Discussion on Future R&D and a possible R&D collaboration

Forum on Tracking Detector Mechanics 2019, Cornell University

Burkhard Schmidt, Experimental Physics Department, CERN

June 20, 2019

Introduction

- Detector R&D was extensively discussed at the **ESPPU meeting in Granada, May 13-16, 2019. In the following I give some feedback:**

Detector R&D questions

Focus
- Generic
- Guided

Coordination
- Distributed
- Centralized

Human factor
- Recruiting
- Training
- Recognition

R&D Focus

ECFA
The ~~Google~~ Way

- 70-20-10 guideline:
  - 70% on NOW – current detectors
  - 20% on NEXT – future detectors
  - 10% on HORIZON – blue sky R&D
- NOW and NEXT should be driven by well defined or prospective requirement
- HORIZON should be driven by technology and what's possible
  - Need more connection to other fields
- % of what resources ? Money, time

R&D Coordination

Centralized

- Expertise is distributed in many institutions
- git model
  - Distributed effort, but with full information exchange
  - Essential to have flexible collaboration network
- Coordination in large labs important for
  - Ideas exchange
  - Technical support
  - Synergy and optimization
  - Data repository
  - Tools
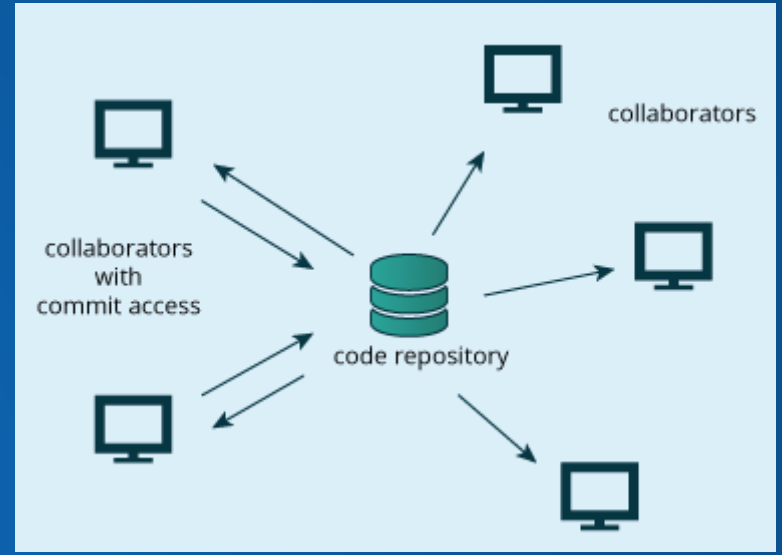
Distributed (git)
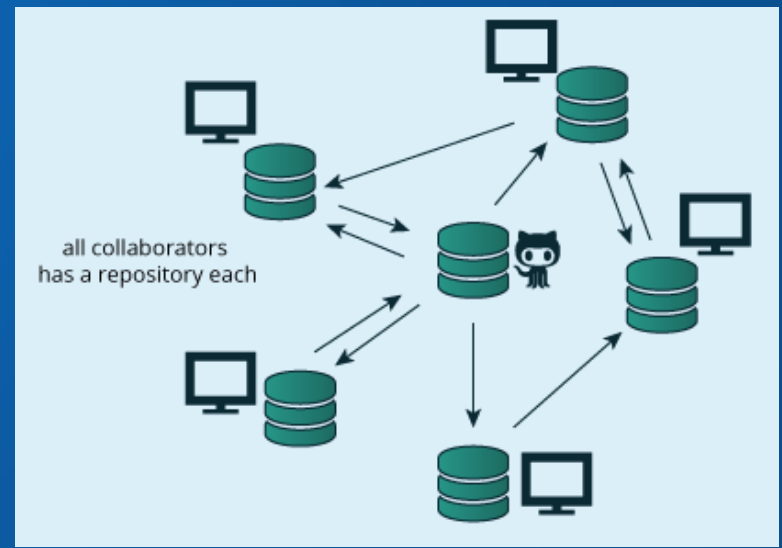
Strategic R&D Programme on Technologies for Future Experiments

Presentation of Lucie Linssen

CERN EP Detector R&D programme

In view of the challenging detector requirements for future experiments, the CERN EP department engages in a long-term advanced detector R&D effort.

The EP R&D programme focuses on those technology areas where CERN has significant expertise and infrastructure and already plays a unique role (ASICs, links, magnets, infrastructure for detector construction).

The developments will be carried out jointly with external groups. Enlarging the collaborative efforts with other research institutes and with industrial partners is an integral part of the objectives.

The selection of topics and the established work plans are the result of a transparent and open process, which took place in 2017-2018.

Agenda

Time		
14:00	**58 - Introduction to the R&D session**	*Burkhard Schmidt*
	27 - Interlocking Super Modules for Future Large Area Tracking Systems	*Peter Cooke et al.*
	36 - CERN R&D lines for the mechanics of future tracking detectors	*Corrado Gargiulo*
15:00	**56 - R&D ideas at DESY**	*Andreas Mussgiller*
	57 - R&D ideas at LBNL	*Eric Anderssen*

Coffee

Clark Hall Room 700, Cornell University   15:45 - 16:15

Time		
16:00	**50 - Development of advanced micro-channel cooling solutions for silicon detectors**	*Alessandro Mapelli et al.*
	34 - R&D for a colder future in HEP	*Bart Verlaat*
17:00	**51 - R&D ideas in relation to robotics**	*Corrado Gargiulo et al.*
	40 - Thoughts about an R&D collaboration on Detector Mechanics	*Burkhard Schmidt*

41 - Discussion

Clark Hall Room 700, Cornell University   17:35 - 18:15

18:00