



# Introduction

Tobias Haas  
Technical Meeting  
11 May 2012

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# Homework from last time



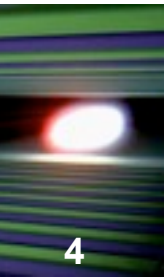
- DAQ and Control needs
  - SPB will be used as a model for the hard X-ray beam lines.
  - SQS will be evaluated next in order to also get a reasonable estimate for the soft X-ray beam lines
    - M. Meyer and C. Youngman to present first results in this meeting
- SPB power and ventilation requirements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

# Homework from last time cont'd



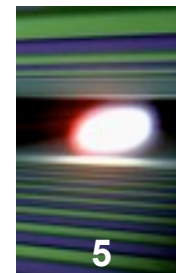
- SASE1 floor plan
  - FXE will be installed on the SASE1/south beam line. Some details on floor allocation in particular with respect to the laser hutch still needs to be worked out.
    - See concept by ML (labelled 28/4.1)
- Cost of instrument infrastructure
  - A first itemized list of instrument infrastructure by C. Bressler with rough cost estimates by TC was shown
    - T. Haas to further refine numbers and find out where the budget for hutch infrastructure has been allocated in the financial planning
    - Include costs of racks on 2nd floor
    - Cross-check numbers with PetraIII (J. Spengler)
    - Incorporate TS part into TS bottom up planning

# Homework from last time cont'd



- XHQ floor plans
  - Previous planning:
    - 5/11 Pre-presentation
    - 5/25 Presentation to the XFEL public
  - Change of plans (due to some delays)
    - 5/25 Pre-presentation
    - 5/15 Presentation to XFEL public
- Discussion on Installation Planning
  - See presentation by S. Cunis today

# Infrastructure cost: First guess



5

32	<b>X-Ray Hutch</b>	(< 250 m2 x 19mm Pb, including hutch door (FXE). Estimate based on P01 hutch (3-30 keV))	348 k€	400 k€		<b>Instrument</b>
33						
34						
35	<b>X-Ray Hutch Interlocks, utilities</b>		313 k€	360 k€	50 k€	WP34, Air conditioning)
36	Water + piping		17 k€	20 k€		<b>TS</b>
37	Gas bottle and gas line infrastructure		17 k€	20 k€		
38	Air conditioning		174 k€	200 k€		
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	<b>X-Ray + Laser Hutch Interlocks, utilities</b>		44 k€	50 k€		<b>WP78</b>
45	E.g., the one with those silly photodiodes (DESY-style)					
46	All those safety boxes around laser+FEL safety					
47						
48	<b>X-Ray Hutch interior</b>		22 k€	25 k€		<b>Instrument</b>
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	<b>Ctrl Room</b>		100 k€	115 k€		<b>TS</b>
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€		
59	Acoustic insulation					

# Infrastructure cost cont'd



6

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

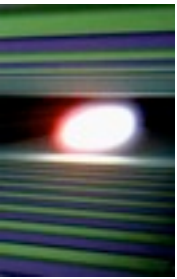


# Infrastructure cost cont'd



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€	

# Conceptual floor plan for SASE 1 instruments



Version 28/4.1: flip entire area symmetric to central line, adjust for width; flip SPB opt.

Cut into MMM, FXE and SPB for space for laser hut.

New/advantages: FXE gains access to placement of add. components inside XTD

Disadvantages: FXE has 5 m less for beam delivery, which go to MMM

OL footprint rather different. Possible ? Beam del. to far SPB-station diff.

