

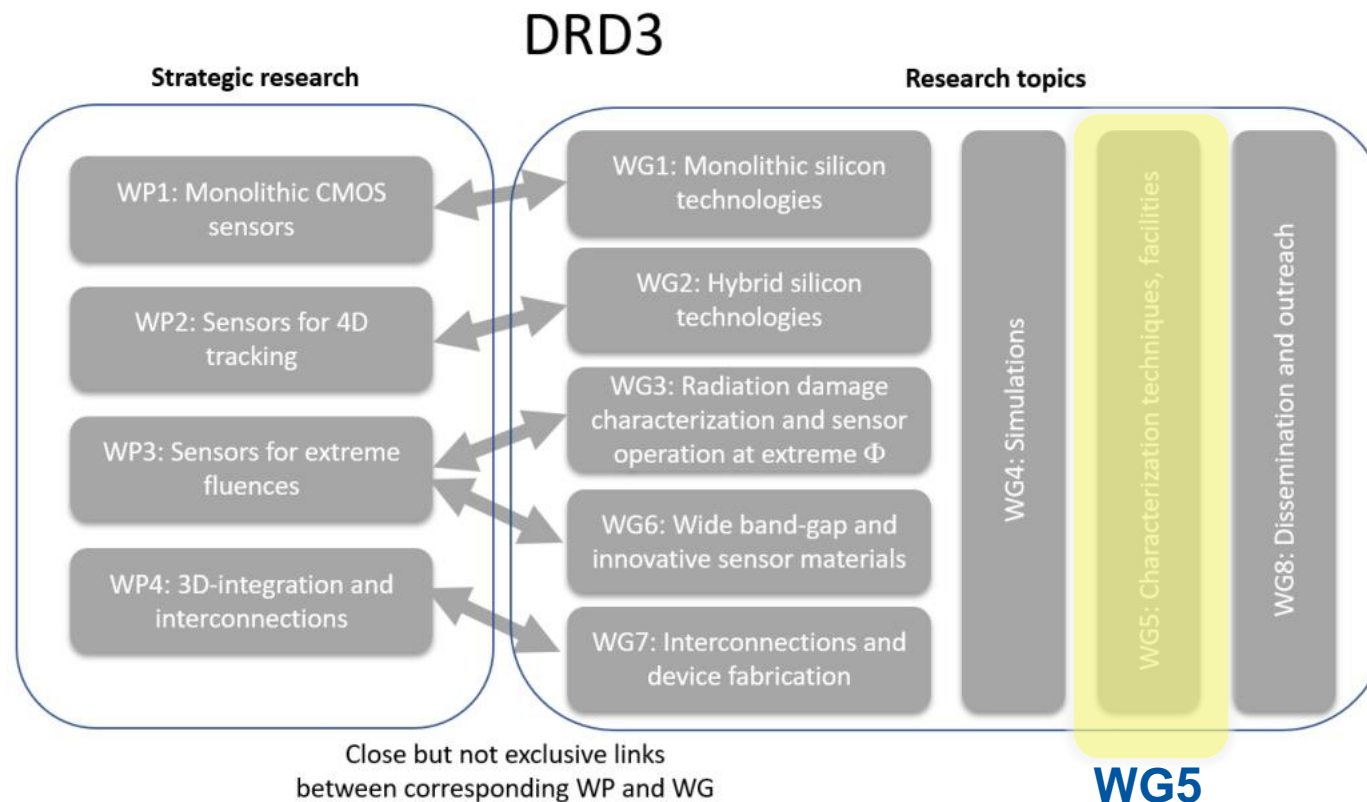
## DRD3 Working Group 5 (WG5) – Characterization techniques, facilities

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*DRD3 WG5 Kick-off Meeting*  
3 June 2024



# WG5 within DRD3



- DRD3 organized into **Working Groups**, pursuing long term goals – Work Packages (WP)
- WG5: Characterization Techniques and Facilities not directly linked to any WP, but transversal and supporting other WGs
- Mechanism for smaller, well defined collaborative efforts: Common Projects (CP), also within WG5



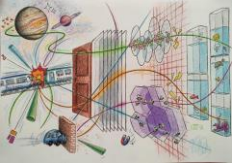
# WG5 Scientific Proposal

- DRD3 Scientific proposal and research goals for WG5:
  - Development, improvement, and diffusion of cutting-edge methods and techniques for sensor characterization
  - Develop and deliver state-of-the-art infrastructure for detector testing (example: Caribou DAQ system)
  - Coordinating access to unique characterization facilities (testbeam, ion beam, irradiation, laser/light facilities)
  - Facilitate sharing of knowledge, resources and expertise

WG5 research goals <2027	
	Description
<b>RG 5.1</b>	Extension of the TPA-TCT to wide-band semiconductor characterization (SiC and diamond)
<b>RG 5.2</b>	Upgrade Caribou DAQ hardware, firmware and software to advanced Ultrascale+ FPGA platform
<b>RG 5.3</b>	Efficient exploitation of common infrastructure (such as TPA-TCT, test beams, EMC facilities or Caribou): Promoting awareness within the community during the DRD3 workshops, dedicated showcase of use and subsidizing access fees or providing grants for specific projects
<b>RG 5.4</b>	Organizing mini-workshops for training on the use of characterization techniques and DAQ tools

Table 10: WG5 research goals in the period 2024 - 2026

- **Joint research activities in DRD3 WG5 via Common Projects (next slides)**



- Activities towards the development of broad interest backbone equipment are to be articulated as the **DRD3 Common Project (CP)** and, if approved, partially funded.
  - Joint research activity proposed by multiple collaborating institutes
  - DRD3 documented and approved, with defined timelines and deliverables
  - Legacy RD50 examples: RD50-2021-01, RD50-2023-04, RD50-2021-10 (next slide)
- We would like to apply the same approach also to the Common Projects towards development of new characterization methods and upgrades of common characterization facilities (for instance, equipping a test beam area with a cooling box and other auxiliary equipment).
- You are very welcome to submit new proposals;
  - We expect to present the Common Project proposal inside the WG5 before approving them.
- Detailed application procedure and requirements for a DRD3 Common Project are yet to be defined by the management team



- **Back-end DAQ platforms:**

- **RD50-2021-01** Production of **Caribou** CaR boards for RD50 DMAPS developments. (CERN, BNL, DESY, Liverpool, IFIC, JSI, Seville, NIKHEF, Lancaster).
- **RD50-2023-04** RD50-DAQ , hardware procurement for **Caribou 2.0 DAQ** system (Seville, Liverpool, Carleton, HEPHY, IFIC).

- **Front-end electronics:**

- **RD50-2023-10** 16-channel amplifier for thin Low Gain Avalanche Diodes based on the FAST3 ASIC – **FAST3-Amplifier** (INFN Torino, UCSC, CERN, JSI, HEPHY, TU Dortmund, KIT)

- **Sensors:**

- **RD50-2023-07** PIN sensors for dosimetry and NIEL studies (CERN, IMB-CNM, JSI, NIMP)



- We propose WG5 to act as a centralized DRD3 contact for access to facilities (apply to calls, book slots for DRD3)
- Appointment of **Facility Coordinators**:
  - Testbeam Coordinator (1 DESY, 1 CERN)
  - Irradiation Coordinator
  - Ion Beam Coordinator
  - Laser Facility Coordinator
  - Light Source Coordinator ?
- Facility Coordinators will manage applications within DRD3 and will maintain contact with their designated facilities
- Appointment via (self-) nominations – email to Conveners
- Discussion during DRD3 Week



# Mini-Workshops for training

- We envisage to organize thematical Mini-Workshops dedicated to specific WG5 topics
  - Focus on a specific technique/infrastructure (TCT, Caribou, ...)
  - Focused on beginner/intermediate level users
  - Combination of presentations + hands-on exercises
  - Typical duration 2 days
- Documentation of procedures/workflow
- Pilot project: TCT Workshop
  - Different TCT techniques (Top-TCT, Edge-TCT, TPA-TCT)
  - Late 2024/Early 2025, probably at CERN
  - First example of training activity within WG5
- More details will be provided in time. How much interest does the community have for such workshops?



- **Contact/Feedback to Conveners (Bojan, Ivan)**
  - [drd3-wg5-conveners@cern.ch](mailto:drd3-wg5-conveners@cern.ch)
- **WG5 e-group for general communications**
  - [drd3-wg5-facilities@cern.ch](mailto:drd3-wg5-facilities@cern.ch)
  - Everyone interested in WG5 should subscribe here via: <https://drd3.web.cern.ch/egroups>
  - Use this channel for general communication/announcements
- **Mattermost channel**
  - Use for working discussions
  - Not yet set up, more information at DRD3 Week
- **Communication between DRD WGs**
  - We support [WG2 proposal](#) for Support Contacts/Liaisons for communication between WGs
  - The person should come from the thematic WG (i.e. 1, 2, 3, 6, 7, 8)
  - We would like to ensure one contact appointed for each of the above WGs
- **Communication with DRDx (example DRD4.1 – Photon detectors)**
  - Propose to keep on Convener level

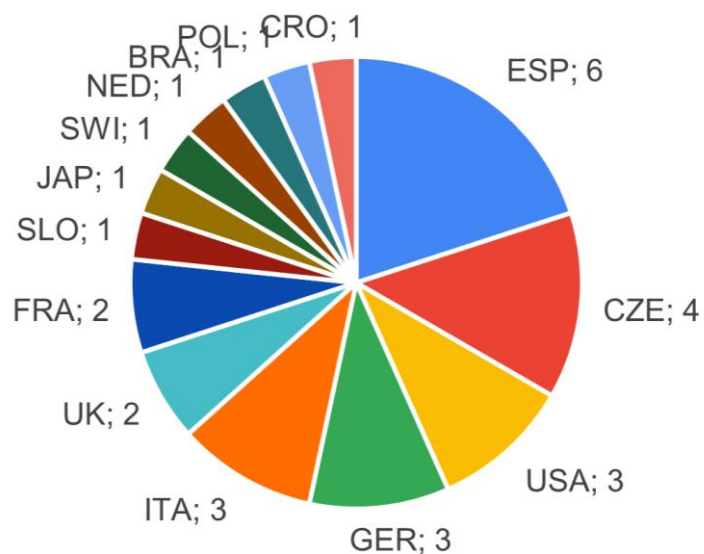




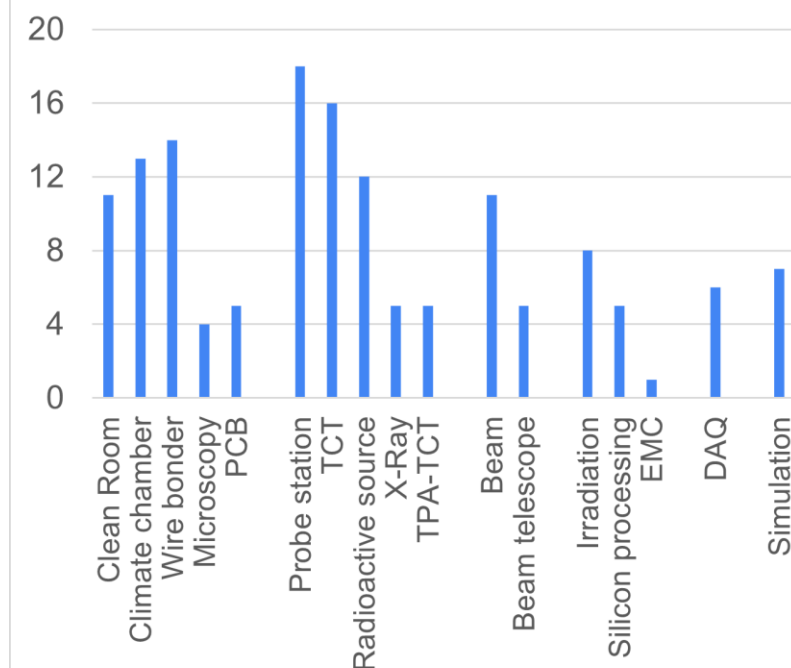
# EOI summary

- Received Expression of Interest (EOI) slide from 30 institutes (25 Europe, 4 Americas, 1 Japan)
  - View in repository: <https://cernbox.cern.ch/files/link/public/QcJZDNdHNzctjNx/WG5-facilities>
- Summary of the collected input:
  - Different level of detail between EOIs, results should serve for general orientation

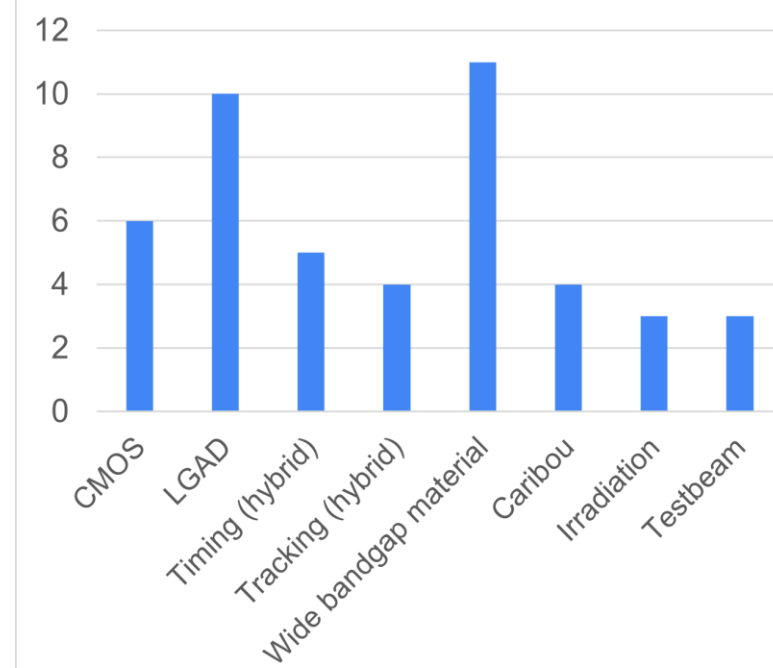
DRD3 WG5 Institutes country



WG5: Available infrastructure



WG5: Category of interest





- DRD3 Week at CERN 17–21 June
  - <https://indico.cern.ch/event/1402825/>
- WG5 Session on Friday 21 June (morning)
- Call for abstracts is open until 6 June – you are encouraged to submit on Indico
  - Type 1 (Scientific talk) – presentation of done work
  - Type 2 (Project proposal) – for strategic financing partially via DRD3
  - Please indicate whether your abstract is Type 1 or Type 2
- Discussion of proposed WG organization



# Summary

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DRD3

- DRD3 WG5 will focus on Characterization Techniques and Facilities
- Common Projects to develop and partially fund:
  - Broad interest backbone equipment
  - New characterization methods
  - Upgrades of common characterization facilities
  - You are welcome to propose a Common Project during DRD3 Week, detailed application procedure still in development
- Propose WG5 to act as DRD3 contact for access to facilities
  - Call for nominations for Facility Coordinators open until DRD3 week – email the conveners
- Envisage organization of Mini-Workshops for specific training
  - We would welcome feedback to conveners
- DRD3 Week in June
  - Call for abstracts open until 6 June (Scientific talk or Project proposal)
  - Discussion of the proposed WG organization