A Large Ion Collider Experiment

O2 Project Status

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TDR

O^2 Technical Design Report

Schedule

- Apr ’14: Draft 0 of the text for review inside CWGs
- May ’14: Draft 1 for review inside EC
- 4th July ‘14: Draft 2 for review inside EC (text completed)
- 1st Sep ‘14: Draft 3 for review inside EC (week 22 September)
- 15th Sep ‘14: Freeze and release for the EC review
- 10th Oct ‘14: Fixes decided by EC (editorial) (2 weeks from meeting)
- 24TH Oct ’14: General coherence decided by EC (4 weeks from meeting)
- Start of proof-reading
- 1 Dec ’14: demonstrators
- Jan ‘15: End of proof-reading for Draft 4
  Draft 4 for review inside O^2
  EC review week
- Feb ‘15: ALICE internal review
- Mar’ 15: Final version for editing
  Circulate TDR to the ALICE collaboration
  Draft to LHCC
- Apr ’15: end: Submission TDR to LHCC 29 (1 month before)
- Jun ’15 : LHCC meeting (not yet fixed 4-5 June in 2014)

Next steps

- Urgent issues
  - Fix elements giving the general coherence
- Issues delaying other parts
  - System size and Project budget, modelling
    - Chapter 2 – Physics programme: 2.4 ALICE running scenario
    - Chapter 5 – Architecture : 5.3.3 CPU requirements
    - TPC CPU requirements
- Proceed with Jira and email exchange till the next draft
- During week 10 Nov: decide if a new TDR EC is needed in January or February

Review responsibilities

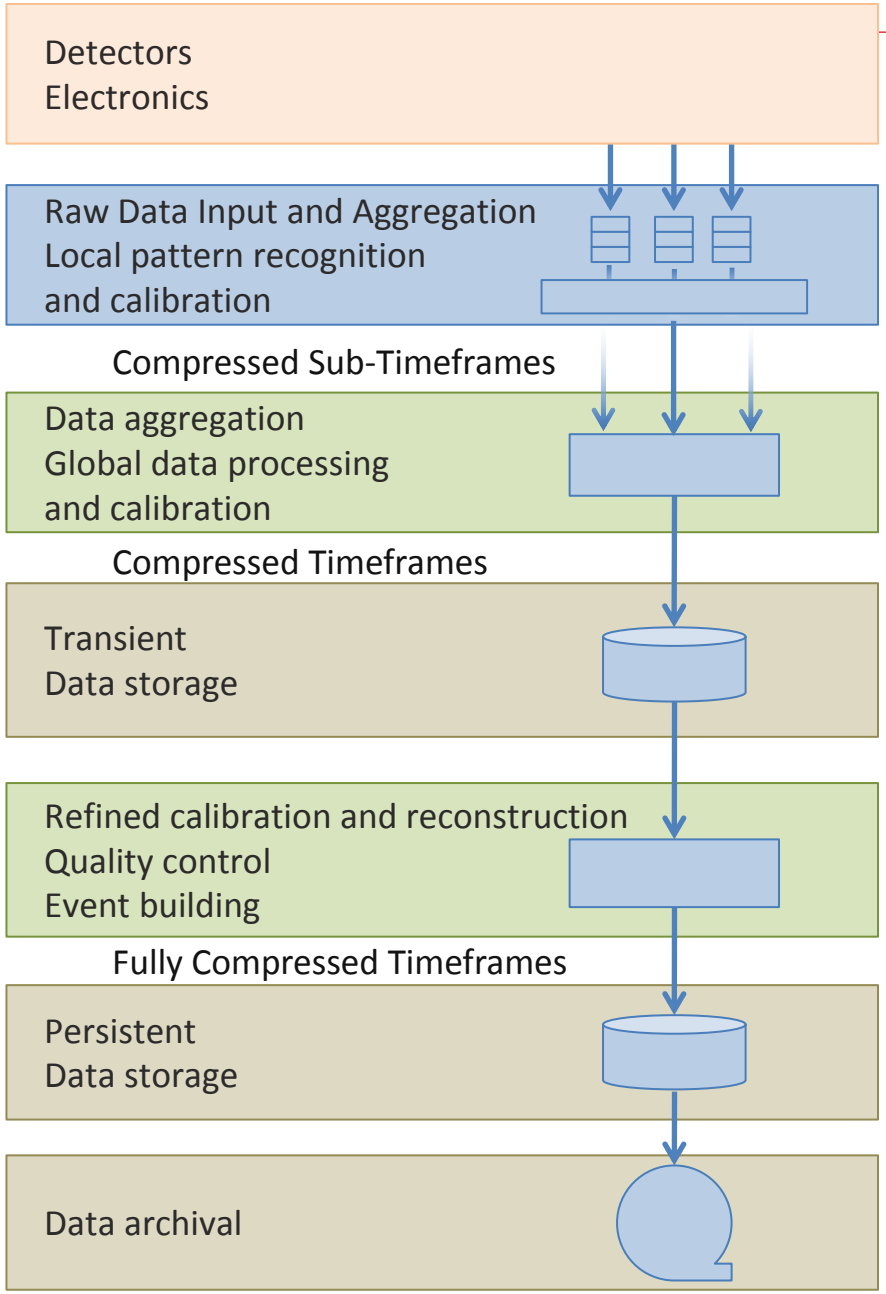
Following-up of the TDR chapters:

- Chapter 1 Introduction : Predrag, Ken, Pierre
- Chapter 2 Physics programme : Peter
- Chapter 3 Requirements : Jochen
- Chapter 4 Computing model: Frank
- Chapter 5 O2 architecture : Pierre
- Chapter 6 Technology survey : Peter
- Chapter 7 O2 software design : Barth, Frank
- Chapter 8 O2 facility design : Latchezar
- Chapter 9 Project organisation, cost estimate and schedule : Ken, Latchezar, Sylvain

TBD:

- **Issue Jira tickets and follow up to make sure that addressed in time**
- **Check the result and iterate if needed**

Design



Functional Requirements

- Global functional requirements of the O2 system
- Shows the 2-step reconstruction with calibrations of increasing quality
- Quality control needed to decide if the fully compressed timeframes are of the required quality to be recorded
  …and the original data erased !

Model

Modeling and simulation

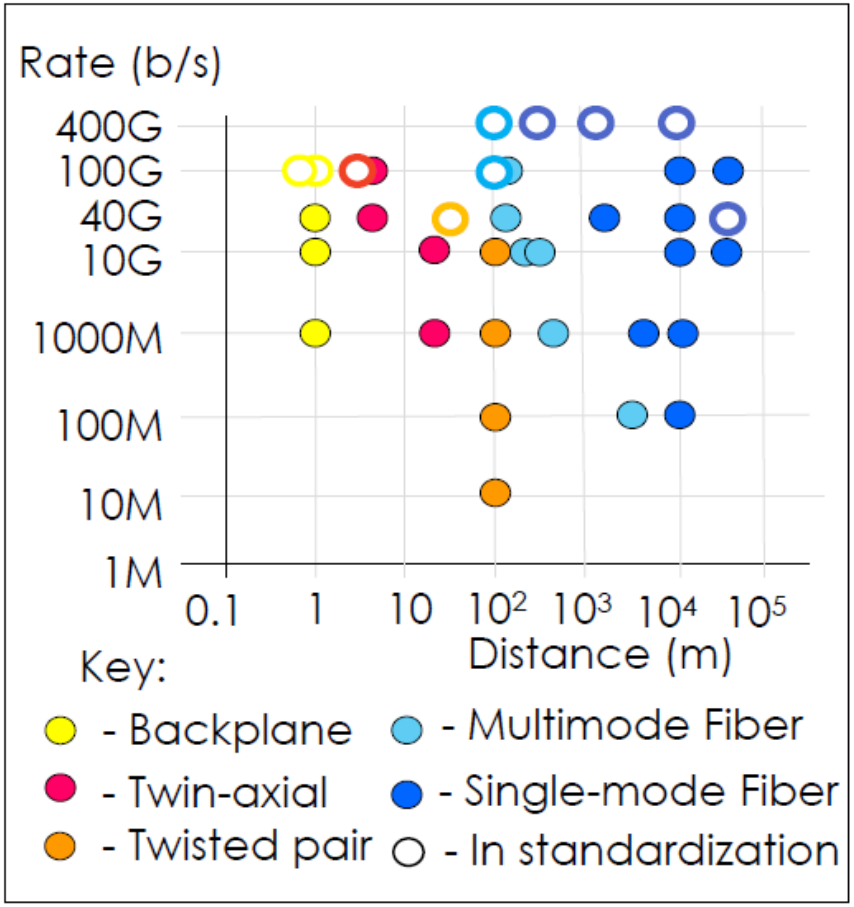
- Fundamental to model the system at P2 and the global Grid/Cloud system: lots of work needed.
- LIPI will take over the simulation of Charles.
- Technical University of Split FESB will work on the Grid modeling

Technology watch and benchmark

Network technologies: Ethernet

- Ethernet: 40 GbE now and probably 100 GbE by 2015

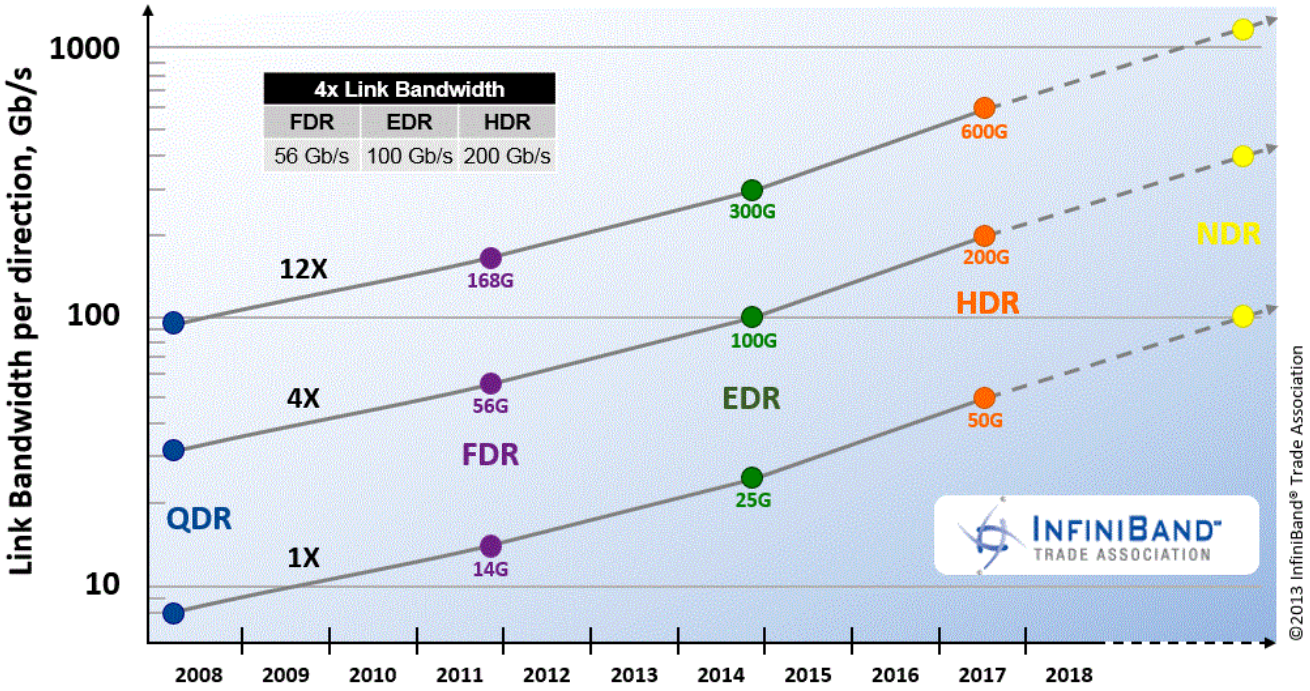
  100GBASE-SR4 over OM3, OM 4 fibers (70/100 m)



ethernet alliance

Network technologies: InfiniBand

- InfiniBand: 56 GbIB now and probably 100 GbIB (EDR) by 2015



Network technologies: Omniscale

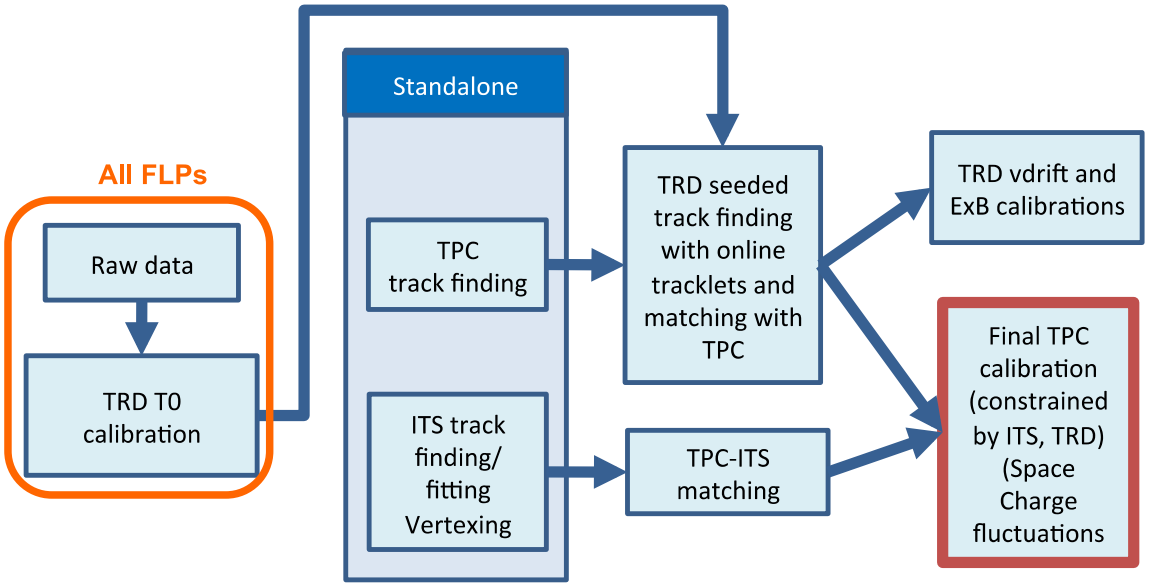
- New network technology announced by Intel in June ‘14
  - Intel® Omni Scale Fabric– an end-to-end interconnect optimized for fast data transfers, reduced latencies and higher efficiency – initially available as discreet components in 2015, will also be integrated into next-generation Intel Xeon Phi processor (Knights Landing) and future 14nm Intel® Xeon® processors.
  - Adapter integrated in the CPU chip
  - 100 Gb fabric announced for 2015.
  - Will be monitored and tested to see if cost effective for O^2
  - Could affect the long-term viability of IB
- Several solutions for the network technologies

Prototype

Online calibration and reconstruction

See presentation of
Ch.Zampolli, R. Shahoyan for CWG6/CWG7

- Needed to proof feasibility of the processing schema
- Necessary ingredients: TPC, TRD, ITS



- ITS, TRD input for TPC SCD calibration:
  → need fast reconstruction (standalone for ITS) for at least $p_T > 0.6$ GeV/c