

ECFA PED WG3 status report

Mary-Cruz Fouz (CIEMAT Madrid), Giovanni Marchiori (APC Paris), Felix Sefkow (DESY Hamburg)

ECFA Plenary Meeting
22 July 2022

Contents

- Mandate and goals
- Structure
- Ongoing activities

WG3

- WG3 is one of the 3 working groups of the ECFA "Physics, Experiment & Detector (PED) Studies towards a Higgs/EW/Top Factory"

WG1
Physics Potential

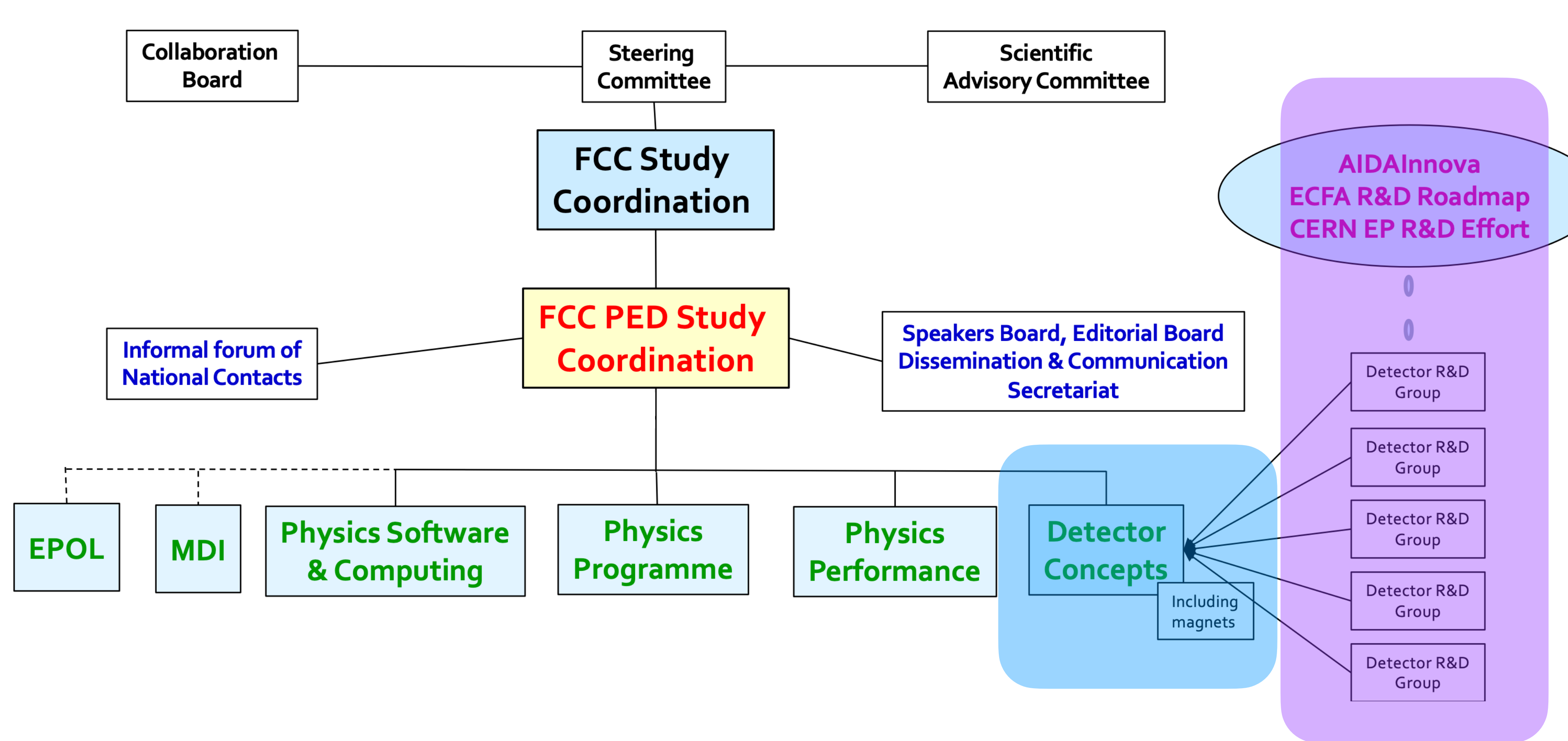
WG2
Physics Analysis Methods

WG3
Detector (R&D)

- Unlike WG1&2, created ~1 years ago, WG3 conveners were appointed only recently (~2 months ago), after the conclusion of the works of the ECFA Detector Roadmap Task Force

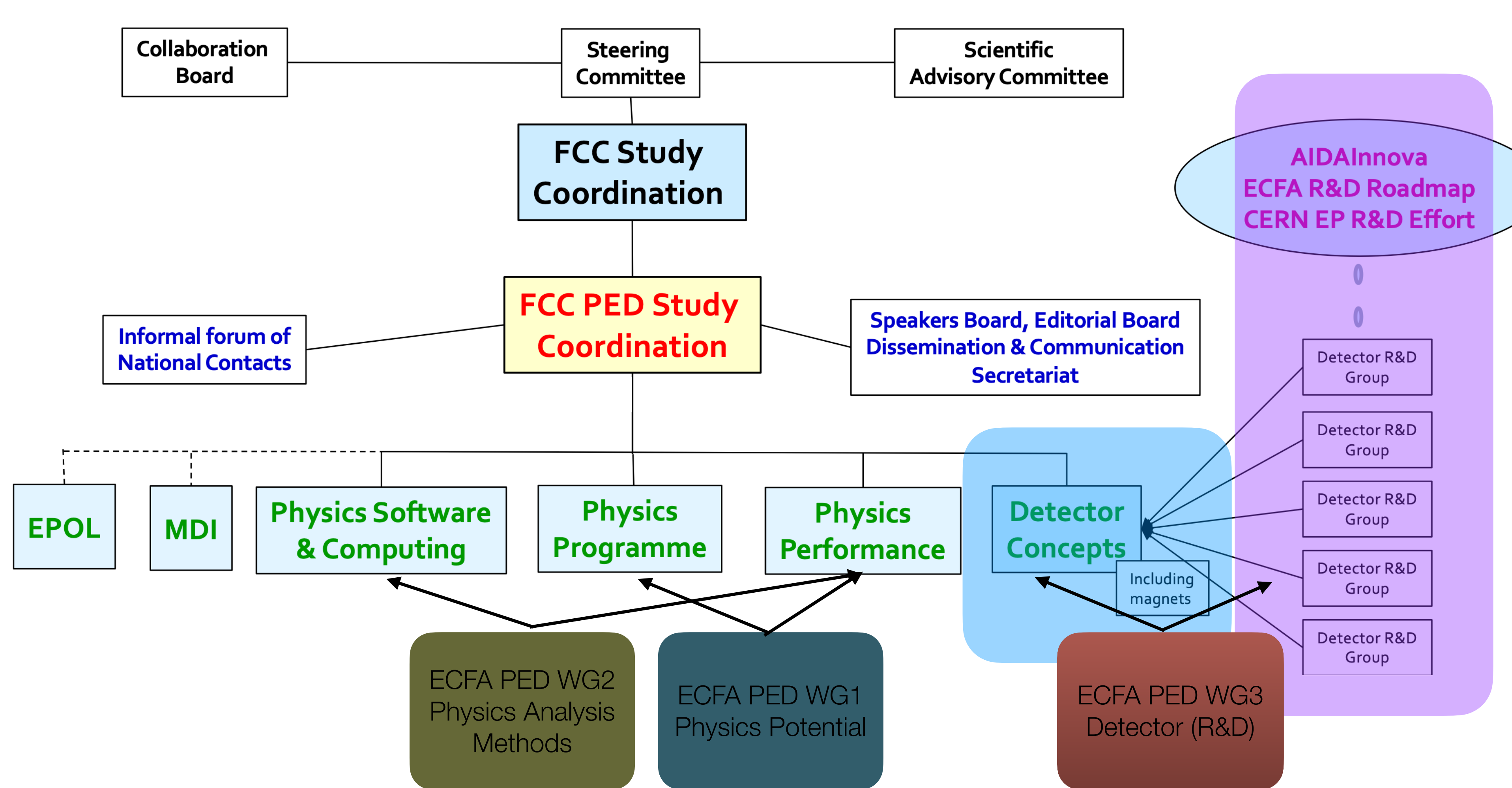
Detector activities towards a Higgs/EW/Top Factory

- Existing activities can be broadly classified in two categories: **detector concept studies** (within the different Higgs factory collaborations) and **detector R&D efforts**



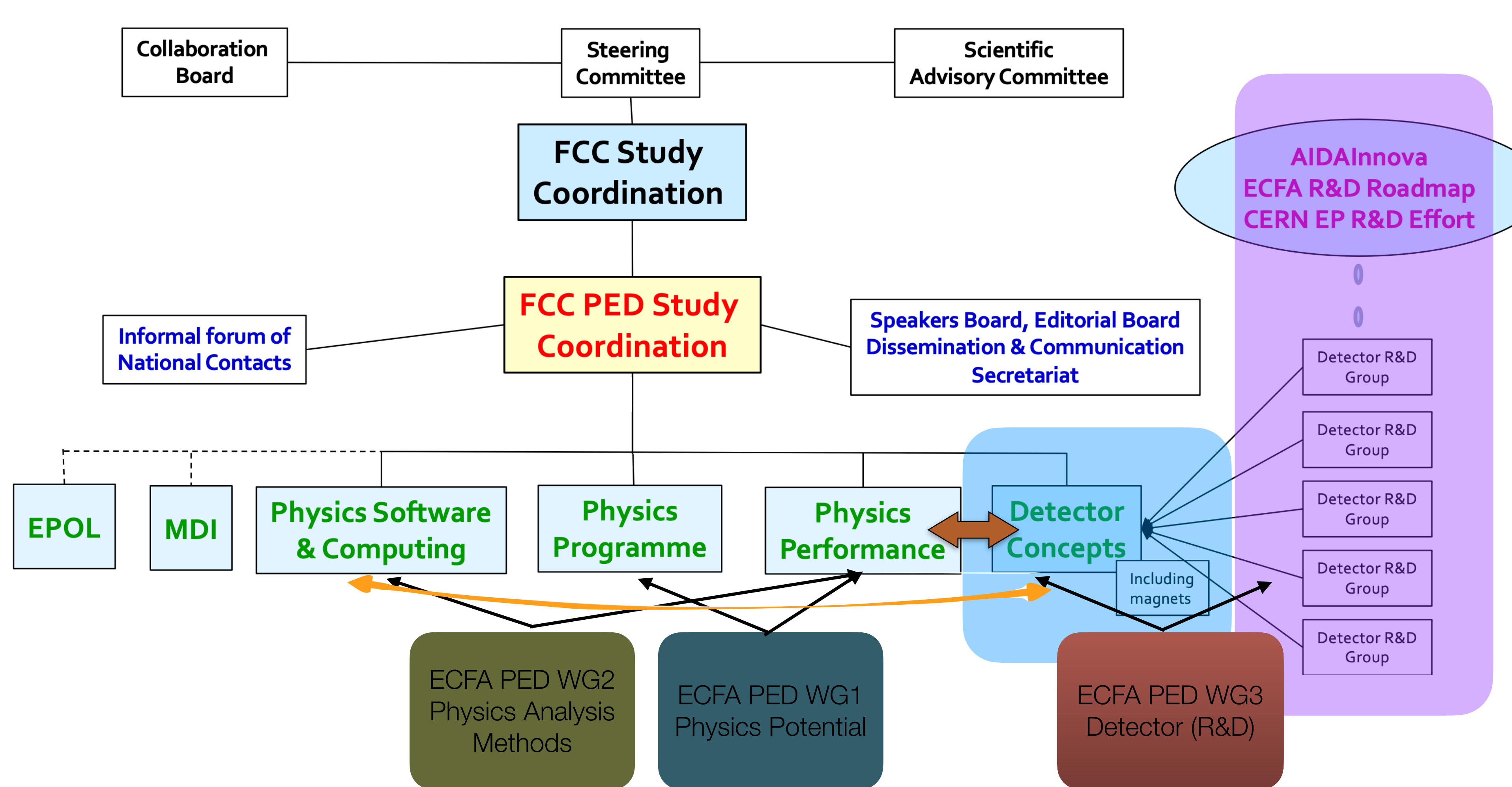
ECFA PED study and WG3 role

- WG3's goal is to create a forum for efficient and fruitful exchange of information and coordinated efforts among detector concept studies and R&D task forces



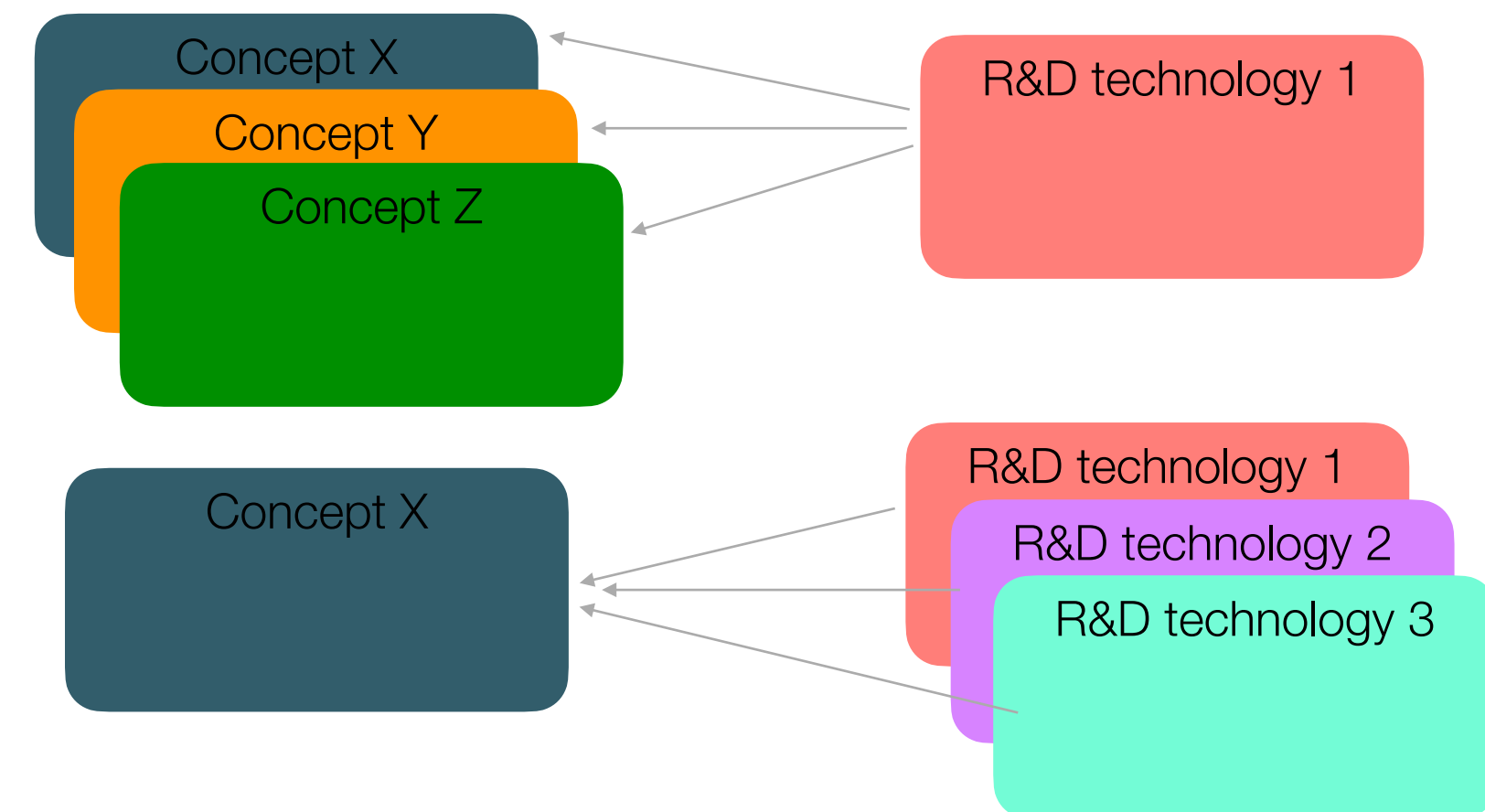
ECFA PED study and WG3 role

- In coordination with other PED WGs



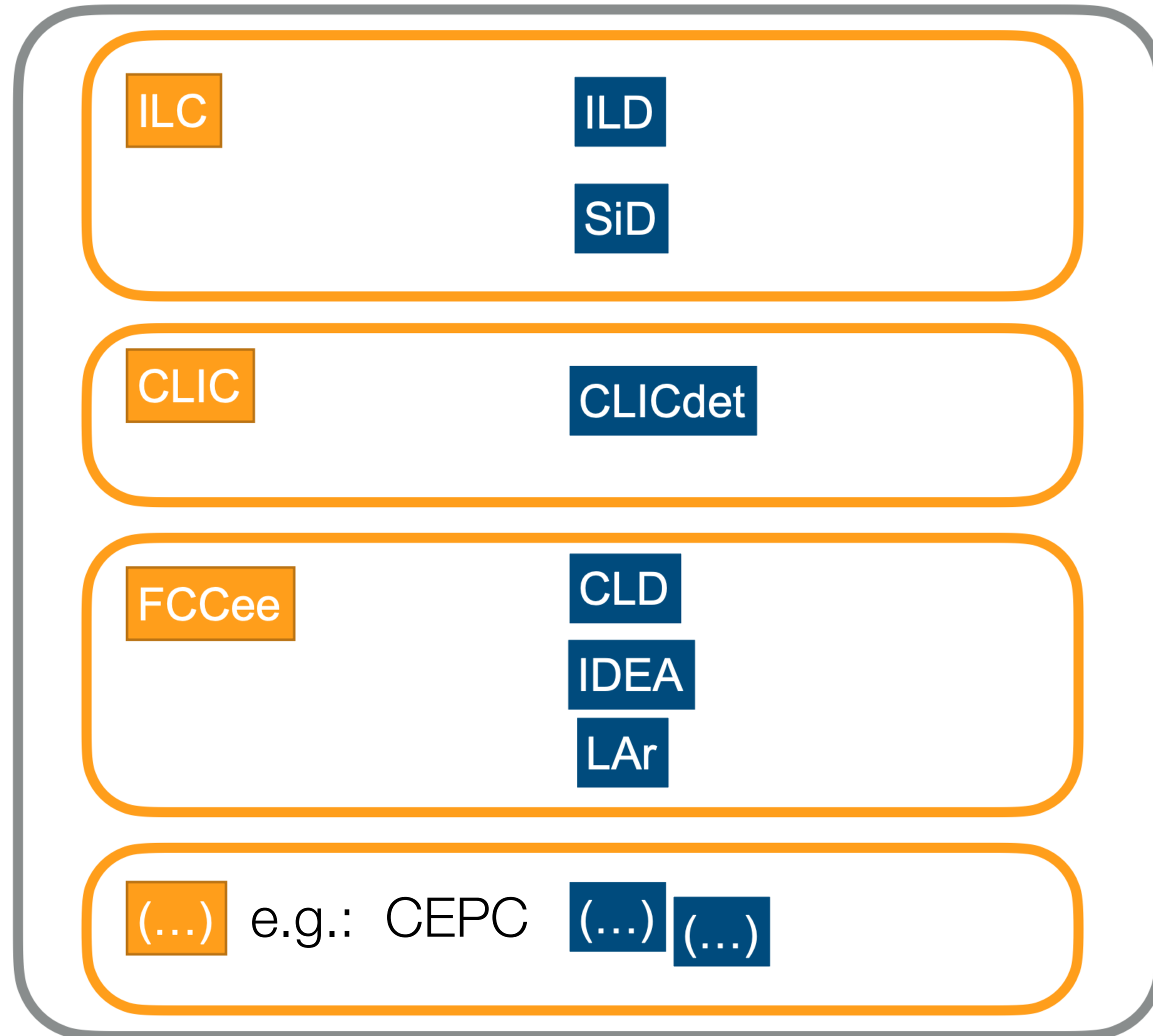
WG3 mandate & main goals

- In short, the main mandate of WG3 is to
 - inform and provide guidance to the detector R&D community on the needs of future Higgs/top/EW/Flavour e+e- projects
 - foster the interaction between the detector R&D groups and future collider physics and detector studies, with the aim of minimising duplication and injecting technological realism into conceptual studies
- Some guiding principles:
 - R&D effort on a certain technology can be beneficial to several detector concepts based on the same technology
 - Different technological solutions might provide similarly well-suited options for subdetector X of detector concept Y
 - Both call for joint forum between concepts and R&D groups, also in view of the still growing community.
- The main goal of WG3 is to bring together the different communities and favour sharing of information as well as of activities (e.g. testbeams) and tools (low-level simulations), and help R&D groups in preparing for reviews, eg. demonstrate how efficiently they address Higgs factory needs
 - In particular, through orchestrating a series of topical workshops (2-3/years) in the next two years to favour efficient exchanges between concepts and R&D groups



Main WG3 actors

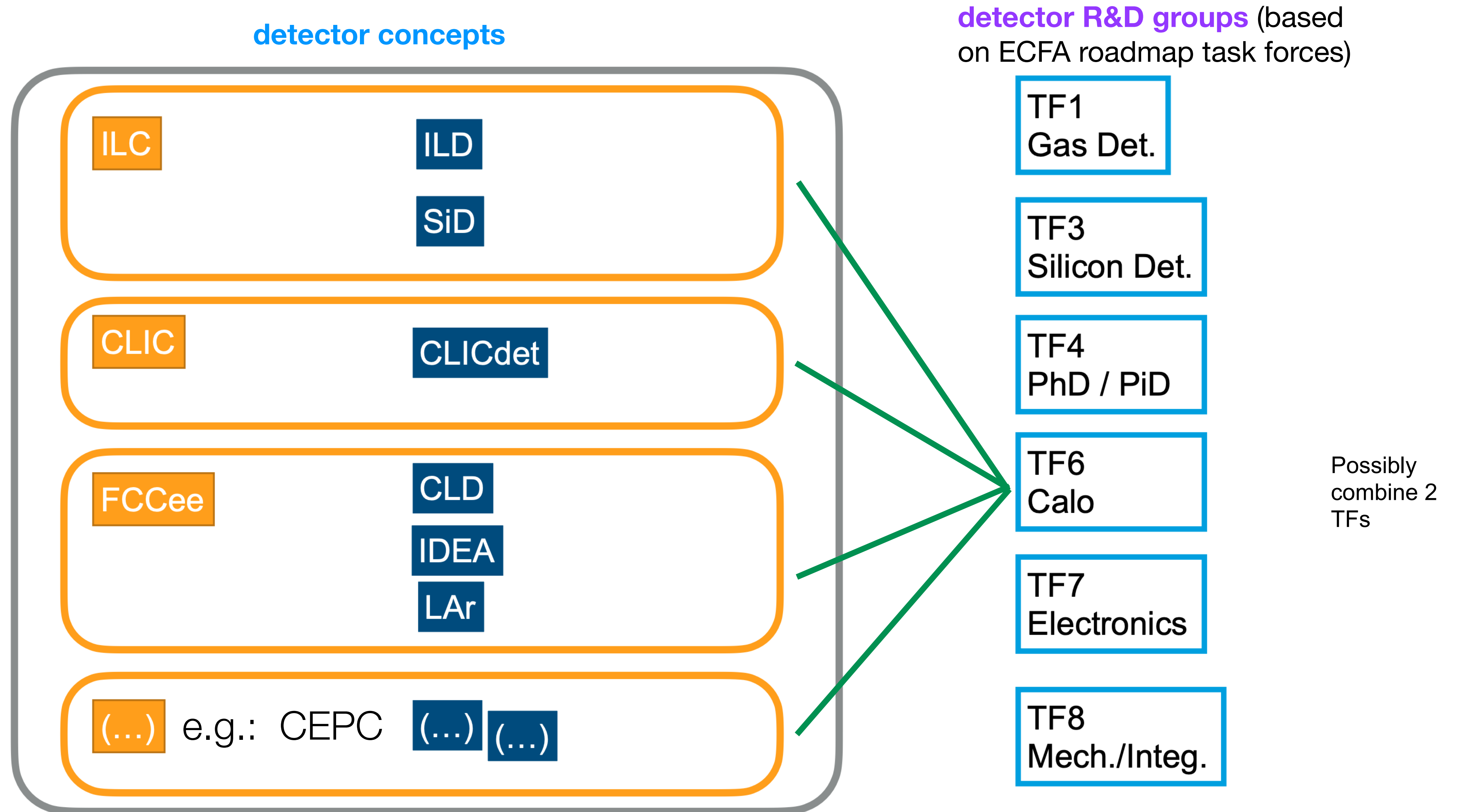
detector concepts



detector R&D groups (based on ECFA roadmap task forces)

- TF1
Gas Det.
- TF3
Silicon Det.
- TF4
PhD / PiD
- TF6
Calo
- TF7
Electronics
- TF8
Mech./Integ.

Example of topical workshop



WG3 organisation and starting activities

- **No subgroups, no sub-group meetings**
 - entities have their own efficient and effective structures, do not want to add overhead / waste time
- **but contact persons:** two, on equal footing, to ensure redundancy, per
 - Detector Concept groups (ILD, SiD, CLICdet+CLD, IDEA, LAr, CEPC)
 - R&D groups: use ECFA roadmap task forces
 - TF1 (gas), TF3 (Si), TF4 (PID), TF6 (calorimeters), TF7 (electronics), TF8 (mechanics/integration)
- **=> WG3 = 3 convenors + 13 (*2) contacts**
- **Main goal would be to orchestrate a series of workshops with efficient exchange between concepts and R&D**
 - and deliver input to R&D reviews on how efficiently groups address Higgs factory needs
- **Current activities towards October workshop:**
 - establish WG
 - organise sessions in Hamburg, with help of contacts
 - sketch a work program

WG3 contacts

Group	Contact A	Contact B
ILD		
SiD	Marcel Stanitzki	Andrew White
CLICdet + CLD	Dominik Dannheim	Frank Simon
IDEA	Margherita Primavera	Romualdo Santoro
LAr	Brieuc François	Nicolas Morange
CEPC	Jianchun Wang	Haijun Yang
TF1 (Gas)	Riccardo Farinelli	Maxim Titov
TF2 (Si)	Daniela Bortoletto	Didier Contardo
TF4 (PID)		
TF6 (Calo)	Gabriella Gaudio	Name TBC
TF7 (Elec)	Dave Newbold	
TF8 (Mech)		

- Most names identified, though some rows still empty => waiting for nominations by detector concepts / TF conveners, or for replies by proposed contacts

WG3 sessions in October ECFA PED workshop

- <https://indico.desy.de/event/33640/>
- 2 x 1h30 parallel sessions (5/10 and 6/10, 4PM) to review recent progress on detector concept studies and R&D
 - Deadline for submitting abstracts is TODAY!
 - still in time for submitting an abstract at [this link](#)
- 1 x 1h30 plenary session (6/10, 11AM)

11:00	ECFA Detector Roadmap and Implementation Plan <i>Auditorium, DESY Hamburg</i>	<i>Felix Sefkow</i> 11:00 - 11:30
	Tracking and Vertexing for Higgs Factories <i>Auditorium, DESY Hamburg</i>	11:30 - 12:00
12:00	Calorimetry and Particle ID for Higgs Factories <i>Auditorium, DESY Hamburg</i>	12:00 - 12:30

- 2 summary talks in 7/10 early morning plenary session

First ECFA WORKSHOP.

on e⁺e⁻ Higgs / Electroweak / Top Factories
5-7 October 2022, DESY, Hamburg

Topics:

- Physics potential of future Higgs and electroweak/top factories
- Required precision (experimental and theoretical)
- EFT (global) interpretation of Higgs factory measurements
- Reconstruction and simulation
- Software
- Detector R&D

INTERNATIONAL ADVISORY COMMITTEE	LOCAL ORGANISING COMMITTEE
A. Elondi (Geneva)	T. Behrke
J.-C. Briant (Paris LLR)	F. Stegman
P. Conde Muñio (IST/LIP)	F. Gaede
D. Contardo (BNP3)	E. Gallo
M. Dam (Copenhagen NBI)	A. Grohsjean
J. Foster (Valencia)	C. Grojean
J. D'Hondt (VU Brussel)	J. Haller
C. Grojean (DESY)	K. Krüger
K. Jakobs (Freiburg, Chair)	G. Moortgat-Pick (Chair)
P. Janot (CERN)	K. Peters
M. Klein (Liverpool)	J. Reuter
T. Lesiak (Krakow)	C. Schwanenberger (Chair)
C. Meroni (Milano)	F. Sefkow
J. Mnich (CERN)	M. Stanitzki
A. Nisati (Rome I)	G. Weiglein
A. Hobson (Glasgow)	
F. Simon (Munich MPP)	
S. Stapnes (CERN)	
R. Tenchini (Pisa)	
G. Wilkinson (Oxford)	
A. Wulzer (Lausanne)	

The European Committee for Future Accelerators (ECFA) organises a series of workshops on physics studies, experiment design and detector technologies towards a future electron-positron Higgs/Electroweak/Top factory.

The aim is to bring together the efforts of various e⁺e⁻ projects, to share challenges and expertise, to explore synergies, and to respond coherently to this high-priority item of the European Strategy for Particle Physics

Universität Hamburg
DER FORSCHUNG | DER LEHRE | DER BILDUNG

CLUSTER OF EXCELLENCE
QUANTUM UNIVERSE

<https://indico.desy.de/event/33640/>

WG3 work programme



- To be prepared with the WG3 contacts and detailed by the October workshop
- Input from the community is welcome!