

# Introduction to the R&D Session

Burkhard Schmidt, June 10, 2022

# Outline

- Conclusions from our R&D session in Cornell regarding a collaboration on Detector Mechanics and Cooling
- Plans for the implementation of the ECFA Detector R&D roadmap

# Pros and Cons for a R&D collaboration

- The topic was discussed at the Forum on Tracking Detector Mechanics in Cornell in 2019
- Positive aspects of an R&D collaboration:
  - It acts as a facilitator to carry out common research plans and activities;
  - It simplifies the exchange of students between participating institutes;
  - It brings people together in view of a (large) future project;
  - The regular reviewing process is appreciated by the Funding Agencies and *might* help the participating institutes to get resources;
  - Better dissemination of knowledge and results.
- An R&D collaboration comes not for free:
  - It requires work to prepare the proposal for approval by the CERN Research Board
  - It will take resources to lead the collaboration and to coordinate the work of the different research lines
  - A 'critical mass' of institutes is needed who are not only interested in R&D, but who have resources
- **We should be sure that at the end the community benefits from it!**

# Synergies with other initiatives

- An R&D program on experimental technologies started in 2020 for a period of 5 years, which provides important resources to continue Detector R&D
- Synergies exist with AIDAInnova and with a net of Institutes and industries, which have similar objectives, in particular regarding low mass trackers and new coolants. It complements the CERN initiative on strategic R&D.
- At CERN, collaboration between the EP-DT and the BE-CEM groups on robotics has been explored and could be intensified.
- Collaboration agreements could be prepared between different institutes.
- Collaboration with other organizations could be envisaged (ESA, NASA).

# ***ECFA Detector R&D Roadmap***

***- Discussion with Funding Agencies on Proposed Implementation plan -***

CERN, 28<sup>th</sup> April 2022

*Karl Jakobs, ECFA Chair  
University of Freiburg / Germany*

**ECFA**

European Committee for Future Accelerators



# 1. Establishment of RD Collaborations at CERN

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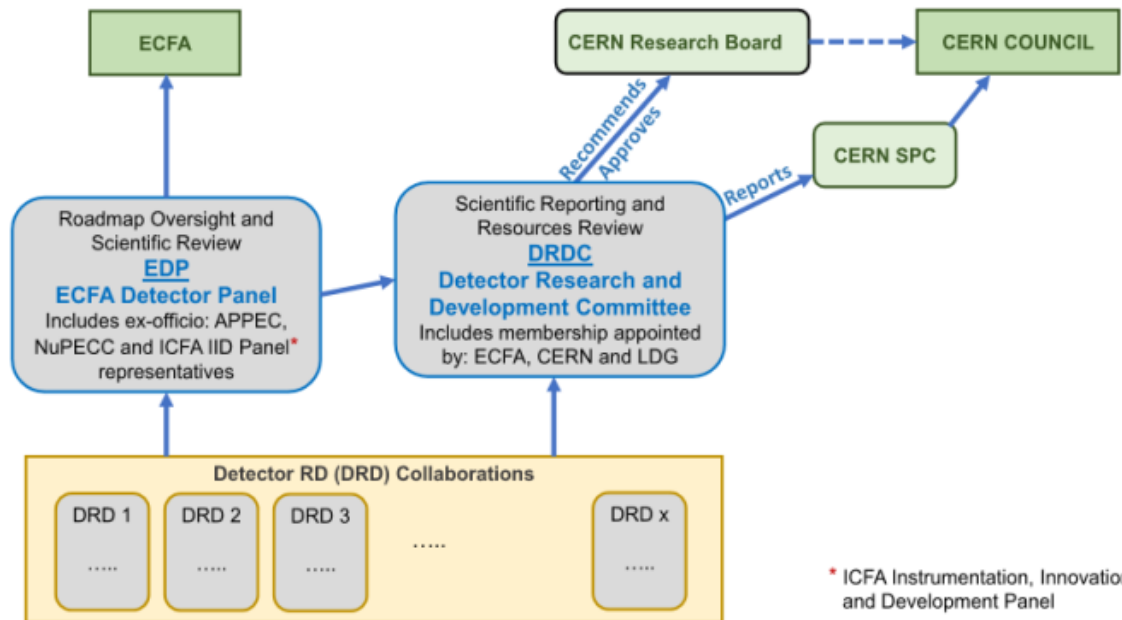
- We propose to organise long-term R&D efforts into **newly established Detector R&D (DRD) Collaborations**

**Detector technology areas: larger DRD collaborations** should be considered  
(one for each of the six areas and an additional similar structure for the transversal topics)

- **DRD Collaborations should be anchored at CERN** → CERN recognition, DRD label
- **Taking full account of existing, well-managed and successful ongoing R&D collaborations and other existing activities**  
(CERN EP R&D programme, EU-funded initiatives, collaborations exploring particular technology areas for future collider)
- The **formation of new DRD collaborations** should adopt a **community-driven approach**;  
Supported by existing ECFA Detector R&D Roadmap Task Forces;  
Timeline 1 - 2 years, however, aim to start setup the process this year
- Research topics, budget, milestones, etc., would have to be **adapted as rolling grants for long-term R&D lines**



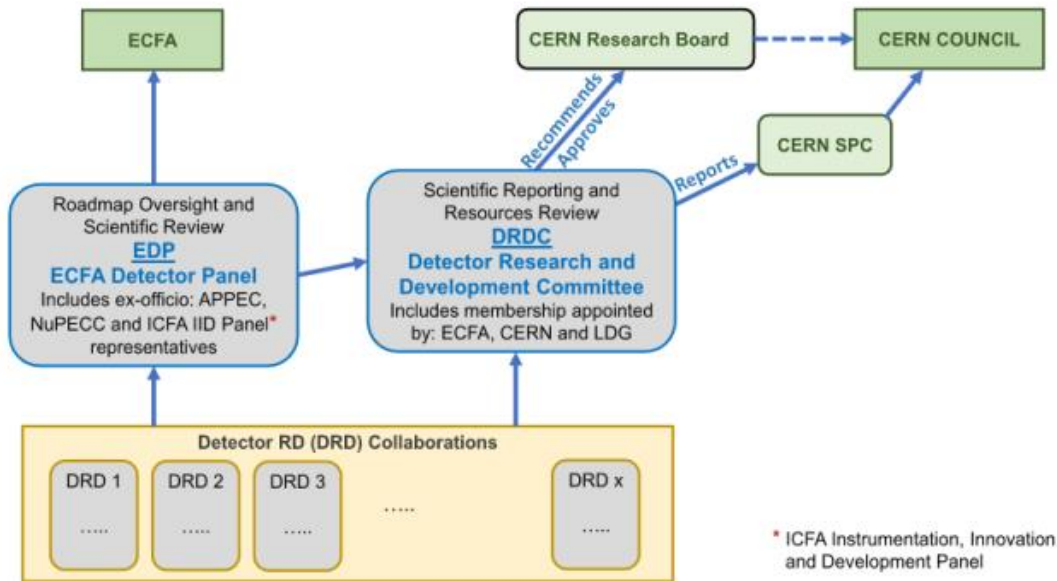
# Review and Approval Process



1. ECFA Detector Panel (EDP): the scope, R&D goals, and milestones should be vetted against the vision encapsulated in the Roadmap. (EDP: <http://cds.cern.ch/record/2211641/files/>, exists, hosted at DESY)
2. The resources for detector R&D should be reviewed by an independent body, the Detector Research and Development Committee (**DRDC**), which should include members appointed by CERN, ECFA and the LDG.  
The DRDC would make recommendations, while the final approval would lie with the CERN Research Board.



# Review and Approval Process



3. Final step: approval by a dedicated DRD Resources Review Board, where the funding agencies involved would commit and sign off on any additional required resources, followed by the signing of memoranda of understanding  
(a RRB meeting every two years seem reasonable)
4. Regular follow-up to monitor the achievements of each DRD collaboration should be carried out on a roughly annual basis by the EDP.  
DRDC would utilise these in-depth reviews to report progress on the overall R&D programme once per year to the SPC, whose Chair would in turn report to the Council.



# Final Comments

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- As projects develop, **some aspects should be expected to transition into approved experiment specific R&D** (outside the DRD programme)
- In addition, as stated in the General recommendations (GSR7) funding possibilities for “Blue-sky” R&D” should be foreseen

→ Three areas of Detector R&D:

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)
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 )
3. “Blue-sky” R&D  
(competitive, short-term responsive grants, nationally organised)

# Final comments

- The structure proposed by ECFA should facilitate the request for resources to carry out R&D on experimental technologies.
- The plan is to present the implementation plan to CERN council for approval next week.
- Assuming approval, this will also have an impact for those interested in R&D on Detector mechanics and cooling.
- We should stay vigilant.
- In case you have suggestions in this context, don't hesitate to contact me:

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