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1. Framework of the European Joint Programme EURAD

The **European Joint Programme on Radioactive Waste Management (EURAD)** has been launched in June 2019 with the main purpose of deepening the collaboration among the European Member States on research and knowledge management activities towards the development of safe and publicly acceptable solutions for the radioactive waste management (RWM) [1]. Further, the EURAD activities support the implementation of national RWM programmes in compliance with the Council Directive [2]. Through the collaboration between the Member States knowledge, experience and technology transfer at the European level is pursued, taking into consideration the different radioactive waste inventories, different implementation stages of national RWM programmes and different considered repository design options.

Both Waste Management Organisations (WMOs), Technical Support Organisations (TSOs) and Research Entities (REs), representing their national programmes, are engaged in the EURAD Joint Programme, which encompasses work packages (WP) dedicated to RD&D activities, Strategic Studies (SS) and Knowledge Management (KM).

2. Importance of uncertainties to Radioactive Waste Management

Decisions associated with each phase of the RWM programme have to be made in the presence of both reducible and irreducible uncertainties. These uncertainties will inevitably remain at the end of the process, however it is necessary to demonstrate that they do not undermine the safety arguments. Clearly, uncertainty management, including uncertainty identification, characterisation, classification, analysis, treatment, assessment, reduction, avoidance and mitigation, is indispensable for a successful implementation of RWM programme, particularly in regards to the safety case of the waste disposal facility.

The relevance of the uncertainties to RWM has been recognised in the EURAD Strategic Research Agenda [3] and the Roadmap [4], in which they are outlined as a cross-cutting issue within the different themes and RWM programme phases. In the context of the associated RD&D activities, aiming at the improvement of the state of knowledge and technique, it is necessary to comprehend their contribution to uncertainty reduction within the uncertainty management.

3. Objectives and structure of EURAD WP UMAN

The **Work Package Uncertainty Management Multi-Actor Network (UMAN)** represents one of the two Strategic Studies of the EURAD Joint Programme, aiming in the first line at improving a common understanding among the different involved actors (i.e. WMOs, TSOs, REs), including Civil Society (CS), on **management of the potentially safety-relevant uncertainties in all stages of RWM**, under particular consideration of the relevance of RD&D activities. The attention is paid to uncertainties related to the EURAD RD&D WPs and to the subdomains of the EURAD Strategic Research Agenda [3] of a high/medium priority, for which a great interest in exchange among the actors was identified. In the first wave of EURAD, uncertainties linked to site and geosphere, human aspects, spent nuclear fuel and waste inventory are considered.

The WP UMAN encompasses the following five tasks:

- Task 1: S/T coordination, interactions with KM WP and integration (Leader: Bel V, Belgium),
- Task 2: Strategies, approaches and tools (Leader: GRS Braunschweig, Germany),
- Task 3: Characterisation and significance of uncertainties for different categories of actors (Leader: RATEN, Romania),
- Task 4: Uncertainty management options and preferences of different actors across the various programme phases (Leader: BGE, Germany),
- Task 5: Interactions between all categories of actors including Civil Society (Leader: MUTADIS, France).

The networking concept adopted in this WP and shown in Figure 1 allows for sharing the knowledge/know-how and discussing common challenging issues among the different actors, including Civil Society, in the framework of planned workshops and seminars. Besides the interactions among the different UMAN Tasks and those with the EURAD RD&D and the other SS WPs, exchange with other international initiatives / organisations such as NEA, IGSC, IAEA and EUGENIA is planned. The knowledge generated/consolidated in WP UMAN will provide a valuable input to the EURAD KM WP.

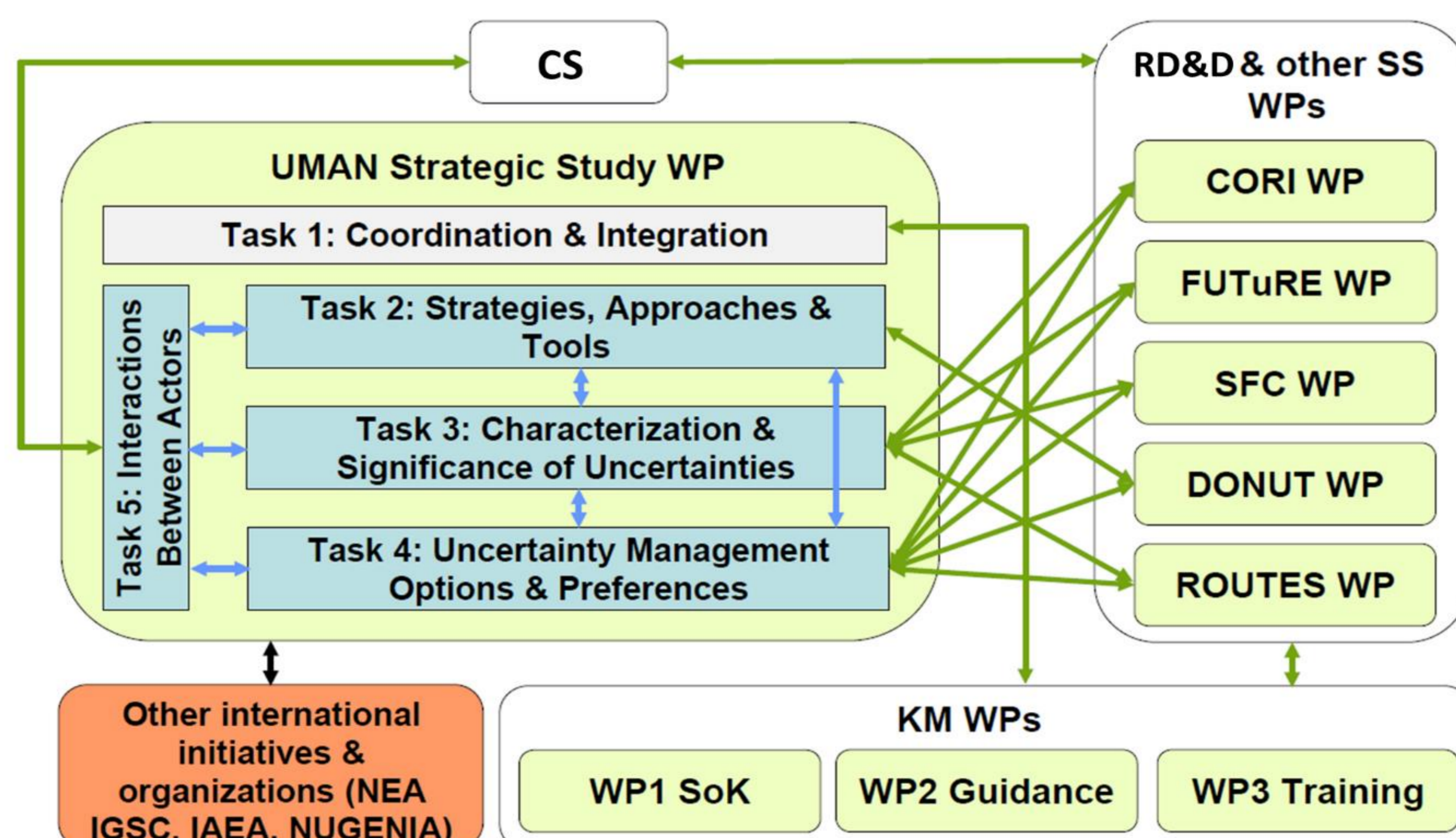


Figure 1: Interactions planned in the framework of EURAD WP UMAN.