

FAIR

Status Report

D. Krämer

MAC Meeting 2&3 April 2012, FZ Jülich



Finland



France



Germany



India



Poland



Romania



Russia



Slovenia



Spain



Sweden



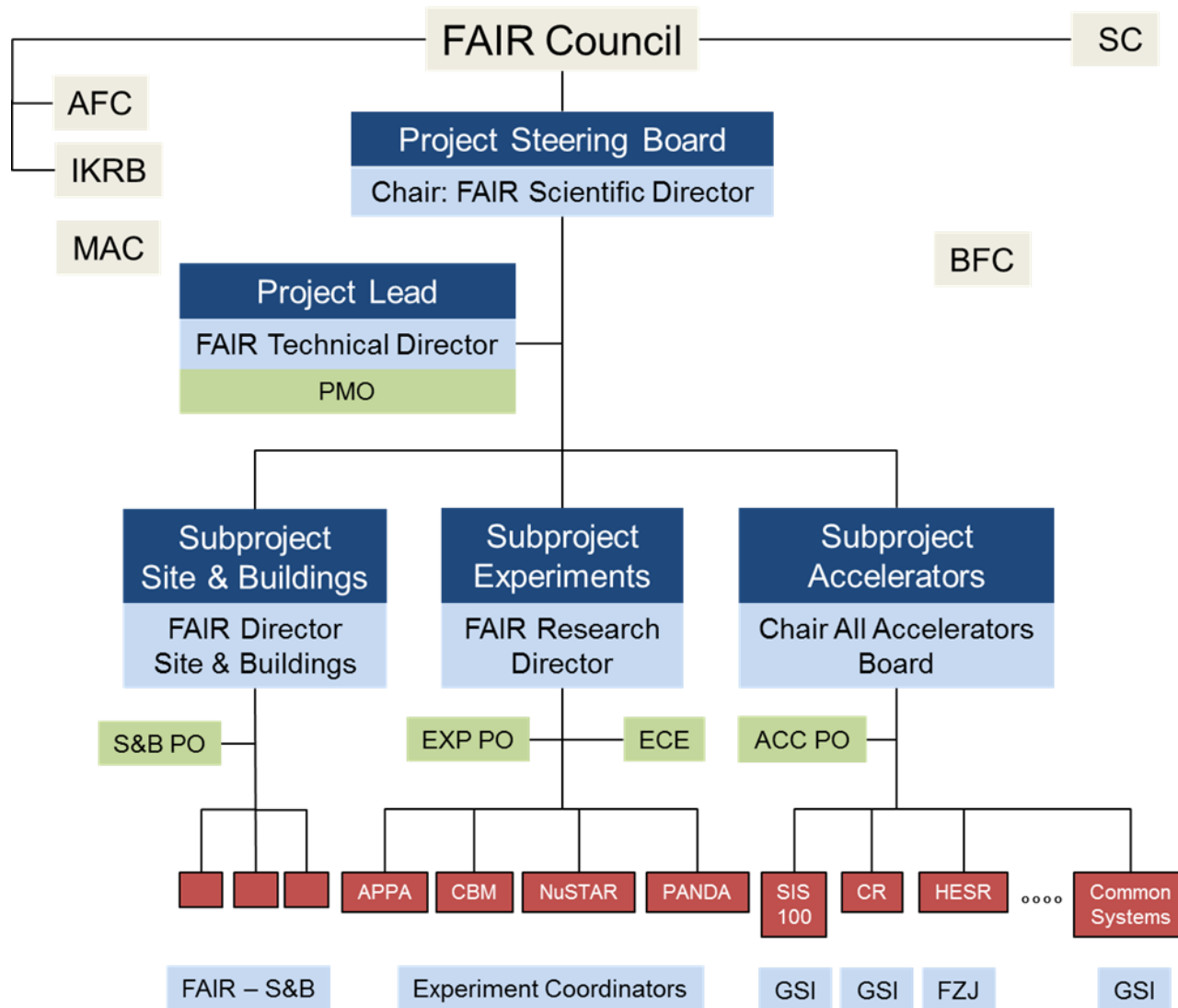
- FAIR Organization
- FAIR Project Site&Buildings
- FAIR Project Accelerators
- FAIR Project Experiments

Shareholders

- Transfer of GSI shares to **Slovenia** in progress
- Nomination of **Polish** shareholder in progress
- Ratification process in **France** continued after election of new parliament in June 2012

Associate members

- Negotiations with UK nearly finished
- Negotiations with Saudi Arabia in progress
- Talks with China in preparation



FAIR Project Steering Board, PSB,

meets once a month.

Project Lead Team, PLT,

established; meets weekly.

*Project Leader plus Sub-project Leaders S&B, ACC
and EXP.*

Project Management Office is being established.

and to steer experimental program:

Resources Review Boards Experiments

Project owner FAIR:

- Project Lead
- Project Administration
- Civil Construction (Bauherr)
- Project follow up for Accelerator and Experiments

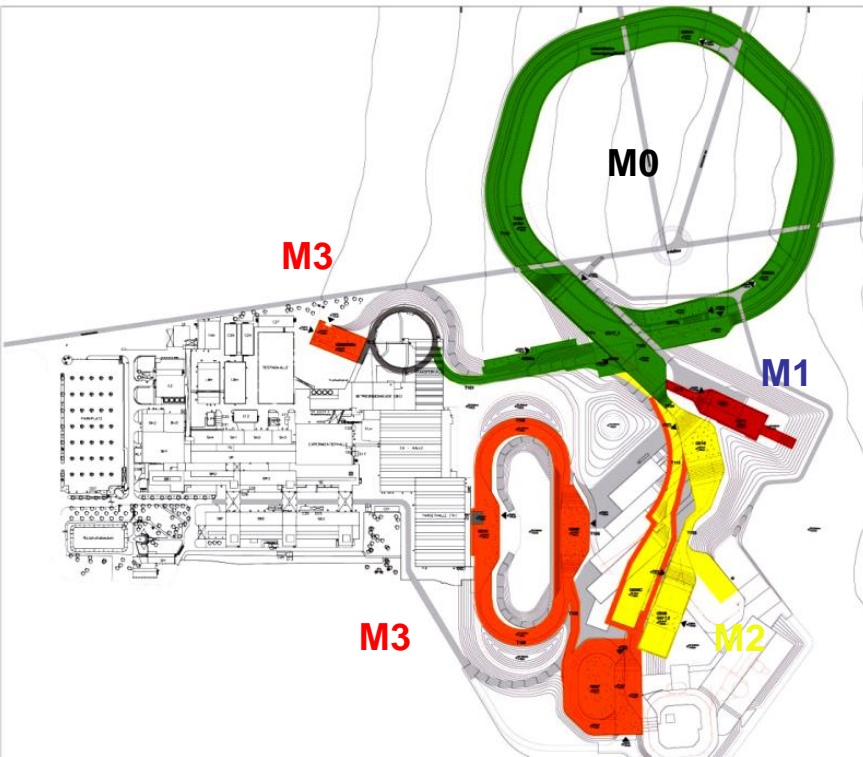
BMC

GSI :

- Shareholder for DE
- Functional respons. for accelerator
- Injector
- Participation in FAIR Collaborations
- Administrative support

.. now including on Radiation Safety

Project Lead Team & Project Steering Board in place



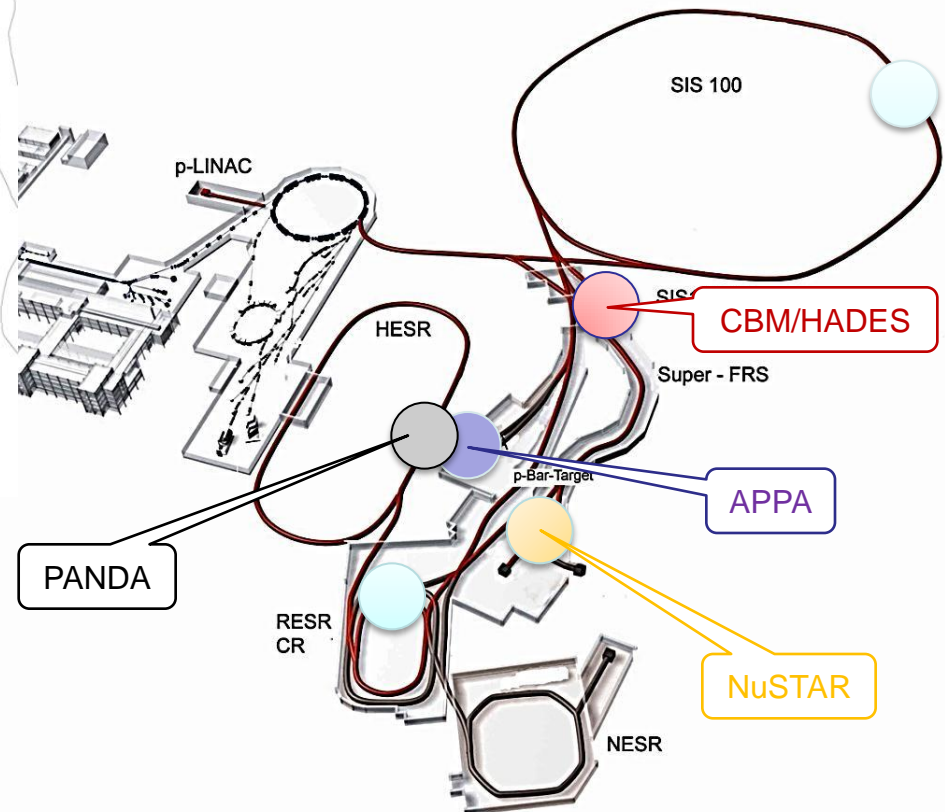
Experiments

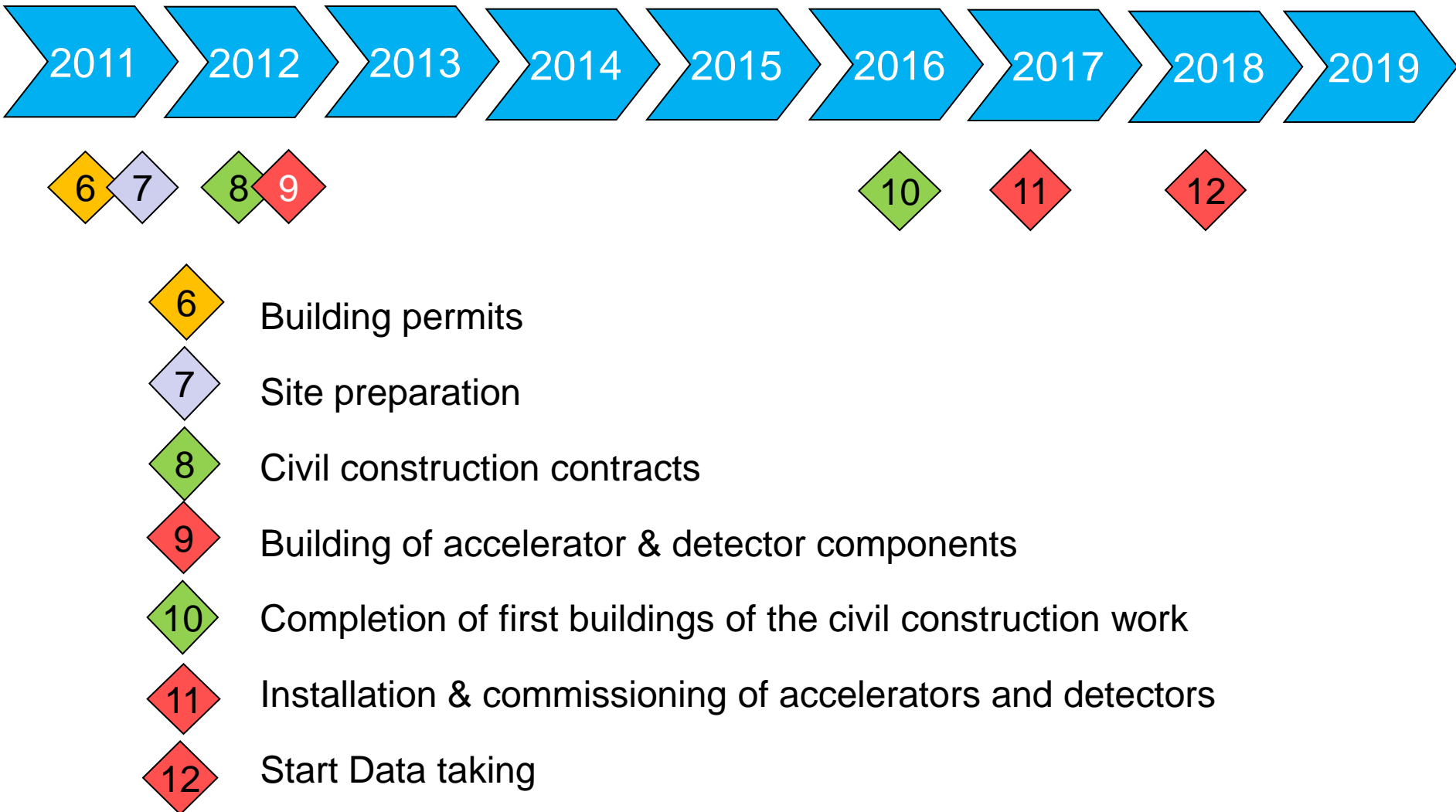
M1: APPA

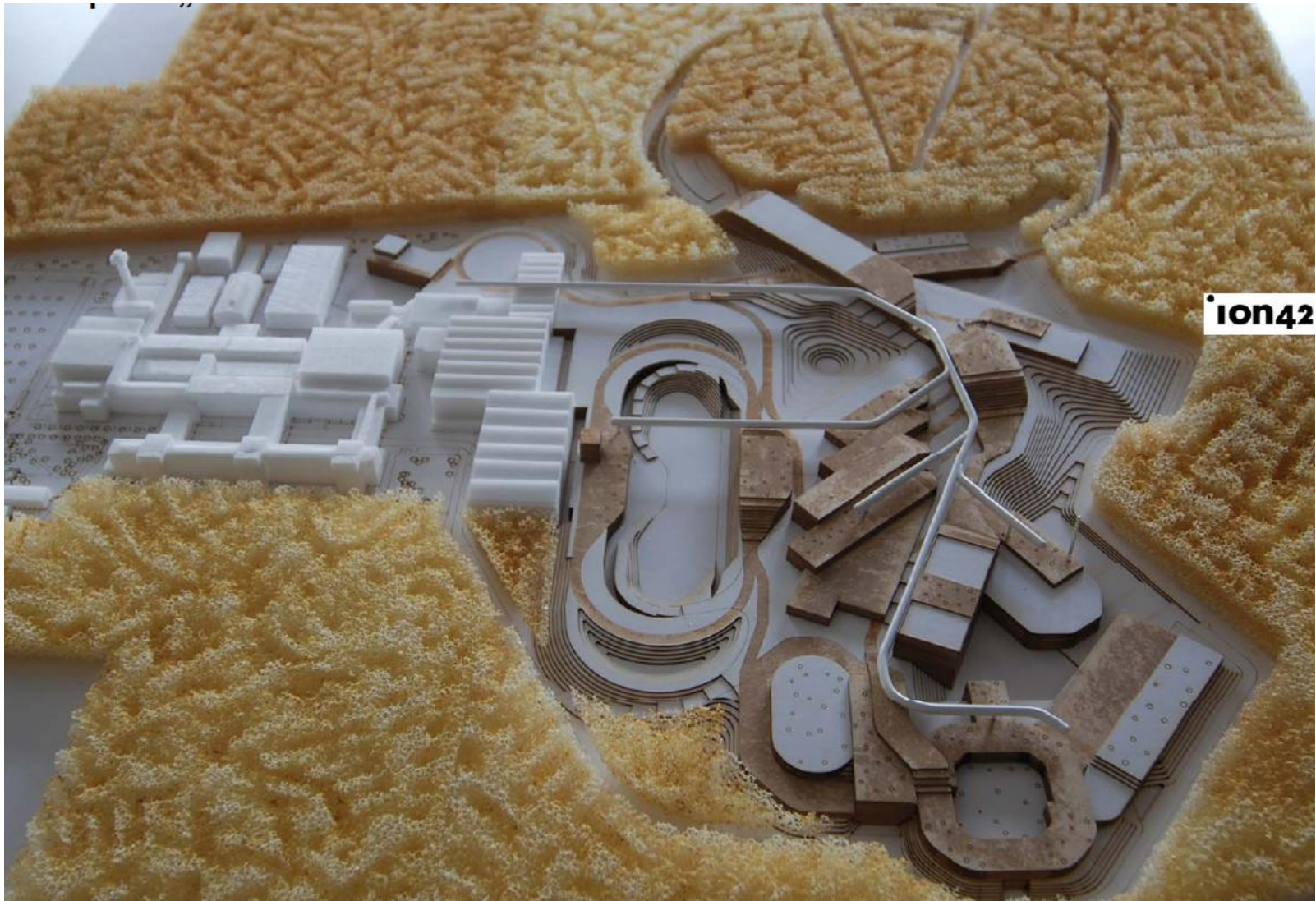
M1: CBM/HADES

M2: NuSTAR

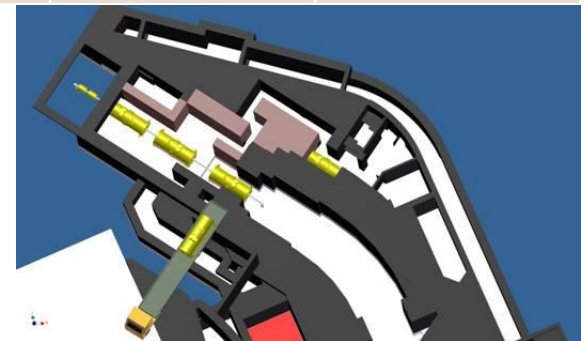
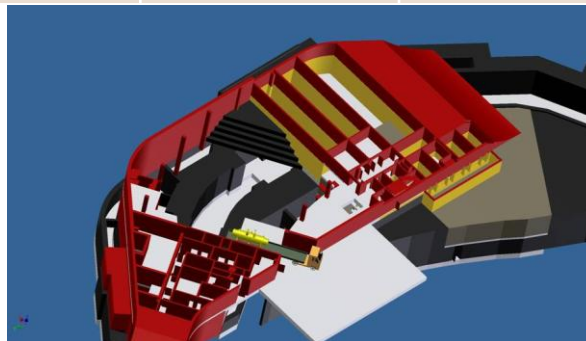
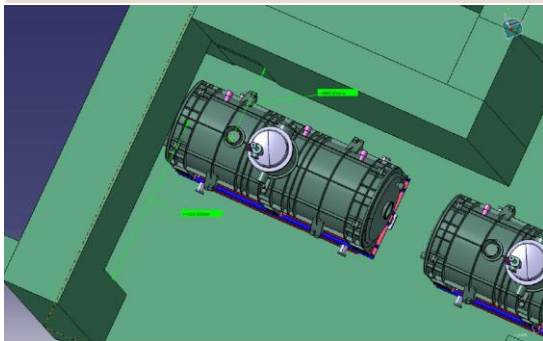
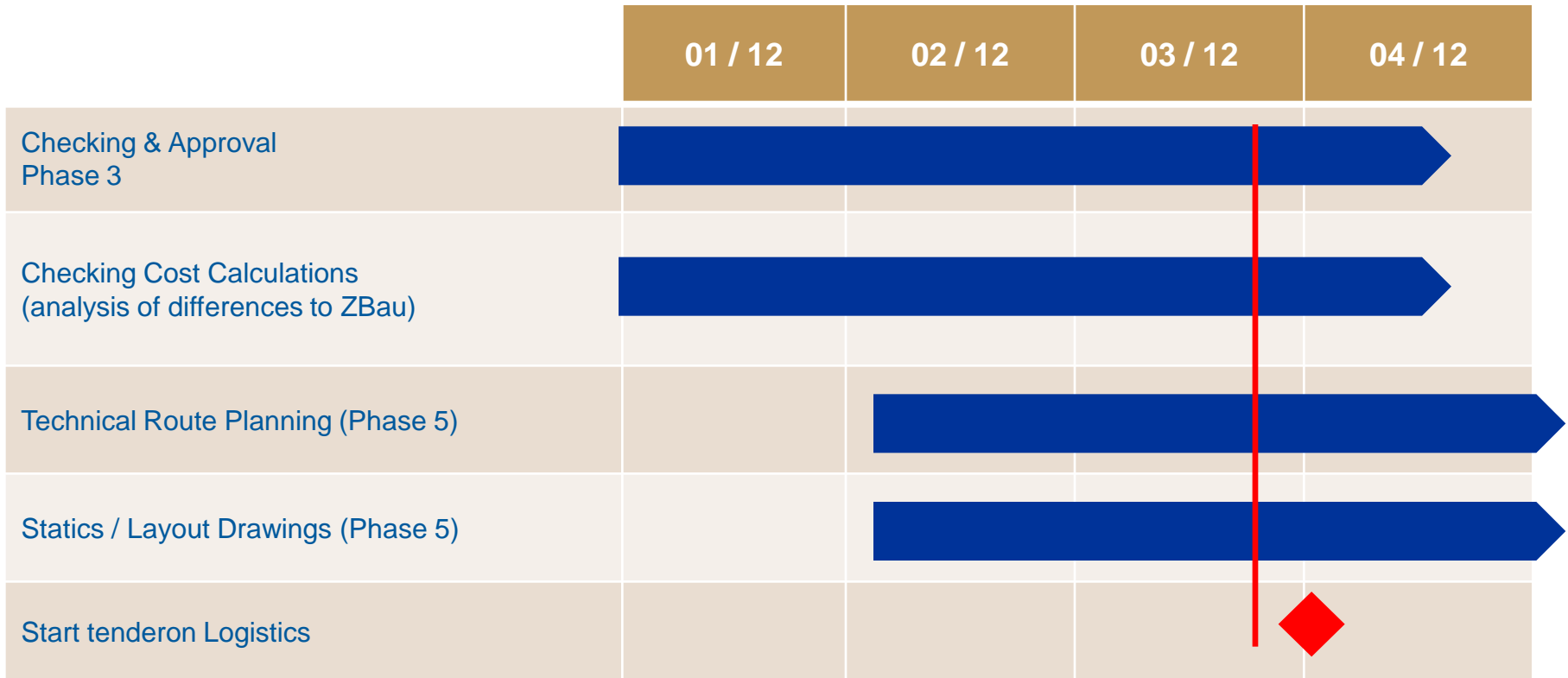
M3: PANDA





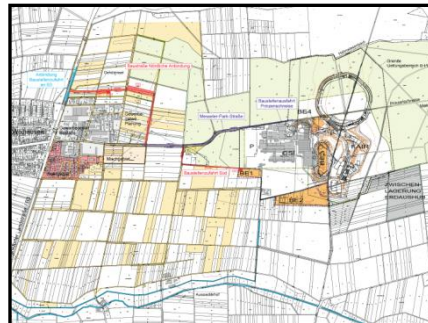


Status Planning Activities



Status Licensing Applications/Permits

	III / 11	IV / 11	I / 12	II / 12	III / 12
Building Application	◆ 31.08.11			◇	
Application Afforestation		19.01.12 ◆	◇	◇	
Application Water Rights	21./23.11.11 ◆			◇	
UVP Environment Comaptibility (ground water)		12.02.12 ◆ ◇	◇	07.03.12	
Application Water Rights (ground water management)				◆	◇



First Post Drilling 31/08/2011







Clearing the Site Started by End of 2011



Clearing the Site in TV



Further Preparatory Work

	01 / 12	02 / 12	03 / 12	04 / 12
Stripping of topsoil (area tree felling)				
Site roads (Messeler Parkstr.)				
Site roads (southern traffic link)				
Site roads (northern traffic link)				



Tender Road Map Civil Construction:

Issue	Start of tender/contract award
1. Construction site logistics	04.12/07.12
2. Drilling and casting 1500 pillars	07.12/11.12*
3. Concrete facility	08.12/02.13*
4. Building shell Lot1	08.12/02.13*
5. Building shell Lot2	09.12/03.13*

*early overview on construction costs (60-70%)

Public tender supervised and executed by Hessisches Bau-Management (hbm Fulda)

BMBF 75% share in funding expected for April

Experiments

Procurements on: PANDA crystals

approved by Council
to:

RUS BTCP, Bogoroditsk
(GER 4.0 M€)
(SWE 1.0 M€)
(FAIR 1.2 M€)

Accelerators

No tenders so far by FAIR

Tender by IK Contributors
e.g. GSI

IKC assigned by Council
on recommendation of IKRB

Tenders so far by IK
contributors

Site&Buildings

GSI signed contracts
on planning since 2008

FAIR took over on Oct.1, 2011
Commitment 36 M€
next step of work phase started

Tendering under preparation

Assignment of In Kind Contracts proceeds

Direct Contracts between FAIR and (Rus) Laboratories
approved (Collaboration Contracts) by Council in Nov. 2011

In Kind Contracts Accelerators

Subproject	Item(s)	Country/Provider	Costbook value	Status approval by	Contracts status
ACC Personnel	1450 person-years on tech. supervision	GER/GSI	108	Council	Signed
ACC	HESR	GER/ FZJ	37,901	Council	Signed
	HESR magnets, power converter	ROM/ ICPE-CA	3,918	Council	Close to signing
	HESR diagnostics	SLO/Consortium (ITech)	1,992	Council	Draft
	CR debuncher	GER/GSI	4,494	Council	Close to signing
	SIS100 dipoles	GER/GSI	8,254	Council	Draft
	Local Cryogenics for SIS100 & S-FRS	POL/Consortium (WUT)	9,475	Council	Draft
	S-FRS Multiplets	GER/GSI	28,801	Council	Draft
	S-FRS Energy buncher	IN/VECC	14,614	Council	Draft
	S-FRS power converter	IN/Bose Inst.		Council	Draft
	p-linac parts	GER/GSI	2,279	Council	Draft
	Control system	GER/GSI	18,313	Council	Draft
	Beam diagnostic & Control system	SLO/Consortium (CosyLab)	10,014	Council	Draft
	Sc magnet testing	GER/GSI	6,308	Council	Draft

Subproject	Item(s)	Country/Provider	Costbook value	Status approval by	Contracts status
ACC	HEBT dipoles	RUS	6,99	Council	Close to signing Specs under preparation

On March 28, 2012 new IKC and CC in IKRB recommended

Regarding GSI:

2.8.4.3 (Bunch-compression rf system), 2.8.4.4 (Barrier bucket system), 2.4.8.6 (Transversal K.O. exciter), 2.8.5.1 (Injection kicker), 2.8.5.2 (Emergency/extraction kicker), 2.8.5.5 (Electrostatic extraction septum), 2.14.8.1.5 (Cryogenic plan CryoHeSu+Compressor), 2.14.14 (Quench detection system).

The total cost-book value of these items amounts to 14,320,692.80 €.

Regarding power converters to India (ECIL)

2.3.3.1.1.1, 2.3.3.1.2.1, 2.3.3.1.7.1, 2.3.3.1.19.1, 2.3.3.2.12.1, 2.3.3.2.13.1, 2.3.3.2.14.1, 2.5.3.3.1.1

The total cost-book value of these items amounts to 1,077,469.00 €.

Regarding magnets for HEBT to RUS (Efremov)

2.3.2.1.13.4, 2.3.2.1.13.6, 2.3.2.1.13.7, 2.3.2.1.13.8, 2.3.2.1.13.9, 2.3.2.1.9, 2.3.2.2.2, 2.3.2.2.10, 2.3.2.2.11, 2.3.2.2.12, 2.3.2.4.1, 2.3.2.4.3

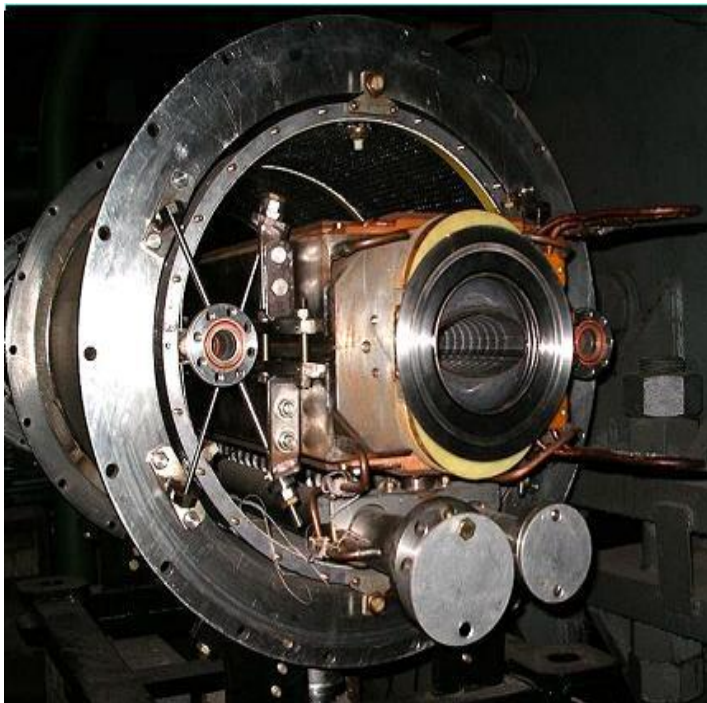
The total cost-book value of these items amounts to 8,348,124.50 €.

Regarding vacuum chambers, magnets etc. to RUS (BINP)

2.5.2.1, 2.5.2.3.1, 2.9.2.1, 2.9.2.3, 2.9.2.4.1, 2.3.7.1.2.1.1, 2.3.7.1.2.1.2, 2.3.7.1.2.1.3, 2.3.7.1.2.1.5, 2.3.7.1.2.1.8, 2.3.7.1.2.2.1, 2.3.7.1.2.2.2, 2.3.7.1.2.2.13_12, 2.3.7.1.2.2.13, 2.3.7.1.2.2.14, 2.3.7.1.2.3.2, 2.3.7.1.2.3.3, 2.3.7.1.2.3.10, 2.4.7.1.1, 2.4.7.1.2, 2.4.7.1.4, 2.4.7.1.5, 2.4.7.1.11, 2.4.7.1.12, 2.4.7.4.2, 2.5.7.1.2.1.1, 2.5.7.1.2.1.2, 2.5.7.1.2.1.5, 2.5.7.1.2.1.8, 2.5.7.1.2.2, 2.5.7.1.2.3.1, 2.5.7.1.2.3.2, 2.5.7.1.2.4.1, 2.5.7.1.2.4.4, 2.5.7.1.2.4.5.

The total cost-book value of these items amounts to 17,699,430.90 €.

Fast cycling superconducting magnets
 $\text{dB/dt} \sim 4\text{T/s}$



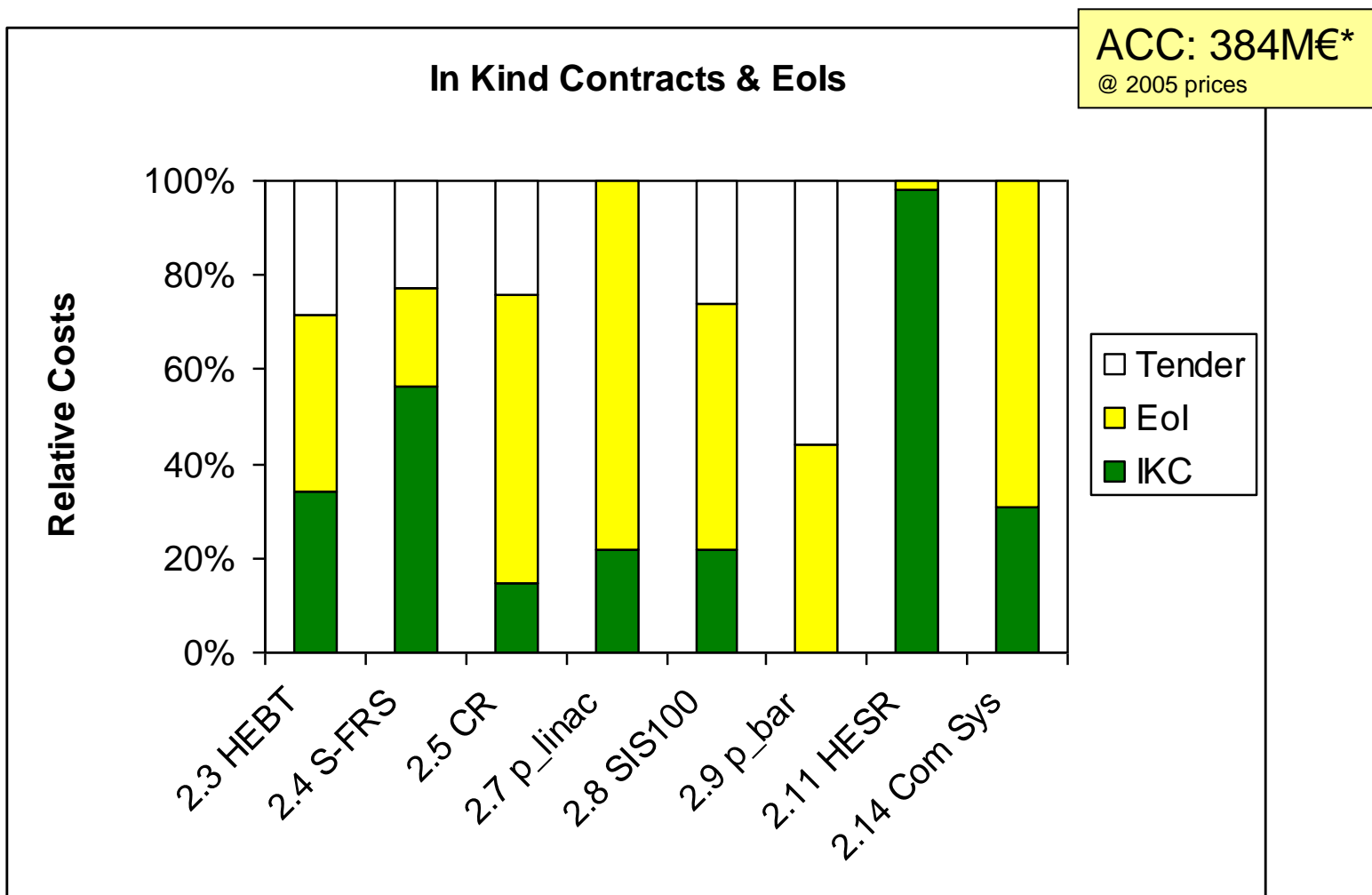
113 SIS100 dipoles ordered from Babcock Noell in Jan. 2012 (German in-kind contribution, BMBF grant to GSI)

Recommendations of GER IKC to Council:
Bunch-compression rf system, Barrier bucket system
Transversal K.O. exciter,
Injection kicker Emergency/extraction kicker
Electrostatic extraction septum
Quench detection system

Quadrupole Modules proposal by JINR & GSI
(funding needs to be secured by respective procedures)

RF System of SIS100 to be procured by FAIR.

In Kind Contracts and Expression of Interest on ACC



Coverage: presently due to Council decision -> with today's proposals:
152 M€ (40->50%) by IKC, 172 M€ (45->34%) by Eols, i.e. 60 M€ (15 %) by tenders

Components on the Critical Path prepared for tender:

- SIS100 acceleration **RF system** (EoI withdrawn)
- Antiproton magnetic horn **pulse power supply** (no EoI)
- **CR quadrupole magnets** (EoI withdrawn)

Clarification needed:

- **Super-FRS superferric dipoles**

Superferric Dipole for Super-FRS - Prototype by China FAIR



- field quality tests successful
- quench tests successful
- stored energy ≈ 400 kJ
- inductance ≈ 15 H
- heat load @ 4.2 K: < 8.1 W

Magnetic flux:

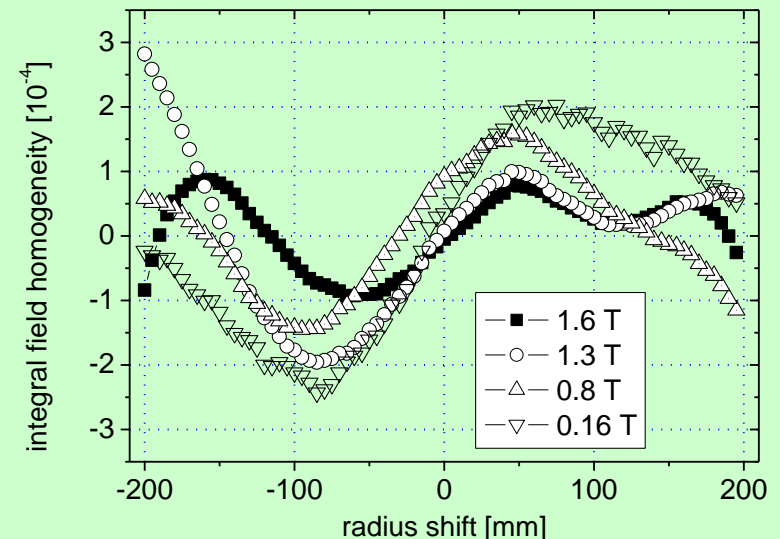
$$B_{\text{gap}} = 1.6 \text{ T @ } I = 232 \text{ A}$$

Required field quality:

$$\Delta B/B = \pm 3 \times 10^{-4}$$

over ± 190 mm

Measurement (cold test)

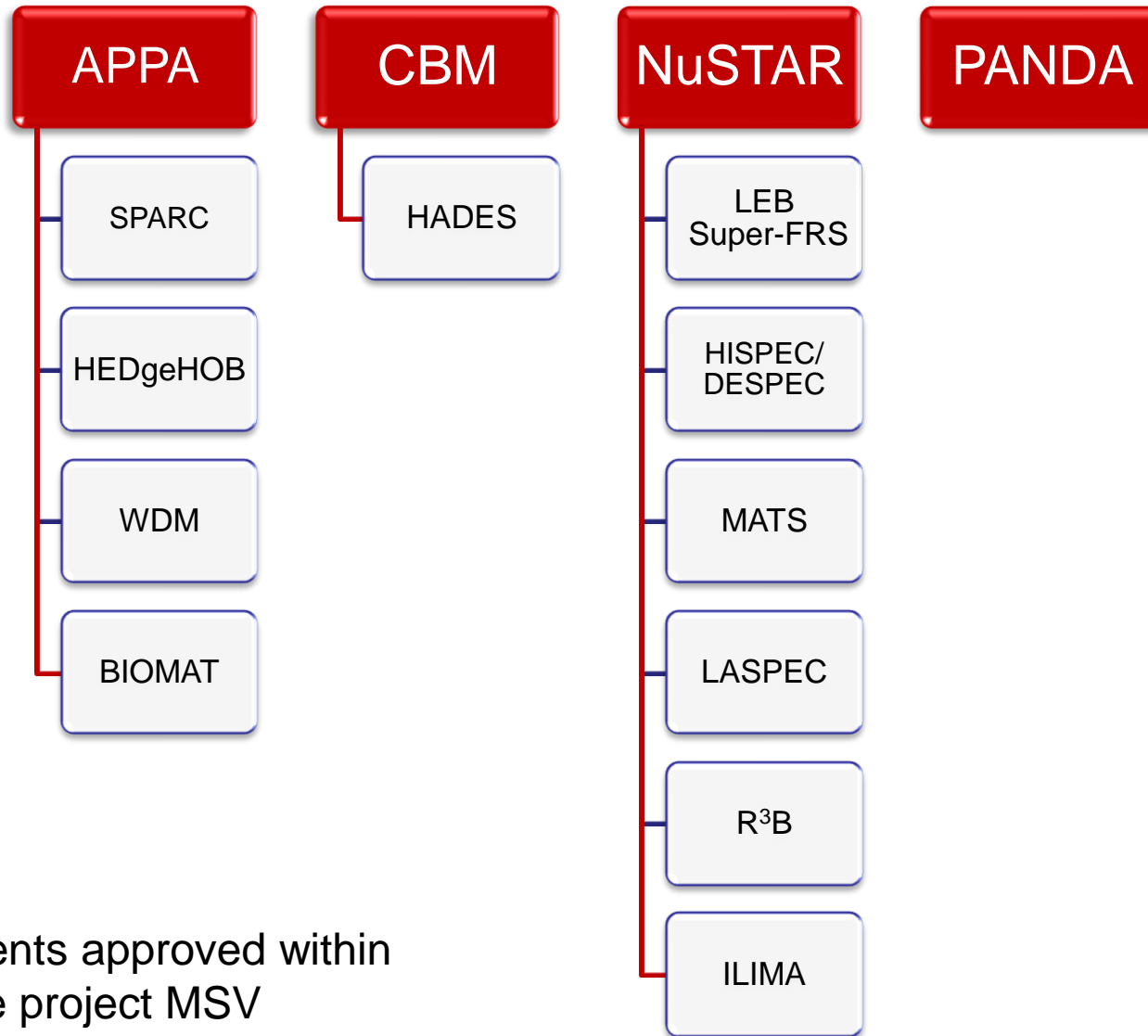


Analysis of actual costs by
France (CEA), Spain (CIEMAT), Russia (BINP)

Discrepancy to Costbook (7,4 M€) : factor of 4 \leftrightarrow 2

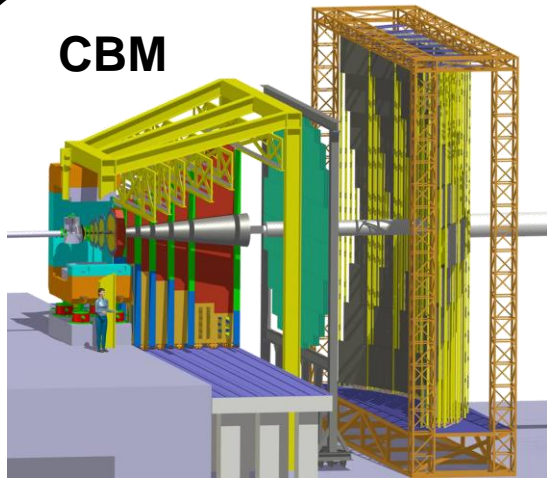
A common collaboration proposal of CEA and BINP is under
preparation

Clarification required up to mid of 2012
to prepare tender to avoid running out of time



13 experiments approved within
scope of the project MSV

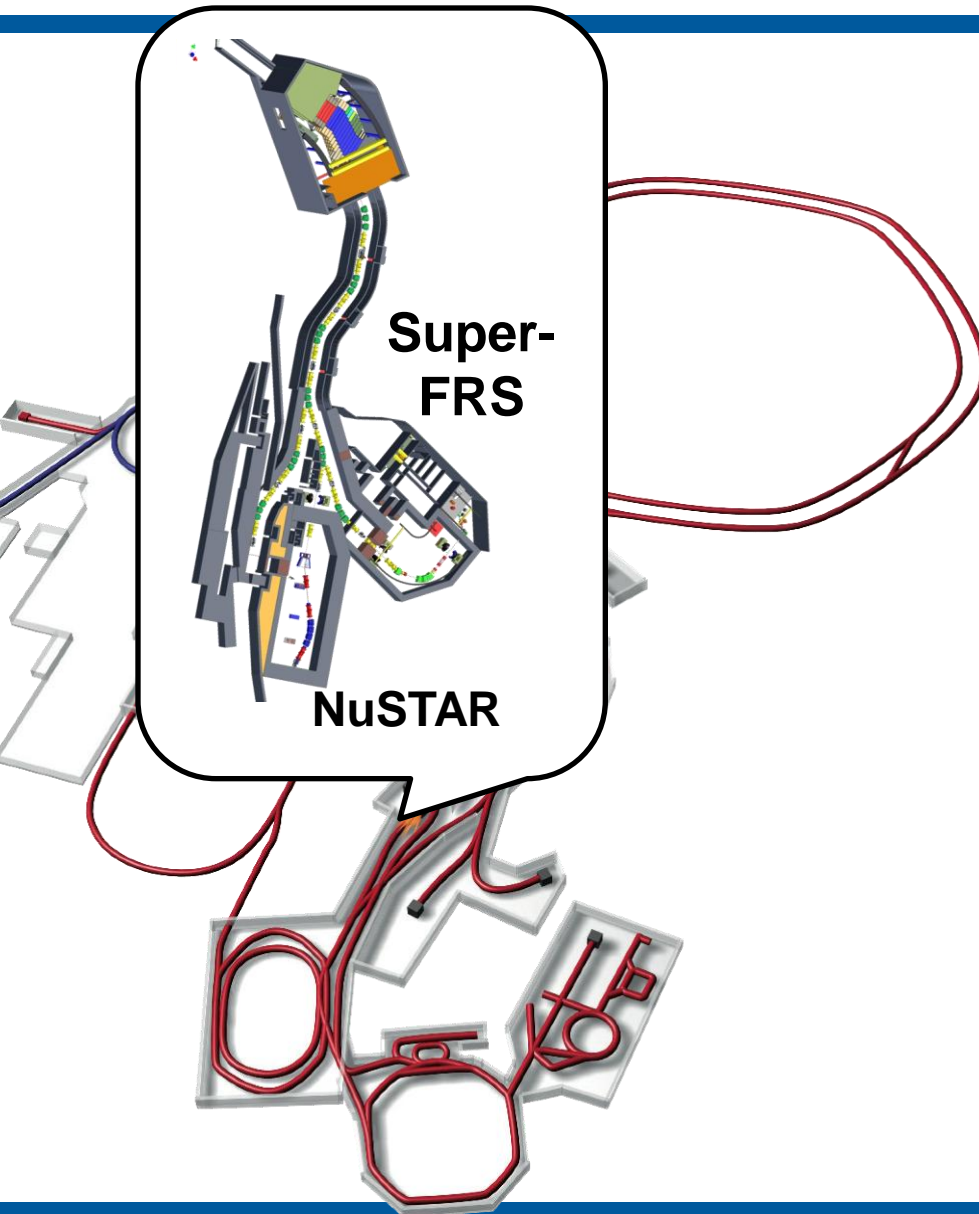
CBM



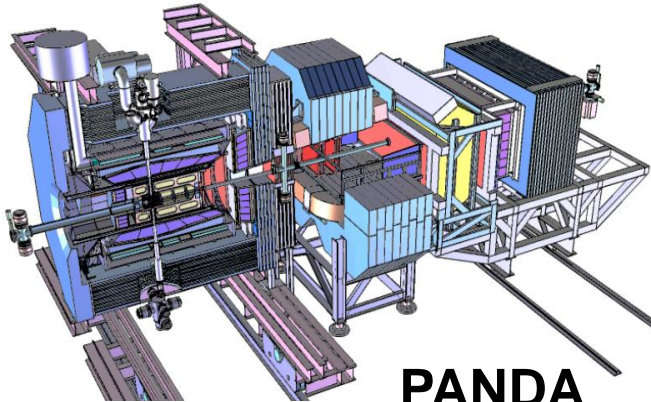
HADES detector upgraded

Finishing R&D work

Collaboration with Dubna
(NICA) being considered

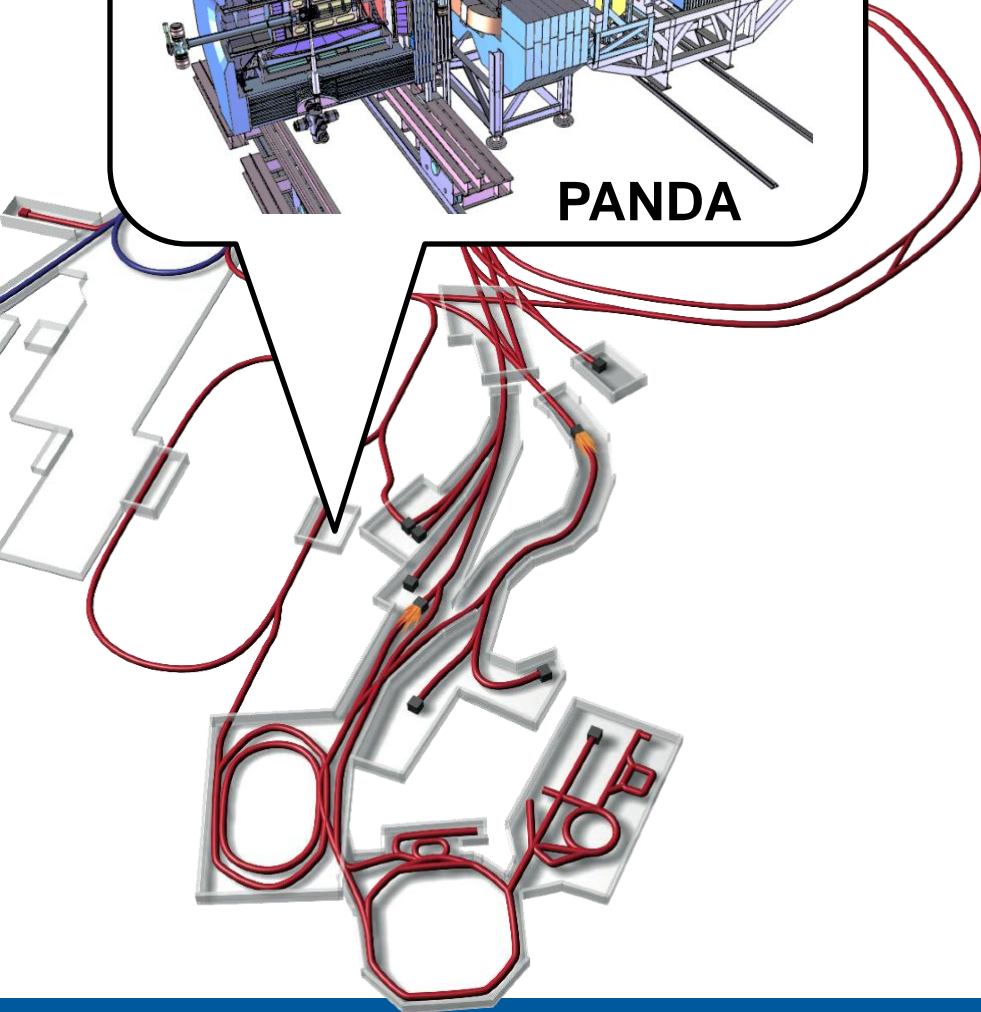


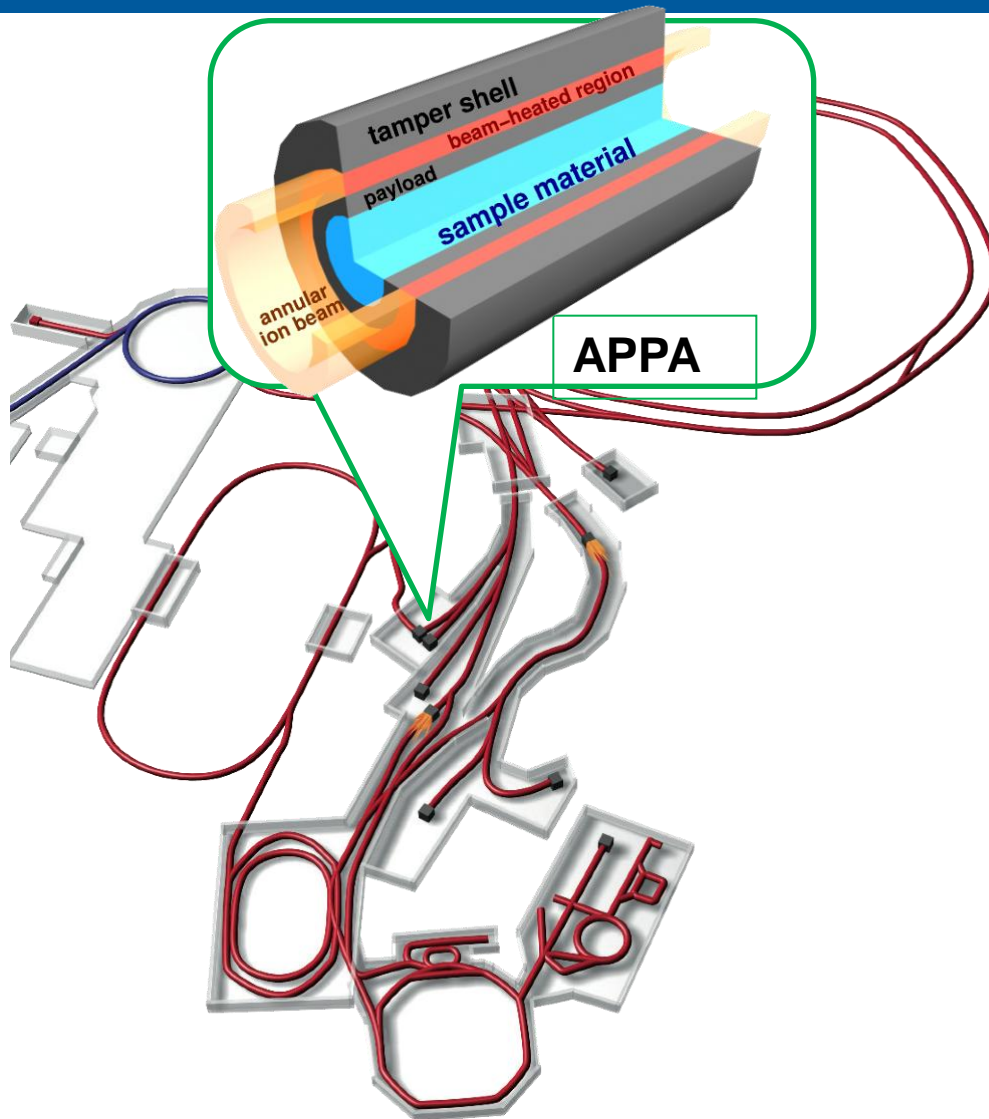
- Hall LEB being considered by Collaboration
 - caveat: no funds available in MSV budget
- Experiments at HESR being considered



PANDA

- R&D being finished
- Remaining TDRs being finalised
- Premounting at FZJ being prepared





- Layout of APPA hall finalised
- Options explored for experiments at
 - HESR
 - Cryring @ ESR

Project

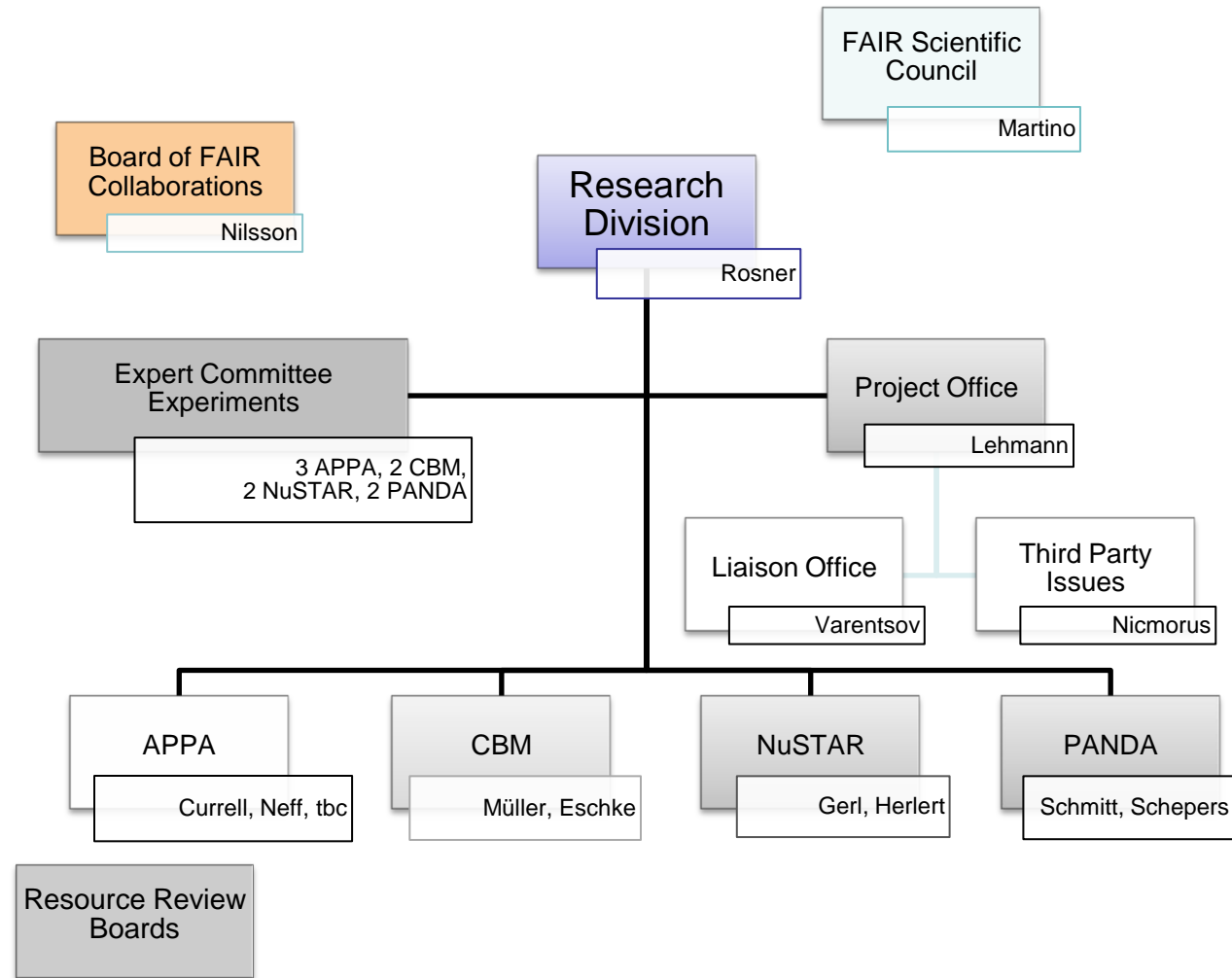
- structure defined
- staff in place

Experiment Coordinators

- mostly allocated

Expert Committee Experiments

- list being consolidated



- **Collaborations** finish *R&D* phase
 - Deliver prototypes of essential parts of detectors
- **Collaborations** submit *TDRs*
 - Take decisions on alternative technical solutions
- **FAIR Research Division** initiates and monitors procedures through
 - Project Office
 - Technical and Resource Co-ordinators
- **FAIR** establishes Expert Committee Experiments, *ECE*
 - Nominations by Collaborations
 - Co-ordination with FAIR Council Chair
 - Negotiations with nominees
 - Approval by FAIR Council
- **FAIR** establishes TDR *Review Panels*: ECE members (+ external experts)
- **FAIR** organises/monitors the co-ordination of experiments with
 - Civil construction
 - Accelerators/storage rings
- **Collaborations** identify, in collaboration with **FAIR**, *critical pathways* regarding
 - Timelines, milestones, deliverables
- **Collaborations** submit *risk management* plans
 - To be assessed by FAIR and
 - integrated into Risk Reports to AFC and Council
- **Funding Issues**
 - **FAIR** organises *Resource Review Boards* in collaboration with each Collaborations, which report to participating funding agencies
- Each **Collaboration**, their **Funding Agencies** and **FAIR** negotiate *Construction MoU*

- **Proposal submitted to AFC**
 - for recommendation to Council
- **One RRB for each pillar**
 - APPA, CBM, NUSTAR, PANDA
- **Representatives from**
 - management of collaboration and FAIR
 - all funding agencies involved + link pers.

Instead of a Summary

- **In place**
 - 50+64+(324) M€
 - Verbundforschung
- **To come**
 - 587+146++ M€



Things are moving ... and there are many challenges in front of us.

Thank you very much !