



Ivana Tucaković¹

Luca Brombal²

¹ Ruđer Bošković Institute, Zagreb, Croatia

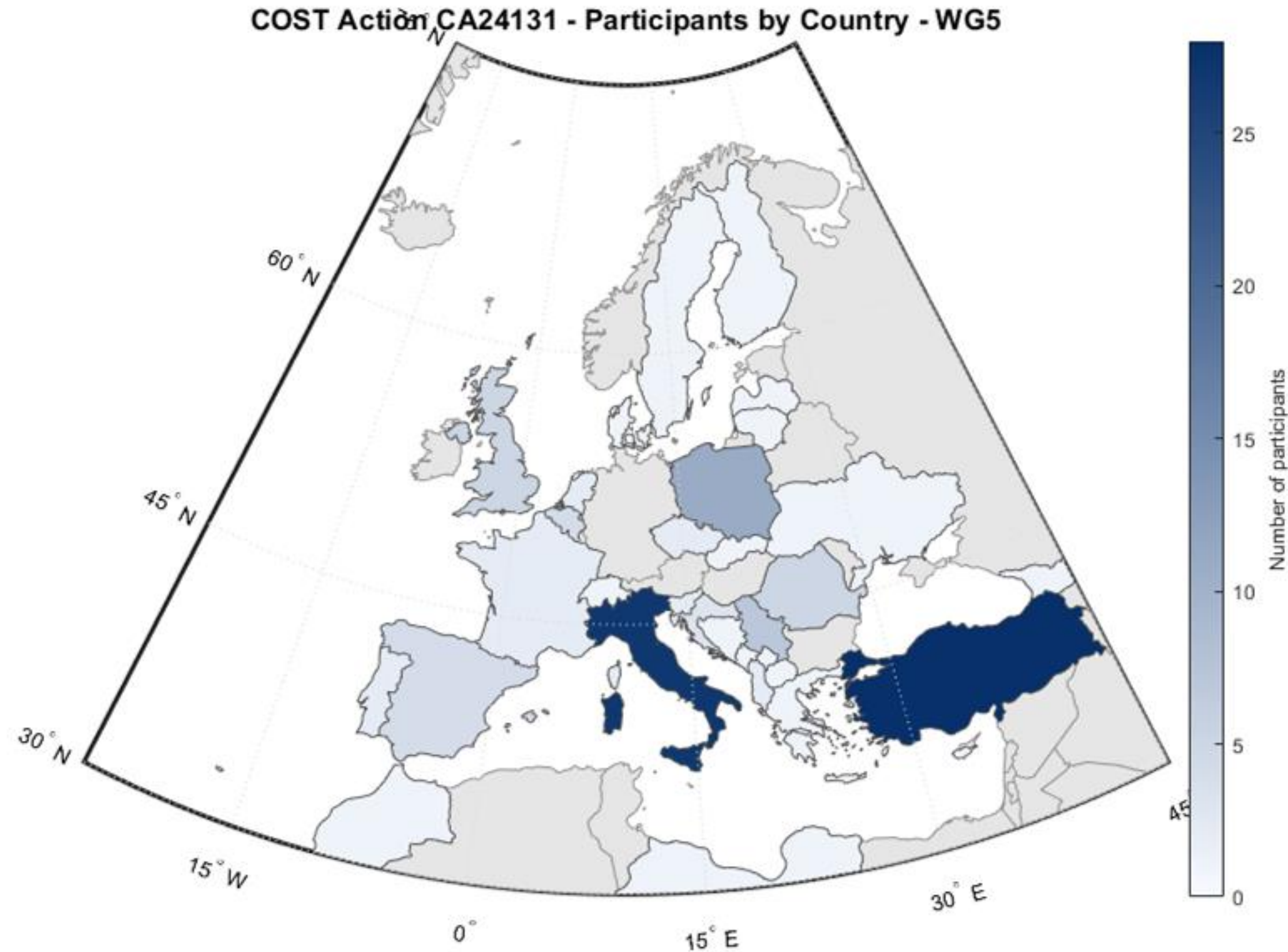
² University of Trieste and INFN Trieste, Italy

WG5

first year activities

- 129 members (largest WG)
- 60% male / 40% female
- 33 states
- 52% of members from ITC

who are we?



Ivana Tucaković
WG5 leader



Luca Brombal
WG5 co-leader



Senior researcher at the Ruđer Bošković Institute,
Zagreb, Croatia.



Environmental radiation and radioecology



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Senior researcher at University of Trieste, and INFN
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Spectral and phase-contrast X-ray imaging and
biomedical applications



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WG5 - Multidisciplinary and Societal Applications

Purpose:

- Bridge **technical development** with **societal needs** by applying photon detection technology across **diverse sectors**

Vision:

- **Real-world impact** through interdisciplinary collaboration and targeted innovation

- Healthcare (early diagnostics, imaging)
- Food safety (contaminant analysis)
- Cultural heritage (non-invasive investigation)
- Environmental monitoring
- Nuclear security and forensics
- Energy storage and material analysis

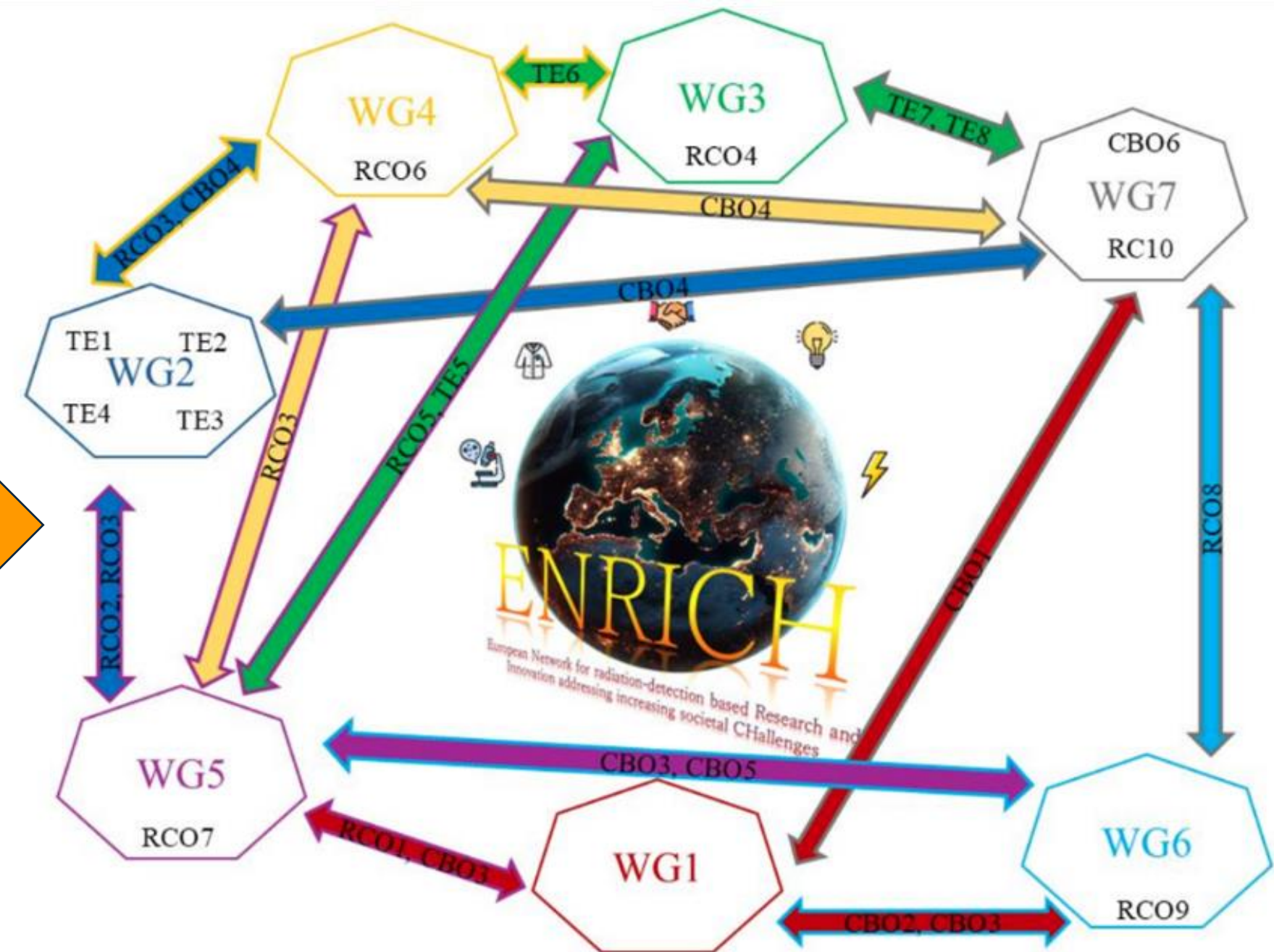


Fig. 2: Schematic of the interconnections among the different tasks of the WGs.

WG / Tasks	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13	Q14	Q15	Q16
WG1: Cost Management and Coordination																
T1.1																
T1.2																
T1.3																
WG2: Technological Advancements																
T2.1																
T2.2																
T2.3																
T2.4																
WG3: Software Advancements																
T3.1																
T3.2																
T3.3																
T3.4																
WG4: Electronics and DAQ																
T4.1																
T4.2																
WG5: Multidisciplinarity and societal applications																
T5.1																
T5.2																
T5.3																
WG6: Interchange																
T6.1																
T6.2																
T6.3																
T6.4																
WG7: Mentoring, training and dissemination																
T7.1																
T7.2																
T7.3																
T7.4																
T7.5																
Deliverables		D1.1		D5.1, D7.1	D1.2, D2.1, D4.1, D6.1	D1.1,D5.2, D6.1, D7.2	D2.2, D3.1, D6.2	D7.1	D6.3	D1.1, D5.3, D7.2		D7.1		D1.1, D4.2, D7.2		D3.2, D7.1
Cross-sectional Deliverables					DX.1, DX.2				DX.1, DX.2				DX.1, DX.2			DX.1, DX.2, DX.3
Milestones	M1	M2		M3		M2		M3		M2		M3		M2		M3

Task T5.1 – Application Survey

- Compile database and analyze radiation detection techniques tailored to real-world applications

Timeline: Q1 - Q4 (Jan - Dec 2026)

Task T5.2 – Mapping to Technical WGs

- Assign identified applications to relevant Working Groups

Timeline: Q3 - Q5 (Jun 2026 - Mar 2027)

Task T5.3 – Fostering Collaboration

- Workshops, conferences, networking

Timeline: Q5 - Q16 (Jan 2027 - Dec 2029)

*first deliverable in Q10 (June 2028)

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- **4 WG5 periodic meetings from January 2026**
 - Agreed on meeting format and duration (45' - scientific seminar + discussion)
 - 2 Scientific seminars (by the WG leaders - trying to engage more participants)
 - Survey preparation
 - Communication of COST initiatives - workshop, schools, YRG and STSM grants
 - Attendance: ~30 people (range from 25 to 40)
 - Each meeting produced minutes following the COST template

Gamma Spectrometry with High-Purity Germanium Detectors and its applications: *From Fundamental Physics to Radioecology and Nuclear Forensics*

The diagram illustrates the radon cycle, showing the decay of radon isotopes in the atmosphere, soil, and water. The cycle is divided into three main sections: Atmosphere, Soil, and Water.

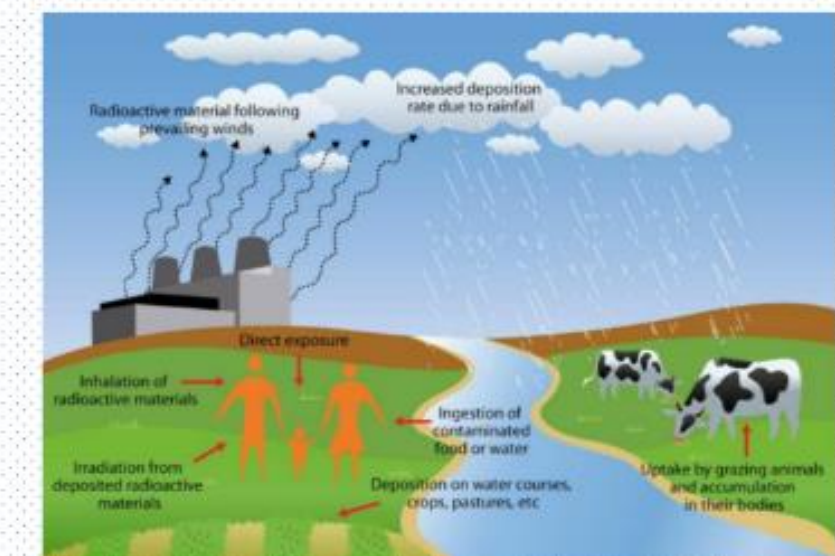
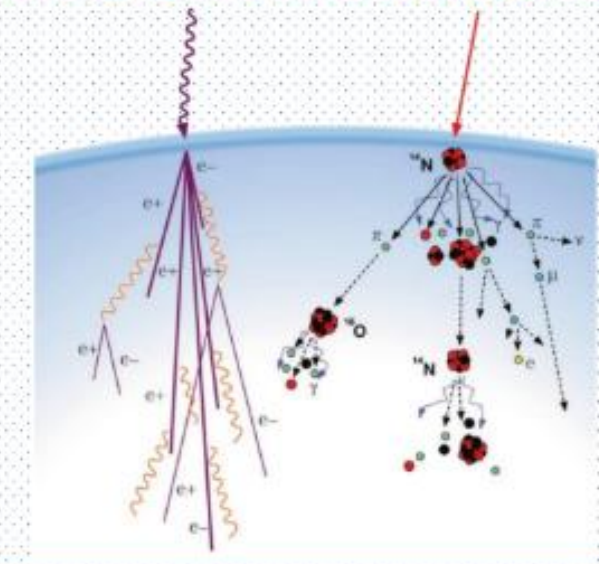
Atmosphere: Radon isotopes are shown in the air, with arrows indicating their decay. The isotopes and their half-lives are: ^{222}Rn (3.82 d), ^{220}Rn (55.6 s), ^{226}Ra (1600 y), ^{228}Ra (5.75 y), ^{224}Ra (3.66 d), ^{223}Ra (11.43 d), ^{221}Ra (26.5 d), ^{227}Th (18.7 d), ^{231}Th (25.5 h), ^{235}U (7.04e5 y), and ^{238}U (4.468e9 y). Arrows indicate the decay paths between these isotopes.

Soil: Radon isotopes are shown in the soil, with arrows indicating their decay. The isotopes and their half-lives are: ^{222}Rn (3.82 d), ^{220}Rn (55.6 s), ^{226}Ra (1600 y), ^{228}Ra (5.75 y), ^{224}Ra (3.66 d), ^{223}Ra (11.43 d), ^{221}Ra (26.5 d), ^{227}Th (18.7 d), ^{231}Th (25.5 h), ^{235}U (7.04e5 y), and ^{238}U (4.468e9 y). Arrows indicate the decay paths between these isotopes.

Water: Radon isotopes are shown in the water, with arrows indicating their decay. The isotopes and their half-lives are: ^{222}Rn (3.82 d), ^{220}Rn (55.6 s), ^{226}Ra (1600 y), ^{228}Ra (5.75 y), ^{224}Ra (3.66 d), ^{223}Ra (11.43 d), ^{221}Ra (26.5 d), ^{227}Th (18.7 d), ^{231}Th (25.5 h), ^{235}U (7.04e5 y), and ^{238}U (4.468e9 y). Arrows indicate the decay paths between these isotopes.

Legend:

Element Names	Half-life units
U - Uranium	a - years
Th - Thorium	d - days
Po - Protactinium	h - hours
Ra - Radium	m - minutes
Rn - Radon	s - seconds
Po - Polonium	
Bi - Bismuth	
Pb - Lead	



Trieste X-ray Tomography Collaborative - TXTC

ENRICH - WG5 monthly meeting

Luca Brombal

Trieste X-ray Tomography Collaborative - TXTC



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March - May

June - September

October - December

- Define content/structure
 - Define recipients
 - Define platform
- Submit the survey
 - Collect and organize responses
- Analyze results
 - Feedback to Management Committee and other WGs
 - Extend it to non-ENRICH members

March - May

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Draft was open to suggestions to WG5 members



Two (or more)-step procedure:

- 1) To send to ENRICH members
- 2) Members to spread to their contacts in academia/industry/other related fields
- 3) ...
(draft version will be first sent to WG5 members, for refinement)



Google forms – free, suitable for multiple choice questions and open questions, no limit on number of recipients...
Relatively easy to export and analyse...

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Submitted to all ENRICH members two days ago (July 13)!



**COST Action ENRICH Working Group 5 –
Multidisciplinary and Societal**

Applications: Survey on Photon and
Radiation Detection Techniques and
Applications

The survey is intended to compile existing photon detection techniques tailored for specific applications, identifying weak points and potential improvements for each application area

<https://forms.gle/aqjrecTfDEGFGHvy8>

Please fill it in!

- 25 questions
 - 19 multiple choice
 - 6 open questions
- Estimated completion time ~15 min
- Mapping
 - Detection instrumentation (WG2+WG4)
 - Detection techniques (WG2+WG3+WG4)
 - Applications
 - Need for improvements (WG2+WG3+WG4+industry)
 - Centers open to collaboration (all WGs)

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- Submit the survey

- Collect and organize responses

To be done!

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A workshop on societal application of radiation detection will likely take place in 2027

- Link this activity to already existing conference?

This is open to discussion...

Acknowledgements

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COST (European Cooperation in Science and Technology) is a funding agency for research and innovation networks. Our Actions help connect research initiatives across Europe and enable scientists to grow their ideas by sharing them with their peers. This boosts their research, career and innovation.

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