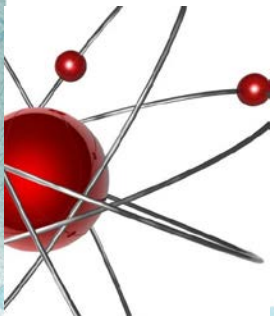


# **Opportunities for health projects under EURATOM programme and other related initiatives**

**Jacques Repussard  
President of MELODI**



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# 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, mainly in the medical field (individual sensitivity, damage to healthy tissues associated to radiotherapy, advanced protocols such as proton therapy),

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## 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
- Include societal aspects in the R&D scope

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# The EURATOM response: European integration of radiation protection 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 Extend the involvement of *medical research teams* ***OPERRA***
- 6 Analyse feed back from *results* and assess *impact*, Train and educate: ***being developed 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	██████████			██████████	██████████

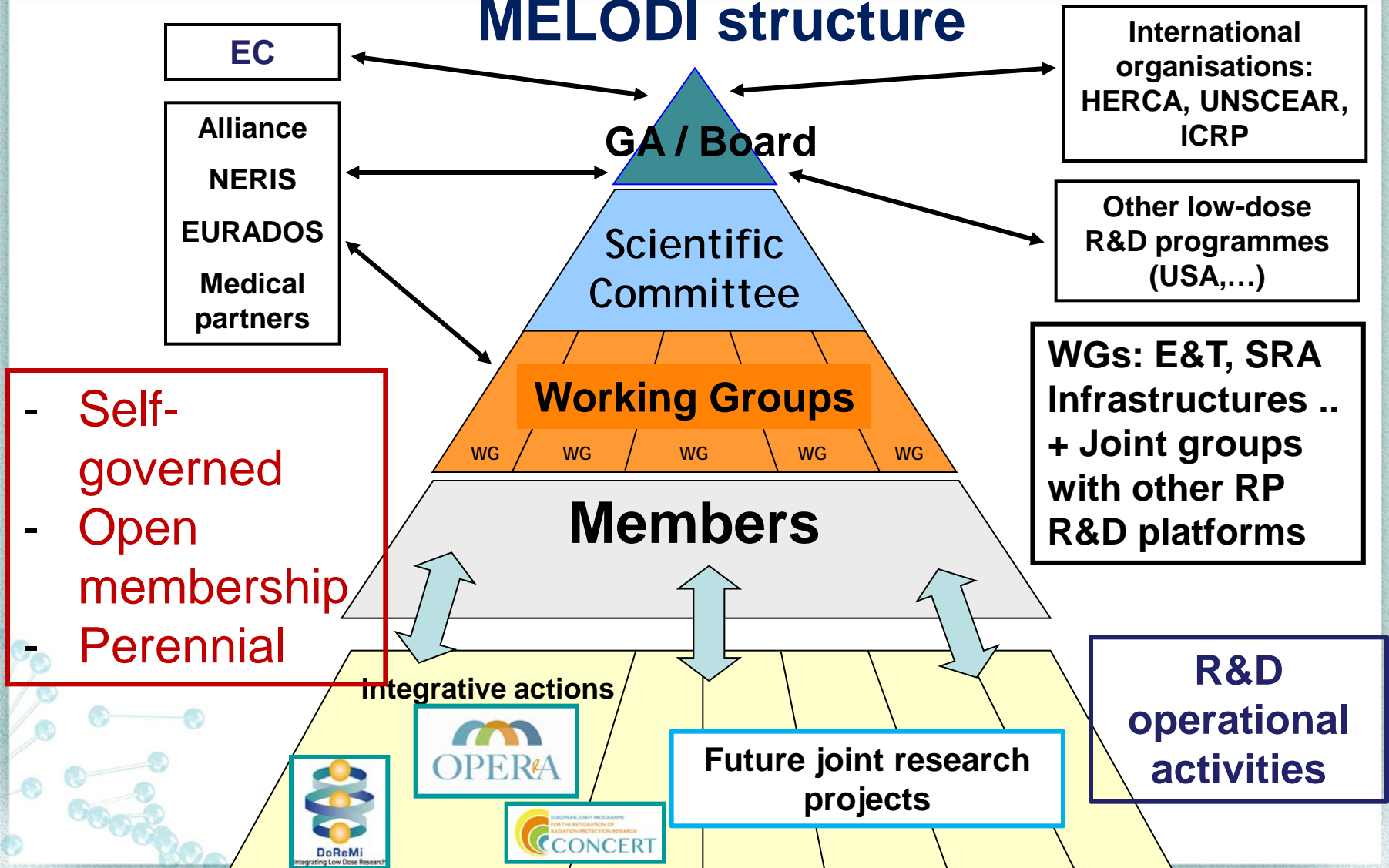


# MELODI: an example of a european R&D associative platform

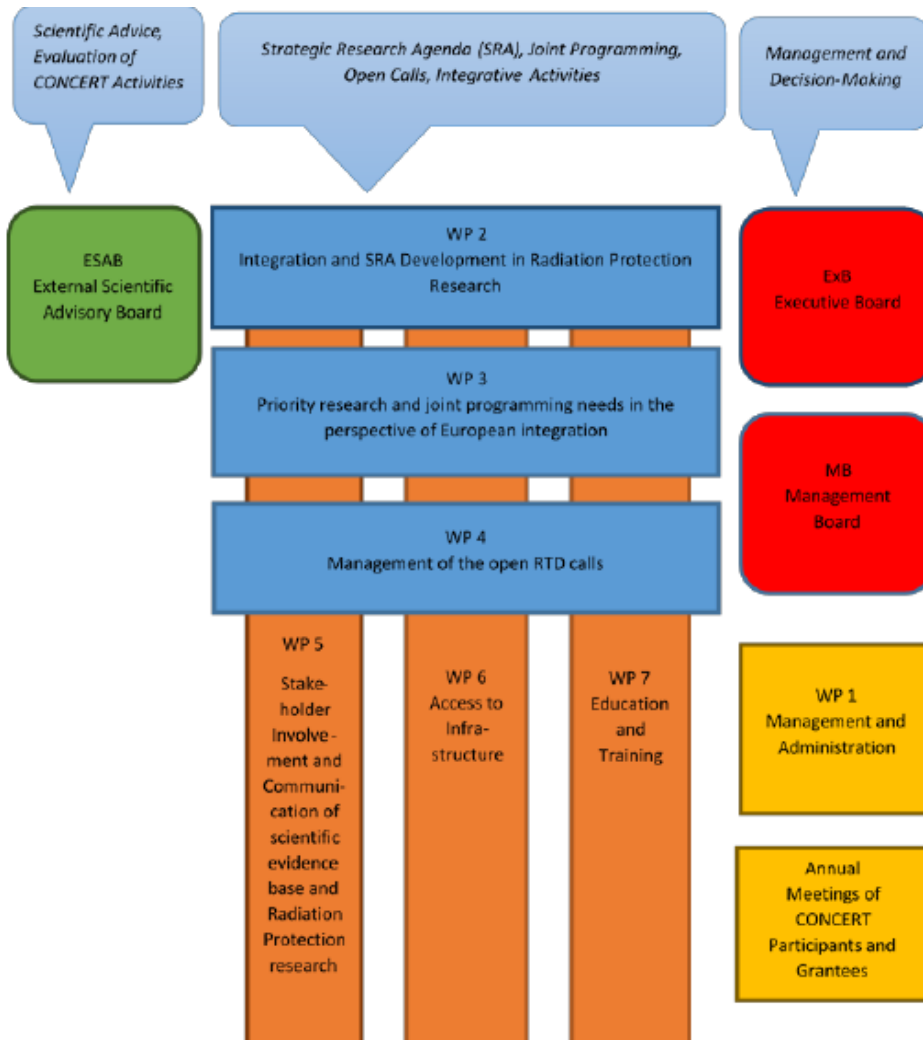
**MELODI**

Multidisciplinary European Low Dose Initiative

## MELODI structure



# The latest EURATOM project: EP CONCERT



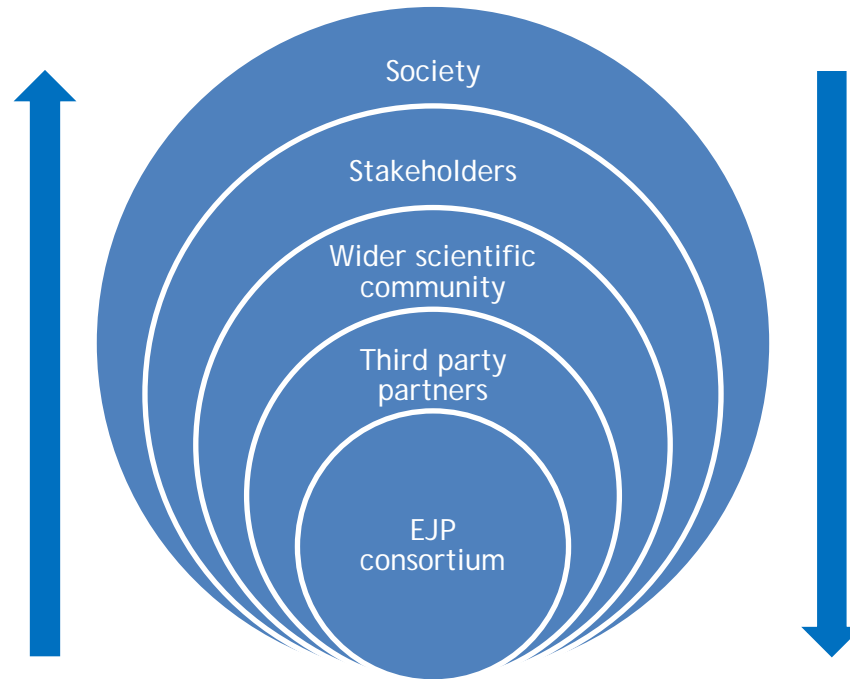
## CONCERT EJP

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

# 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

# Progress report

- A review of results achieved in the last 5 years will be presented at the 8th Open MELODI Workshop, in Oxford 20-23 sept 2016
- Success in the launch of the new and sophisticated CONCERT Project
- « J-MELODI » launch initiative in Japan
- EURATOM NFRP9 2016/2017: an opportunity to bring together the medical and nuclear R&D communities



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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: Towards a Medical Platform for imaging/therapy radiation protection research issues, acting in close cooperation with MELODI and EURADOS
3. response to NFRP9 EURATOM call: a demonstration project bringing together the scientific communities?

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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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# Conclusion

- With its strategy, Europe is now several years ahead of The US and Japan in RP R&D
- A very powerful R&D instrument is getting more and more operational every day: results will come
- To reach the ambitious goals, stability of R&D policies at European and national levels will be required for at least a decade
- This stability will also depend on the on-going support by the scientific communities to the Platforms such as MELODI,
- **Please join the Platforms !**

**Thank you for your attention**

# 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**

# 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?