

Introductory Remarks
2nd Detector Alliance Workshop

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The particulars of the Alliance

The aims of the Alliance in general

In order to optimally place German particle physics in an increasingly global environment, it is now the right moment to create new and improved structures for particle physics in Germany. This is the overarching goal of the proposed Alliance. A structured network comprising 17 universities, 2 Helmholtz institutes and 1 associated Max Planck institute will be created as a tool for a more effective collaboration, in particular between experimentalists and theorists. The Alliance will cover four Research Topics, addressing the fundamental questions of particle physics, distributed computing, novel detector development and accelerator science. An important aspect of the Alliance will be the creation of common infrastructures. All partners of the Alliance will contribute to and use these infrastructures for specific research projects.

This is new!

This should be tried and adjusted and followed up!

Alliance almost 2 years old →

by now an established and used structure in German particle physics

Alliance tools in detector physics

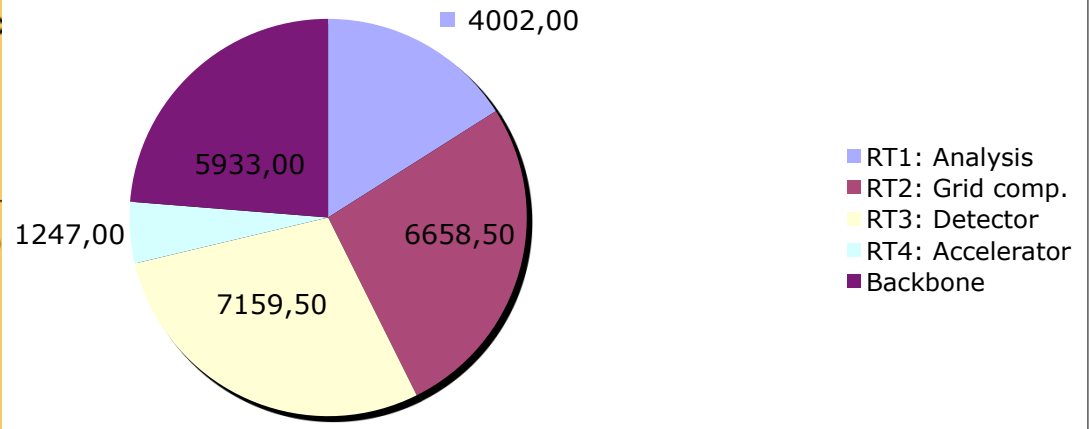
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Monitoring tools	ILC Detectors <ul style="list-style-type: none"> • Vertex Detector • Tracking • Calorimetry • Forward Detectors 	Optimi <ul style="list-style-type: none"> • Accele • Source • Beam t
etrieval	(s)LHC Detectors <ul style="list-style-type: none"> • Vertex Detectors • Tracking • Trigger • Luminosity Monitor 	
g Centre s Tier 2 cility etwork	Virtual Detector Lab <ul style="list-style-type: none"> • VLSI & Electronics • Support Sensor Design & Characterization • Detectors Systems Support 	Advan Scienc
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Is: ources onitoring ment	R&D Projects	R&D P

Funding in total: 7,16 M€

~ 6 M€ in common infrastructure + personnel

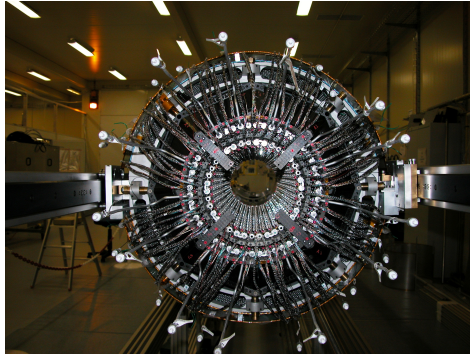
~ 1,2 M€ initiating special research

HGF Request [kEUR]



Detector R&D in Germany (maybe not complete apologies)

Very strong! Substantial detector R&D and building in Germany (just LHC)



Si – detectors:

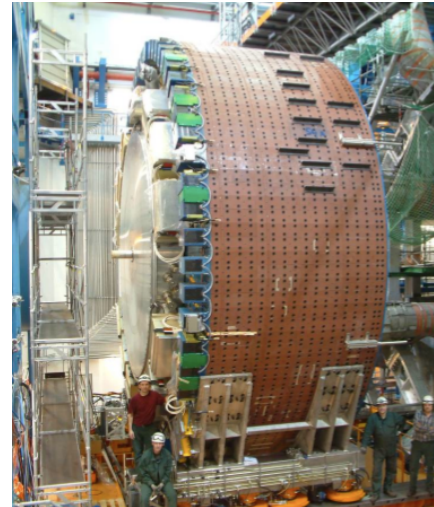
AC, HUB, BN, DESY, DO, FR, GÖ, KA, HH, MPP, MPIK, SI, W

Calorimetry

DD, MZ, MPP, W,

Tracking Chambers (μ chambers)

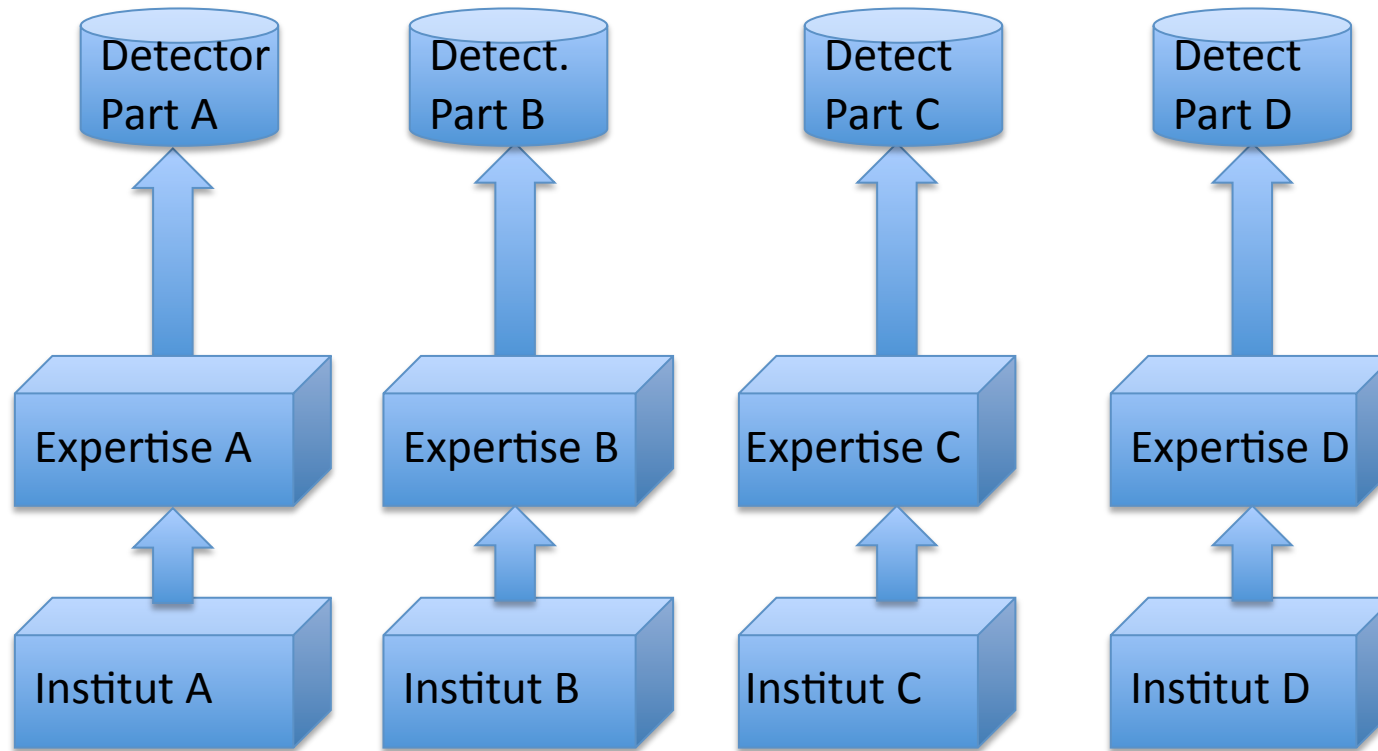
AC, FR, M,



+ Trigger

DO, HD, MZ

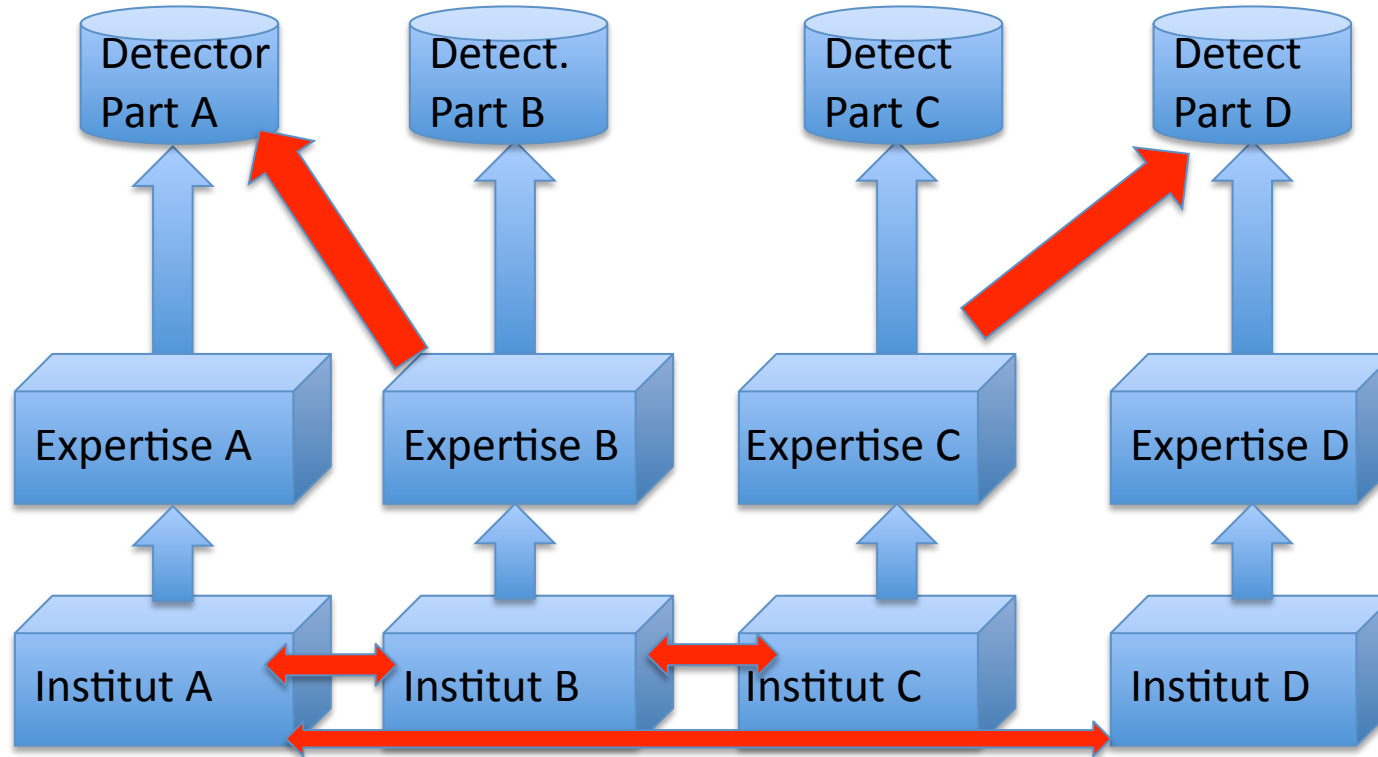
Detector R&D in Germany: Institutes only loosely connected



In general: Individual and separate engineering and technical expertise at institutes,

- repetition of resources and
- limited expertise & contributions to experiments ,
- potential dependence on few people
- It works but can it make to work better?

**Vision of Alliance Detector R&D in Germany:
Encourage and make possible common tools and research**



- Use: engineering and technical expertise at institutes,**
- Highlight and advance special resources at institutes**
 - continuously develop expertise further to**
 - beyond critical mass**
 - Will it make our work better?**

Alliance Tool I: foster exchange

No forum in Germany to discuss common issues

(apart from DPG Tagung at the level of diploma & doctoral students)

This workshop is a great opportunity

- to get an overview over detector R&D in Germany
- to understand the needs for (common) infrastructure and expertise
- to find out if/how running projects can profit from Alliance

Importance of detector project board: moderating ideas and visions

- Take up ideas and requirements
- encourage communication among groups, experiments, projects
- prioritise them
- support funding

But: no top → down approach!

Ideas, requirements and tools to come from actual R&D in groups.

No contradiction to worldwide effort:

Strengthening detector R&D in Germany to strengthen international efforts

Tool II: initiate R&D programs

Very successful projects to *initiate* R&D on special issues

→ lead them to obtain longer term funding from other resources

However, not at the CORE of what the Alliance is meant for!

Overlap with other funding:

- BMBF Verbundforschung,
- DFG,

Very carefully judge if *new* projects should be supported!

Note: only limited amount of funds non – committed

- **avoid ambiguities in funding!**
- **what does it give to whole of Alliance?**
- **weight it against other needs**

Tool III a.: devices and knowledge of common interest

Get an overview over existing infrastructure
(idea at 08 – Karlsruhe workshop ... was it followed up?)

Each institute has **devices** which could be of interest to other groups,

Develop data base and support exchange

Possible/meaningful to develop a pool (cp. electronic pool at CERN)
of (expensive) devices of common interest?

→ communication of needs and a strategy and (resources) to buy, maintain and exchange them

Each institute has **knowledge** which could be of interest to other groups,

Data base of ‚who knows how to‘ and support communication

→ Get an overview of what is missing and what knowledge and expertise should be developed (e.g. do we have enough system engineers?)

Tool III b.: (larger scale) competence centers of common use

Existing substantial expertise and infrastructure at certain institutes

- chip development at Bonn & Heidelberg
- radiation facility in Karlsruhe
- defect characterisation in Karlsruhe and Hamburg
- test beams and construction at DESY

All supported by Alliance:

enhance capabilities and make these facilities and people profitable for whole community

→ expand possibilities of whole community to contribute detectors

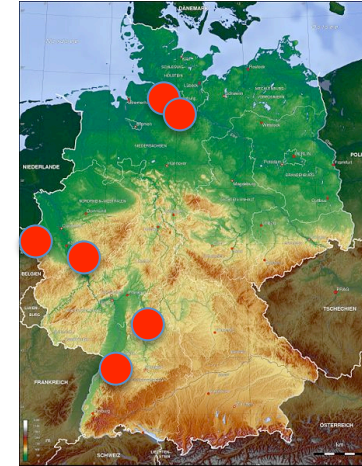
Infrastructure in place, most people hired

**... increased use,
but sometimes still thresholds to surmount**

Tool III b.: (larger scale) competence centers of common use

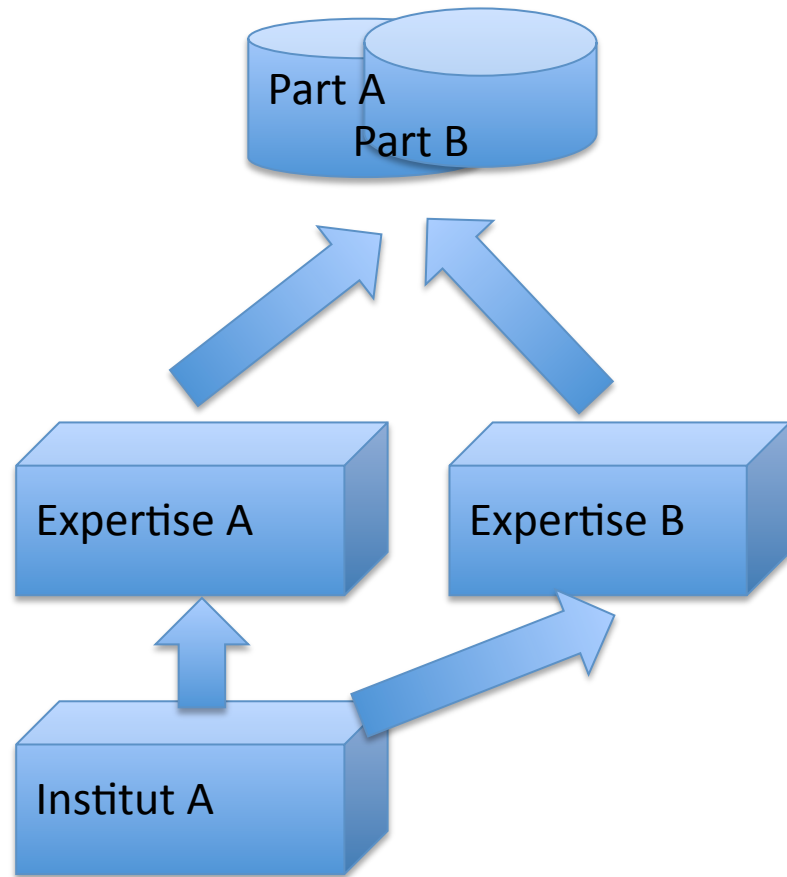


**Alliance aims at DEcentralized structure
where different institutes contribute different
competences!**



- Do we need distributed competence centres?
- Do we want them?
- Understand thresholds and hesitations
- How to guarantee and allow for new initiatives and ideas?
- Do we have all relevant competence in Germany?
- Where are weaknesses and strengths?
- Do we need to develop further ones?
(note: from sensor, to mechanics, to read-out, to DAQ/Slow control to integration ...)
- **On which structures to build detector physics in Germany in 2020?**

Detector R&D in Germany: Alliance allows broader contributions



**Make use of commonly available expertise
to strengthen and extend contributions**

**Opens new possibility in a rapidly developing
field**

**A potential to make detector physics work
better!**

Special funding of Alliance terminates in 2012

..... what then ?

Alliance aimed to build up sustainable structures!

Mid – term review end of this year

Should perform an honest and critical evaluation of concepts

- ➔ what worked?
- ➔ what did NOT work?
- ➔ what should be dropped?
- ➔ do we share the basic idea of the Alliance ?
(not just additional money!)
- ➔ what should be kept?
- ➔ what should be added?

Future funding not sure

But without vision of where we want to go, guarantee of no funding!

Questions to be answered in the next months

this workshop is one step in the process of discussion!

Conclusions & Summary

**Germany IS very succesfull in detector development & building,
Alliance tries to improve it further!**

**Basic principle is to improve by division of work
and sharing of expertise & resources**

Vision as stated in funding request:

- **strengthen collaborative spirit**
- **Emphasise existing expertise at individual institutes and make it**
 - usable for other groups**
 - more sustainable and competative**

**Infrastructure is in place →
All groups should use it**

Many questions to be answered on how to best develop it in the long term