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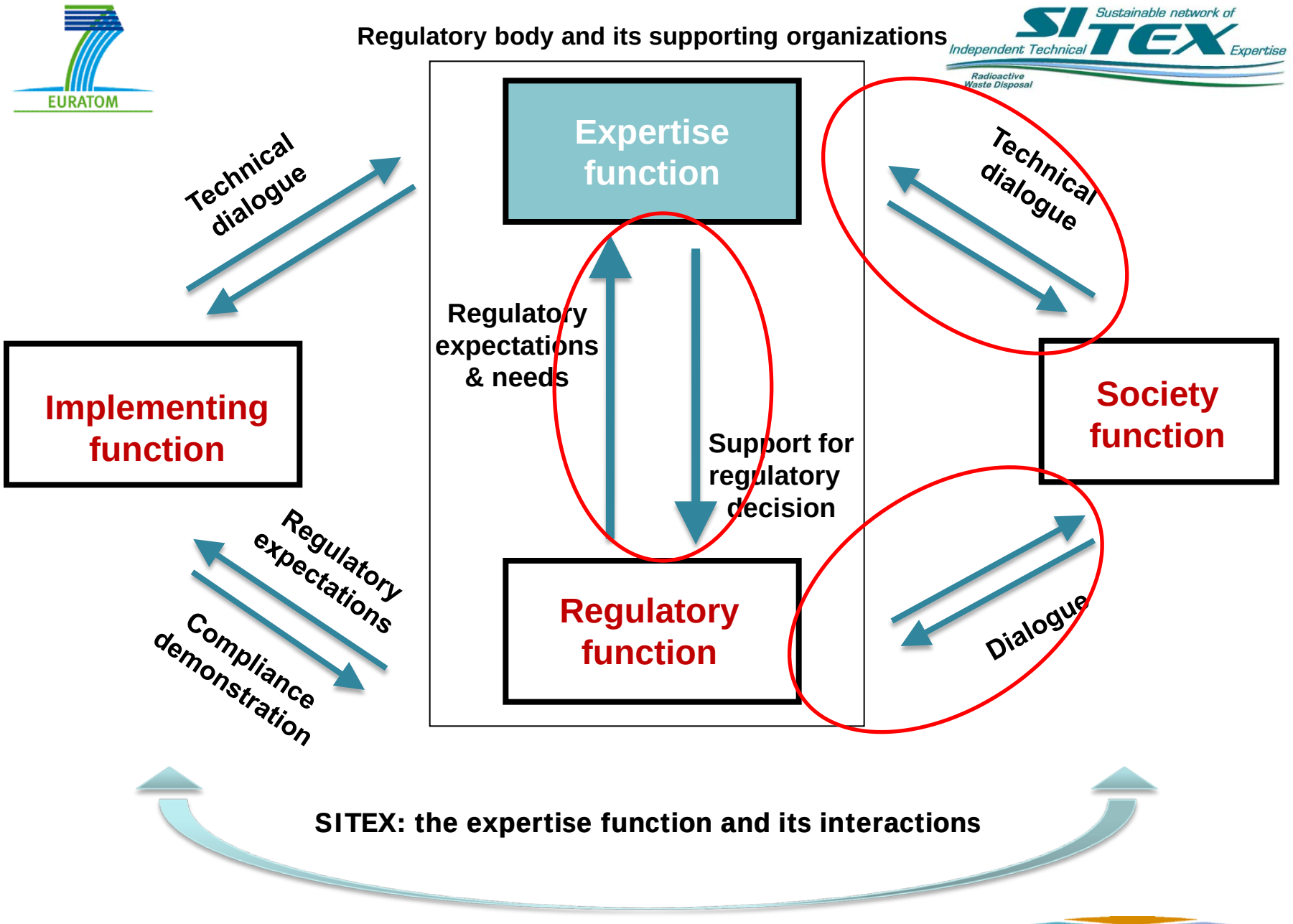
Sustainable Network of Independent Technical Expertise for Radioactive Waste Disposal

Objectives

- To define the conditions and means (TOR and road map) for establishing a coordinated European (and possibly international) workforce ensuring a sustainable capability to provide a technical and independent expertise in the field of radwaste management safety and radiological protection,

- Coordinated Action; January 2012 – December 2013

- http://sitexproject.eu/


Regulatory body and its supporting organizations
Expertise function
Technical dialogue
Technical dialogue
Regulatory expectations & needs
Support for regulatory decision
Implementing function
Society function
Regulatory function
Regulatory expectations
Compliance demonstration
Dialogue
SITEX: the expertise function and its interactions

Cartography

IGD TP

EXCHANGE MEETINGS

INSOTEC
IPPA

WORKSHOP

End users =
SOCIETY

IRSN
GRS
UJV
BelV
LEI
DECOM
NRG

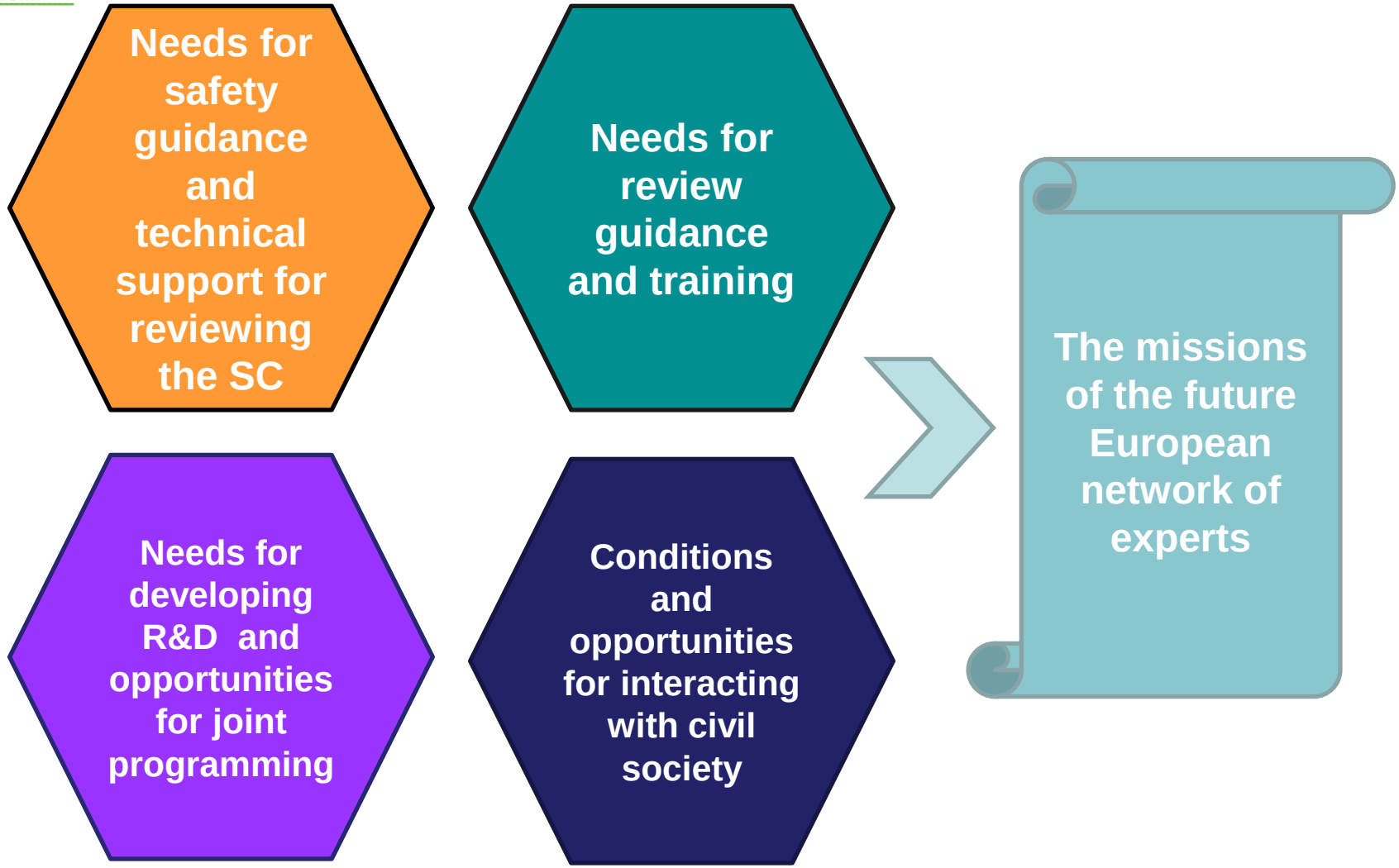
FANC
ASN
SSM
ENSI
CNSC
ELI

ENSTTI

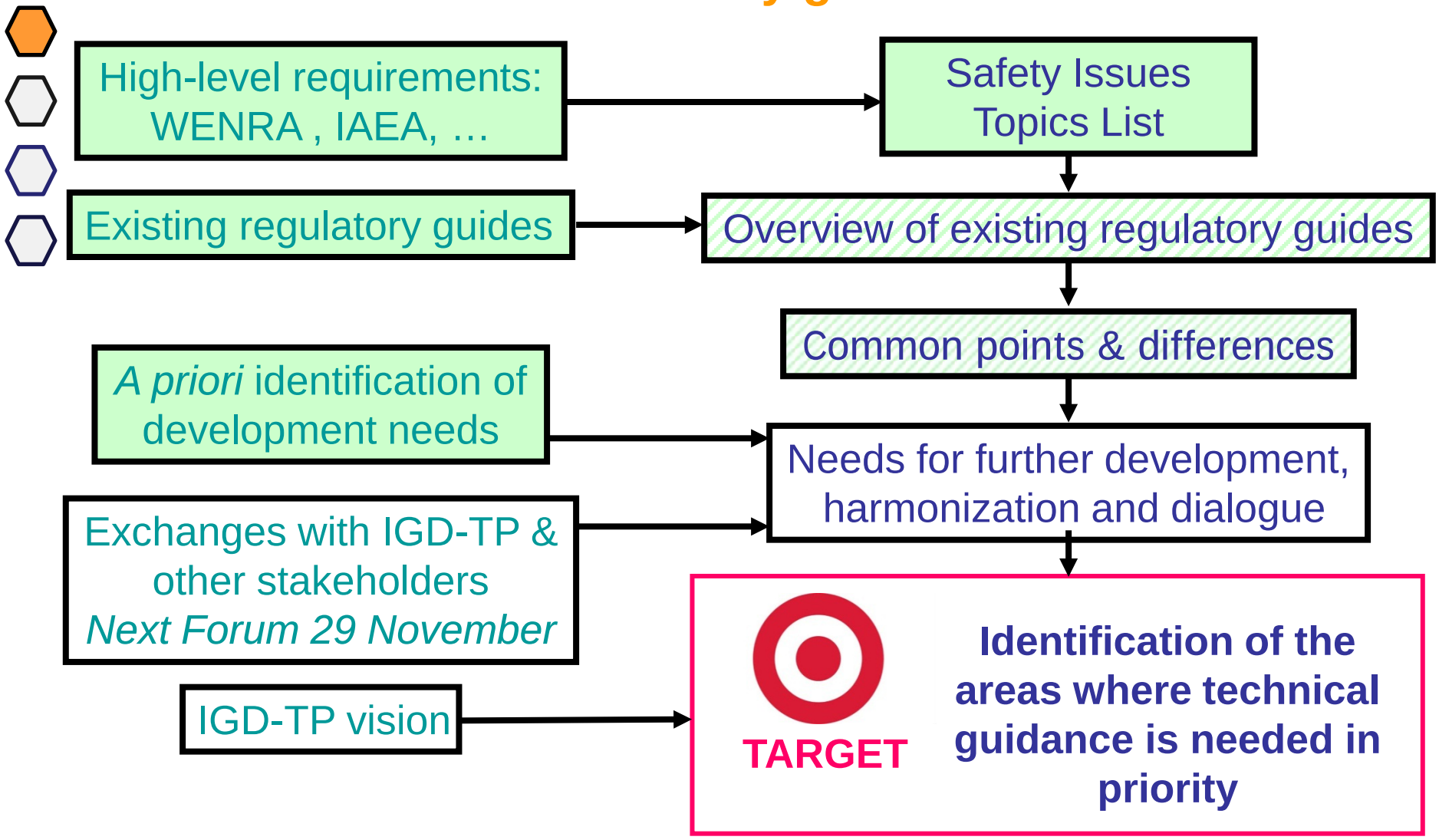
MUTADIS

External Expert
Advisory Board
IAEA
Univ Clausthal
USEPA
STUK

Description of tasks



Needs for safety guidance



Needs for safety guidance

- The interpretation of ICRP 122 (radioactive waste),
- The concept of reversibility and its benefits vs potential adverse effects,
- The hazards linked to concurrent activities and specificities of operation,
- The approach to deal with design modification during construction,
- The definition of operating limits and conditions and their verification during operation,
- The clearance of decommisioning material,
- The criteria for radiological protection of the environment

Needs for review guidance and training

- Overview of national practices
- European Pilot Group (EPG) report
- Preliminary grid of analysis based on the specific phases of development of the disposal program
- Standardized matrix but with focus and depth of the assessment depending on the phase

Needs for review guidance and training

stage	SITE INVESTIGATION AND SELECTION PHASE
Safety case	Main content expected
Focus of the review	Definition and agreement
Safety strategy	Implementation in practice
Assessment basis	Data, processes, understanding
Safety assessment	- See example -
Uncertainties / optimization	R&D update
Integration	Overall apraisal of the SC consistency

Ex: safety assessment

Effectiveness of Safety Functions / performance of barriers :

- Mechanisms identified and quantified ?
- Range of possible perturbations identified and quantified ?
- Confidence in demonstrability of physico-chemical mechanisms ?
- Confidence in industrial feasibility/realisation of components and their performance level ?

Dosimetric calculations

- Definition of scenarios
- Verification impact is not unacceptable and meets set standards
- Confidence in Safety margins

Effectiveness of total system :

- Is total system robust? no common modes of failure and/or lack of compensation of (postulated) dysfunction ?
- Does total system covers sufficiently possible evolution /events ?

Developing R&D and joint programming

- **3 major axes of R&D activities developed by experts:**
  - Quality of data: assessment of characterization methods and tools/devices, domain of validity and adequacy
  - Understanding of complex processes occuring in the GD environment, where few consensus/knowledge exists within the scientific community and that require independant views
  - Verification of extent and intensity of processes (near field/process level and far field/integrated level), uncertainty and sensitivity, robustness and margins

Developing R&D and joint programming

- Because national programmes are at very different phases (conceptualization, siting, design…)
- Because concepts/host rocks are different
  - Needs and priorities are not homogeneous between expertise bodies
- Distinguish between areas where interest is concept/specific and where it is more generic

Developing R&D and joint programming

- More concept specific:
  - Waste matrix and source term: bitumen, glass fracturing
  - Container: corrosion, µ-organisms, radiolysis
  - Engineered components: geochemical interactions
  - Host rock: methods to detect heterogeneities
  - …
- More generic concerns:
  - Modeling coupled processes during transient phase (evolution of data…): the « movie » of the disposal
  - Upscaling methods: from lab scale to site
  - Accounting for uncertainties in scenarios
  - Monitoring and measurement methods : what? where? when? (what is the « safe domain » of the disposal?...)
  - …

Interacting with civil society

- a workshop has been organized in September 2013 in Slovakia with members of civil society and NGOs (Asse, MKG, REC, Greenpeace, Accro, GEP-Limousin)
- The goal of this workshop was to map the needs for the public to engage in the radioactive waste management decision making process and to identify opportunities for civil society and technical experts to interact in the framework of SITEX areas (review activities, definition and implementation of R&D, exchanges with nuclear safety authorities)

Interacting with civil society

- The conditions to be established :
  - the scientific uncertainties,
  - the criteria for assessing different technical solutions and how they lead to recommandations,
  - the background documentation of expertise,
  - the terms of the expertise while it is elaborated for the need of safety authorities,
  - the traceability of the collective expert‘s opinion that should be provided in order to enable the public to identify the various views of the experts before achieving the trade-offs.

Interacting with civil society

- Opportunities for engaging with SITEX:
  - the assessment of the application in practice of the EC directive 2011/70,
  - the assessment of the strategic research agendas of WMOs and TSOs,
  - the definition of the long term engagement of public during the operating phase of the geological disposal
- To propose practical actions in the european framework in coordination with national and supra-national organisations of civil stakeholders: next call

Opportunities of interactions offered by SITEX