

Detector Roadmap Implementation European Perspective

CALICE Collaboration Meeting at FZU Prague

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Outline

This Talk

Motivation and international perspective

Resources

Towards MoUs

Implementation of the ECFA Detector R&D Roadmap

In a Nutshell

Roadmap effort started from a global perspective

- 2019: US Basic Research Needs study with European participation (Shipsey, Krizan, FS)
- discussions started towards European roadmap (AIDA, ESPSU): keep global perspective

European Strategy stresses importance of a strong focus on instrumentation

- Relevant R&D issues must be addressed **in time** (calo timescale 20 years)
- Common R&D lines with near- and mid-term projects - exploit **synergies and stepping stones**
- Offer **long-term perspectives** for instrumentation physicists / engineers

Successful completion of High-Luminosity LHC must remain key focus

- started the process now, but expect only gradual ramp-up
- larger involvement of many groups after phase II construction completed

Establishment of R&D collaborations **"anchored" at CERN**

- In addition: Implementation of General Strategic Recommendations

DRD: Detector R&D Collaborations

Anchored at CERN

Follow the successful model of R&D collaborations for the LHC

- **CALICE** was also a model and very present throughout the process
- Differences with respect to structure (common fund, cascade funding), **TRL** and importance of system aspects
- CALICE has pushed the boundaries of “**generic**” further than others
- all have **world-wide participation**, in particular strong US contributions

Take full account of existing, successful and well managed R&D coll.

- Integrate with CERN EP R&D, AIDAInnova, RDxy, CALICE,...
- invite world-wide participation

Reasonably dimensioned review process (ECFA and CERN)

- addressing needs of **future experiments (as prioritised in ESU)** is important criterion
- **worldwide perspective**: non-European reviewers, coordination between strategy processes

Process approved by CERN Council (Sep 2022)

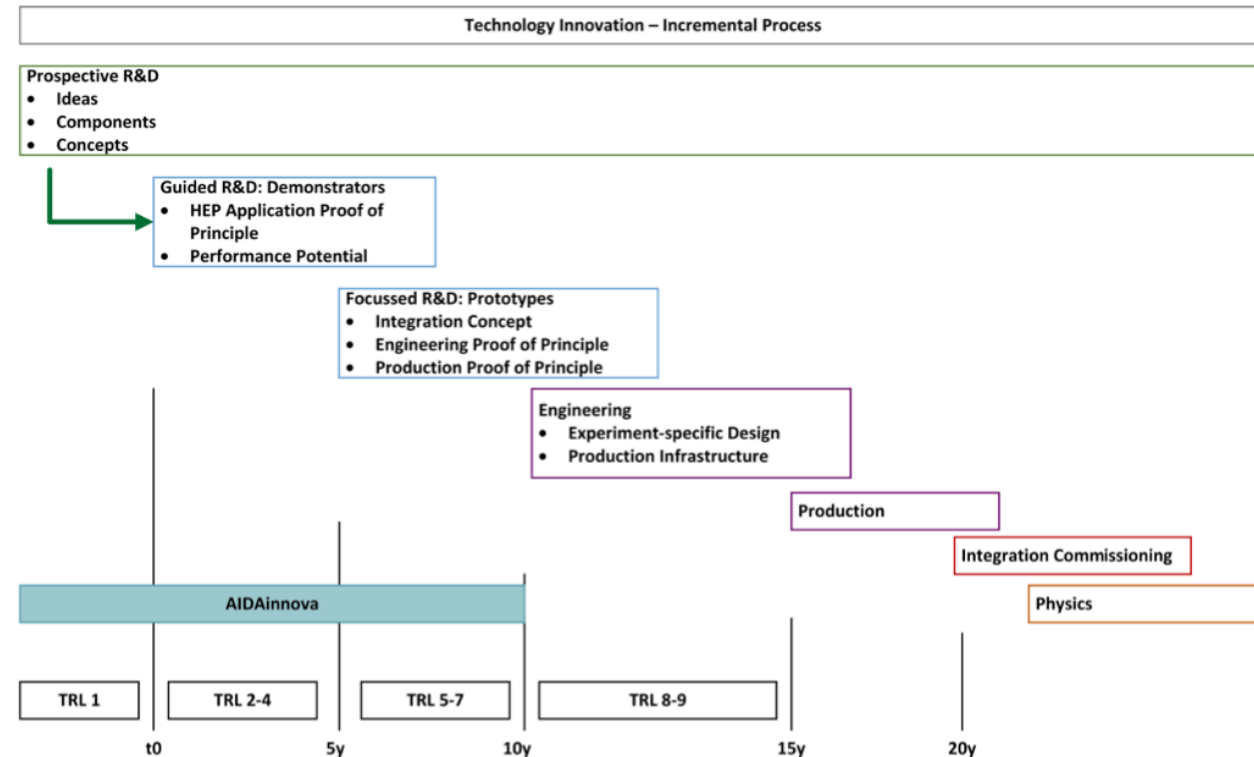
- following extensive consultations with funding agencies
- Document: https://indico.cern.ch/event/1197445/contributions/5034860/attachments/2517863/4329123/spc-e-1190-c-e-3679-Implementation_Detector_Roadmap.pdf

Categories of R&D

And Sources of Funding

1. Strategic R&D via DRD Collaborations
(long-term strategic R&D lines)
(address the high-priority items defined in the Roadmap via the DRDTs) **vision**
2. Experiment-specific R&D
(with very well defined detector specifications)
(funded outside of DRD programme, via experiments, usually not yet covered within the projected budgets for the final deliverables) **focus**
3. "Blue-sky" R&D
(competitive, short-term responsive grants, nationally organised) **agility**

Transitions Blue-sky → Strategic → Specific expected
Cross-fertilisation desired



From the AIDAInnova proposal

Resources

Bootstrap

One important goal of the Roadmap implementation is to improve the funding for detector R&D

- level, and stability
- long-term perspective requires task sharing and coordination - CALICE seen as a model
 - rather than the cascade funding which is more directed towards blue-sky R&D

Structure the R&D process

- here AIDA serves as a model: deliverables and milestones
- formulate targets that match resources and schedule

Resources

- DRDC does not provide funding, this comes from national agencies and remains with institutes
 - has been the case (and a subject for discussion) since the times of the DESY PRC review
 - nevertheless national funding requests have benefited from independent and international reviews

How to get it started

- state resources that are available and can reasonably be expected to continue to flow
- realistically guess what could become available if your current requests are successful
- The sum of both should match the formulated targets
- Will be finalised only in MOU process; better guesses - faster convergence

(Further) Integration of non-European Groups

Into DRD6 Proposal

First version of the proposal submitted

- revision in progress, second version to be iterated with DRDC, finally due Nov 15

Add new institutes

- to existing deliverables
- or add new deliverables
- recourses: make an effort, was difficult for everyone

Task sharing

- for ourselves, and for interaction with the committee
- should be able to demonstrate complementarity and coverage (no duplication, no gaps)

MoUs

In preparation

CERN considers multilateral collaborations for research purposes like experiments

- Was already the case for the R&D Collaborations
- Basis: CERN general conditions applicable to the execution of experiments (“GC”)
- https://cds.cern.ch/record/2728154/files/General-Conditions_CERN_experiments.pdf

Based on GC, a template MoU will be provided based on experience with “small” experiments

- Try to keep things simple and the MoUs as uniform as possible across DRD collaborations
 - adapted only where necessary to the specific needs of a given DRD collaboration

Special properties of DRD collaborations with respect to small experiments

- Working groups: reflect internal structure of the collaboration
 - Collaborators and their funding agencies sign up for one or several working groups
- Work packages: resource-loaded time-limited units of work, possibly across working groups
 - Collaborators and their funding agencies may sign up for work packages

Guiding principle

- Reduce signature cycles to a minimum
- Still make funding agencies agree if they undergo a commitment

pragmatic balance to be found

Back-up

Review and Approval Process

Lightweight and commensurate with effort

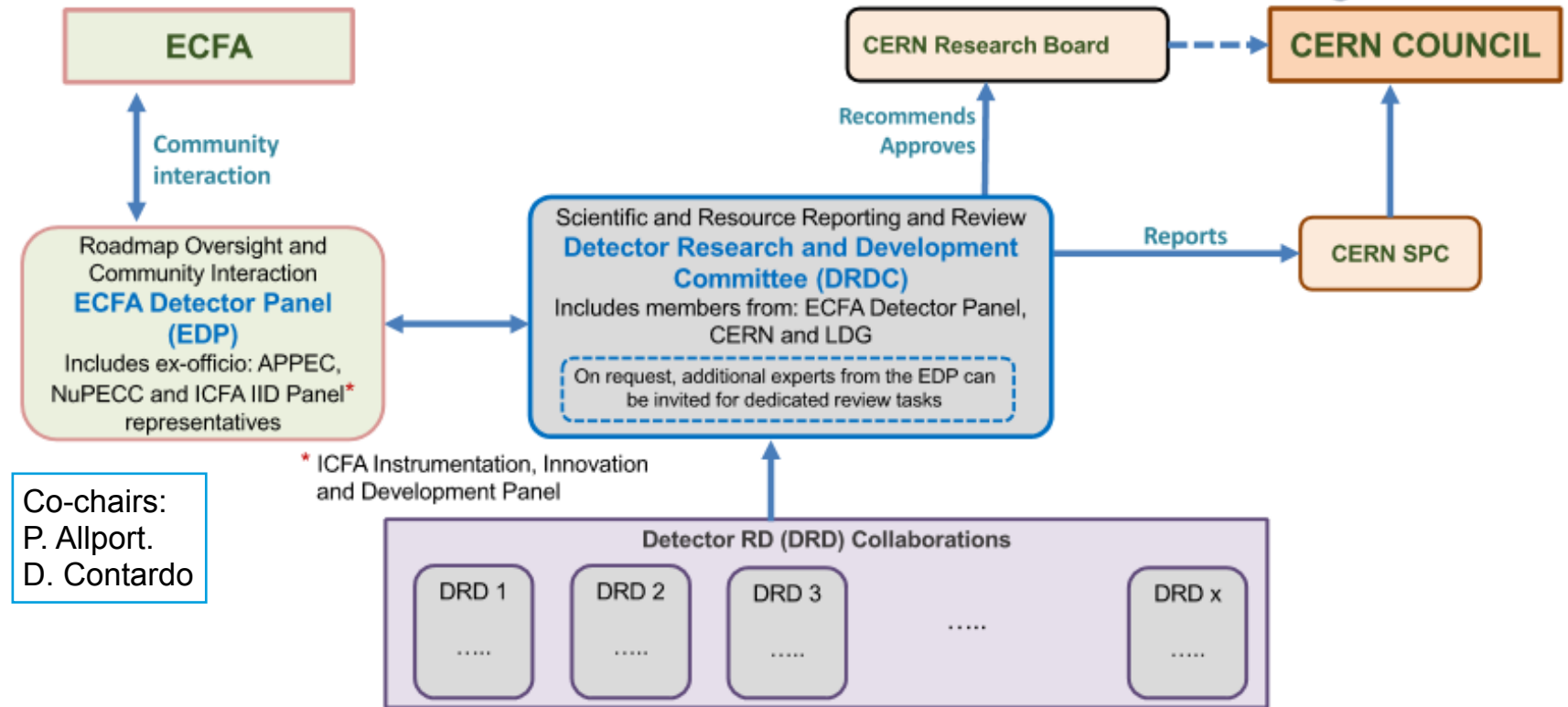
Scientific and Resource Reporting and Review by a Detector Research and Development Committee (DRDC)

- report via SPC to Council

Assisted by the ECFA Detector Panel (EDP):

- the scope, R&D goals, and milestones should be vetted against the vision encapsulated in the Roadmap

Funding Agency involvement via dedicated Finance Review Committees



* ICFA Instrumentation, Innovation and Development Panel

resources awarded to and held by institutes