DRD7 Structure

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on behalf of the DRD7 Steering Committee

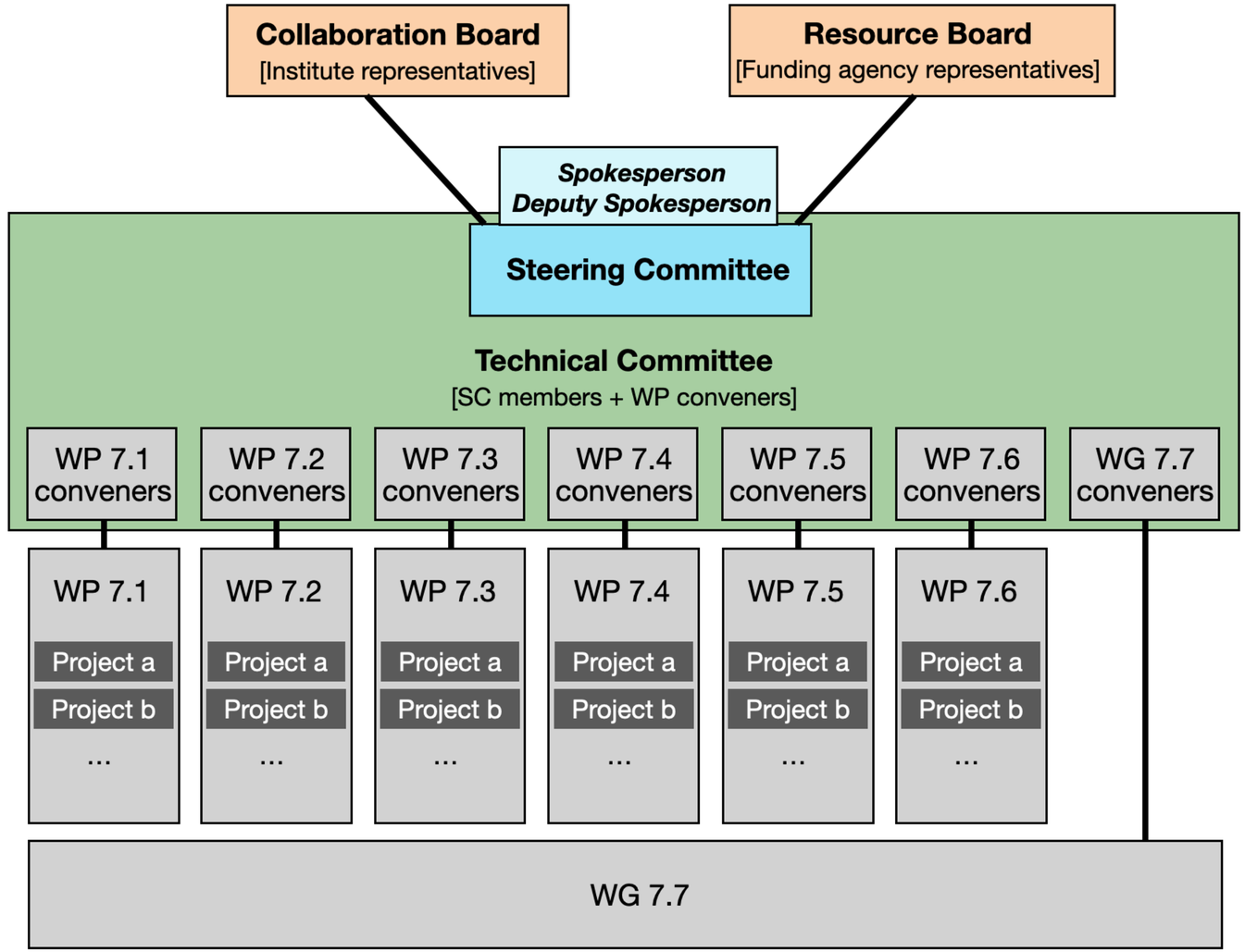
DRD7 Collaboration Meeting, CERN, 09.09.2024

Karlsruhe Institute of Technology

Institute for Data Processing and Electronics

The Collaboration Structure

Adapted to the Community



- R&D in electronics often revolves around major laboratories that can provide a backbone of expertise (in particular engineering) and resources (production, expensive hardware). Reflected in composition of **Steering Committee** as central executive body.
- Research activities defined bottom-up by institutes coming together in **Projects**, grouped thematically in **Work Packages**. WG conveners as coordinators, facilitators of information exchange within WP, within DRD7, and with observing parties from other backgrounds and other DRDs.
  One transversal **Working Group**.

NB: Nomenclature may still to be adjusted to achieve uniformity across DRDs.

The Collaboration Board

Composition of the Collaboration

- One representative per contributing institution
- Chaired by a chairperson, elected from CB members
- Appoints SC members, endorses Spokesperson, Co-Spokesperson and WP/WG Conveners nominated by SC

- 68 institutions from 19 countries (incl. CERN)

  Member institutes are institutes that are active in at least one project (e.g. with a concrete FTE commitment)

  Several additional institutes have shown interest in projects, but have not yet formally joined. These institutes are invited to subscribe to the *observers list*, and will be informed about events related to the WG subscribed to, and about general DRD7 events.

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AT	Graz University of Technology, Institute of Electronics	alicja.michalowska@tugraz.at
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CA	Sherbrooke University	serge.charlebois@usherbrooke.ca
Cern	CERN	francois.vasey@cern.ch
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	University of Geneva, DPNC	anna.sfyrla@cern.ch
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EE	Tallinn University of Technology (TalTech)	andrii.chub@taltech.ee
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	INFN-Arcadia project, represented by INFN Torino	darochar@to.infn.it
	Scuola Superiore Sant'Anna Pisa	claudio.oton@santannapisa.it
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	University of Udine	stefano.saggini@uniud.it
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	Fermilab National Laboratory (FNAL)	dbraga@fnal.gov
	Ohio State University	gan.1@osu.edu
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	University of Minnesota	rusack@umn.edu

The Steering Committee

The Central Executive Body of DRD7

- Current structure: 6 members. Chaired by two co-chairs elected from within the committee.
- Has evolved out of R&D roadmap TF7 membership by ad-hoc appointments.
  Primary motivation for current composition: Representation of major national communities / centers, diversity of expertise, ensuring continuity with roadmap recommendations.
- After proposal phase: 4 - 8 members, elected by Collaboration Board. Chaired by Spokesperson and Deputy Spokesperson - nominated from within the committee, endorsed by Collaboration Board.

Current composition:

- Frank Simon [KIT] (co-chair)
- Francois Vasey [CERN] (co-chair)
- Jerome Baudot [IPHC Strasbourg]
- Marcus French [STFC RAL]
- Ruud Kluit [NIKHEF]
- Angelo Rivetti [INFN TO]

Main roles:

- Oversees activities and progress of WPs
- Prepares annual report and workshop
- Nominates Spokesperson, Deputy Spokesperson, WP Conveners

Together with WG Conveners: ***Technical Committee***

- Progress tracking and reviewing of projects
- Proposes new Projects to Collaboration Board
- Oversight of DRD7 presentations and publications
  (detailed procedures to be worked out)

The Work Packages

Addressing Roadmap DRDTs, hosting Projects

		DRDT
Data density	High data rate ASICs and systems	7.1
	New link technologies (fibre, wireless, wireline)	7.1
	Power and readout efficiency	7.1
Intelligence on the detector	Front-end programmability, modularity and configurability	7.2
	Intelligent power management	7.2
	Advanced data reduction techniques (ML/AI)	7.2
4D-techniques	High-performance sampling (TDCs, ADCs)	7.3
	High precision timing distribution	7.3
	Novel on-chip architectures	7.3
Extreme environments and longevity	Radiation hardness	7.4
	Cryogenic temperatures	7.4
	Reliability, fault tolerance, detector control	7.4
	Cooling	7.4
Emerging technologies	Novel microelectronic technologies, devices, materials	7.5
	Silicon photonics	7.5
	3D-integration and high-density interconnects	7.5
	Keeping pace with, adapting and interfacing to COTS	7.5

- With slight remapping of activities to maximize synergies within working groups
- Complex monolithic sensors / ASICs added in area of emerging technologies (overlap with DRD3 resolved)
- Backend systems & COTS as an independent topic
- Transverse WG on Tools and Technologies

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	Reliability, fault tolerance, detector control	7.4
	Cooling	7.4
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- WP 7.1 - Data Density and Power Efficiency
- WP 7.2 - Intelligence on the Detector
- WP 7.3 - 4D and 5D Techniques
- WP 7.4 - Extreme Environments
- WP 7.5 - Backend Systems and commercial off-the-shelf Components
- WP 7.6 - Complex imaging ASICs and Technologies

WG 7.7 Tools and Technologies

topics currently not explicitly addressed by projects

- With slight remapping of activities to maximize synergies within working groups
- Complex monolithic sensors / ASICs added in area of emerging technologies (overlap with DRD3 resolved)
- Backend systems & COTS as an independent topic
- Transverse WG on Tools and Technologies

The WG Conveners

Coordinating the Execution of the Scientific Program

- WP 7.1 - Data Density and Power Efficiency
  Szymon Kulis [CERN], Jeffrey Prinzie [KU Leuven], Jan Troska [CERN]
- WP 7.2 - Intelligence on the Detector
  Davide Ceresa [CERN], Francesco Crescioli [LPNHE]
- WP 7.3 - 4D and 5D Techniques
  Sophie Baron [CERN], Marek Idzik [Krakow]
- WP 7.4 - Extreme Environments
  Giulio Borghello [CERN], Manuel Da Rocha Rolo [INFN TO], Oscar Augusto De Aguiar Francisco [Manchester]
- WP 7.5 - Backend Systems and commercial off-the-shelf Components
  Conor Fitzpatrick [Manchester], Niko Neufeld [CERN]
- WP 7.6 - Complex imaging ASICs and Technologies
  Marlon Barbero [CPPM], Michele Caselle [KIT], Ian Sedgwick [STFC RAL], Walter Snoeys [CERN]
- WG 7.7 - Tools and Technologies
  Kostas Kloukinas [CERN], Xavi Llopart Cudie [CERN], Mark Willoughby [STFC RAL]

Ad-hoc appointments, based on expertise, coverage of community, involvement in relevant R&D projects.

Transition out of Proposal Phase

In Progress - Going Step by Step

- Following approval in June 2024: Establish central collaboration bodies.
  - **Collaboration Board** in operation - Chair to be elected -> See presentation of candidates
  - Call for nominations of **Steering Committee** members - expect majority of current SC members would be willing to serve for at least one more year, new nominations very welcome.
  - Election of Steering Committee members by Collaboration Board.
  - Steering Committee will propose **Work Package Conveners**, to be endorsed by Collaboration Board. Expect that majority of current WP Conveners would be willing to serve for at least one more year. Steering Committee will propose Spokesperson and Deputy Spokesperson for endorsement.
- Expected terms of office:
  - 3 years for SC members, renewable once. Desirable to rotate and renew the committee: 2 new members per year.
  - 1 year for Spokesperson and Deputy, renewable.
- Once all collaboration bodies are established and legitimized, the yearly rolling replacement of Steering Committee members (elected by CB) will enter into effect, ensuring both broad community representation and continuity.

Going Forward

The next Steps

- ***Immediate***: Election of CB chair. Online election - after the introduction of candidates later in this session.
- ***After that***: Formal establishment of all collaboration bodies - see slide 7. Volunteers wanted!

- ***Operational aspects***: Establish and streamline interfaces to community: web page, egroups. See next presentation, help and ideas very welcome!

- ***Formal resource aspects***: Preparation, then signature of MoU. Still work in progress at CERN. Expect "financial granularity" on the level of projects.
  Will also need a *Resource Manager*, annual meetings of the *Finance Review Committee* from 2025.

- ***Evolution of DRD7***:
  - Growing the collaboration: New members, new projects - with the goal of also addressing roadmap topics currently not covered (for example system aspects of power distribution and data concentration).
  - Establish ways to use DRD7 expertise to support the development of DAQ concepts to guide subsystem electronics developments for future large experiments