

MUSA – Management and Uncertainties of Severe Accidents

Project Coordinator

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MUSA



MUSA has received funding from the Euratom research and training programme 2014-2018 under grant agreement No 847441.



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Project Description

- ▶ MUSA was founded in Horizon 2020 EURATOM NFRP-2018 call on **“Safety assessments to improve accident management strategies for generation II and III reactors”**.
- ▶ The MUSA project aims to establish **a harmonised approach for the analysis of uncertainties and sensitivities associated with severe accident (SA) analysis** among EU and non-EU entities.



MUSA kick-off meeting in Madrid, Spain
July 10-12, 2019

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Project Description



- ▶ The project was launched in June 2019.
- ▶ The MUSA project is coordinated by **Centro de Investigaciones Energéticas, Medioambientales y Tecnológicas (CIEMAT)** in Madrid, Spain.



- ▶ MUSA has the **NUGENIA label** that recognises the excellence of the project (obtained on 7 July 2018)

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MUSA in Numbers



▶ 48 months



▶ Budget of € 5,768,452.50



▶ 28 partners*



▶ 16 countries

- ▶ *The MUSA project includes partnerships with non-European institutions (Canada, China, Japan, South Korea and USA).

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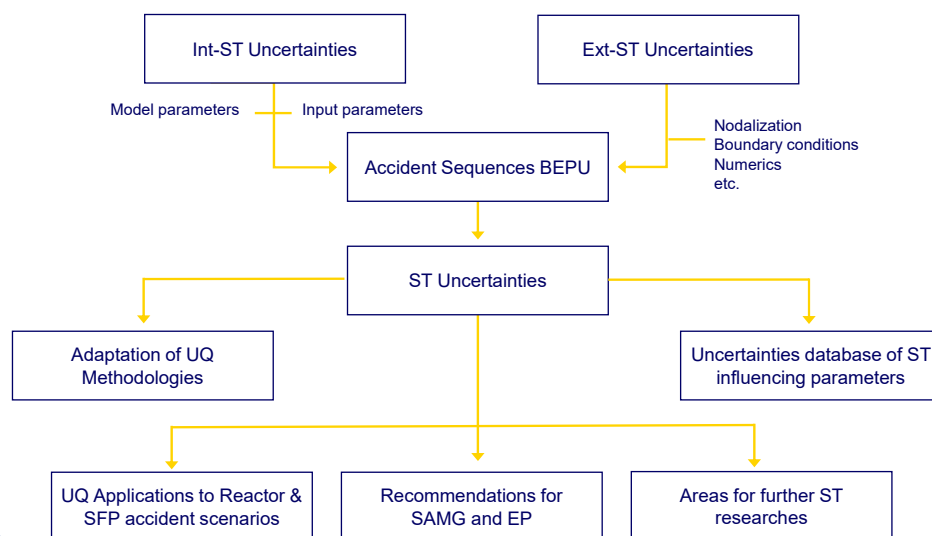
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Objectives & Scope

- ▶ The overall objective of the MUSA project is to **assess the capability of SA codes** when modelling reactor and Spent Fuel Pool (SFP) accident scenarios of GEN II, GEN III and GEN III+ reactor designs.
 - Identification of Uncertainties Quantification (UQ) methodologies to be employed, with emphasis on the effect of both existing and innovative SA Management (SAM) measures on the accident progression.
 - The MUSA project will determine the state-of-the-art prediction capability of SA codes & quantify the codes uncertainties applied to SA sequences.
- ▶ Emphasis will be made on:
 - SA measures (existing & innovative)
 - Source Term mitigation
- ▶ MUSA will adopt and adapt **Uncertainty & Sensitivity Analysis (UaSA)** methods to SA domain.

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MUSA Approach



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Specific Impacts

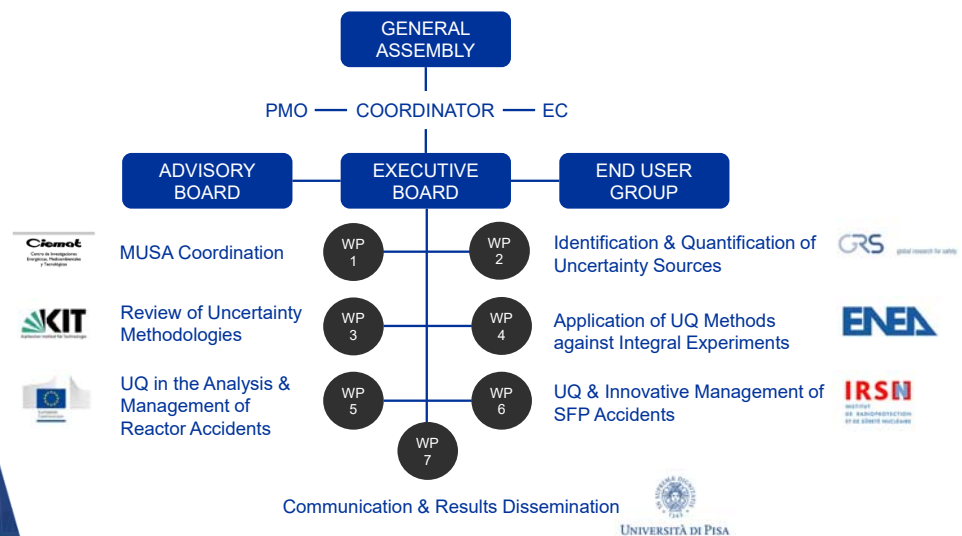
- ▶ **A systematic assessment of the uncertainty band** affecting ST in risk dominant sequences.
- ▶ **Guidelines to systematic conduct BEPU analysis** in the SA domain.
- ▶ **A database with the characterization** (upper and lower bound and pdf) **of uncertainties** in input deck parameters.
- ▶ **Insights into key elements affecting SAM** implementation (i.e., timing).
- ▶ **Additional means and actions that might optimize the accident management**, both in reactors and SFPs.
- ▶ Hands-on **training & identification of major challenges**.

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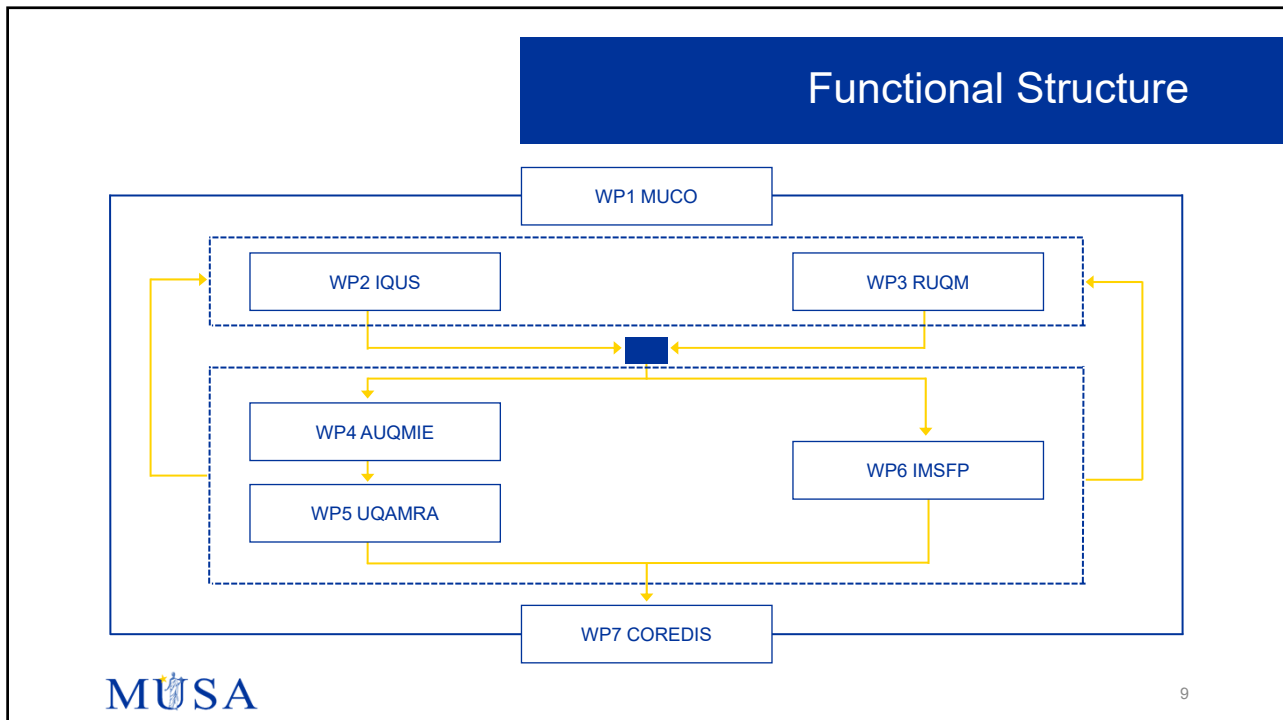
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Project Governance

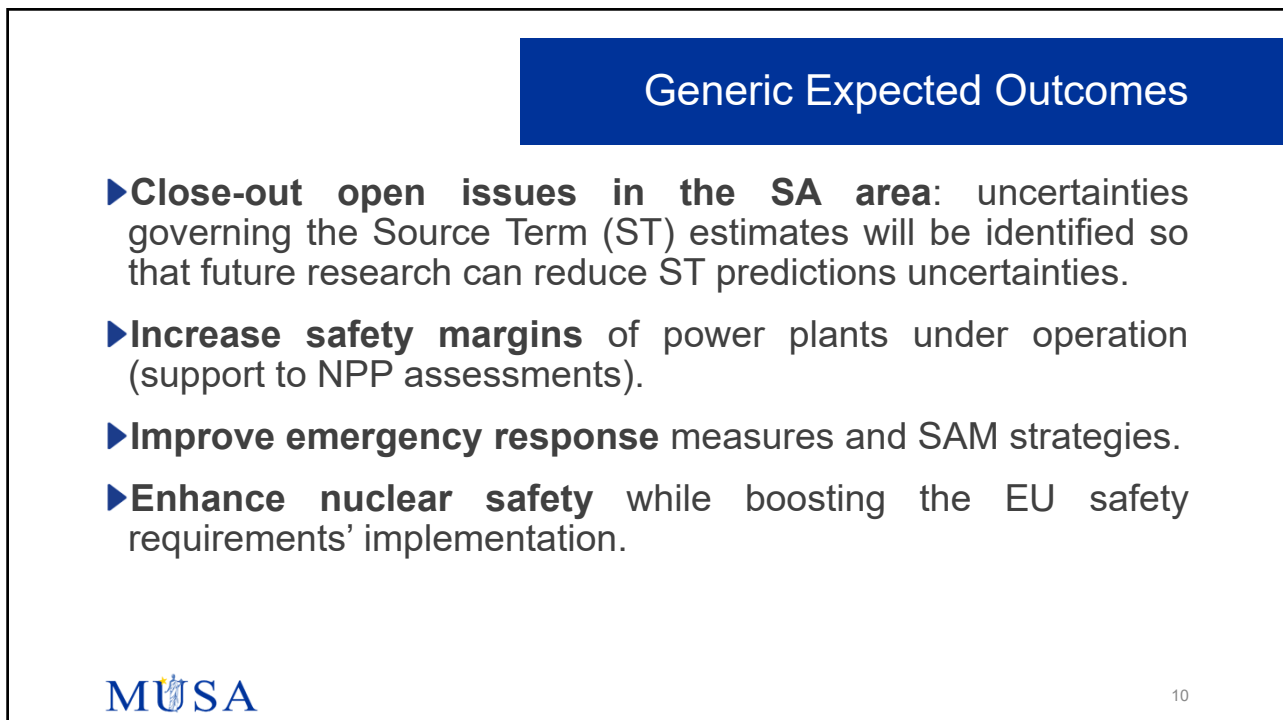


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Knowledge Dissemination

- ▶ MUSA education and training activities target Masters and PhD students, as well as young researchers in the ST field.
 - **Public learning modules** on MUSA major outcomes.
 - **Mobility exchange programme** under which university students and young researchers go to internship programmes.
 - **Production of a lecture on “Uncertainty Quantification in Severe Accident Analyses”** for the different international courses that might be given on Severe Accidents and/or on “uncertainties”.



MUSA Consortium Members





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