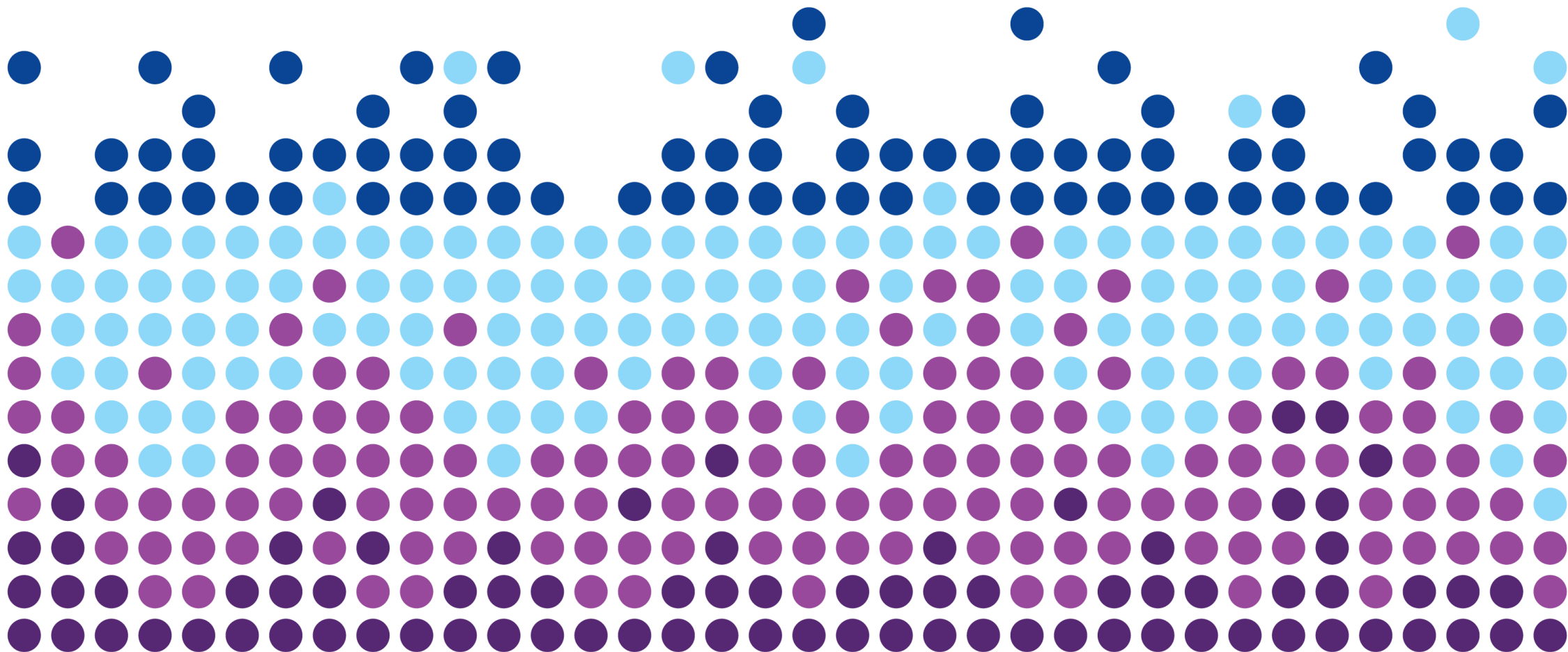




## Important aspects in competency management and radiation protection

**sck cen**  
Academy



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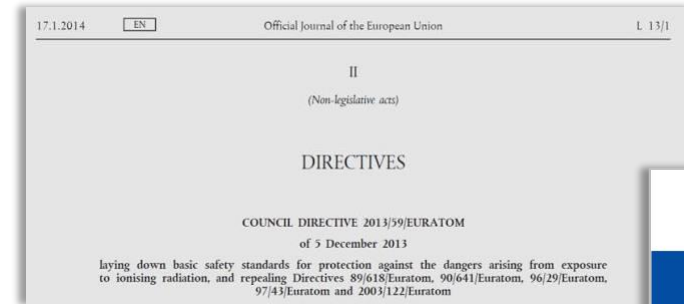
# Why competency management matters



- Increasing complexity of applications using ionizing radiation
- Well developed system of radiation protection with described roles (RPE, MPE, RPO,...)

But:

- Workforce shortages and mobility
- Variability across Europe: definition, role, development pathway, recognition (criteria & process)



**Recently published!**

# Recommendations



- Update and publish guidance for RPE and RPO developed under ENETRAP III, including
  - **Competency based approach**, interpretation of roles and functions, objective of recognition and relation with qualification frameworks



- Update and publish guidance developed for MPE, including
  - **Competency based approach** with common curricula
  - New technological developments, and involvement in low-dose medical exposures (incl pediatric)



- Establish actions on competency development in RP, clarifying competence for RPE and RPO and work towards common training standard

# What is competence?

- Competence = **ability to do something**  
= combination of knowledge, skills, attitude  
judgement, behavior  
(level of) autonomy & responsibility
- Not described nor defined in the BSSD
  - for RPE-MPE: “...*having knowledge, training and experience...*”
  - for RPO: “...*technically competent...*”
- Little mapping to roles, tasks and responsibilities
- Often reduced to focus on “training topics and # hours of training”

# Enabler of competences management ?

## The systematic approach to training

- SAT = logical progression from the identification of the competences to the development and implementation of training towards achieving these competences

- 5 phases



- 'ADDIE approach'
- Linking roles/tasks/responsibilities > competencies > training > assessment

# Why do we use a systematic approach?

- Logical process – can be tweaked over time
- To communicate with others who are not learning specialists
- To establish milestones and targets
- Sound basis for external review

# Analysis

- Analysis = Analysis of the needs
- Different approaches
  - Job/task/competency analysis
  - Content analysis
  - Goal-approached analysis
- Use references!
  - IAEA (Safety reports, RPO syllabi)
  - EC (e.g. ENETRAP, RP175-MEDRAPET, RP174-MPE)
  - National guidance via RP or MP society
- Techniques
  - Document analysis (based on existing procedures and job-related documents)
  - Functional analysis (based on a broad spectrum of tasks)
  - Topical analysis (based on content)
  - Verification analysis (based on similar tasks, existing training materials)

# Analysis

## Document analysis

- EU BSS (for MPE, RPE, RPO)
  - Definition/role (art 4)
  - Responsibilities (art 34, 37, 38, 44, 52, 57, 58, 68)
  - Tasks (art 22, 82, 83, 84)

- National legislation

*Also beyond the key profiles: workers, medical professionals, emergency workers, occupational health services, dosimetry services,...*

- (inter)national guidance documents (RP 174, RP 175, ENETRAP III, EFOMP, IAEA safety series)

# Analysis

- Output:
  - Target audience (incl. jobs, tasks, responsibilities)
  - Learning goals (general)
  - Topics (meta)
    - ...complementary to workforce planning, anticipation on shortages and capacity
- Pitfalls:
  - too broad (too much resources)
  - too narrow (training deficiencies and costly personnel errors)



***“If you don’t know where you are going, you’ll end up someplace else”***

# What was observed in Europe



- Huge variety in implementation of
- RPE (roles, definition, development pathway, recognition criteria,...)
- RPO (roles, definition, designation,...)
- MPE (tasks, development pathway, recognition criteria,...)

# Analysis Design

- Determine training approach: efficient and (cost-)effective
  - (Sometimes the conclusion of your analysis is: training will not lead to the desired competences!)
- Input from analysis phase
  - Information on knowledge, skills and attitudes
  - (unstructured) content topics
- Result:
  - **Learning outcomes** (specific)
  - Sequence of content
  - Instructional and delivery strategy (cfr teaching and learning styles)
    - E.g. theory vs hands-on practice, real technical visits vs simulations,...
  - Evaluation strategy

# Pragmatic list of action verbs in the (revised) Bloom's Taxonomy

|                   |                      |                                                                                                                                                  |
|-------------------|----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Create</i>     | <b>Evaluation</b>    | Rate, evaluate, assess, judge, justify                                                                                                           |
| <i>Evaluate</i>   | <b>Synthesis</b>     | Create, compose, argue, design, plan, support, revise, formulate                                                                                 |
| <i>Analyse</i>    | <b>Analysis</b>      | Analyze, question, differentiate, experiment, examine, test, categorize, distinguish, calculate, contrast, outline, infer, discriminate, compare |
| <i>Apply</i>      | <b>Application</b>   | Operate, apply, use, demonstrate, solve, produce, prepare, choose                                                                                |
| <i>Understand</i> | <b>Comprehension</b> | Translate, paraphrase, discuss, report, locate, generalize, classify, summarize                                                                  |
| <i>Remember</i>   | <b>Knowledge</b>     | List, define, recall, state, label, repeat, name                                                                                                 |

**Avoid** the use of vague qualifiers: 'very', 'completely', 'fully', 'totally', 'quickly'...

- Produce the material required to implement the training programme

- Result:

- Course material
- Demonstration models
- Didactic material for practical exercises
- Training scenario's and storyboards
- Extra content (pre-reading, references,...)
- Technical framework for online/VR/AR/XR content

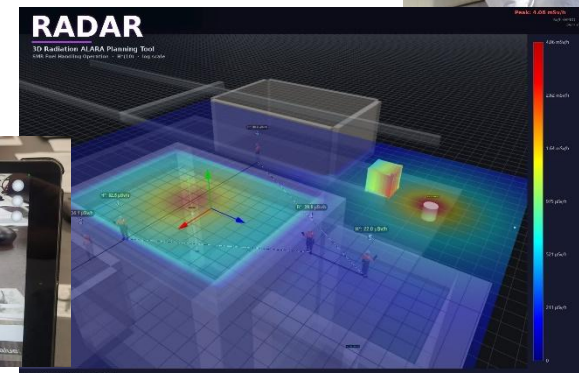
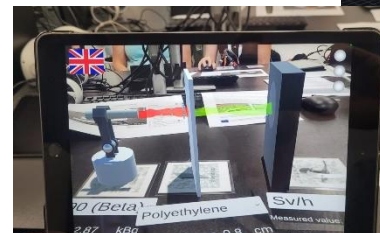
## Resources:

- EUTERP library
- IAEA resources
- IRPA webinars
- UNSCEAR documents
- ICRP guidance
- ...

- Do not forget:

- Evaluation/assessment

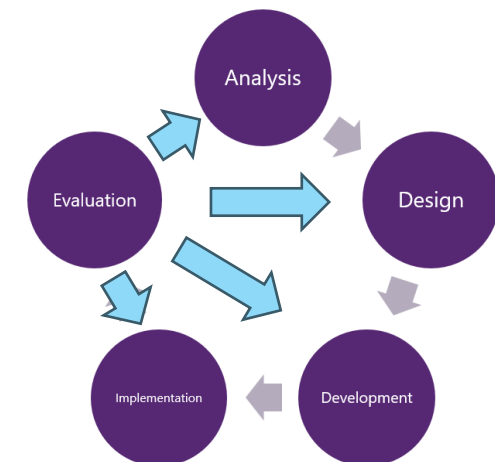
- Deliver the training programme in an **efficient** and **effective way**
- Possibilities that might level-up the performance:
  - Skills lab for hands-on training
  - Interactive polling tools
  - Demonstration of materials and devices
  - Quizzes and assignments
  - Simulation in VR, AR or XR...
  - The use of GenAI



# Analysis Design Development Implementation **Evaluation**

- According to the Kirkpatrick Evaluation Model
  - Level 1: Reaction *(did they like it?)*
  - Level 2: Learning *(did they learn it?)*
  - Level 3: Behavior *(do they use it?)*
  - Level 4: Results (impact) *(does it make a difference?)*

- Provide **feedback to other phases**



# 10th EUTERP Workshop

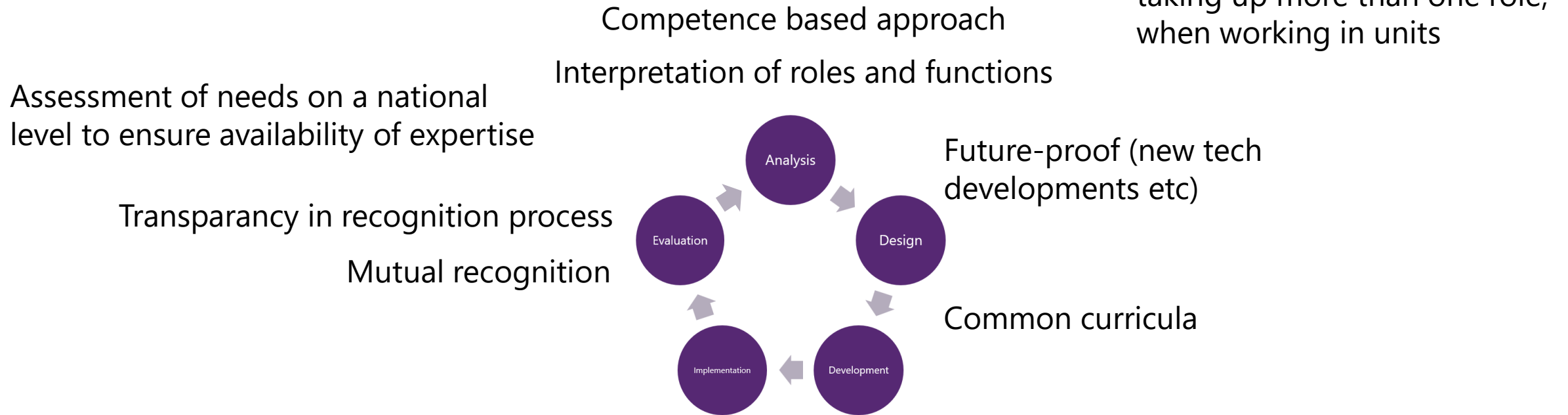
*Competence-based approaches in radiation protection*

PSI Switzerland, 7-9 July 2026



# How does this relate to this workshop?

- Update guidance, including.....



- Actively work on....

# Introduction to the programme

**Setting the scene – competency framework in radiation protection**

**Competencies: how to design, implement and evaluate**

**Recent developments regarding implementing competencies in E&T for RPOs and RPEs in Europe**

**New methods in radiation protection E&T**

# Introduction to the working groups

1. How to design, implement and evaluate competencies?
2. Establishment of qualification pathways and competency frameworks
3. New methods in radiation protection E&T

*Working in small groups with real cases linked to RP professional roles.*

Output: **tangible recommendations and common understanding, approaches and methodologies on the above concepts.**

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