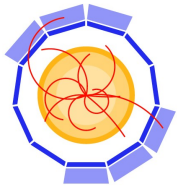


AIDA WP8.6.2 “common DAQ” pre-kick off meeting

Vincent Boudry
LLR, École polytechnique

CERN & elsewhere
19/10/2010

Introduction

- Goal of the meeting
- Situation
- Goals & Milestones
- Tasks & detailed Timeline
- Preparation of a document listing more precisely the task
- AOB

Situation

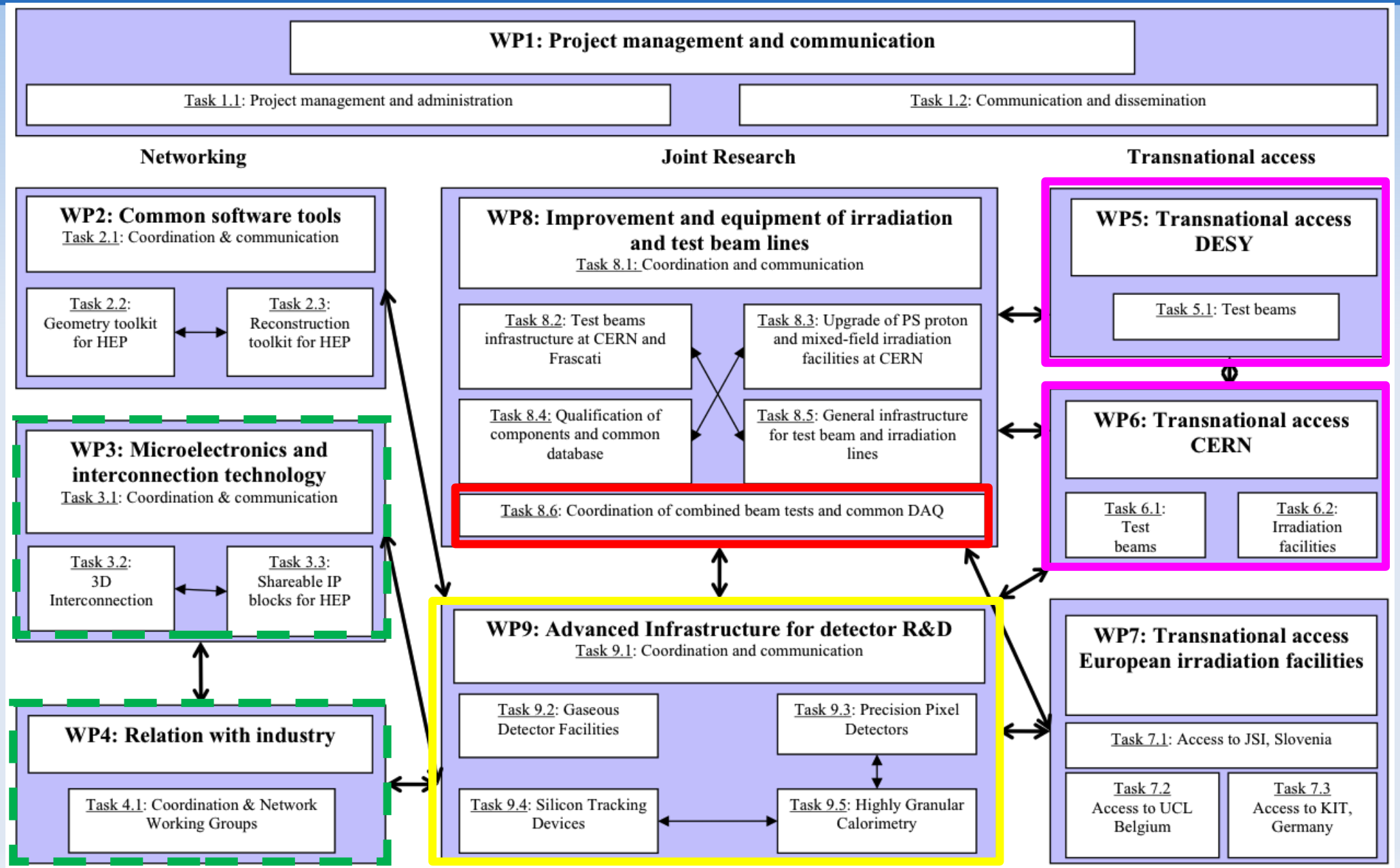
- EUDET is ending (dec. 2010)

  2 DAQs supported: EUDAQ (for telescope) & CALICE DAQ (v2)

- Emlyn Corrin (U. Geneva) replaces D. Haas as co-coordinator.
- AIDA starts 1st of February
  - News from L. Serin (EUDET meeting 01.10.2010):
    - All documents sent to EU end of July (after reduction 10M€ → 8 M€)
      Validation/checking of administrative documents is ongoing.
      Since then no more news but :
      - Most of the consortia used in TIARA (FP7 project in negotiation in June) have been rejected. We are expecting to face the same problems
      - Some consortia will have to be split in individual partners
        - Should not concern WP8.6
  - Activity/meeting of WP can start now
    - no fund available before Feb 2011.
    - typically 2 M€ per year, profile sharing to be defined wrt deliverables

Kick-off meeting foreseen Feb 16th–18th 2011 @ CERN

AIDA structure



WP8.6.2: “common DAQ”

- More correlated to WP9
  - Link to common TB (WP8.6.1), ~ beam telescope (WP8.5.1)
- Goals:
  - “to provide a powerful and unified control and acquisition system.” !
  - wide range of users, ⊃ ILC R&D Groups: CALICE, Silicon Trackers, TPC and Forward calorimeters, and compatible with the EUDET telescope
  - An interface with the remote control facilities developed by DESY is also foreseen in coordination with WP8.6.1
  - Close links to the sLHC community will be looked for to profit from existing developments (RD51 collaboration)
- Main stream
  - Define the technical characteristics
  - Merge SW : EUDET telescope/EUDAQ & Calice DAQ + access to beam facility (↔ WP8.6.1)
  - New HW: sync of systems (~TLU) & beam information recording for ILC-like mode (BIF)
  - Interface to other systems [TPC, SiLC]
  - Increase throughput [µCTA, CALICE ODR]

Official Milestones & Deliverables

Deliverable Number	Deliverable Title	Lead beneficiary number	Estimated indicative person-months	Nature	Dissemi-nation level	Delivery date
D8.5	**Installation of tracking telescope** The tracking telescope is installed in the beam line and operational.	**9 (DESY)**	**18**	**R**	**PU**	**M40**
D8.2	**Publication of specification documents for the DAQ and for the central documentation facilities**	**9 (DESY)**	**38**	**R**	**PU**	**M20**
MS34	**Testbeam,EDMS and DAQ commisionning** Intermediate stage for D8.8	**9 (DESY)**				**M36**
D8.8	**DAQ performance and test beam utilization** Report on the performances and use of the integrated DAQ setup, and of the common test beam facilities at DESY and CERN.	**8 (CNRS)**	**127**	**R**	**PU**	**M46**

”As loose as possible”

==> More detailled planning and charges needed!!

Check with other activities

Link to other tasks (WP8)

- Subtask 8.5.1- Commission and operate beam tracking telescope
  - Based on the experience of the EUDET programme a new beam tracking telescope is to be developed with a larger acceptance than the previous telescope allowing the tracking of several concurrent particles. The telescope is to be built under WP9. In this task the tracking telescope is to be installed, commissioned and operated installed in the H6 beam line at CERN [DESY]. These devices are to become part of the common infrastructure for the benefit of all H6 users and are useful for the transnational access users of WP6.
- Subtask 8.6.1- Common test beam experiments at CERN and DESY
  - [] Most of the installations will be used in test beams experiments either at CERN or at DESY. [] The main goal of the activities will be to ensure that different infrastructures are compatible and can operate together once installed. To this end **central documentation** facilities will be developed and provided and technical support given to ensure that installations are built on **common specifications and using well defined interfaces**. The activities are of primary importance for the linear collider oriented activities, where no such central structures exist.

Link to other tasks (WP9)

- Subtask 9.2.3 [CEA; DESY (UBONN, JOGU); FOM]:
  - **Common readout systems for gaseous detectors.** Auxiliary electronics for the read-out of pixellated front-end chips, aimed at highly granular pixel read-out of gas detectors, are to be developed. **(S-ALTRO chip)**

D9.3: Month 37

- Task 9.3: Precision Pixel Detector Infrastructure
  - A versatile and modular pixel telescope is to be built using state-of-the-art pixel devices (TimePix, ATLAS FE-I4 and MIMOSA) to meet the requirements of a broad user community. …
  - Resources are reserved for the development and maintenance of common analysis software. A common DAQ to read out the different detector technologies in a single DAQ is to be developed in close collaboration with task 8.6 [DESY; UNIGE].

D9.4 : Month 37

- Task 9.4: Silicon Tracking
  - In the baseline design the system is to be read out by electronics [CSIC (IFCA, IFIC, UB)] developed for the LHC experiments with established performance.

D9.5 : Month 39

- Task 9.5: Granular calorimeter studies infrastructure
  - The position measurement in calorimeters dedicated to **luminosity measurement** imply testing them in an integrated infrastructure where additional information of a **silicon tracker** is used: [] moving devices supporting a **pixel hodoscope, silicon strip layers** [] (task 9.4) **just in front of the calorimeters**, an electromagnetic calorimeter and a radiator structure to receive different detecting media like scintillators or gas chambers. **The electronics** would be adapted to **beam structure**, cooling and other services. Components developed under EUDET are to be well integrated in this improved infrastructure, fulfilling new tasks and validating the integration.

D9.5 & 9.7: Months 39-40

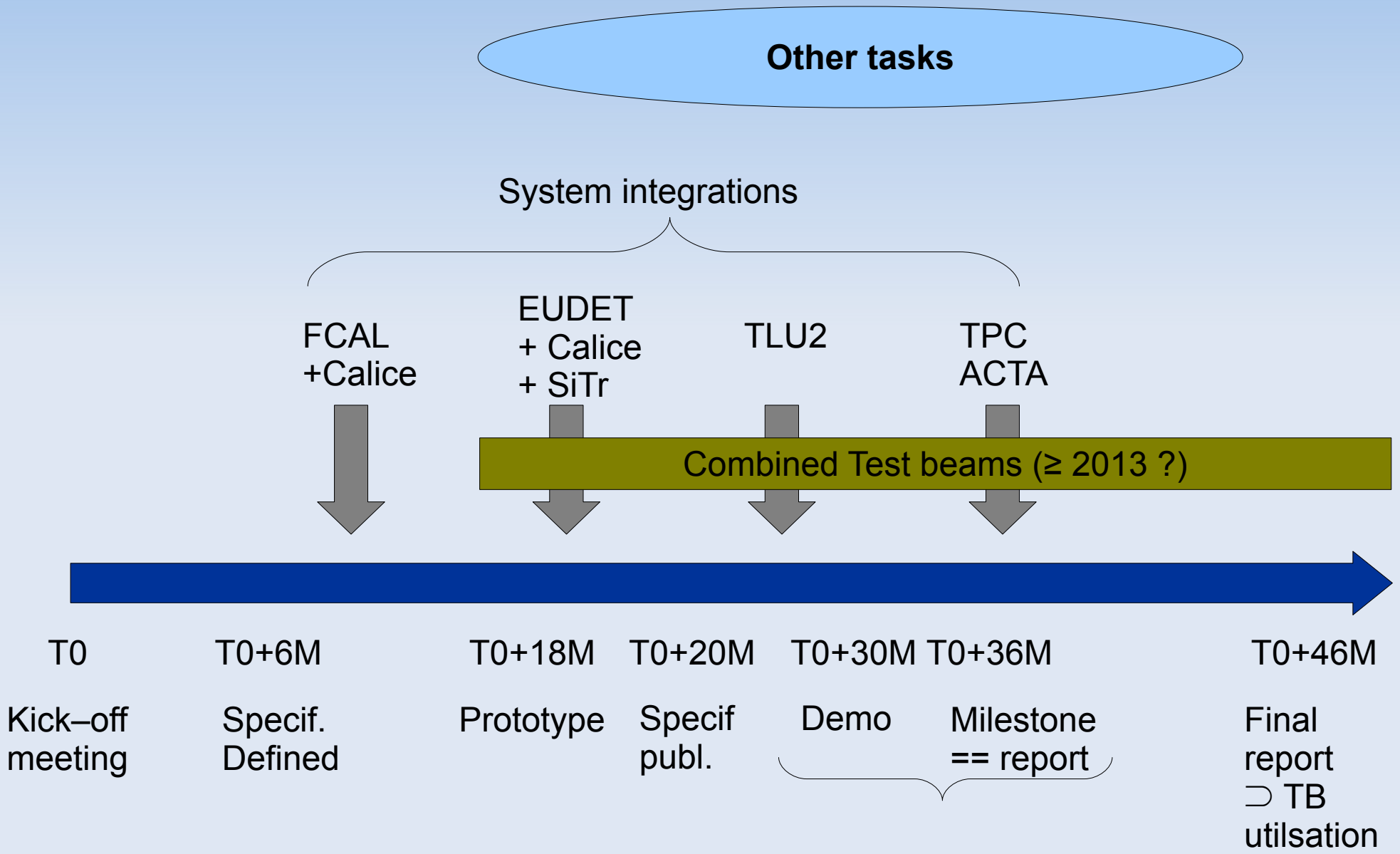
Detailed charges

Tasks	Who	Remarks
Regular meetings	All	Every 6 months ? + 2 month video ?
The definition of the tech. characteristics for a common DAQ	All	1 meeting ASAP Doc to prepare
Merge the EUDAQ and CALICE DAQ software framework providing the base for a common DAQ	LLR, LAPP, RHUL, IPNL	
→ Interaction with elogs, and a condition Database (Run conditions, detector configuration),		
→ Information fetching from machine specific information (energy, beam profiles, magnet currents, collimators, …); in coordination with TB facilities, eventually provide a standard API.		Experience from CALICE DAQv1 & EUDET
→ Slow control, active and inactive (temperature, table, low and high voltages, …)		Systems ?
→ GUI and Event display		Good candidate with druid
Interface the remote communications tools with the common DAQ, in coordination with subtask 1.	DESY	Name ?

Detailed charges

Tasks	Who	Remarks
HW: Extend the versatility of the EUDET TLU: improve time stamping, allow for ILC like running modes (time stamping, storage and readout at the end of a spill) and ensure compatibility with the CALICE Clock & Control Card (CCC)	Bristol, RHUL	BIF could be common
HW: Devt of CALICE Beam InterFace (BIF) card based on Calorimeter Readout chips or a FPGA and allowing to record the beam environmental information	LLR, LAPP, Bristol, RHUL	Too many people there, but remarks above..
Interface the LC-TPC DAQ in the common environment.	LUND, ULB	Unique system Date ?
Interface the SiLC DAQ to the common environment HW & SW Narval ↔ common DAQ	LPNHE	Dates, manpower
Interface the FCAL DAQ to common environment	TAU, IFJPAN	Likely use calice
Extend the readout for high fluxes:		
Test the possible use of μTCA/ATCA	LUND, ULB	Plans ? Goals ? Concentrator cards ?
Adapt the CALICE ODR card for the common DAQ (event builder on board)	RHUL	Perf estimated ?

Timeline
(Draft to be completed and refined)



Exemple of more detailed planning ⚠⚠⚠ Inaccurate ⚠⚠⚠

Milestone.	Description/title	Nature	Dissemination level	Delivery month
8.6.1	EDMS documentation structure and interface standards defined	R	PU	M12
8.6.2	Definition of DAQ interface specifications	R	PU	M6
8.6.3	Selection of a control framework under which the system will operate	R	PU	M6
8.6.4	Prototype of DAQ	P	PU	M18
8.6.5	Si Tracking DAQ HW interface	P	PU	M18
8.6.6	TLU2 & CCC production (if needed)	P	PU	M27
8.6.7	Demonstration of fully functional common DAQ setup	D	PU	M30
8.6.8	TPC Detector Interface Prototype likely based on ATCA standards	P	PU	M36

Conclusion

- Remarks!!!
  - Mandatory!

- Short document for each task with more information
  - Timeline, plans, procedure
  - For the kick-off meeting
  - To be put on the AIDA internal WP8 pages
    https://espace.cern.ch/aida/intranet/WP8/default.aspx

Annexes

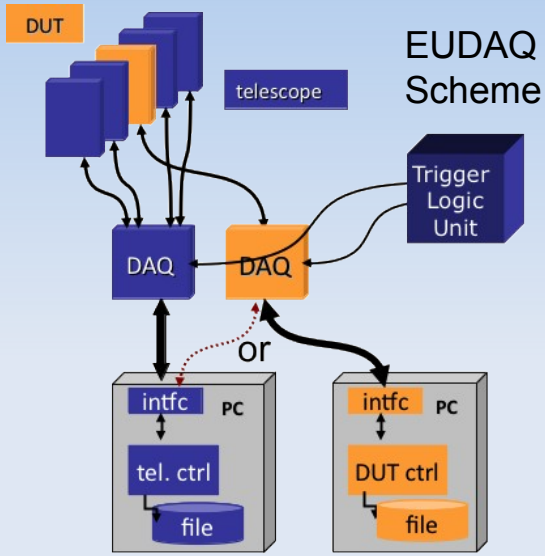
WP8.6.2: Common DAQ for combined TB

Task leader: V Boudry (LLR), E. Corrin (U. Geneva)

Provide a uniform control and acquisition framework allowing for the integration of most ILC R&D components in a combined beam test

Main components are
- EUDET telescope
- CALICE prototypes
- FCAL calorimeters
- Silicon trackers
- TPC readout units

Deliverables :
T0+20 : specification documents (common interfaces/infrastructure To LC beam tests
T0+46 : Report on performance & use in beam test

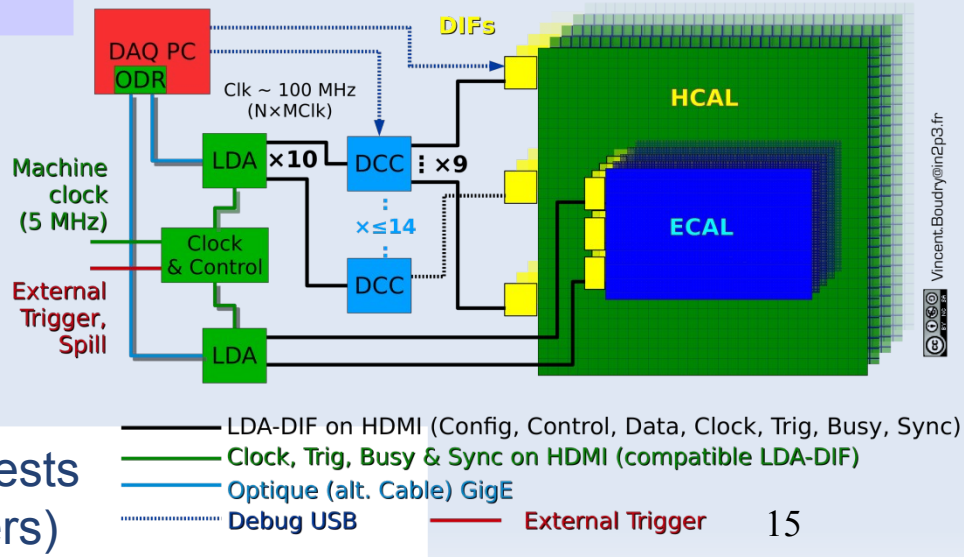


EUDAQ Scheme

The integration will includes SW and HW (sync) components and the beam line Interfaces based on EUDAQ and CALICE DAQv2.

EUDAQ Trigger and Logic Unit

CALICE Scheme



Main users: all devices needing integrated tests
WP9.5 (set-up for High Granular Calorimeters)

AIDA EU contribution (total budget=27M€)

Activity	Proposal	Negotiation	Reduction
WP1 : Management	450 k€	350 k€	-33 %
WP2 : Common software tools	1098 k€	906 k€	-17.5 %
WP3 : μelectronics & interconnection	1096 k€	918k€	-16.2 %
WP4 : Relation with industry	300 k€	120k€	-60 %
WP5 : DESY testbeam	100 k€	100k€	-
WP6 : CERN testbeam	150 k€	150k€	-
WP7 : European irradiation facilities	600 k€	550k€	-8.3 %
WP8: Improvement of irradiation & beam lines	3140 k€	2324k€	-25.8 %
WP9 : Advanced infrastructure for detector R&D	3066 k€	2582k€	-15.7 %

Main reduction from CERN priority and removal of some tasks
-16% for DAQ in average (mix of 10% & 20%) + FCAL → WP9

Budget table

Beneficiary short name [a] (all costs in €)	Person-Months	Consumable and prototype direct costs	Travel direct costs	Material and travel indirect costs	Total costs (direct +indirect)	EC requested funding
UNIGE-own	24	70 000	0	42 000	334 720	63 000
LLR	36	0	3 520	2 112	293 632	56 000
LAPP	7	0	0	0	58 607	16 000
LPNHE	24	25 760	0	15 456	233 216	28 000
UNIBRIS	19	0	0	0	176 320	56 000
RHUL	19	0	0	0	176 320	56 000
ULund	6	0	5 000	3 000	57 920	18 000
ULB	6	0	5 000	3 000	64 640	31 500
IFJPAN	0	0	0	0	0	0
TAU	0	0	0	0	0	0