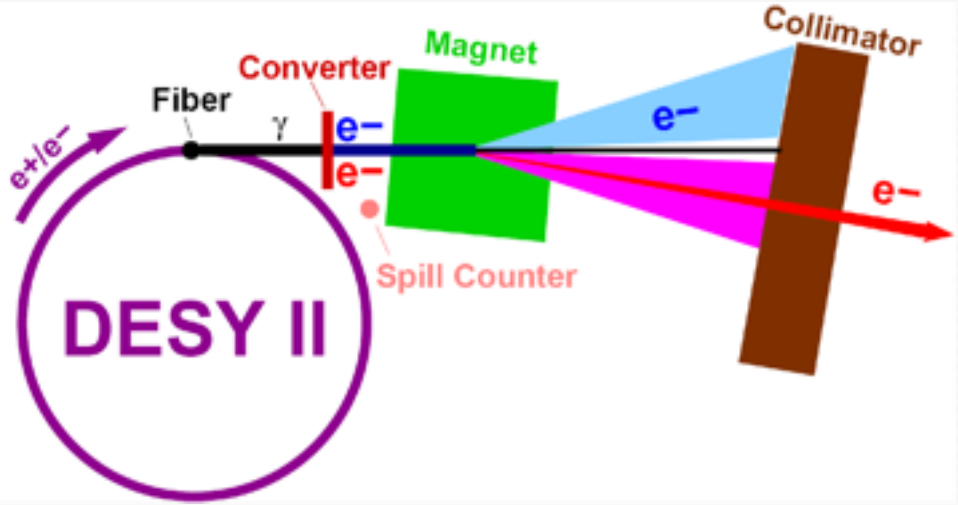
Marcel Stanitzki

for the

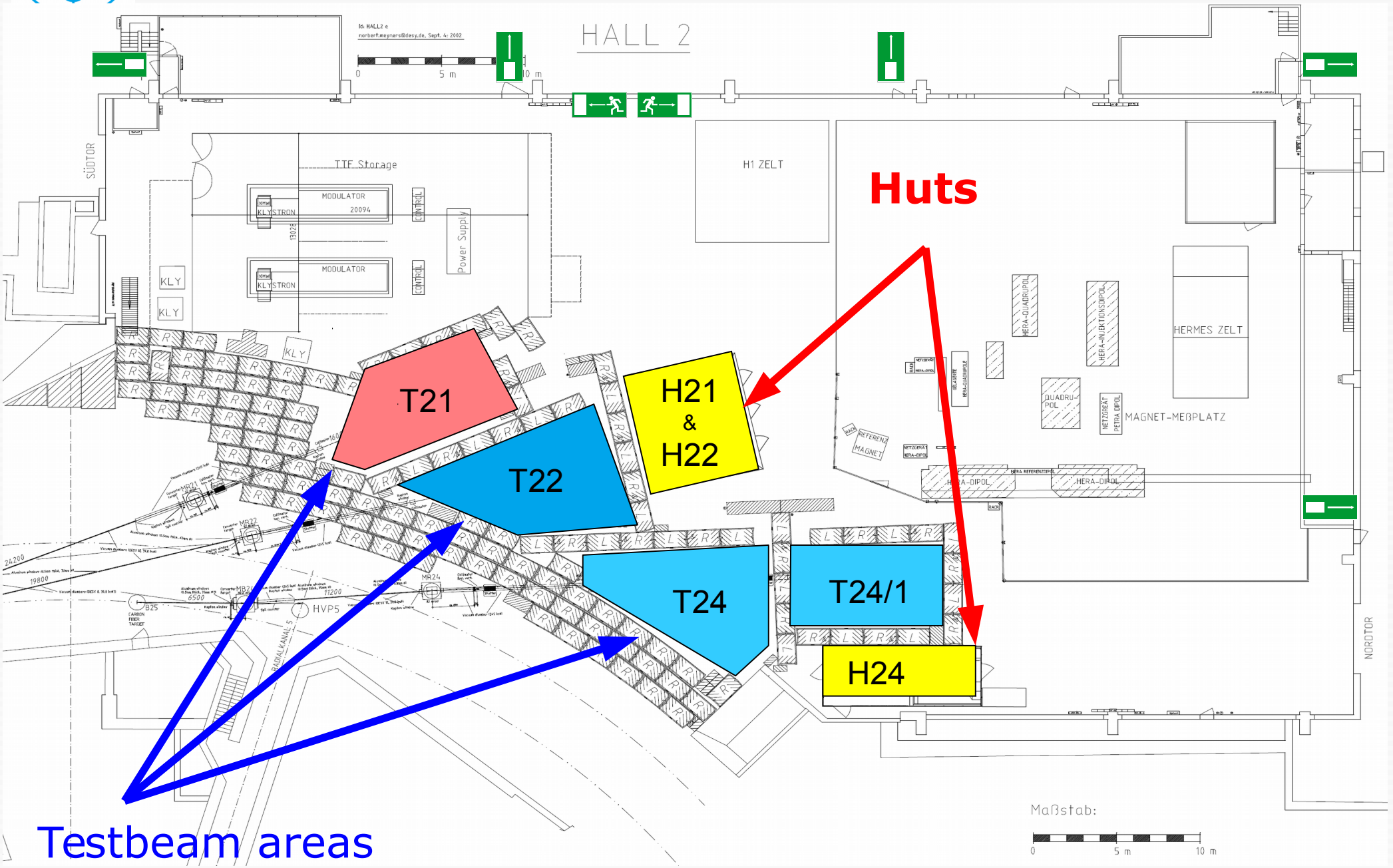
DESY Testbeam Coordinators

The DESY Testbeam Faciliy

- Facility fed by DESY-II synchrotron
- Bremsstrahlungs / conversion beam with E_e up to 6 GeV
- Beam momentum steered by magnet current by test beam user.
- Rates depending on beam line, energy, target material, collimator setting and operation.



Testbeam Hall (Halle 2 Geb. 27)



Beam availability

- DESY-II synchroton
  - ~ 99 % uptime during schedules runs
  - Main purpose: Injector for PETRA-III
  - Test Beam is parasitic user
- Beam structure
  - 1 MHZ clock
  - Basic magnet cycle 12.5 Hz (accelerating from 450 MeV to 6.3 GeV)
  - 1 bunch per fill (30 ps)
- Interruption during Extraction for Petra (sec-min)
  - Otherwise almost DC beam (no spill structure)

Unique Infrastructure at DESY

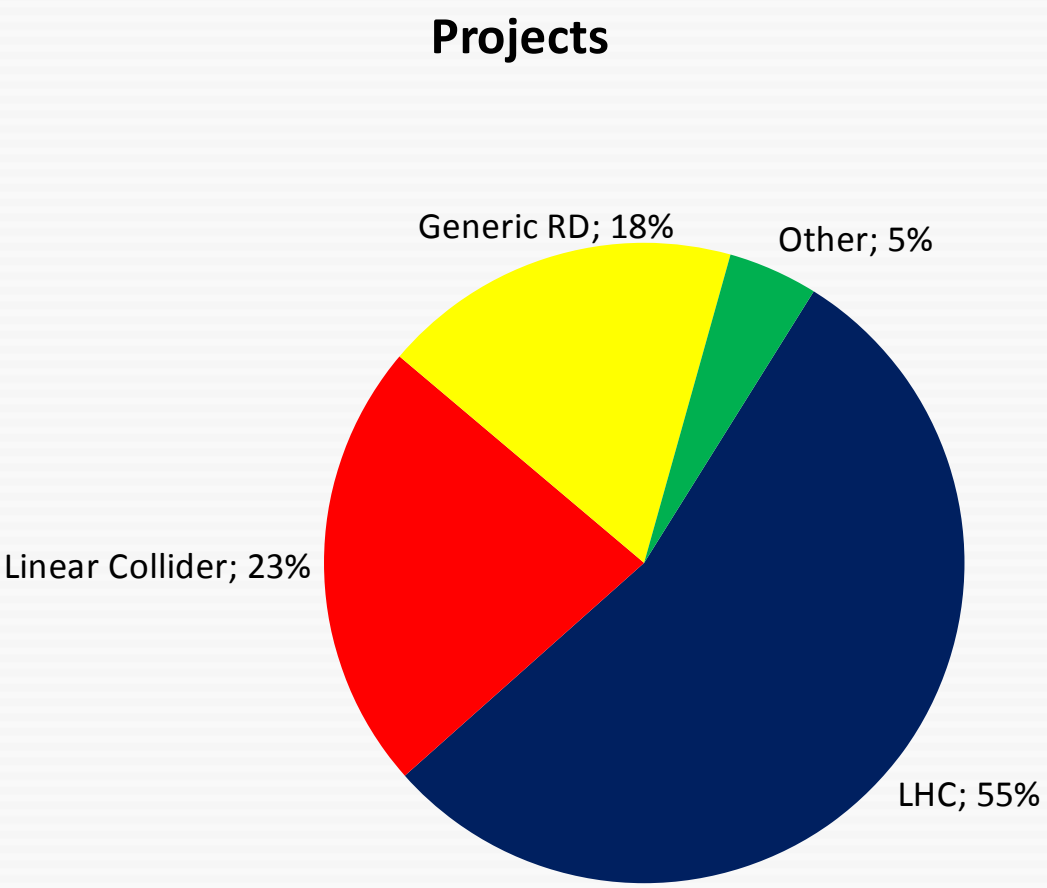
- TB21 & 22 both provide a pixel telescope
  - Complete Package (Hardware, Trigger, Reconstruction software)
- Dipole Magnet in TB 21
  - For tracking studies
- 1 T Solenoid for putting detectors in a magnetic fields
  - Internal diameter 85 cm
  - Moveable
  - Possible to install pixel telescope

Current Status

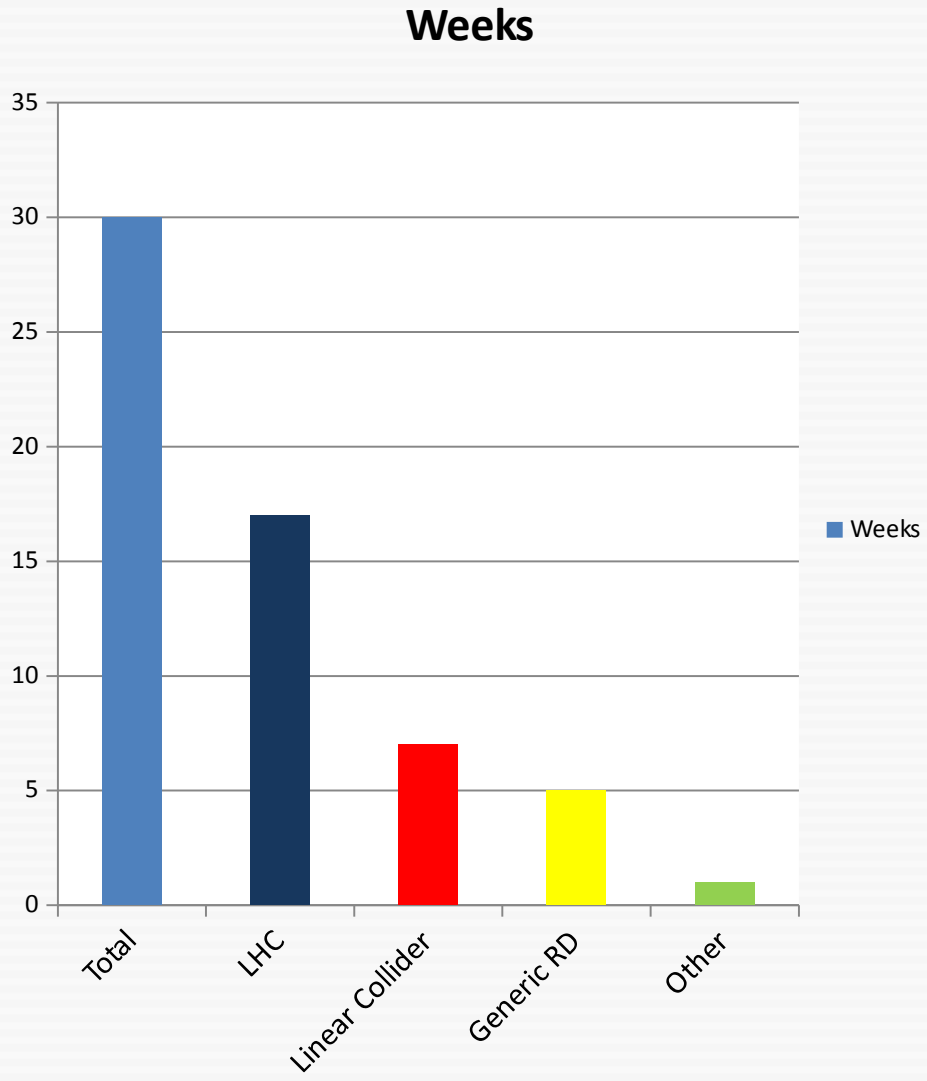
- Shutdown 2014
  - March-December 2014
- End of Shutdown was driven by PETRA-III extension schedule
  - PETRA-III will start commissioning in February 2015
- Beam in DESY-II since last week
  - Smooth Start-up after 9 month
- First users:
  - CMS Pixels starting this week
- Call for Users
  - In November 2014 for the Jan-Jun 2015 period

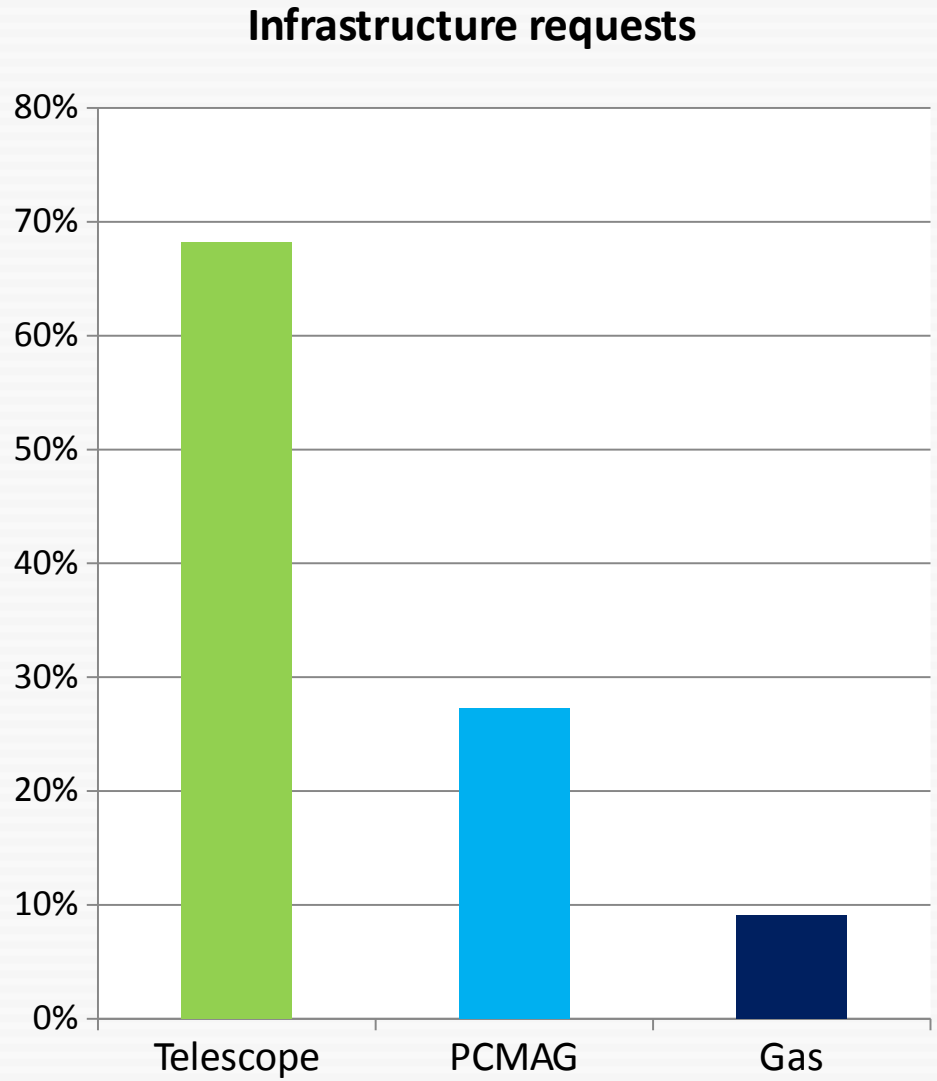
DESY-II Test Beam Facility 2015

- Call for beam time
  - Jan-Jun 2015
- 22 Groups responded
  - 30 weeks of beam time
  - LHC community : 55 % of the groups
- EU-funded infrastructure a big success
  - 68 % of groups request EUDET/AIDA Telescope
  - 28 % request the EUDET-PCMAG solenoid



More details





Shutdown Projects 2014

- The shutdown gave us the opportunity to do some improvements (and some cleaning up)
  - New flooring in the areas
  - DACHS
  - Laser Alignment System
  - Upgraded Vacuum pumps
  - Beam Monitors
  - New Carbon Fiber Targets
  - New Beam Magnet controllers and PC's
  - Cameras in the areas (already in 24/1 now everywhere)
  - And by popular request : new phones

Changes for the Users - DACHS

- Several changes mandated by Safety Dep.
  - Interlock handling
  - Enforcing of training checks
- Most important
  - DACHS cards are now mandatory for all Users
- DACHS controls
  - Access to the huts
  - Part of the Interlock
- As DACHS cards will have information on safety training (a.k.a. No Training → No Access)

DACHS Con't

- First time only
  - Users need to register in DESY Database (PIP)
  - Needs to happen before coming to DESY
- DACHS card
  - Valid ~ 10 years
  - Personal ID
- Safety course
  - Annually
  - Training Status is stored in DACHS System

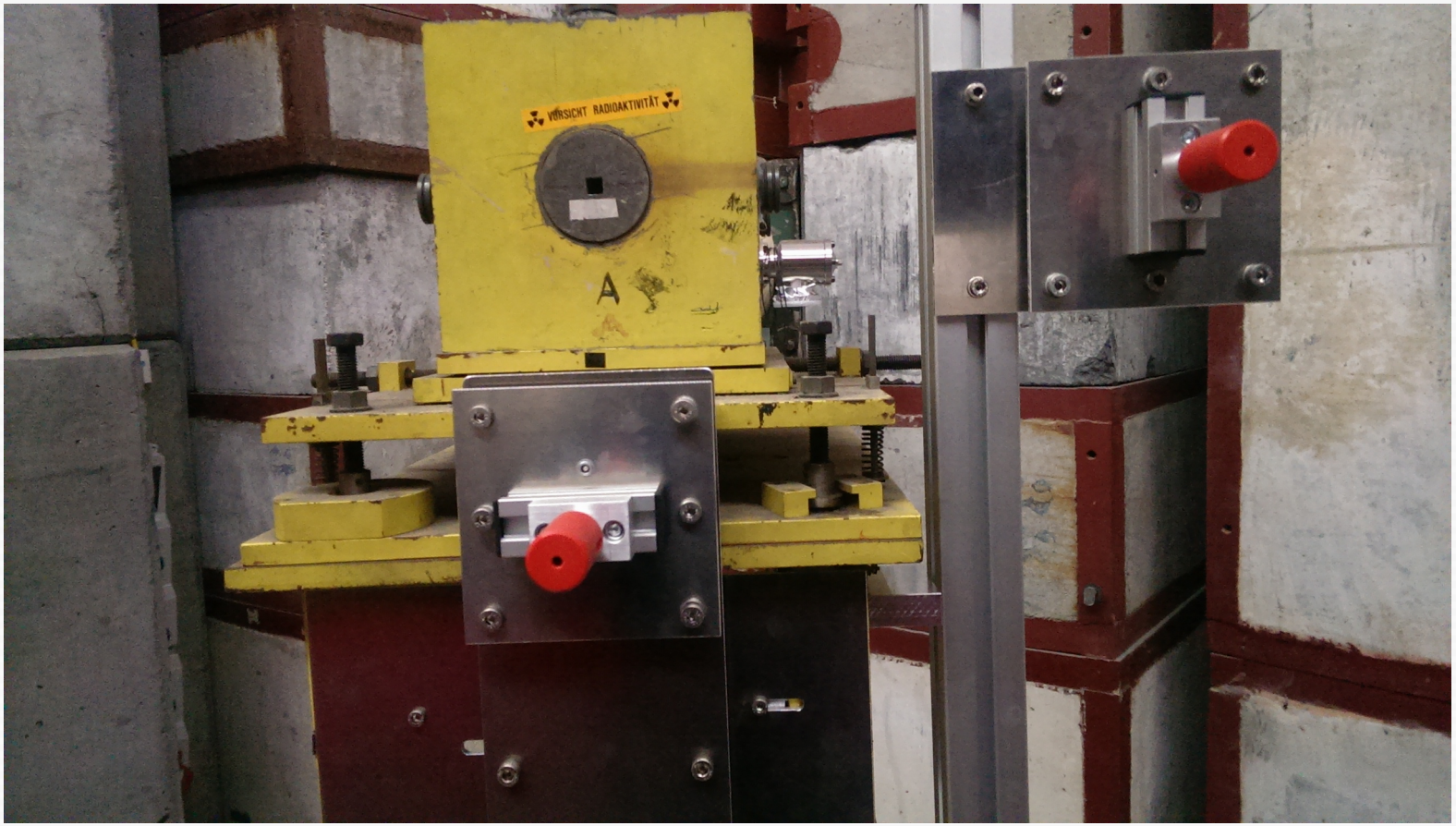
Registration

- Registration will be handled by our Indico system
- If you don't have a DACHS card
  - System will generate the form for you
  - Sign it and send it (best a week before)
  - Indico system does have all info
- Upon arriving at DESY
  - Go to V1 (Geb 6, Zi 111) and get your picture taken and a DACHS Card issued
- Attend Safety lecture
  - Coordinators will give you access to the areas

The end of Controlled Access (ZZ)

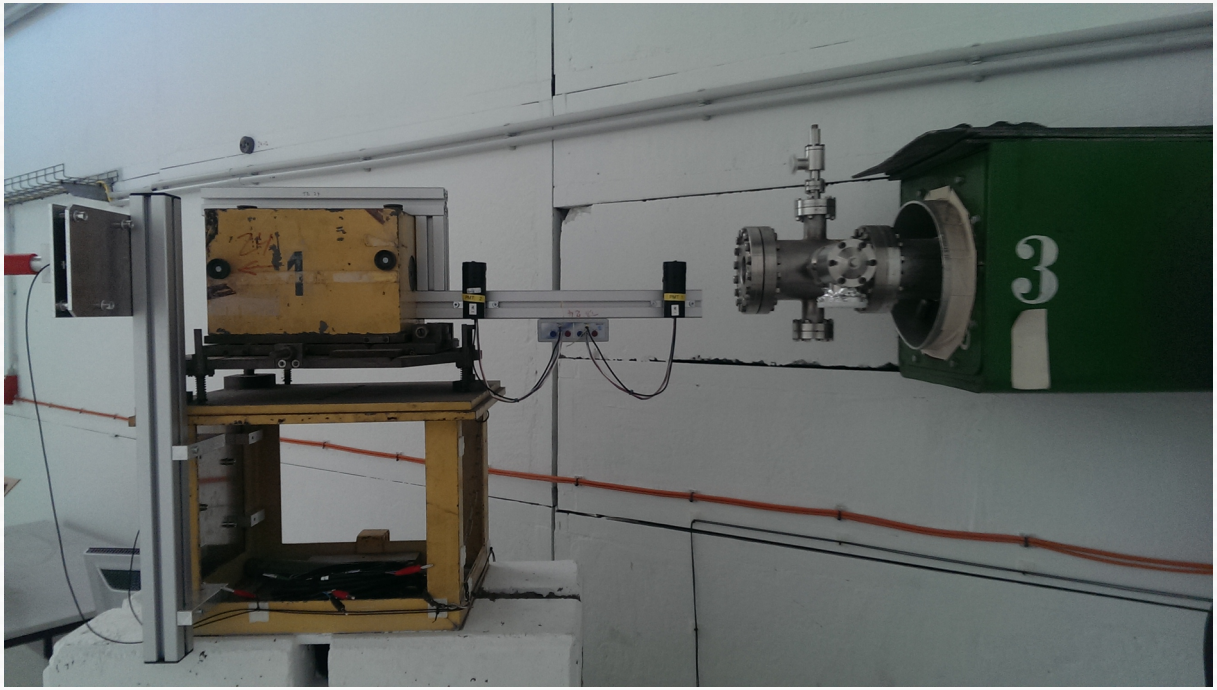
- As per Directive from D3 and the DESY directorate
  - Controlled Access/ZZ is no longer permitted at the DESY Test Beam
- This means
  - Every access requires breaking and re-enabling the interlock
  - Setting the interlock is 2 min operation, no major operational impact
- For TB24/1 a separate set of rules applies
  - Due to PCMAG magnet interlock

Laser Alignment system



- Now provided in each area
  - Should simplify aligning your setup with the beam

Test Beam Monitors



- Test Beam Monitor
  - Simple: Two Scintillators in Coincidence
  - Used by the control room to monitor beam in the area
  - Users have also access to signals
  - Currently being commissioned

Other changes

- New flooring in the area
  - Major improvement
- Radiation Safety department will now insist on proper documentation (English/German)
  - They'll not accept shipments without this information
- Update to the infrastructure
  - Improved power outlets
  - More Ethernet ports

Scientific Accounting

- Acknowledging the use of the facility:
  - The research leading to these results has been carried out at the Testbeam Faciliy at DESY, a member of the Helmholtz Association (HGF)
  - Adding parts of should be fine ;-)
- Scientific Accounting
  - We now have to keep track of conference talks, proceedings, papers that have used the DESY Test Beam
  - HGF likes to see the "impact" of the facilities it funds
  - Please provide the necessary information

AIDA 2020

- AIDA2020 has just been approved
  - Successor of AIDA
- DESY-II Test Beam Facility
  - Increased Funding for Transnational Access
  - Support for Telescopes
  - Modest improvements to the infrastructure
- Grant preparation phase
  - AIDA2020 will be up and running in spring

Outlook 2015

- The plan is to run till ~November 2015
  - Again driven by PETRA-III
- Once this is finalized
  - Call for Users for the second half of 2015
- Stay tuned

How to apply for beamtime

- Send an email to
  - testbeam-coor@desy.de
- Testbeam coordinators will try to accommodate everybody
- There is an annual call for testbeam time
  - Subscribe to
    https://lists.desy.de/sympa/subscribe/testbeam-info
- Lots of information at
  - http://testbeams.desy.de
  - Latest Schedule
  - Updates, Instructions

Summary

- DESY-II Testbeam facility offers
  - 3 beamlines with 1-6 GeV electrons
  - Unique Infrastructures
- 2014 Shutdown is finished
  - Many improvements to the Infrastructure
- Starting up in January 2015
  - Run start tied to PETRA-III Schedule
  - Some operational changes compared to 2014
- Foresee to end the run in November 2015
  - Details and Call to follow !