

# DRD3 - WG5 Discussion

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*DRD3 WG5 Kick-off Meeting*  
3 June 2024



# Research Goals: Recall

- Research goals included in the proposal (**to be achieved in 2.5 years**):

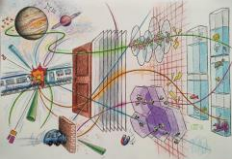
<b>WG5 research goals &lt;2027</b>	
	<b>Description</b>
<b>RG 5.1</b>	Extension of the TPA-TCT to wide-band semiconductor characterization (SiC and diamond)
<b>RG 5.2</b>	Upgrade Caribou DAQ hardware, firmware and software to advanced Ultrascale+ FPGA platform
<b>RG 5.3</b>	Efficient exploitation of 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



# Lines of Action towards the RGs

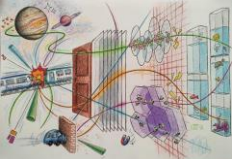
- **RG1 – TPA in Wide Band semiconductors:**
  - Proposal draft for a dedicated Common Project
- **RG2 – Upgrade of Caribou DAQ**
  - Hybrid approach – external + DRD3 funding
- **RG3 – Awareness and showcase of the available common infrastructure**
  - Today a first, quite likely too intense, showcase of such facilities.
- **RG4 – Topical mini-workshop**
  - Pilot mini-workshop on TCT techniques (see slide five)



# A new Research Goal (RG5)?

**DRD3**

- Need for a **permanent DRD3 characterization infrastructure at CERN** beam areas.
- Motivation: Optimize the test beam time reducing as much as possible characterization system commissioning phase.
- May include:
  - Cooling system, including gas services and environmental monitoring.
  - High resolution telescope with high-precision timing planes, time distribution system and fast trigger.
  - Maintained documentation and technical support.
- No need to re-invent the wheel, this infrastructure should be built up upon the AIDAInnova deliverables.
- Next steps:
  - Survey the interest of the DRD3 groups.
  - Converge into the infrastructure requirements.



# Mini-Workshops for training

- 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

**PLEASE LET US KNOW IF YOU ARE INTERESTED IN CONTRIBUTING OR ATTENDING THE MINI-WORKSHOP.**



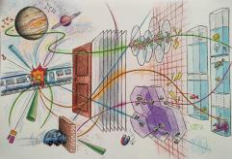
- We propose WG5 to act as a centralized DRD3 contact for access to large facilities (apply to calls, book slots for DRD3)
- Appointment of **Facility Contacts**:
  - Testbeam contact:
    - CERN: [Marcos.Fernandez@cern.ch](mailto:Marcos.Fernandez@cern.ch)
    - DESY: ?
  - Japanese facilities contact (KEK testbeam + irradiations): [yuji.enari@cern.ch](mailto:yuji.enari@cern.ch)
  - Irradiation contacts:
    - Ljubljana: [igor.mandic@ijs.si](mailto:igor.mandic@ijs.si)
    - LANSCE + Sandia: [seidel@unm.edu](mailto:seidel@unm.edu)
  - Ion Beam contact: [georgios@irb.hr](mailto:georgios@irb.hr)
  - Laser Facility contact: [gordana.medin@gmail.com](mailto:gordana.medin@gmail.com)
- Facility Contacts will manage applications within DRD3 and will maintain contact with their designated facilities



# Summary

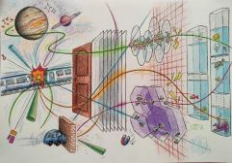
**DRD3**

- DRD3 WG5 initial Research Goal seems to be on track
- A new Research Goal?:
  - DRD3 permanent test beam characterization infrastructure at CERN
- Proposal for a Pilot mini-workshop on TCT techniques.
- Appointment of large facility contacts.



# BACK UP





- 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:**

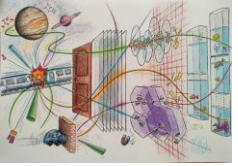
- **RD50-2023-10** 16-channel amplifier for thin Low Gain Avalanche Diodes based on the FAST3 ASIC – **FAST3-Amplifier** (INFN Torino, UCSC, CERN, JSI, HEPHY, TU Dortmund, KIT)

- **Sensors:**

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



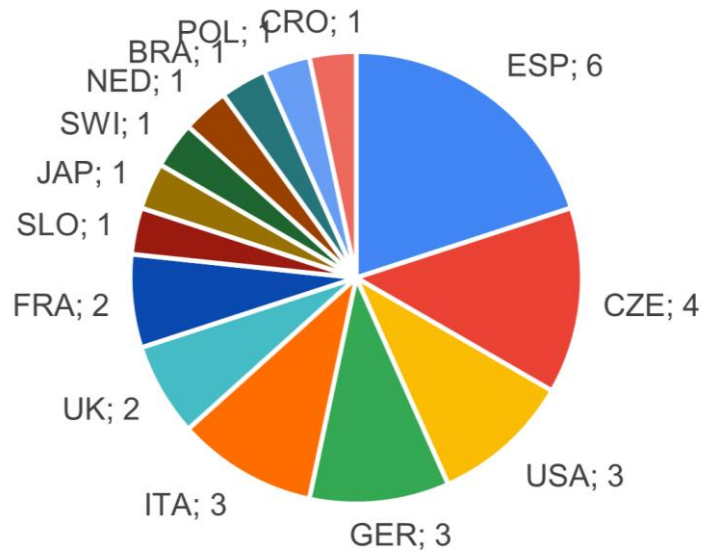
- **Contact/Feedback to Conveners (Bojan, Ivan)**
  - [drd3-wg5-conveners@cern.ch](mailto:drd3-wg5-conveners@cern.ch)
- **WG5 e-group for general communications**
  - [drd3-wg5-facilities@cern.ch](mailto:drd3-wg5-facilities@cern.ch)
  - Everyone interested in WG5 should subscribe here via: <https://drd3.web.cern.ch/egroups>
  - 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



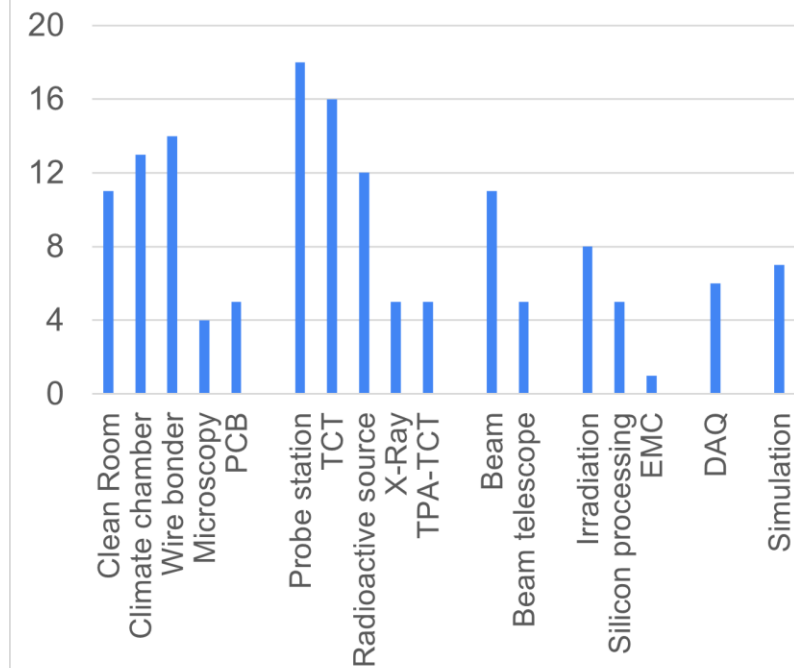
# EOI summary

- 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

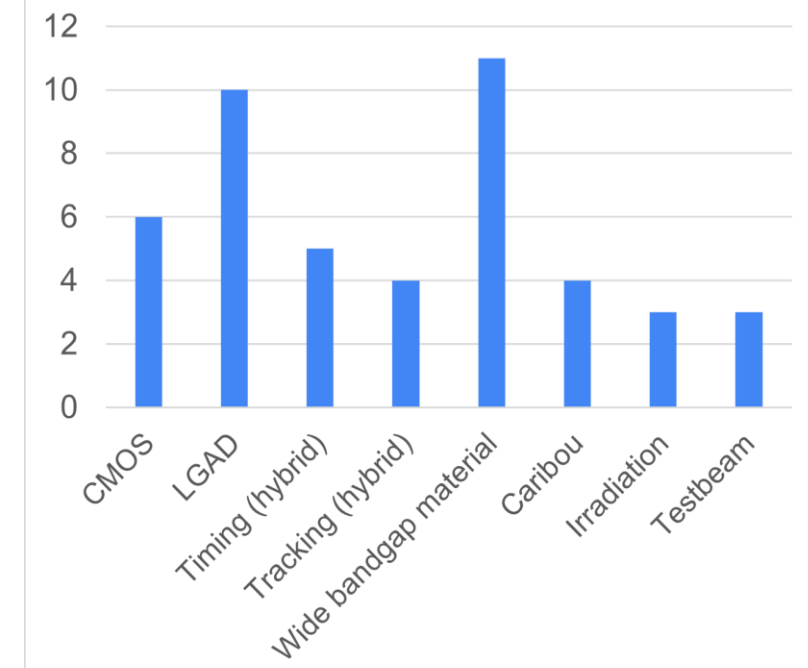
DRD3 WG5 Institutes country

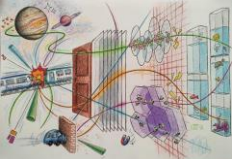


WG5: Available infrastructure



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