



An introduction to EuCARD-2 and to the role of Transnational Access in European Integrating Activities

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EuCARD-2: the European highway to Accelerator R&D

European Coordinated Accelerator Research and Development

An Integrating Activity in the FP7 Programme of the European Commission

- ❑ 300 participants
- ❑ 40 partners (Laboratories, Universities and Industries) from 12 European Countries (+ CERN and Russia)
- ❑ 4 years duration (01.05.2013 - 30.04.2017)
- ❑ 13 Workpackages
- ❑ 62 Deliverables, 86 Milestones
- ❑ 23.5 M€ total cost, 8 M€ EC contribution (1/3)

One website:
<http://eucard2.web.cern.ch/>





13 Workpackages



6 Networks

2 WPs for 3
Access to
Research
Infrastructures



Catalysing Innovation – G. Anelli (CERN), V. Skarda (STFC)
Transfer to society of EuCARD-2 technologies.

Energy Efficiency – M. Seidel (PSI)
Energy management in accelerators.

Accelerator Applications – R. Edgecock (HUD)
Accelerator technology for industry, health care, energy, ..

Extreme Beams – F. Zimmermann (CERN)
Frontier performance of accelerators.

Low emittance rings – Y. Papaphilippou (CERN), S. Guiducci (INFN), R. Bartolini (UOXF)
Improving synchrotron light sources, storage rings, damping rings, lepton colliders.

Novel Accelerators – R. Assmann (DESY)
European roadmap for plasma-based accelerators.



4 Joint
Research
Activities



Future Magnets – L. Rossi (CERN), P. Fazilleau (CEA)
High Temperature Superconductors for 20 T magnets.

Collimator Materials – A. Rossi (CERN), J. Stadlmann (GSI)
New materials for future collimators.

Innovative RF Technologies – P. Macintosh (STFC)
High gradients for SC and NC accelerating cavities, RF diagnostics, photocathodes.

Novel Acceleration Techniques – V. Malka (CNRS)
R&D topics on plasma wakefield acceleration.

Ion Cooling Test Facility at STFC
R. Preece (STFC)

HighRadMat, MagNet at CERN
A. Fabich and M. Bajko (CERN)

- TNA is an **essential ingredient** of Integrating Activities. The primary goal of the instrument is to “integrate” communities, via exchange of people and services and with the goal to develop **collaborations** and **synergies**.
- The objective of the TNA is to sponsor **new opportunities** for research teams (including individual researchers) to obtain access to individual major research infrastructures they require for their work.
- Infrastructures must be **rare in Europe**, must provide a **world-class service** essential for the conduct of top quality research, and must typically have investment or operating costs that are **relatively high** in relation to those costs in their particular field.

Ion Cooling Test Facility (ICTF) at STFC – coord.: R. Preece (STFC) – 200 k€
 Tests with high-quality low-energy beams (MICE and others)

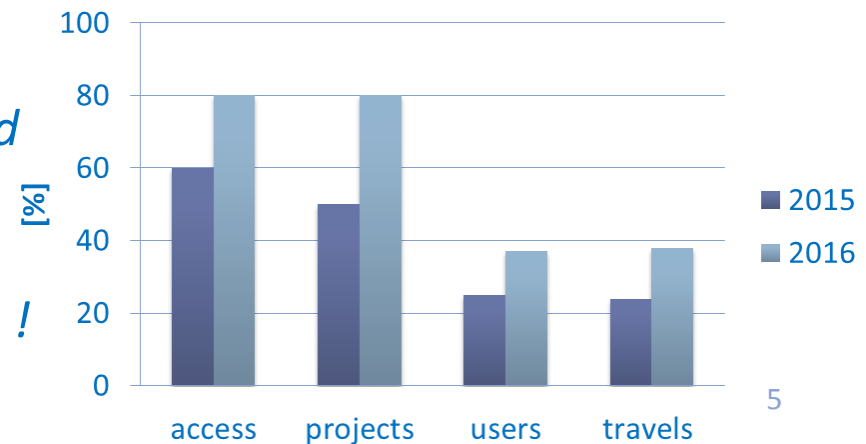
HighRadMat and MagNet at CERN – coord.: A. Fabich and M. Bajko (CERN)
 – 500 k€

Measure performance of materials bombarded with intense proton beams; Open SM18 (superconducting cable and magnet test station) at CERN to external users.

MagNet is a clear success story, in terms of access units and of opening to new teams and communities.

Perfectly in the spirit of Transnational Access !

Status and advancement from 2015





The new programme: ARIES

ARIES

Accelerator
Research and
Innovation for
European
Science and
Society

- New proposal submitted to the call H2020 INFRAIA-01-2016-2017 in March 2016.
- Physical Sciences – Advanced Communities – Particle Accelerators
- Requested EC funding **10 M€**.
- Under evaluation; result to be announced in August.
- If approved, could start after the end of EuCARD-2 (May 2017).

EuCARD The 4 ARIES Pillars



excellence

Develop **key accelerator technologies** to make more performant, affordable, reliable and sustainable the present and future accelerators

Improve the European **accelerator infrastructure**



access

New scheme of Transnational Access opening **14 accelerator test facilities**

Enlarged consortium with **20 new partners** in accelerator projects and **6 new countries** in the East and South of Europe



innovation

Enhanced **industrial participation** (7 industries and 1 association)

3 new **co-innovation programmes** with industry

Development of **societal applications** (medicine, industry, environment)



sustainability

Joint programme with TIARA to develop a **model for sustainable accelerator science** in Europe

Training programme for the new generations of accelerator scientists and engineers



Sharing the accelerator test facilities in ARIES

Access provider short name	Short name of infrastructure	Installation		Installation Country code	Type of access	Unit of access	Unit cost (UC) €	Min. quantity of access to be provided	Access costs		Estimated number of users	Estimated number of user projects
		Nr	Short name						On the basis of UC	As actual costs		
CERN*	MagNet	1	MagNet@CERN	IO	TA-uc	1h	0.00	1,920	1,548,825.60	-	40	8
UU	FREIA	1	Gersemi	SE	TA-ac	1h	-	2,880	-	183,212.80	56	8
CERN*	HiRadMat	2	HiRadMat@SPS	IO	TA-uc	1h	0.00	200	654,000.00	-	20	5
GSI	UNILAC	1	M-branch	DE	TA-uc	1h	274.79	480	131,900.00	-	48	8
KIT	KIT-ATP	1	KIT-ANKA	DE	TA-uc	1h	416.22	480	199,787.04	-	64	8
KIT	KIT-ATP	2	KIT-FLUTE	DE	TA-ac	1h	-	320	-	100,975.00	40	8
CEA	IPHI	1	IPHI	FR	TA-ac	1h	-	1,440	-	267,144.00	72	12
DESY*	SINBAD	1	SINBAD	DE	TA-ac	1h	-	630	-	257,500.00	36	9
STFC	VELA	1	VELA	UK	TA-ac	1h	-	336	-	198,737.87	56	14
UU	FREIA	2	HNOSS	SE	TA-ac	1h	-	2,880	-	199,585.15	44	4
CERN*	XBox	3	XBox@CERN	IO	TA-uc	1h	0.00	6,000	750,080.00	-	64	4
CNRS	LULI	1	APOLLON	FR	TA-ac	1h	-	180	-	695,456.25	48	6
CEA	LIDyL	2	LPA-UHI100	FR	TA-uc	1h	117.00	640	74,880.00	-	40	4
UL	LULAL	1	LULAL	SE	TA-uc	1h	170.00	480	81,600.00	-	36	6

Total no. of users** = 664

- **Magnet** testing: CERN SM18 and FREIA at Uppsala.
- **Material** testing: HiRadMat at CERN and M-branch at GSI.
- **Beam** testing: protons and RF at IPHI (CEA), high current electrons in ANKA (KIT), variable electron beams at VELA (CI), short electron bunches at FLUTE (KIT) and when operational at SINBAD (DESY).
- **RF** testing at FREIA (Uppsala) and at the XBOX at CERN.
- **Plasma acceleration** testing at the Apollon laser (CNRS), UHI100 laser (CEA-CNRS) and Lund Laser Centre.
- **Flagships**: IPHI, VELA, ANKA, Apollon.

➤ 14 facilities in 5 WPs
 ➤ 664 estimated users
 ➤ About 18'000 access hours



We want to see more smiling faces...

Thank you for your work and have a good Workshop!