

EUROpean- Laboratories for Accelerator Based Sciences



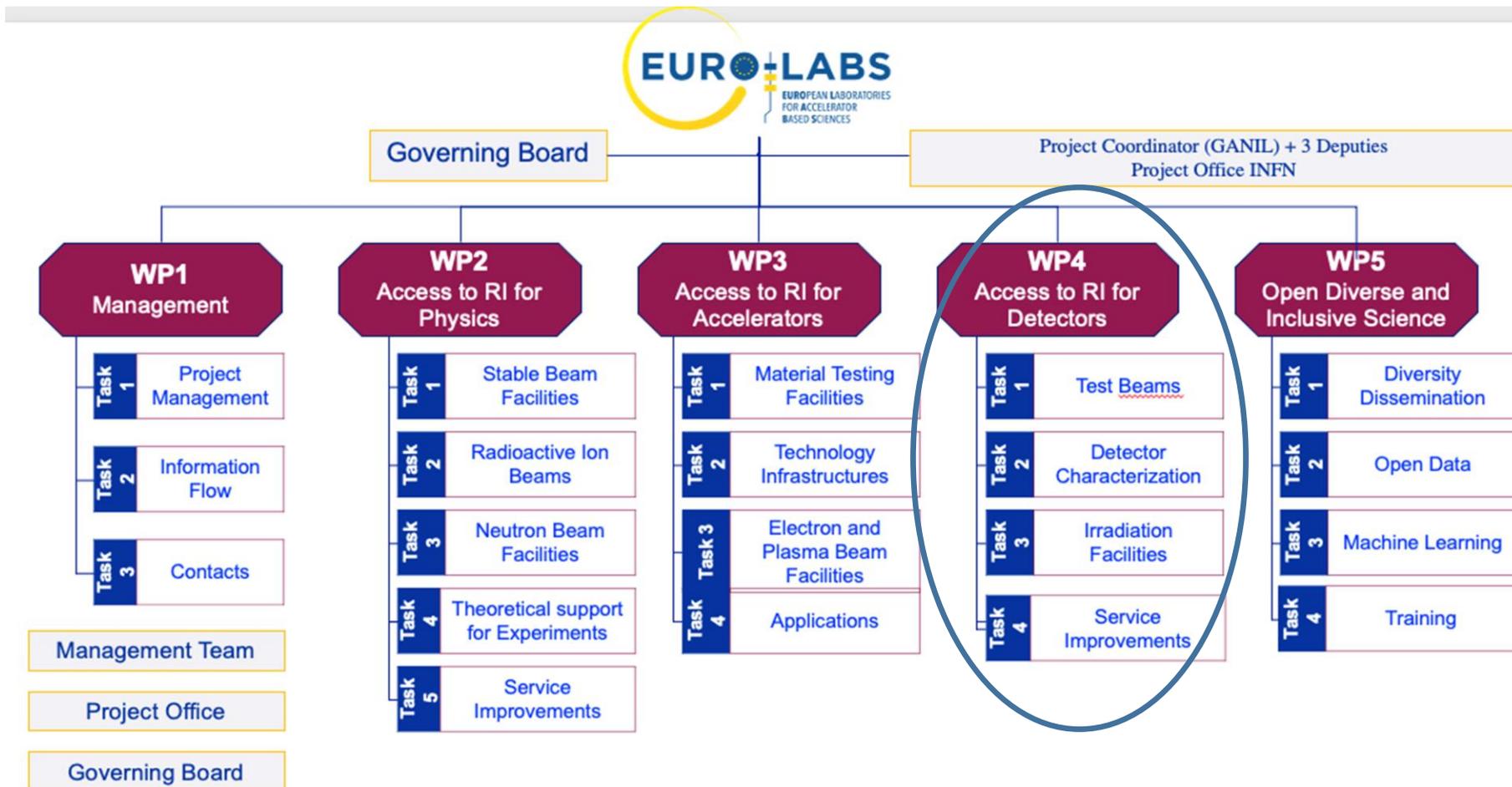
<https://web.infn.it/EURO-LABS/>

HORIZON-INFRA-2021-SERV-01-07: Research infrastructures services advancing frontier knowledge

Project started 1.9.2022, duration 4 years

- kick off meeting: Bologna Oct 3 – 5, 2022 <https://agenda.infn.it/event/32088/>

➔ Project budget 14,500.00 kEUR



WP4 Budget

- WP4 access for **Research Infrastructure for detectors** Budget in EUR:

Task name	WP label	EC + CH + UK	EC
Test Beams	WP4.1	1,033,300	855,175
Detector Characterization	WP4.2	236,420	236,420
Irradiations	WP4.3	1,074,713	908263
Service Improvements	WP4.4	740,675	606,800
Total Budget	WP4	3,085,108	2,606,658

- EC allocation 2.6 MEUR
- supplemented by CH and UK contributions from their national funds
- ➔ total over 3 MEUR, about 40 % more TA funding than in AIDA2020

Transnational Access

- each **Research Infrastructure (RI)** delivers Access Units (~beam hours)
- two access modalities: physical/remote access
 - **Physical:** users at **RI** (user support)
 - **Remote:** users send samples to the RI (handling, shipment)

Task	WP name	Institute	Facility	Access Units	Users	Projects	User support
Test Beams	WP4.1.1	CERN	PS & SPS	8736	504	56	yes
	WP4.1.2	DESY	TESTBEAM	8640	120	30	yes
	WP4.1.3	PSI	PIM1/UCN	5376	136	32	yes
Detector Characterization	WP4.2.1	RBI	RBI-AF	504	24	12	yes
	WP4.2.2	ITAINNOVA	EMCLab	800	56	14	yes
Irradiations	WP4.3.1	CERN	IRRAD	4000	65	16	yes/remote
	WP4.3.2	CERN	GIF++	4060	74	14	yes
	WP4.3.3	JSI	TRIGA	700	150	50	remote
	WP4.3.4	IFJ-PAN	AIC-144	800	140	28	yes/remote
	WP4.3.5	UCL	HIF/LIF/NIF	100	20	10	yes
	WP4.3.6	UoB	MC40	300	36	12	remote

RD50 main interest:

→ irradiations

- **access to irradiation facilities tailored to HEP detector R&D**
 - 6 first class European irradiation facilities covering broad range of particles and fluences
 - **CERN IRRAD facility** (Geneva, Switzerland)
 - **CERN GIF++ facility** (Geneva, Switzerland)
 - **JSI TRIGA reactor** (Ljubljana, Slovenia)
 - **IFJ PAN AIC-144 cyclotron** (Kraków, Poland)
 - **UCLouvain CRC** (Louvain-la-Neuve, Belgium)
 - **Birmingham MC40 Cyclotron** (Birmingham, UK)
 - special campaigns foreseen for irradiations to **1e17 n/cm²** and above
- TA Offering **9960 AU = 9960 hours of irradiation** in the coming 4 years **free of charge!**

How to apply for TA:

- information is on EURO-LABS web pages: <https://web.infn.it/EURO-LABS/transnational-access/>
 - check for eligibility
 - [contact the facility coordinator](#)
 - fill the forms
- **Generic review procedure in WP4:**
 - the scientific RI coordinator checks the technical requirements and eligibility of applications.
 - EURO-LABS WP4 User Selection Panel gets notified the application and decides on the allocation of resources
 - ➔ approval in 2 weeks
 - ➔ **some facilities require additional approval by their Scientific Committees (CERN, PSI...)**
- after completing the irradiation the customer signs the number of access units used
- customer must **add acknowledgments to EURO-LABS in publication:**

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How to apply for TA:

- Application procedure very similar to AIDA and AIDA2020
 - ➔ irradiations related to RD50 research are eligible for TA
 - ➔ RD50 expected to be one of the main users of TA funds
- Irradiations to extreme fluences:
 - **reactor in Ljubljana:** $1e17$ n/cm² reached in somewhat over 4 hours in the Central Channel (highest flux)
 - ➔ 200 UA foreseen for extreme fluences ➔ 4 irradiations to $1e18$ n/cm²
 - ➔ samples from interested groups will be irradiated together
 - **MC40 (27 MeV p):** upgrade of the scanning system etc.. should enable irradiations up to $1e17$ n_{eq}/cm² in one day
 - ➔ available after year 2 of the EURO-LABS project

Note that there are not only irradiation and test beam facilities available within EURO-LABS!

- one of the ideas behind EURO-LABS was to search for synergies between nuclear and particle physics
- look at the [EURO-LABS web page](#) and presentations shown at the [Kick Off meeting](#) for available RI

Task	Title	Objective	RIs	User group
WP2.1	Stable ion beams	Extremely high intensity required to search rare events and the production of new chemical elements. R&D for detector materials, electronics and medical applications.	8	NP community, hadron-therapy groups, NP and HEP Accelerator & Detector community.
WP2.2	Radioactive ion beams	Experiments to explore the borders of the nuclear stability, studies of fundamental interactions and BSM physics. Research in biophysics.	6	NP community, Groups applying nuclear technique to solid-state and biophysics, nuclear astrophysicists.
WP2.3	Neutron beams	Wide energy range for the investigation of nuclear processes occurring in astrophysical scenarios. Applications in advanced nuclear technology.	5	NP community, nuclear astrophysicists, waste management technologists.
WP2.4	Theoretical support	NP community, nuclear astrophysicists, waste management technologists.	2	NP community, including NP theorists.
WP2.5	Service Improvements	Toolkit to improve remote access, improved access for biomedical applications, efficient sharing of traveling detectors, improved ion beam variety and stability, targets for high intense beams. As well applications of FAIR principles	10	All potential EURO-LABS users (NP + HEP)
WP3.1	Material testing	Test of materials with high-intensity proton and ion beams	1	Teams doing R&D for near beam devices (collimators, beam windows), targetry, vacuum
WP3.2	Technology Infrastructures	Testing of superconducting magnets, superconducting and normal RF cavities, and associated material and mechanics	6	Teams from the AMICI collaboration, validation of new RF cavities and magnet designs for FCC, MYRRHA, US/PIP-II, R&D on materials
WP3.3	Electron and plasma beams	Testing of instrumentation, beam optics, RF equipment, accelerator components with low- medium energy proton and electron beams. Testing of new acceleration concepts and instrumentation in electron beamlines driven by PW and TW-lasers.	4	Wide spectrum of research teams in accelerator R&D, like FEL, design of compact electron LINACs, work with ultra-short bunches, accelerator-based photon sources.
WP3.4	Applications	Test of developments for applications, relation to industry	2	Community doing R&D on the use of pulsed electron beams for medical applications or industrial processes.
WP4.1	Test Beams	Position-resolved tests of detectors	3	Teams involved in detector R&D, QC, related fields
WP4.2	Detector Characterization	Assessment of detector structure and evaluation of EM characteristics	2	Teams involved in Detector RD, QC
WP4.3	Irradiations	Irradiation of detectors and electronics	6	Teams involved in Detector RD, QA, related fields
WP4.4	Service Improvements	Improvement of infrastructure to face challenges of EURO-LABS	11	All users of WP4