

EP-DT Group Meeting

Welcome/Bienvenue!

June 26, 2024

Burkhard Schmidt

EP-DT Barbeque



Many thanks to all who contributed!

EP-DT Group Meeting (26th June) & BBQ (19th June)

📅 Wednesday 26 Jun 2024, 14:00 → 17:00 Europe/Zurich

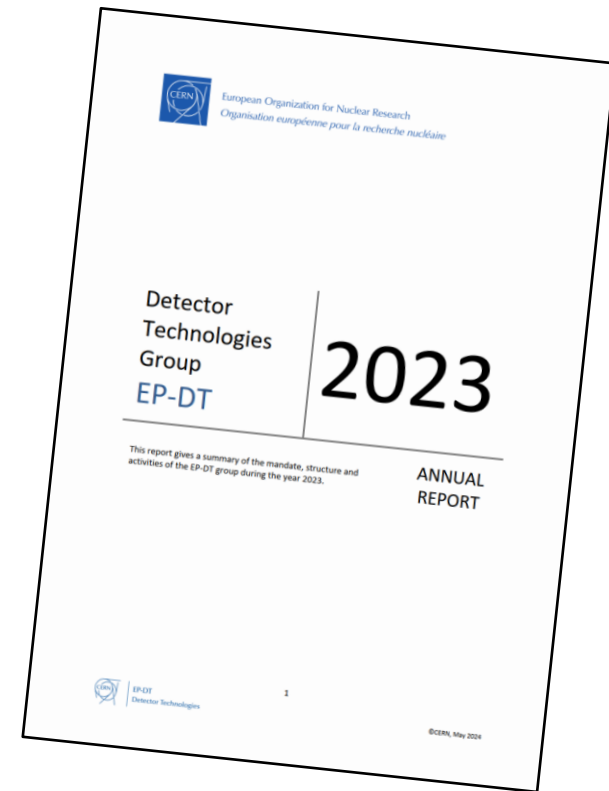
📍 80/1-001 - Globe of Science and Innovation - 1st Floor (CERN)

👤 Burkhard Schmidt (CERN)

- | | | | | |
|--------------|---------|---|-------|---|
| 14:00 | → 14:20 | Welcome and news | 🕒 20m | ✎ |
| | | Speaker: Burkhard Schmidt (CERN) | | |
| 14:20 | → 14:35 | ATLAS ITk upgrade | 🕒 15m | ✎ |
| | | Speaker: Ricardo Tavares Rego (CERN) | | |
| 14:35 | → 14:55 | CMS Tracker and HGCAL upgrades | 🕒 20m | ✎ |
| | | Speakers: Joao Batista Lopes (CERN), Marta Adamina Krawczyk (CERN) | | |
| 14:55 | → 15:10 | Further ALICE upgrades | 🕒 15m | ✎ |
| | | Speaker: Arturo Tauro (CERN) | | |
| 15:10 | → 15:25 | Further LHCb upgrades | 🕒 15m | ✎ |
| | | Speaker: Philipp Roloff (CERN) | | |
| 15:25 | → 15:45 | Coffee break | 🕒 20m | |
| 15:45 | → 16:00 | DRD 1: Gaseous Detectors, EP-DT Involvement | 🕒 15m | ✎ |
| | | Speaker: Djunes Janssens (CERN) | | |
| 16:00 | → 16:15 | DRD 3: Silicon Detectors, EP-DT Involvement | 🕒 15m | ✎ |
| | | Speaker: Peter Svihra (CERN) | | |
| 16:15 | → 16:25 | DRD 4: Photon Detectors, EP-DT Involvement | 🕒 10m | ✎ |
| | | Speaker: Floris Keizer (CERN) | | |

Outline

- **Overview of the EP-DT group composition**
 - **Great challenges ahead of us**
- **Activities of the group on projects not mentioned in the following presentations can be found in the [EP-DT Annual Report](#)**
- **Things coming up**
 - **Possible future projects: ALICE 3 and LHCb phase II upgrades**
 - **News about building 140+**
- **Concluding remarks**



EP-DT Composition and Structure

Section	Persons
Technology & Physics (TP) SL: Thierry Gys	MPE: 13 MPA etc. 5
Detector Development (DD) SL: Petra Riedler	MPE: 20 MPA etc. 7
Fluidic Systems (FS) SL: Paolo Petagna	MPE: 31 MPA etc. 16
Detector Interface (DI) SL: Xavier Pons	MPE: 9 MPA etc. 4
Engineering Facilities (EF) SL: Hans Danielsson	MPE: 13 MPA etc. 1
Engineering Office (EO) SL: Andrea Catinaccio	MPE: 15 MPA etc. 3
Construction & Operations (CO) SL: Antti Onnela	MPE: 17 MPA etc. 0

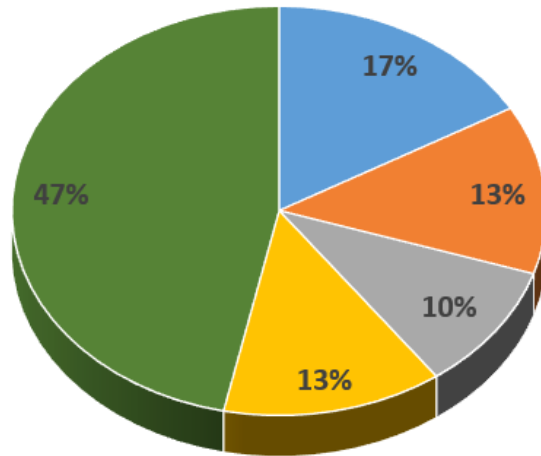
Personnel	FTE 2024	(2023)
Staff	88	(84)
Fellows /GRADs	32	(31)
PJAS	2	(3)
Doct. Students	17	(20)
Tech. Students	12	(11)
Trainees	5	(9)
FSU PH-02 (S 302):	26	(16)
FSU PH-40 (S 287):	14	(16)
Contributing Retirees	5	(6)
Total	201	(196)

Comments:

- The number of Staff members is increased slightly (Three 5-year LD positions for CO₂ cooling project)
 - 1 Staff members (included in the counting) is on long term sick-leave
- Many Fellows, DOCT and TECH are affiliated to DT, but are only partially on DT quota.
- The FSUs in the FS and EF sections are crucial to fulfil our mission (~20% of the workforce).

FSU Activities in EP-DT

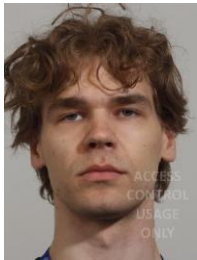
FSU activities in 2023 organized through EP-DT
(PH-02 and PH-40)



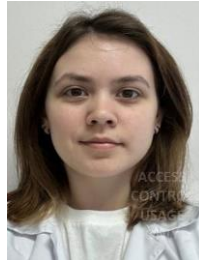
- Gas- and Cooling- Projects
- Magnet Control and Safety System and cabling service
- Support for LHC experiments
- Support for non-LHC experiments and Neutrino Platform
- Support Micro Pattern Technology Workshop (PH-40)

- Total of hours for 2023: ~55,000 hours (~30 FTE) for a cost of about 3 MCHF
- The new FSU contracts are in place since July 2023 (MPT) resp. April 2024 (EP Tech. Support)
- EP Technical Support merges the old DT contract (PH-02) and the CMS contract (PH-04).
- The total FSU personal number is going up to 40.
- **FSUs are an important resource to respond to urgent needs of the experiments**
- For both new FSU contracts (S287, MPT Workshop, and S302, EP Technical Support), we work with the previous contractors and largely with the same personnel.

EP-DT Summer Students 2024 (1/2)



**Antti
LUMPPIO**
01.06 to 31.08
SV: E.OLIVERI/F.GARCIA



**Natalya
GERASSYOVA**
17.06. to 09.08
SV: L. DIEHL/O.K



**Moritz
VOGT**
10.06 to 06.09
SV: X. YANG



**Zoe
RICHARDSON**
24.06. to 23.08.
SV: L.SCHARENBERG



**Margarita
BIVEINYTE**
01.07 to 23.08
SV: V.KRAUS/M.WIEHE



**Faezeh
GOGOUNANI**
17.06 to 09.08
SV: D.JANSSENS



**Andres
NAVARRO PEDREGAL**
03.06 to 30.08
SV: G.RIGOLETTI/ P.V.



**Hsuan-Chu
CHEN**
10.06 to 09.08
SV: M.C.ARENA/D.G



**Merve Sude
ALKAN**
01.07 to 13.09
SV: A. LALE/P-SVIHRA



**Maria Luisa
VELAZQUEZ FERNANDEZ**
03.06 to 30.08
SV: M. LISOWSKA/F.BRUNBAUER

- **Welcome to EP-DT! We wish a very profitable time at CERN!**
- We have scheduled three sessions during the summer, in which you will have an opportunity to present your work: **July 23, August 6 and August 20 (always AM)**
 - The aim is to have each time 4/5 presentations

EP-DT Summer Students 2024 (2/2)

Summer Students still to come:

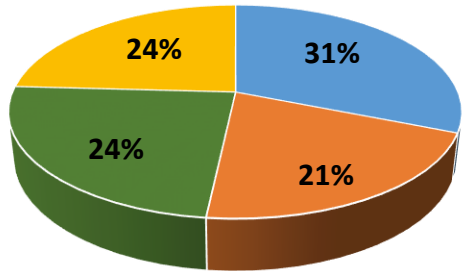
Maria SOUSA 01.07. to 20.09 SV: J.WEICK/A.SHARMA	Thomas LARRIVEE 01.07. to 23.08 SV: A. SHARMA	Milica RAJCIC 01.07 to 16.09 SV: Y. OTARID	Pedro SCARAZZATO 01.07 to 09.08 SV: Eraldo OLIVERI
---	--	---	---

Proposal for EP-DT Summer Student Presentations:

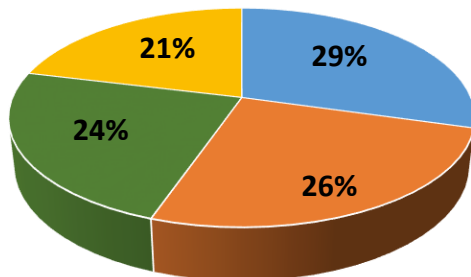
Students	Title	start date	end date	23-Jul	6 aout	20 aout
GERASSYOVA Natalya	Characterisation of silicon sensors for the CMS HGAL project	17.06.2024	09.08.2024	x		
GOGOUNANI Faezeh	Garfield++ Modelling of SiPM	17.06.2024	09.08.2024	x		
CHEN Hsuan-Chu	Studies on recuperation systems for fluorinated greenhouse gases at the LHC experiments	10.06.2024	09.08.2024	x		
VELAZQUEZ Louisa	PICOSEC Micromegas gaseous detectors for precise timing in high-rate environments	03.06.2024	30.08.2024	x		
						Indico: https://indico.cern.ch/event/1427010/
RICHARDSON ZOE	High-granularity charge readout of MPGDs with the Timepix4	24.06.2024	23.08.2024		x	
BIVEINYTE Margarita	Characterization and irradiation studies of n-LGADs	01.07.2024	23.08.2024		x	
LARRIVEE Thomas	Moduel assembly and testing for the Pahse 2 ATLAS Pixel Inner Tracker	01.07.2024	23.08.2024		x	
VOGT Moritz	Performance measurements for the ATLAS HGTD using a picosecond laser	10/06/2024	06/09/2024		x	
SCARAZZATO Pedro	Optical readout of MicroPattern Gaseous Detectors with alternative gases	01.07.2024	09.08.2024		x	
						Indico: https://indico.cern.ch/event/1427019/
NAVARRO PEDREGAL Andres	Development of software tools for optimizing the operation of gaseous detectors and gas systems	03.06.2024	30.08.2024			x
SOUSA Maria	Studies on recuperation systems for fluorinated greenhouse gases at the LHC experiments	01.07.2024	20.09.2024			x
ALKAN Sude Merve	Pixel Detector hybridization, development and characterization	01.07.2024	13.09.2024			x
LUMPIO Antti	Studies of Gaseous detectors and Tracking reconstruction using Corryevrekan	01.06.2024	31.08.2024			x
RAJCIC Milica	Characterisation of H2M monolithic pixel sensor ASIC (ATLAS)	01/07/2024	16/09/2024			x
						Indico: https://indico.cern.ch/event/1427026/

EP-DT composition and age profile

Professional Categories 2024

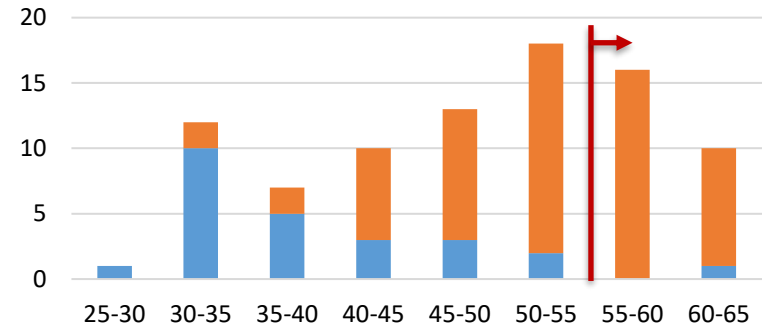


Professional Categories 2016

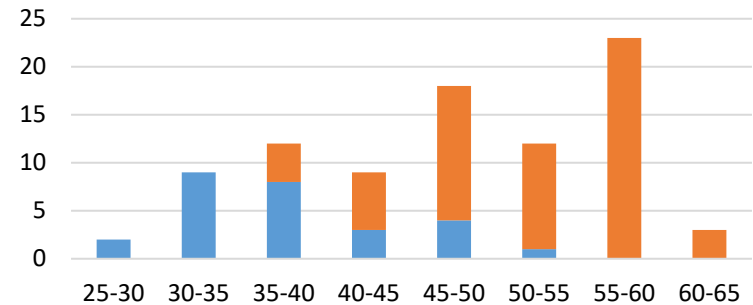


■ Technicians ■ Technical Engineers
■ Engineers ■ Applied Physicist

Age Distribution 2024



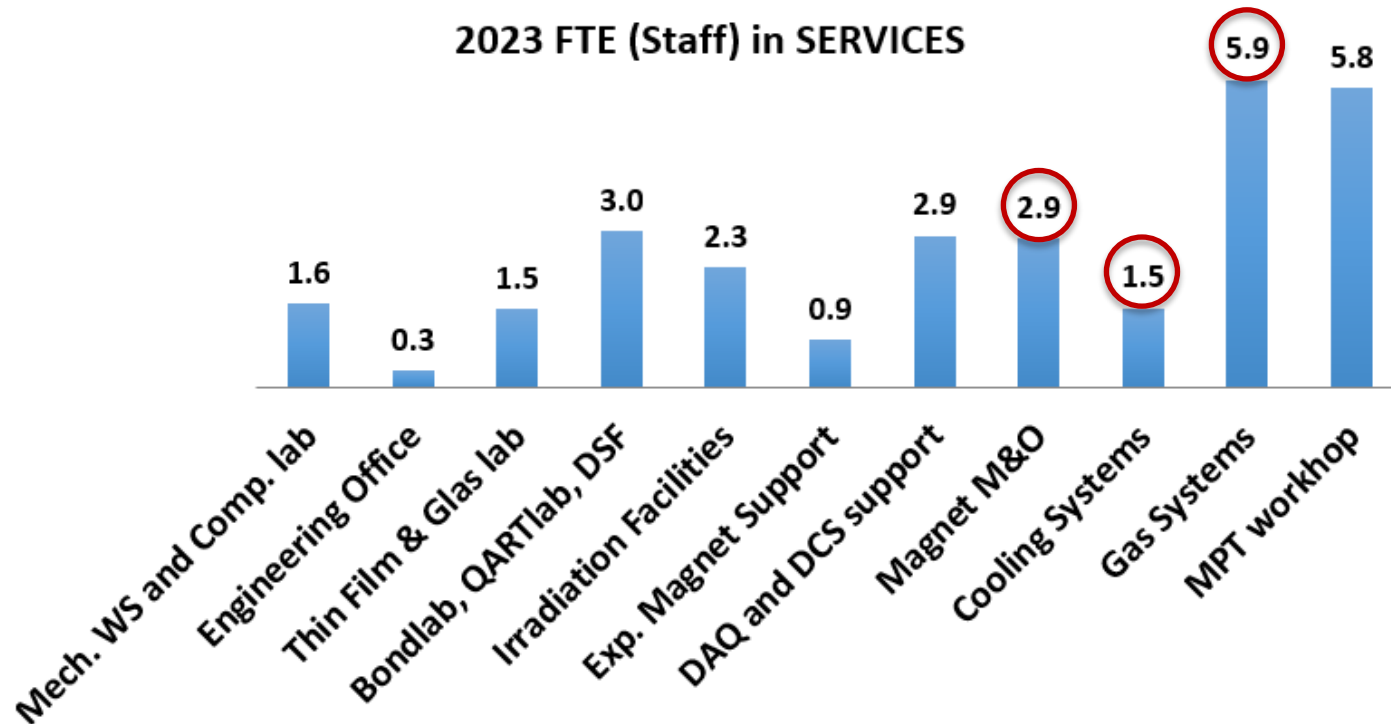
Age Distribution 2021



■ LD ■ IC

- Only minor changes in the Professional Categories over the past 8 years
- About 70% of the group is on an IC contract, 30% on an LD contract, no change over the past years.
- 30% of the group will be above 55 and will retire in the coming years, this are 40% of the ICs.
- In addition, only about 45% of the LDs can be retained.
- **In total 43% of the personnel will change. This is huge challenge to maintain the competencies we have.**

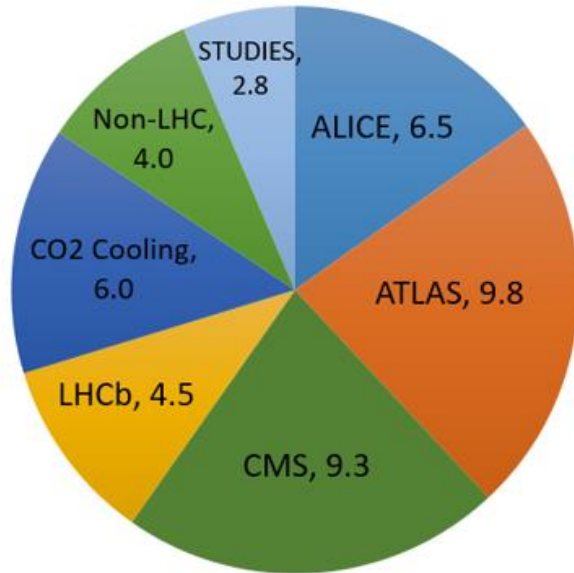
DT Staff involvement in Services



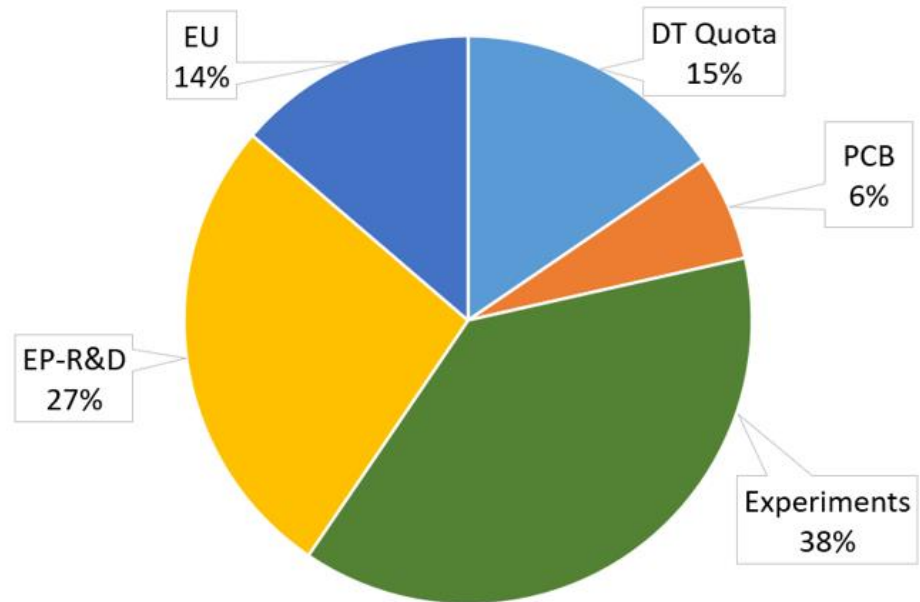
- Pure Services have been reduced to a minimum in some areas (e.g. Mech. WS and Engineering Office); the resources are assigned to projects (mainly ATLAS and CMS trackers, and ALICE)
- Some of the **services are crucial for the world-wide detector physics community**, e.g. the MPT workshop, the Irradiation Facilities, the Bond- QART-labs, the DSF, the magnetic field measurement service etc., the DQ and DCS support.
- Some services are based on **Service Level Agreements** with the experiments

DT Staff and Fellows in Projects

Involvement of Staff and Fellows In Projects

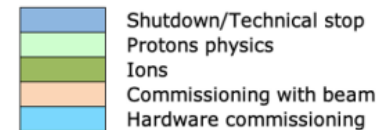
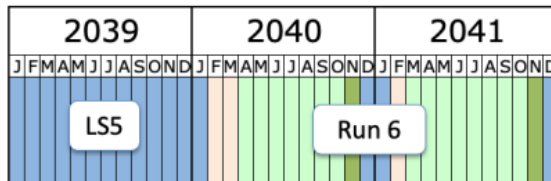
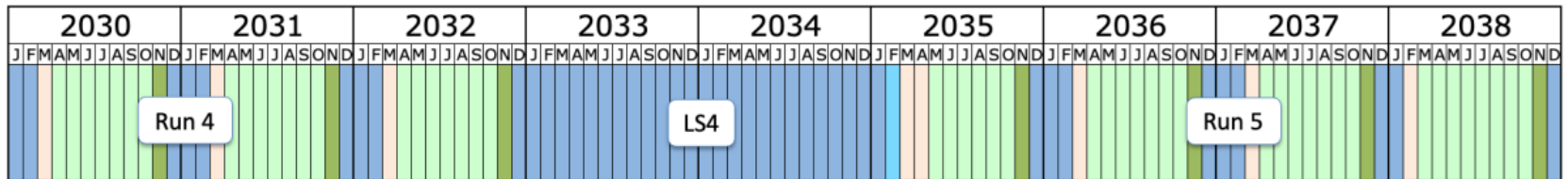
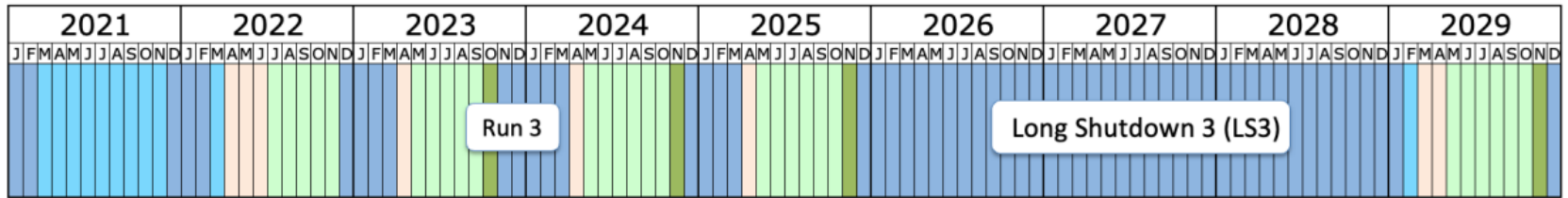


Funding Source of Fellows (w/o TTE)



- Involvement in projects related to the upgrade of the LHC experiments is more than 85%.
- The remaining 15% are shared between other experiments and project studies.
- DT based Fellows (and Students) are mainly on non-DT resources
- Very good collaboration with ATLAS, CMS, NA62 and NP for funding Fellows/Students
- Fellows represent 50% of the resources for R&D
 - **Involvement of DT in the newly formed DRD collaborations will be shown after the break**

LHC / HL-LHC schedule



Last update: April 2023

- **A confirmation / update of the schedule is expected for September 2024**
- As EP-DT group we are heavily involved in the Phase 2 upgrades of ATLAS and CMS and committed to complete our contributions according to the agreed WPs.
- We contribute as well to R&D and operations for ALICE and LHCb, together with several non-LHC projects
- **For EP-DT it is fundamental to have new large projects for the 2030!**

Possible Future Projects for EP-DT

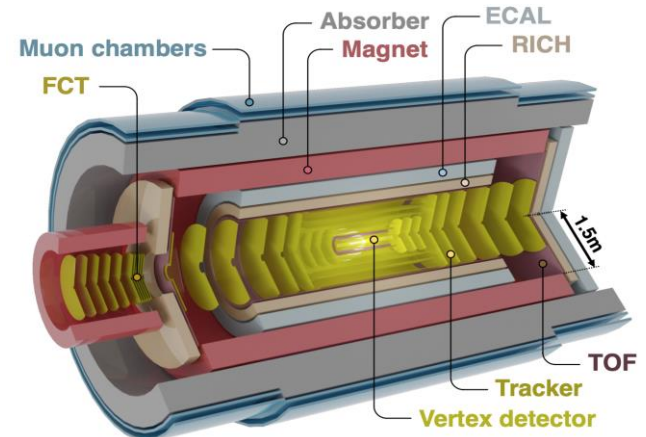
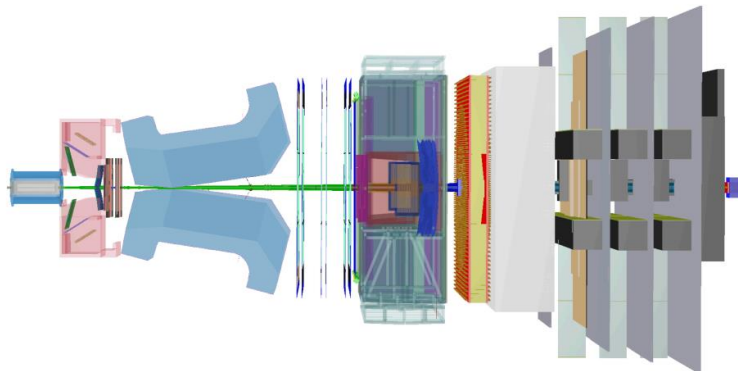
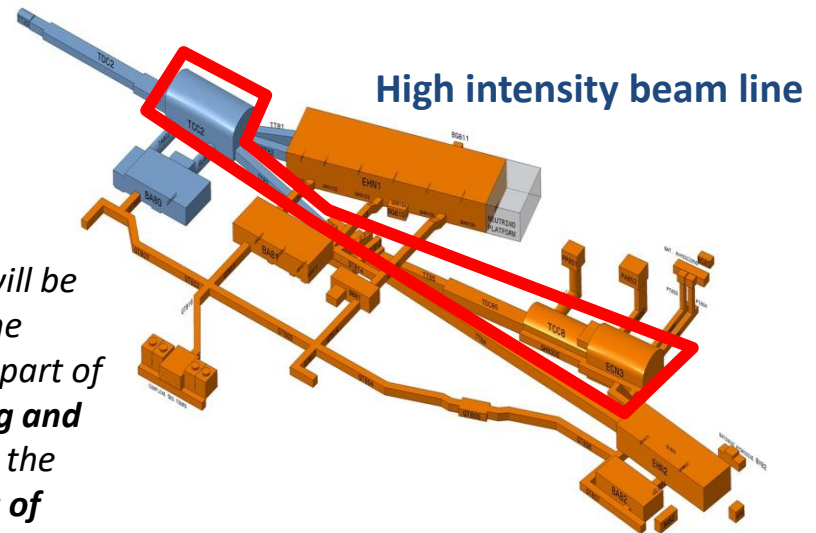
- A decision has been taken in March 2024 regarding the ECN3 beamline:

- **The SHiP project has been selected**

- However, it has also been officially stated that:

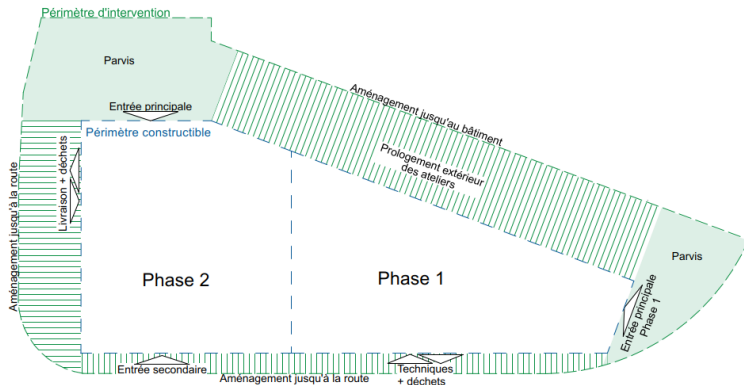
*CERN's contribution during the R&D and construction phases will be primarily focused on the muon spectrometer magnet and on the interfaces between the experimental area and the detector, as part of the host lab responsibility. ... Given the emphasis on **developing and constructing all detector components outside CERN** except for the magnet, significant **effort will be required from CERN in terms of coordination, design support, and integration**. This is particularly important for the decay volume and the straw tracker.*

- **The most promising projects for EP-DT for the 2030s are therefore the ALICE3 and LHCb phase II upgrades, currently undergoing a descoping exercise, aiming approval by the CERN Research Board in autumn 2024**



News about Building 140

- General analysis of the Meyrin site has been carried out, leading to the conclusion that building 140 will be carried out in two phases:
 - **Phase 1:** Facilities for EP-DT and office space for EP and the user community
 - **Phase 2:** Offices, labs and meeting rooms for IR, HSE, Council Chamber



CRITERION	WEIGHTING
Quality of the submitted Bid Design (Envelope 1 – Section A) shall be assessed based on the following criteria (as described further below): <ul style="list-style-type: none"> • <i>Architecture</i> • <i>Functionality</i> • <i>Estimated Construction Cost</i> • <i>Sustainability</i> • <i>Maintenance</i> 	50
Quality of the responses to the Evaluation Questionnaire (Envelope 1 – Section B) , covering: <ul style="list-style-type: none"> • <i>Technical References</i> • <i>Contractual organisation and staffing</i> • <i>Experience and qualification of Key Personnel</i> • <i>Proposed design & construction administration methodology</i> • <i>Programme</i> • <i>Risk assessment</i> • <i>Sustainability</i> • <i>Quality assurance plan</i> 	20
Price (Envelope 2 – Section C & D) (including all relevant costs)	30
TOTAL	100

Table 1 – Adjudication Basis and Points Distribution

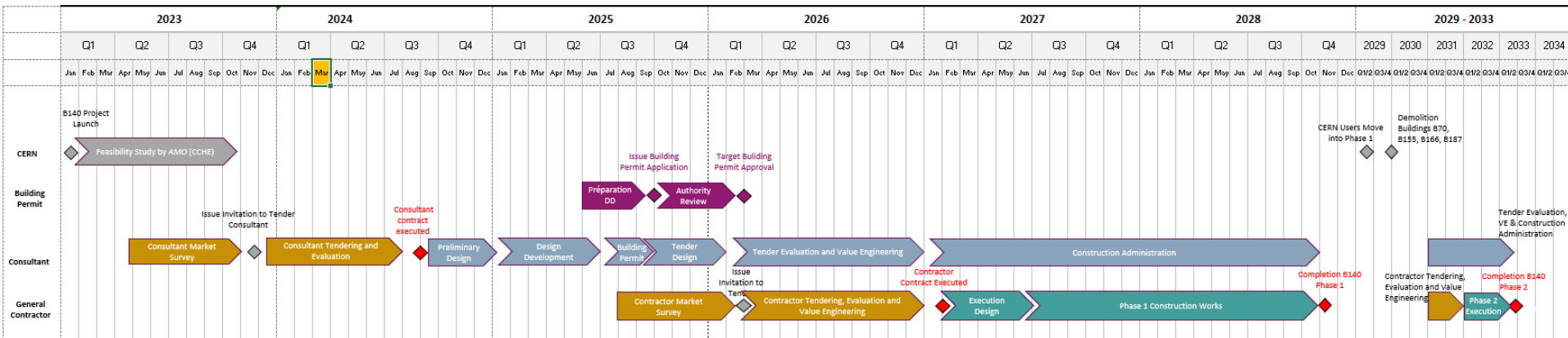
- A Market Survey and an Invitation to Tender (IT-4827) have been carried out in 2023/2024.
- Representatives of the users for building 140 have been involved in the IT process.
- Eight bidders presented their proposed design of the building to an Evaluation Panel.
- The process was successfully concluded in May 2024 and the contract with selected Consultant will start in September 2024, after the final decision is taken by the CERN Finance Committee.

Consultant Programme

Stage	Services	Duration	Start	End
Stage 1	Preliminary Design	4 months	01/09/2024	31/12/2024
Stage 2	Design Development	5 months	01/02/2025	30/06/2025
Stage 3	Building Permit	2 months	01/08/2025	30/09/2025
Stage 4	Tender Design	4 months	01/10/2025	31/01/2026
Phase 1 of the Project				
	<i>Construction Tender Phase 1</i>	5 months	01/03/2026	31/07/2026
Stage 5.1	Tender Evaluation & Value Engineering	10 months ¹	01/03/2026	31/12/2026
Stage 6.1	Construction Administration	21 months (estimate)	01/02/2027	30/10/2028
Stage 7.1	Defects Notification Period	10 years	01/11/2028	30/10/2038
<i>CERN users move into Phase 1</i>		6 months	Jan-2029	Jun-2029
<i>Demolition Buildings B70+B155+B166+B187</i>		6 months	Jul-2029	Dec-2029
Phase 2 of the Project²				
	<i>Construction Tender Phase 2</i>		01/01/2031	31/05/2031
Stage 5.2	Tender Evaluation & Value Engineering	10 months ¹	01/01/2031	30/10/2031
Stage 6.2	Construction Administration	16 months (estimate)	01/01/2032	30/04/2033
Stage 7.2	Defects Notification Period	10 years	01/05/2033	30/04/2043

Official Start in Sept. 2024

- Discussions between SCE project managers and EP-DT members about the Design of the DT part resumed yesterday.
- Demolition of building 25 scheduled for Q2 2026
- We have to reallocate about 30 colleagues in Q1 2026



Concluding remarks

- We are living in very challenging times, from many viewpoints!
- We are committed to support the CERN experiments with the resources available, which are very tight.
- More volatile resources (TECH, DOCT, GRAE, FSUs etc.) are fundamental to fulfill our commitments for the Phase II upgrades of ATLAS and CMS.
- The collaboration with the teams of the experiments is very good.
- **A decision about the LHC schedule is expected in September 2024.**
- Building 140 is another challenge, but progress has been finally very good over the past year
- The age-profile of persons on ICs is a concern as 30% of the staff will retire before the end of the decade.
- It is important to maintain the expertise and facilities of EP-DT and the various services we provide.
- **We have to ensure continuity of the competencies in the DT group!**