

Detector Development and Support

Detector Developments at the cutting edge of technology
geared towards a high precision experiment at an Lepton Collider

Integration of different technologies into a coherent overall detector design
technical integration (machine - detector interface)
Physics studies and Physics case

Support for DESY and external groups (Germany and beyond) for detector
developments, detector test, detector integration

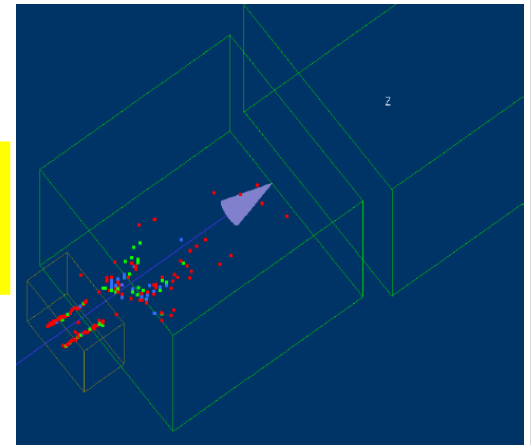
Well integrated into the German and the International landscape

Strategy Detector Development

Involvement in key parts of a future detector:

Calorimetry
Tracking (TPC)
Vertexing
Forward Calorimetry

Driving force is
Particle Flow



Involvement of the critical machine- detector interface

Detector Integration
Beam Instrumentation for experiments

Foundation: Tools/ Software/ Infrastructure

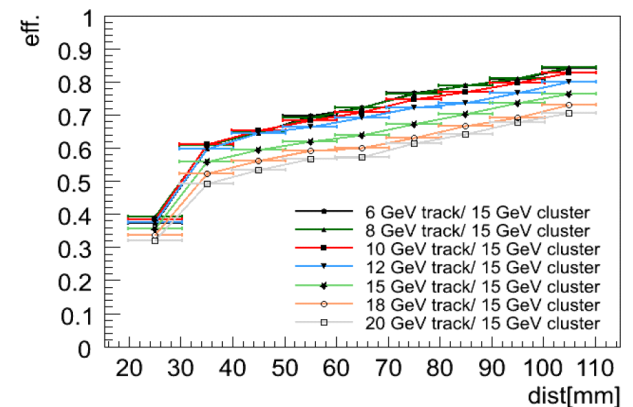
The next 5 Years

Do series of key experiments to establish

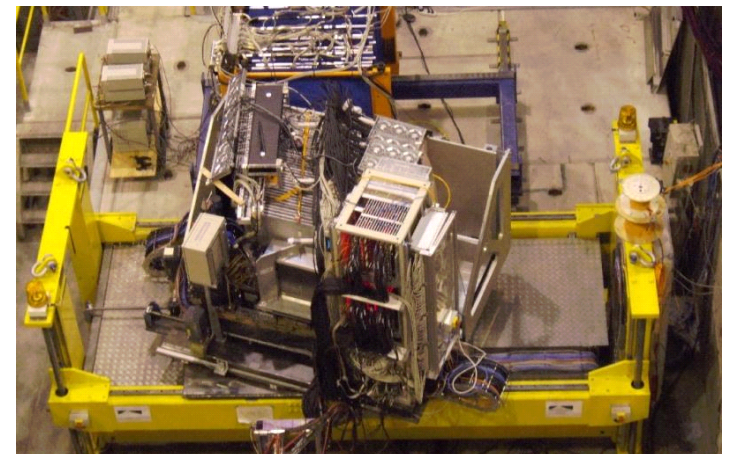
Key technologies

Particle flow as a means for reconstruction

Get a first solid idea how to construct a detector



Continuing technological development
Test beam experiments at increasing
complexity



Extra Investment: Plans

Base budget: flat development until 2014

Extra Investment:

More effort into overall integration of the detector effort
→ ILD project office

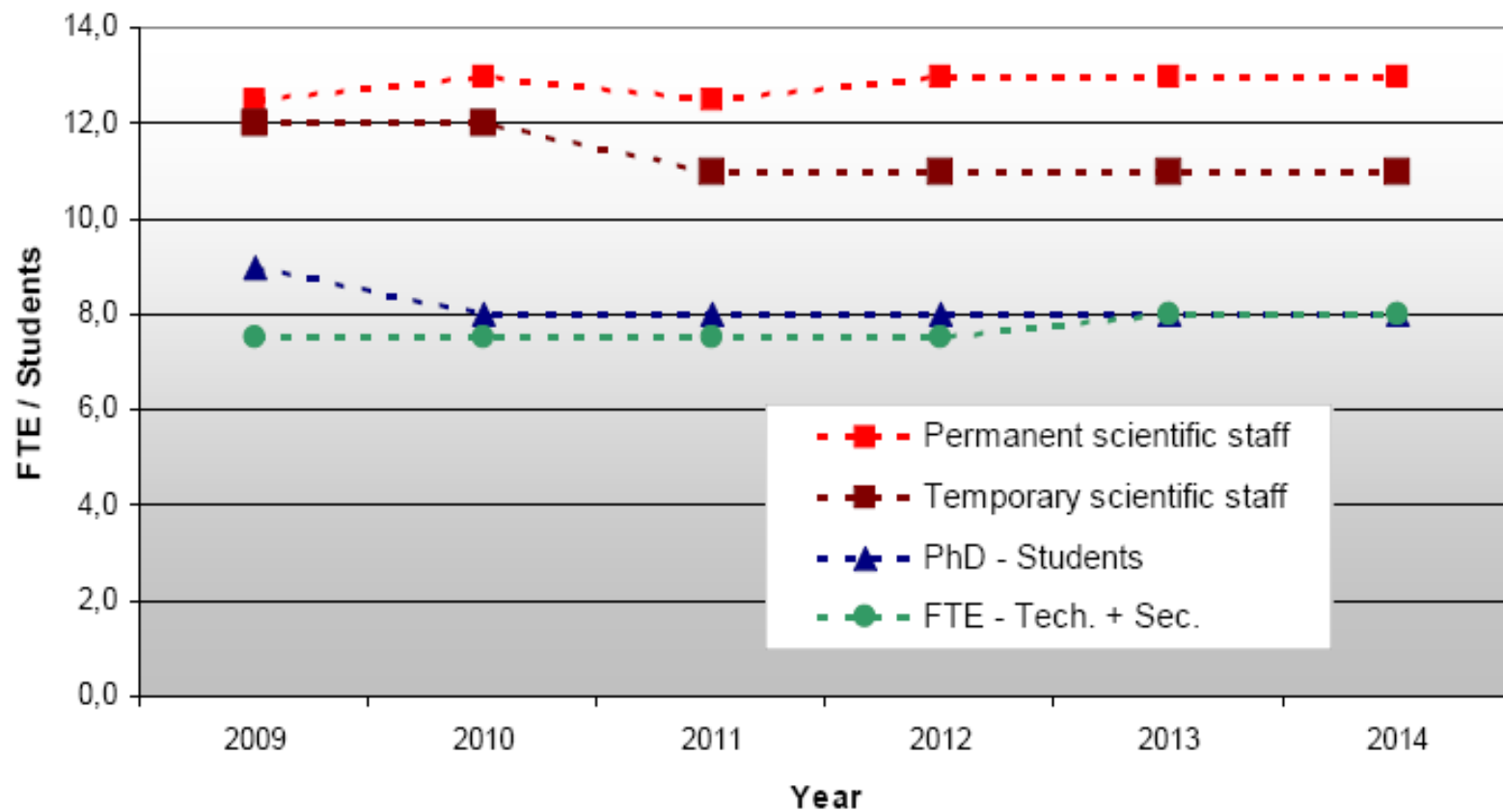
Place to coordinate detector activities in Europe
(possibly together with CERN, or other places)

Setup an integrated test beam facility for overall
system test of an ILC detector: unique facility in the
world.

Close synergy with CLIC effort / CERN groups

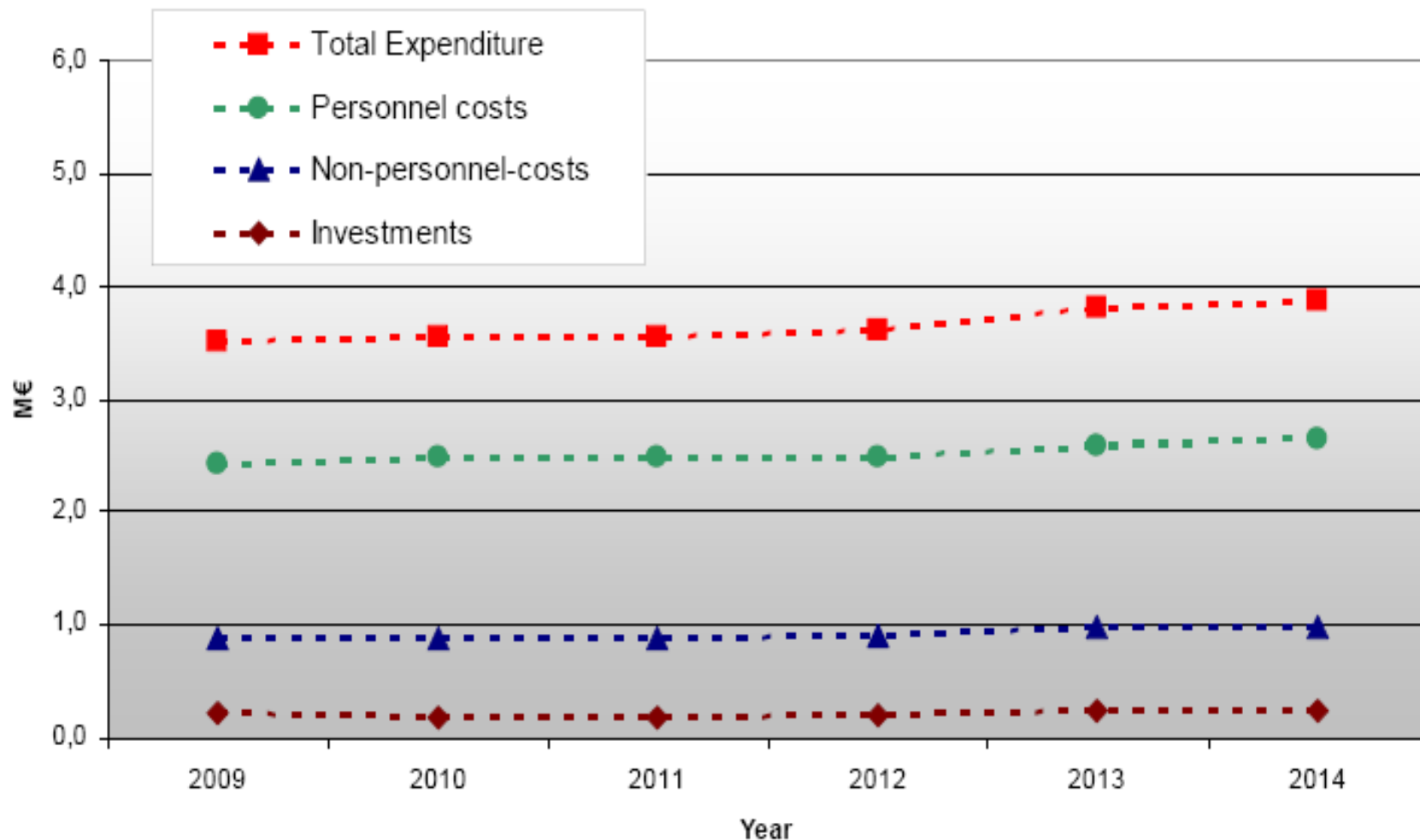
Base Budget: Personpower

DESY planning:
Future Lepton Collider - Personnel

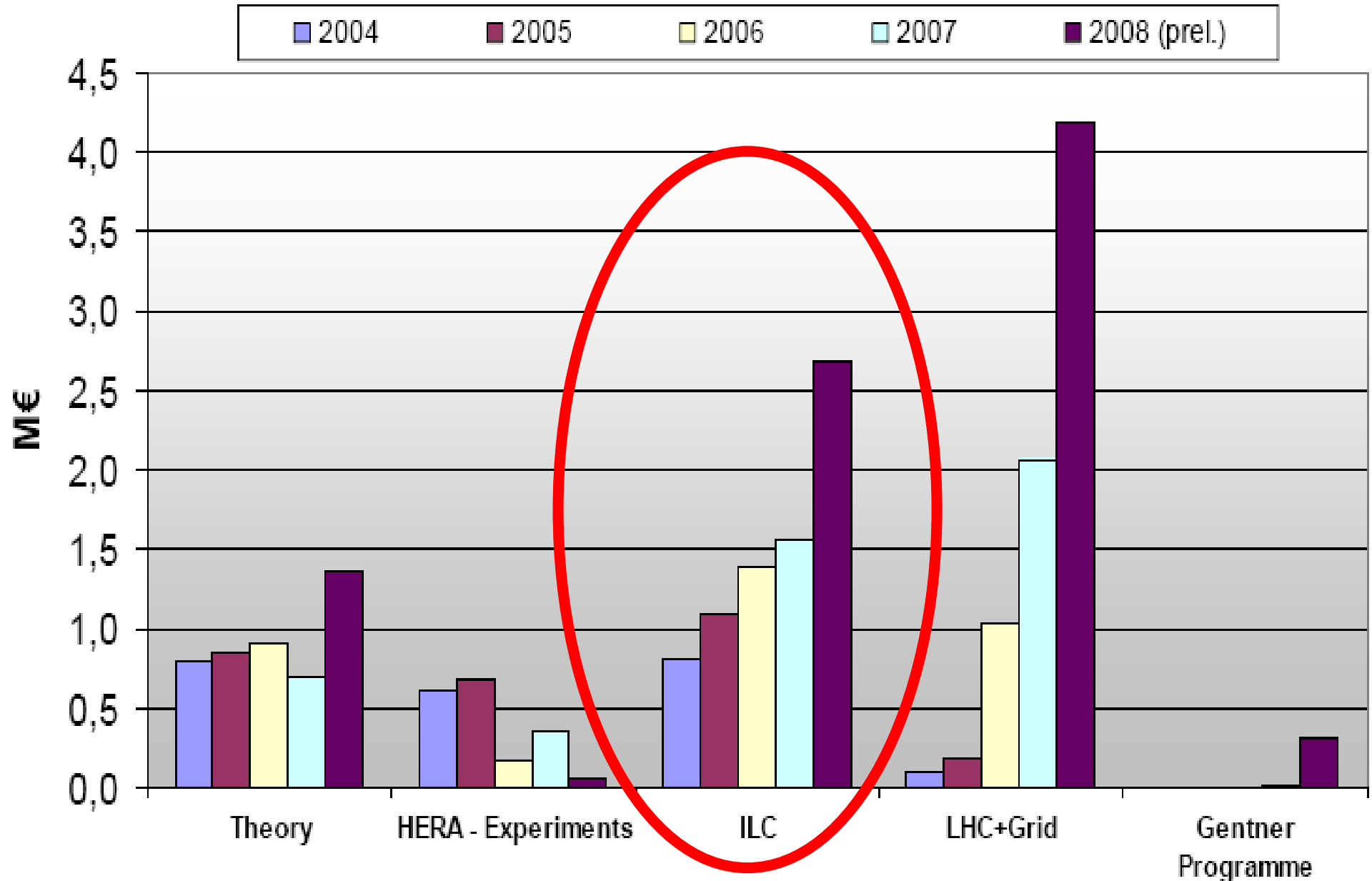


Base Budget

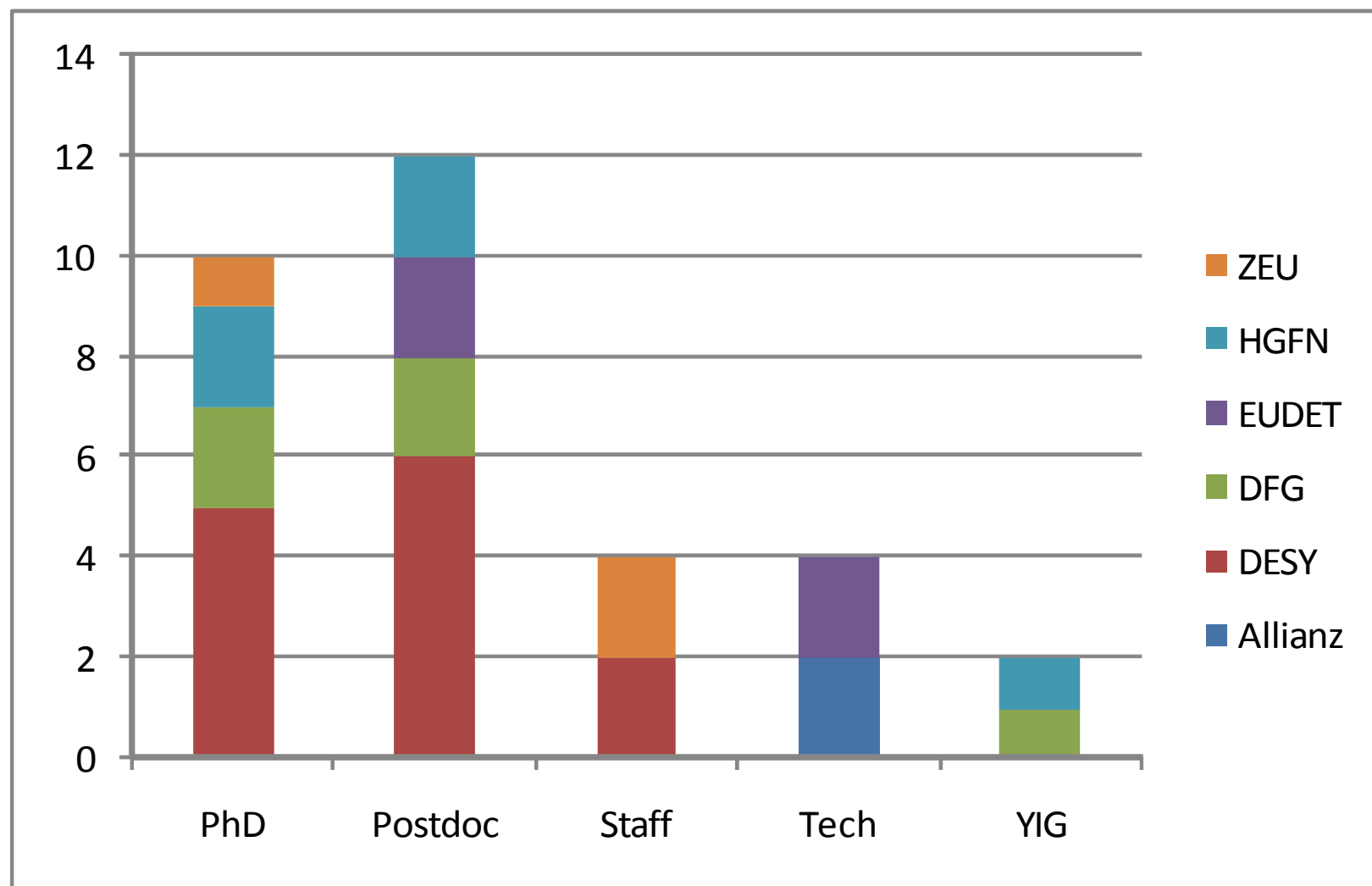
DESY planning:
Future Lepton Collider - Expenditures



Third party funding

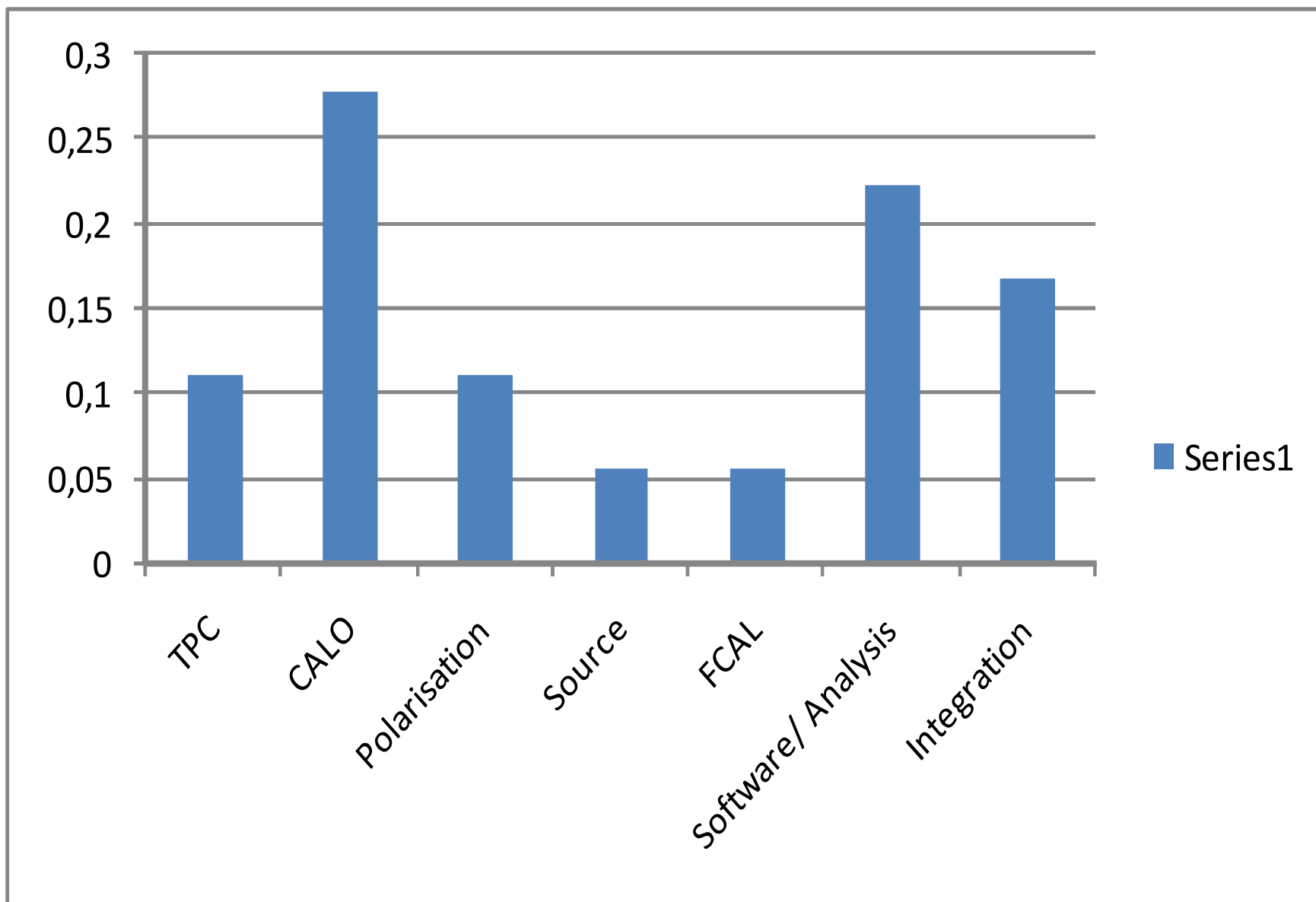


Composition of the Group



Detector Development including 3rd party funding

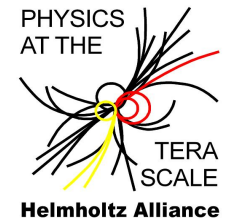
Distribution into topics



Experimental Facilities

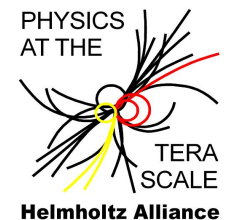
Support for the development and construction of HEP detectors

- Test beams/ Test facilities
- Remote control center
- Virtual laboratory for detector technologies
- Coordination center for large scale detector tests



Support for the analysis of data from HEP detectors (non IT aspects)

- Analysis center



DESY's role

Built upon the well developed DESY infrastructure

vast experience by DESY staff from building and running large HEP detectors for many years

Provide infrastructure not tightly connected to a specific project: sustainability

Integral part of the concept of the Helmholtz Alliance to create a structured network for particle physics in Germany

Technical support/ test beam/ facilities at DESY
Virtual Laboratory for Detector Technologies
Analysis center

Analysis Centre

Center at DESY to support analysis of groups within the Alliance

Concentrate on common tasks:

- Monte Carlo generators
- Statics Tools
- PDF's from HERA

Education of Students

Development of basic tools

Development of a pool of know how for analysis
"help line"

Organisation of workshops, working weeks, etc

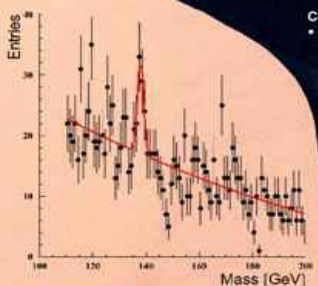
PHYSICS AT THE TERA SCALE
Helmholtz Alliance

School on **Statistics Tools**

PHYSICS AT THE TERA SCALE
Strategic Helmholtz Alliance

29 September – 2 October 2008
DESY, Hamburg Site

Learn about statistical methods needed for the analysis of the LHC data. The program consists of plenary lectures, special highlight talks and practical work on example problems in smaller groups.



Covered Topics:

- Optimal signal/background separation, multi-variate techniques
- Searching for signals, discoveries, limits
- Advanced likelihood fit techniques
- Special practical problems, e.g.
 - data corrections (unfolding)
 - systematic errors

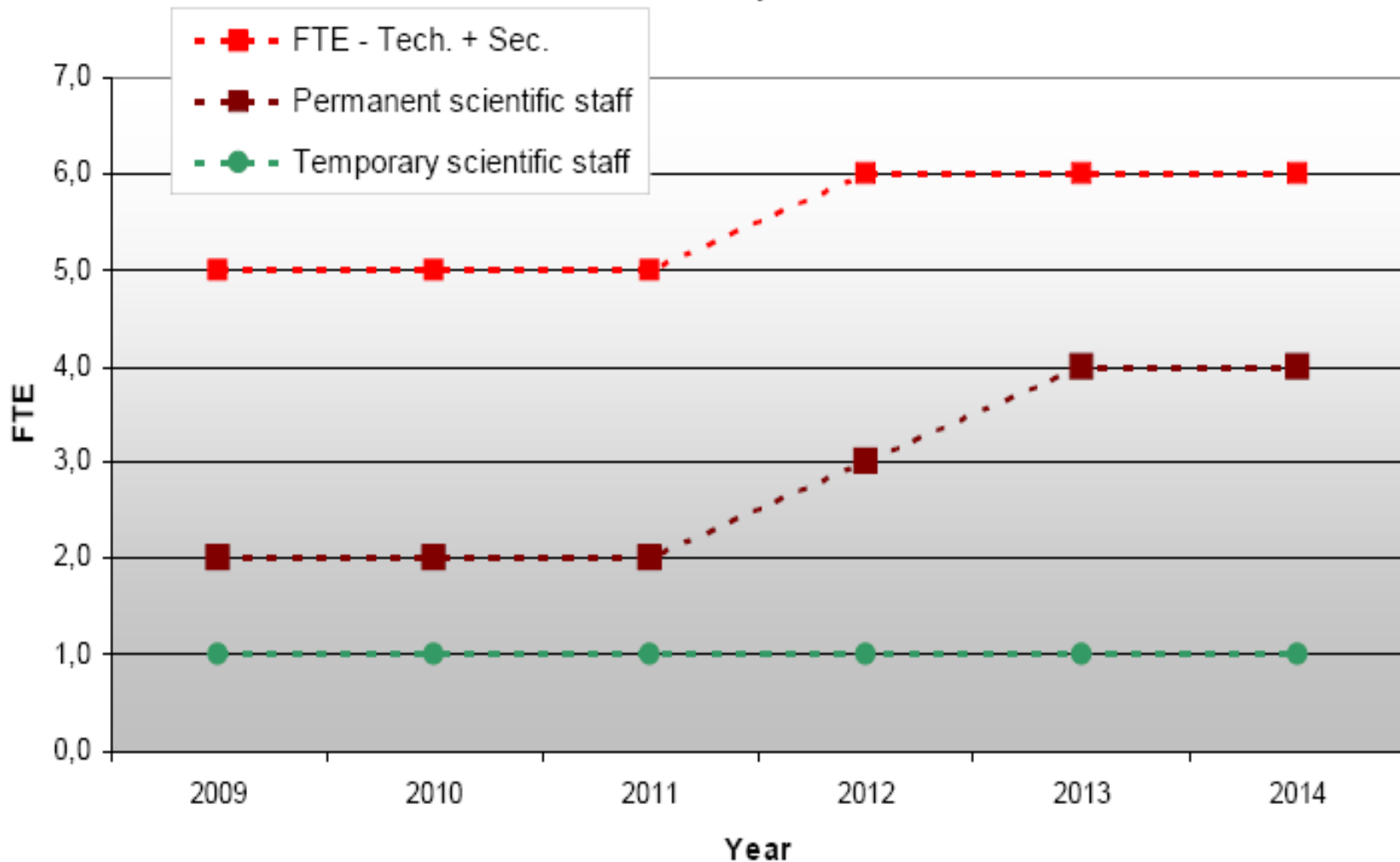
Invited Lecturers:
Volker Blobel
Glen Cowan
Luc Demortier
Markus Schumacher
Helge Voss
Rainer Wanke

Cooperation Contacts: Dr. R. Heide, M. Grimm, C. Kleinwort, S. Schmitt
Registration deadline: 10 September 2008. Please register via the online webpage.

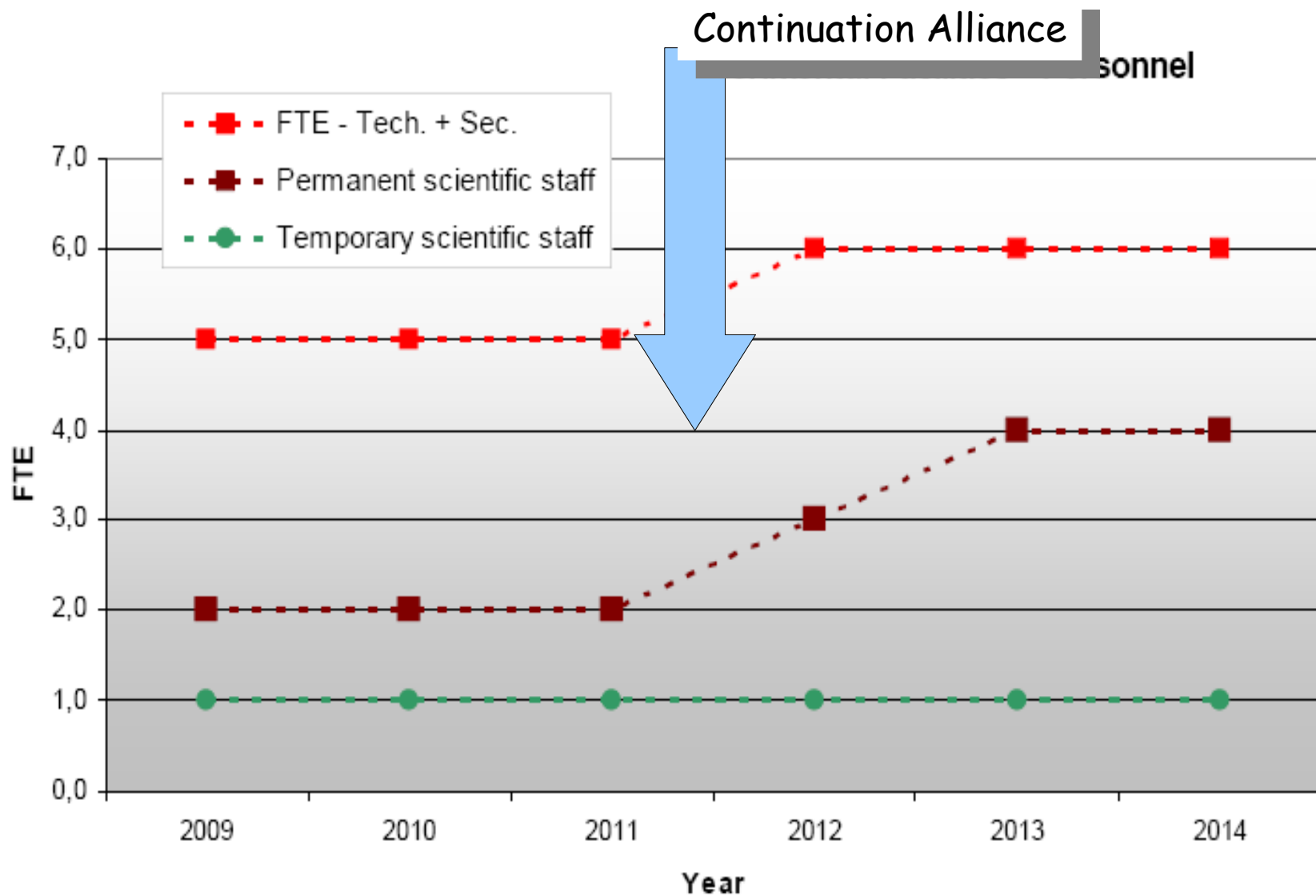
<http://www.terascale.de/stat2008>

Experimental Facilities

DESY planning:
Experimental Facilities - Personnel



Experimental Facilities



Experimental Facilities

DESY planning: Experimental Facilities - Expenditures

