



The RADSAGA Project - outcome and benefits

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R2E Annual Meeting – 1-2 March, 2022
<https://indico.cern.ch/event/1116677/>



Outline

I. Introduce RADSAGA project as:

- I. EU funded doctoral training network

- I. Structure and interaction with R2E activities

II. Sharing good practice for EU project management

- II. Managing networks and projects

- II. Collaborative tools

III. Sharing the outcomes and benefits

- III. The benefits of a collaborative research project

- III. RADSAGA achievements and results

I. RADSAGA – EU funded doctoral training network



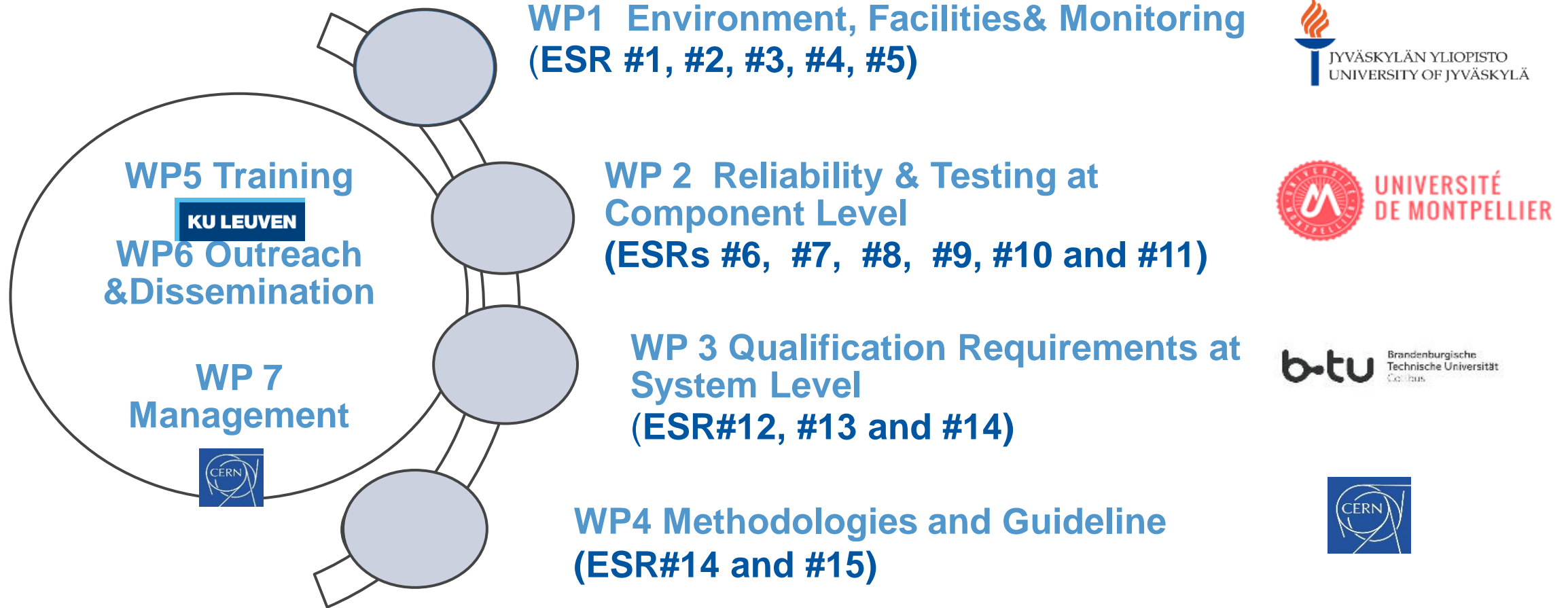
RADIation and reliability challenges for electronics used in **S**pace, **A**vionics, on the **G**round and at **A**ccelerators (2017-22)

H2020 programmes aiming at **consolidating leading innovation across Europe**

- ✓ **Empowering scientific networks** and collaborations between industrial partners, research centers and University (**30 partners in the RADSAGA**)
- ✓ Giving **access to specialized manpower** (15 ESRs positions with a total of **45 years of funded research activities**)
- ✓ **Catalyzing new projects development**



I. RADSAGA structure and the interaction with R2E



II. Managing EU network and project



□ Network management

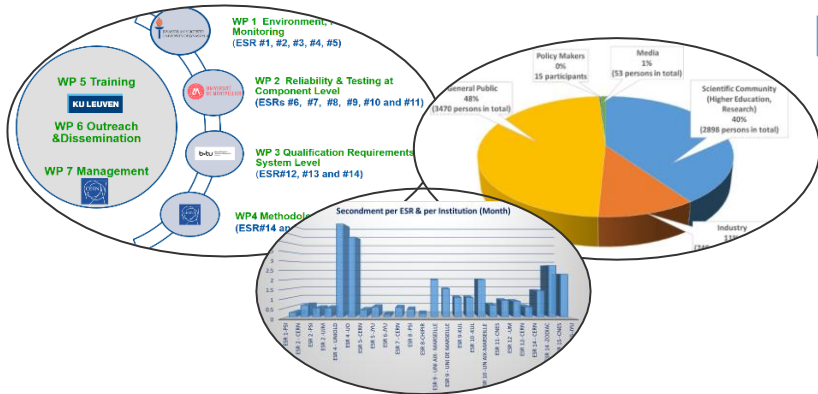
- ✓ Engaging collaboration between partners
- ✓ Being the point of contact with Funding Agency
- ✓ Mentoring ESRs

□ Project executive management

- ✓ Coordinating the common activities
- ✓ Monitoring program execution (47 between deliverable and milestone's report)
- ✓ Content management (data analysis, sharing and storage)

□ Reporting to Funding Agency and to internal steering committees

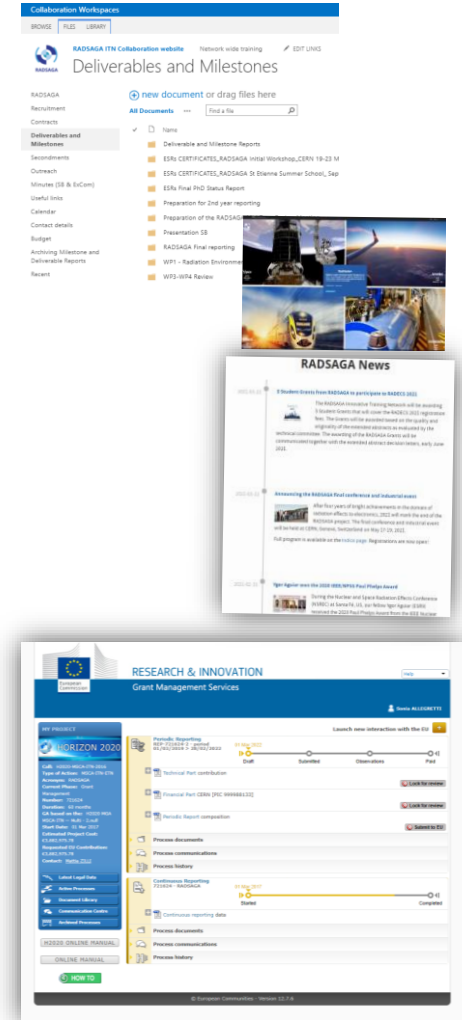
- ✓ Contribution to the definition of best practice for EU grant management at CERN



II. RADSAGA: Collaborative tools

Platform to **collect, analyze and share knowledge & data**

- ❑ RADSAGA Intranet – Content co-creation internally to the network
 - ✓ Information exchanges and document co-production
 - ✓ Temporary storage of data
- ❑ Indico platform and Website – Internal & external communication
 - ✓ Management purpose (Recruitments, Steering Committees,...)
 - ✓ Organization of network-wide events
 - ✓ Outreach and dissemination
- ❑ RADSAGA Participant Portal - reporting to funding agency
- ❑ EDMS platform - Archiving data and project dissemination



III. RADSAGA – benefit to ESRs and network



PhD & Career development training

Individual research projects

Secondments

Network-wide training events

Entrepreneurship and business

Complementary skills training

Scientific training

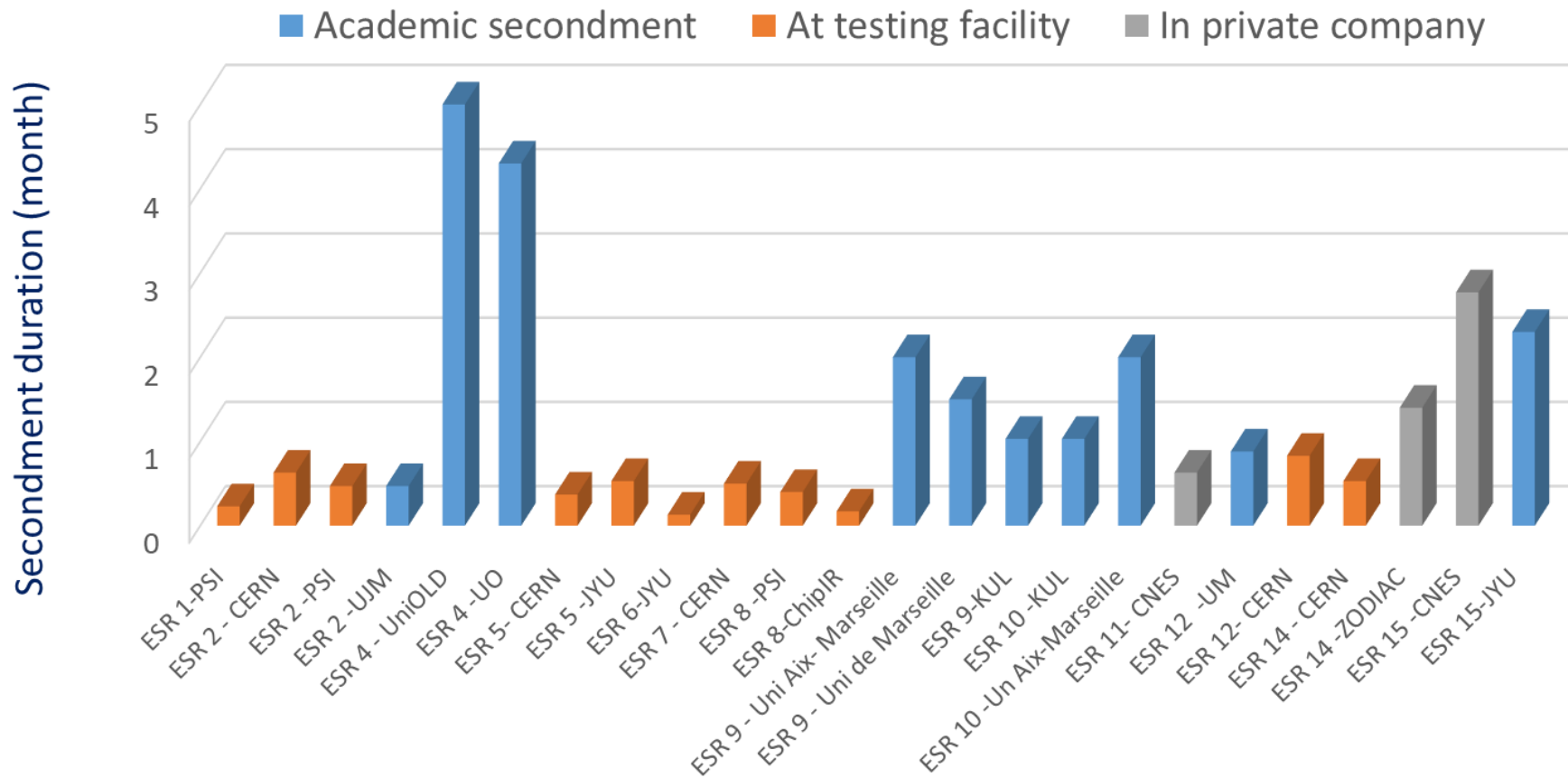
PhD work
(specialized learning + experimental project)

**Few months of extra collaborative work at
hosting institutes (2.5 y of secondments)**

**30 full-days of Common Training in several
disciplines (generating professional
network between ESRs)**

**ESRs have extra budget to invest in
individual courses, dissemination and
outreach events**

II. RADSAGA - collaborative research



Total of 2.5 years of scientific exchanges between partners:

- **20.5 M spent in testing at external facilities**
- **About 9.5 M for academic and research purposes**

III. Achievements: WP1 Environment, Facilities and Monitoring

Providing tool to select and prepare radiation test campaigns focused on specific operational requirements

Deliv. 1.1 “[Summary of Radiation Hardening Assurance approaches in European test facilities](#)”,

Deliv. 1.3 “[Facility dosimetry procedure and dedicated monitors](#)”,

Deliv. 1.4 “[Documentation of test setups practical for mixed field radiation facilities](#)”

Deliv. 1.2 “[Design status report and prototype of SRAM](#)”,

5 Early Stage Researchers work in WP1 ([link to contributions](#))

- Working at **University of Jyväskylä**: ESR1 – S. Lüdeke, ESR2 – D. Söderström,
- Working at **Univ. of Groningen**: ESR3 – C. Meyer,
- Working at **CERN**: ESR4 – V. Wyrwoll
- Working at **KU Leuven**: ESR5 – J. Wang

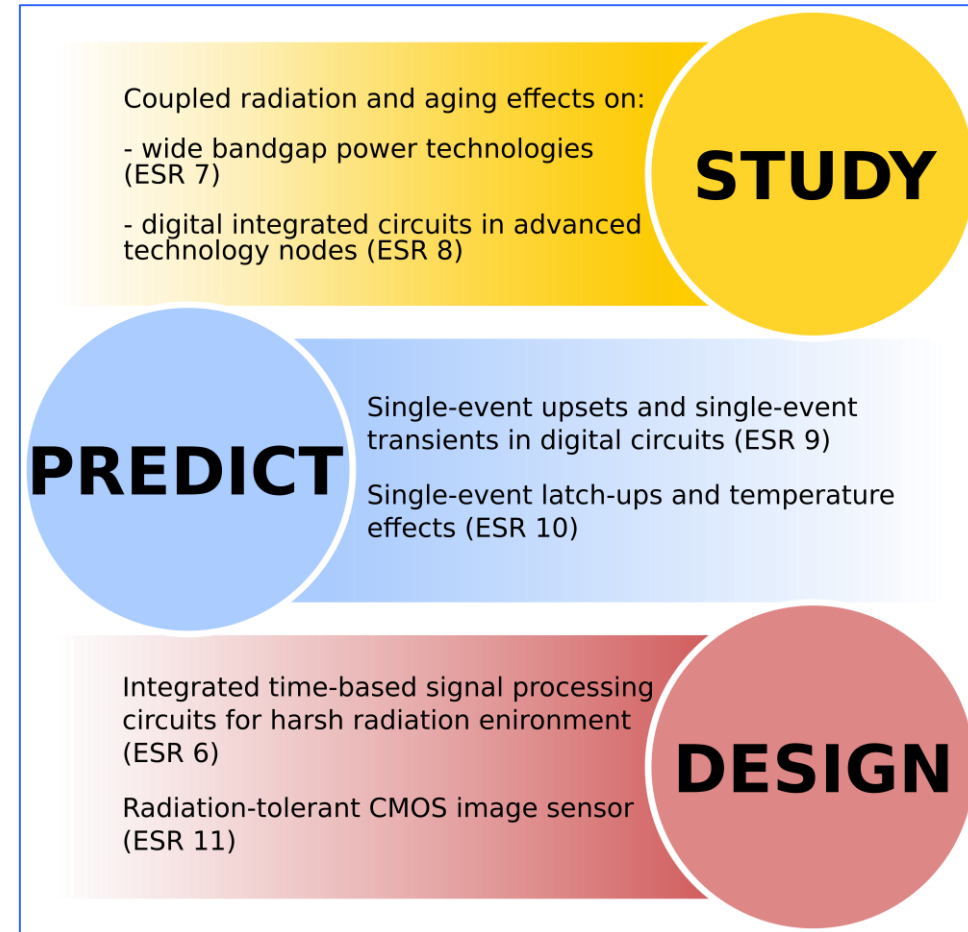
III. Achievements: WP2 Reliability and testing at comp. level

The WP2 spans from studying the **radiation and aging effects**, to making **predictive tools for the errors**, and up to **developing "Radiation Hardened By Design"**

- ✓ [D2.1 Report on hardening by design rules, tools and modelling,](#)
- ✓ [D2.2 Status report on coupled effects and predictions tools,](#)
- ✓ [D2.3 Design status report and prototype of the rad-tolerant CMOS imager](#)
- ✓ [D 2.4 Combined status report on modelling techniques and tools,](#)

The specific contribution to the project of the 6 ESRs:

- ✓ **University of Montpellier:** ESR7 K. Niskanen, ESR9 Y. Q. Aguiar, ESR10 S. Guagliardo,
- ✓ **KU Leuven:** ESR6 – A. Karmakar, ESR8-M. Mounir and ESR11-R. J. Maestro



III. Achievements: WP3 Qualif. Requirements at System Level

WP3 - Qualification Requirements at System level is dedicated to test and qualification approaches.

- ✓ D3.1 Report on system level test methodology compared with component test results
- ✓ D3.2 Final Report on system level test methodology compared with component test results
- ✓ D3.3 Collection and documentation of testing tools and facilities required for system level tests
- ✓ D3.4 Risk assessment and application procedure of system test methodologies based on a software-defined radio (SDR) development for space application (deliverable supported by A. Coronetti and J Budroweit, DLR Bremen)

3 ESRs have been working to WP3: ESR12 – T. Rajkowski (3Dplus), ESR13 I. Lopes (UM) and ESR14 (Q. Croenne)

III. Achievements: WP4 Methodologies and Guideline

WP4 - Methodologies and Guideline deals with tailoring guidelines for emerging Radiation Hardness Assurance approaches.

- ✓ D4.1 Evaluation report of 14 MeV test methodology
- ✓ D4-2 Handbook of test methodologies and applicable facilities for advanced systems

2 ESRs worked at CERN on WP4: ESR15 A. Coronetti and ESR14 I. Slipukhin

III. RADSAGA ITN - Summary

The RADSAGA project has already :

- ❑ **Granted 15 ESRs positions:**
 - ✓ Allowing **45-year of additional specialized man power** working in several fields of radiation to electronics,
 - ✓ Producing more than **~31 months of effective scientific exchanges between industry/ academy/ research centres** (secondments),
- ❑ Contributed to leading edge research resulting in **more than 56 scientific publications in International Journals** (Microelectronic Reliability, IEEE Transactions on Nuclear Science, OSA, NIMA,, Aerospace,...)
- ❑ **Consolidated an International Professional Network**

III. RADSAGA – the people!



RADSAGA Kick-off meeting, CERN 2017



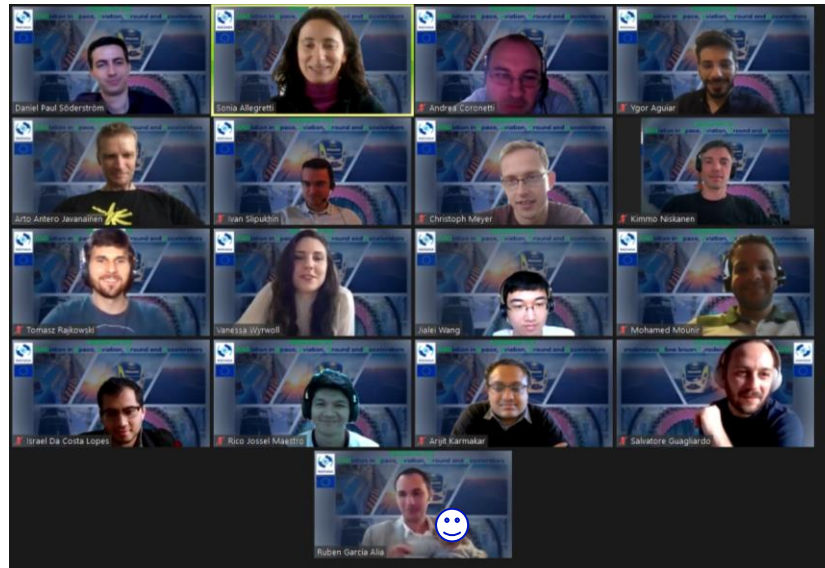
RADSAGA-CERN Magic Team
RADECS2018



RADSAGA Summer School, UJM
Sept 2018



System Level Testing Review at CERN,
Nov 2019



RADSAGA Final Conference May 2021



JYU Summer School,
August 2018

Thank you for
your attention!

Any questions?

