

# MOBILITY MISSION REPORT

*This work has been partially supported by the EURAD project that has received funding from H2020-EURATOM 1.2 under grant agreement ID 847593.*

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## MISSION TITLE

EURAD training on Requirements management system

## DESCRIPTION

### Concerned organisations

- Research entities
- Technical support organisations
- Waste management organisations

### Concerned infrastructures or facilities

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### Concerned phases

All phase:

- Phase 0: Policy, framework and programme establishment
- Phase 1: Site evaluation and site selection
- Phase 2: Site characterisation
- Phase 3: Facility construction
- Phase 4: Facility operation and closure
- Phase 5: Post-closure

## Themes and topics

- Theme 1: Managing implementation and oversight of a radioactive waste management programme
  - Programme planning
  - Organisation
  - Requirements Management

## Keywords

programme planning, requirements management, requirement management system

## EXECUTIVE SUMMARY

Requirement management system supports effective leadership and efficient management of a radioactive waste programme by addressing the following issues:

- “Do the right things”
- Develop “the right products”
- Implement the “right products” at the “right time”

“Do the right things” is the key element of the management allowing to arrive at “the right product(s)” with the “product(s)” being built right and at the required time. To ensure that the things are done right it has to be clearly specified “who” must develop and implement the product/technology/programme (“what”) and how and when the “what” has to be implemented to fulfil the goals/needs. For this it is important to properly define the national stakeholders, including the external stakeholders (those having a “problem” and being strongly interested or obliged in finding a solution), external ones (usually the WMO) and the other stakeholders, than do not have formal responsibilities and are informed and involved through consultation (usually the public) but their agreement/acceptance is important for successful implementation of a waste management programme.

For Romanian geological disposal programme, that is under initially planning stage, a correct developed Requirement Management System can be an effective tool for the efficient and step wise implementation of the programme.

By attending this training course, the main elements, and the means for starting developing such a system, even in a simplified form, were identified.

## 1. MISSION BACKGROUND

### 1.1. R&D background

I'm PhD in nuclear physics and I am coordinating the RATEN RD&D programme on radioactive waste and spent fuel management since 2012.

As a RE with the aim of ensuring and developing the technical expertise for Romanian nuclear programme, the Institute for Nuclear Research Pitesti (RATEN ICN) is continuously working on improving and extending the technical competences needed to support Romanian WMO (ANDR) in implementing the disposal programmes: for the near surface repository planned to be in operation in 2028 (for LILW-SL) and for geological repository for SF and long lived waste planned to be in operation in 2055.

### 1.2. Mission objectives

As the geological disposal programme in Romania is in its initial planning stage, we are looking for a tool to be developed for our WMO (ANDR) for efficient implementing of this programme. The main objectives for attending the training course was to learn about the requirements management and requirements management system, the elements of this system, the main steps of the development process and how we can start to develop such a system for Romanina DGR programme.

### 1.3. Mission request

Financial support from EURAD Project for my attending this training course.

### 1.4. Mission composition

#### Host organisation

PURAM in collaboration with EURAD WP 12 and WP13

#### Host facility

Hotel Mercure Budapest Castle Hill, Budapest

#### Mission dates

16-18 January 2024

## 2. MAJOR PRACTICES, TECHNIQUES, METHODS, TOOLS OR SYSTEMS OPERATED OR STUDIED

### 2.1. Practice, technique, method, tool or system operated or studied during the mission

Strategies, methods and tools on requirements management and requirement management system.

#### Description

During the training course, theoretical lectures were provided by Piet Zuidema on: meaning of the requirements management (what and why) and of requirement management system (RMS), the structure, the cornerstones, constraints and boundaries of a RMS, the roles and responsibilities of different stakeholders, as well as on the softwares used for the requirements management. The elements of a RMS were illustrated for the particular case of spent fuel canister.

The theoretical lectures were complemented by application case studies and lessons learnt from advanced programmes such as: Finland, Sweden, and UK.

The accumulated knowledge was put into practice during the practical exercises on developing RMS for early stage programmes and for developed programmes.

#### Usage

We'll try to apply the knowledge accumulated by attending this training course for developing a simple RMS for Romanian geological disposal programme.

#### Benefits

A better understanding on how to structure the RMS, the process of developing, updating and using the RMS.

#### Limitations

This training course provided me with preliminary information about the requirements management system that needs to be deepened and passed on to my colleagues to form a team able to develop such a system for our national DGR programme.

#### Applicability

A proper developed simple requirement management system, that can be further detailed, may be an effective tool for implementing in a step wise approach the Romanian DGR programme, optimizing the costs, avoiding the subestimation of the effort (both financial and human resources), and preparing well what is needed, when it is needed.

2.2. Practice, technique, method, tool or system operated or studied during the mission

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Description

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Usage

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Benefits

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Limitations

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Applicability

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2.3. Practice, technique, method, tool or system operated or studied during the mission

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Description

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Usage

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Benefits

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Limitations

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Applicability

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**2.4. Practice, technique, method, tool or system operated or studied during the mission**

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**Description**

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**Usage**

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**Benefits**

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**Limitations**

-

**Applicability**

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### 3. MISSION FINDINGS AND CONCLUSIONS

#### 3.1. Lessons learned and conclusions

Even after the training course I was very confident that I'll be able to develop a simple system for our DGR programme, I understood trying to discuss with my colleagues that developing a requirements management system, even for an early-stage programme, is complex and not an easy task to accomplish. We need an interdisciplinary team for RMS development for our national DRG programme, including both so called "generalists" as well as specialists.

#### 3.2. Relevant findings and conclusions for home organisation

We need to train at least 2 or 3 persons as generalists, with a good understanding on Safety Assessment and the elements of a DGR with different safety functions.

#### 3.3. Relevant findings and conclusions for host organisation

Only three days of training are not enough to fully understand how to develop such a complex system as Requirements Management System and I hope that the training courses on this topic will be also organized under EURAD -2 and a Community of Practice will be created.

#### 3.4. Relevant findings and conclusions for other organisations

For Romanian WMO it is important to be involved by themselves, at least as stakeholder, in the future European partnership on RWM.

## 4. POTENTIALS FOR IMPROVEMENT OR DEVELOPMENT

### 4.1. Generic potentials

Additional training courses on RMS and creation of a Community of Practice on developing RMS for different stages of DGR implementation or even for the waste management system as a whole, from cradle to grave.

### 4.2. Potentials for home organisation

### 4.3. Potentials for host organisation



## APPENDICES

### Mission journal

#### Day 1:

Introductory speeches from Jiří Faltejsek, SURAO (WP 12 coordinator) and Bálint Nős, PURAM (host organization and WP 12 co-leader).

Theoretical training sessions given by Piet Zuidema on:

- why should requirements management (RM) be used, how should RM be done and what are the 'building blocks' of the RMS
- stakeholders and their role
- the cornerstones of RM: why, what, when, who and how

Johan Andersson: Illustrated the evolution of disposal system with time, with different sources of requirements, conflicts and their resolution, giving concrete example on spent fuel

#### Day 2:

Piet Zuidema theoretical training lectures on:

- elements, concepts and interdependences in a RWM system, their life cycle and the way of working with RM in early stages
- the process and the system to manage the information at a more advanced stage
- summary the methodology of developing the RMS, with example about post-closure safety: The disposal canister - specific example from Sweden

Example and lessons learned from Sweden (Johan Andersson), UK (Sarah Bryson), Finland (Barbara Pastina) and case study on disposal concept evaluation in case of plutonium disposal (Tara Beattie).

#### Day 3:

Practical exercises on developing RMS and discussions on the exercises outcomes.

Discussions on the draft Guidance on Developing, Using and Modifying a Requirements Management System for a Waste Management System with a few examples

### Mission bibliography

## MISSION BENEFICIARY

Crina Bucur  
 PhD, senior researcher  
 Radioactive waste treatment and conditioning department, Institute for Nuclear Research  
 Pitesti (RATEN ICN)  
 Regia Autonoma Tehnologii pentru Energia Nucleara - RATEN

## PARTNER EXPERTS CONTRIBUTING TO THE MISSION

### Host organisation experts

- Bálint Nős, Director of strategy and technology, PURAM, Hungary, WP12 co-leader



### Home organisation experts

- Marius Iordache, Head of Radioactive waste treatment and conditioning department of RATEN ICN

### Other organisations experts

- Jiří Faltejsek, Strategy Business Development, SURAO, Czech Republic, WP 12 leader
- Piet Zuidema, Senior Expert , Zuidema Consult GmbH, Switzerland
- Johan Andersson, Senior Expert, Sweden
- Sarah Bryson, Principal System Engineer, Nuclear Waste Services, UK
- Barbara Pastina, Project Manager, Posiva Oy, Finland
- Tara Beattie, Principal Consultant at MCM Environmental Services Ltd, UK

## REPORT APPROVAL

Date	Beneficiary	Home mentor/supervisor	Host mentor/supervisor
Date of last signee	Crina Bucur	Marius Iordache	-
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