**Integration Group for the Safety Case (IGSC) Symposium 2024**  
*MOVING TOWARDS THE CONSTRUCTION OF A SAFE DGR – GETTING REAL*

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| **Abstract Title:** Digital Safety Cases: Digital approaches to managing safety case documents, data, and models | |
| **Abstract (300-500 words):**  The United Kingdom is committed to the safe management and disposal of higher activity radioactive waste through a policy of secure interim storage prior to final disposal in a deep geological disposal facility (GDF). A consent-based site selection process with the UK Government and its agencies working in partnership with communities is currently underway. Nuclear Waste Services (NWS), formerly RWM, is the delivery organisation responsible for the implementation of a safe, sustainable and publicly acceptable programme for geological disposal.  The production and maintenance of a GDF environmental safety case (ESC) requires the management of large quantities of multi-disciplinary information, knowledge and data. This evolves with time as the disposal programme progresses, with formal change management processes needed to ensure consistency. Digital solutions offer the opportunity to enhance the management of a safety case with the features and benefits of a digital safety case now being considered by several countries and international projects.  ViSI is a software tool owned by NWS, and developed through its supply chain, to store the narrative of the GDF ESC and allow it to be viewed and searched easily, including through a visual Claims, Arguments, Evidence (CAE) (‘argumentation’) based format. The system is based around the principles of linked data, with hyperlinks used to provide context and underpinning for information. Various databases are provided, including a glossary of controlled safety case terms, future research tasks needed to fill knowledge gaps, natural analogues and an extensive bibliography of contractor reports.  ViSI was last presented in a public safety case forum at the IGSC Symposium in Rotterdam in October 2018. Since this time NWS has continued to progress its original vision for the system, making significant developments over the past six years.  NWS is incorporating performance assessment (PA) into ViSI, with a web-based data management system (DIG) developed to store PA inputs. Deterministic and stochastic data types are supported, and the system allows data to be exported into a data report and into modelling tools, for example the GoldSim code used by NWS. Underpinning and quality information can be entered for each parameter and linked to any other information in the system, such as bibliographic references or research tasks.  An intuitive user interface and advanced search capability has been built into ViSI, allowing users to locate content of interest using both metadata and full-text based searches. A graph database is being implemented to allow powerful searches based on links to be performed. For example, locating where references or data are cited in safety case arguments is expected to aid change control.  All data within ViSI is stored in standards-compliant text-based XML formats to improve prospects for long-term accessibility as technologies change.  In this presentation, NWS will explain the enhancements above in more detail, together with planned future developments of ViSI. A companion paper (*Tinling et al.*) has been submitted to explain how Systems Engineering is planned to manage the wider GDF system, which will see ViSI interface with other tools, such as inventory, design, and geosphere systems. Together, this work further defines the concept and potential of a digital safety case. | |