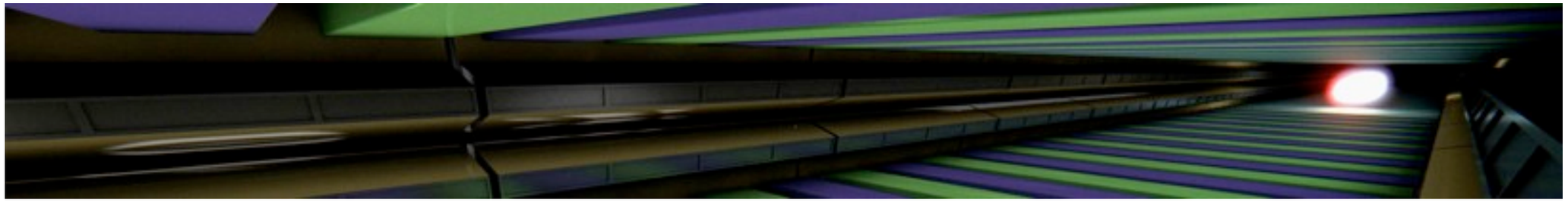

Introduction

Tobias Haas

Technical Meeting

27 April 2012

European XFEL

XTD10 and XTD9 last week

Homework from last time

- DAQ and Control needs
  - SPB will be used as a model for the hard X-ray beam lines.
  - SQS will be evaluated next in order to also get a reasonable estimate for the soft X-ray beam lines
    - ➔M. Meyer and C. Youngman to present first results in this meeting
- SPB power and ventilation requirements
  - The numbers for power and ventilation requirements for SPB are now fairly solid
    - ➔TC to review the numbers
      - Consistency
      - Necessary safety factors

European XFEL

Homework from last time cont'd

- Cost of instrument infrastructure
  - A first itemized list of instrument infrastructure by C. Bressler with rough cost estimates by TC was shown
    - ➔T. Haas to identify who is responsible for what and find out what has already been costed where

European XFEL

Homework from last time cont'd

- All labs
  - 27 Apr: Are all labs requested actually included in the floor plan
    - ➔Floor plan and current state of lab list were circulated and requesters asked to check plan against list
    - ➔I shall summarize the comments and make some remarks

Homework from last time cont'd

- Beam port Allocation
  - 13 April: Which branch beam line should be used for FXE needs to be decided:
    - ➔ C. Bressler, T. Tschentscher to discuss the advantages and disadvantages for FXE on the two respective beam lines
    - ➔A decision on the beam port allocation should be taken during this Technical Meeting

State of the lab planning

LKW-Durchfahrt
Transportöffnung
Chemie 2 WP 73,81,83,84
Chemie 1 WP 73,81,83,84
EMBL Bio Labs WP79
Dokumentationszone
Bio Labor (S3) WP 84
Lab. 1
Lab. 2
Mass- spec Room
Bio Lab
Spülküche
Chemie Vorraum WP 73,81, 83,84
Chemikalien Lager WP 73,81, 83,84
Interner S3 Raum
Personen Schleuse
Bio-/Chemie Labor 582 m²
Detector Elt. Messraum WP 75
Detektortestlabor/ Detector test laboratory_Messraum WP 75
SCS LABOR 86/ lab 86 WP 86
Personen-Schleuse
Material-Schleuse
WP 75 Integrationsraum
WP 73 Integrationsraum
WP 74 Integrationsraum
SPB Lab. 84 WP 84
S 2- Lab
Storage
Geräte-raum
N 2 Storage
Geräte-raum
Geräte S 2
Flourescent Microscope S 2
Coldroom
Vorraum
Sozialräume 63 m²
ca. 54 Personen
Photon Systems Sample Prep WP 79
Light Scatter Labor/Light scatter lab WP 83
Metrology-Labor
Cleaning/ Wet Area
Calibration/ Test Raum
Inspektions-Raum
Reinraumlabor 365 m²
Feuerlösch HD-Sprühnebel
Mid Labor WP 83
Standardlabor 553 m²
Reinraumaufbau / Clean Assembly WP73
Wartungsweg
Wartungsweg
Technik 348 m²
Technik 387 m²
Technik 230 m²
Sichtfh. Bereich
Brand-meldezentrale
Maschinenherstellungs-labor/ Mechanical preparation lab WP 74,75
NSHV SV NSHV AV
USV
Vakuumtransportaufbau/ Vacuum assembly_Messraum WP 73,74,75,8X
Instrument Laser Labor/ Photon Systems Laser Lab WP 81,85
SQS Labor/ SQS lab WP 85
Röntgenstrahlen-labor/X-ray lab WP 79
Rasterelektronen-mikroskop WP 79
Nano Fabrication/ Ionenstrahl-Ätzen WP 79
Photoelectron and Auger Spectroscopy WP 79
HLS
Sozialräume 67 m²
ca. 80 Personen
FXE Lab 81 WP 81
Photon Systems Laser Labor/Photon Systems Laser Lab WP 78
Präzisionslabor 422 m²
Präzisionslabor 416 m²
Schleuse
Diagnostig Labor/ Diagnostic Lab WP 74
Dosimetry Lab TC/Safety
HED Lab/ lab 82 WP 82
Probenherstellungslabor/ Scample preperations lab Glove box lab WP 73,74,75,78
Probenherstellungslabor/ Scample preperations lab Trockenpräparation WP 73,74,75,78
allg. Elektronikwerkstatt/ General Electronics Workshop_Messraum WP 73,74,75,78
Labor 95 m²
DAQ Messraum/ DAQ lab WP 76

TGA-Planung: ScholzeJaeger GmbH - ibb Burrer & Deuring Ingenieurbüro GmbH - dr. heinekamp Labor- und Institutsplanung GmbH

Vorplanung
Grundriss EG

General remarks

- First stage of planning
  - several iterations will follow
- This iteration is important for a cost estimate
  - Quality of the labs (bio/chemistry/precision/clean room)
  - Overall size
  - General location
  - Implementation concept (media distribution etc...)
  - Fire protection/escape concept
- What is not so important
  - Size/exact placement of inner walls/doors

Comments I received

- Size and placement of doors
- Size and placement of changing rooms
- Separation of offices and lab floors (hall elevators end in lab area)
- Arrangement of rooms in cleanroom area
- Placement of some “general” labs in precision lab area
- Layout of Bio area
- S3 bio area
- Double floor
- Size of various rooms

Next Steps

- Points relevant for this stage will be considered
- Presentation of the results will be given to the general XFEL public:

  » ***25 May 2012***

- Taking cost etc into account
  - An implementation strategy will be defined
  - All requirements will be revisited
  - Detail planning will start

    ➔will involve direct discussions btw. users and planners.

Infrastructure cost: First guess

32	**X-Ray Hutch**	(< 250 m2 x 19mm Pb, including hutch door (FXE). Estimate based on P01 hutch (3-30 keV))	348 k€	**400 k€**			**Instrument**
33							
34							
35	**X-Ray Hutch Interlocks, utilities**		313 k€	360 k€	50 k€	WP34, Air conditioning)	
36	Water + piping		17 k€	20 k€			
37	Gas bottle and gas line infrastructure		17 k€	20 k€			
38	Air conditioning		174 k€	200 k€			TS
39	Water cooling + pipes		44 k€	50 k€			
40	Electricity, lighting, related utilities		44 k€	50 k€			
41	Cable trays, chicanes (through hutch wall)		17 k€	20 k€			
42	Experiment interlock			60 k€	60 k€	WP 38, Interlocks)	
43							
44	**X-Ray + Laser Hutch Interlocks, utilities**		44 k€	50 k€			**WP78**
45	E.g., the one with those silly photodiodes (DESY-style)						
46	All those safety boxes around laser+FEL safety						
47							
48	**X-Ray Hutch interior**		22 k€	25 k€			**Instrument**
49	Toolbox, BNC cables, mechanical parts		4 k€	5 k€			
50	Work Bench(es)		4 k€	5 k€			
51	Cabinet(s)		9 k€	10 k€			
52	Video cameras/Web cams (not sample-related)		4 k€	5 k€			
53							
54	**Ctrl Room**		100 k€	115 k€			**TS**
55	Hutch		26 k€	30 k€			
56	Electricity		26 k€	30 k€			
57	Lighting		4 k€	5 k€			
58	Air conditioning/Ventilation		44 k€	**50 k€**			

Infrastructure cost cont'd

61	**Ctrl Room Interior**		25 k€	29 k€		**Instrument**
62	10-15 Chairs		13 k€	15 k€		
63	10m2 Tables		2 k€	2 k€		
64	10 50" Flatsccreens		9 k€	10 k€		
65	Water cooler (drinking water)		0 k€	**0 k€**		
66	Coffee machine and free coffee supply		0 k€	1 k€		
67	5 Whiteboards		1 k€	1 k€		
68						
69	**Cables (+special plugs)**		315 k€	**362 k€**		**Instrument**
70	1000 m type x	20€/m	17 k€	20 k€		
71	2000 m type y		35 k€	40 k€		
72	400 plugs	30 € per plug	10 k€	12 k€		
73	15 CY racks	6k€ per rack	78 k€	90 k€		
74	200 uTCA crates	1k€ per crate	174 k€	200 k€		
75						
76	**Controls (Beckhoff+more)**		152 k€	175 k€		**Instrument**
77	250 Beckhoffs	0.5 k€/axis	109 k€	125 k€		
78	100 others?	0.5 k€/axis	44 k€	50 k€		
79						
80	**Computing, Interface, Data Storage**	I think this is all allocated in WP76 but I need to check	0 k€	0 k€		**WP76**
81	Fast data lines					
82	50 Tbyte local storage					
83	10 PByte total instrument storage					
84						
85	**Programming of controls + DAQ * …**		69 k€	79 k€		
86	Trigger definition and masterclocking	100 hrs (I think this is underestimated by a factor 2. I use my numbers and 36 €/hr)		7 k€		
87	Motor control interfacing to beamline controls	500 hrs (I think this is underestimated by a factor 2)		36 k€		
88	Advanced instrument programming and control work	500 hrs (I think this is underestimated by a factor 2)		36 k€		

Infrastructure cost cont'd

90	**R&D**	174 k€	200 k€	**Instrument**
91				
92	**XHQ lab spending (instrument lab + more)**	96 k€	110 k€	**Instrument**
93	**Toolbox, BNC cables, mechanical parts**	17 k€	20 k€	
94	**Work Bench(es)**	17 k€	20 k€	
95	**Cabinet(s)**	17 k€	20 k€	
96	**Extra instrument-science related items**	44 k€	50 k€	