

Implementing Geological Disposal of Radioactive Waste Technology Platform (IGD-TP)

Key Topics and Cross-cutting Activities of the SRA

Exchange Forum, 08/02/2011

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Overview of the history of the SRA

- Jan. 2010 – Executive Group of the IGD-TP established the SRA group (8 representatives) and outlined broad directives
- Jan. to Jun. 2010 – inputs from members based on the country RD&D needs
- Jun. 2010 – SRA Seminar in Brussels – presentation of the SRA Key topics and discussion on inputs to the SRA
- Jun. to Nov. 2010 - Revision of Key Topics list and drafting of SRA document
- 8 Nov. 2010 – release of SRA Preview Document on the IGD-TP website for review
- Dec. 2010 – Revision based on review comments and input from EG and completion of draft SRA document
- Dec. 23 – Posting of the complete draft SRA document on the IGD-TP website



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Preliminary remarks (..some ground rules)

- RD&D needs of the programmes closest to implementation received particular attention in SRA development as these will be critical for the achievement of the vision.
- But....SRA must also produce results that are useful for other programmes
- The topic descriptions should not refer to specific national programmes; instead focus on main areas of possible convergence of interests.
- Consequence: certain issues of importance to some programmes are not very prominent in the SRA (at least not as Key Topics) – this doesn't mean they aren't being worked on
- SRA should not duplicate the work of other forums, but should ensure their integration into deployment (we implicitly acknowledge ongoing work outside the SRA in the selection of topics).
- SRA is “living” and continuing revisions will be made.



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June 2010 Seminar version of the SRA

1. Safety case methodology

improvement of tools

treatment of uncertainties

specifics (scenario related)

Scientific and technological basis for long-term safety

2. high burn-up – spent fuel

3. long-term behaviour of sealing materials

Design engineering and construction

4. design adaptation and optimisation

5. optimisation and demonstration of construction technology for repository components

6. closure – plugging and sealing

Cross-cutting and other issues

7. operational safety

8. monitoring

9. stakeholder involvement and governance



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Feedback / Comments on the SRA Topics

- First feedback on the Key Topics was provided at the IGD-TP SRA seminar of 16 June 2010 in Brussels
- Comments were at two levels
 - broad structure, top level priorities and organisation
 - detailed suggestions to be considered for incorporation into the Key topics (many suggestions)
- Topics and their contents modified as a result of the June 2010 SRA Seminar and through further review within the WMOs.



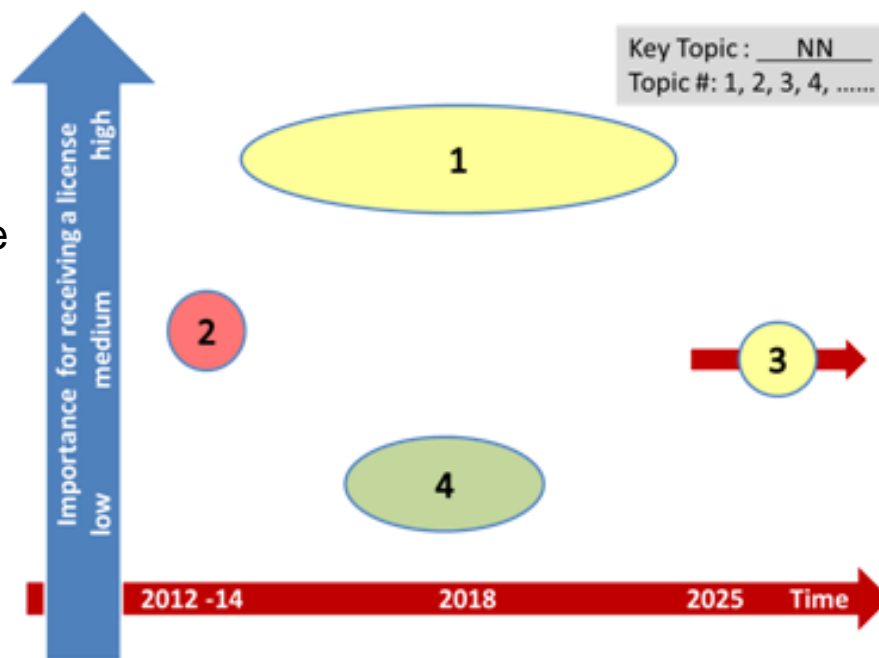
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Revisions to the SRA key topics (1)

- The Key Topics list was significantly restructured in response to comments
- The scope of each topic was developed with a standard structure
 - Definition
 - Objectives
 - Rationale and benefits
 - Priorities
 - Importance and urgency were evaluated



Revisions to the SRA key topics (2)

- The broadest, highest level comments were dealt with – some of these led to the complete restructuring of Key topics and reorganisation of the content
- Many comments were quite detailed – this or that topic or issue should be included in the Key topic
 - A significant number of these were incorporated into the list of topics under each Key Topic.



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The SRA Key topics

- Key Topic 1: Safety case
- Key Topic 2: Waste forms and their behaviour
- Key Topic 3: Technical feasibility and long-term performance of repository components
- Key Topic 4: Development strategy of the repository
- Key Topic 5: Safety of construction and operations
- Key Topic 6: Monitoring
- Key Topic 7: Governance and Stakeholder involvement



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Chapter 4 of the SRA also covers

- Cross-cutting Activities
 - Dialogue with the regulators
 - Competence maintenance, education and training
 - Knowledge management
 - Communication and use of research results
- Waste management programme-specific activities
 - Site characterisation issues
 - Transportation
 - Requirements management systems
 - Waste acceptance (quality assurance and safeguard issues)
 - Industrial scheme
 - Costing



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Some issues in the review comments (1)

- Several reviewers remarked on the fact that site characterization and geoscience issues were not highlighted as key topics.
 - Site characterisation and confirmation of site suitability are obviously important elements for programmes implementing in 2025
 - but technical R&D issues related to site characterisation are not the primary challenge (the techniques are good)
 - work will continue for many years to confirm site suitability during the excavation and construction phase and is quite site-specific
 - the approach or methodology used by these programmes may be of interest to those that are much earlier in their siting process



Some issues in the review comments (2)

- About 50 comments on the Preview document of the SRA (8 Nov. 2010)
- Majority were positive regarding the scope and selection of topics
- Many specific detailed changes were made for clarification as a result of the reviews
- There were many different perspectives on Governance and Stakeholder involvement
- There were a number of comments on some of the cross-cutting issues and regarding what role the SRA should play regarding communication, training, knowledge management



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Review comments on SRA topics and revisions



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Key Topic 1: Safety case

- Importance of handling of uncertainties in safety cases has been emphasized by many (desire for consistent methods and approaches)
- Several comments on the role of process models and their uncertainties, the results of which are abstracted into safety assessment models
 - Few details in the SRA, as the importance of processes is system-specific, but they are a continuing area of research in WMOs and in EU Projects and in certain international forums and we will address process-related areas where needed during deployment



Key Topic 2: Waste forms and their behaviour

- The topic has been broadened to cover all waste forms and the priorities were clarified and modified
 - High priority
 - RN release from spent fuel (esp. high burn-up)
 - Behaviour of Long-lived ILW
 - Medium priority
 - MOX fuel
 - Burn-up credit methodology
 - Low priority
 - HLW glass



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Key Topic 3: Technical Feasibility and Long-term Performance of Repository components

- The topic is much more comprehensive and now covers demonstration, construction and long-term performance of all repository components
- Many specific topics or issues raised at the June 2010 SRA Seminar can be found in the list of topics
 - Total of 17 topics related to demonstration, construction, process understanding related to backfill, sealing, canisters, etc., arranged according to priorities



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Key Topic 4: Development strategy of the repository

- Deals with the integration of new developments during the lifetime of a geological repository (construction and operation periods up to closure)
 - Optimisation and integration of new industrial methods
 - Development of the associated strategy, e.g. guidelines on consequences of changes in approaches



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Key Topic 5: Safety of construction and operations

- Objective - to improve consistency in areas such as methodological approaches, strategies and procedures
 - Develop a more integrated approach to
 - Nuclear engineering practice and radiation protection;
 - Classical industrial safety aspects; and
 - Geotechnical and rock engineering in underground works (including practical mining experience when applicable)
- Topics
 - Improve methodology for assessing risk
 - Further develop strategies to evaluate the impacts of operational issues
- Comments
 - Link to safety case needed



Key Topic 6: Monitoring

- Objective – development of requirements, strategies and techniques related to repository monitoring
- Topics
 - Monitoring strategies related to performance confirmation
 - Overall methodology and assessment of monitoring technologies and techniques.
 - Monitoring of the environmental reference state
 - Monitoring of engineered barrier systems (EBS) during operations
 - Post-closure monitoring - determination of conditions at closure and the possible parameters for monitoring during the post-closure stage until the end of institutional control



Key Topic 7: Governance and Stakeholder Involvement

- The topic was significantly revised. The need for effective and sustained engagement with all relevant stakeholders throughout all stages of a geological disposal facility is acknowledged.
- Note - The Forum for Stakeholder Confidence meets annually and is the main source of information exchange on national approaches
- Also, some EC Projects are in progress that refer directly to the IGD-TP and its SRA and seek our involvement.
 - Implementing **P**ublic **P**articipation **A**pproaches in Radioactive Waste Disposal (IPPA)
 - **I**nternational **S**ocio-**t**echnical challenges for implementing geological disposal (InSOTEC)



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Recent review comments

- Several recent comments have emphasized the need to make clearer the process used to develop the topics
- Further need to explain how SRA priorities complement national programme priorities and ongoing EU projects or other initiatives



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Summary comments

- The SRA aims to set out some priority areas where
 - enhanced cooperation could support the vision
 - practical achievements may be possible
 - programmes implementing both in ~2025 and much later will benefit
- The SRA group is aware of many ongoing relevant activities and has tried to avoid giving priority to topics already well served by other forums
- The SRA will need continuing consideration and revision as programmes progress



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Actions underway related to the SRA

- Already several projects have contacted the IGD-TP to discuss how coordination could take place in areas of mutual interest (e.g. IPPA and InSOTEC in the area of public participation and governance – representatives from the WMOs attend meetings of these projects to explore coordination)
- One EU project now in progress (LUCOEX) grew out of the very early deliberations of the SRA group
- Several potential project proposals under discussion for submission in April 2011 have already drawn on the SRA as a core justification in their proposals and have sought input from WMOs to participate in their end-user groups

