EUROPEAN JOINT PROGRAMME FOR THE INTEGRATION OF RADIATION PROTECTION RESEARCH
CONCERT

Joint priority setting for the first CONCERT call

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This project has received funding from the Euratom research and training programme 2014-2018 under grant agreement No 662287.

Towards joint programming in RP in H2020

A European Strategy for Radiation Protection Research

CONCERT EJP

Umbrella structure for radiation protection research in Europe

- Co-funding action
- Joint programming
- Open research calls
- Integrative activities

MELODI | ALLIANCE | NERIS | EURADOS | *Medicine*

http://www.concert-h2020.eu/en

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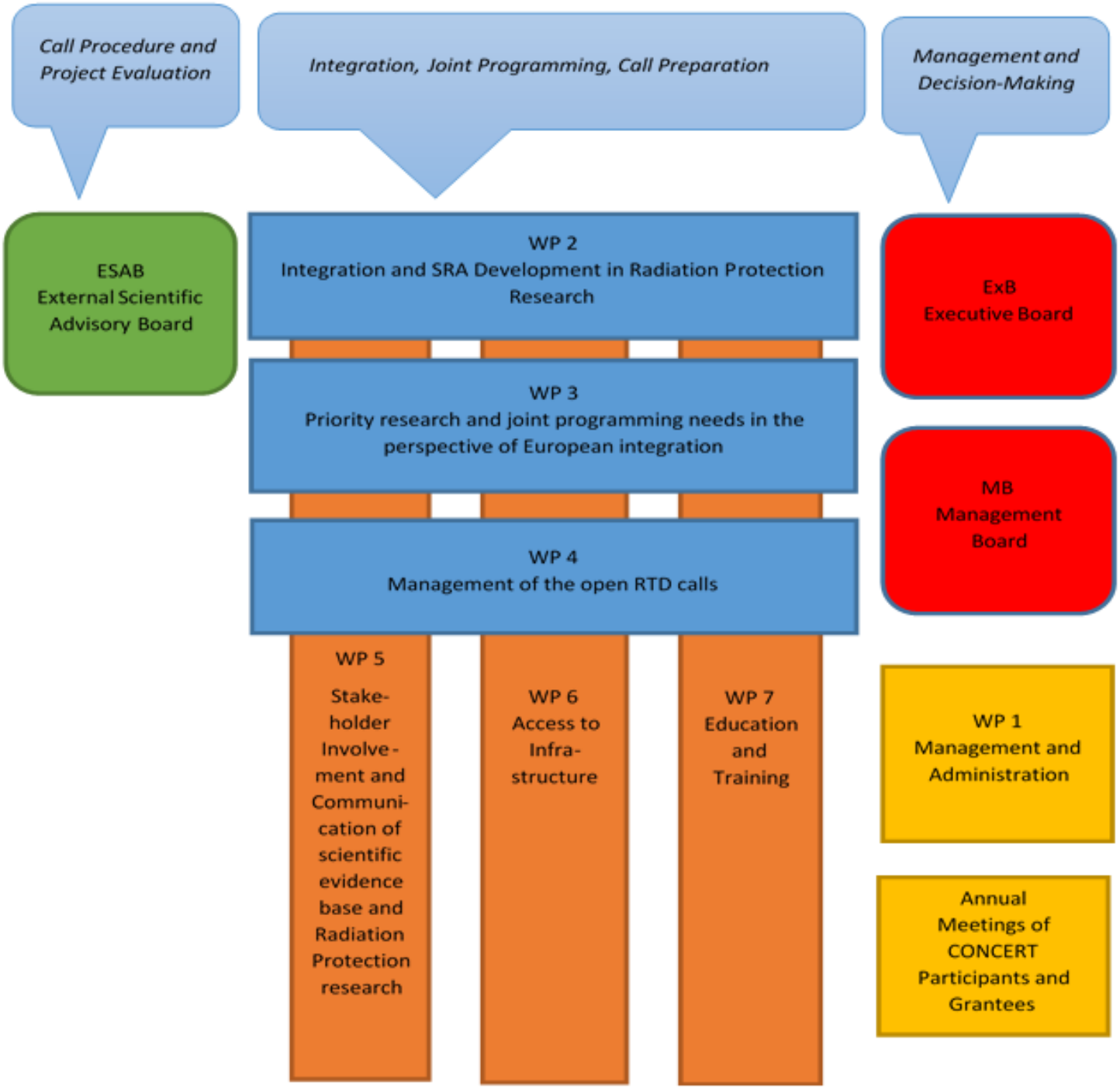

This project has received fundin

WP2: Integration and SRA development of radiation protection research

Task 2.1 - Development of Strategic Research Agenda, roadmap and priorities for research on low dose risk (MELODI)

Task 2.2 - Development of Strategic Research Agenda, roadmap and priorities for research on radioecology (ALLIANCE)

Task 2.3 - Development of Strategic Research Agenda, roadmap and priorities for research on emergency preparedness and response (NERIS)

Task 2.4 - Development of Strategic Research Agenda, roadmap and priorities for research on dosimetry (EURADOS)

Task 2.5 - Development of Strategic Research Agenda, roadmap and priorities for research with the medical scientific community

Task 2.6 - Creating Strategic Research Agenda on social sciences and safety culture in radiation protection

Task 2.7 - Research and innovation supporting the implementation of the revised European Basic Safety Standards

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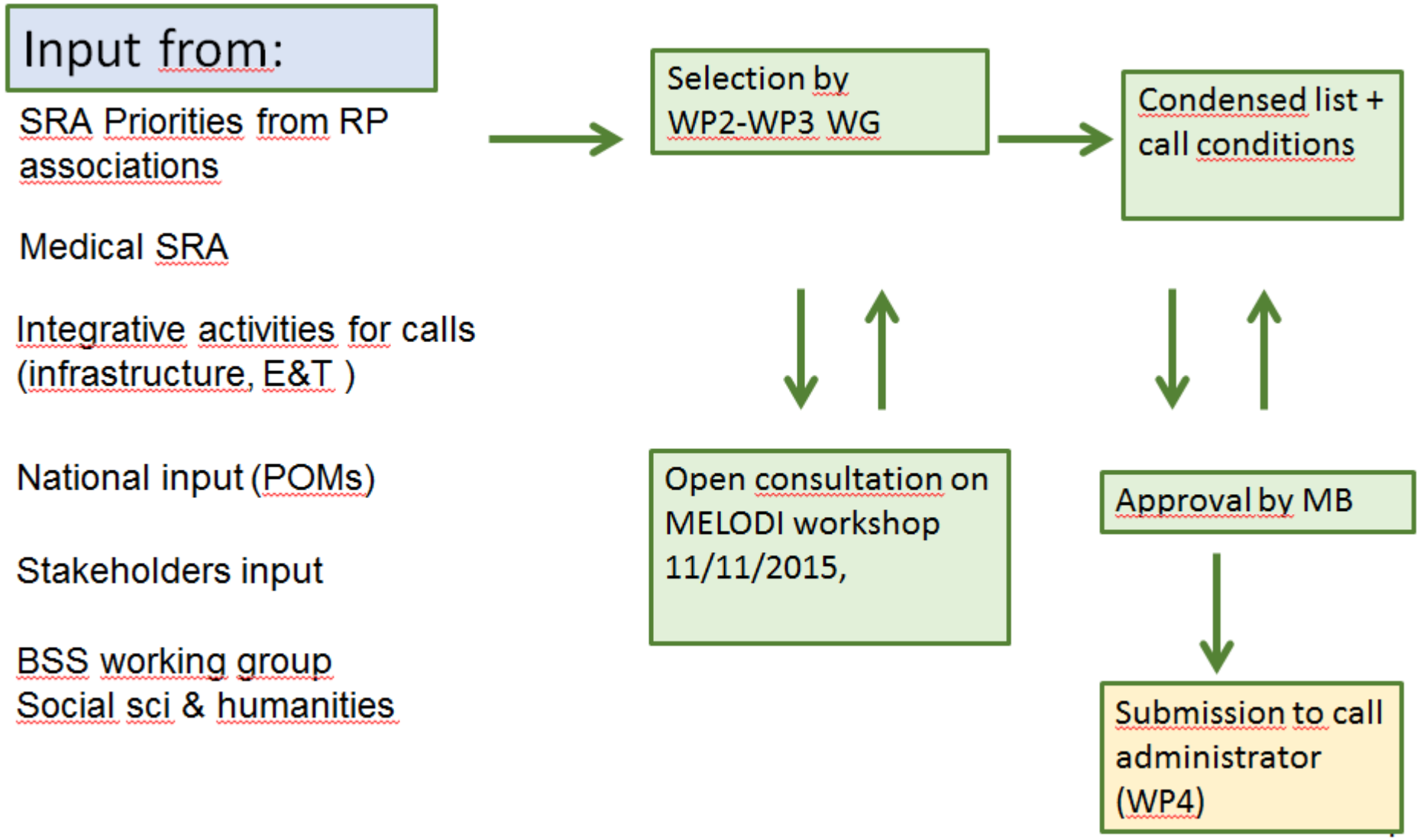
CONCERT 1st call preparation



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MELODI SRA Statement priorities

- **M1:** To explore the shape of the dose-response relationship for radiation induced health effects at low doses/dose-rates based on key informative epidemiological studies (including where appropriate, molecular or other biomarkers) for internal and/or external emitters, incorporating detailed dosimetric assessment.
- **M2:** To explore and define the role of epigenetic modifications in radiation-induced health effects following exposure to low doses/low dose rates.
- **M3:** To identify, develop and validate biomarkers for exposure, early and late effects for cancer or/and non-cancer diseases in relation to low doses/low-dose rates and to integrate them in molecular epidemiological studies.
- **M4:** To explore the roles of specific target cells for low dose/dose-rate radiation-induced late developing health effects such as cancers, circulatory diseases and cataract.
- **M5:** To understand the potential impact of individual susceptibility on radiation risk using cohorts and/or systems models with variations in sensitivity to low doses of radiation, so that differences in the response pathways can be detected and biomarkers validated.

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ALLIANCE SRA Statement priorities

- **A1**: Environmental availability and impact of radionuclides in terrestrial and freshwater ecosystems (including human food chain) and their interactions with atmosphere, incorporating physical, chemical and/or biological processes. Validated process-based model parameterisation, characterisation of variability and uncertainty, and guidance for fit-for-purpose models (**ranked as priority 1**)
- **A2**: Biomarkers of exposure and effects to living organisms as operational outcomes of a mechanistic understanding of intra- and inter-species variation of radiosensitivity to chronic low dose exposure situations (**ranked as priority 2**)
- **A3:** Development of models/tools, and datasets for their calibration and validation and guidance to select and evaluate the effectiveness of different remediation strategies in long-lasting exposure situations (e.g. nuclear accidents and/or NORM/TeNORM) (**ranked as priority 3**)
- **A4:** Multiple stressors and modulation of radiation effects in living organisms (**ranked as priority 4**).

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NERIS SRA Statement Priorities

- **N1:** Assessment of and communication of uncertainties. Investigation of data uncertainties (model or monitoring results) and how they can be communicated, e.g. in model results and in Decision Support Systems (DSS) to help decision-makers to understand the radiological situation. This includes also work on model sensitivity, validity of model results and inter-comparisons of models and measurements.
- **N2:** Robust decision-making. Structuring the decision processes and the protective strategies at national, regional and local levels with the help of formal decision aid tools, such as multi---criteria analysis and on the basis of feedback from stakeholder processes. Development of guidance on the use of DSS in the various phases of an event based on feedback from stakeholder processes and from Fukushima experience in emergency response and recovery.
- **N3:** Countermeasure strategy preparedness. Development of sustainable preparedness strategy at Local, National and European level, based on the analysis of countermeasures for relevant accident scenarios. Ensuring that parameters governing the radiological consequences can be identified in time to enable optimized remediation and contribute to the elaboration of robust recovery strategies.
- **N4:** Atmospheric dispersion modelling. To make more reliable forecasts of atmospheric dispersion, including data assimilation and improved inverse modelling (to determine source term and/or source location) in different environments (e.g. urban areas) and/or at different spatial scales (near range to global scale).
- **N5:** Local radio-ecological models. Development and integration in general DSS of local radio-ecological models interlinked with monitoring information and the more global and food chain dose models. Investigate the capability of such models to be operated by local stakeholders as farmers or local communities. Link with ALLIANCE.
- **N6:** Monitoring strategies. Optimised use of monitoring resources, including mobile units and trans-border issues. Integration of new monitoring technologies (e.g.; drones). Development of processes and tools for integrating the monitoring results from experts and lay people into a common operational picture (monitoring crowdsourcing). Information fusion (radiological and non-radiological). Link with EURADOS but focus on strategy and integration, less on the improvement or development of new measurement methods/techniques.

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EURADOS SRA Statement priorities

- **E1:** To quantify correlations between track structure and radiation damage
- **E2:** To improve neutron dosimetry techniques
- **E3:** To quantify doses after accidental internal contamination
- **E4:** To develop accurate and on-line personal dosimetry for workers
- **E5:** To improve the measurement and combination of out-of-field radiotherapy and imaging doses in photon and particle radiotherapy, for input to epidemiological studies
- **E6:** To improve dosimetry in modern external beam radiotherapy

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Medical SRA priorities

- MD1: Personalised dosimetry
- MD2: Biomarkers

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Input from national Programme Owners / Managers (POMs)

- POMs have been invited to formulate research priorities
- This resulted in
  - 38 topics from 9 POMs
  - 15 Comments from 6 POMs
- POMs are CONCERT MB members – having final word on priorities

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POM's priorities assessment by the RP platforms

Matrix with indication of interest

POM priority title	All	NERIS	EU	MEL	med	budg	durati	NERIS comments	MELODI Comments	Soc Ss H	EURA	MED comments	Alliance Comments
To explore immune- and inflammation-related mechanisms in the development of radiation induced late side effects such as various cancers and different degenerative disorders of the cardiovascular, central nervous and hematopoietic system		-		**M1 M2 M3 M4 M5**	MD2	3-4	4		**Link with M1, M2, M3,M4,M5 (keyword immune- and inflammation-related mechanism)**				
To explore the role of spatial inhomogeneity of radiation burden in cellular, tissue and health effects in case of internal exposure		-		**M1**		1-2			**Link with M1, because good dosimetry for internal exposure is a prerequisite**				Limited interest - re also improve wildlif
Biokinetic models for incorporated radionuclides		-	E3	M1	MD1	4-6 par	3-4		Link with M1, because good dosimetry for internal exposure is a prerequisite				Some interest - A r of RNs in organism and improve dosim
Secondary Neutrons Issues in Modern Radiotherapy Applications		-	E5 E2 E6	M1 M2 M3 M4		4 partn	3-5		Small link with M1, M2,M3, M4 in case of Medical epi/biology study	implicit link to SSH			
Source term estimation with external and in-plant data		**N4**				4-6 partners							
Radioprotection and nanotechnology: a case for a converging technology approach towards innovation.		-	E1		MD3	2	3-5					quite special	
Medical Radiation Protection: Integrating Radiobiology, Dosimetry, Epidemiology and Modelling		-	E5	M1 M5 M3	MD1 MD2	6-8	3-5		Strong link with M1,M5, M3				
Nano and microdosimetry research for radiological applications		-	E1		MD1	1	3-4						
Environmental availability of radionuclides in the biosfere and their impact on wildlife and human food chain. Process-based model parameterization, characterization of variability, uncertainty assessment and communication	A1 A3	N5 N1		M1		2-4	3-5		Indirect link to M1 with respect to good dosimetry in environmental epi studies	implicit link to SSH			Strong link with A1
Development of tools, datasets and guidance to select and													

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Match between platforms' and POMs' priorities

- Platforms investigated the POM's priorities and comments, and identified the relationship/similarity to their own priorities
- 34/38 priorities were identified to be at least partially covered by the priorities in the statements of the associations
- Many of them were even recognised by several associations
- 1 about E&T

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CONCERT MB decisions Sept 2015

- Platforms invested a lot of time for the process of defining priorities
- In the final call text the priorities should show up
- The number of call topics could be 2 – 4
- Avoid overlap with other calls (Euratom, EURAMET)
- Consider number of proposals expected per topic; 4-8 fold oversubmission is optimal, just one not good.

✓A structured approach needed to define the priorities for the 1st CONCERT call

✓Setup of a WP2-WP3 working group representing platforms and task leaders of WP2 and WP3

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CONCERT WP2-WP3 working group

WP3 leader, chair of the WP2-WP3 working group	Nathalie Impens	SCK•CEN
WP2 leader, secretary	Sisko Salomaa	STUK
WP2, secretary	Liisa Sirkka	STUK
MELODI chair	Jacques Repussard	IRSN
MELODI SRA WG	Michaela Kreuzer	BfS
ALLIANCE chair	Hildegarde Vandenhove	SCK•CEN
ALLIANCE SRA WG	Jacqueline Garnier-Laplace	IRSN
ALLIANCE secretary	Almudena Real	CIEMAT
NERIS chair	Thierry Schneider	CEPN
NERIS SRA WG	Johan Camps	SCK•CEN
NERIS + Task 3.1.3	Wolfgang Raskob	KIT
EURADOS chair	Werner Rühm	HMGU
EURADOS vice chair	Filip Vanhavere	SCK•CEN
Task 2.5.1 Medical	Christoph Hoeschen	HMGU
Task 2.5.2 Medical + WP7 E&T	Vere Smyth	UNIPV
Task 2.5.2 Medical + WP7 E&T	Andrea Ottolenghi	UNIPV
Task 2.6 Social sciences	Tanja Perko	SCK•CEN
Task 2.6 Social sciences	Catrinel Turcanu	SCK•CEN
Task 2.7 BSS	Katalin Lumniczky	OSSKI
Task 3.1.2	Imre Balashazy	MTA-EK
OPERRA Coordinator	Jean-René Jourdain	IRSN

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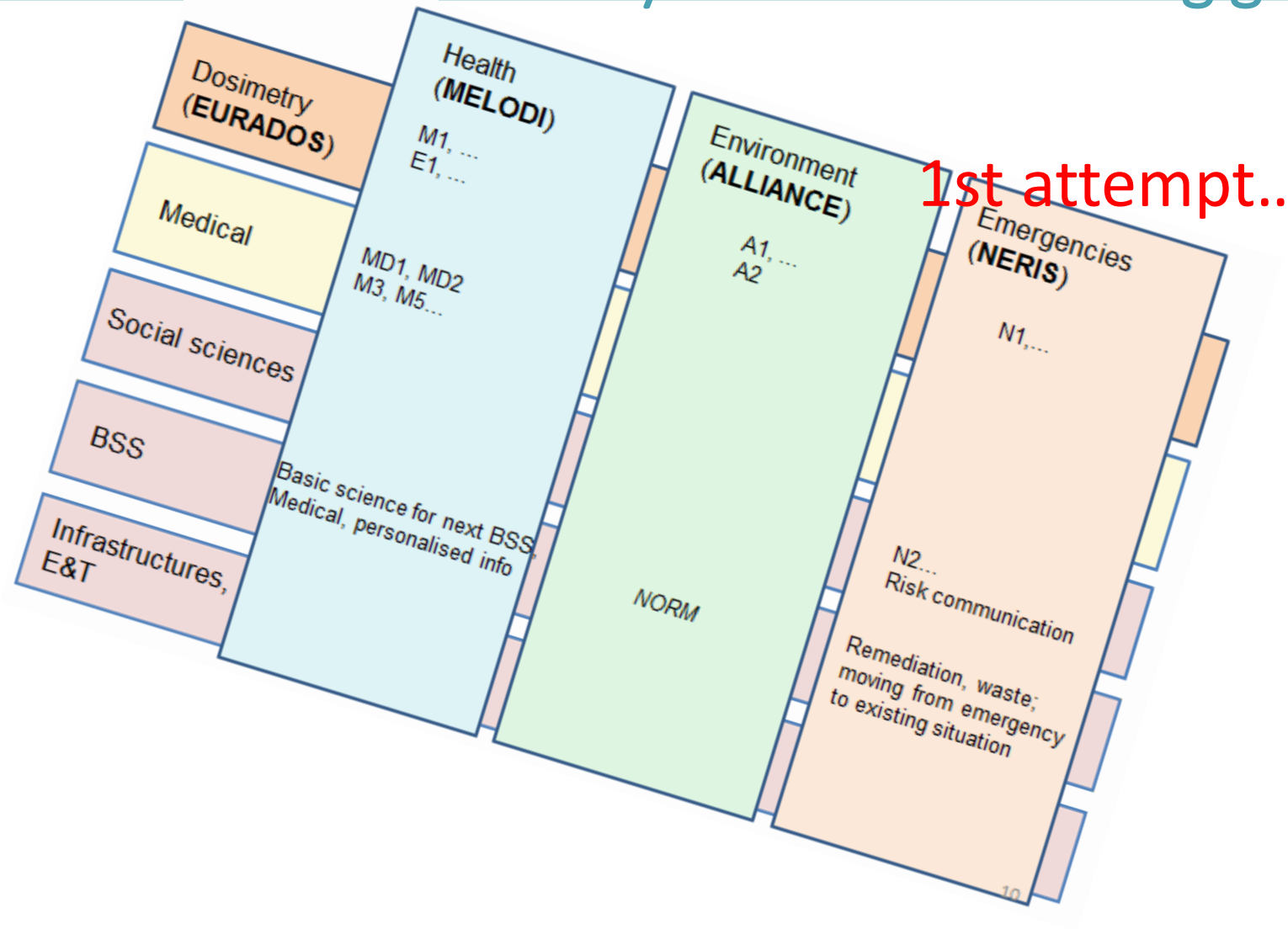
Brainstorming on joint priority definition by WP2-WP3 working group



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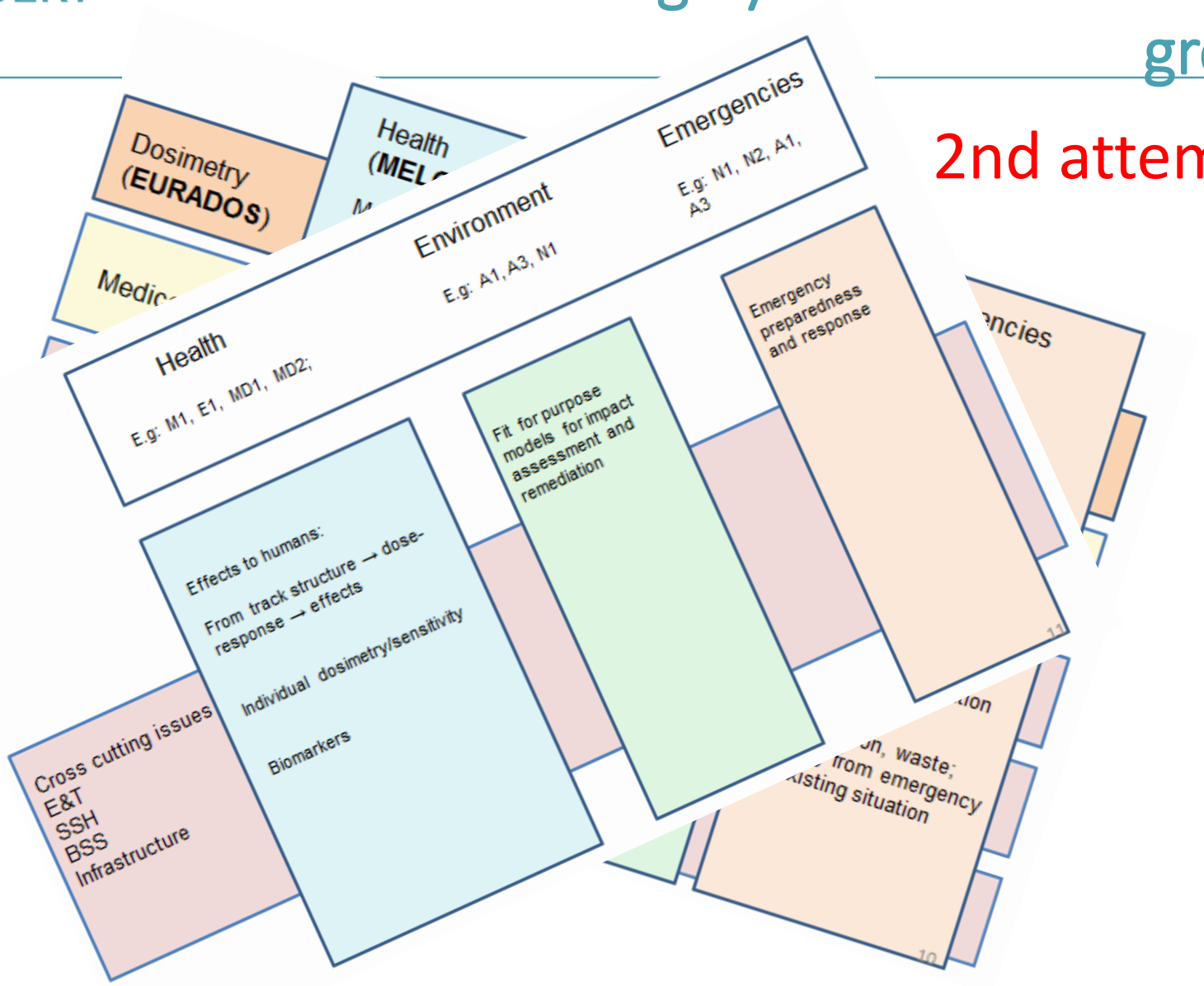
Brainstorming by WP2-WP3 working group

2nd attempt…



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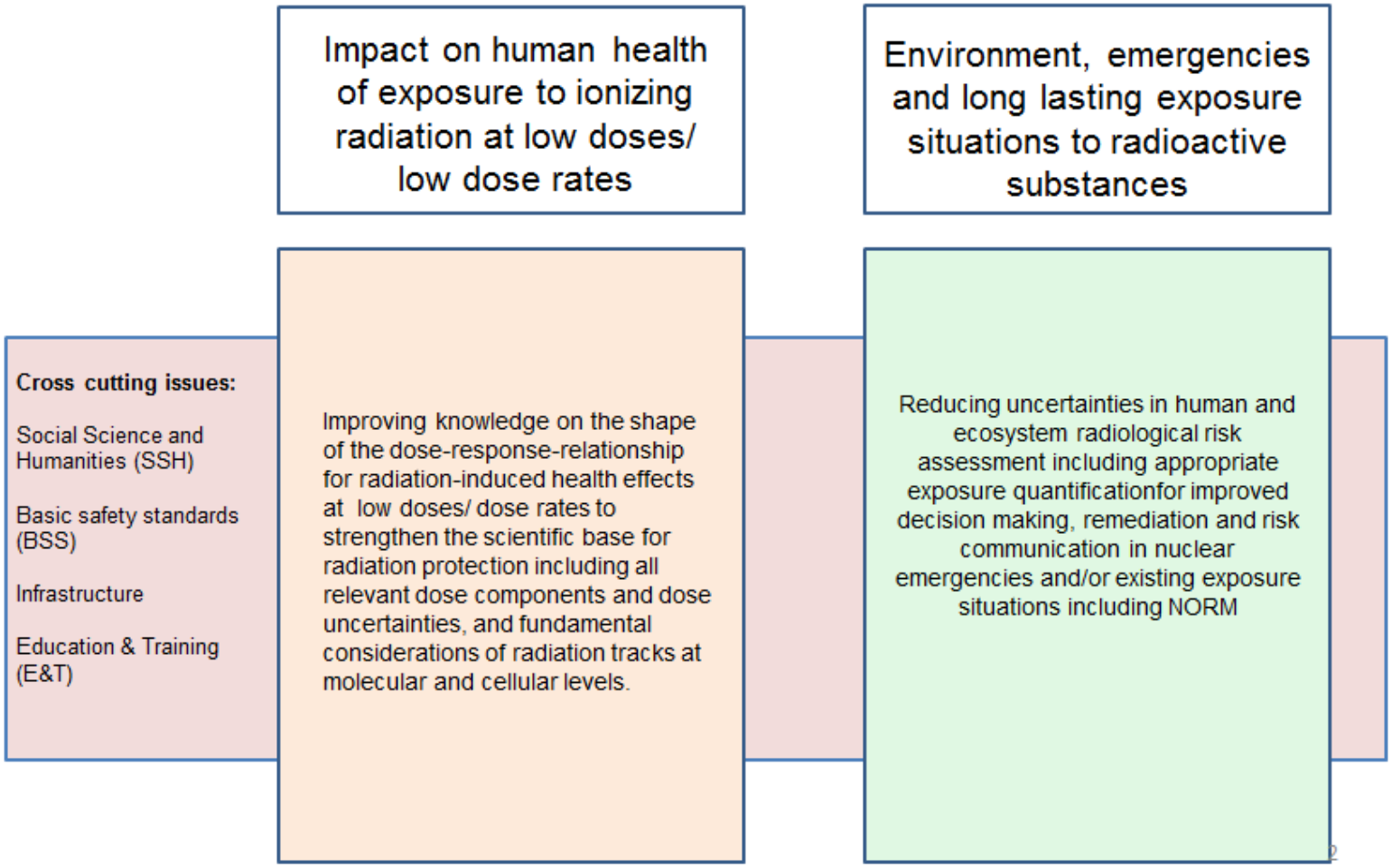
Proposal to MB on 16/10/15

Scientific priorities responding to society's concerns



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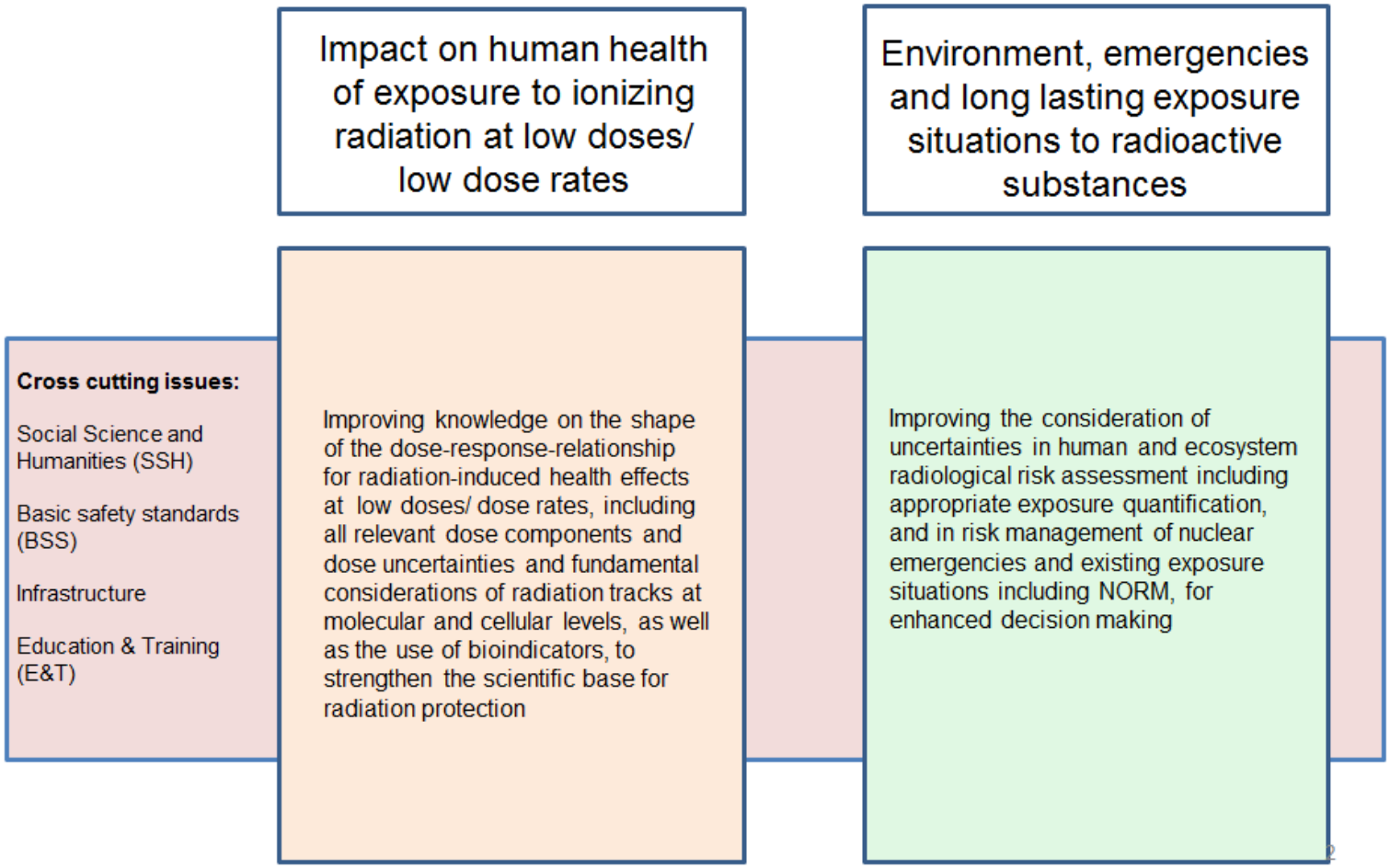
Adapted proposal after MB consultation by e-mail

Scientific priorities responding to society's concerns



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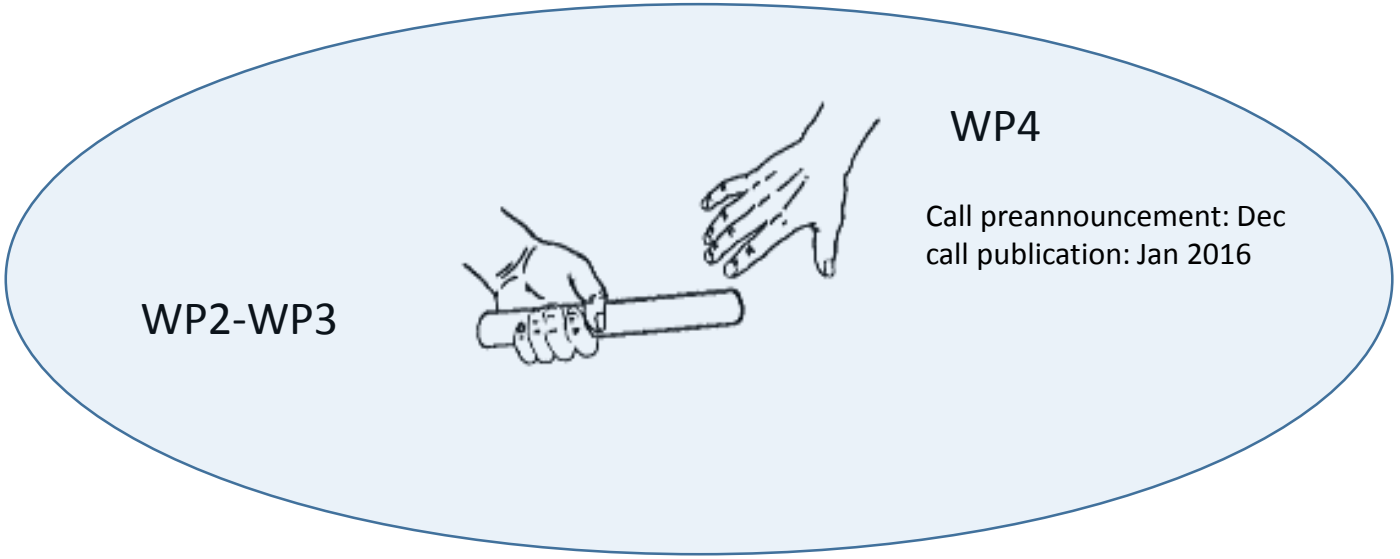
MB decisions 12/11/2016

- Detailed priority texts were provided to the MB 2 weeks before the MB meeting.
- Approved by the MB
- Call conditions discussed



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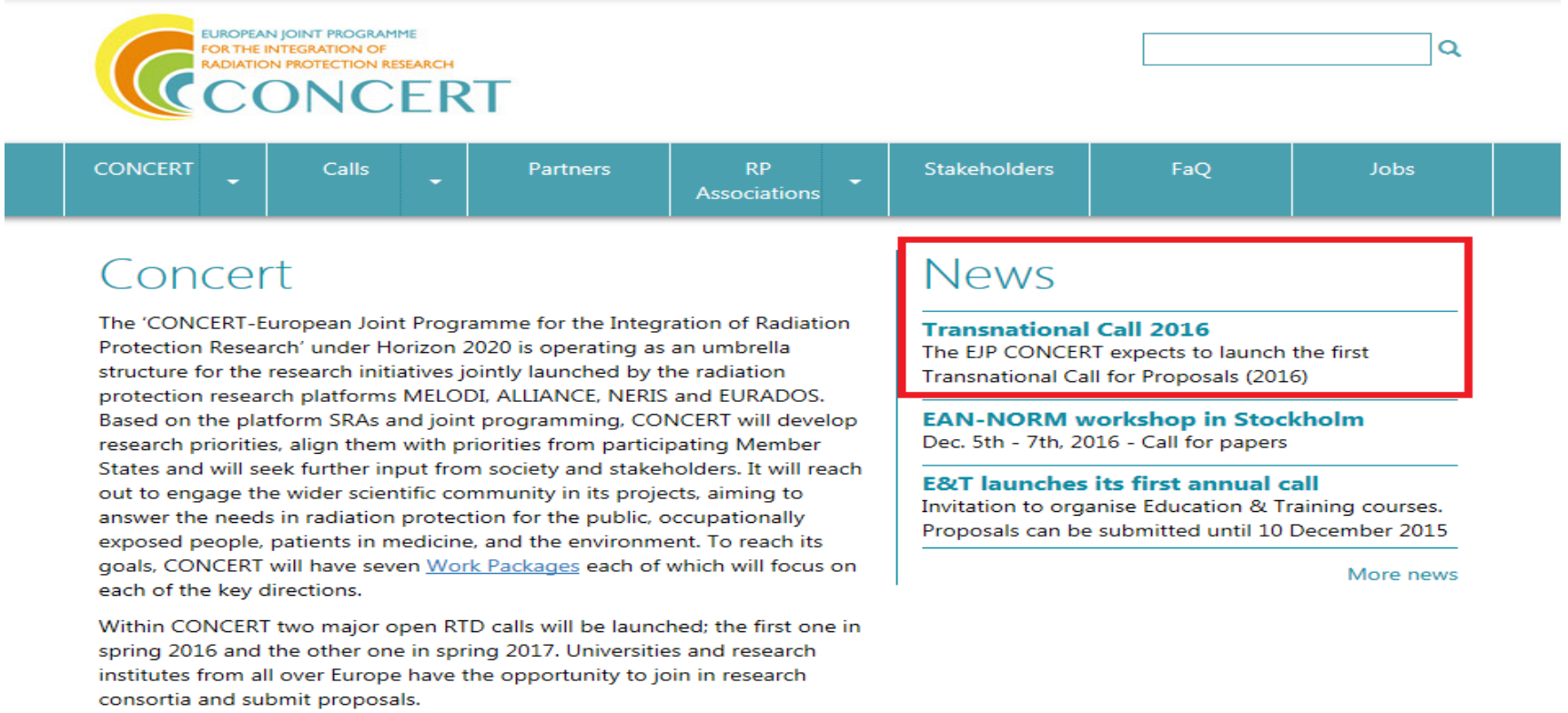
CONCERT call information

- http://www.concert-h2020.eu



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