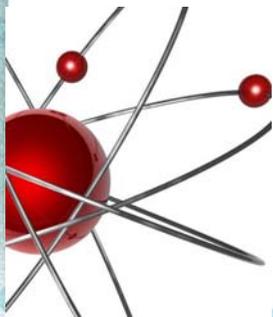




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# **Integration of Social Sciences and Humanities in European radiation protection research**

**Jacques Repussard  
President of MELODI**



**RICOMET Bucarest June 2016**

# Damaging knowledge gaps

- Doubts about the robustness of the European radiation protection system at low dose exposures
- Confusion in public opinion between a precaution-based regulatory system and the actual existence of health risks at low dose/dose rate exposures (LNT « syndrome »)
- Poor judgement outside the professional sphere about the hierarchy, prevalence and prevention of radiological risks can lead to inadequate risk management decisions
- Unresolved issues of radiation protection optimisation, including in the medical field (individual sensitivity, damage to healthy tissues associated to radiotherapy, advanced protocols such as proton therapy),

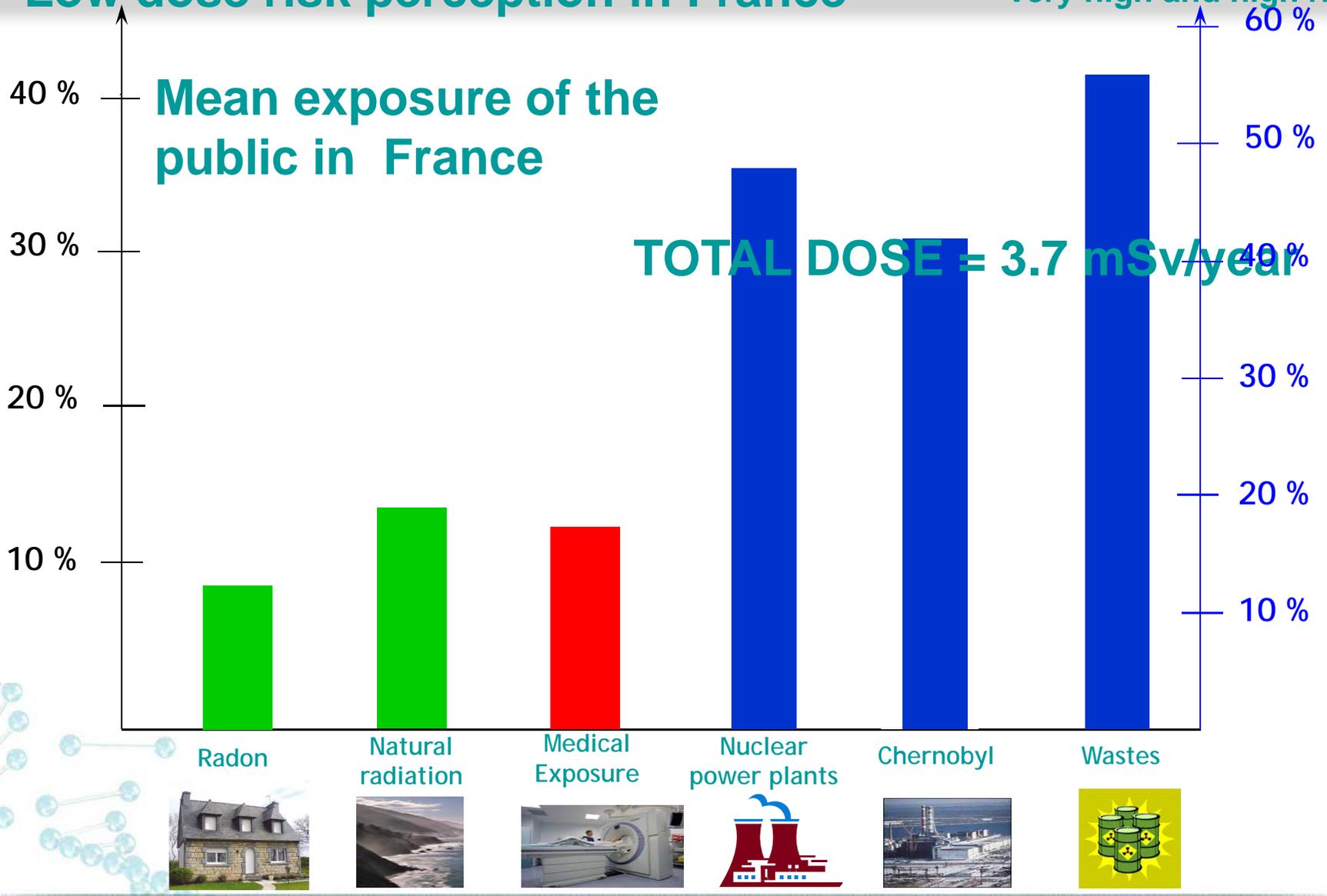


# Radiation risk to the public and how this is perceived by the public

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## Low dose risk perception in France

% answers :  
Very high and high risk



## 4 key challenges

Closing such knowledge gaps is an ambitious target for RP research which requires to:

- Enhance multidisciplinary
- Develop a holistic research strategy
- Secure stable funding
- Integrate societal aspects in the R&D scope



# The EURATOM response: European integration of R&D

## Why?

- Improve the radiation protection system for low dose / dose rate exposures (MELODI)
- Better understand the behaviour and effects of radionuclides in the environment and on ecosystems (Alliance)
- Improve radiological preparedness for large scale pollutions (NERIS)
- Provide excellence in radiation measurements techniques and related dose estimations (EURADOS)
- Optimize the use of radiations for medical applications
- **Help society in its interaction with radiation risk**



# The EURATOM response: European integration of radiation protection R&D

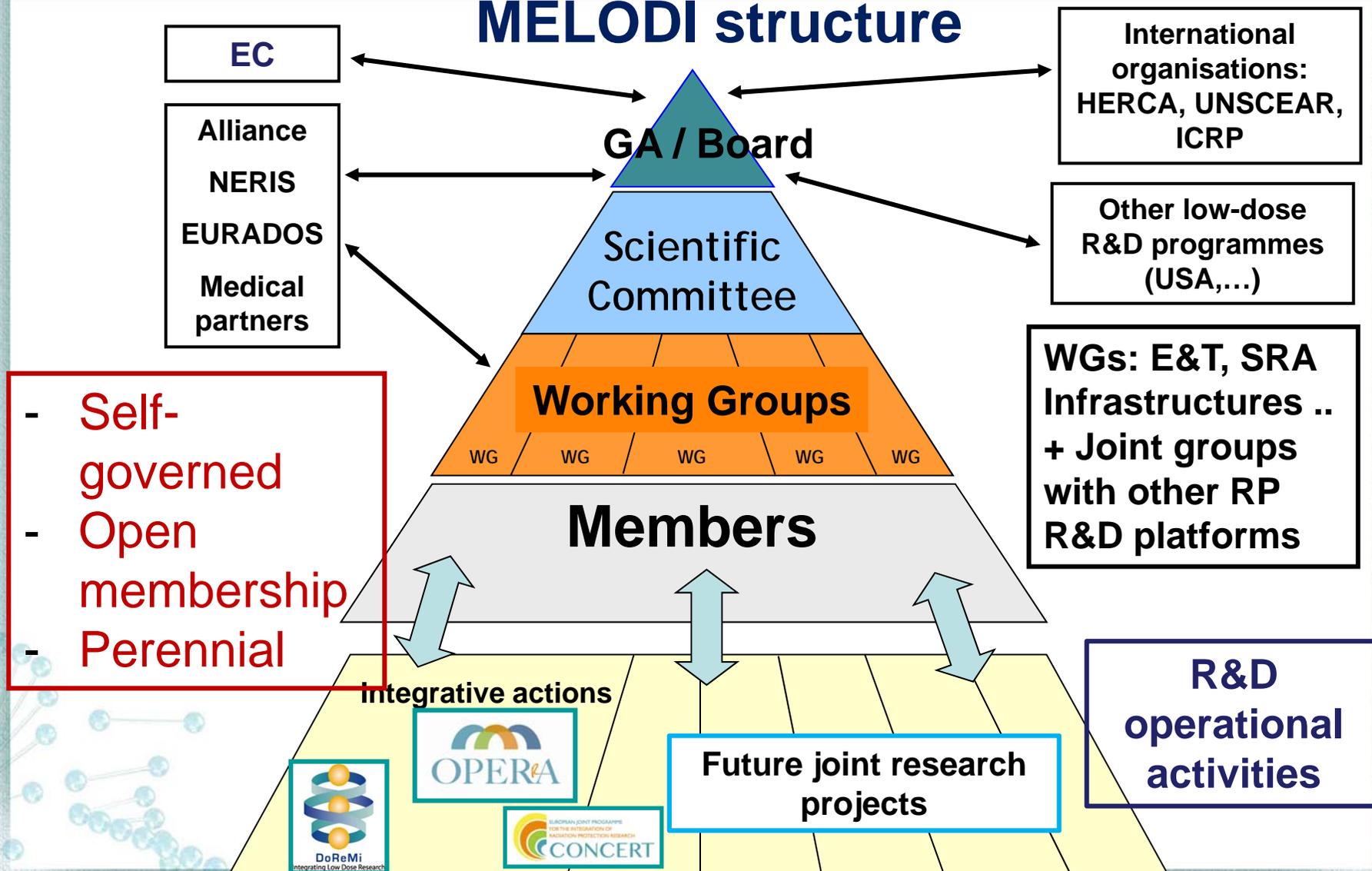
## How?

- 1 Formalize *overarching questions* to science from society with a holistic perspective: ***done with HLEG Report for the low dose issues***
- 2 Develop concerted *thematic SRAs*: ***partly done by MELODI and other platforms***
- 3 Open periodic *thematic RTD calls* (EC+ National funding) based on elements of *questions* and relevant elements of *thematic SRAs*: ***experimented with OPERRA and CONCERT projects***
- 4 Create, select and fund *multidisciplinary consortia* to operate R&D: ***first OPERRA funded consortia approved***
- 5 Involve more *medical research teams* ***OPERRA/ CONCERT***
- 6 Analyse feed back from *results* and assess *impact*, Train and educate: ***being developped in OPERRA and CONCERT***

# The EURATOM integration concept : platforms + projects

Platforms Projects	MELODI	Alliance	Neris	Eurados [Euramet]	Medical [Health]
DoReMi	██████████				████
Comet		██████████			
Prepare			██████████		
OPERRA	██████████			██████████	████
Concert EJP	██████████			██████████	████
Programme 2016/2017	██████████			██████████	████

## MELODI structure



# SSH strategic challenges

- On the basis of society's needs (information, dialogue, access to expertise and decision processes), learn how to respond efficiently, taking into account countries' different cultures,
- Adapt the knowledge and behaviour of RP experts and researchers to risk evaluation & management practice to an « active society » needs,
- Benchmark and continuously improve interaction mechanisms with society



# SSH Integration: a way forward (1)

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## Integrate SSH with other RP sciences:

Develop a MOU between existing RP RP research platforms to promote and support SSH related actions

- Policy commitment
- A sustainable « SSH Core Group » of scientists
- Contributions to SRA's and other actions/projects
- Platforms interaction with stakeholders and society
- Adhesion of SSH R&D centres to the Platforms



## SSH Integration: a way forward (2)

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Institutions forming the « SSH Core Group » could join the future Energy SSH Platform promoted in H2020 programme:

- Nuclear risk issues should also be considered in the wider context of societal questioning on energy in the 21st century
- A critical number of SSH researchers from different horizons would justify a sustainable SSH Energy Platform (statutes, funds, admin)



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# Summary

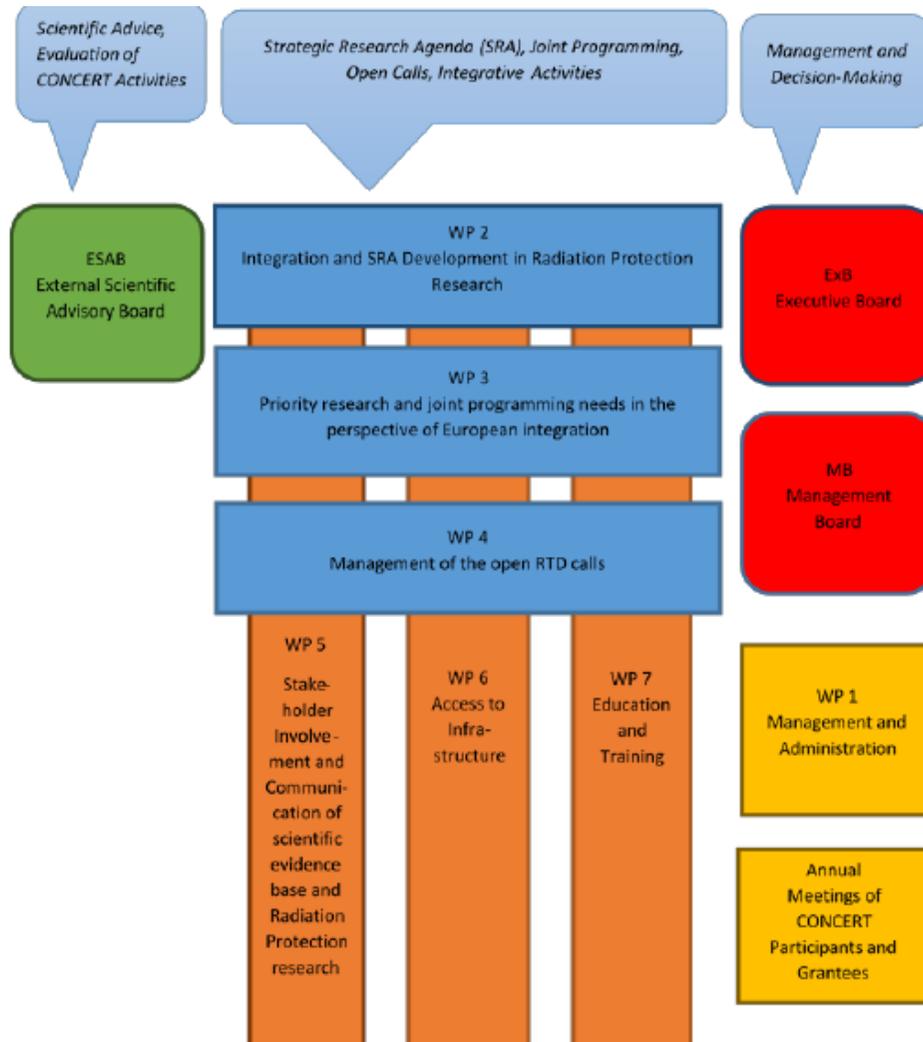
- SSH are disciplines essential to the successful resolution of scientific/societal questions raised by low dose exposures
- EURATOM has initiated a successful strategy of integration of research, combining sustainable, self-governed, coordinated Platforms with competitive RTD projects
- RP Platforms – at least MELODI- would welcome a new step forward to enhance the role of SSH, by developing an ad-hoc MOU.
- This MOU could be extended to NUGENIA / IGD-TP.
- EURATOM SSH Group could form part of a European Energy SSH Platform



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**Thank you for your attention**

# The latest EURATOM project: EP CONCERT



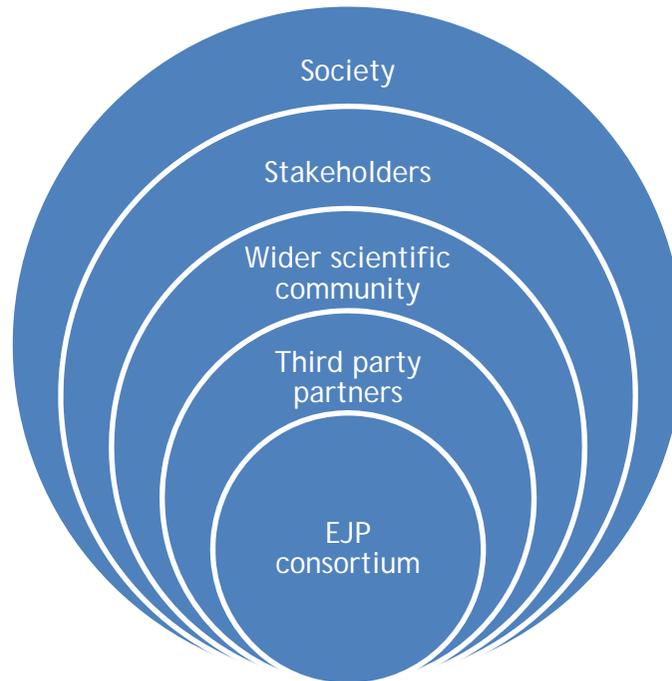
## CONCERT EJP

European **Concerted**  
Programme on  
Radiation Protection  
Research  
a **European Joint**  
Programme

- Supporting integration
- Funding research
- Limited duration

# CONCERT: an innovative two way street to integration

Spreading excellence, multidisciplinary, and state of the art knowledge through cooperation, competitive open calls processes, communication



Listening to needs, expression of priorities and innovative ideas, through appropriate mechanisms

# CONCERT Funding Scheme

- 70% EURATOM + 30% National co-fund by the EJP Partners (in total around 27 M€)
- 60% (16M€) for two CONCERT open research calls (End of 2015 and end of 2016)
- 30% (8M€) for CONCERT integrative activities (joint programming, stakeholder engagement, access to research infrastructure, E&T etc.)
- 10% (3M€) for administration and management



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## MELODI SRA frames a holistic strategy with 3 Key questions + 3 research paths (from the cell to the whole organism)

- Dose/dose rate dependance of cancer risk?
- Threshold exposures for protection from health risks other than cancer?
- Reliable methods for identifying individual radiation sensitivity, and addressing related ethical issues?



## MELODI SRA frames a holistic strategy

3 Key questions; 3 research paths  
(from the cell to the whole organism)

- Radiobiology research to improve understanding of mechanisms contributing to radiation risk
- Epidemiology Research to integrate biological indicators into radiation risk evaluation
- Radiation protection research to better understand the specifics of internal or inhomogeneous exposures, and of different radiation qualities



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# Progress report

- A review of results achieved in the last 4 years will be presented at the 7th Open MELODI Workshop, in Munich 9-11 2015
- Success in the launch of the new and sophisticated CONCERT Project
- Request by the US Congress to the Government to elaborate a new scientific strategy for low dose research
- « J-MELODI » launch initiative in Japan



# Contents

- Damaging knowledge gaps
- 4 key challenges for research
- The EURATOM response
- **Contribution from and benefits for the medical scientific community**
- **How to optimise national input**
- **Conclusion**



MELODI

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## Contribution from and benefits to the medical scientific community

- Controlled exposure of patients: R&D will benefit from the input of medical disciplines and from a unique and high quality patients / dosimetry data
- Radiobiology and epidemiology: R&D will benefit both medical research and radiation protection science
- Imaging and therapy protocols: R&D will accelerate the development and acceptability of advanced optimized protocols

# The “medical MOU”

- **Signed in 2014 between: MELODI, EURADOS, ESR, EANM, EFRS, ESTRO, EFOMP and notified to the European Commission**
- **Signatories commit to cooperate to promote integration and efficiency of European radiation protection research, to maintain and use common infrastructures and to promote scientific E&T**
- **Signatories set up a Joint Committee and WGs to address this cooperation, and agree to develop mutual information**



# Towards a “medical thematic”

**Question(s) from Society to be made explicit:**  
science to support the optimized use, in RP terms, of ionizing radiation for medical applications of advanced healthcare technologies (*vectorised radiotherapy as an example*)

**SRA development:** in order to benefit from past efforts and avoid duplication, rely on the cooperative mechanism of the MOU, with resource support from OPERRA; take care to also avoid duplication with Health R&D

## The way forward together with the medical scientific community

1. A medical Radiation Protection SRA complementing MELODI and EURADOS SRA (OPERRA WG)
2. The link to medical research: A complementary platform, or an extension of MELODI for accomodating programmatic dialogue on medical related low dose R&D issues?
3. How to progress from the existing MOU to an operational structure: a new joint initiative from MELODI towards medical associations?

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# How to optimise national input

- Encourage active participation in the platforms (research institutes, academia, medical R&D)
- National co-ordination to orient available funding to operate in synergy with European SRA's on selected national priorities (an « imbedded » element for EJP operations)
- Accept and even encourage specialisation in order to reach excellence at European level
- Support national R&D teams and infrastructures to participate in open calls

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## Next steps towards a “medical thematic”?

- **“medical RP” oriented EURATOM thematic call, possibly in conjunction with the Health Program (end 2015), drawing upon the mix of MELODI, EURADOS and draft Medical SRA, on the basis of OPERRA deliverables**
- **Consolidation of Medical RP SRA, development of an associated platform gathering the relevant scientific community, within CONCERT, leading to further thematic integrated calls**



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## Example of the MELODI thematic 2

**MELODI SRA also proposes three complementary R&D paths:**

- Improve understanding of mechanisms contributing to radiation risk at low dose /dose rate**
- Epidemiological studies that integrate development of informative biological risk indicators**
- Investigate specificities of effects and risks related to internal exposure, radiation quality and inhomogeneous exposures**



# Example of the MELODI thematic 1

**Question:** is the RP system pertinent for low dose/low dose rate exposures (<100 msv)?

**SRA** : based on *three key research questions*: Dose dependence of cancer rate for low exposures?

Appropriate thresholds for non cancer health risks?

Reliable methods to address issues of individual sensitivity?