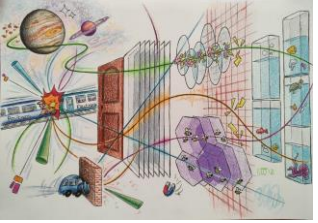


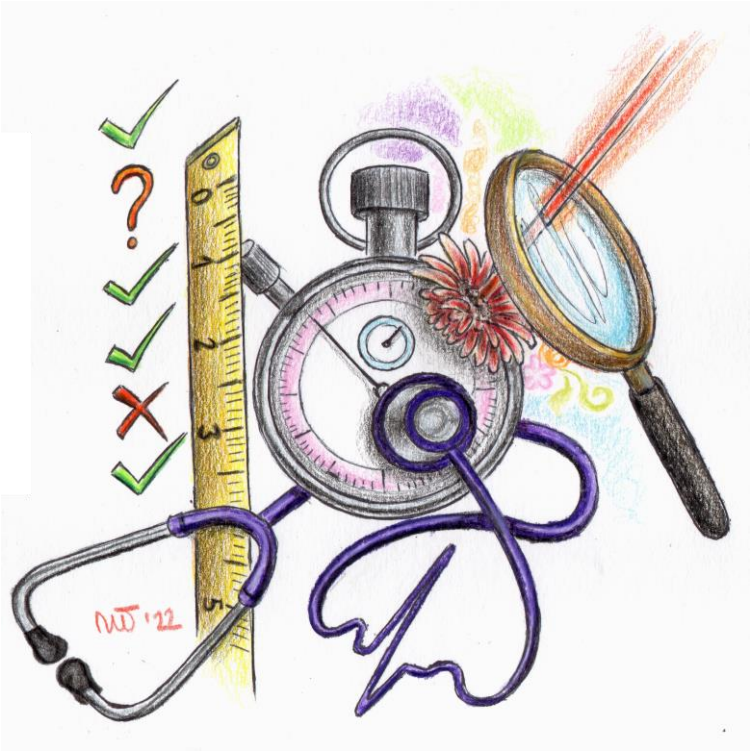
WG2: Solid-state sensors* for trackers and calorimeters

DRD3

Community structure, interests, funding, and blue sky R&D

(questionnaires recevied in the last few days are not included)

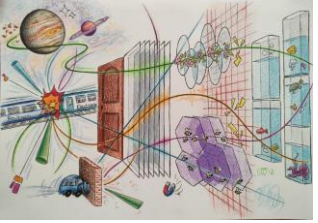
- **Introduction to WG2**
  (N. Cartiglia)
- **Sensors requirements for the next generation of trackers**
  (C. Gemme)
- **Milestones and Costing**
  (A. Macchiolo)



(*non MAPS)

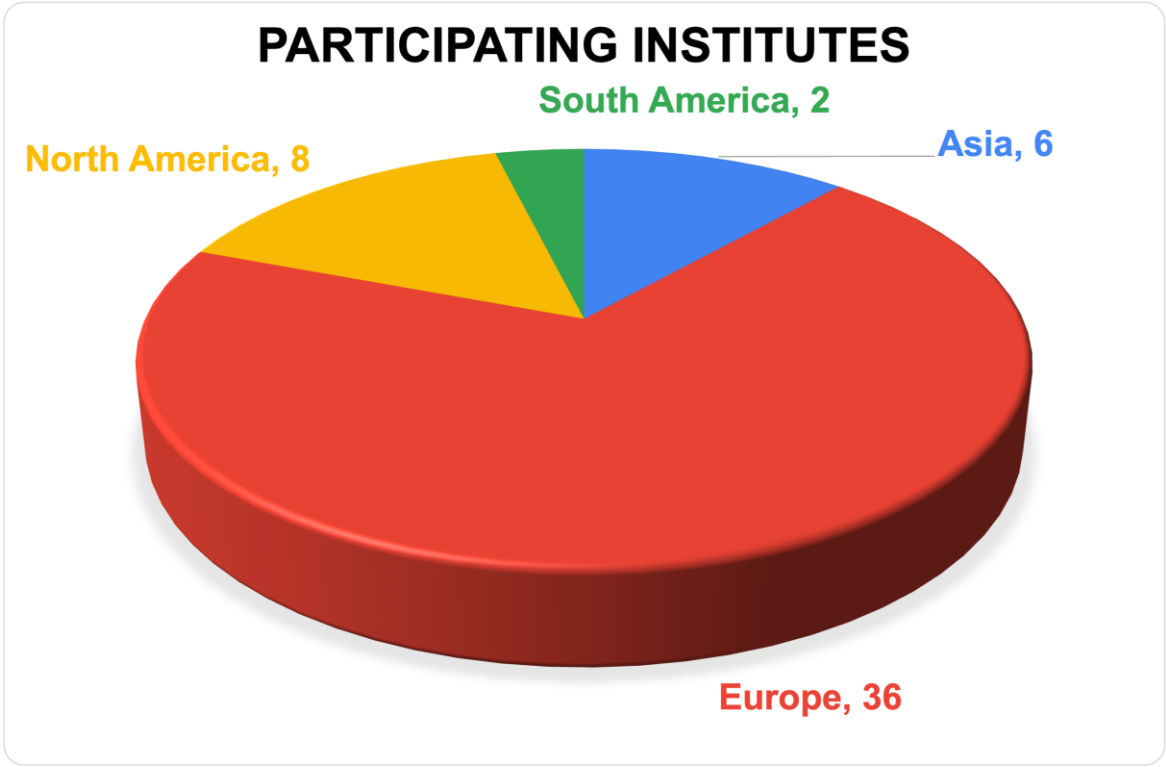
N. Cartiglia, C. Gemme, A. Macchiolo

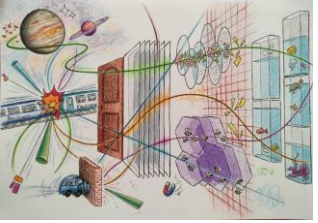
on behalf of the DRD3 proposal writing team



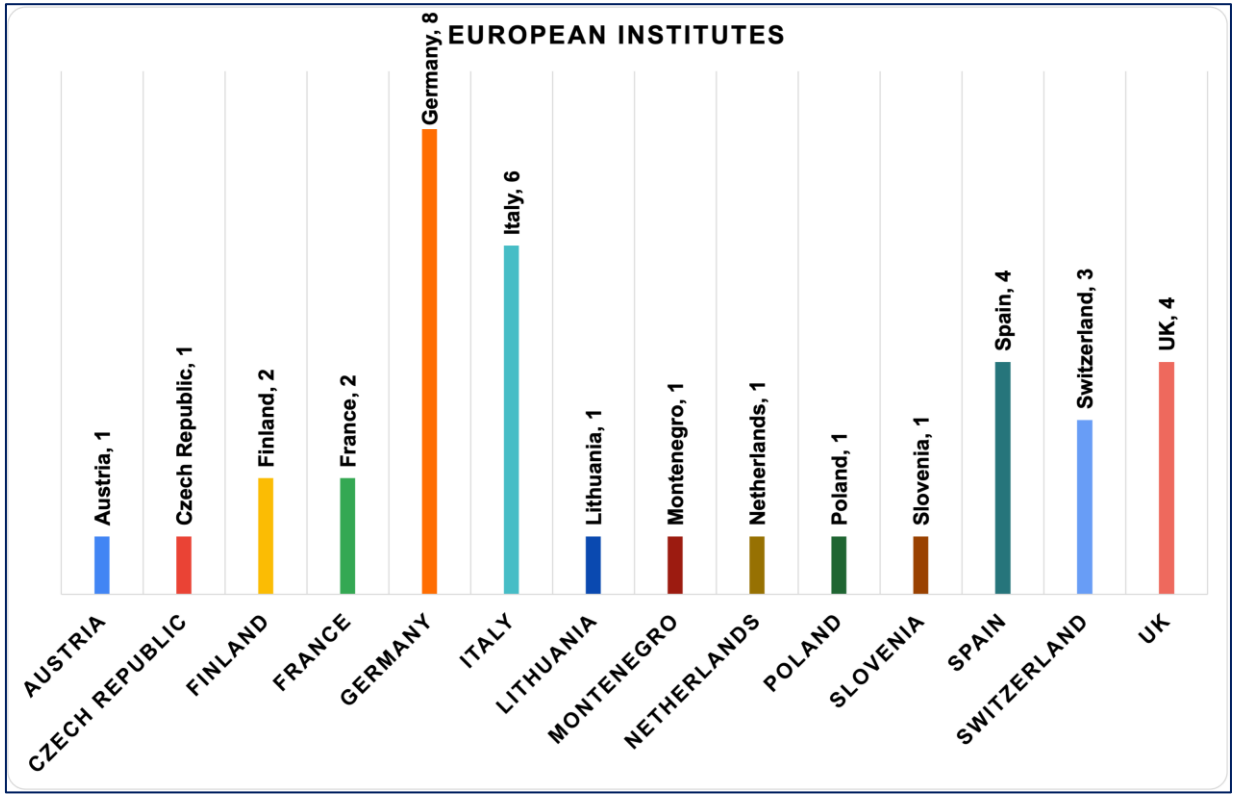
Community composition

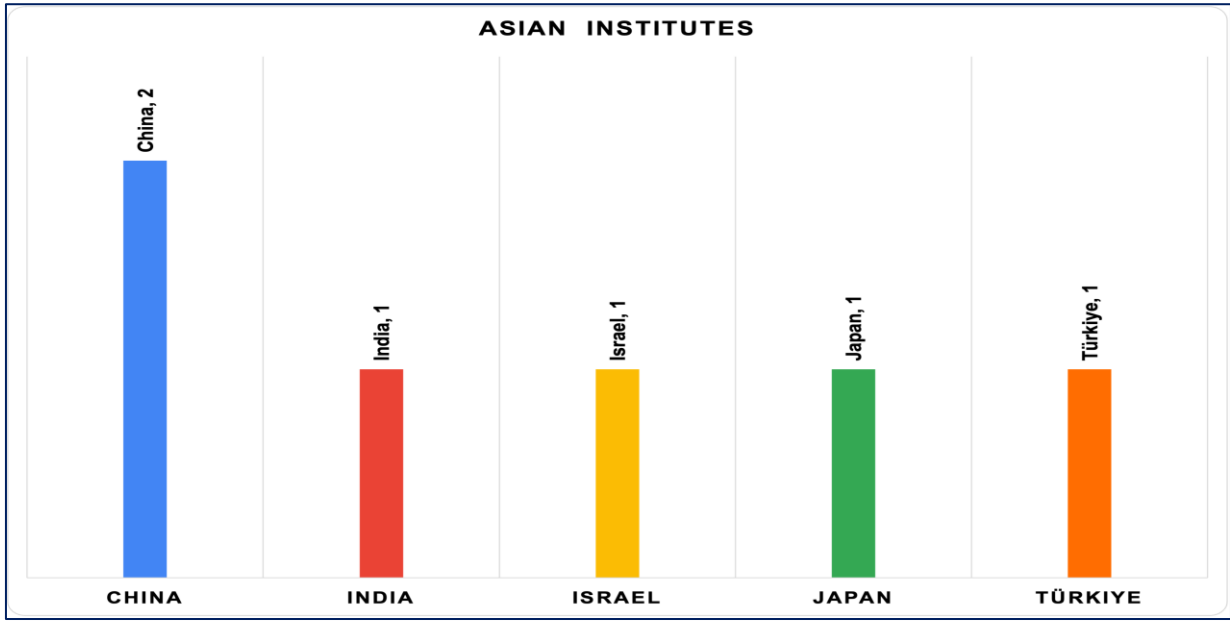
52 institutes expressed interest in contributing to the WG2 activities.

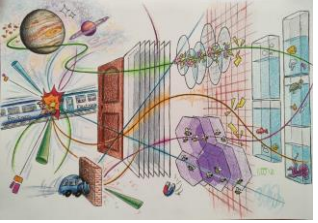




Community composition



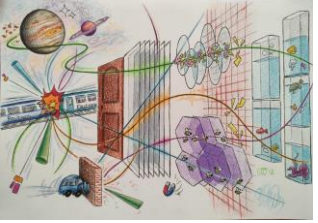




Community interests - Table

53 institutes expressed interest in contributing to the WP2 activities.

Activity	# groups
R&D on LGAD, current and novel designs: TI-LGAD, AC-LGAD, rad-hard LGAD, iLGAD, 100% fill factor, reduced power dissipation, resistive read-out	27
TCAD studies of LGAD/3D (in WG4):	12
3D sensors (mostly silicon, a few diamond):	12
4D tracking (general concept):	9
4D demonstrator (upgrade of beam telescopes, for example, the EUDET family or similar):	7
Edgeless:	2
Impact ionization at very high fluence:	2
New detector concepts (for example, saturated gain avalanche):	2
Ultrathin sensor:	2
Improvement of planar PIN design (pixel and strips):	2
Passive CMOS (in WP1)	4



Community interests - Topics

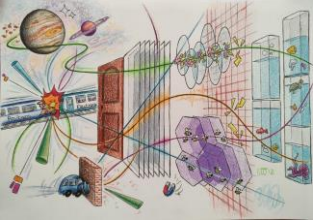
The development of 4D tracking is the main interest of the community

- Various evolutions of the LGAD design are presently considered the most promising solutions
- 3D sensors are seek-out as the most promising solution for high-fluence area
- The construction of 4D demonstrators has strong support, both as an addition to present beam telescopes and as a needed stepping stone for more complex systems
- A better understanding of impact ionization attracts interest

Development of planar PIN design (strips, pixels, edgeless)

Missing activities:

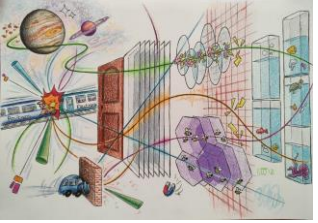
- Sensors for calorimetry
- Large area sensors, > 8” wafer



Contact with other WG

WG1: Passive CMOS as an alternative to traditional strips

WG4: TCAD, has strong support



Forthcoming activities in 2024 - 2030

DRD3

WG2

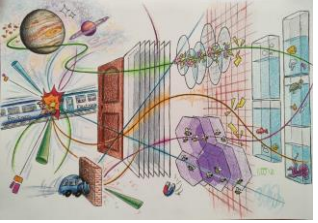
Blue sky R&D

Explore new ideas and techniques that might be of use in the future

Strategic R&D

(next two talks)

Develop technologies that solve well-defined problems of near-future experiments.



DRD3 WG2 Blue-sky R&D

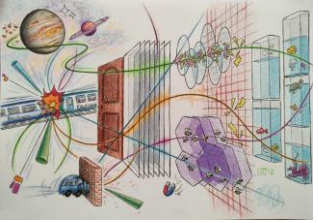
One of the main goals of the DRDx program is to foster blue-sky R&D

⇩

Specifically, the R&D activities of DRD3 WG2 are characterized by the **production of new sensors.**

⇩

We propose to encourage R&D activities by using the same approach used by RD50:
if an idea finds enough support in the communities, **about 50% of the cost** will be covered using the **common funds**, while **the other 50%** will be **split among the interested institutes**



Agenda of WG2

14:00	**WG2: Solid state sensors for tracking and calorimetry. Community structure, interests, and blue sky R&D** *Nicolo Cartiglia* *222/R-001, CERN* 14:00 - 14:15	
	WG2: Sensors requirements for the next generation of trackers (~<2035) *Claudia Gemme* *222/R-001, CERN* 14:30 - 14:45	
15:00	**WG2: Milestones and costing of near term strategic R&D** *Anna Macchiolo* *222/R-001, CERN* 15:00 - 15:15	