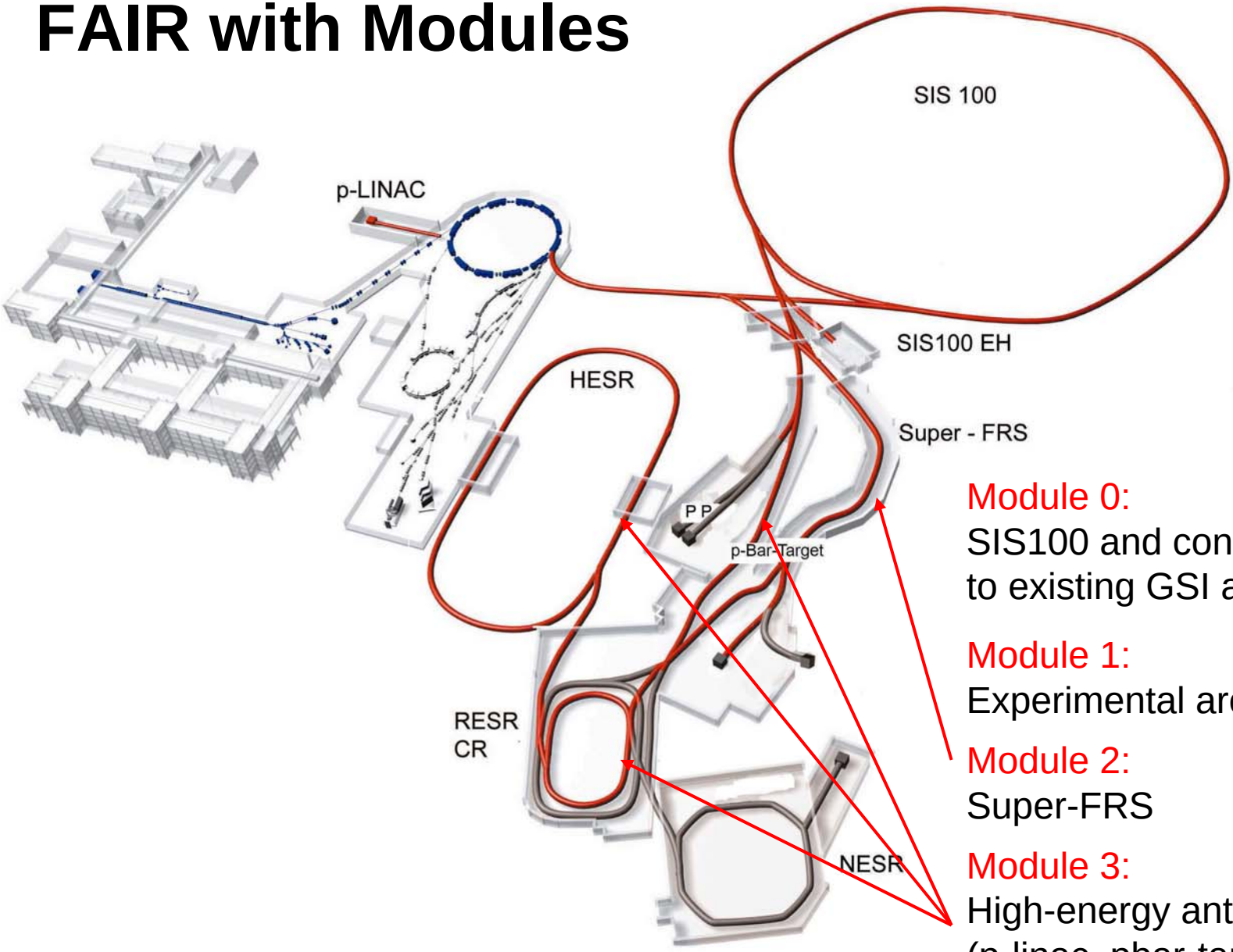
ILIMA Status Report

Helmut Weick, GSI

Darmstadt, 2nd March 2010

- **FAIR Status**
- **Timeline**
- **Working Groups**
- **Finances**

FAIR with Modules



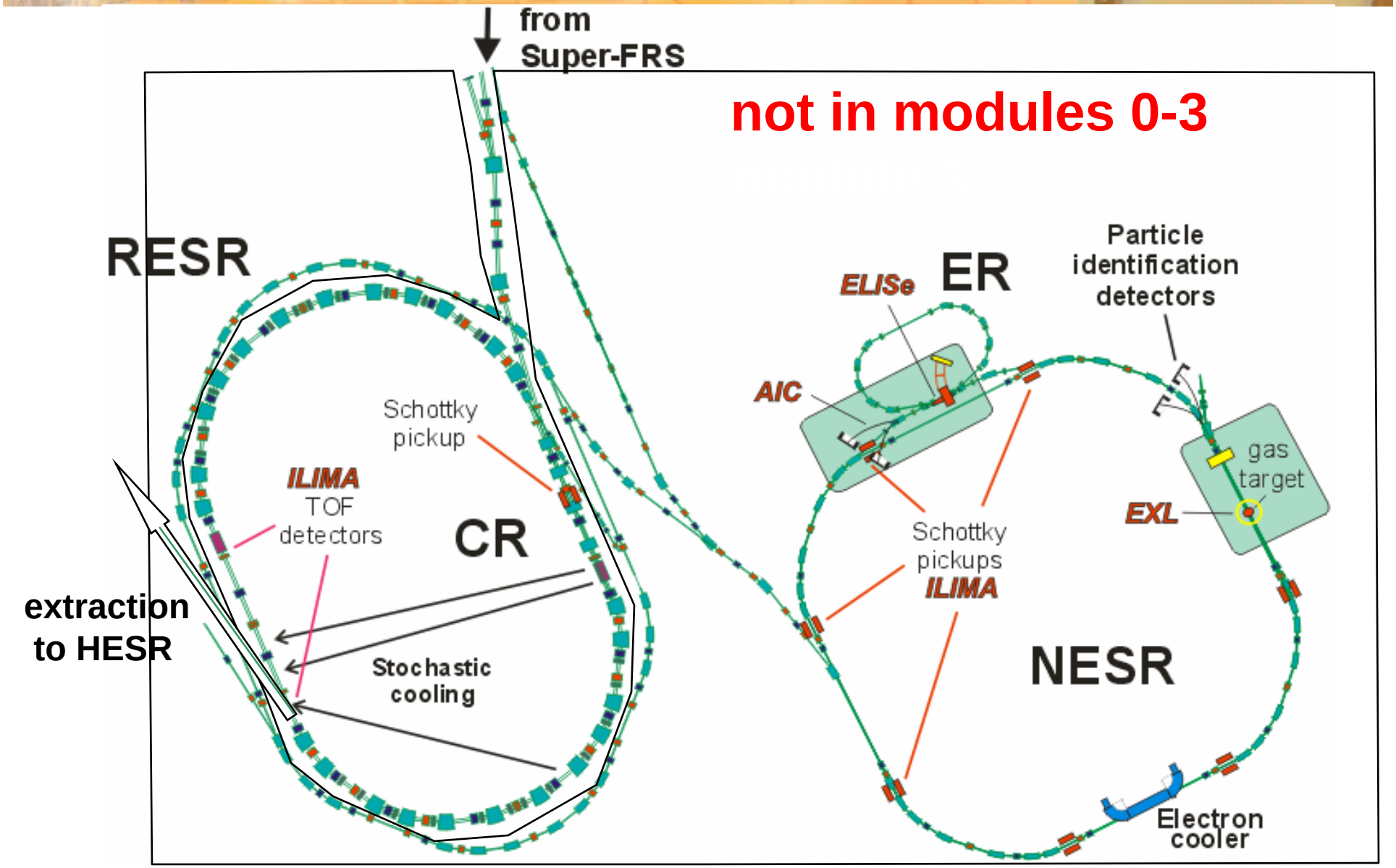
Module 0:
SIS100 and connection to existing GSI accel.

Module 1:
Experimental areas

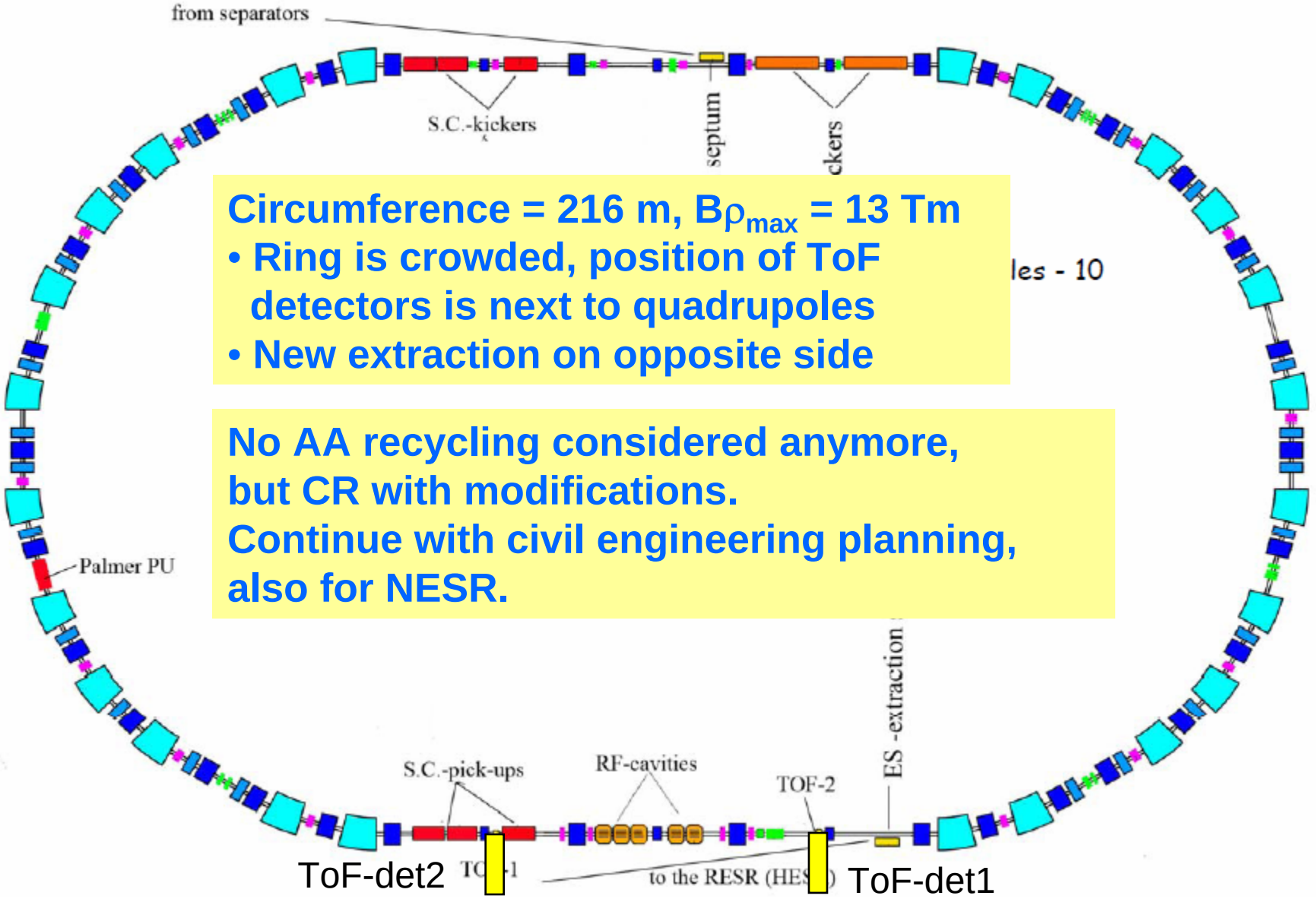
Module 2:
Super-FRS

Module 3:
High-energy antiprotons (p-linac, pbar-target, CR, HESR)

Rings Overview



CR67: without RESR, CR extraction to HESR



Circumference = 216 m, $B\rho_{max}$ = 13 Tm

- **Ring is crowded, position of ToF detectors is next to quadrupoles**
- **New extraction on opposite side**

No AA recycling considered anymore, but CR with modifications.
Continue with civil engineering planning, also for NESR.

FAIR Time Schedule

Roadmap

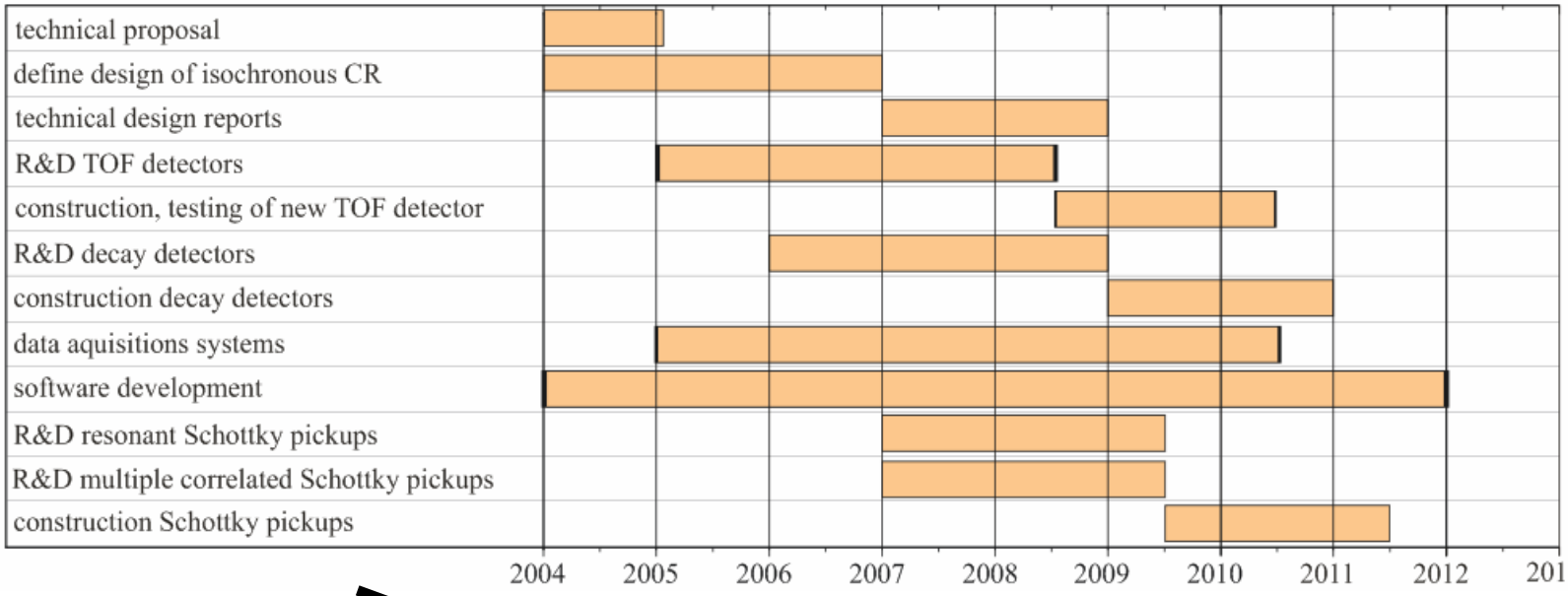
- Start of construction activities 2010/11
- Schedule is driven by **civil construction**
- Aim for earliest commissioning of accelerators and respective experiments

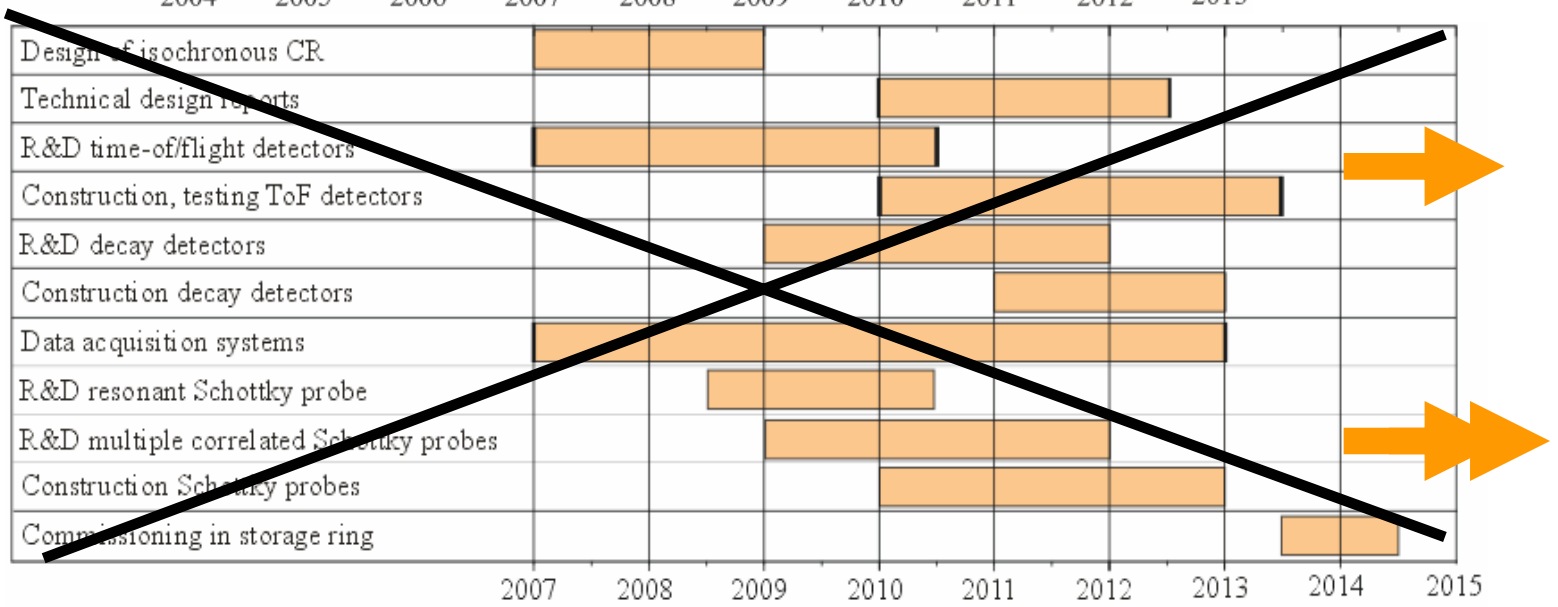
Module	Construction time (months)	Ready for installation
0	72	2015 / 16
1	28	2015 / 16
2	60	2016
3	60	2016

B. Sharkov

Meeting spokespersons with Majka/Krämer last week
"The actual digging will start in 2012 after cutting the trees in 2011/2012."

Time Schedule for ILIMA from IMoU and new





Working Groups

ILIMA Technical Board

Sub-Project	Group Leader		Institute
Project Manager, Chair	**H**	**Weick**	GSI, Darmstadt
Simulation and Beam Handling	H	Weick	GSI, Darmstadt
Evaluation Software	Yu	Litvinov	MPI Kernphysik Heidelberg
Physics and Theory Programs	Z.	Patyk	Soltan Inst. Nucl. Studies, Warsaw
ToF Detectors	W	Plaß	GSI / Univ. Giessen
Schottky Detectors	C	Kozhuharov	GSI, Darmstadt
Other Detectors	I.	Dillmann	Univ. Giessen
Spokesperson	P	Walker	Uni. Surrey
Deputy-spokesperson	Yu	Litvinov	MPI Kernphysik Heidelberg

good news, all WG can also work with ESR !

WG: Simulation, Beam Handling

CR: Further ideas to improve isochronicity for larger emittance

- **Achromatic condition is essential, for isochronicity with respect to the transverse momentum spread (phase space).**

- **In ESR not even fulfilled to first order.**
  In CR possible up to second order with hexapoles.

WG: Schottky

see talk by Fritz Nolden

WG: Particle Detectors

Get more experience with particle counting in addition to Schottky for lifetime measurements. Experiment E073 on alpha-decay lifetime in July.

Larger interest for more particle detectors in ring.

- **(p,γ), (α,γ) reaction experiment**
- **experiment on ^{19}Ne alpha decay of Phil Woods**
- **EXL new detector pockets –> parallel meeting**

One goal is detector on inside of dipole, charge pickup, β^- decay for ions with Z<50.

DSSDs counters as well as MWPCs + scintillators.

ToF Detector

- see talk by Wolfgang Plaß

- Faster DAQ, already next experiment we can get spills at 2 Hz frequency but old oscilloscope needs 10-20s for storage.
  Development by LeCroy ~300 MB/s for new 20 GHz scope, 150 k€
  possibility to get a test device for next ESR experiment

- Test analysis with second ToF detector.
  Possible in CSRe at Lanzhou ?
  Do tracking and velocity measurement in non-isochronous ESR.

WG: Evaluation Software

Analysis of ESR experiments

full IMS data not ready yet but evaluated.
SMS: thesis Lixin Chen

Correlation Matrix

investigation how to divide settings,
always correlation over full spectrum?

Oscillations Analysis

Software to analyze intensity steps in few-ion Schottky spectra.
Hans Essel, Nicolas Winckler

AME mass evaluation

is continued in by Meng Wang, also George Audi is still active.
and Bernd Pfeiffer is employed by GSI.

Status of Funding

GSI budget:
nuclear structure, nuclear reactions, and atomic physics, also accelerator department, e.g. new Schottky (~70 kEuro)

BMBF FAIR project money:
Application by GSI for German funds (several million Euro) titled NUSTAR storage rings, and for GSI ILIMA has priority. We need a technical design report to apply for this money, then approval is likely (up to now by STI).

BMBF-Verbund: money for Univ. Giessen (NuSTAR.de)
184 kEuro, ½ position over 3 years + invest. for ToF det.

Status in other countries:
Japanese Grant for University of Tohoku for Si detectors.