Quick Response for Operational Centers

D5.5 – QROC Validation Plan

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Definitions, Acronyms and Abbreviations

ACRONYMS / ABBREVIATIONS	DESCRIPTION
QROC	Quick Response for Operational Centres
LEA	Law Enforcement Agency
PMC	Project Management Committee
PCG	Project Coordination Group
QC	Quality Control
NGO	Non-governmental Organization
NPO	Non-Profit Organization
RTO	Research & Technology Organization
SME	Small- and Medium-sized Enterprise
UNI	University
CSA-tool	Situation awareness capabilities tool

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Executive Summary

This report describes the Validation plan (D5.5) for the curriculum (learning platform and table top) that will be developed in wp5 and the innovative technology that will be selected based on the identified needs (D4.2) and the market scan (D4.3).

The overall goals of the evaluation are:

1. To conduct the (end-user) evaluations of the training, and to elaborate on the delivered training curricula and materials in order to facilitate future exploitation of the project results.
2. To validate whether the developed technologies address the user needs that were identified in WP4, task 4.2.

The main measurement will be a (digital) questionnaire that end-users have to fill-out individually directly after each online training and tabletop (15-20 minutes). The results of the questionnaire will be discussed with the participants after the tabletop to gain a deeper understanding of the results. In addition to this self-evaluation, we use observations and the outcomes of the tabletop (results of the assignments) to evaluate the curriculum.

Evaluation of the curriculum

To evaluate the curriculum, we use the game-based learning evaluation model (GEM) (Oprins et al, 2015). It presents a set of measurable characteristics that are adjusted to fit our purpose, e.g. the evaluation of the e-learning and the tabletops. The figure below shows the characteristics that will be measured. Personal features are for example years of work experience in the OC, and current function. Design features are the characteristics of the e-learning and the tabletop. For example, the amount of challenge and the duration of the e-learning (is it too long or not?). Examples of learning features is the amount of engagement and enjoyment participants experienced. Finally, the learning outcomes are measured. Is there increased knowledge or awareness on the topics that were addressed? The full questionnaires are presented in ANNEX I: QUESTIONNAIRES CURRICULUM

Evaluation of the innovative technology

To measure whether the innovative technology addresses the needs that were identified in task 4.2, we use the same questionnaire as was used to identify the needs, namely the situation awareness capabilities tool (CSA-tool). We adjusted the CSA-tool to fit our context, that is the table tops where the innovative technologies will be introduced. Based on various means of experiencing new technologies, e.g. presentations and demonstrations, the LEA's will be able to assess whether the technologies address their user needs. In addition to the CSA questionnaire we will also measure the expected usefulness of the technology. For example, does the technology improves the job performance?

See for the questionnaire ANNEX II: QUESTIONNAIRE VALIDATION TECHNOLOGY.

The measurements will be described in a validation report. These results provide feedback about the added value of the innovative technology for the work in an OC and feedback about the curriculum in order to facilitate future exploitation of the project results.

1. Introduction

This report (D5.5) is the product of Task 5.4 (Validation) within the research project Quick Response for Operation Centers (QROC). It presents the evaluation plan for the curriculum (learning platform and table tops) and the innovative technology.

From the Grant Agreement (Annex I): This activity includes the work needed to define the evaluation methodology, to conduct the (end-user) evaluations of the training, and to elaborate on the delivered training curricula and materials in order to facilitate future exploitation of the project results. TNO will validate whether the developed techs address the needs that were identified in WP4, task 4.2. This task will necessarily run in parallel to T5.3 (tabletop exercises), but it is a separate task to ensure that the validation process will not interfere with the learning goals.

This evaluation plan describes the goals of the evaluation, what content will be evaluated, how the evaluation will be conducted (approach), what measurements will be used and how the results will be analyzed.

The goal of this plan is to describe as specific as possible what is needed to conduct the evaluation and to be able to use the same approach and measurements for each tabletop. Therefore, the main part of the evaluation contains measurements that can be used regardless of the specific content of the curriculum and the selected innovative technology. However, for each curriculum we will add specific questions related to the learning outcomes of the curriculum. These will be added when the specific learning content is developed.

The results of the evaluation provide feedback about the added value of the innovative technology for the work in an OC and feedback about the curriculum in order to facilitate future exploitation of the project results.

The content of the plan is as follow: in the second chapter (General evaluation approach) the general approach for the evaluation of all content will be described. In the third chapter (3.   Evaluation curriculum) the specific approach and measurements to evaluate the curriculum will be described. In the fourth chapter (4.   Validation innovative technology) the specific approach and measurements to evaluate the innovative technology will be described. In the annexes the material for the evaluation is presented, e.g. the developed questionnaires and the table with topics for qualitative analysis.

2. General evaluation approach

The evaluation consists of two main parts, namely the evaluation of the curriculum (training platform and tabletops) and the evaluation of the innovative technology that will be integrated in the tabletops addressing the needs of the users.

In this section we will describe the general approach for both parts. In the following chapters we will describe into more detail the evaluation method and measurements for the curriculum and for the innovative technology.

2.1 Goal

The overall goals are:

1. To conduct the (end-user) evaluations of the training, and to elaborate on the delivered training curricula and materials in order to facilitate future exploitation of the project results.
2. To validate whether the developed technologies address the user needs that were identified in WP4, Task 4.2.

2.2 Participants

The respondents of the evaluation are the participants of e-learning and the tabletop, these are operational OC experts. There will be two representatives of each participating LEA.

2.3 Method

In Table 1 we provide an overview of our evaluation approach. This approach will be the same for each table top, however the selection of the specific measurements might differ per table top. For example, to be able to measure the usefulness of a technology, it is necessary that the technology is integrated in the table top. The first tabletop will be held online, which requires different methods of evaluation.

We will use different measurements depending on the evaluation goal. The main measurement will be a (digital) questionnaire that end-users have to fill-out individually directly after each online training and tabletop (15-20 minutes). We will focus on measuring short term effects, this means measuring directly after the table top. However, after the second and third tabletop we will add some questions that include long term effects of the curriculum. The questions are based on existing questionnaires; however we adjusted the questions for this purpose.

In addition to the questionnaire, we will also use qualitative measurements, like observations and the results of the assignments of the table top. These measurements will be explained into more detail in the following chapters.

For the table tops, after the participants have filled-out the questionnaire, we will facilitate a discussion based on these questions. We will use a tool like Mentimeter[1] or Survalizer[2] to display (some of) the results to the

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[1] https://www.mentimeter.com/

[2] https://www.survalyzer.com/

group immediately and use this as an input for the discussion. This way we can discuss the most interesting results, e.g. items with a low score or high score, and gain a deeper understanding of what was meant by it. This discussion will focus on the evaluation aspects and is not a reflection of the assignments, e.g. this is not an after-action review.

Table 1 gives an overview of the different methods and materials used for each evaluation goal.

Evaluation part	Method	When	Materials	Division of tasks
Curriculum- e-learning platform	Questionnaire	Directly after e-learning.	Questionnaire – digital, closed and open questions	TNO develops the questionnaire
Curriculum – table top	Observation	During table top	List with observation topics	TNO: observation topics TNO/ Vesta/ EUC/DITSS: observe during table top
	Questionnaire Discussion	Directly after table top	Questionnaire – digital, closed and open questions Open questions for discussion	TNO develops the questionnaire TNO leads discussion, Vesta takes notes
	Analyze assignments	After table top	List with topics	TNO: list of topics Vesta: analysis
Innovative technology	Questionnaire Discussion	Directly after table top	Questionnaire – digital Open questions for discussion	TNO will develop the questionnaire TNO leads discussion, Vesta takes notes

Table 1: Overview of the evaluation approach

Before participation, participants will receive an informed consent. Here is explained the goal of the evaluation and how we will manage the data (as described here) Procedure – informed consent.

The first slide of each online questionnaire will contain the informed consent information. This information informs the participant about: which data will be collected; for which purposes the data will be used. With respect to data rights participants receive information about: which party collects, processes and stores their data; how many years their data will be stored; and their general data rights (e.g. request insight or deletion).

2.4   Analyses

The responses on the questionnaires are exported from Survalyzer to Excel. For the close-ended questions in the questionnaire (scale-questions) we will provide descriptive statistics. Description statistics give an overview of the end-user experience of both the e-learning platform, the tabletop and innovative

technologies. The results will be reported on group level, we will not report individual results, or results per country/ participating LEA.

The open answer questions in the questionnaire are structured and depending on the outcomes divided into different categories. Based on this, the main results will be described in the report.

The results of the discussion after the tabletop will be used to interpret the results of the questionnaires and to enrich the qualitative analyses with more content.

Besides the qualitative questionnaires, which are the subjective perceptions of the participants (LEA's), it is possible to add an expert opinion. This is possible by analyzing the assignments of the table top. The expert analyses how the content of the e-learning is applied in the tabletop and whether they elaborate this knowledge during the table top. An expert is in this case, the person who developed the e-learning or has enough knowledge about the content of the e-learning. Preferably these persons also has domain knowledge about the OC.

The results for each tabletop (and corresponding e-learning) will be described in the exercise validation report and can provide input for the improvement of the e-learning and following table top, and the innovative technologies.

2.5   Data processing and data rights

TNO is responsible for the data collection, data processing and storage of data. As with the privacy laws, participants have the right to request insight in their data and request deletion of their data. For this they can contact TNO.

TNO is the controller of the data. This means that TNO determines the purposes and means of the processing of personal data. Data collection will be carried out using the software Survalyzer. This software has been used at TNO since 2011 and runs on one of TNO's own servers. This means that the data will not be stored outside TNO and remains the property of TNO.

TNO needs to collect the names of the participants in each questionnaire. The purpose of this information is to allow TNO to connect the questionnaires after the e-learning and after the tabletop to the same person. This is necessary to be able to analyze whether individual differences in experience of the e-learning relate to differences in experience of the tabletop and learning outcomes. These are group-level correlations. All data will be presented on group level (meaning the participant group per table top). Individual scores or responses will not be presented. After connecting the multiple measurements in time to the same individual by using their name, the names of the participants will not be needed furthermore. After this activity the names will be removed from the dataset and replaced by a participant number. The names of the participants cannot be traced after the research.

3. Evaluation curriculum

In this chapter we describe into more detail the evaluation of the curriculum. The curriculum consists of the learning platform and the table top. The learning platform is to prepare the trainees for the table top.

3.1 Goal

To goal is to

- conduct the (end-user) evaluations of the training and to elaborate on the delivered training curricula and materials.
- to measure whether the learning goals are achieved.

Learning goals for the curriculum in general are:

- improve the preparedness of OC's staff against improved international communication means (data sharing and communication capability)
- improve the preparedness of OC's staff against upcoming technologies (Technology and Change Management capability)

For the lectures in the learning platform and for each table top, the learning goals will be specified.

3.2 Method

To evaluate the curriculum, we will use the game-based learning evaluation model (GEM) [8]. The Game-Based Evaluation Model helps training professionals to evaluate training in a systematic way. It presents a set of measurable characteristics that are relevant to the evaluation of game-based learning specifically. However, characteristics can be added to and removed from the model in order to fit the purpose of other type of training that are not serious games. In **Error! Reference source not found.** we present the selection of features for each of the GEM blocks for the learning platform and the table top. The selection of features is made based on the learning goals and the type of learning method.

With this framework we collect data to answer two questions that are central to evaluation of training programs. These questions are:

1. Was the training effective?
2. How can the training process be modified in ways that increases its potential for effectiveness?

The first question, 'Was the training effective?' is answered by measuring *learning outcomes* on the attitudinal, cognitive and the behavioral level. Attitude and cognitive outcomes refer to the feelings of the employee about the training and to the knowledge or skills gained in the training, both measured directly after the training. Behavioral level outcomes refer to the extern to which what is learned is applied in the workplace and is often measured a few weeks after the training [6]. In this evaluation study, we evaluate learning outcomes at the levels of knowledge and attitude. Behavioral outcomes are not evaluated. The learning outcomes refer to knowledge and awareness (attitude) of participants about the importance of international data sharing and communication, and the added value of innovative technologies.

The second question is 'How can the training process be modified in ways that increases its potential for effectiveness?'. Although most training evaluations historically solely focus on *learning outcomes*, these results do not provide information about the factors that helped or hindered the effectiveness of the training [5]. Four sets of characteristics contribute to training effectiveness.

The first set is *input variables* or the individual characteristics that the trainees bring to the situation. The personal information that is relevant to understand the learning process is: current function in OC and years of work experience in OC. These characteristics can influence how the participants appreciate the curriculum and therefore it is good to know the composition of the participants.

The second set are the *design features* or the training characteristics, such as the form and content of the training and its materials. The GEM model presents social interaction as an important design characteristic, as interaction with peers can hinder or facilitate learning. The GEM model also presents the degree of which the content challenges the learners as a factor for learning. Additionally, a few variables are added to the model in order to evaluate specific design features of the e-learning and table top. These variables are: duration (is it too long or not?), information content quality (based on a study on e-learning evaluation in [9], and use of the scenario's in the table tops. Information content quality is evaluated because the learners are already experts in the domain, and it is interesting to collect their assessment on the material quality as it will continue to develop over the table tops. Lastly, we added three open questions about general learners experiences that provide input to further develop the learning materials.

The third set are the *learning features* that were manipulated in the training such as motivation and engagement. Motivation has proven to have a strong influence on learning. Motivation refers to the perceived importance or interest in what is learned. The Intrinsic Motivation Inventory studied in [10] is a multidimensional measurement intended to assess different concepts relevant to motivation. From this questionnaire we used the concepts of perceived value/usefulness and the perceived enjoyment. Engagement describes a person's active involvement in a task or activity and is shown to be connected to student learning [7].

The fourth set of characteristics covers the *contextual circumstances* in which the training is implemented or the organizational and situational characteristics. These factors can indeed influence learning processes but are not explicitly measured in this evaluation.

The last set is the output of the training, the learning outcomes. Is there increased knowledge or awareness on the topics that were addressed?
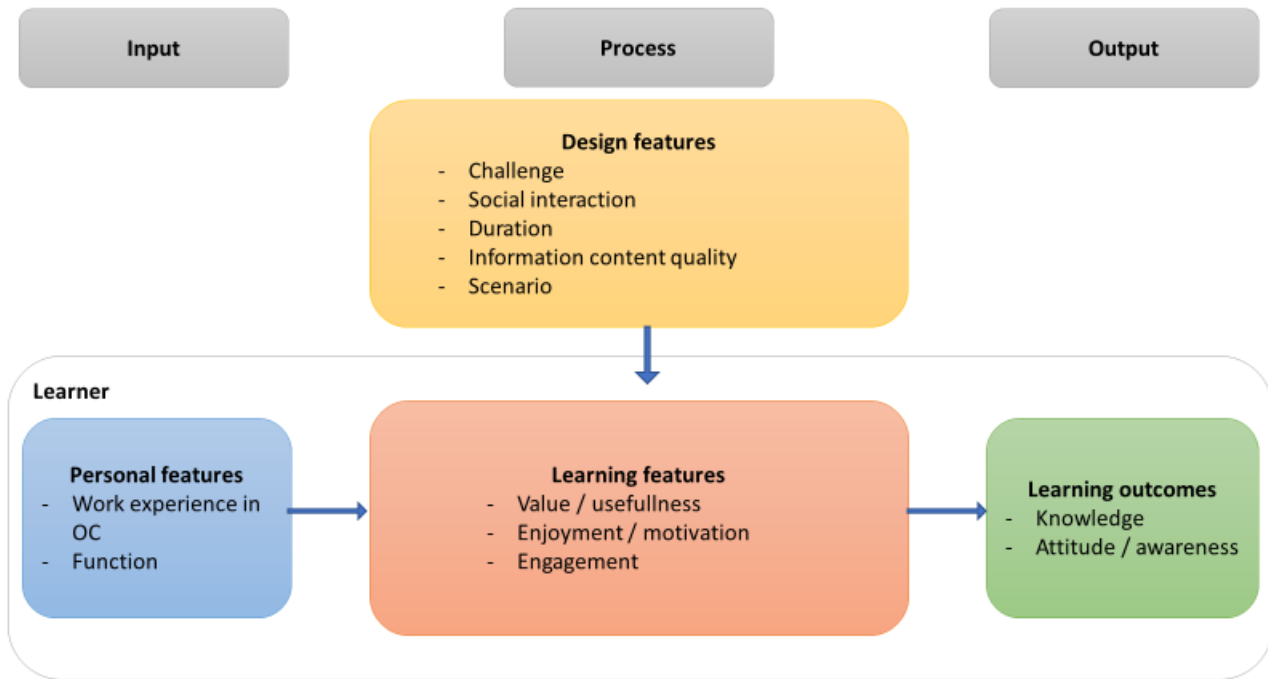
Figure 1: The Game-Based Evaluation Model (GEM) [8]

3.3   Quantitative measurements: Questionnaires

All the variables that are presented in **Error! Reference source not found.** are measured in a self-assessment questionnaire. There are two questionnaires: one directly after the e-learning and one directly after the table top. Both questionnaires measure the same characteristics from the GEM model. For each characteristic we formulated 1-3 questions. In the tabletop questionnaire two topics are added: the connection between the e-learning and the table top; and the extent to which the scenario helped the participants to generate ideas in the assignments. An overview is presented in Table 2. The full questionnaires are presented in ANNEX I: QUESTIONNAIRES CURRICULUM.

GEM block	Variables / constructs	Number of items	Questionnaire e-learning	Questionnaire table top
Personal features	Personal	3	x	x
Learning outcomes	Learning outcomes (GEM)	3	x	x
Learning features	Value/usefulness (GEM)	1		x
	Enjoyment / Motivation (GEM)	1	x	x
	Engagement (GEM)	1	x	x

Design features	Duration	1	x	x
	Challenge (GEM)	1		
	Information content quality [9]	3	x	x
	Social interaction (GEM)	1	x	x
	General	3	x	x
	Link to e-learning	1		x
	Scenario's	2		x

Table 2: Overview of the curriculum questionnaires

3.4 Qualitative measurements: Observation & assignments

3.4.1 Observations of learning outcomes

It is possible to measure the learning outcomes not only with a questionnaire (quantitative) but also by analyzing the results of the assignments that the participants have to do during the table top. This is a qualitative analysis of the results of the assignments. The answers that are given during the assignments can be compared with the content that was provided in the e-learning. How rich are the answers that are given during the tabletop and do we see the content of the e-learning in the answers? To what extend do they apply their knowledge in the table top? From this we can derived what is remembered and what is considered important. The specific questions might be adjusted once the content is developed. At this moment not all the learning content is ready yet.

3.4.2 Observations of other features

Additionally, we would like to strengthen our analysis by collecting observational data during the table top. The observational data would provide a second data source with which the some of features can be evaluated. Some learning features and design features can be observed during the table tops. This is the case for: Social interaction, Engagement and Challenge.

See ANNEX III: OBSERVATION & ASSIGNMENT for the table with observation topics.

4. Validation innovative technology

4.1 Goal

The goal of the second part of the evaluation is to validate whether the developed technologies address the user needs that were identified in WP4, task 4.2.

4.2 Method

As described in chapter two, the validation of innovative technologies will be done via digital questionnaires and open discussion after each table top. In this chapter we will elaborate on the user needs and envisioned innovative technologies

4.2.1 Identified needs

The user needs identified with the LEA's in WP4.2 [3], are next to innovation management capabilities, concerning improving the following situational awareness capabilities:

- Information gathering
- Information sharing
- Information storage
- Information integration
- Information interpretation
- Information projection

4.2.2 Technologies

These situational awareness capabilities might be improved using innovative technologies. The following technologies are envisioned for the QROC project: 5G-based technology, intelligent data management technology and drone-based technology. The technologies are described in, and a result of task 4.3 Market Scan [4].

The technologies have functional characteristics which can meet the user needs. For example, a drone provides the functional characteristic to have 'eye's from the air' at a specific location. These functionalities of the technologies are opportunities to meet the desired user needs. However, introducing new technologies will also introduce new risks, e.g. possible downsides of the technology (for example limited airtime of a drone due to limitations on the battery life) or even introduce new user needs.

In preparation of and during the tabletop exercises, the new technologies will be presented and demonstrated to the LEA's in different ways. This can be in written form, illustrated in use cases, or can be presentations or demonstrations of the different technologies.

A use case is a written description of how users will perform a task. It outlines, from a user's point of view, the technology's behavior as it responds to a user request. Each use case is represented as a sequence of simple steps, beginning with a user's goal, and ending when that goal is fulfilled. The use cases, the result of task 4.4, describe how the technological functionalities provide a solution for one or more user need.

The presentations and demonstrations of the technologies will provide and show the LEA's how the technology works and can address the advantages of disadvantages for the OC tasks and user needs.

Based on these various means of experiencing the technologies, the LEA's will be able to assess whether the technologies address their user needs.

4.3   Measurements

As described in Chapter 2, by using questionnaires and group discussion we will at the end of tabletop 2 and 3 evaluate how the technologies address the needs of the end-users. During tabletop 1 (TTX1) no technology will be presented and therefore no validation questions asked. However, we will ask the LEAs if they have identified any interesting technologies of functionalities during the exercises. In the second and third table top, the during the tabletop addressed functional characteristics and technologies will be evaluated via questionnaires and discussion afterwards. Important note: this means that for each presented technology, the questions have to be filled out.

We will not perform a comparison between an operational situation with the technology and without the technology. We will ask the end-users to rate the expected added value based on their expectations after experiencing the technologies in the various means as described above during the tabletop exercises.

The measurements we will use:

Usability & usefulness: Technology acceptance tool (TAM)

This standardized questionnaire measures usefulness and usability. Depending on the maturity level of the tool that will be incorporated in the table top, we will measure a selection of the usefulness questions.

For example: 1. [The technology] improves the job performance of my OC.

Needs concerning SA: CSA-tool

We will use the Self-assessment tool to measure SA capabilities (CSA-tool) developed in WP 4.1 as a basis to measure whether the innovative solutions fulfill the needs that are identified in the self-assessment. This way it can be evaluated whether the tools support the different processes that are important for building and maintaining SA, like gathering of information. We adjusted the CSA-tool to fit this purpose and use a for the table tops relevant selection. We kept the formulation of the questions as similar as possible.

Example of a question: [This technology] helps the gathering of relevant information to build situational awareness.

See for the questionnaire ANNEX II: QUESTIONNAIRE VALIDATION TECHNOLOGY

5. Conclusions

The overall goals of the evaluation are:

1. To conduct the (end-user) evaluations of the training, and to elaborate on the delivered training curricula and materials in order to facilitate future exploitation of the project results.
2. To validate whether the developed technologies address the user needs that were identified in WP4, task 4.2.

To reach the goals of the evaluation different measurements will be used.

The main measurement will be a (digital) questionnaire that end-users have to fill-out individually directly after each online training and tabletop (15-20 minutes). The results of the questionnaire will be discussed with the participants after the tabletop to gain a deeper understanding of the results. In addition to this self-evaluation, we use observations and the outcomes of the tabletop (results of the assignments) to evaluate the curriculum.

To evaluate the curriculum, we use the game-based learning evaluation model (GEM) (Oprins et al, 2015). It presents a set of measurable characteristics that are adjusted to fit our purpose, e.g. the evaluation of the e-learning and the table tops.

To measure whether the innovative technology addresses the needs that were identified in task 4.2, we use adjusted the situation awareness capabilities tool (CSA-tool) to fit our context. In addition to the CSA questionnaire we will also measure the expected usefulness of the technology.

The results of the measurements will be described in a validation report. These results provide feedback about the added value of the innovative technology for the work in an OC and feedback about the curriculum in order to facilitate future exploitation of the project results.

ANNEX I: QUESTIONNAIRES CURRICULUM

Questionnaire E-learning

Moment: Right after Moodle, via survalyzer

Theme	Question/ statement	Answer options
Personal	What is your name?	Open question
	What is your current function?	Open question
	How many years of work experience in OC do you have?	Open question
Duration	1. How much time did you spend on the e-learning?	Categories: [< 01:00 hour] [01:00 – 02:00 hours] [02:00 – 04:00 hours] [> more than 04:00 hours]
	2. The duration of the e-learning was too long.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Learning outcomes (GEM) After this e-learning,...	3. ... I have more awareness of challenges of international data sharing and communication.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	4. ... I have more insight in the pitfalls and advantages of different information gathering/sharing methods.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	5. ... I find international data sharing and communication more important.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	6. ... I see more added value of innovative technologies for international data sharing and communication.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Challenge (GEM)	7. The content of the e-learning was challenging.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Enjoyment / Motivation (GEM)	8. This activity was fun to do.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Engagement (GEM)	9. I felt engaged (involved/committed) during the whole e-learning.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Information content quality [9]	10. The e-learning content covers an appropriate degree of breadth.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	11. The e-learning content is up to date.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	12. The e-learning is interactive.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Social interaction (GEM)	13. I would like to discuss the content with others online (for example on a discussion forum).	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
General	14. What did you find strong / good about the e-learning?	Open question
	15. What could be improved in the e-learning?	Open question

Remarks

Questionnaire Table top

Moment: Right after Table top

Theme	Question/ statement	Answer options
Personal	What is your name?	Open question
	What is your current function?	Open question
	How many years of work experience in OC do you have?	Open question
Learning outcomes (GEM) After this tabletop exercise…	1. … I have more awareness of challenges of international data sharing and communication.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	2. … I have more insight in the pitfalls and advantages of different information gathering/sharing methods.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	3. … I find international data sharing and communication more important.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	4. … I see more added value of innovative technologies for international data sharing and communication.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Link to e-learning	5. I could apply what I studied in the e-learning.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Duration	6. The duration of the tabletop was too long.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Value/Usefulness (GEM)	7. This tabletop was useful for my job.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Challenge (GEM)	8. The assignments were challenging.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Interest/Enjoyment (GEM)	9. This activity was fun to do.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Engagement (GEM)	10. I felt engaged (involved/committed) during the whole table top.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Information content quality [9]	11. The tabletop content is up to date.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	12. The tabletop is interactive.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	13. The scenario in the tabletop is representative for work in the OC.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Social interaction (GEM)	14. I learned from discussing with the other participants.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Scenario's (Extent to which tabletop engages participants in realistic dilemma's (on which base they subsequently evaluate the usefulness of technology)	15. The scenario was challenging.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	16. The scenario provided enough input for the assignments.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"

General	17.	What did you find most interesting?	Open question
	18.	What did you find least interesting?	Open question
	19.	What was strong / good about the table top?	Open question
	20.	What could be improved in the table top?	Open question
Long term effect (only TTX 2&3)	21.	After the first table top, I applied the new knowledge in my job.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	22.	After the first table top, I searched for more information about [topic].	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Remarks			

ANNEX II: QUESTIONNAIRE VALIDATION TECHNOLOGY

Questions TTX1

Theme	Question/ statement	Answer options
Usefulness	1. What did you find the most interesting technologies (functionalities) that were discussed during the assignments?	Open question
	2. What is the added value of this technology (functionalities) for the OC?	Open question
Remarks		

Questions TTX2 and TTX3

Theme	Question/ statement	Answer options
Usefulness (TAM)	1. [The technology] improves the job performance of my OC.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	2. [The technology] makes our job as OC easier.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Information gathering (CSA)	3. [The technology] helps gathering relevant information to build situational awareness.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	4. [The technology] helps in monitoring the situation via various sensors or sources of information.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	5. [The technology] helps to actively seek further information to extend the picture of the situation.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	6. [The technology] helps to assess whether information is factually correct.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Information sharing (CSA)	7. [The technology] helps sharing relevant information between team members.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Information storage (CSA)	8. [The technology] helps storing and organizing information in a structured way (e.g. in an information system).	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Information integration (CSA)	9. [The technology] helps displaying of relevant information to support our team decision making.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Information interpretation (CSA)	10. [The technology] helps interpreting the information (sense-making).	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	11. [The technology] helps to weight the trustworthiness of information.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	12. [The technology] helps to identify discrepant information.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
	13. [The technology] helps to include all information rather than fixating on one item or event.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"

Information projection (CSA)	14.	[The technology] helps to form an impression of how the situation will develop.	7 – point scale. "Strongly disagree" – "Neutral" - "Strongly agree"
Remarks			

ANNEX III: OBSERVATION & ASSIGNMENT

Observation topic list table top

Observe whether you see this behavior, provide examples. Make 2 separate observations for group for part 1 and part 2

GEM design features	Observation topics
Social interaction	- do participants ask questions (type of questions, e.g. clarification) - are there vivid discussions - is there an active participation of participants in general (all or some) - positive environment, e.g. is there a relaxed atmosphere, room for jokes, open attitude to each other - did the facilitator intervene to improve the discussions/ interactions? E.g. use questions from the list of prepared questions
Engagement	- concentration during assignments
Challenge	- effort participants have to put in the assignment, e.g. can be derived from duration to complete assignment, non-verbal cues of effort (frowning, red face), remarks about level of assignments (easy, difficult).
Context	- Where there circumstances that were of influence?

Topic list assignments tabletop

GEM feature	Observation topics	Score
Learning outcomes (knowledge and attitude/awareness)	To what extent do the participants show…. (per assignment / per table top):	
	Awareness of challenges of international data sharing and communication?	poor - excellent score 1-10
	Insight in the pitfalls and advantages of different information gathering/sharing methods?	poor – excellent score 1-10
	To what extent do the answers during the assignments/ discussion reflect the content of e-learning? E.g.:	
	Do participants reproduce the advantages/pitfalls/gaps/challenges that were presented to them in the e-learning, in the assignments?	poor – excellent score 1-10

	Do participants elaborate on issues addressed in the e-learning?	poor – excellent score 1-10
	What SA dilemma's and innovative technologies are regarded by the participants as important/urgent?	Open field

ANNEX IV: E-LEARNING & TABLETOP

Training platform and material

We will only evaluate the content of the e-learning platform and not the platform itself (e.g. the usability of platform).

The e-learning platform consists (at the time of writing the evaluation plan) of three long courses and two short courses:

Long courses

- CBRN-E Training
- Understanding LEAs' Information Sharing
    - Lecture 1: Existing tools and current practises
    - Lecture 2: Gaps in information sharing
    - Lecture 3: New Methods and Tools for Efficient Information Sharing for LEA's
- Incident Management of CBRN-E Attacks

Short courses

Lecture 1: Information Gathering

Lecture 2: Information Sharing

E-learning platform	Learning goals	Learning outcomes
Preparation for tabletop 1 Course: Information Sharing	The goal of this course is to reflect on the way information is exchanged, within Member states.	• Define the importance of information sharing • Identify the benefits of information sharing • Describe the risks involved in information sharing • Identify the main barriers to effective information exchange • Analyse the gaps of information sharing • Practice new ways to share information
Preparation for tabletop 1 Course: Information Gathering	The goal of this course is to identify the various forms of information gathering during an event.	• Define the importance of information gathering • Describe the different methods used in gathering information • Describe the various ways information is gathered using electronic means

		• Identify the methodologies of gathering information from human subjects • Analyse previous events and how LEAs gathered information during the event lead-ing to the capture of the perpetrators
Preparation for tabletop 2 To be determined	To be determined	To be determined
Preparation for tabletop 3 To be determined	To be determined	To be determined

Table tops

Table top	Learning goals	Learning outcomes
Tabletop 1	The goal of this tabletop exercise is to train practitioners in information management guided by a detailed scenario about Manhunt. To reach that goal, the first TTX focusses on training practitioners on 5 different aspects of information management: information input, information gathering, information visualization, information verification and information sharing.	• Learn how to deal with the information incompleteness • Learn how to deal with information overload (too much information) • Test/describe the best way to visualize an emergency situation • Learn to make a distinction between fact checked information and fake news, how to ensure verification of information (under time pressure) Learn how to share operational information with stakeholders internal and cross border
Tabletop 2	To be determined	To be determined
Tabletop 3	To be determined	To be determined

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