

TM-45853

Technical Meeting of the International Project on Human Intrusion
in the Context of Disposal of Radioactive Waste (HIDRA)

- Status Report on Integrating Activities-

08 November 2013



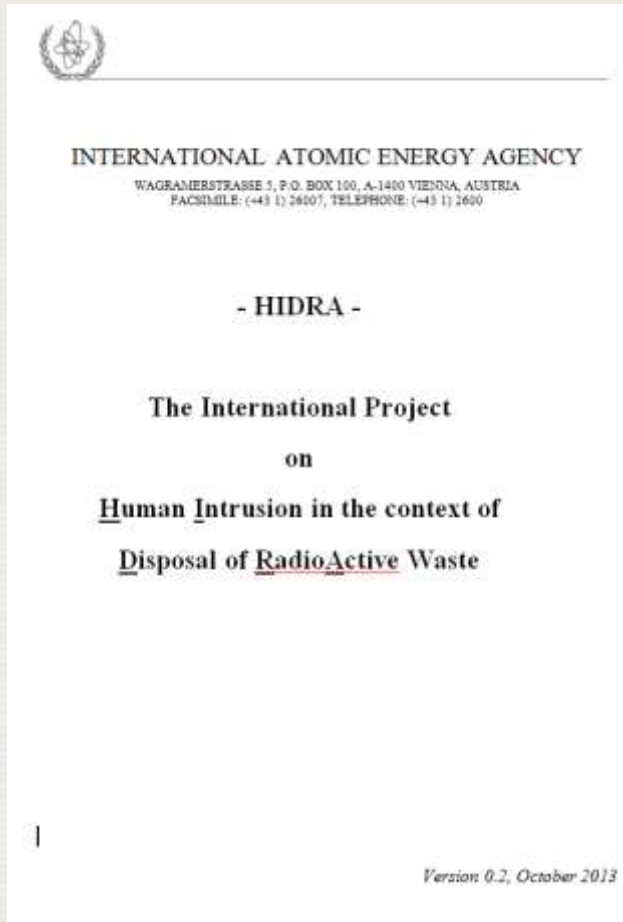
IAEA

International Atomic Energy Agency

Key Messages

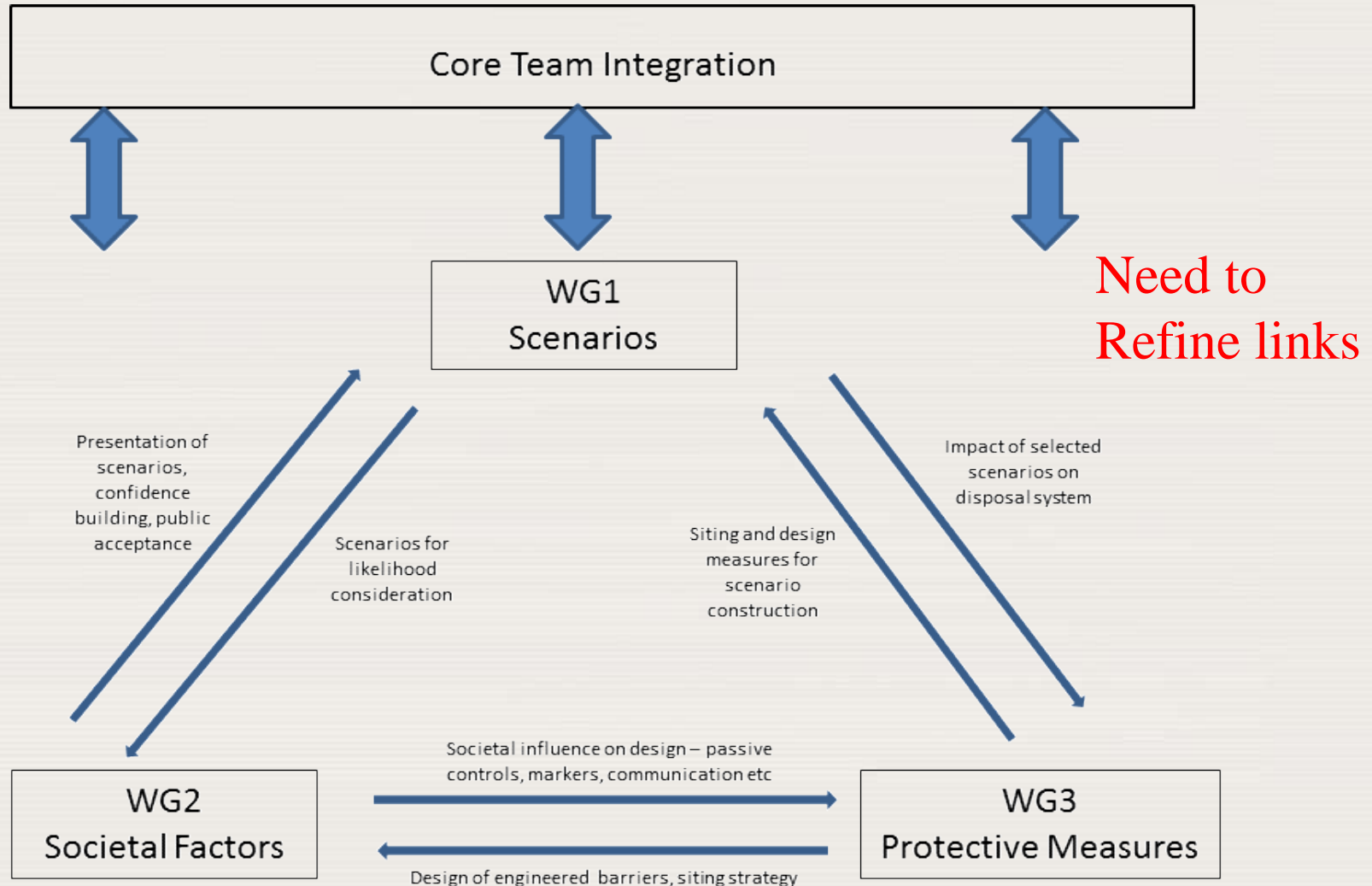
- Concentrate and Contain is considered best alternative, but increases risk should someone inadvertently disrupt facility
- Inadvertent HI following loss of controls must be addressed
- HI is unique to radioactive waste disposal and provides defense-in-depth and added confidence
- IAEA and ICRP agree HI considered separate from normal evolution safety assessment and interpreted in context of optimization rather than against a dose constraint
- Stylized scenarios sufficient given the uncertainties
 - Likelihood and potential consequences of HI can be reduced or mitigated by protective measures

Updates to Draft Report



- Background and Rationale
- Project Description
- IAEA/ICRP Recommendations (**criteria**)
 - Integration with the Safety Case
- Decision-Making in the Safety Case
 - HI for Decision Making, Time Line
- Selection of Scenarios and/or Measures
- Scenarios
- Societal Factors
- Protective Measures
- Conclusions
- Appendices: **Glossary, Links with other International Projects, Examples and Database of Measures**

Example Working Group Interactions

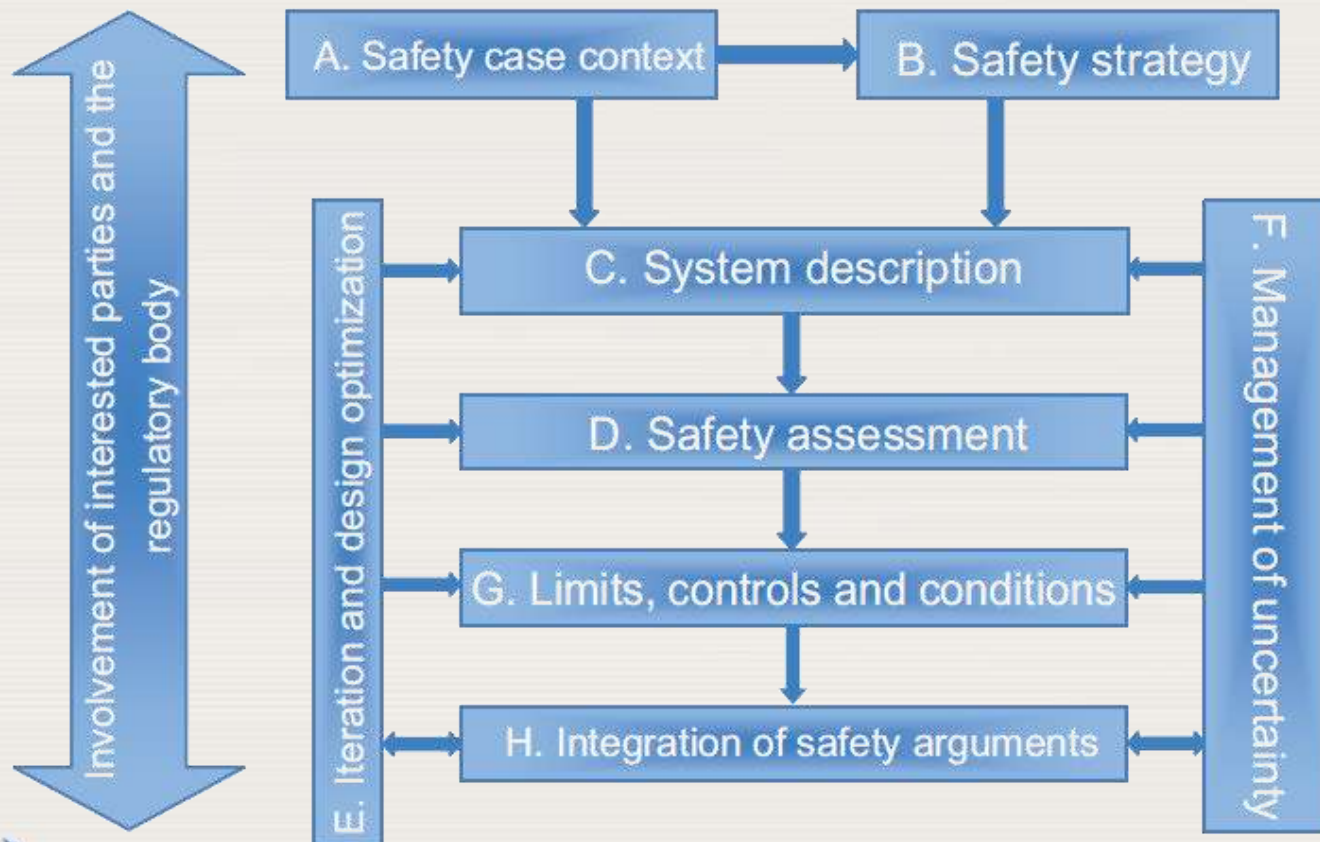


Criteria for Inadvertent Human Intrusion

- Expanded discussion of criteria to include specific IAEA requirements (SSR-5)
- Emphasis on agreement from IAEA, ICRP, NEA that HI addressed as optimization rather than comparison with constraints
- Emphasis on goals to reduce potential for and consequences of potential HI

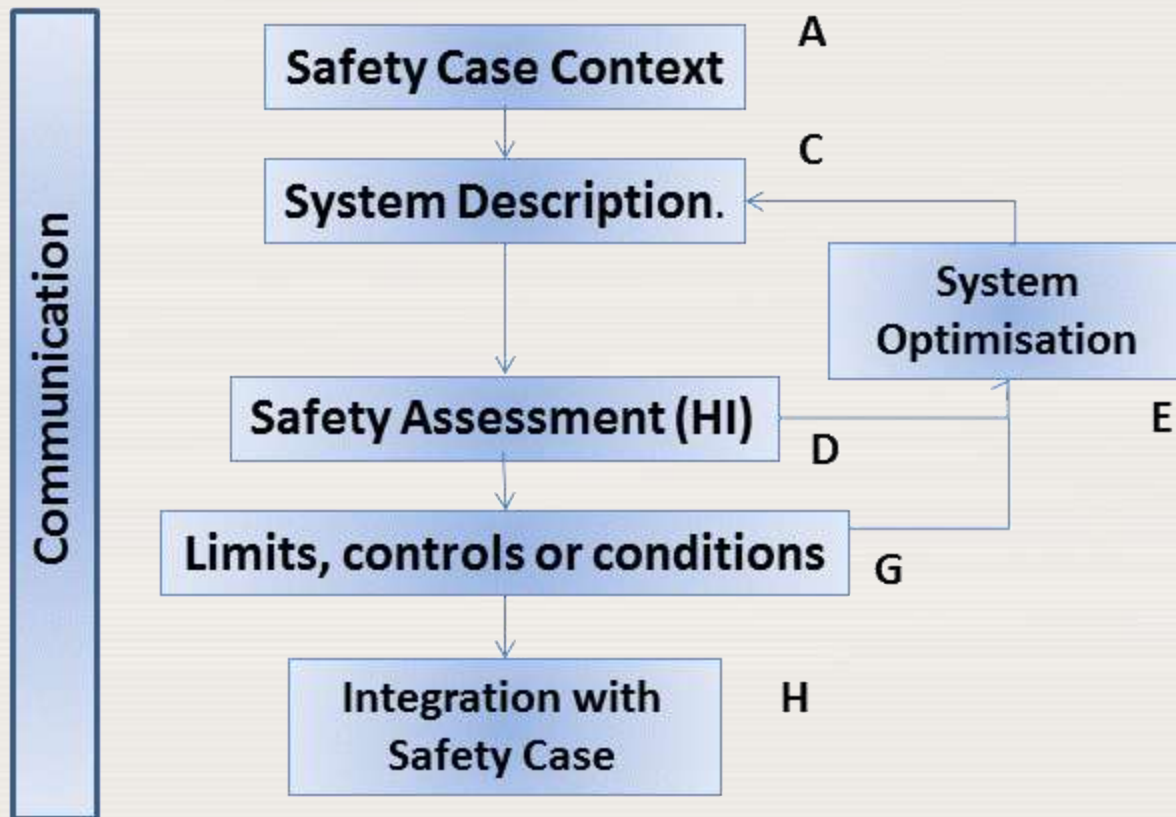
Integration with Safety Case

- New section/chapter to summarize implementation of HI in Safety Case (linked to SSG-23)



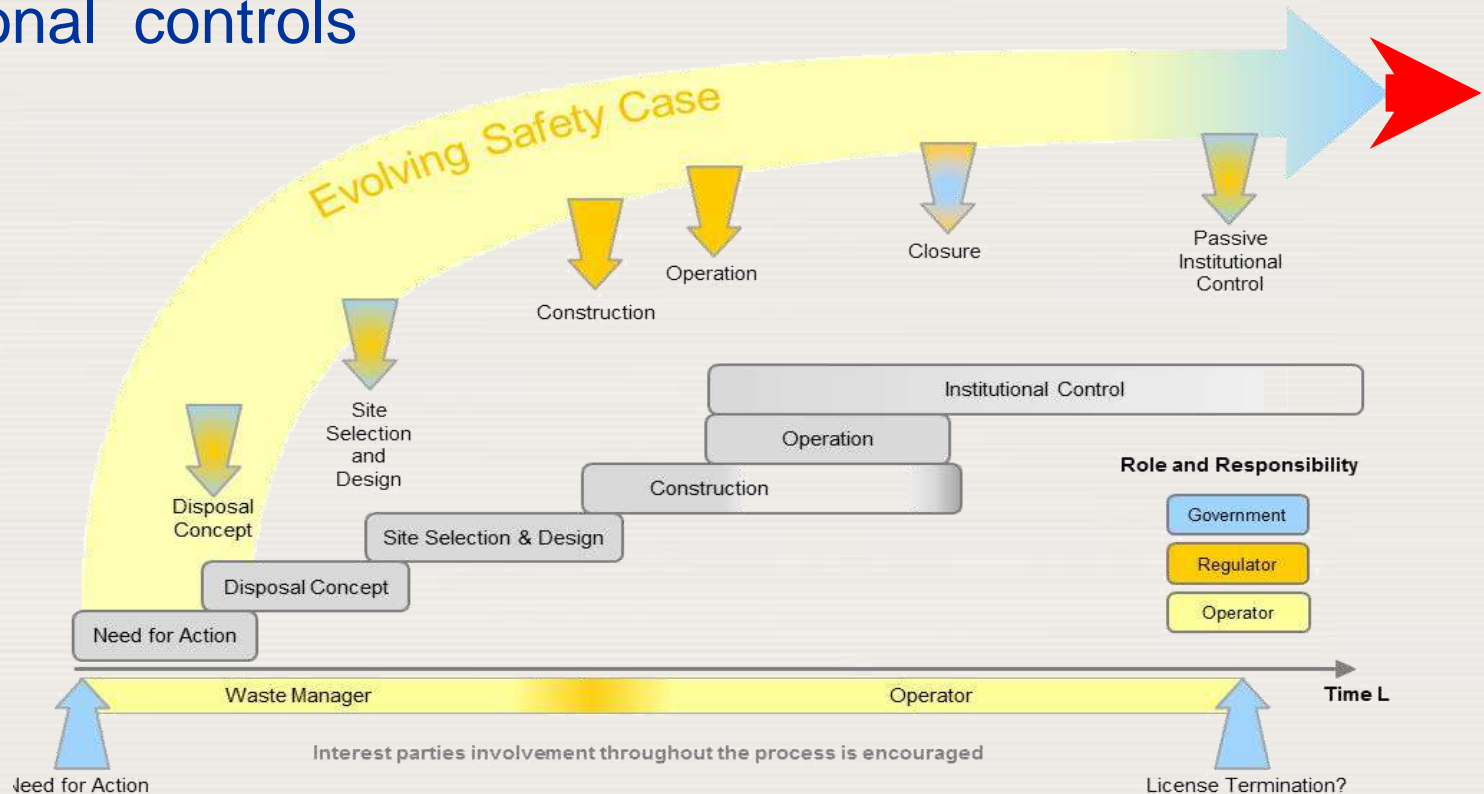
HI specific version of figure

- Developing text describing specific considerations for HI



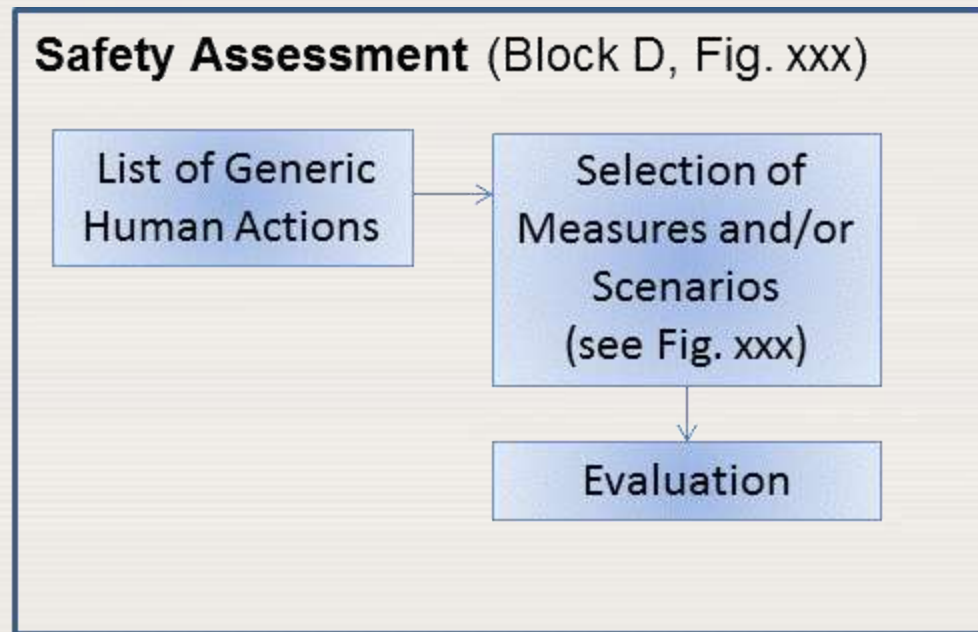
Emphasis on Link with Decision-Making

- Added closer integration with PRISM: HI considerations for decisions during life-cycle
- Refining time line discussion for considerations after loss of institutional controls

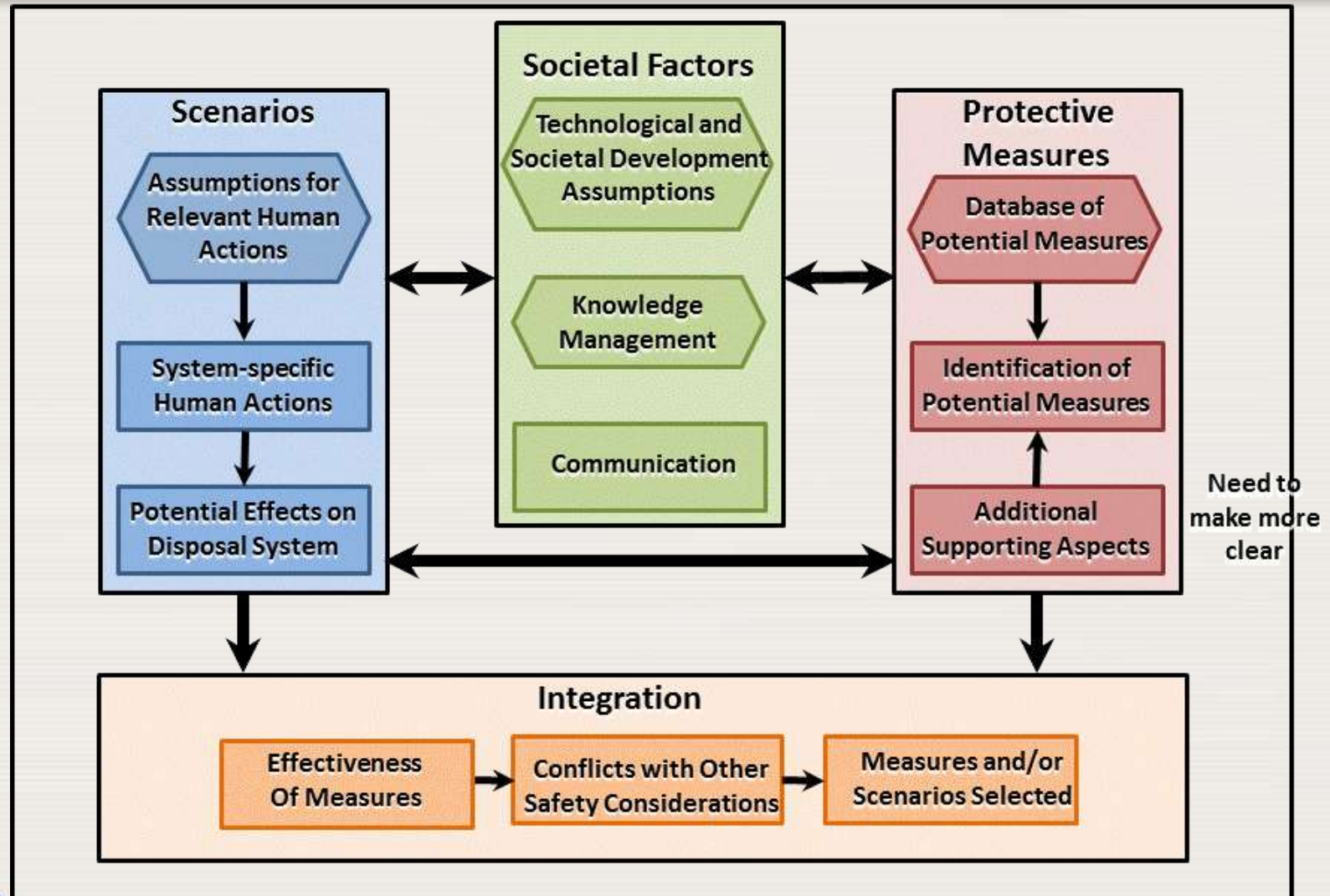


Methology, now Selection of Scenarios and/or Measures

- Emphasis on “safety assessment” block in safety case, especially for selection of measures and/or scenarios
- Discussed and refined approach and tied more closely to each of the working groups
- Need to update text for this section



Selection of Scenarios and Measures



Working Group 1 - Scenarios

- Identified a set of generic stylized human actions
 - Near Surface (drilling, excavation (building and roadway))
 - Geologic (drilling, mining, solution mining)
- Developing a methodology for translating the generic human actions into facility specific inadvertent intrusion scenarios and to identify potential impacts of the intrusion scenarios
- Not focusing on identification of specific parameter inputs at this time

Working Group 2 – Societal Factors

- Addressing how societal factors are considered in selection of scenarios and/or measures
 - Technology and Societal Habits
- Providing information regarding knowledge management and timing of institutional controls
- Discussions regarding communication aspects and adding a section to Chapter

Working Group 3 – Protective Measures

- Identified collection of general measures in different categories that could be used to reduce the potential for and consequences of inadvertent human intrusion
- Implementing list of measures in a database of general measures
- Developed a methodology for deriving optimization measures that are applicable for a specific disposal system and intrusion scenarios

Potential Overlaps

- Discussion of Probability, Likelihood, Potential (WG1, WG2, WG3)
- System Description (WG1 or WG3)
- Role of HI in Safety Case (Integration or WGs)
- Institutional Controls (Integration, WG2, WG3)
- Knowledge Management (WG2, WG3)
- Participation of interested parties (WG1, WG2, WG3)
- Human activities (WG1, WG2, WG3)

Glossary Needs

- Future Human Action
- Inadvertent Human Intrusion (SSR-5)
- Optimization (SSR-5?)
- Unintentional actions
- Institutional control (active and passive)
- Likelihood
- Probability
- Disposal System
- Disposal Facility
- Oversight
- Monitoring and Surveillance
- Measure (protective, general, potential, optimization)
- Proponent/Applicant/Implementer/Licensee

National Examples

- Type of waste and disposal facility
- Current status in lifecycle and future plans
- Human intrusion (HI) considerations in regulations and criteria
 - Time frames, assumptions regarding active/passive institutional controls, criteria (with rationale and interpretation, how institutional control is related to scenarios/design, financial assurance)
- HI criteria used for facility development
- Role of HI assessment in development of safety case (SC)
- Scenarios considered (assumptions used, use of probability?, etc.)
- Approach to derive scenarios (public input?)
- Timescales considered in safety assessment (active/passive institutional control, time frame for assessment)
- Measures that have been applied to reduce the potential for and consequences of HI (e.g., record keeping, land use restriction, siting, design, disposal concept)
- Role of interested parties to develop scenarios and address HI in SC

Future Plans (Near Term)

- Provide updated chapters to IAEA by 20 November
- Current rough draft of the report distributed to participants by 30 November 2013
- Feedback from participants on draft report – 31 January 2014
- Initial National Examples from US (near surface), Canada, UK (geologic) – end of January 2014
- Draft national examples to IAEA – 30 April 2014

Future Plans (Prior to Plenary)

- Working Group activities/meetings – 1st/2nd quarter of 2014 (WG2 meeting 5-9 May?)
- Updated drafts of HIDRA report input – July 2014
- Core group meeting and updated HIDRA report sent to participants – September 2014
- Request update of National Examples – September 2014
- Updated National examples – November 2014
- Participant feedback on HIDRA report – Nov. 2014

Plenary Meeting

- Proposed for 1-5 December 2014
- Develop input and agreement on approach for finalization of the report
- Potential new activities
- Distribute updated report after meeting
- Potential follow-up core group meeting to finalize draft report

HIDRA webpage & working folders

Working Platform

<http://gnssn.iaea.org/sites/auth/rtws/hidra/SitePages/Home.aspx>

Username: rtws07 Password: hidra123\$

Webpage

<http://www-gnssn.iaea.org/projects/hidra/default.asp?s=8>