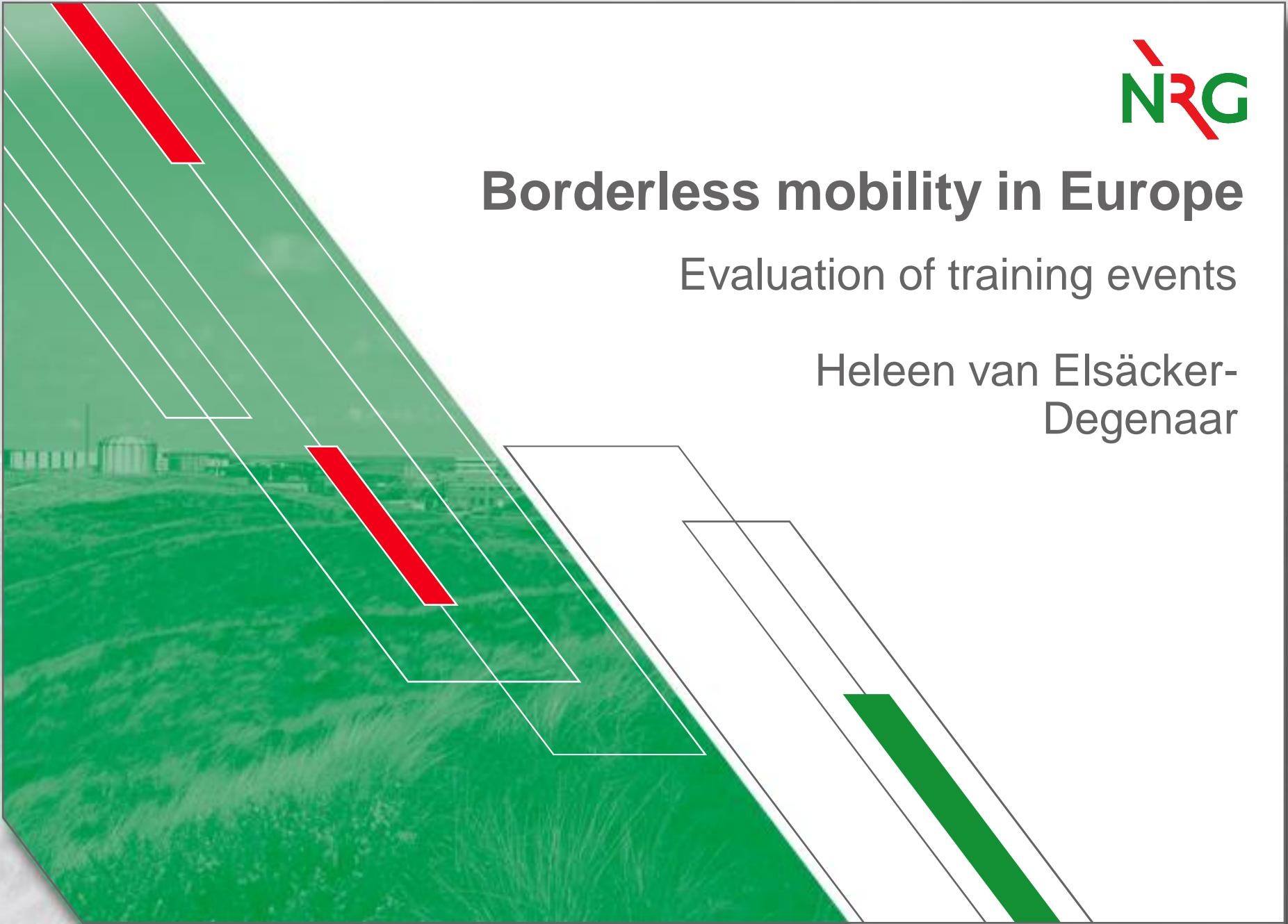# Borderless mobility in Europe

Evaluation of training events

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Problem

Borderless mobility of Radiation Protection Experts (RPEs)

- Ambiguous interpretation of the qualified expert (QE)
- Different trainings for RPE within Europe
- Education and training is a national affair

Solution

- An unambiguous definition of the RPE → concept EU/BSS
- Harmonize education and training (E&T) of RPEs
- Develop a methodology to compare E&T events

Identification of elements that are essential for the comparison of training events

Types of training
- Theoretical training courses
- Practical exercises
- E-learning
- Examinations
- On the job training
- Work experience

Comparison elements
- Learning outcomes
    - Knowledge
    - Skills
    - Attitudes
- Learning outcomes for the Radiation Protection Expert from WP 4, ENETRAP2
- The more detailed the LO, the more easy to use
- Descriptor system ('grading system')

Learning outcomes

Knowledge based

- To understand the descriptors for knowledge based learning outcomes
- To understand the descriptors for skill and attitude based learning outcomes

Skill based

- To apply the proposed methodology for the evaluation of training events

Attitude based

- To apply the methodology without (self-)bias

Comparison of courses

Learning outcomes (LO)

ECVET (European system to promote life-long learning and borderless mobility)

- No entrance level
- XX ECVET points is one year (duration)
- Knowledge, skills and attitudes/competences

Dutch reference table

- No entrance level
- Descripter (grading) system independant of duration
- Knowledge, skills and attitudes

Knowledge based LO

Descriptor	goal
0	-
1	Basic awareness of the subject
2	Understanding of the subject
3	Detailed understanding of the subject

Grades at which subjects are covered knowledge.
These grades will also be used for the evaluation of material.

Skills and attitude based LO

Descriptor	Description
+/yes	Fulfilled
-/no	Not fulfilled

Grades at which subjects are covered skills and attitudes.
These grades will also be used for the evaluation of providers.

Learning outcomes (knowledge)

Training provider	A	B	C	D	E	F	G	H	ERPTS
Be able to:									
Explain the different modes of disintegration and desexcitation	2	3	2	3	3	2	1	3	3
Describe the different type of radiations emitted and their features	2	3	2	3	3	3	2	3	3
Define the notions of activity, intensity of radiation, half-life.	2	3	2	3	3	3	2	3	3
	…	…	…	…	…	…	…	…	
Example	2	3	1	3	3	3	2	3	2

Learning outcomes (skills and attitude)

Training provider	A	B	C	D	E	F	G	ERPTS
Be able to:								
Calculate the activity of a source at any time...	yes	yes	yes	yes	yes	yes	yes	yes
Calculate the range of a beta radiation and the attenuation of a radiation using curves	yes	yes	yes	yes	yes	yes	yes	yes
Apply relationship between fluence, kerma and absorbed dose	yes	yes	yes	yes	yes	yes	yes	yes
Calculate the limit of detection, and others characteristics	NO	NO	NO	yes	yes	yes	yes	yes
Use the appropriate detection device and probe vs type of radiations	yes	yes	yes	yes	yes	yes	yes	yes

Outlook

Self serving bias
- Standard is known

Self-assessment → auditing or commission assessment
- Many languages in Europe
- Independent
- National regulations

Attitude based learning outcomes difficult to asses

Learning outcomes

Knowledge based

- To understand the descriptors for knowledge based learning outcomes
- To understand the descriptors for skill and attitude based learning outcomes

Skill based

- To apply the proposed methodology for the evaluation of training events

Attitude based

- To apply the methodology without (self-)bias