

# **LNF ACTIVITY PLAN 2025**

## **ACCELERATOR & TECHNICAL DIVISION**

**ANTONIO FALONE**

**ON BEHALF OF THE PROJECT MANAGEMENT OFFICE**

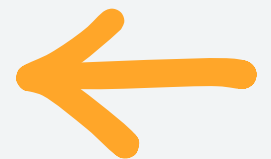
- Presentation of the Project Management Office
- LNF overall organizational structure
- Projects and activities ongoing
- 2025 planning for accelerator division and technical division
- Risk analysis
- Next steps

# BACKGROUND

- On the 26th June 2024 the boards of directors (*Consiglio Direttivo*), approved the updated organization structure of Frascati National Laboratory.
- The new structure of the lab is the outcome of a long process of discussions within the lab under the guidance of the former director (F.Bossi) and eventually agreed by the current director (P.Gianotti).
- Several changes have been introduced, notably the creation of a dedicated unit : PROJECT MANAGEMENT OFFICE (*servizio di project management*) which has been officially established on the 1st August 2024

## MANDATE

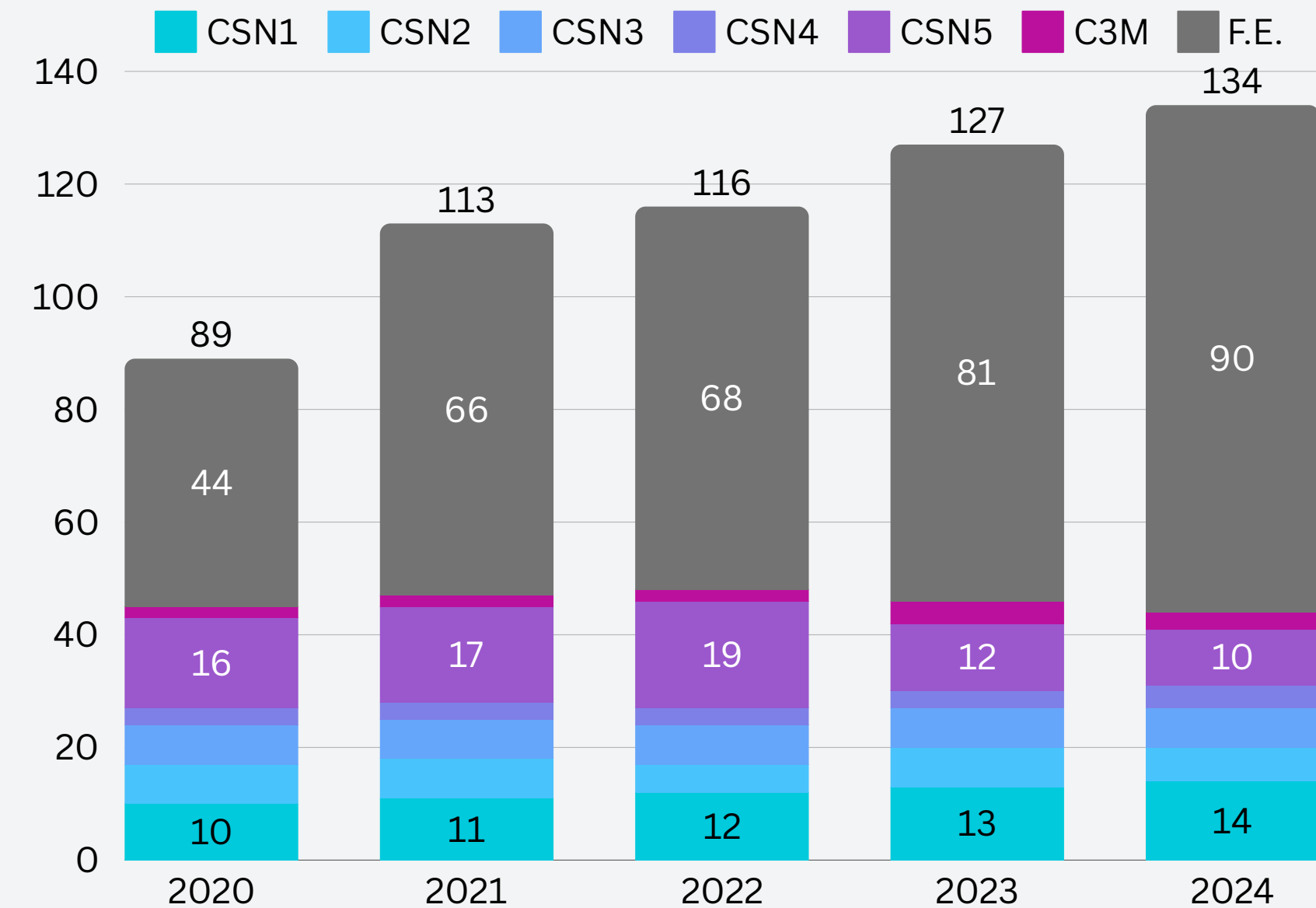
- supports LNF Management in the implementation of Project Management best practices and methodologies for the management of the Laboratories projects;
- promotes the constant training and updating on the Project Management methodologies of all the workers in collaboration with the INFN central structure;
- assists the Director, Division heads and Project Managers in the identification of any project risks in terms of availability of human and material resources;
- suggests to the Management of the Laboratories the standards of Project Management and Quality Control to be used for the management of the Laboratory projects (methodologies and software);
- supports the Director and Divisions heads in the harmonization of the different projects of the Laboratories.



High Priority

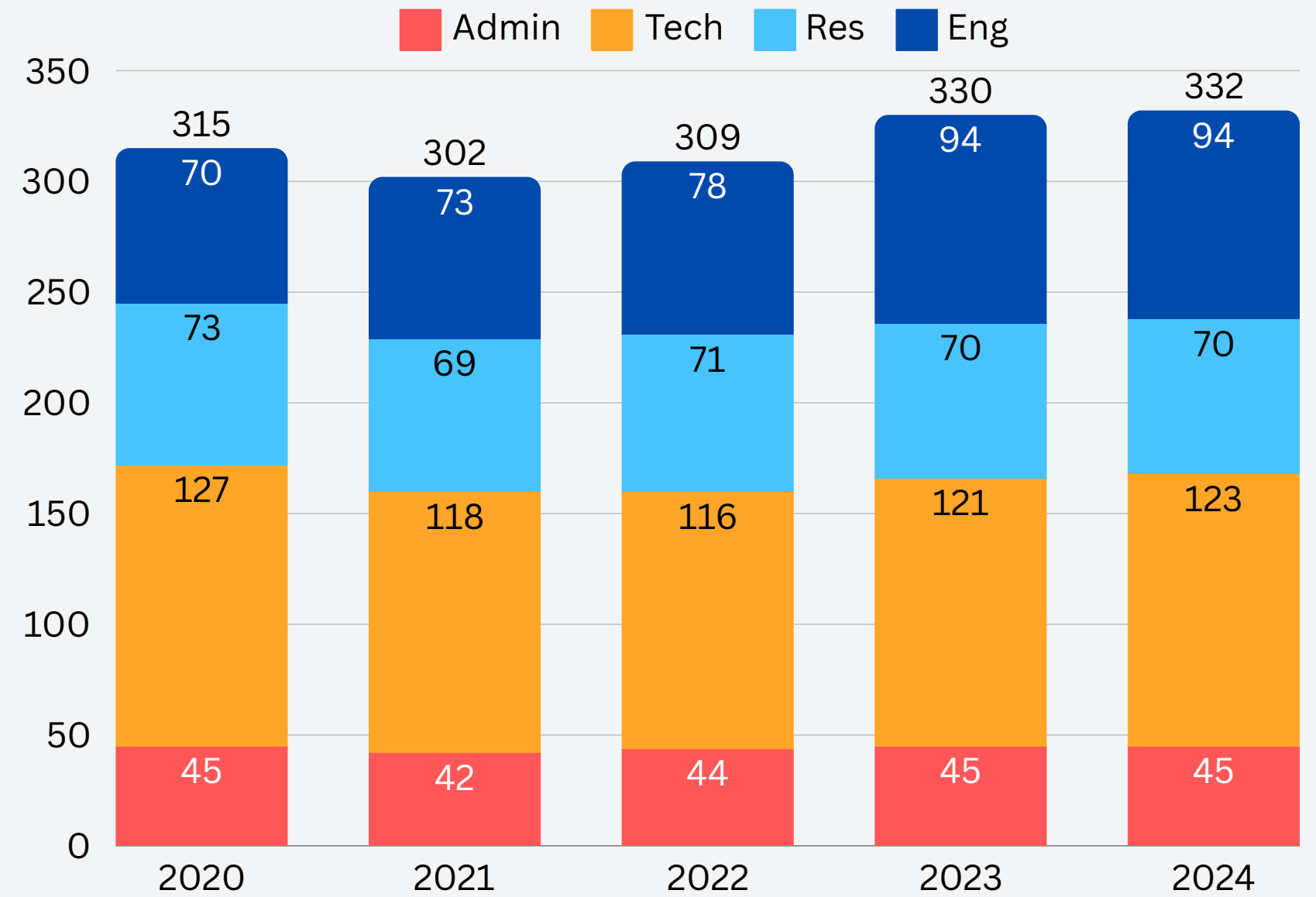


## Total number of projects 2020-2024



**50%** Increase from 2020 to 2024

## Total workforce @ LNF 2020-2024



**5%** Increase from 2020 to 2024

In the last years the number of projects in the lab has increased dramatically. Many of them are the results of dedicated calls that impose severe constraints in terms of milestones, deliverables and project duration, but also financial reporting and procurement. Financial reporting is now a critical task to be carried out by Admin. Dept. which is under staffed (Admin. Staff remain unchanged in number).

EuPRAXIA implementation phase is approaching and several correlated projects have been approved. EuPRAXIA will be the major project of the lab with a size which is at the limit of the Lab capabilities.

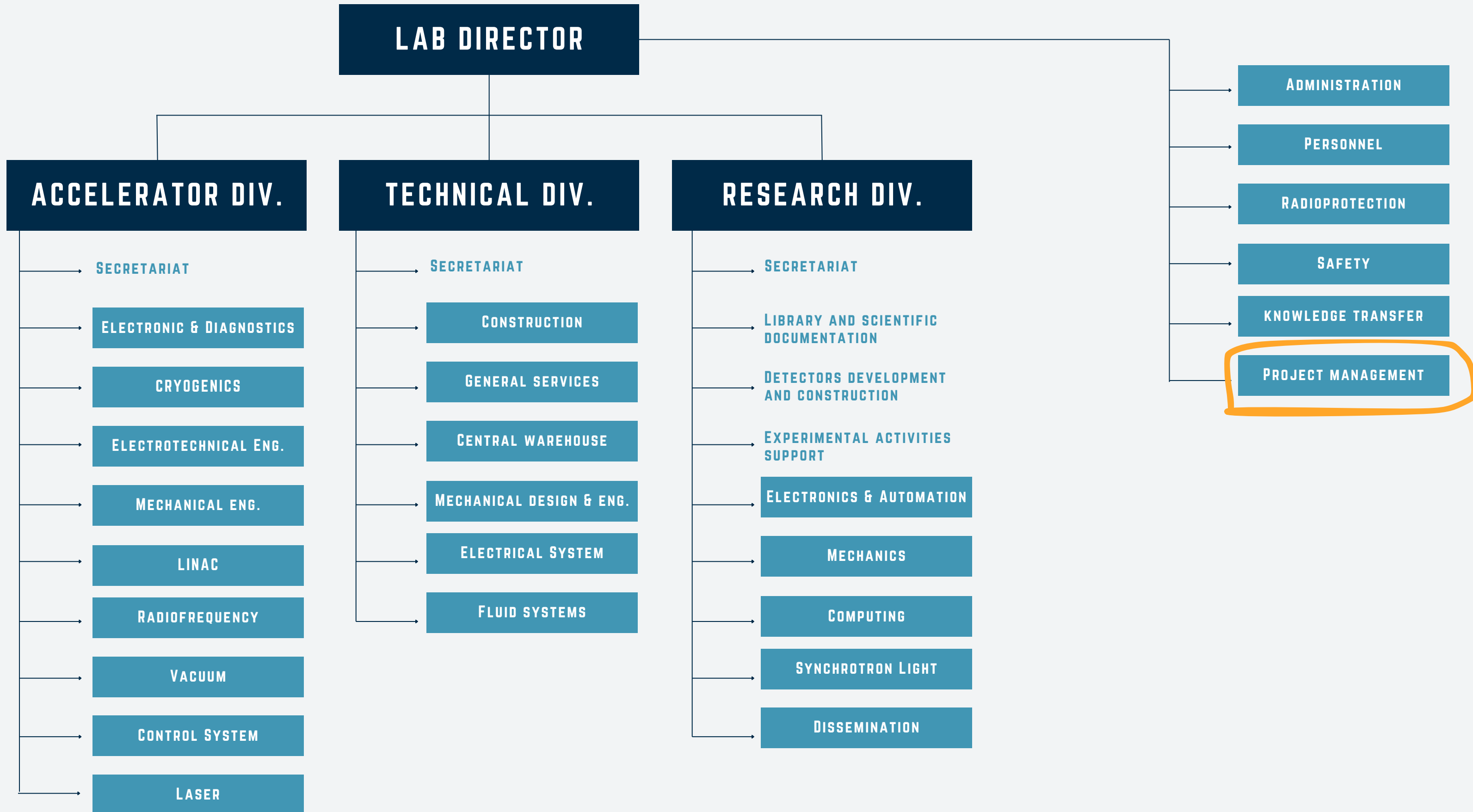
**The number of resources available has not increased linearly with the number of the projects. In 2025 the situation will not improve due to the limitation in the turnover (fixed at 75%) imposed by the budget law for the next year.**

On one hand, this highlights that LNF is a dynamic, proactive community with a strong capacity to attract funding. (external funded project increased by a stunning 104% in the last 5 years). On the other hand the organization of the work has become more and more complicated.

Delays due to difficult resource allocation is now one of the major risk factor for every project.

**It has become evident that it is necessary an effort to have a global view of the resource allocation strategy and more in general to improve the project management maturity within the Lab activities.**

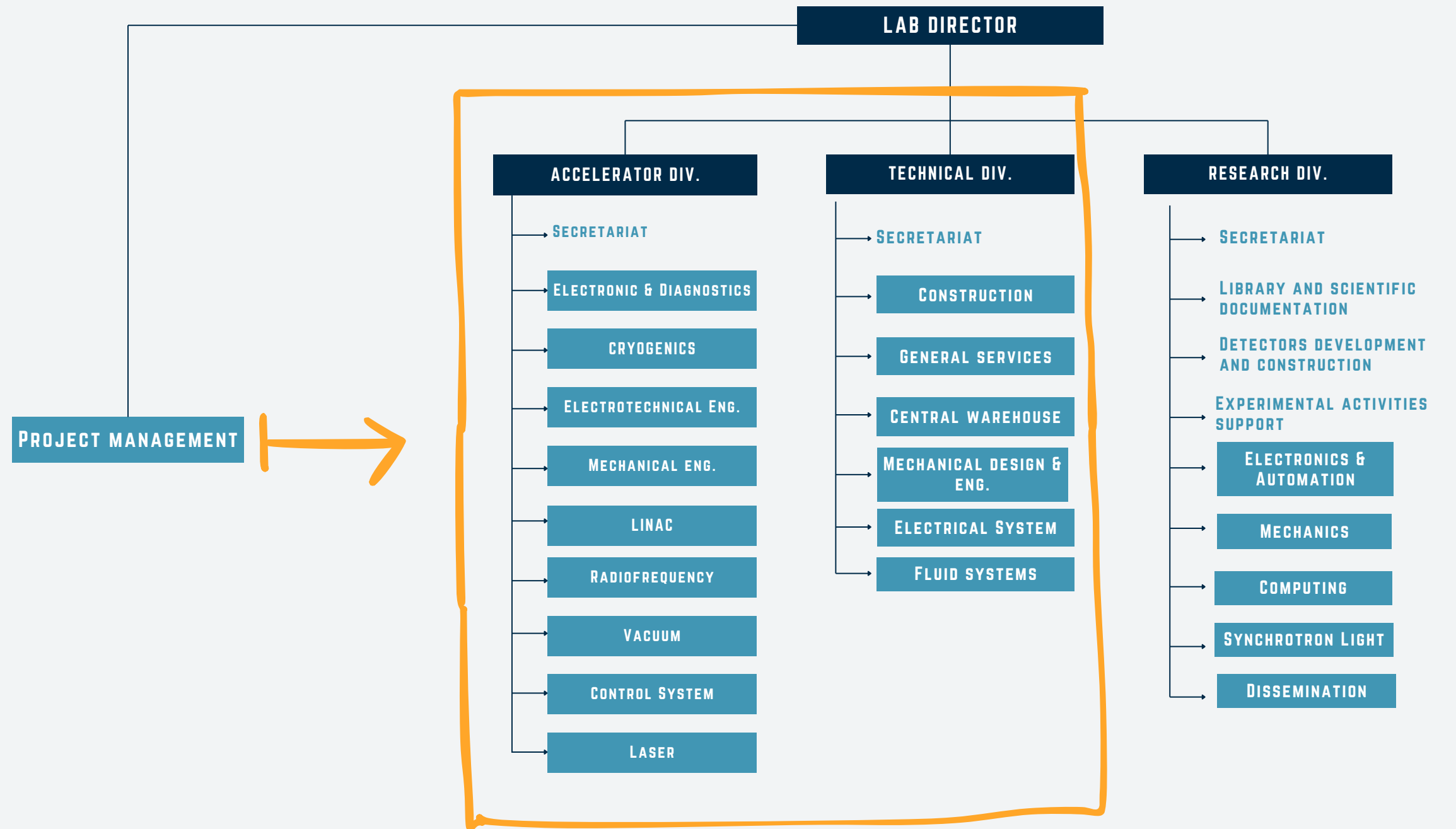
# LNf UPDATED STRUCTURE



# PMO TASKS

Being a brand new service within the lab with limited resources it has been agreed that the main first tasks are:

- Provide a sustainable planning for the accelerator and technical division - Year 2025
- Evaluate risks for the ongoing projects especially due to over-allocation of personnel
- Suggests harmonization of the personnel allocation with the goal to respect projects constraints and maximize scientific output.
- Setting up a tool for high level monitoring of the projects



# ACTIVITIES & PROJECTS

Activities can be divided in three main families

## Operational Activities Run facilities

- LINAC/BTF
- SPARC\_LAB
- TEX

Keep the facilities running but also assist and support experiments

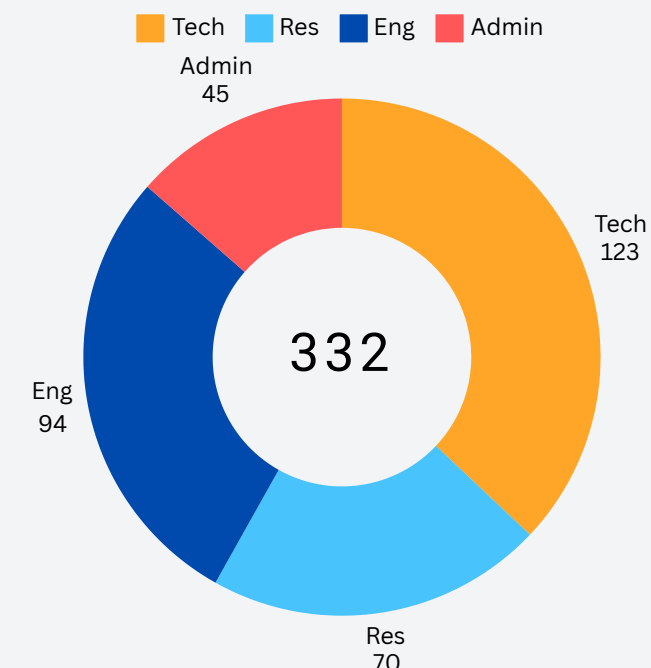
## Hybrid Activities

NO standard activities but less constraints. Usually internal funds.

Extra-ordinary maintenance  
Subsystems upgrades  
Emergencies.  
R&D internal activities

## Project Activities

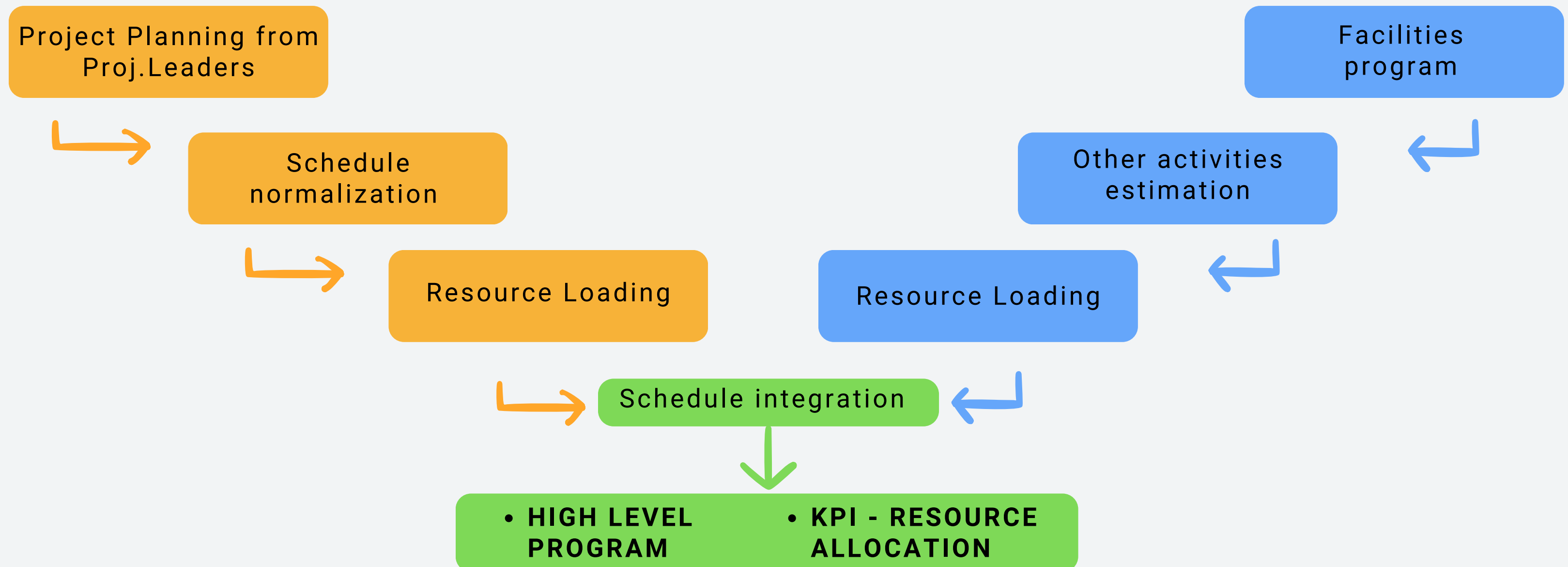
- Start-end
- Milestones & deliverables
- Often funding agency involved
- Scope/Time/Cost constraints.





A subset of the projects have been considered:

- Accelerator Division & Technical Division
- Projects that have a significant impact on resource allocation within services
- Projects with strict time constraints



Project	Description
EuAPS	EuPRAXIA Implementation betatron radiation source CNR & LNS involved - PNRR
EuPRAXIA_PP	EuPRAXIA R&D Related Projects.
PACRI	
EuPRAXIA@SPARC_LAB TDR	
SSRIP	Former ELI-NP gamma beam system. To be done at IFIN-HH, Romania
Rome Technopole (TEX2)	Upgrade TEX facilities - PNRR
ASTERIX	Recently approved by CSN V. Novel methodology for X-Band TW section production
IRIS	Upgrade Mag.Meas.Lab - PNRR. In the context of a novel RI for SuperCond. Cables.
FCC IR-Mockup	CSN I Project for the R&D and realization of a mock up of the IR of FCC. Tech. Div. Involved.
SABINA	No contractual obligation but commitment to finalize the THz radiation source and make it available for users.

# PROJECTS - DA

Project	Duration	Estimated end	Budget	Funding source	CSN	Type
EuAPS	36	31/12/25	6.584.488	PNRR	V	R.I
EuPRAXIA_PP	48	31/10/26	2.490.000	Horizon Europe	V	R&D
PACRI	48	31/12/2029	9.990.000	Horizon Europe	V	R&D
EuPRAXIA@SPARC_LAB TDR	48	31/12/25	7.000.000	GE	V	R.I. TDR
SSRIP	24	28/02/26	3.000.000	External Funds	V	Accelerator
Rome Technopole (TEX2)	36	30/06/25 (possibly 31/12/25)	2.855.370	PNRR	V	Accelerator
ASTERIX	36	31/12/27	390.000	CSN V	V	R&D
IRIS	36	31/12/25	1.334.000	PNRR	V	R.I.
FCC IR-Mockup	24	31/12/25	500.000	GE	I	R&D
SABINA	52	28/2/24	6.088.000	Reg.Lazio	V	R.I.

Project	Duration	Estimated end	Budget	Funding source	Type
PV - System	10	13/06/25	6.584.488	TICC	Infrastructure
Revamping SPARC	13	18/04/25	120.000	Internal Funds	Infrastructure
HVAC ed 13	24	28/02/26	300.000	Internal Funds	Infrastructure
District Heating	36	30/06/25 (possibly 31/12/25)	300.000	Internal Funds	Infrastructure
EuPRAXIA Building	36	01/06/25 (tender)	42.0000.000	GE	Infrastructure
ET _ ITALIA (DA&DT)	36	31/12/25	1.334.000	GE	R&D
HVAC ed 12	24	31/12/25	200.000	TICC	Infrastructure
ICSC	36	17/09/25	6.088.000	PNRR	R.I.

18 Projects between DA and DT 13 of them to be concluded in 2025.

Many of them are funded by external funding agencies and there are stringent requirements in terms of deadline, milestones and deliverables to be accomplished, not to mention the necessary effort from the administrative side for financial reporting.

To be considered also all the activities required to support and prepare the facilities experiments not shown here.

A reasonable detailed planning has been set up for the first semester together with an outlook for the second one, that shows a remarkable amount of resources dedicated to project activities.

This has to be considered a baseline for the future activities and a follow up + monitoring & control will be implemented starting from the beginning of 2025.

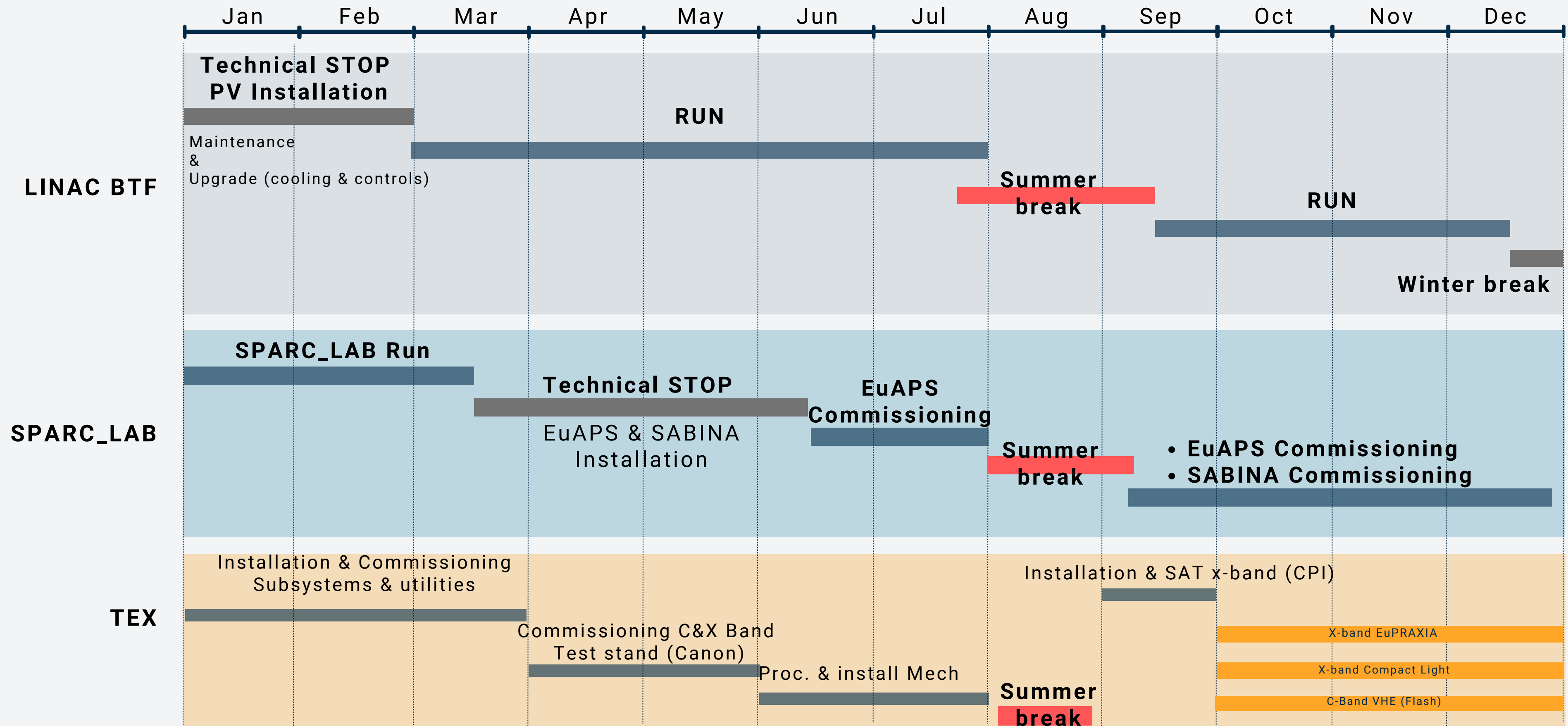
## Special mention for EuPRAXIA; during 2025 several critical activities must be carried out:

- Finalization of the building executive design
- Validation of the executive design from an external evaluator
- Publication of the tender for the building construction (scheduled in summer 2025 and to be awarded in 2026).
- Completion of the TDR and advancement on the experimental program @ SPARC\_LAB
- Final testing of the X-Band Accelerating sections and full deployment of the X-Band RF test stand TEX (25MW Canon tube to be tested in February, CPI 50MW tube to be tested in September).

## But also...

- Finalization of EuAPS (Critical end-date 31/12/2025)
- EuPRAXIA Preparatory phase: 2nd site selection and progress on the legal framework and financial model.
- Final preparation of the Project Management Plan for EuPRAXIA@SPARC\_LAB and detailed planning of the procurement phase.

# PROGRAM FACILITIES



# PROGRAM FACILITIES

- LINAC / BTF
- SPARC\_LAB
- TEX

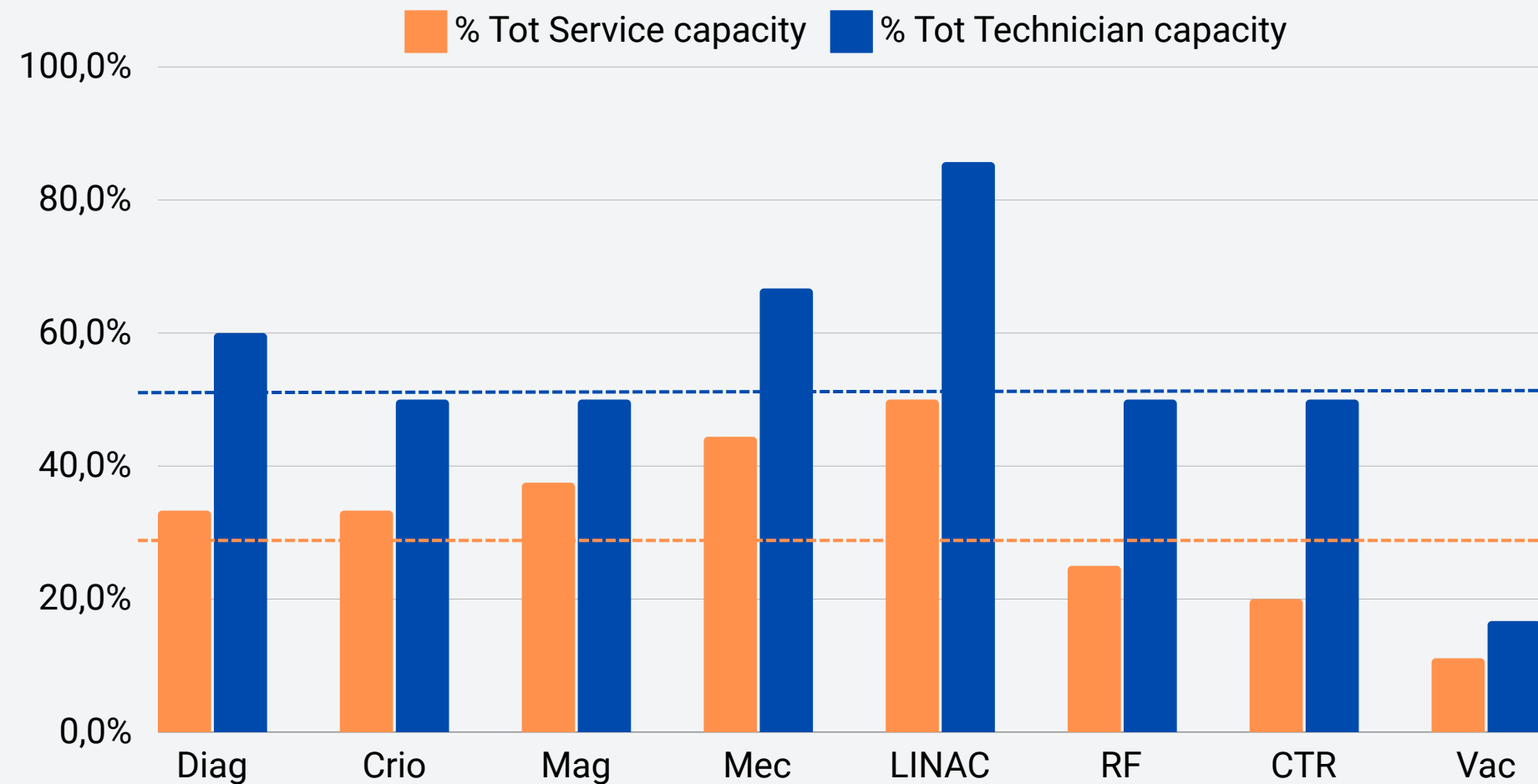
They all require shift operators - 3 shifts per day (24/7).  
 2 operators during the night (1 shift)  
 3 operators during normal working time (2 shifts)  
 1 Rest day for night shifters.

Operators are typically technicians from Acc.Div. and Tech. Div.

300 FTE / Month on average  
 20 FTE / Year integrated

Average:

31,8% of service capacity  
 53,6% of service technicians capacity

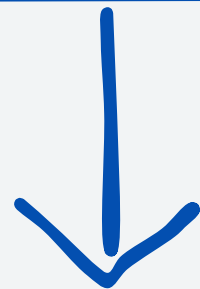




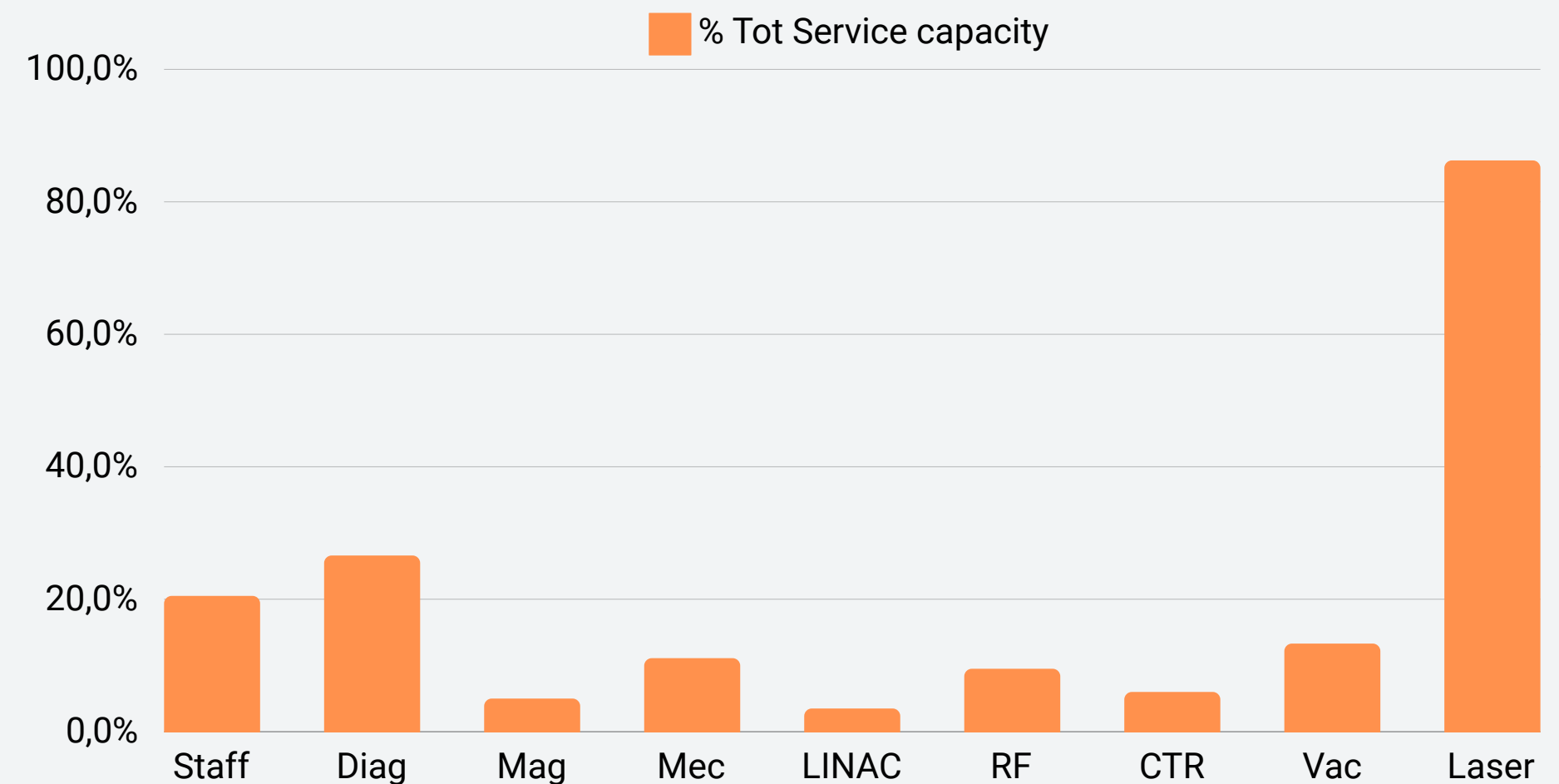
SPARC\_LAB facility went, over the last years, through a comprehensive upgrade plan.

During 2025 three main activities will be carried out

- Experimental Run (until 15/03/2025)
- EuAPS and SABINA Installation
- EuAPS and SABINA Commissioning

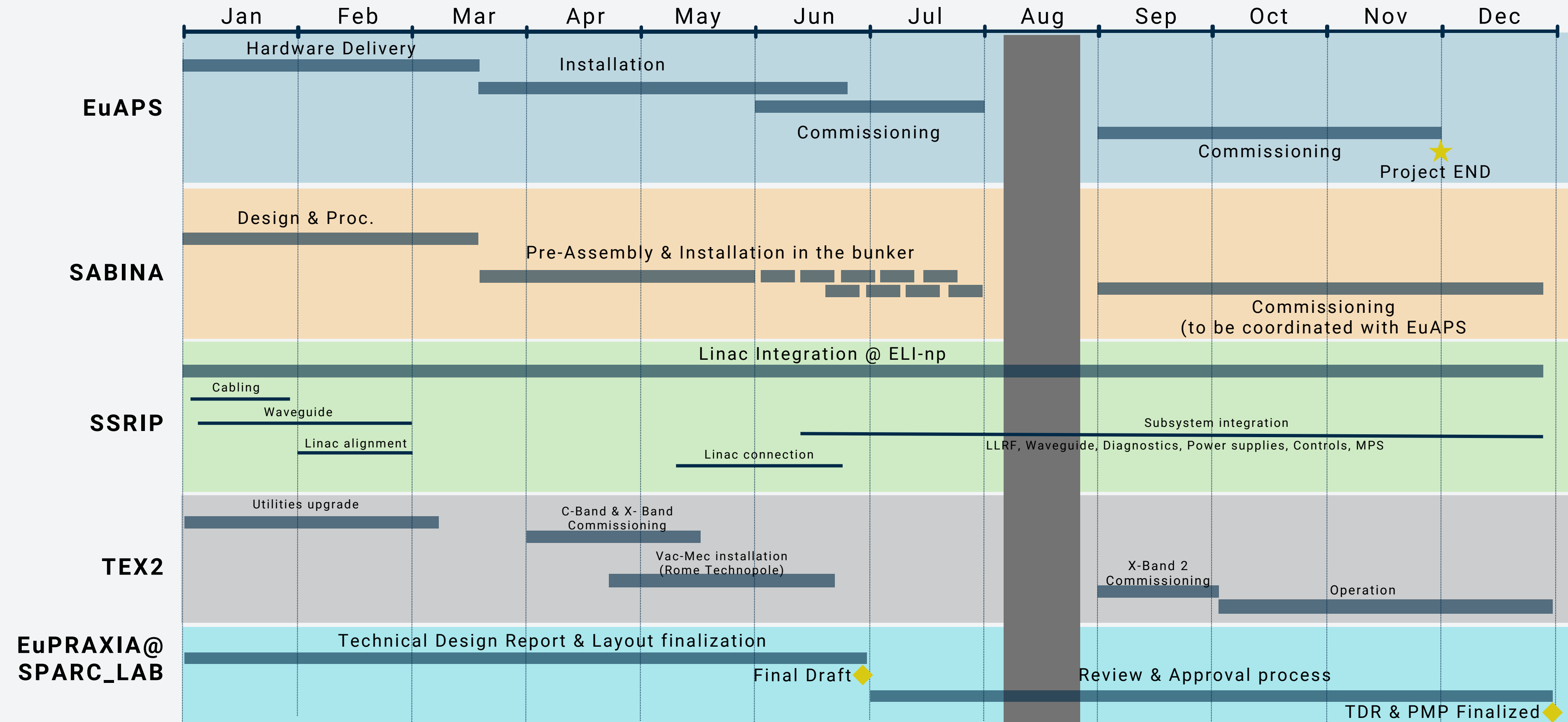


RUN & Commissioning: Average  
21 FTE/ Month + operators.



# ACCELERATOR DIV. PROJECTS

## SUBSET - CRITICAL PROJECTS



# TECHNICAL DIV. PROJECTS

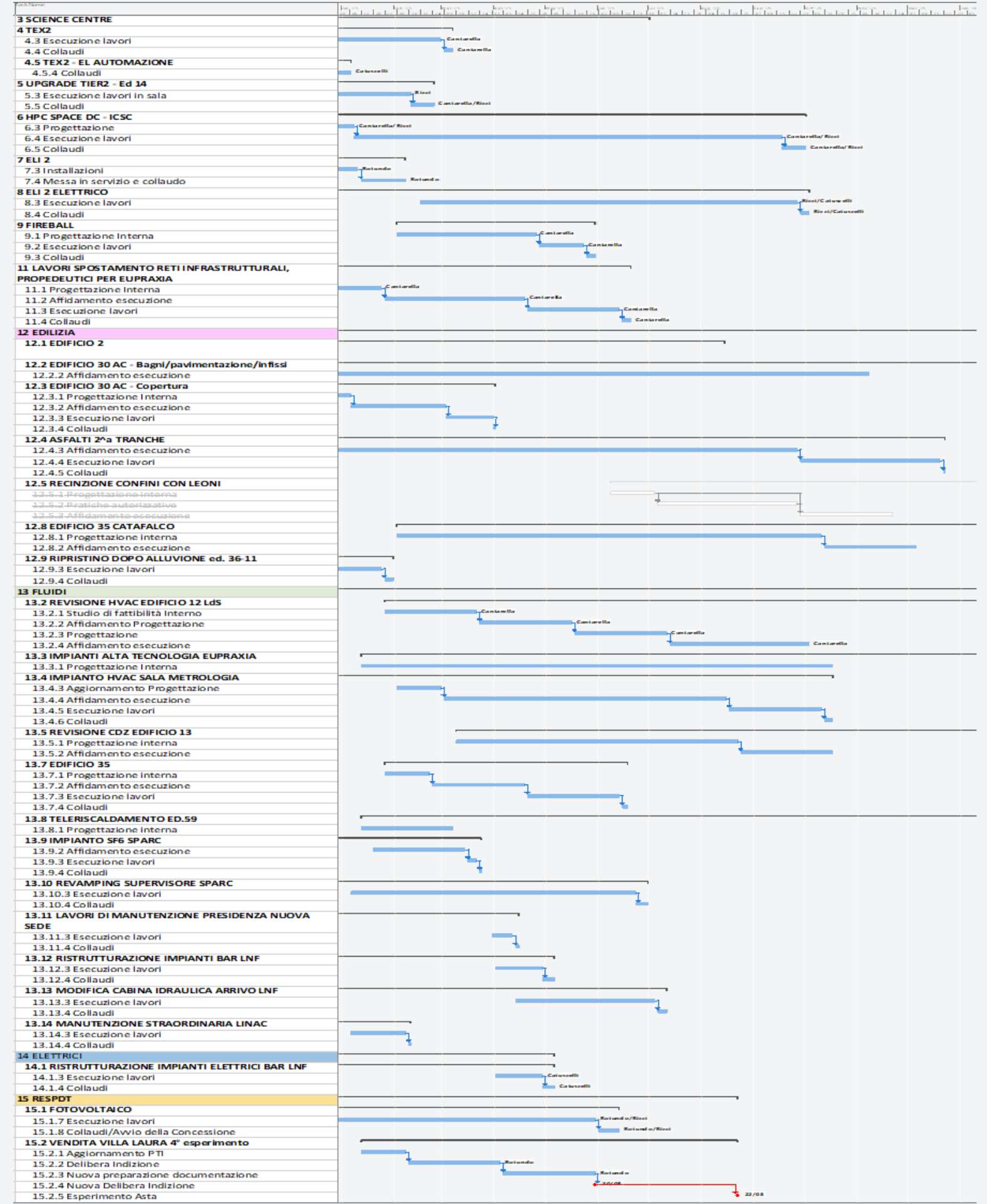
Project and  
experiment  
supports

Civ. Engineering

Fluid System

Electrical System

Task Name	Duration	Start	Finish
SCIENCE CENTRE	1352 days	Tue 28/04/20	Tue 01/07/25
TEX2	355 days	Mon 30/10/23	Fri 07/03/25
Esecuzione lavori	3 mons	Mon 09/12/24	Fri 28/02/25
Collaudi	1 wk	Mon 03/03/25	Fri 07/03/25
TEX2 - EL AUTOMAZIONE	311 days	Mon 30/10/23	Mon 05/01/25
Collaudi	1 wk	Tue 31/12/24	Mon 05/01/25
UPGRADE TIER2 - Ed 14	780 days	Tue 01/03/22	Mon 24/02/25
Esecuzione lavori in sala	18 mons	Tue 28/09/23	Mon 10/02/25
Collaudi	2 wks	Tue 11/02/25	Mon 24/02/25
HPC SPACE DC - ICSC	785 days	Thu 27/10/22	Wed 01/10/25
Progettazione	3 mons	Thu 17/10/24	Wed 08/01/25
Esecuzione lavori	9 mons	Thu 09/01/25	Wed 17/09/25
Collaudi	2 wks	Thu 18/09/25	Wed 01/10/25
ELI2	525 days	Mon 06/02/23	Fri 07/02/25
Installazioni	1 mon	Mon 18/12/24	Fri 13/01/25
Messa in servizio e collaudo	1 mon	Mon 13/01/25	Fri 07/02/25
ELI2 ELETTRICO	370 days	Mon 06/05/24	Fri 03/10/25
Esecuzione lavori	8 mons	Mon 17/02/25	Fri 28/09/25
Collaudi	1 wk	Mon 29/09/25	Fri 03/10/25
FIREBALL	85 days	Mon 03/02/25	Fri 30/05/25
Progettazione Interna	3 mons	Mon 03/02/25	Fri 25/04/25
Esecuzione lavori	1 mon	Mon 28/04/25	Fri 23/05/25
Collaudi	1 wk	Mon 26/05/25	Fri 30/05/25
LAVORI SPOSTAMENTO RETI INFRASTRUTTURALI, PROPEDEUTICI PER EUPRAXIA	185 days	Mon 07/10/24	Fri 20/08/25
Progettazione Interna	4 mons	Mon 07/10/24	Fri 24/01/25
Affidamento esecuzione	3 mons	Mon 27/01/25	Fri 18/04/25
Esecuzione lavori	2 mons	Mon 21/04/25	Fri 13/08/25
Collaudi	1 wk	Mon 18/08/25	Fri 20/08/25
EDILIZIA	1728 days	Mon 23/09/19	Fri 01/05/26
EDIFICIO 2	1540 days	Mon 23/09/19	Thu 14/08/25
EDIFICIO 30 AC - Bagni/pavimentazione/infissi	585 days	Mon 05/02/24	Fri 01/05/26
Affidamento esecuzione	12 mons	Mon 09/12/24	Mon 07/11/25
EDIFICIO 30 AC - Copertura	101 days	Tue 12/11/24	Tue 01/04/25
Progettazione Interna	2 mons	Tue 12/11/24	Mon 06/01/25
Affidamento esecuzione	2 mons	Tue 07/01/25	Mon 03/03/25
Esecuzione lavori	1 mon	Tue 04/01/25	Mon 03/03/25
Collaudi	1 day	Tue 01/04/25	Tue 01/04/25
ASFALTI 2 <sup>a</sup> TRANCHE	941 days	Mon 18/05/22	Mon 22/12/25
Affidamento esecuzione	12 mons	Mon 28/10/24	Fri 28/09/25
Esecuzione lavori	3 mons	Mon 29/09/25	Fri 19/12/25
Collaudi	1 day	Mon 22/12/25	Mon 22/12/25
RECINZIONE E CONFINI CON LEONI	185 days	Mon 09/08/25	Fri 23/01/26
Progettazione Interna	1 mon	Mon 09/08/25	Fri 04/07/25
Pratiche autorizzative	3 mons	Mon 07/07/25	Fri 28/09/25
Affidamento esecuzione	2 mons	Mon 29/09/25	Fri 21/11/25
EDIFICIO 35 CATAFALCO	280 days	Mon 03/02/25	Fri 30/01/26
Progettazione Interna	9 mons	Mon 03/02/25	Fri 01/10/25
Affidamento esecuzione	2 mons	Mon 13/10/25	Fri 05/12/25
RIPRISTINO DOPO ALLUVIONE ed. 36-11	100 days	Mon 18/09/24	Fri 13/01/25
Esecuzione lavori	2 mons	Mon 02/12/24	Fri 24/01/25
Collaudi	1 wk	Mon 27/01/25	Fri 31/01/25
FLUIDI	2358 days	Tue 20/08/19	Mon 28/08/26
REVISIONE HVAC EDIFICIO 12 Lds	285 days	Mon 27/01/25	Fri 27/02/26
Studio di fattibilità Interno	2 mons	Mon 27/01/25	Fri 21/03/25
Progettazione	2 mons	Mon 24/03/25	Fri 18/05/25
Affidamento esecuzione	2 mons	Mon 19/05/25	Fri 11/07/25
Impiantistica	3 mons	Mon 14/07/25	Fri 03/10/25
IMPIANTO ALTA TECNOLOGIA EUPRAXIA	948 days	Mon 13/01/25	Mon 28/08/26
Progettazione Interna	10 mons	Mon 13/01/25	Fri 17/10/25
IMPIANTO HVAC SALA METROLOGIA	900 days	Mon 09/05/22	Fri 17/10/25
Aggiornamento Progettazione	1 mon	Mon 03/02/25	Fri 28/02/25
Affidamento esecuzione	6 mons	Mon 03/03/25	Fri 15/08/25
Esecuzione lavori	2 mons	Mon 18/08/25	Fri 10/10/25
Collaudi	1 wk	Mon 13/10/25	Fri 17/10/25
REVISIONE CDZ EDIFICIO 13	225 days	Mon 10/03/25	Fri 18/01/26
Progettazione Interna	6 mons	Mon 10/03/25	Fri 22/08/25
Affidamento esecuzione	2 mons	Mon 25/08/25	Fri 17/10/25
EDIFICIO 36	183 days	Mon 27/01/25	Wed 18/08/26
Progettazione Interna	1 mon	Mon 27/01/25	Fri 21/02/25
Affidamento esecuzione	2 mons	Mon 24/02/25	Fri 18/04/25
Esecuzione lavori	2 mons	Mon 21/04/25	Fri 13/08/25
Collaudi	3 days	Mon 18/08/25	Wed 18/08/25
TELERISCALDAMENTO ED.59	345 days	Mon 13/01/25	Fri 08/05/26
Progettazione Interna	2 mons	Mon 13/01/25	Fri 07/03/25
IMPIANTO SF6 SPARC	128 days	Mon 30/09/24	Mon 24/03/25
Affidamento esecuzione	2 mons	Mon 20/01/25	Fri 14/03/25
Esecuzione lavori	1 wk	Mon 17/03/25	Fri 21/03/25
Collaudi	1 day	Mon 24/03/25	Mon 24/03/25
REVAMPING SUPERVISORE SPARC	348 days	Mon 04/03/24	Mon 30/08/25
Esecuzione lavori	6 mons	Tue 07/01/25	Mon 23/08/25
Collaudi	1 wk	Tue 24/08/25	Mon 30/08/25
LAVORI DI MANUTENZIONI E PRESIDENZA NUOVA SEDE	157 days	Mon 09/09/24	Tue 15/04/25
Esecuzione lavori	2 wks	Mon 31/03/25	Fri 11/04/25
Collaudi	2 days	Mon 14/04/25	Tue 15/04/25
RISTRUTTURAZIONE E IMPIANTIBAR LNF	137 days	Mon 28/10/24	Tue 06/05/25
Esecuzione lavori	1 mon	Wed 02/04/25	Tue 29/04/25
Collaudi	1 wk	Wed 30/04/25	Tue 06/05/25
MODIFICA CABINA IDRAULICA ARRIVO LNF	280 days	Mon 07/10/24	Fri 18/07/25
Esecuzione lavori	3 mons	Mon 14/04/25	Fri 04/07/25
Collaudi	1 wk	Mon 07/07/25	Fri 11/07/25
MANUTENZIONE STRAORDINARIA LINAC	108 days	Mon 18/09/24	Mon 10/02/25
Esecuzione lavori	1,2 mons	Tue 07/01/25	Fri 07/02/25
Collaudi	1 day	Mon 10/02/25	Mon 10/02/25
ELETTRICI	177 days	Mon 02/09/24	Tue 06/05/25
RISTRUTTURAZIONE E IMPIANTIELETTRICI BAR LNF	177 days	Mon 02/09/24	Tue 06/05/25
Esecuzione lavori	1 mon	Wed 02/04/25	Tue 29/04/25
Collaudi	1 wk	Wed 30/04/25	Tue 06/05/25
RESPDT	1538 days	Mon 07/10/19	Fri 22/08/26
FOTOVOLTAICO	1488 days	Mon 07/10/19	Fri 13/08/26
Esecuzione lavori	9,5 mons	Mon 09/09/24	Fri 30/05/25
Collaudi/Avvio della Concessione	2 wks	Mon 02/08/25	Fri 13/08/25
VENDITA VILLA LAURA 4 <sup>a</sup> esperimento	180 days	Mon 13/01/25	Fri 22/08/25
Aggiornamento PTI	1 mon	Mon 13/01/25	Fri 07/02/25
Delibera Indizione	2 mons	Mon 10/02/25	Fri 04/04/25
Nuova preparazione documentazione	2 mons	Mon 07/04/25	Fri 30/05/25
Nuova Delibera Indizione	0 days	Fri 30/05/25	Fri 30/05/25
Esperimento Asta	0 days	Fri 22/08/25	Fri 22/08/25



Resource allocation is critical especially for a set of services that are deeply involved in many activities in parallel.

A critical period is the first semester of 2025 (see slide 17). At least three projects will absorb a significant amount of resources in few dedicated services of the Accelerator Division: EuAPS, SSRIP, SABINA. In particular Vacuum Group and Mec. Engineering group seems to be sub-critically allocated.

Since the current baseline is highly adaptative due to the yet not fixed delivery date of most of the critical components, at this stage is not possible a resource levelling and/or a rescheduling.

A first exercise to extrapolate an index of resource allocation shows that as example (considering only a subset of projects):

- Mechanical Engineering: 103% in January, 80% in April and May
- Magnets: 83% in May, 85% in June

Other groups are close to those numbers.

A close follow up and an iterative refinement of the short term activities will be necessary.

- The number of projects and activities is very close to be critical compared with the resources available. Projects schedules are highly variable due to a number of uncertainties mainly due to delivery date of hardware components for integration and installation.
- A close follow up will be needed to ensure that resources are properly allocated and there's no critical overlapping.
- Completion of the ongoing projects also depends on administrative tasks (financial reporting). In some cases this is a quite demanding task (e.g. PNRR Projects)
- At the end of 2025 beginning 2026 SSRIP and EuAPS must be concluded which will free a remarkable effort towards other projects (i.e. EuPRAXIA) in 2026.
- The baseline for this program is that DAFNE will not be running during 2025. Any other decisions in this respect will affect significantly the current baseline.
- A closer look indicates that there are three main risk categories for all the projects ongoing.

# RISKS ASSESSMENT

The current program is feasible and realistic although a reality check is necessary to assess the main risk factors.

Risk	Description	Mitigation actions
<ul style="list-style-type: none"> <li>• <b>Resources over-allocation and correlation between activities</b></li> </ul> <p><b>HIGH</b></p>	<p>All Lab activities draw from a shared resource pool. Currently, contingency is limited, meaning that any deviation in one project could have substantial repercussions, not only for that project but also for other ongoing projects and activities.</p>	<ul style="list-style-type: none"> <li>• Close follow up and pro-active resource allocation management</li> <li>• Prioritization strategic activities</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Administrative effort</b></li> </ul> <p><b>HIGH</b></p>	<p>Procurement and financial reporting are becoming essential components that must be integrated into overall project management activities. e.g. PNRR projects require financial reporting every 2 months.</p> <p>Introduction of a quality approach for the documentation is crucial in case of audit and/or controls</p>	<ul style="list-style-type: none"> <li>• Close follow up and pro-active resource allocation management</li> <li>• Proposal of a quality procedure for tenders and related documentation</li> </ul>
<ul style="list-style-type: none"> <li>• <b>Procurement procedures</b></li> </ul> <p><b>MEDIUM</b></p>	<p>Recent changes in the public procurement rules made the overall process rather complicated. The time needed to get the contracts in place has increased dramatically.</p>	<ul style="list-style-type: none"> <li>• Future procurement activities must consider this issue carefully. Procurement might be the most significant contribution to project delays.</li> </ul>

The PMO has started officially its activities only a couple of months ago. At the moment we are working on several aspects for a full deployment of the mandate.

- Systematic high level projects schedules follow up
- Introduction of KPI (especially for resource allocation)
- Integrated planning automatization
- Closer look to EuPRAXIA Implementation phase - preparation of the project management plan
- Configuration database tool for EuAPS and EuPRAXIA@SPARC\_LAB ongoing (to be extended to other future facilities).
- Stress test and simulations for future projects

2025 will be an intense year.

- ▶ The existing facilities have a comprehensive experimental program that **must** be properly supported.
- ▶ A set of critical projects **must** be concluded during 2025 (e.g. EuAPS, IRIS, ICSC et.al).
- ▶ EuPRAXIA@SPARC\_LAB Technical Design Report **must** be concluded.
- ▶ EuPRAXIA Building tender **must** be published.

The available resources are just sufficient to meet existing commitments, with minimal margin for flexibility or contingencies. Prioritizing strategic activities will be essential. The PMO's role is to deliver quantified insights to management, enabling priority setting and supporting informed decision-making.