

# Status of the DESY NanoLab Project

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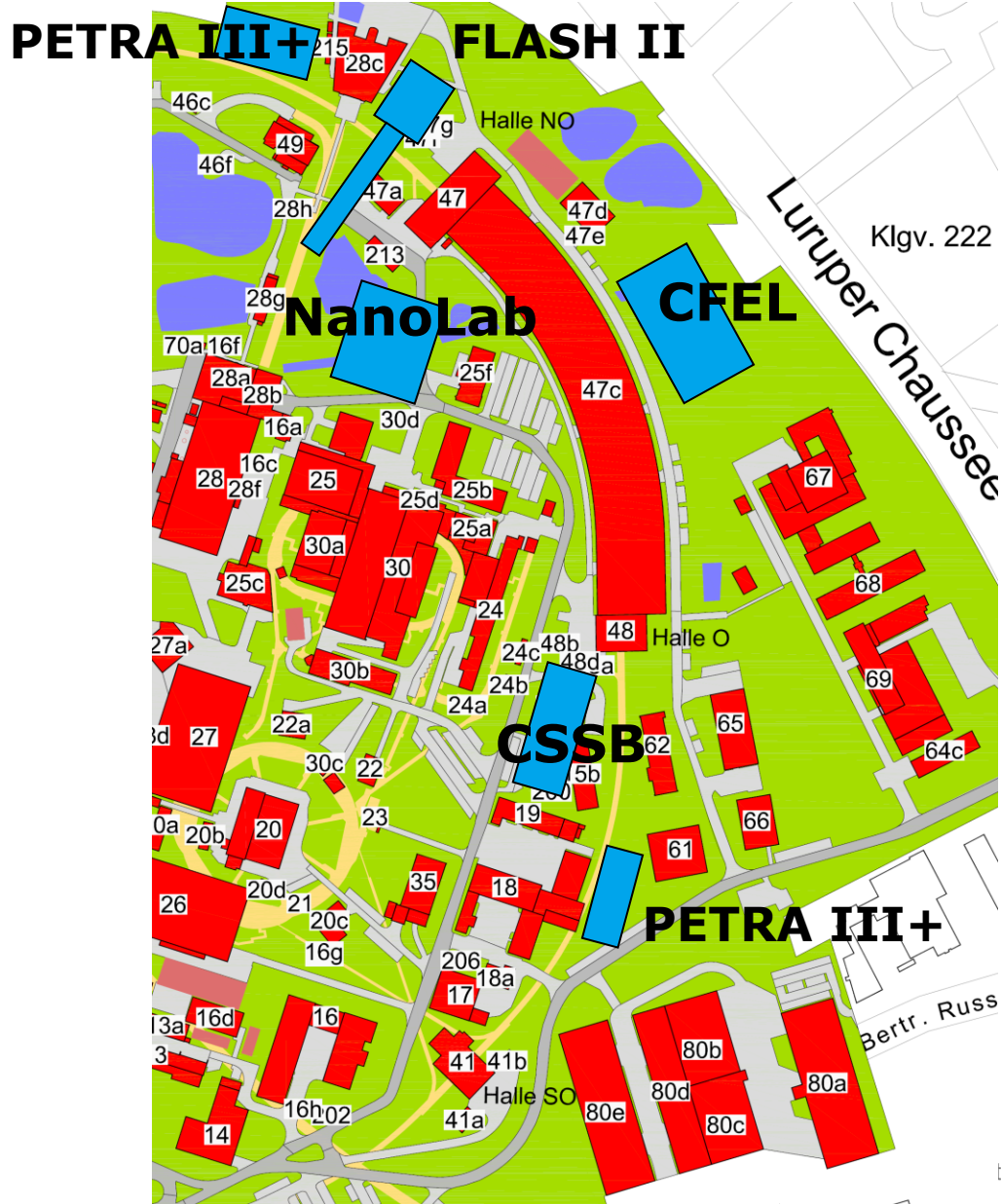
# Mission of the DESY NanoLab

To accommodate the growing need for structural probes on the nanoscale, DESY plans to establish a centre for analysis, production and handling of nanoscale and nanostructured materials, guided by experiments with micro- and nanobeams at PETRA III and FLASH.

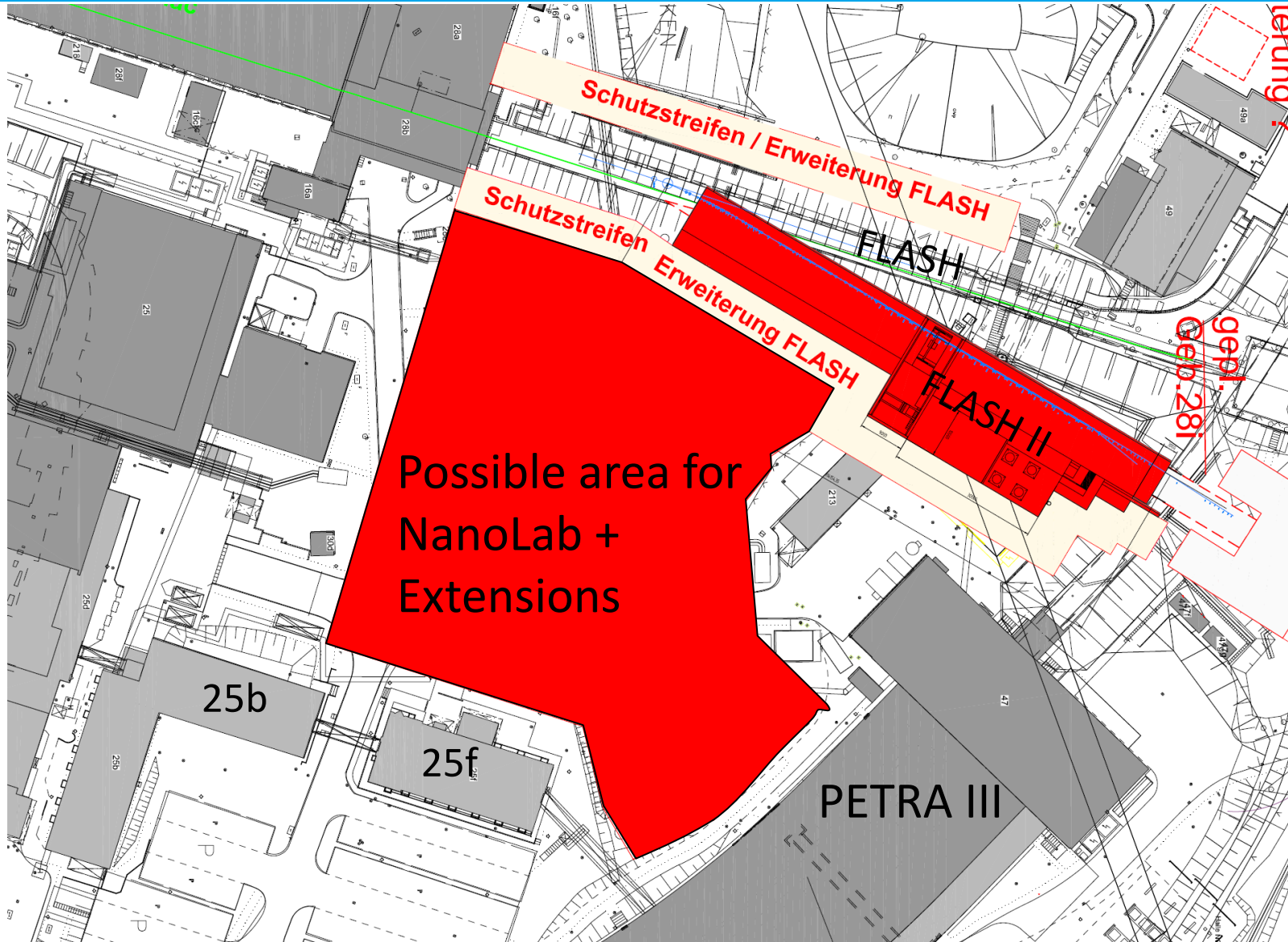
- Modular group of buildings, erected in successive phases, to accommodate DESY groups and external partners
- First phase shall constitute the core of the building complex
- Helmholtz Zentrum Geesthacht (HZG) will be the first partner contributing funds for an own building section
- More partners to join in the following phases



# The Building Site



# The Building Site



# 1<sup>st</sup> phase specification

## DESY (NanoLab)

- Room for 4 W3 groups (3 experimental, 1 theory)  
= 4 x 150 m<sup>2</sup> office space + 3 x 150 m<sup>2</sup> lab space
- 500 m<sup>2</sup> laboratory space for general use, including a  
300 m<sup>2</sup> low-vibration section for sensitive instruments

## HZG (Engineering Materials Science Center)

- 800 m<sup>2</sup> office space

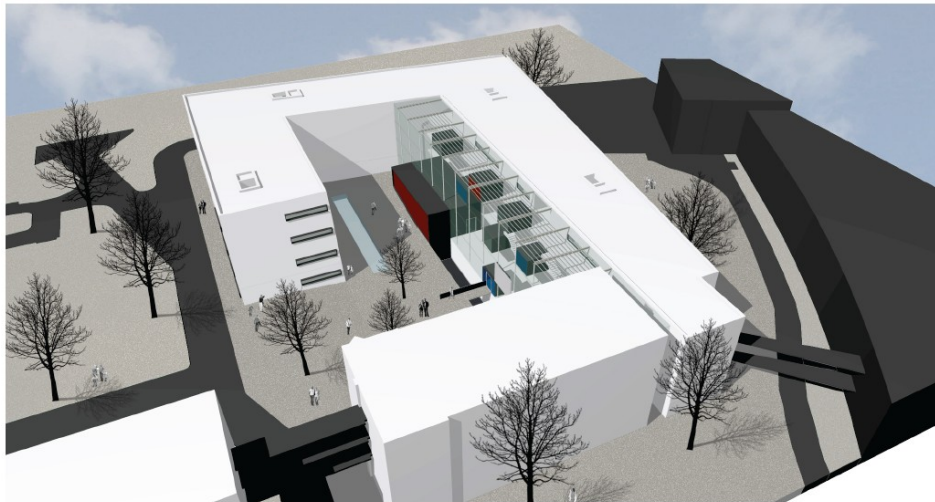


# Architectural Competition for ‚Urban Development‘

## Collection of 3 proposals from

- hammerskrause architekten, Stuttgart
- REINER BECKER ARCHITEKTEN, Berlin
- planpark architekten, Hamburg

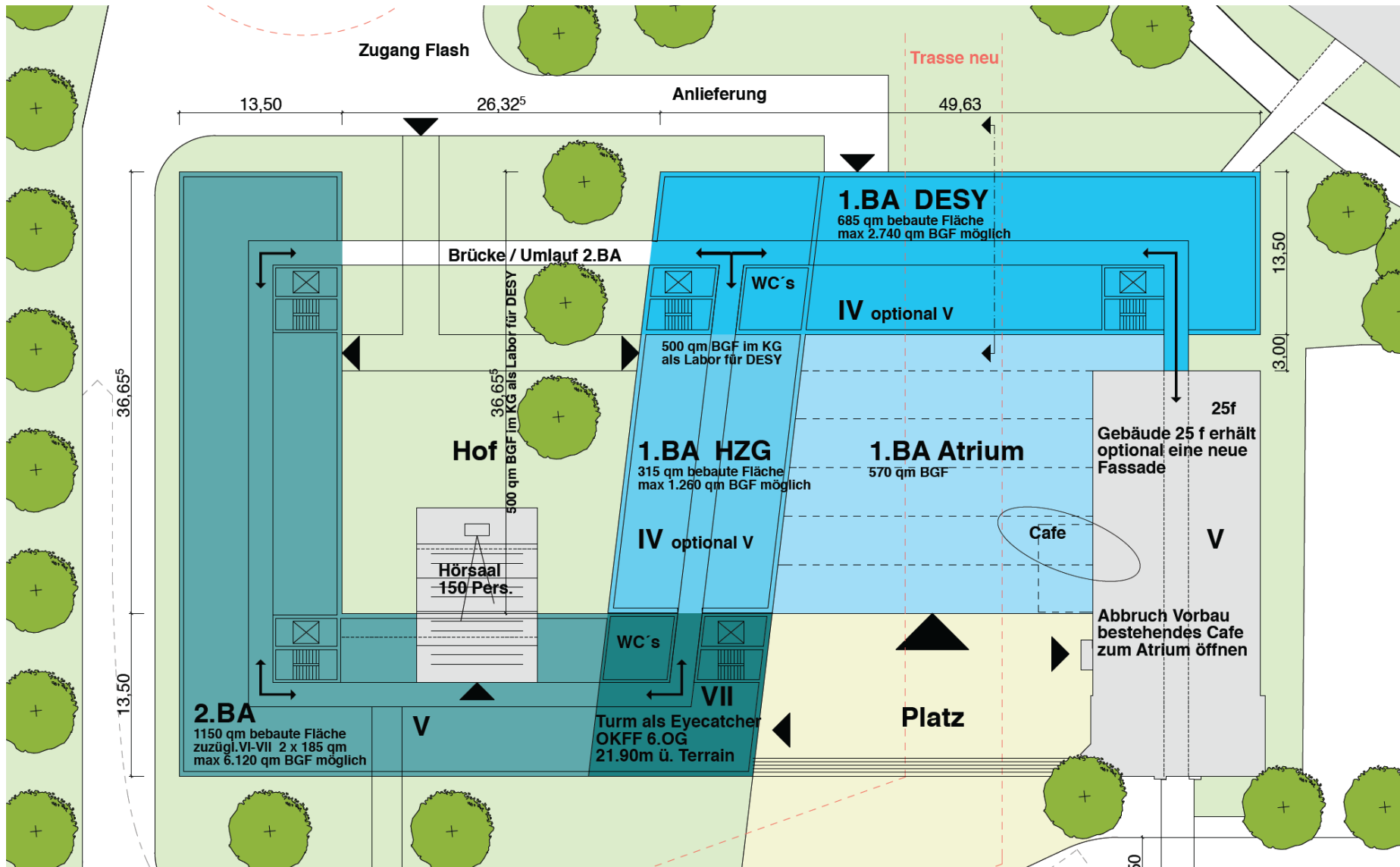
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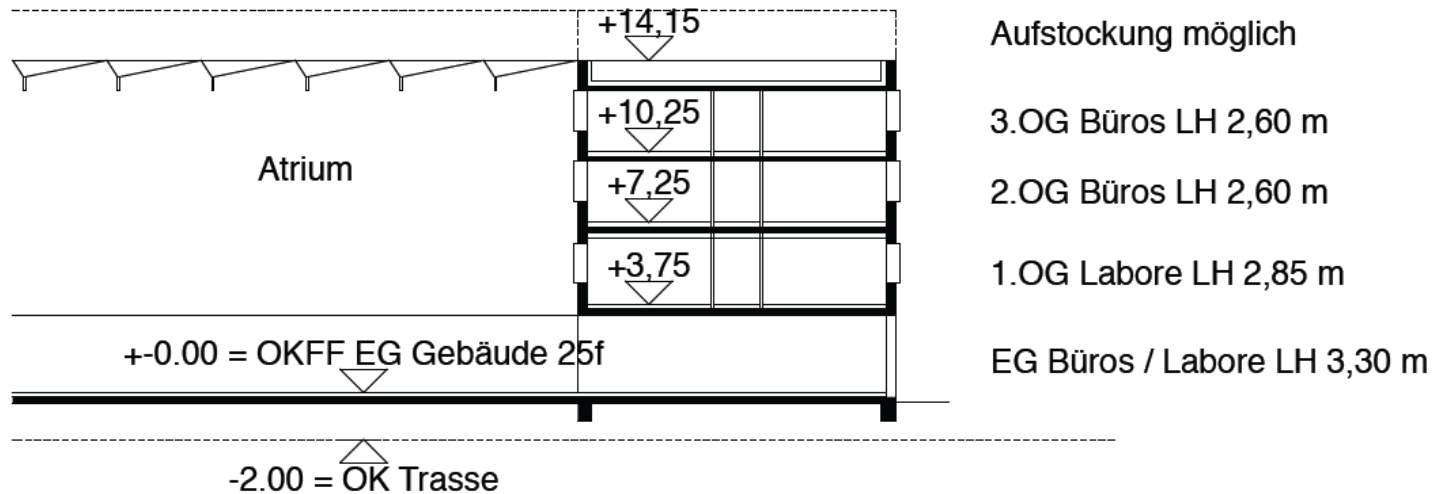


# Current Status of Architectural Planning (as of 13. May 2011)





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**DESY, 1st phase :** 4 stories with 685 m<sup>2</sup> total floor area each + 500 m<sup>2</sup> low-vibration lab space

**→ 3240 m<sup>2</sup> total floor area**

**HZG, 1st phase :** 4 stories with 315 m<sup>2</sup> total floor area each (office space only)

**→ 1260 m<sup>2</sup> total floor area**

**Atrium :** **→ 570 m<sup>2</sup> total floor area**



# Timeline

**June 2011: Call for tender for architectural planning**

**Spring/Summer 2012: Start of construction**

**End of 2013: Completion**



# Instrumentation for Central labs (First Phase)

- Microscopes:
  - o Scanning electron microscope (robust, general use)
  - o Field-emission SEM for high-resolution applications
  - o Atomic force microscopes
  - o Optical microscopes, e.g., confocal, fluorescence, laser-scanning
- First phase of central UHV system with metal deposition techniques and analysis (Auger, LEED)
- Magnetic characterisation of samples via MOKE, magnetometry
- Soft-matter deposition techniques like spin-coating, dip coating, Langmuir-Blodgett etc.
- Chemistry laboratory, clean rooms

**Details of instrumentation and infrastructure to be defined with scientists (in-house and potential users)**



# Instrumentation (Later stages)

- Lithography techniques: Electron-beam lithography, Interference lithography, Nano-imprint lithography
- Dry (plasma) etching and wet etching techniques for lithography processes
- Focussed ion-beam (FIB) processing of samples with nanomanipulation
- Extension of the UHV system and its infrastructure
- Cryo-handling of biological samples, cryo-TEM, environmental SEM

**Synergies to be explored and to be coordinated with instrumentation available and planned at HZG, CFEL, CSSB, University of Hamburg (Bahrenfeld Campus)**

