

RADNEXT kick-off meeting: Opening from Coordinator

Rubén García Alía (CERN)

RADNEXT Kick Off Meeting – 19-21 May 2021

<https://indico.cern.ch/event/983095/>

<https://indico.cern.ch/event/1029314/>



What is RADNEXT?

- A network of European (+ TRIUMF!) **irradiation facilities** and related research and outreach activities with the main purpose of **enhancing accessibility** to accelerator infrastructures for **research activities on radiation effects in electronics**
- **How** do we plan to enhance accessibility? Through:
 - 6000h of beam time over 4 years, free-of-cost to users, and to be awarded via a competitive proposal process, evaluated by independent experts
 - A rich quantity and variety of facilities, targeting at satisfying user needs in terms of beam characteristics and timeline
 - A centralized access point and procedure for requesting beam time for research on radiation effects in electronics
 - A research program devoted to improving radiation effects testing, both on the facility and user side

Approval of proposal

- **Congrats again to all!**
- Proposal evaluation available to project members in EC portal and RADNEXT EDMS
 - Excellence: **4.5/5.0**
 - Impact: **4.5/5.0**
 - Implementation: **4.0/5.0**



General call information

General information

Programme

[Horizon 2020 Framework Programme](#)

Work programme part

[European research infrastructures \(including e-Infrastructures\)](#)

Call

[Integrating and opening research infrastructures of European interest \(H2020-INFRAIA-2018-2020\)](#)

Work programme year

H2020-2018-2020

Type of action

RIA Research and Innovation action

Deadline model

single-stage

Opening date

28 November 2019

Deadline date

14 May 2020 17:00:00 Brussels time




<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/infraia-02-2020>

Projects accepted for funding

Projects funded under this topic

Results: 17

Search..

TITLE 	ACRONYM 	PROJECT ID 
Biodiversity Community Integrated Knowledge Library	BICKIL	101007492
Chemical Elements as Tracers of the Evolution of the Cosmos - Infrastructures for Nuclear Astrophysics	CHETEC-INFRA	101008324
Computational Literary Studies Infrastructure	CLS INFRA	101004984
Building Collaborative Urban Drainage research labs communities	Co-UDlabs	101008626
Communities on Food Consumer Science	COMFOCUS	101005259
COhort cOMmunity Research and Development Infrastructure Network for Access Throughout Europe	COORDINATE	101008589
Electron and X-ray microscopy Community for structural and chemical Imaging Techniques for Earth materials	EXCITE	101005611
Heavy Ion Therapy Research Integration plus	HITRIplus	101008548
Metrology for Integrated Marine Management and Knowledge-Transfer Network	MINKE	101008724
MOlecular-Scale Biophysics Research Infrastructure	MOSBRI	101004806
A Pan-European Solid-State NMR Infrastructure for Chemistry-Enabling Access	PANACEA	101008500
An infrastructure for experimental research for sustainable pig production	PIGWEB	101004770
Plasmasphere Ionosphere Thermosphere Integrated Research Environment and Access services: a Network of Research Facilities	PITHIA-NRF	101007599
RADiation facility Network for the EXploration of effects for indusTry and research	RADNEXT	101008126
Scientific Large-scale Infrastructure for Computing/Communication Experimental Studies – Starting Community	SLICES - SC	101008468
Fully connected virtual and physical perovskite photovoltaics lab	VIPERLAB	101006715
Virtual health And weLlbeing Living Lab InfraStructurE	VITALISE	101007990

“State of US electronic parts space radiation testing infrastructure”

**TESTING AT THE
SPEED OF LIGHT**
THE STATE OF U.S. ELECTRONIC PARTS
SPACE RADIATION TESTING INFRASTRUCTURE

(PDF available online:

<https://www.nap.edu/catalog/24993/testing-at-the-speed-of-light-the-state-of-us>)

- Highlighted overall findings and recommendations (not complete):
 - *the radiation-testing infrastructure system is fragile; it is already experiencing **long wait times and rising testing prices**, and it could easily suffer major strains if even a single major facility closes down suddenly.*
 - *The combination of this fragility and overloading of current beam-line facilities for space radiation testing, together with the growing complexity of commercially available microelectronic and optoelectronic systems that will further strain the system, and increasing requirements for accelerator testing by the private sector, all together project a **growing shortage of available testing facilities to support future space missions among space agencies and industry.***
 - *An apparent bimodal distribution in the radiation testing workforce exposes the risk that **critical knowledge** may not be transferring at a sufficient rate from mid-career to early career radiation engineers.*

Main objectives

- Establish a **network of European irradiation facilities** microelectronics component and **system level testing**
- **Ease the access to irradiation facilities** especially for SMEs, radiation effects newcomers and scientific researchers
- Bridging the gap between **facilities and industry**
- **Remote access to irradiation facilities**, users connected to experiment online / real-time
- **Optimize and standardize COTS component and system level radiation testing** procedure for SEE, TID and TNID

Main objectives

- **Harmonize the related dosimetry techniques**, cross-reference results amongst facilities
- **Use of non-conventional irradiation** means:
 - Large irradiation volume
 - High penetration beams
 - Charge injection via laser and X-rays
- Develop multi-physics **simulation tools** to complement and optimize the radiation hardness assurance
- Establish a **roadmap for possible future irradiation facilities**

Main objectives

Primary user target groups

- **New space**
- **Ground level applications e.g.**
 - Automotive
 - Internet of Things
 - Nuclear dismantling and civil applications
 - Medical environment (proton therapy, conventional radio-therapy)
 - Accelerators
 - Fusion reactors
- **Experienced users will profit from activities as well:**
 - Space companies and organizations
 - Aviation

Work packages

WP No.	Work Package Title	Lead Participant
WP1-MGT	Project management	CERN, UM
WP2-NA1	Communication, Dissemination, Exploitation and Training	KUL, ESRF
WP3-NA2	Transnational Access Management and Harmonization	ENEA, INT
WP4-NA3	Roadmap and pre-design of future irradiation facilities	CERN, ELI
WP5-JRA1	Radiation monitors, dosimeters and beam characterization	UJM, TRIUMF
WP6-JRA2	Standardization of system level radiation qualification methodology	UM, UC3M
WP7-JRA3	Cumulative radiation effects on electronics	UM, ISAE
WP8-JRA4	Complementary modelling tools	UM, CERN
WP9-TA1	Neutron, muon and mixed-field spallation facilities and irradiation	UKRI, HZDR
WP10-TA2	Proton, heavy ions and alternative beams and irradiation	CNES, JYU

RADNEXT Work Package leaders



Rubén García Alía



Frédéric Saigné



Salvatore Fiore



Jochen Kuhnhehn



Paul Leroux



Ennio Capria



Salvatore Danzeca



Roberto Versaci

RADNEXT Work Package leaders (II)



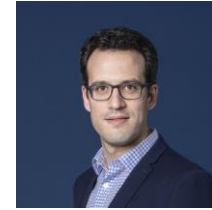
Sylvain Girard



Conny Hoehr



Jerome Boch



Vincent Goiffon



Luigi Dilillo



Luis Entrena



Frédéric Wrobel



Francesco Cerutti

RADNEXT Work Package leaders (III)



Carlo Cazzaniga



Anna Ferrari

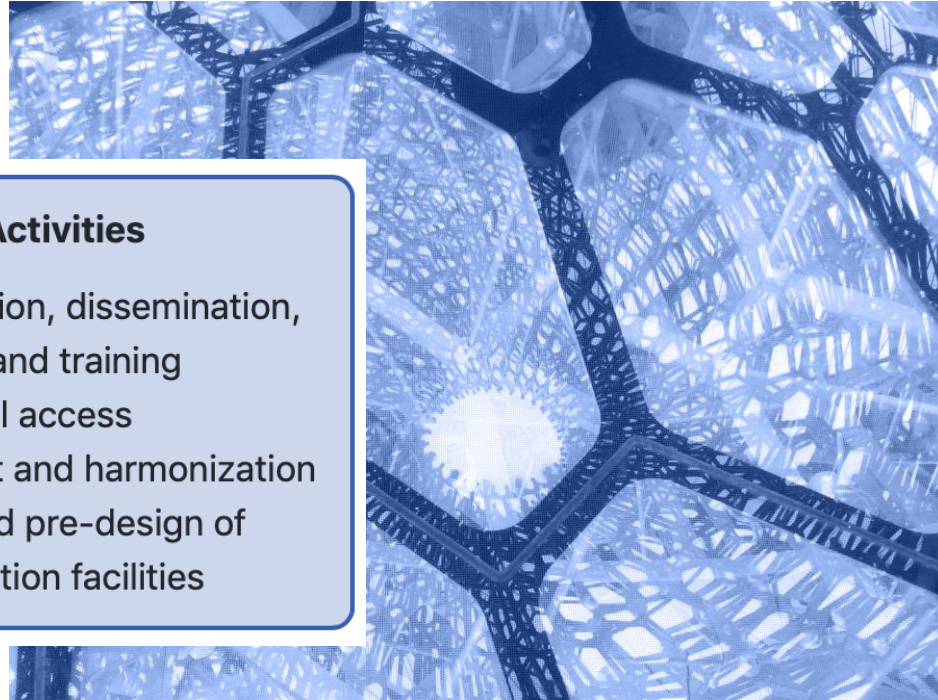


Françoise Bezerra



Arto Javanainen

Networking activities



Networking Activities

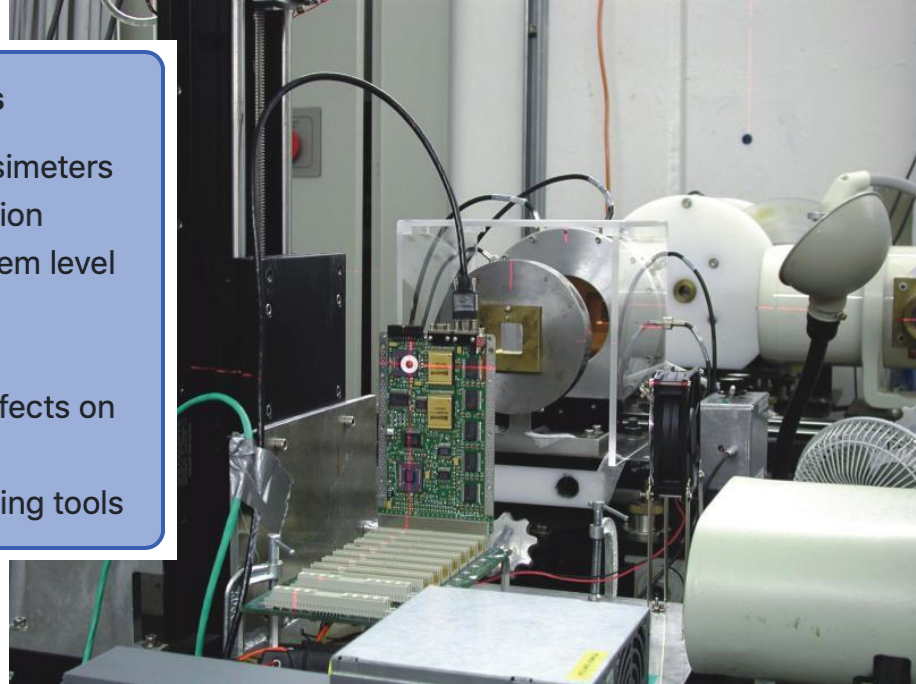
- WP02/NA1** Communication, dissemination, exploitation and training
- WP03/NA2** Transnational access management and harmonization
- WP04/NA3** Roadmap and pre-design of future irradiation facilities

Source: Gerd Datzmann

Joint Research Activities

Joint Research Activities

- WP05/JRA1** Radiation monitors, dosimeters and beam instrumentation
- WP06/JRA2** Standardization of system level radiation qualification methodology
- WP07/JRA3** Cumulative radiation effects on electronics
- WP08/JRA4** Complementary modelling tools



Source: TRIUMF

Transnational Access

- *More than 6000 hours of transnational beam time access (i.e. at no cost for users) throughout 4 years of the project*
- *Beam time awarded through proposals, evaluated by panel of experts*



Foto: Peter Tahl

Source: AGOR / KVI-CART

Transnational Access

WP09/TA1 Neutron, muon and mixed-field spallation facilities and irradiation

WP10/TA2 Proton and heavy ion beams and irradiation

Facilities providing Transnational (or JRA) Access

Irradiation type	Number of facilities
Protons (400 keV – 24 GeV)	11
Neutrons (thermal, fast, atmospheric)	11
Heavy ions (4 MeV/n – 6 GeV/n)	6
Electrons (up to 115 MeV) monoenergetic and bremsstrahlung	5
Pions (50 – 230 MeV; pos. and neg.)	1
Muons (up to 33 MeV; pos. and neg.)	2
Mixed-field (CHARM, nELBE)	2
X-rays (pulsed X-ray from synchrotron)	1

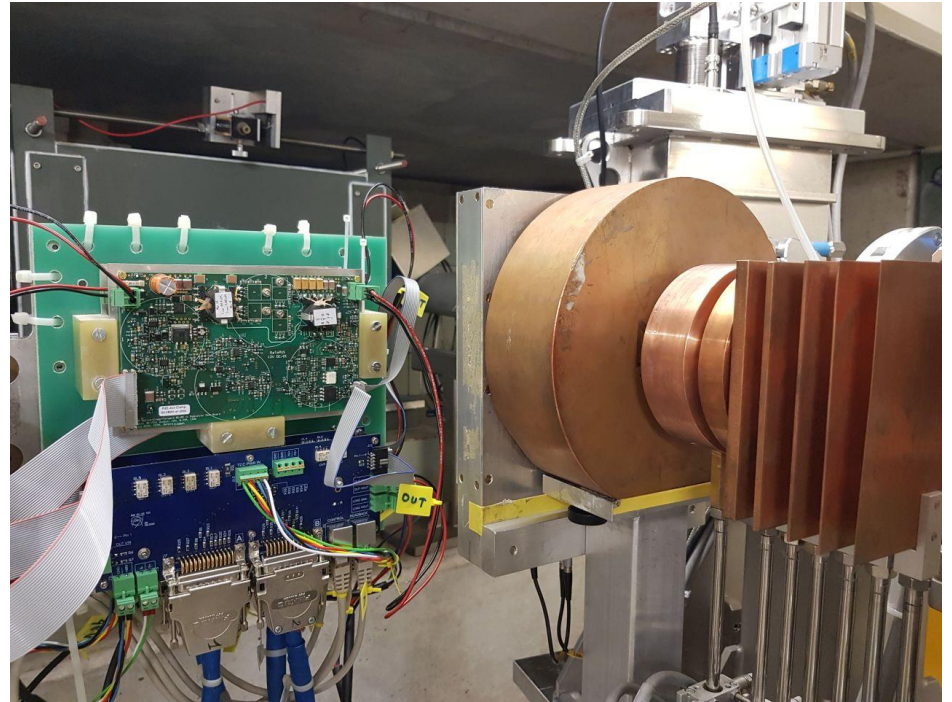
21 facilities in total

Facilities:

Seibersdorf Laboratories (Austria)
Centre Spatial Liege (Belgium)
UCLouvain (Belgium)
TRIUMF (Canada)
ELI Beams (Czech Republic)
NPI CAS (Czech Republic)
RADEF (Finland)
GANIL (France)
CNRS/LPSC (France)
ILL (France)
ESRF (France)
HZDR (Germany)
GSI (Germany)
PTB/PIAF (Germany)
Fraunhofer INT (Germany)
FNG (Italy)
KVI-CART (Netherlands)
PSI (Switzerland)
CLPU (Spain)
CNA (Spain)
Uppsala University/NESSA (Sweden)
STFC-ISIS (UK)

Timeline (with focus on TA users)

- Planned starting date: June 2021
- If travel conditions have improved/normalized, RADNEXT will target opening a first **call for test proposals in Summer 2021**, to be evaluated by the experts of the selection panel, with the **first irradiation starting in Autumn 2021**
- **We look forward to receiving your testing ideas and to matching your needs!!**



Source: Grzegorz Daniluk (CERN), from electronics test at PSI

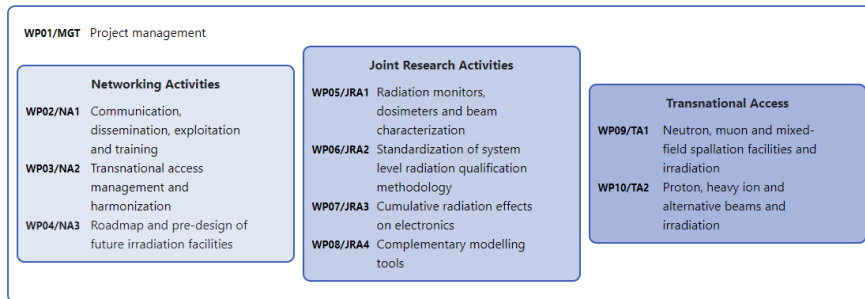
RADNEXT reporting timeline



Website as central entry point (for members, users, general public...)

- <https://radnext-network.web.cern.ch/>
- Work package structure and description

Work Packages



Work Package WP10/TA2

Proton, heavy ion and alternative beams and irradiation



Françoise Bezerra

(CNES)

WP leader



Arto Javanainen

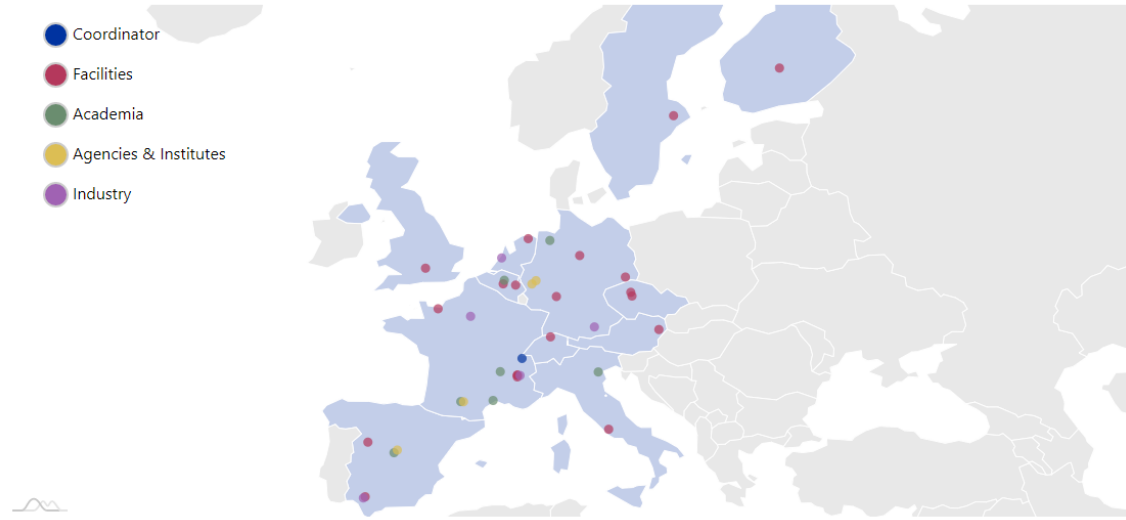
(University of Jyväskylä)

Deputy WP leader

Website as central entry point (for members, users, general public...)

- <https://radnext-network.web.cern.ch/>
- List and map of partners

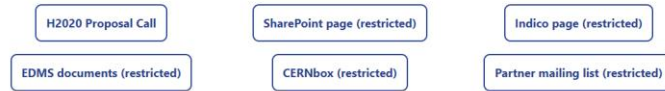
Partners & Associates



Website as central entry point (for members, users, general public...)

- <https://radnext-network.web.cern.ch/>
- Link to other RADNEXT online platforms (mainly for members, but to soon include beam proposal submission process)

Links



Contact

For more information, please contact:

radnext-proposal-coordination@cern.ch



Website as central entry point (for members, users, general public...)

- <https://radnext-network.web.cern.ch/>
- Blog entries, including also events and recruitment

Blog

The screenshot displays the RADNEXT website's blog section. At the top, there are logos for 'ies l'institut d'électronique', 'RADNEXT', and 'RADNEXT'. The main content area features three blog entries, each with a title, a brief description, and a 'Read more' button. The first entry is titled 'Open PhD position in RADNEXT (WP08)' and includes a 'career' tag. The second entry is titled 'RADNEXT Public Kick-Off & RADSAGA Final Conference' and includes an 'event' tag. The third entry is titled 'Some perspectives on space radiation issues' and includes an 'article' tag. The background of the blog section shows a satellite in orbit over Earth.

Open PhD position in RADNEXT (WP08)
Impact of circuit modelling and low energy particles on Single-Event Effect rate prediction
[Read more](#) [career](#)

RADNEXT Public Kick-Off & RADSAGA Final Conference
If you are interested in RADNEXT, make sure to register for the online Kick-Off Meeting taking place on 19-20 May, in combination with the RADSAGA Final Conference event!
[Read more](#) [event](#)

Some perspectives on space radiation issues
The RADNEXT community brings a collection of facilities and skills to address the space radiation effects domain.
[Read more](#) [article](#)

Thanks for your attention!



Image Source: CERN