



OECD Halden
Reactor Project

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Structured Safety Argumentation for Decommissioning with the InStrucT Prototype Tool

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Motivation

Organizing and communicating information relevant for decommissioning safety

in a *logically sound, transparent and assessable* way



Means – structured argumentation

- *Explicitly* presented argument elements (e.g. claim, evidence, context)
- *Explicitly* presented relations between them

- ⇒ Less space for ambiguity
- ⇒ Dubious parts or missing items are easier to spot



Tool – InStrucT: Information Structuring Tool

- A prototype tool to support creating, assessing and sharing argumentation structures
- General functionality: organising and structuring information according to *pre-defined categories* and *relations* between them





Live demo of InStruct



Application for training and knowledge management

- Support for planning and explicitly presented rationale of decommissioning activities
- Filtering relevant information from documentation
- Organizing and making sense of information



Application for LiveDecom and RoboDecom

LiveDecom: support for **organizing** safety relevant information and knowledge and make it available **for navigation and assessment**

RoboDecom: support for **demonstrating** the **reduced** labour and **risks** by robotics based solutions

Common challenge: scepticism for applying new technologies, new ways of decommissioning

Explicitly and clearly presented rationale can help to build trust



Thank you for your attention



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Reserve slides

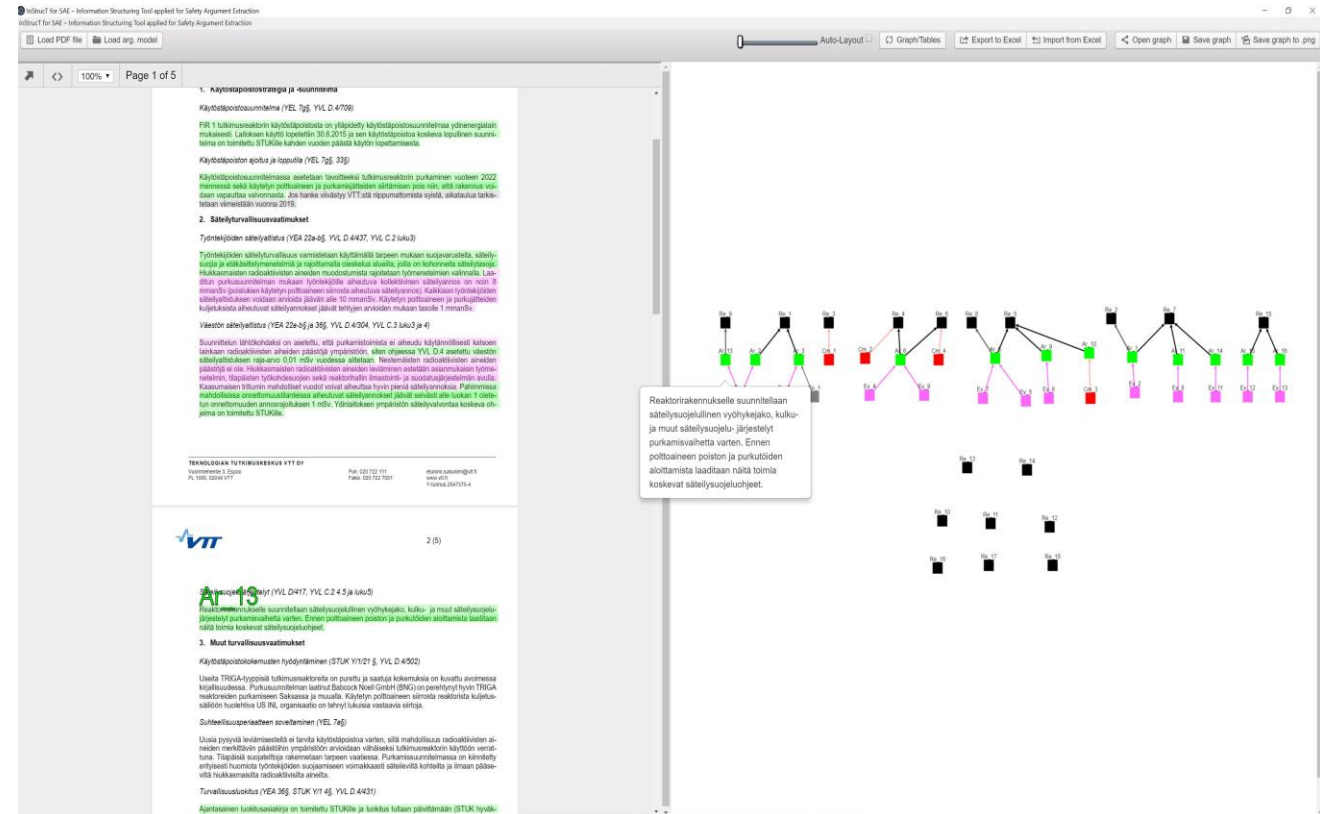


Safety argumentation for decommissioning

- Compliance with regulatory requirements to be shown
 - Requirements might need *interpretation* of how they apply in specific situations
 - Might contain *obsolete* parts, or *lack guidance* for new developments
 - *Structured safety arguments* can reduce ambiguities, fill in gaps and thus improve confidence
- Justification of sufficient safety
 - Decommissioning plan – safety argument explaining
 - How the planned activities will *fulfil* regulations
 - What evidence will be used to *demonstrate* that
 - Decommissioning process – safety argument
 - *Maintained and updated* reflecting changes in plan
 - *Collected pieces of evidence* connected into the argument
- Showing exhibited *quality characteristics*, e.g. correctness, completeness, consistency, verifiability, unambiguity, traceability *to support confidence in decision*

Main functionalities of InStruct and InStruct Viewer

- Loading pdf documents
- Loading an argumentation model description
- Tagging continuous text parts
- Presenting arguments as a *directed graph*, or as a *table*
- Freely define nodes and relations
- Saving and loading extracted information structure as a
 - *graph* (keeping links to the pdf)
 - *table* (loosing links to the pdf)
- Generate xml document
- **InStruct Viewer**: online tool to share argument files only for viewing



The screenshot displays the InStruct Viewer application. On the left, a PDF document is open, showing text from a safety report. The text is structured into sections, with some parts highlighted in green. On the right, a directed graph is generated from the document's content. The graph consists of numerous nodes, each represented by a small square with a colored border (green, red, or black). These nodes are interconnected by directed edges, forming a complex network. A tooltip is positioned over one of the nodes, containing text in Finnish: "Reaktorin rakennus suunnitellaan säteilyuojelun vyöhykkeiksi, kulkua ja muut säteilyuojelun järjestelyt purkamisvaihetta varten. Ennen polttoaineen poistoa ja purkutöiden aloittamista laaditaan näitä toimia koskevat säteilyuojelut." This tooltip explains that the reactor building is designed as radiation protection zones, and that transport and other radiation protection arrangements are planned for the decommissioning phase, before the removal of fuel and the start of decommissioning work, safety measures for these activities are developed.

Figure: decommissioning argument in development