D924.12 - MATERIALS FOR THE TRAINING MODULE II

SP92 - TEST-BED

FEBRUARY 2019 (M58)

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The DRIVER+ project

Current and future challenges, due to increasingly severe consequences of natural disasters and terrorist threats, require the development and uptake of innovative solutions that are addressing the operational needs of practitioners dealing with Crisis Management. DRIVER+ (Driving Innovation in Crisis Management for European Resilience) is an FP7 Crisis Management demonstration project aiming at improving the way capability development and innovation management is tackled. DRIVER+ has three main objectives:

- Develop a pan-European Test-bed for Crisis Management capability development:

  a. Develop a common guidance methodology and tool, supporting Trials and the gathering of lessons learnt.
  b. Develop an infrastructure to create relevant environments, for enabling the trialling of new solutions and to explore and share Crisis Management capabilities.
  c. Run Trials in order to assess the value of solutions addressing specific needs using guidance and infrastructure.
  d. Ensure the sustainability of the pan-European Test-bed.

- Develop a well-balanced comprehensive Portfolio of Crisis Management Solutions:

  a. Facilitate the usage of the Portfolio of Solutions.
  b. Ensure the sustainability of the Portfolio of Solutions.

- Facilitate a shared understanding of Crisis Management across Europe:

  a. Establish a common background.
  b. Cooperate with external partners in joint Trials.
  c. Disseminate project results.

In order to achieve these objectives, five Subprojects (SPs) have been established. **SP91 *Project Management*** is devoted to consortium level project management, and it is also in charge of the alignment of DRIVER+ with external initiatives on Crisis Management for the benefit of DRIVER+ and its stakeholders. In DRIVER+, all activities related to Societal Impact Assessment are part of **SP91** as well. **SP92 *Test-bed*** will deliver a guidance methodology and guidance tool supporting the design, conduct and analysis of Trials and will develop a reference implementation of the Test-bed. It will also create the scenario simulation capability to support execution of the Trials. **SP93 *Solutions*** will deliver the Portfolio of Solutions which is a database driven web site that documents all the available DRIVER+ solutions, as well as solutions from external organisations. Adapting solutions to fit the needs addressed in Trials will be done in **SP93**. **SP94 *Trials*** will organize four series of Trials as well as the Final Demo (FD). **SP95 *Impact, Engagement and Sustainability***, is in charge of communication and dissemination, and also addresses issues related to improving sustainability, market aspects of solutions, and standardisation.

The DRIVER+ Trials and the Final Demonstration will benefit from the DRIVER+ Test-bed, providing the technological infrastructure, the necessary supporting methodology and adequate support tools to prepare, conduct and evaluate the Trials. All results from the Trials will be stored and made available in the Portfolio of Solutions, being a central platform to present innovative solutions from consortium partners and third parties, and to share experiences and best practices with respect to their application. In order to enhance the current European cooperation framework within the Crisis Management domain and to facilitate a shared understanding of Crisis Management across Europe, DRIVER+ will carry out a wide range of activities. Most important will be to build and structure a dedicated Community of Practice in Crisis Management, thereby connecting and fostering the exchange of lessons learnt and best practices between Crisis Management practitioners as well as technological solution providers.

Executive summary

This document describes the design of the final version of the DRIVER+ Training Module (TM) and the rationale behind this design. In M66 (October, 2019), the final TM will be delivered hand-in-hand with the final Trial Guidance Methodology (TGM) Handbook and the Trial Guidance Tool (TGT), thereby providing a description of the pan-European Test-bed, a training how to use all methods, tools and user network of this Test-bed best and a tool guiding users through the process of preparing, executing and evaluating their own realistic, structured Trial in an objective, data-driven manner.

The TM's design is based on the feedback received on earlier conducted training activities during project meetings, TGM support provided to the project's Trials 1-4, and interviews with project-external education experts and practitioners who have attended Crisis Management courses. This led to concrete suggestions for improvements, such as a modular, role-based e-learning (i.e. sections specifically focused on the learner's role in Trial organisation), shorter and more interactive e-learning sections divided in basic and advanced parts, a tailored contact-phase facilitated by instructors who have completed a train-the-trainer course, full consistency with explanations and terminology in the TGM Handbook, and suggestions regarding sustainability and feasibility of the TM after the project's end-date (e.g. findability, promotion, cost coverage and implementation advice). This feedback, together with progressions in the TGM development and its Handbook, leads to an improved design of the TM, compared to its previous version 1 (**D924.11**).

The primary target group of the TM are organisers of future Trials, such as experienced and/or high-level Crisis Management (CM) professionals, policy makers, procurement officers and researchers. The TM also targets a secondary group of learners, namely CM practitioners, solution providers, technicians and staff involved in specific steps of organizing and/or running a Trial. The TM provides both groups with explanations, training, practice and assessments in applying the TGM, the supportive tools and methods (e.g. the TGT, the Test-bed technical infrastructure and how to draw a baseline and innovation line). In addition, it makes references to other users of the Test-bed, such as the members of the Crisis Management Innovation Network Europe (CMINE) and potential Centres of Expertise (CoE) who will deliver the services developed within DRIVER+ after the project duration.

The TM will use a blended learning approach to facilitate a feasible and effective learning strategy that can be partly tailored to fit the needs of a specific (mixed) group of learners. This means that the TM contains a self-directed e-learning phase, followed by a face-to-face or web-based instructor-led contact-phase providing more instruction, practice, guidance and feedback in those sessions where the Test-bed is most innovative and/or differs most from organizing other type of activities, like exercises.

A reference implementation of the TM will be delivered in M66, using EASS's learner administration system and e-learning platform Moodle. To support the TM's sustainability after the project's duration, not only the TM content and the reference implementation will be delivered; a full training package will be delivered, which can be implemented at the potential CoEs. More implementations would result in a better coverage and findability of the Test-bed and its TM throughout Europe. In addition to the training contents, the full package consists of the content's source files and instructor notes, manuals how to implement, tailor and update them and a train-the-trainer program facilitating the creation of a pool of TM instructors. Furthermore, it is recommended to establish a Test-bed steering committee, that can manage future updates of the Test-bed and thus of the TM.

Until M66, the TM's contents will be developed, reviewed and finalized, together with the other parts of the training package, harmonized with the TGM Handbook finalization. The TM's sustainability aspects will be taken along in the broader sustainability work within the project. Furthermore, implementations of the TM at other prospective CoEs will be investigated.

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List of Acronyms

Acronym	Definition
BPMN	Business Process Modelling Notation
CM	Crisis Management
CMINE	Crisis Management Innovation Network Europe
CoE	Centre of Expertise
DR1 / DR2	Dry Run 1 / 2
ECTS	European Academic Credit Transfer System
ELSI	Ethical, Legal and Social Issues
EQF	European Qualifications Framework
EUCPM	European Union Civil Protection Mechanism
EU GDPR	EU General Data Protection Regulation
KPI	Key Performance Indicator
LL	Lessons Learned
LMS	Learning Management System (e-learning support)
LCMS	Learning Content Management System
PoS	Portfolio of Solutions
RPL	Recognition of Prior Learning
SIA	Societal Impact Assessment
SQF	Sectorial Qualification Framework (occupational standard)
T1/T2/T3/T4	Trial 1 / Trial 2 / Trial 3 / Trial 4
TAP	Trial Action Plan
TGM	Trial Guidance Methodology
TGT	Trial Guidance Tool
TIM	Trial Integration Meeting
TM	Training Module
TNA	Training Needs Analysis
UN OCHA	United Nations Office for the Coordination of Humanitarian Affairs

1. Introduction

In October 2019 (M66) the final version of the DRIVER+ pan-European Test-bed will be delivered, as documented in the final version of the Trial Guidance Methodology (TGM) Handbook (i.e. **D922.41** (1)). This Handbook supports Crisis Management professionals in organizing and evaluating their own Trials. The TGM Handbook will be accompanied by the Trial Guidance Tool (TGT) and a Training Module (TM), so future Trial organizers not only have a document to consult and a tool guiding them through the methodology, but can also attend a training course instructing them what the Test-bed offers and how it can be used to best fit their needs. The TM is developed as part of **WP924** (Test-bed for Trials)

This report **D924.12** *Materials for the Training Module II* contains the final design of the TM and the design rationale behind it. It is important to note that this document does not contain the exact training contents of the TM, but rather the descriptive designs of these. In fact, the training content itself cannot be documented in a report like this, as the design of the final TM is highly visual (e.g. video animations), interactive (e.g. quizzes as well individual and group assignments) and partly tailored to specific groups of learners[1]. Converting it into a written text and static images would neglect its interactive, tailored and contemporary nature. Delivering already in M58 the final well-thought-through design of the TM enables the joint delivery (M66) of the final versions of both the TGM Handbook and the TM, fully consistent in structure, terminology and visuals.

As the TM's main objective is to train organizers, facilitators and other stakeholders of future Trials, the TM's design is especially focussed on its sustainability after the end of the DRIVER+ project. That means that particular attention is paid to:
• Feedback received from both within and outside the project consortium about previous delivered training activities.
• Lessons identified from TGM support to Trials organized within the project.
• Feedback from CM practitioners who have attended other international courses, specifically courses from the UN OCHA and the European Union's Civil Protection Mechanism (EUCPM).

This feedback and the conclusions drawn from it are documented in section 2. Section 3 explains the overall design and structure of the final TM, including a detailed explanation of the TM's target groups and their training needs. The specific learning objectives and selected learning strategies of each part of the final TM (i.e. for each sub-session) are documented in Annex 4. To get a tangible impression about how the TM looks like, especially the e-learning part, readers are referred to Annex 2 providing user credentials to access the previously delivered TM version 2.

A reference implementation of the TM will be delivered in M66, using EASS's learner administration system and e-learning platform Moodle. To facilitate that the final TM will be used after the project and will remain valuable and up-to-date, an entire training package will be delivered, which can be implemented at multiple locations (e.g. at the envisioned DRIVER+ Centres of Expertise) and can be maintained and updated. These sustainability aspects are described in section 4.

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[1] In the context of e-learning and general education the terms "trainee" or "student" are often used to indicate the persons participating in a training course. In this document however, the term "learner" is used to refer to those persons attending the TM, because "learner" is seen as more neutral to indicate the wide range of (high-level) CM professionals the TM is targeted at.

The final section 5 provides an overview of the planning to create, review, finalize and implement the full TM package in the coming period up to M66 (October 2019). It also provides an overview of the links and interdependencies with other work-packages and activities within the DRIVER+ project.

This document is targeted at readers with an interest in how the pan-European DRIVER+ Test-bed will be explained to potential future Trial organizers and other stakeholders like CM practitioners, solution providers etc.). Readers are expected to have at least a basic understanding of the DRIVER+ objectives, the TGM and its supportive tools and methods, as well as a generic level of knowledge or experience in Crisis Management. Furthermore, readers should have a basic understanding of didactics and experience with IT-based education and training methods.

2. Feedback on previous training activities

This section presents a short summary of the feedback received on previously delivered training activities. Annex 3 contains the list of persons (internal and external to the consortium) who provided input as well as how the feedback will be implemented in the final TM. The feedback has been collected during different occasions: with DRIVER+ partners who have been invited to provide feedback on the EASS e-learning platform, attendants of the DRIVER+ Workshop "0", and Trial Committee members and practitioners in their meetings. External education specialists from organizations outside the project consortium provided their feedback face-to-face or during tele-conference. In the first phase of the training activities, mostly internal feedback was collected. The reason is twofold:

- Some key outputs were still immature. Consequently, the content of the modules was not yet ready to be shared with externals. For instance, an important contact-phase moment took place in November 2018, while the first version for internal use of the TGM Handbook was delivered in December 2018.
- In the first phase the TM was mainly DRIVER+ oriented, meaning that the first version was executed as a more bi-lateral and needs-driven process. Following this, all Trial Committees (mainly T1 and T2), got on-demand support from the TGM team.

While acknowledging the restriction of this approach (limited sample from internal sources), the feedback received was deemed important to reflect upon what was expected and needed. It served as an input to trigger discussions and to brainstorm, and ultimately to take decisions, on goals, structure and sustainability of the TM. On-going collaboration activities with external stakeholders will be taken into account to further improve the TM.

The collected feedback is structured along four main topics:

- Overall structure and main rationale of the TM.
- E-learning and Contact-phase.
- E-learning platform technique.
- Sustainability.

These topics have been chosen based on potentially relevant implications in the development of the final TM, and are summarized below. More elaborate and detailed descriptions of the feedback are in Annex 3.

Feedback on the overall structure and main rationale of the TM

Given the complexity of the topics covered by the TM, the feedback received highlighted the importance of providing both a general overview of the topics and detailed information on specific issues as well as examples. Hence, before the actual start of the training activities, a list of topics to explore based on the user's profile (e.g. Trial organiser, solution provider, technicians etc.) will be presented. A consistent user-story will also be provided. This user-story is currently being developed based on all collected experiences, data, information and lessons identified until now in the project. The user story will be a recognizable element in the e-learning. It will help the learner to focus on the daily challenge of organising a Trial. The user story will provide not only examples, but also tips and tricks.

Assignments will be standardized and formulated in a helpful way. The learner will not meet any knowledge gaps or barriers in case he/she would like to skip the assignments.

Additionally, the input received from both internal and external partners, drew attention to the importance of repeating the key aspects of the TGM throughout the module. This will help the learners both to get familiar with steps and phases and to set priorities with regards to leaning objectives (e.g. without a

structured and robust data collection plan, a proper assessment of the solutions cannot be carried out). In the final TM, the "heartbeat" of the methodology will be repeated to address this important element. References to relevant documents and literature will also be included.

The modules will be enriched with internal links. They will guide the learner through the material. The links will also support the role dependent learning strategies.

The final version of the TM will be aligned with the most actual version of the TGM Handbook. All references to the TGM Handbook will be added and updated. External references will be added to modern and verified (academic) methods, tools and concepts.

In the TM it will be stressed that the Test-bed's technical infrastructure and implementation has a large impact on the Trial. In the TM all possibilities of the Test-bed will be pointed out and illustrated: the opportunities for simulation activities, the connection between solutions and tools, data exchange and automatic saving possibilities. It will be mentioned that the degree of Test-bed implementation is directly related to the data collection and evaluation.

Feedback on the e-learning and Contact-phase content

Based on the feedback, it seems that a long e-learning programme is, on the one hand, a challenge but on the other is seems unavoidable due to the large number of topics that must be tackled to give a comprehensive overview. In the final version of the TM, a good balance between in-depth explanations and more generic descriptions will be ensured. This is also the reason why a blended approach (both -learning and contact-phase) has been decided for: in doing so, the contact-phase will only focus on topics that need more face-to-face clarifications and practical group work.

It is crucial to start the e-learning with a clear description of the aims so that learners can opt for a "pick and choose" approach based on their needs. The feedback also emphasised the need to get shorter and straightforward videos and voice-overs by native English speakers. All current videos will be redone by presenters with good English skills. For the final TM, new visuals, icons and animations have been developed and will be used in a structured and recognisable way in the e-learning. Visual attractiveness will be increased by the clear modular structure, the recognisable voices and the teasers to every topic.

As far as the contact-phase is concerned, it was highlighted to be clear on the structure from the very beginning. In the final TM, learners will be provided with a list of topics and explanations for the contact-phase. They will also have examples of possible schedules, along with a warning of not overloading themselves during the contact-phase. Discussions, co-creation and exchange of experiences have been appreciated and should be encouraged in the contact-phase.

Feedback on the e-learning platform technique

The choice of a suitable e-learning platform is not trivial, especially considering current uncertainties with regards to the sustainability of the TM. An important feedback received is the time-consuming procedure to log-in at the current Moodle platform. The content of the TM in designed in a format that can be implemented in different platforms.

The use of forums was also deemed important to exchange experiences, ask questions and receive real-time replies. While this is a good idea during the project lifetime as learners are committed to achieve the same goal, it might be a challenge to implement after the end of the project. Forums entail moderation and a certain level of engagement from the participants. If forums are provided within a CoE's implementation of the TM, this feedback needs to be taken in account. A link with CMINE might be natural, and this will be included in the ongoing sustainability discussions.

Feedback on the sustainability

The overall sustainability of the TM was raised in the feedback received. To involve companies and industries is one of the topics of the sustainability tasks within the project. In the final TM this idea cannot be elaborated; it is one of the topics to be discussed in the project's Sustainability Board and with prospective CoEs. A CoE should provide both technical assistance and trained instructors to reply to the learners and to facilitate the organised contact-phases. Continuation of Trial support itself should also be addressed in the setup of the CoE.

3. Final design of the Training Module

This section describes the final design of the TM and the rationale behind it, based on the feedback as described in the previous section. Section 3.1 describes the main objective of the TM. Section 3.2 describes the target groups of the TM. The blended-learning approach is explained in section 3.3, while section 3.4 illustrates the learner role-based approach.

3.1. The main objective of the TM

The aim of the Training Module (TM) is to train and instruct all persons involved how they can best organize their own Trials. This means that the TM should explain how to make best use of the pan-European DRIVER+ Test-bed:

- How to use the DRIVER+ Trial Guidance Methodology (TGM).
- How to use the supportive methods and tools.
- To make reference to the pan-European network of fellow Test-bed users and organizations that can deliver Test-bed support.

These topics are also described in the TGM Handbook (**D922.41** (1)). The final TM should therefore go hand-in-hand with the TGM Handbook (e.g. fully consistent wording and delivered simultaneously) as both target the same audiences and have the same main objectives. After reading the TGM Handbook and completion of the TM, learners should be able to prepare, execute and evaluate a high-quality Trial themselves, potentially but not necessarily with support from DRIVER+ Centres of Expertise (CoE). These Trials can be small-scale (e.g. only one type of socio-technical solution) or rather complex (e.g. assessing multiple solutions in a cross-border context).

Because all this together is a quite a complex and elaborate story, the learning content is to be split in several sessions, which can each be divided again in sub-sessions (refer also to Table 3.1 in section 3.3.1). This division makes it possible to train each topic in an achievable time-frame, making it feasible for the target groups of learners to go through each topic (i.e. sub-session) step-by-step and spread over time (e.g. during free evenings at home or during some allocated hours at work). This division in sub-sessions is also useful, as different types of persons involved in organization of a Trial will have different needs or topics they are most interested in. To know which persons should focus on which topics, first these target groups of learners should be further analysed (as described in the following section 3.2).

3.2. The training target groups

Because the TM is aimed to support future Trial organizers and thus future Test-bed users (i.e. the TM's learners), one can distinguish two main categories of training target groups for the TM:

1. **Trial organisers**, being the **TM's primary training** target group, who could be employed as:
   - **High-level crisis managers** – as they have first-hand experience in encountering CM gaps directly, or to experience the cascading effects or lessons identified of these gaps. They also are in a strategic position to trigger a process to search for a solution for these gaps. Therefore they are the most logical spot to kick-start a project to organize a Trial. To be able to run this well, they should have a good understanding of the TGM and how to work best with it (in a team).
   - **Senior CM field practitioners** – as they have multiple years of experience working in the field and/or in command/coordination centres, they have first-hand experience in current CM gaps, especially at the operational level. As such they are foreseen to be a logical spot at which the concept of a Trial emerges (e.g. "We often experience issues A or B in these types of incidents:

can't we try out how to solve this best?"). Therefore, they should at minimal be able to participate as practitioner expert in the committee organizing a Trial or they even need to be able to use the TGM fully.

- **CM policy makers** – because they are involved in the development of new policies, often requiring the implementation of new socio-technological solutions and requiring an assessment of new policies and solutions piloted/implemented. Therefore, they need to understand the concept of a Trial and be able to (manage a team to) follow the TGM.
- **CM procurement officers** – because they could use the TGM as objective assessment method for new socio-technological solutions to acquire. Therefore, they need to understand the objective character of Trials and the TGM and how to apply this in their procurement processes.
- **CM innovators** – usually working within a CM organisation, their job is to chase CM innovation. To assess the success of these innovations, all aspects of the Test-bed are most useful for them. To implement and use it well, they should have a full understanding of the Test-bed.
- **Researchers in the field of CM** – as these are working on their independent research in CM and innovations to solve these, or because they can be involved by a CM organisation to assist them in innovation research. These persons can be found to work at (applied) universities and public research organisations. They should therefore have a full understanding especially of the TGM and supportive tools and methods. Because of their research background, they probably have or should be drawn to different focus areas within the TM.
- **Consultants in the field of CM** – because they can be involved by a CM organisation to assist them in innovation assessment, for instance as data analyst, evaluation expert or as toolset implementer. These persons can be found to work at public research organisations, and commercial consultancy companies. Dependent on the expertise for which they are hired, they need to be able to use certain aspects of the Test-bed (e.g. to prepare and execute the evaluation approach, or to select and implement simulations required to run a realistic Trial scenario).

Next to this primary target group, there are also **other stakeholders in a Trial**, who are the **TM's secondary training target groups**:

- **Practitioners (not being the main Trial organizers)** – because they are needed as players during the Trial runs and/or as observers. Therefore, they must understand what a Trial is and particularly what is expected from them to play or observe during a Trial run.
- **Solution providers** – because their solution is being trialled. They must have a good understanding of what a Trial is, have a basic understanding of the TGM, and must understand the process to prepare, execute and evaluate a Trial well such that they can cooperate effectively. In addition, this enables them to better provide suggestions on how to best assess the performance of their solution during a Trial.
- **Developers and technicians (for any kind of socio-technical solution)** – because they are needed to organize a Trial, they must have a basic understanding of what a Trial is and the TGM, and they must have in-depth understanding of what the Test-bed technical infrastructure can bring them, how to implement it and of the technical and logistical preparation processes. They can work for solution providers, but also for CM organisations hosting a Trial or research organisations.

3.3. The TM's blended approach

Because of the heterogeneous training target groups and the different needs they each have, the final TM will use a blended approach by combining e-learning and a contact-phase, just like the previously delivered TM version 2. This section will further detail out this blended approach and why it was chosen. It will also list sub-sessions the content is divided in, the training delivery methods foreseen effective and feasible for the TM's target groups, and how an exemplary user-story and other examples will be used throughout the TM's sessions to illustrate the use of the Test-bed.

Using a blended approach means that the TM will consist of both an e-learning phase, followed by a face-to-face (or potentially webinar) instructor-led contact-phase. The e-learning part is used to convey knowledge, create comprehension (i.e. learners not only knowing about a certain topic, but also able to explain it to others) and facilitate a basic level of analysis and synthesis capabilities via interactive assignments (for instance, the ability to select and detail out those CM gaps applicable to a Trial in the learner's own CM organisation). The e-learning is mostly automatic with clear content based on the learner's profile (see also section 3.4 about the role-based focus).

The TM provides skill-based learning in order to enhance transfer of learning, meaning that, after completion of the TM, learners can in principle organize a Trial themselves, independently or with support from CoE experts. To develop these skills, not only knowledge-transfer is needed, but learners should also have the ability to practice these skills and critically reflect on their performance and even have their performance assessed by the expert instructors. Therefore, next to the e-learning, a contact-phase consisting of a collection of TGM-expert-led sessions is offered. Although this requires instructor manpower for every contact-phase course, this investment is deemed valuable as especially for the more complex methodological steps in the TGM, a face-to-face contact-phase is regarded as the best method for practice, reflection and assessment.

Learners should first complete those parts of the e-learning aimed at their future role (e.g. Trial organiser, evaluation consultant or solution developer). The succeeding contact-phase is set-up in a modular fashion, such that the modules applicable to a specific group of learners can be selected and tailored to fit the needs of this group best (e.g. for a group of new TGM experts at a CoE, or a group of developers employed at several solution providers). This phase builds on the e-learning by providing more (group) assignments to improve the learner's analysis and synthesis capabilities. For instance, this can be a multi-disciplinary group assignment to work out and critically reflect on research questions, in which a TGM expert facilitates this assignment and provides expert advice and feedback.

This blended approach was also used for the TM version 2 because of the conclusions drawn from an initial training needs analysis and experience of educational project partners in other curricula (see **D924.11** (2). As the feedback on this approach was positive, both from learners and TGM experts (see also section 2) it was decided to keep the same concept of a blended approach for the final TM.

3.3.1. The division in sub-sessions

As stated in section 3.1, the final TM will be divided in multiple (sub-)sessions, each with a specific topic. Especially the sessions about the TGM's phases are divided in sub-sessions, mainly to prevent information overload in one single session, and thereby better facilitating learners in self-scheduling his/her training activities. The structure of the TM is depicted in Table 3.1, listing the e-learning (sub-)sessions and whether learners can also attend a tailor-made contact-phase activity about that sub-session.

Table 3.1: Structure of the final Training Module

Session	E-learning phase	Contact-phase
Session 1: Introduction.	√	
Session 2: Preparation phase.		
2.1 Step 0.	√	
2.2 Six-step approach.	√	√
2.3. How to iterate within the six-step approach.	√	

Session	E-learning phase	Contact-phase
Session 3: Execution phase.		
3.1: Trial execution.	√	
3.2: Steps in the execution-phase.	√	
3.3: Transition from preparation to execution: TIM.	√	√
3.4: What to be tested in Dry Run 1 and 2.	√	
Session 4: Evaluation phase.		
4.1: Data quality check.	√	√
4.2: Data analysis.	√	√
4.3: Data synthesis.	√	√
4.4: Dissemination of results.	√	√
Session 5: Supportive tools and methods.		
5.1: Trial Guidance Tool and Trial Action Plan.	√	
5.2: Test-bed Infrastructure.	√	
5.3: CM gap assessment and gap selection methods.	√	
5.4: Base-line and Innovation-line.	√	√
5.5: Societal Impact Assessment.	√	√
5.6: Lessons Learned Framework.	√	
Session 6: Pan-European networks and references.		
6.1: Networks: CoE, CMINE and Community of Users.	√	
6.2: Portfolio of Solutions.	√	
6.3: Training Module glossary.	√	

3.3.2. Suitable training delivery methods

Based on the choice for a blended approach, the profiles of the training audiences and feasibility within and after the project and the contents of each sub-session, several training delivery methods are foreseen to be suitable for the final TM. This section provides a summarizing overview of these methods. For more elaborate descriptions - including advantages, disadvantages implementation options/concerns – the reader is referred to Annex 5. Which method is selected for which topic is explained in the designs documented in Annex 4.

For e-learning:
- **Video** – Short video clip, usually <10 min., fit for introducing a topic or providing an example in a very appealing method via 1-directional knowledge transfer.
- **E-lecture** – Video recording of a (real) lecture by one or two presenters, intended for explaining a topic in a basic up to very detailed level (i.e. 1-directional knowledge transfer).
- **Presenter slides with voice-over** – similar as e-lecture, but without a video capture of the presenter. Usually containing a scripted, professional voice-over.
- **Video interviews** – a scripted video of 5-30 minutes between interviewer and one or more persons being an expert or having first-hand experience in the topic to be trained. Often used to convey example cases via 1-directional knowledge and experience transfer.

- **Explanimation** – animated video providing a very appealing, concise explanation of a topic via 1-directional knowledge transfer.
- **Tutorial videos** – (screen capture) videos with voice-over for explaining how to use physical products and software applications and for providing a step-by-step guide to resolve issues with these (i.e. 1-directional practical ability-transfer).
- **Checklists, user manuals and other written and visual documentation** – providing written explanations (i.e. 1-directional knowledge transfer) and for providing reference to more advanced topics or to topics/tools/methods used less often.
- **Quizzes and tests** – come in the form of a single question up to a full list of questions to answer, thereby to check the level of knowledge or ability transfer. Providing direct, automatic feedback.
- **H5P.org interactivity** – this is a specific open source technology to create interactive questions, quizzes and tests. H5P.org technology can be implemented in YouTube, Moodle (i.e. open source e-learning platform also used by EASS) and Drupal (i.e. open-source content management system on which the TGT and PoS websites are based).
- **Individual assignment** – complex question/assignment than possible via a quiz, usually graded by an instructor (i.e. human-in-the-loop grading system).
- **Take-home assignment** – similar to individual assignments but intended for more complex tasks requiring a learner more than five minutes to complete. Instructors also need considerable time to grade the submitted answers/reports.
- **Discussion forum** – communication medium for sharing questions, answers, practical advices, submitted (take-home) assignment and feedback amongst learners and between learners and instructors.
- **Achievements** – awards granted to learners to mark progression in the e-learning, indicating level of knowledge and ability transfer and for motivating learners.

For the contact-phase:
- **Presentation or lecture** – similar to e-lectures provided via e-learning, but in this case with instructor being face-to-face with learners. In the core being 1-directional knowledge transfer.
- **Question & answer session (Q&A)** – a face-to-face session between learners and an instructor fit for providing tailored answers to questions that have arisen at learners.
- **Checklists, manuals, leaflets and other documentation** – completely similar to these types of documentation provided via e-learning.
- **Individual assignment** – similar to individual assignment provided via e-learning.
- **Group assignment** – fit for triggering joint (multi-disciplinary) work on an assignment. Especially good for topics into analysis and synthesis and for triggering joint discussions amongst several learners.
- **Plenary discussion** – fit for jointly – meaning both learners and instructor(s) – enriching the knowledge and ability transfer by posing questions or statements, followed by jointly discussing about the different aspects/answers to these.
- **Test / Exam** – similar to a test in the e-learning, but providing more time for learners to complete it and providing instructors to observe the learners during completion (e.g. observe group behaviour or monitor for improper passing strategies).

The term "workshop" is often used to name activities in a contact-phase. Usually, a workshop is a combination of various delivery methods and is therefore not included as a specific method in this list.

3.3.3. User-story and other examples

To provide a consistent example throughout the complete TM, a user-story will be used. This user-story provides a concrete example of a Trial, thereby guiding the learners through the entire TM and linking all parts in the TM's (sub-)sessions. The main aim of the user-story is to contribute to the TM with a clear focus on the practical work to be performed using the TGM. In the TM the user-story will be used as a continuing narrative about "How to organise a Trial and how to overcome difficulties?". It is a user-story from the

practitioner's point of view. Names and places are not mentioned, but real data (collected during Trials) will be used as concrete examples.

Although the user-story is based on different experiences and Trials in the DRIVER+ project, the story itself is simplified to one gap and one solution. The user-story tells about a fictive group of firefighters that identifies a gap and wants to close it with the use of the TGM. So, they start to work on defining gaps, research questions and solutions. They organise a Trial and indicate challenges, iterations, how to use tips and tricks, how to foresee pitfalls or difficulties and ways out.

The user-story will be written in an active and concerned style. For instance: "*One day you meet with your fellow managers. You discuss (over coffee) the exercises of the last few years. Someone says: 'Every time we do the evacuation exercise, we meet the same difficulties. Why don't we look for a real solution?' Another immediately reacts: "Yes, you mention it well. I have recently spoken to my colleague of the neighbouring country and he faces the same problem. We are not the only one". One colleague is quite new in the organisation and he asks what the difficulty is about.*"

Although an important one, the user-story will not be the only example in the TM. In order to enhance a better understanding of the TGM and the use of the Test-bed technical infrastructure, and the transfer of training, a rich variety of examples and illustrations (both good and bad, both fictive and originating from real Trials) will be used as well throughout the TM.

As the target groups play different roles during all steps and phases of a Trial, they have different training needs and should be offered different training contents. If not, they will probably lose interest in the Test-bed and thus their motivation to continue with the TM. Because of this, the TM must offer a learner role-based approach, meaning the different target groups are advised to focus on different sub-sessions. This learner role-based approach is further detailed out in section 3.4.

3.4. Training needs per target group

It can be concluded from the former sections that different learners are probably interested in different aspects of the Test-bed. According to their different roles in organizing a Trial, their training should be focussed on different (sub-)sessions of the Training Module. The final TM will therefore use a learner role-based set-up, in which learners are first allocated to a specific target group based on their role in a Trial and then lead to that content that is most applicable to them.

Table 3.2 and Table 3.3 provide an overview of which sessions of the e-learning and contact-phase respectively are aimed at which target group. These tables use the following two symbols:

√   Learners are strongly advised to focus well on this (sub-)session. At least the basic part should be completed. Advanced parts can be followed to further deepen the understanding and ability to use the Test-bed, according to the learner's role in organizing a Trial or to his/her own interests (e.g. a CM policy maker acting as Evaluation Coordinator would focus specifically on Session 2.2: six-step approach and Session 4: Evaluation phase).

+   Learners are suggested to review the basic part of this sub-session. In their role in organizing a Trial, they do not have to actively perform these steps or use these methods or tools, but their work will be related to this. Therefore it is good to have a basic understanding of this (e.g. the developers and solution providers are part of creating the innovation-line, possibly get connected to the Test-bed technical infrastructure and must enable data collection, hence they should also know the basics about the TGM and Trials).

Note that when cells are left empty, this does not mean learners are discouraged to look at these sub-sessions. On the contrary, every learner interested in (participating to) the preparation, execution and/or

evaluation of a Trial should be able to complete all basic and advanced parts of all sessions if he/she is curious about its contents.

Table 3.2: Overview of target groups and their advised e-learning sessions

E-learning session	1. Trial organisers	2. Practitioners	3. Solution providers	4. Developers and technicians
Session 1: Introduction.	√	√	√	√
Session 2: Preparation phase.				
2.1 Step 0.	√	√	+	+
2.2 Six-step approach.	√	+	+	+
2.3. How to iterate within the six-step approach.	√	+	+	+
Session 3: Execution phase.				
3.1: Trial execution.	√	√	√	√
3.2: Steps in the execution-phase.	√	+	√	√
3.3: Transition from preparation to execution: TIM.	√	+	√	√
3.4: Trial rehearsals in Dry Run 1 and 2.	√	+	√	√
Session 4: Evaluation phase.				
4.1: Data quality check.	√	+	+	+
4.2: Data analysis.	√	+	+	
4.3: Data synthesis.	√	+	+	
4.4: Dissemination of results.	√	+	√	
Session 5: Supportive tools and methods.				
5.1: Trial Guidance Tool and Trial Action Plan.	√			
5.2: Test-bed Infrastructure.	√		+	√
5.3: CM gap assessment and gap selection methods.	√	+		
5.4: Base-line and Innovation-line.	√		+	
5.5: Societal Impact Assessments.	√		+	
5.6: Lessons Learned Framework.	√	+		+
Session 6: Pan-European networks and references.				
6.1: Networks: CoE, CMINE and Community of Users.	√	+	+	+
6.2: Portfolio of Solutions.	+	+	+	+
6.3: Training Module glossary.	+	+	+	√

Table 3.3: Overview of target groups and their advised contact-phase sessions

Contact-phase session	1. Trial organisers	2. Practitioners	3. Solution providers	4. Developers and technicians
Session 2.2: Six-step approach.	√	+		
Session 3.3: Transition from preparation to execution: TIM.	√	+	√	√
Session 4: Evaluation phase (i.e. sub-sessions 4.1-4.4).	√		+	
Session 5.4: Drawing a Base-line and Innovation-line.	√	+	+	
Session 5.5: Societal Impact Assessments.	√		√	

As can be seen in Table 3.3, all contact-phase sessions are primarily aimed at the primary target group of Trial organisers. These sessions are intended to further deepen the understanding of specific steps in organizing a Trial and providing practice (e.g. via group assignments). These contact-phase sessions can be tailored to the personal expertise and training needs of the learners.

4. Implementation of a sustainable training package

For the final TM to be used after the project, hence to be a sustainable project output, it should consist of not only a proper design and adequate contents as described in the previous sections. A training package needs to be delivered, supporting the training content to be provided at multiple CoEs, by proficient staff who shares experiences, and to be maintained and updated. This is addressed in the current section.

First, the conditions for enhancing the sustainability of the TM and the contents of the training package derived from these conditions are described (section 4.1). Next, the processes for hosting, learner administration, helpdesk support and maintenance (section 4.2) and the structure to be put in place to keep a pool of instructors and the training content itself up-to-date and future-proof (section 4.3) are described. The final section provides an overview of the implementation options, including some details regarding the reference implementation of the final TM.

4.1. Sustainability conditions for the final Training Module

The main objective is that the TM is ready to be used at the moment of its delivery, including the period after the project duration. Having access to and using the TM is conditional for a successful application of all aspects of the pan-European Test-bed by CM professionals. This requires the following conditions to be met:

The pan-European Test-bed should be known by the CM community. Therefore, the TGM Handbook, the Test-bed technical infrastructure and the TM need to be easily findable and accessible via clear points of contact (e.g. CoE and via the public project webpage that is available for several years after the project duration) and should each provide a direct link to the others. Already promoting and advertising the TM, the TGM Handbook and the Test-bed technical infrastructure during the course of the project helps in this respect.

Just like the TGM Handbook is a living document, and the technologies of the Test-bed technical infrastructure will be updated, the Training Module content should be updated on a regular basis as well, enabling the CoE to deliver a high-quality training service. Only in this way the TM will remain fully consistent with the developments in the pan-European Test-bed (e.g. updates of the TGM and expansions of the user network).

In case of multiple implementations (for instance at various CoEs), consistency amongst these packages must be assured. If TM implementation at one CoE differs in content from another CoE, updating the TM is much more complex and will jeopardize the quality of the TM and its compliance with the TGM, and may complicate the sharing of experiences and lessons learned.

Any CoE that has implemented the TM must be able to tailor the TM (especially the contact-phase) to the needs and circumstances of a specific group of learners. This can be both a generic tailoring offering the TM in a specific language, as well as a more specific tailoring in which the assignments are tailored to the specific needs and context of a specific group of learners.

Sufficient numbers of instructors should be available to provide feedback during e-learning sessions and to facilitate the contact-phase. Ideally, every MS would have a DRIVER+ CoE, offering training courses in their native language. More realistic is to have a pool of instructors covering the main languages in Europe and thus a large majority of European CM professionals (for instance English, French, German, Spanish and Italian).

The costs involved for a CoE for hosting, maintaining and updating the TM, and facilitating the contact-phase, should be covered. This relates to the cost structure, revenue streams and value proposition of a CoE and can/will of course vary between countries and CoEs.

Taking the sustainability conditions as into account, the total training package is designed in such a way it includes:

- Curriculum description of the TM contents, aimed at not only informing but also attracting (new) learners, their colleagues, instructors and their managers. This description can also be included in the set of promotion materials for the entire Test-bed.
- All e-learning contents (i.e. source files), comprising an instructor manual for providing feedback to assignments and coaching learners, a description how to best implement these, and a list of requirements and wishes for hosting this e-learning package.
- All contact-phase contents (including source files) comprising instructor notes on how to run the sessions, and a manual on how to tailor the contact-phase.
- Train-the-trainer programs to train TM instructors (for both e-learning and contact-phase courses) and to train members of the Test-bed steering committee (see also section 4.3).
- Contact details of the current pool of TM instructors, and the CoE(s) hosting the TM.

The whole TM package will be delivered in a reference implementation, embedded in a Learner and Learning Content Management System (LCMS) delivered outside of the Moodle platform.

4.2. Hosting, learner administration, helpdesk and maintenance

For each organisation aiming a implementing the TM, the following provisions have to be implemented:

- A system to register all learners who have applied for the TM course, to monitor their progress and schedule the delivery of the contact-phase on which location. It is recommended to use LCMS functionalities for this purpose. The learner registration must be easy to complete for learners and should respect the EU GDPR (EU General Data Protection Regulation).
- A helpdesk needs to be installed for enrolment and technical as well as administrative support.
- A repository of all contact-phase materials (e.g. presentations and assignments, instructor notes) and all source materials of all contents (e.g. all separate video files). These parts should only be accessible for TM instructors and administrators. The e-learning platform may be used for this.
- Maintaining the contents requires that the source materials should be easy to upgrade in case of technical upgrades of the e-learning platform and/or updates of resources used during the contact-phase (e.g. newer versions of MS Office).

4.3. Content updates and Train-the-Trainer programs

The TGM Handbook and TM are envisioned to be living documents that can be adjusted along with experience gained in using them and due to changing circumstances in which they are used after the end of the project. It is recommended to implement the following processes in order to conduct these updates and maintain the quality of the products:

- The source files must remain accessible, in order to implement additional insights and knowledge gained from other Trials and similar experiments/events using the Test-bed.
- A Test-bed steering committee, including a TM working group, should be established to monitor and decide upon TM curriculum updates and to assure consistency between the different sessions and different implementations of the TM. This committee should consist of representatives covering all aspects of the Test-bed (incl the TM). These members should come from the envisioned CoEs and/or the international expert network they are part of.
- A train-the-trainer is needed to not only train novice instructors in all components of the Test-bed, but also to guarantee a harmonized level of understanding of the Test-bed between all TM instructors.

Personnel changes within the pool of TM instructors can be mitigated in this respect. In addition, the availability of a train-the-trainer program helps sustaining the body of knowledge within the steering committee and the TM working group.

4.4. Implementation options

Hosting of the TM will be done through a reference implementation **T924.1** leader and has a full LCMS up and running. More implementations at other CoEs are encouraged to reach out to as many CM professionals throughout Europe as possible.

A feasibility analysis will be conducted with prospective CoEs from both within and outside the consortium. Together with the sustainability team from WP954, it will be discussed to which extend these CoEs need additional support in meeting the conditions as stated in section 4.2. In addition to these conditions, the conditions regarding cost coverage should be taken into account. Potential options foreseen are:

- The learners pay a fee to participate to the training.
- The costs are (partly) sponsored (like in UN courses).
- The costs are (partly) subsidized by regional, national or European government.
- In case the TGM is standardised, the TM cost could be paid by the regulatory body (e.g. national government).

To limit the implementation cost, it is advised that CoEs use as much as possible systems and processes already in place for other training activities. For instance, implementing the TM in an existing LCMS, and using the standard student administration system to enrol TM applicants. Apart from saving costs, this also has the advantage that the systems and processes used are not solely implemented for the purpose of the TM but are also kept in place for other training activities.

5. Way forward and recommendations

This deliverable described the final design of the TM, taking previous feedback into account as well as considerations for improving the sustainability. Based on these, the content and materials are being created leading to a reference implementation of the TM by October, 2019 (M66). Section 5.1 provides an overview of the concrete steps (divided in four phases) to achieve this. Activities on supporting the sustainability of the entire Test-bed and the TM specifically are run in parallel. Section 5.2 describes the links and interdependencies between the TM development and other work-packages.
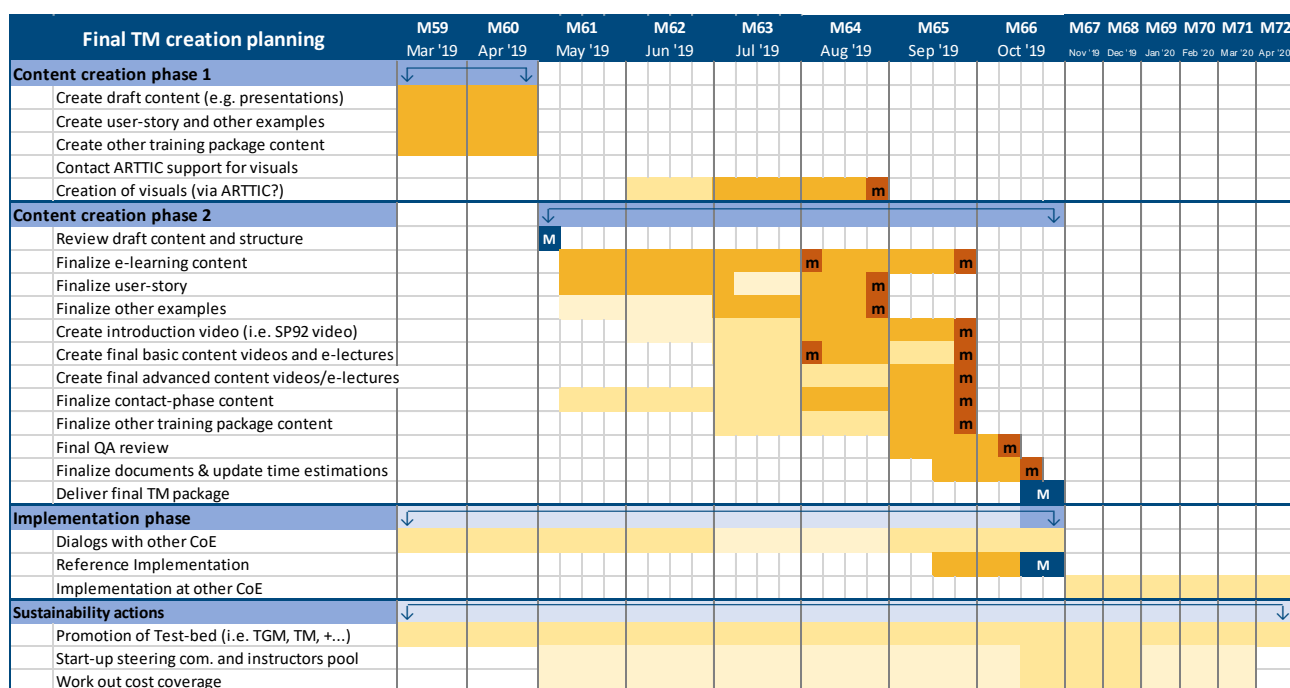
5.1. Planning for final TM creation

Final TM creation planning	M59 Mar '19	M60 Apr '19	M61 May '19	M62 Jun '19	M63 Jul '19	M64 Aug '19	M65 Sep '19	M66 Oct '19	M67 Nov '19	M68 Dec '19	M69 Jan '20	M70 Feb '20	M71 Mar '20	M72 Apr '20
Content creation phase 1	↓	↓												
Create draft content (e.g. presentations)														
Create user-story and other examples														
Create other training package content														
Contact ARTTIC support for visuals														
Creation of visuals (via ARTTIC?)						m								
Content creation phase 2			↓					↓						
Review draft content and structure			M											
Finalize e-learning content						m	m							
Finalize user-story							m							
Finalize other examples							m							
Create introduction video (i.e. SP92 video)								m						
Create final basic content videos and e-lectures						m		m						
Create final advanced content videos/e-lectures								m						
Finalize contact-phase content								m						
Finalize other training package content								m						
Final QA review								m						
Finalize documents & update time estimations								m						
Deliver final TM package								M						
Implementation phase	↓							↓						
Dialogs with other CoE														
Reference Implementation								M						
Implementation at other CoE														
Sustainability actions	↓													↓
Promotion of Test-bed (i.e. TGM, TM, +...)														
Start-up steering com. and instructors pool														
Work out cost coverage														

Figure 5.1: Gantt chart for creation activities of the final TM
(Blue "M" being a delivery milestone, dark-orange "m" being an intermediate milestone)

Figure 5.1 provides a Gantt chart for the creation of the final TM. A more comprehensive version is included in Annex 6. This schedule is updated up to 15/06/2019, and takes into account:

- The latest developments in the development of the TGM (i.e. TGM Handbook v06).
- The latest experiences in the preparation and execution of Trials the Netherlands and Austria and the Final Demo.
- The decisions taken on the review of the draft contents during the TM workgroup meeting in Tallinn on 07-08/05/2019.

All partners of **Task 924.1** involved in the creation of the final TM have agreed to this schedule, especially to the delivery of the base-contents by end of August 2019 (M64), the delivery of all (sub-)session contents by end of September 2019 (M65) and delivery and implementation of the full training package in October 2019 (M66).

This schedule consists of four phases:

Content creation phase 1:
- The creation of draft content is to be done based on the designs documented in section 3 and Annex 4. The working groups on the TGM Handbook and the TM have aligned both structures (i.e. table of

contents). This alignment is crucial as it enables readers/learners to immediately recognize the respective similar sections in both products.

- The creation of the user-story and gathering of other examples is a joint effort for the TGM Handbook and the final TM. This assures the quality of the user-story and examples and also their efficient production.
- The working groups of the TGM Handbook and the TM have teamed up with the Dissemination and Communication team of **SP95** for the creation of high-quality visuals which can be used as well in both the handbook and the TM (e.g. icons or videos).

Content review and creation phase 2:
- This development phase has started during the TM review and update meeting, held at EASS on 07-08/05/2019. During this meeting the draft content and the TM's structure were reviewed in detail. Decisions were taken on the necessary updates and on the exact practical process to make the final contents (e.g. when, where and with whom to record a video interview).
- Creation of "other training package contents" (not being actual training content), like implementation advice.
- Quality assurance of the final TM will be coordinated by the overall quality manager of the project. This will mainly be focussed on the final review task of all contents to assure correct use of terminology and to check the written texts and visuals.
- Final update of the estimations of the time (range) it takes for a learner to complete a (sub-)session. These estimations will be set most accurately once the content is finalized.

Implementation phase and sustainability actions:
- The reference implementation will be completed.
- In case prospective CoEs are interested in the implementation of the TM before the project's end date, this can be supported after M66.
- To enhance the sustainability of the TM, action should be taken on the establishment of a TGM and TM steering committee – or a similar group of experts – and the creation of an initial pool of TM instructors. This task is directly linked to the creation of other package content, in which train-the-trainers-programs are developed by the TM team until October 2019 (M66).
- Promotion of the entire Test-bed and thus of the TM and TGM Handbook is an ongoing activity that runs in parallel, together with **SP95**.

5.2. Connections with other work-packages and overall project's sustainability

The most important links of **T924.1** are that of the alignment between the TGM workgroup (i.e. **WP922**).

Task **T924.1** is closely linked with **WP922** in which the TGM Handbook is being developed following an iterative, agile approach. This approach enables to continuously align the handbook and the TM with each other. Special attention needs to be paid on the following aspects:
- Consistent/recognizable table of contents.
- Consistency in wording and visuals.
- Correctness of TM contents (i.e. the TGM Handbook is leading).
- Awareness that the TGM handbook in itself can be considered as training material, although it is only a unidirectional knowledge transfer, meaning it is lacking a feedback-loop to assess achieved learning outcomes.

The TGM and the Test-bed technical infrastructure support during Trials is continuously provided from **WP922** and **T924.2**. The TGM support diary, of which feedback points are included in section 2 will therefore continue to grow. The latest information in this diary will also be taken into account during the creation of the TM's content.

The TM content regarding software tools should correctly explain and depict the final versions of these tools as being developed in their respective work-packages of **WP923** and **WP933**. For instance, a tutorial video of the TGT should depict the interface of the final TGT and not that of an intermediate development version. Furthermore, documentation regarding the process to connect solutions with the Test-bed technical infrastructure, as developed in **WP933**, can be used as developer documentation aimed at target group 4 (i.e. developers and technicians). The TM working group should keep an open eye for such supportive documentation developed in **WP923**, **WP933** or as part of dissemination and communication activities within the Trials and the Final Demo (i.e. **WP945**, **WP946** and **WP947**), and other promotional material developed within **WP952**.

A final important link is between **T924.1** and the sustainability team of **WP954**, and the relation with External Cooperation (**WP912**). The following topics will be jointly addressed:

- Promotion and findability of the DRIVER+ Test-bed. This promotion stimulates the uptake of the Test-bed and (other) organisations to organise new Trials. This assures that use of components of the Test-bed, including the TM, is continued, and enhances the sustainability of the complete pan-European Test-bed.
- Cost coverage for hosting, administration, contact-phase execution and maintenance of the TM. This is part of the broader discussions with prospective CoEs to create viable business models for all aspects of the Test-bed.
- Establishment of (a cluster of) CoEs, with potentially at least one CoE mainly focussing on delivering the training service, and keeping the TGM up-to-date.
- Preparing the grounds for establishing self-sustainable groups of TGM experts a pool of TM instructors and a TGM/TM steering committee. A similar approach may be followed for other staff within CoEs (e.g. technical consultants and software engineers).

References

1. **DRIVER+ project.** *D922.41- Trial Guidance Methodology Handbook.* 2018.

2. —. *D924.11 - Materials for the Training Module I.* 2018.

3. —. *D942.11 – Report on review and selection process.* 2018.

4. **Frontex.** *Sectorial Qualification Framework for Border Guarding, SQF Facilitators handbook - pages 10-54.* s.l. : Frontex, 2014.

5. **ECTS Users' Guide. [Online] September 20, 2016. [Cited: June 29, 2018.] https://ec.europa.eu/education/sites/education/files/ects-users-guide_en.pdf. page 10.**

6. **Bloom's Taxonomy Action Verbs. [Online] January 19, 2018. [Cited: June 29, 2018.] http://www.fresnostate.edu/academics/oie/documents/assesments/Blooms%20Level.pdf.**

7. **DRIVER+ project.** *D922.11 - List of CM gaps.* **2018.**

8. **Kolb, David A.** *Experiential Learning: Experience as the Source of Learning and Development.* **Englewood Cliffs, N.J. : Prentice-Hall, Inc., 1984.**

9. **Biggs, J.B.** *Teaching for quality learning at university.* **Buckingham : Open University Press/Society for Research into Higher Education. (Second edition), 2003.**

10. **Bourner, T. and S. Flowers.** *Teaching and Learning Methods in Higher Education: a glimpse of the future.* **s.l. : Higher Education Foundation, 1997. Vol. 9.**

11. **Illeris, Knud.** *Contemporary theories of learning, Learning theorists…in their own words. Pages 16-24 (Chapter 1: A comprehensive understanding of human learning).* **Abingdon : Routledge, 2009. ISBN I 0:0 0 -415- 47343- 8 (hbk).**

Annexes

Annex 1 – DRIVER+ Terminology

In order to have a common understanding within the DRIVER+ project and beyond and to ensure the use of a common language in all project deliverables and communications, a terminology is developed by making reference to the main sources, such as ISO standards and UNISDR. This terminology is presented online as part of the Portfolio of Solutions and it will be continuously reviewed and updated[2]. The terminology is applied throughout the documents produced by DRIVER+. Each deliverable includes an annex as provided hereunder, which holds an extract from the comprehensive terminology containing the relevant DRIVER+ terms for this respective document.

Table A1: DRIVER+ Terminology

Terminology	Definition	Source
Evaluation	Process of estimating the effectiveness, efficiency, utility and relevance of a service or facility	ISO 5127:2017(en) Information and documentation — Foundation and vocabulary, 3.1.3.02.
Gap	Gaps between the existing capabilities of responders and what was actually needed for effective and timely response.	Project Responder 5, Homeland Security, Science and Technology, August 2017.
Portfolio of Solutions (PoS)	A database- driven web site that documents the available Crisis Management solutions. The PoS includes information on the experiences with a solution (i.e. results and outcomes of Trials), the needs it addresses, the type of practitioner organisations that have used it, the regulatory conditions that apply, societal impact consideration, a glossary, and the design of the Trials.	Initial DRIVER+ definition.
Practitioners	See: Crisis Management professionals: Person with knowledge, experience or ability needed to effectively and timely respond to crisis in order to minimize damage to society.	Initial DRIVER+ definition.
Societal Impact Assessment	The process of identifying, analysing and managing intended and unintended (positive or negative) societal consequences.	Initial DRIVER+ definition.

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[2] The Portfolio of Solutions and the terminology of the DRIVER+ project are accessible on the DRIVER+ public website (https://www.driver-project.eu/. Further information can be received by contacting coordination@projectdriver.eu.

Test-bed	The Test-bed provides a pan-European arena consisting of virtually connected facilities and crisis labs where users, providers, researchers, policy makers and citizens jointly and iteratively can progress on new approaches or solutions to emerging needs. The software tools, middleware (Test-bed Technical Infrastructure) and methodology to systematically conduct Trials and evaluate solutions (Trial Guidance Methodology, TGM) within a testing environment (life and/or virtual) where the trialling of solutions is carried out using a structured, all-encompassing and mutual learning approach. This encompasses location(s) where a Trial is executed and the facilities (terrains, rooms, hardware, software, etc.) available at this location. DRIVER+ Note 1: The Test-bed encompasses the infrastructure (Test-bed Technical Infrastructure), the methodology (Trial Guidance Methodology), training modules (Training Module) and a guidance tool (Trial Guidance Tool) to support Trial planning, execution and evaluation.	Initial DRIVER+ definition.
Test-bed Technical Infrastructure	The software tools and middleware to systematically create an appropriate (life and/or virtual) environment in which the trialling of solutions is carried out. The Test-bed infrastructure can enable existing facilities to connect and exchange data. DRIVER+ Note 1: For a better understanding within the CM community the term "Test-bed Technical Infrastructure" replaces the term "Test-bed Infrastructure". These terms are synonyms.	Initial DRIVER+ definition.
Trial Action Plan (TAP)	The main Trial planning document, facilitating collaborative planning and supporting execution of the Trial. It covers all areas related to the Trial organization and is used to record efforts, circulate decisions and assess progress.	Initial DRIVER+ definition.
Trial Guidance Methodology (TGM)	A structured approach from designing a Trial to evaluating the outcomes and identifying lessons learned.	Initial DRIVER+ definition.
Trial Guidance Tool (TGT)	A software tool that guides Trial design, execution and evaluation in a step-by-step way (according to the Trial Guidance Methodology) including as much of the necessary information as possible in form of data or references to the Portfolio of Solutions.	Initial DRIVER+ definition.

Annex 2 – Description of the previously delivered Training Module versions

Training into how to best use the TGM and the Test-bed Infrastructure, were previously delivered in two ways:
1. **Consultancy-based TGM support** in a pragmatic issue-answer structure to the committees of Trials 1 and 2, mainly in the period Oct 2017 – Oct 2018, as the TGM was at that time still very much under development. This work was reported in the TGM support diary. Parts of this support serve as the first version of the Training Module contents.
2. **Training Module version 2 (TMv2)**. Its design is documented in **D924.11 *Materials for the Training Module I***. TMv2 is primarily aimed at the committee members of Trials 3 and 4 and the Final Demo. Its e-learning part is available as of 01/10/2018 and its contact-phase was executed on 7-8 November 2018.

This annex provides a concise description of this second delivery: the Training Module version 2. It is this version on which the feedback as described in section 2 is collected. And the contents of this version serve as a base and source of inspiration – but to be updated and highly improved - for the final TM.

This annex only describes the TMv2. It does not contain the training contents itself, as these contents are using far more effective training delivery methods than only written text with pictures, but are for instance delivered via e-lecture videos followed by a group assignment.

Blended approach of TMv2

TMv2 consists of both an e-learning part and an instructor-led contact-phase, as training how to apply the TGM best is seen as too complex to be correctly conveyed using e-learning only and because learners have expressed that they would feel more comfortable using the TGM when the TM (also) offers face-to-face contact with fellow learners, other Trial organisers and TGM experts.

EASS's Moodle platform is used to host the e-learning part and the instructor materials for the contact-phase. This platform was also used for account creation of all learners and instructors, and to restrict access to the contact-phase materials to instructors only. Accounts were made available only to DRIVER+ project partners, as the TMv2 is not the final training outputted from the project and because during launch of the TMv2, the TGM and the supportive tools were still under development.

TMv2 e-learning part

The e-learning consists of six sessions. Learners were suggested to go through these sessions in this order, but were left free to go through them in a different order or to skip parts (e.g. because they were only interested in the technical aspects of the Test-bed Infrastructure). To have a full view on these e-learning sessions, please visit the TMv2 on EASS's Moodle platform using the hyperlink and credentials provided in the following sub-section.

User-credentials for access to TMv2 e-learning part

The generic user account provided below is available for readers interested to review the full contents of the TMv2 e-learning part. Note that as this document is a public deliverable and because the TMv2 will not be the final project's output, this user account will be ended on 31/12/ 2019.

URL to Moodle portal: https://moodle.hitsa.ee/course/view.php?id=21956

User name: digitiim.sisekaitse

Password: Moodle.Sisekaitse123

Contents of the e-learning

- **Session 1: Introduction to the e-learning module.**
  - Introduction video explaining DRIVER+, the concept of a Trial, the TGM and this training module.
  - Individual assignment to write down the benefits the TGM can bring to the learner's organisation.
  - Short quiz about the main TGM concepts.

Figure A1: Stills from the introduction video

- **Session 2: The context of Trials – Why, Who and What?**
  o E-lecture introducing the session and explaining the context of a Trial.
  o Quiz into the similarities and differences between Trials and exercises.
  o E-lecture about the Trial objectives, CM gaps and considerations for scenario creation.
  o Individual assignment to write down the learner's first idea for a Trial.
  o E-lecture about the three dimensions of a Trial, Base-line and gap selection.
  o Documents regarding gap selection and the 21 validated CM gaps.
  o Individual assignment to select 1 or 2 applicable gaps for the learner's own Trial idea.
  o E-lecture about the practical context of a Trial and the personnel needed.
  o E-lecture summarizing this session and explaining the take-home assignment.
  o Take-home assignment and forum to work out their own Trial idea and to share it as preparation for the contact-phase.

Figure A2: Stills from e-learning Session 2

- **Session 3: Preparation of the Trial.**
  - E-lecture introducing the session and explaining how and why the TGM was developed.
  - Individual assignment to write down why to do a Trial.
  - E-lecture about Step 0: CM gap selection and setting the Trial's context.
  - Individual assignment to select gaps and to draw a preliminary base-line.
  - E-lecture about the six-step approach.
  - Individual assignment to select one gap and to design a mini-Trial around it, going through the six-step approach.

Figure A3: Stills from e-learning Session 3

- **Session 4: Execution of the Trial.**
  - Voice-over e-lecture introducing the session.
  - Voice-over e-lecture about achieving readiness for execution.
  - Quiz about readiness for execution.
  - Voice-over e-lecture about the dry runs.
  - Voice-over e-lecture about assessment concerns and final adjustments.
  - Voice-over e-lecture about reviewing the Trial's final readiness.
  - Quiz about the stages of the execution phase.

Figure A4: Stills from e-learning Session 4

- **Session 5: Evaluation of the Trial.**
  - E-lecture about the evaluation phase: data check, data analysis, data synthesis and reporting the Trial conclusions.
  - Information about the contact-phase assignment regarding data analysis.
  - Information about the contact-phase assignment regarding answering the research questions.
  - Information about the contact-phase assignment regarding reporting the conclusions of a fictive example Trial.

Figure A5: Stills from e-learning Session 5

- **Session 6: Supportive tools.**
  - *Session 6.1: Portfolio of Solutions.*
    - Tutorial video explaining the aims of the PoS and how to use its interface.
    - Quiz about the Portfolio of Solutions.
  - *Session 6.2: Trial Guidance Tool.*
    - Tutorial video explaining the aims of the TGT and how to use its interface.
    - Quiz about the Trial Guidance Tool.
  - *Session 6.3: Trial Action Plan.*
    - Tutorial video explaining the aims of the TAP and how to use this template document.
    - Quiz about the Trial Action Plan.
  - *Session 6.4: Test-bed Infrastructure.*
    - Explanimation video explaining the main components of the infrastructure, aimed at everybody involved in the organization of a Trial.
    - Explanimation video explaining the extra developed components, aimed at developers involved in the organization of a Trial.

Figure A6: Stills from e-learning explaining the supportive tools

TMv2 contact-phase

The contact-phase consists of seven sessions, each session consisting of presentations and assignments executed in multi-disciplinary groups (i.e. committee members and other project partners mixed in 4 groups). The total duration of the contact phase is 7 + 4 hours.

- **Session 1: Introduction and the context of Trials.**
  - o Presentation providing an overview of the contact-phase sessions.
  - o Plenary session collecting expectations of the participants for the coming 1.5 training days.
  - o Presentation repeating the main aspects of a Trial.
  - o Group-assignment to jointly discuss Trial ideas submitted as take-home assignment in the e-learning, this group assignment is mainly aimed at a try-out of the group process.
- **Session 2: Evaluating a Trial.**
  - o Presentation regarding evaluation phase in general and data collection and analysis.
  - o Group assignment into data analysis.
  - o Presentation regarding visualisation of results.
  - o Group assignment into result visualization.
  - o Presentation regarding answering the research question and dissemination.
  - o Group assignment into dissemination.
- **Session 3: Preparation of a Trial.**
  - o Presentation repeating the main aspects of the preparation-phase (i.e. six-step approach).
  - o Group assignment to discuss each other's Trial designs.
  - o Group assignment to discuss lessons learned from previous Trials w.r.t. own Trial design.
- **Session 4: Practical preparations and execution of a Trial.**
  - o Presentation repeating the steps inside the execution phase.
  - o Open question and answer session regarding specific Trial issues.
- **Session 5: Portfolio of Solutions & Guidance Tool.**
  - o Instructor-led guidance through the online Trial Guidance Tool interface.
- **Session 6: Technical preparations for a Trial.**
  - o Presentation regarding the technical preparation steps and interdependencies with scenario creation.
  - o Open question and answer session regarding specific Trial technical issues.
- **Session 7: Review of the contact phase.**
  - o Trial specific questions and answers sessions with TGM experts.
  - o Plenary review of the expectations aired in session 1.

Annex 3 – Detailed overview of feedback received on previous versions of the TM

This annex provides a detailed overview of people who have provided feedback on previous training activities. Table A2 lists these persons, including the statement "*External to DRIVER+ consortium*" in case they are not involved in activities inside the project (note that some of these externals are colleagues of DRIVER+ staff while others are from external organisations). Moreover, as mentioned in section 2, this annex explains how the feedback will be implemented in the final TM. A direct quote from the received feedback is included, along with a solution and/or proposed implementation in the final version. To ease readability, internal and external feedback has been merged.

Feedback from internal sources came from:
- Learners (participants of TMv2):
  o Who (partly) completed the e-learning on the EASS e-learning platform.
  o Who attended the contact-phase, conducted at the Updated Workshop 0 (7-8 November 2018, The Hague, the Netherlands).

- TGM support to the Trial Committees, as documented in the TGM support diary.
- Practitioners from the project consortium involved in the preparation and/or execution of the project's Trials.

Feedback from external sources was collected from:
- From face-to-face as well as from teleconference meetings with different education specialists from organizations outside the project consortium.
- CM practitioners from The Netherlands, Austria and Estonia with some knowledge of DRIVER+, but who do not directly work on the DRIVER+ project. These CM practitioners, having attended international training modules (e.g. at UN OCHA or within the EUCPM), were interviewed in order to receive feedback on the best training delivery methods.

Feedback from external sources was limited as the first version of the TM was mainly DRIVER+ oriented to get input on what is needed and expected.

Table A2: List of people who have provided feedback

Feedback provider	Organisation	Role in the organisation	External to DRIVER+ consortium
Gerald Schimak	AIT	Trial 3 owner	
Georg Neubauer	AIT	Senior Scientist	
Thomas Seltsam	ARC	Trial 3 host	
Camilo Palacio Ramirez	ARC	Trial 3 host	
David Wran Schumer	ARC - Styria	Department Head of Disaster Management	*Yes*
Andreas Seipelt	ARTTIC	SP95 lead	
Gunnar Schwoch	DLR	Trial 4 owner	
Christian Niermann	DLR	Project manager	
Elisa Schroeter	DLR	Trial 4 owner	

Feedback provider	Organisation	Role in the organisation	External to DRIVER+ consortium
Alexander Scharnweber	DLR	Research Scientist	
Louise Juul Hansen	DRC	Senior Communication Officer	
Pia Ringsted Blum	DRC	Psychological first aid instructor	
Tarmo Kull	EASS	Lecturer	
Kristjan Sirp	EASS	Head of International Relations and Development	*Yes*
Hector Naranjo	GMV	Solution coordinator Trial 1	
Cor-Jan Vermeulen	HKV	Consultant	
Kees de Gooijer	HKV	Business developer ICT	
Carolien Wegman	HKV	Consultant	*Yes*
Chiara Fonio	JRC	SP92 lead	
Chaim Rafalowski	MDA	Disaster Management and EU Projects Coordinator	
Ronald Christiaans	Police Academy of the Netherlands	Chief Digital Simulations Officer	*Yes*
David Lund	PSCE	Project Coordinator	
Jean De Preter	PSCE	Communications manager	
Rafał Wróbel	SGSP	Lecturer	*Yes*
Tomasz Zwęgliński	SGSP	Trial 1 owner	
Karolina Trzebinska	SRC PAS	Final Demo owner	
Joanna Tymińska	SRC PAS	SP94 lead	
Jakub Ryzenko	SRC PAS	Head of Crisis Information Centre	
Andre de Rond	SRH	Trial 4 host	
Laurent Dubost	TCS	Solutions coordinator Trial 2	
Doreen Gropmann	Technical University Berlin	E-learning technologist	*Yes*
Edith Felix	THALES	Project manager	
Erwin Rouwenhorst	THG	Trial 4 host	
Marijn Rijken	TNO	DRIVER+ project manager	
Marcel van Berlo	TNO	DRIVER+ Technical Coordinator	

Feedback provider	Organisation	Role in the organisation	External to DRIVER+ consortium
Dirk Stolk	TNO	Senior Project Leader	
Alice Clemenceau	Valabre	Trial 2 owner	
Frédérique Giroud	Valabre	Trial 2 owner	
Maurice Sammels	XVR	Project manager	

Feedback on the overall structure and main rationale

Feedback received (internal):
The course seems to be designed as "one size fits all", but not all the learners need to know all the details of the TGM.

Solution / implementation in the final TM:
The first version of the e-learning course already has been set up in a modular way, to enable learners to pick the topics that seem most interesting to them. The final version of the TM is role dependent. On the platform, before the real start, the learner will be given a list of topics to be studied based on the user's profile (Trial organizer, solution provider, developers, technicians, etc.). In the final version it will be clear how the module has been set up, what the learning possibilities are and from what different points of view (role) the course can be valuable. The overall overview of the TGM for people interested in the topic is short and compact. The medium (animation with voice over) is attractive and understandable for all learners. It might be provided by Centre of Expertise (CoE) before registration, to just any interested person.

Feedback received (internal and external):
Trigger curiosity to the TGM and tease about its usefulness. Teaser videos should be made for each session (maybe the session holder could do the introduction).

Solution / implementation in the final TM:
As soon as learners arrive at the e-learning environment they should be immediately triggered to watch a short video (may be an animation) about TM, what it is, for whom and how it can be used. There will be a video to trigger curiosity about the usefulness of Trials, the TGM and TM. Furthermore, every (sub-)session will start with a very short introduction video explaining why to do this methodological step or use this tool/method, for whom the (sub-)session is intended and the specific learning objectives. All these session introductions will have the same set-up and visual styling.

Feedback received (internal):
E-learning and TGM handbook sections do not go hand-in-hand. Links and connections with other TM elements, nor with the TGM document, were available. In TMv2 some internal references were missing, for example to tools.

Solution / implementation in the final TM:
It is important to have helpful links, both to internal sources (other modules) and external sources (e.g. TGM Handbook). The internal links between the modules will be added, not only to guide the learner in the process, but also to improve the role-dependent learning strategies ("If you are a … and want to know more about… go directly to …"). Second, the final version of the TM will be aligned with the TGM Handbook, at least the version that is available at finalisation of TM. There will be direct links between TGM Handbook and TM. Next to this, in the TM references will be added to modern (academic) research, existing methods and tools and ready to use concepts and ideas.

Feedback received (internal and external):
Repeat the "heart-beat" of the methodology.

The importance of a good evaluation should be the red line in the whole method and e-learning. If you don't prepare on the observations, the measurements and the questions, there is a possibility that you learn nothing in the end. Make this something to hold on during the whole training.

Solution / implementation in the final TM:
The "heart-beat" will in the new version be translated as an explanation of the how-and-why of organising a Trial, following the methodology. A consistent user-story will be provided. This user-story will be developed based on all collected experience, data, information and lessons identified until now in the project. The user story line will be delivered in a separated manner (like a movie and/or a booklet), but also as part of every TM-session, to keep the learner focussed on the how-and-why of the Trial and to provide tangible examples.

Feedback received (internal):
Use the same personas for the user-story.
Include experiences from previous Trials. Use as examples 2-3 user-stories (2 organizers + 1 tech developer) throughout all e-lectures.

Solution / implementation in the final TM:
With a handful of clear personas the learners will be able to identify themselves with one or more "actors" in the methodology. Personas will be designed and added to the user-story for the final version of the TM. The implementation of Trial experiences and other examples will serve well to illustrate on how to do a Trial. Due to timing in the project, the user-story line that will be used in the TM will be based on the experiences of Trials 1, 2 and 4.

Feedback received (internal):
In TMv2 almost all sessions have provided a stepwise way of working: go to the session overview, click the first thing, watch or do it, then return to the overview. Make it standard and recognisable.

Solution / implementation in the final TM:
The general idea is to provide a general overview of the topic, to provide the learner with essential information and an insight in the specific module. After that the learner should have the possibility to go into detail. All the sessions will have the same recognisable layered structure: one general overview (i.e. the basic part) and (by wish) optional advanced parts.

Feedback received (internal):

In TMv2 sometimes actions from the learner were asked to do on "a website", but in the session no hint was given on where these actions take place.

Solution / implementation in the final TM:
References to (external) websites will be given in a presentation or video, but the learner should be able to continue with the instruction without visiting these. Exception to this rule are tutorial videos included in the TM to explain how to use a specific tool (e.g. the PoS website), as tutorials are meant to be used in simultaneously with the tool they are explaining.

Feedback received (internal):
Data collection plan: explain the setup and importance in preparation phase; explain the way of working and how to deal with errors/omissions in the evaluation phase. Use the same examples of collected data.

Solution / implementation in the final TM:

The explanation of the data collection plan will be connected strongly with the evaluation plan, to emphasise the importance of the overall connections in the TGM. Essential connections will be described and referenced. Examples will be given, also the "bad" ones of connections between data collection and evaluation plan.

Feedback received (internal):

Improve the connection between the sessions:

    a. Story line.

    b. Personas.

    c. Style, look and feel, colours.

    d. Connectors and links ("this topic will be explained/elaborated in session…."); show the bridges.

    e. Use the same type of tasks/tests/assignments for the same goal.

    f. References to contact phase.

    g. Repeat the "heartbeat" of the methodology – determine and express the TGM-red line in the training (like a mantra).

    h. Not too much text on slides, focus on images.

    i. Clear picture of target group.

Solution / implementation in the final TM:

All recommendations will be implemented and are already described in other lines in this section.

Feedback received (internal):

A structured evaluation procedure is the key. Rephrase the statement that "without evaluation not 1 person is learning from the trial" and stress the fact that evaluation is of key importance and how to reach the situation that everyone is learning by doing.

Solution / implementation in the final TM:

The TM has been developed to explain the main aim of a Trial: to assess solution(s) and therefore to organise this in a structured step-by-step preparation and evaluation. At the start of the session about the evaluation phase, a general overview is needed on everything that is related to evaluate the Trial. The statement that evaluation is the key to a successful Trial will be mentioned from the beginning and repeated in every phase/sub-session. In the TM, the learner will find ways to organise the evaluation in such a way to obtain the best results in the end. Extra explanations will be provided about the data synthesis (what it is and how to use it to evaluate the trial) and an explanation of qualitative versus quantitative data will be added.

Feedback received (internal):

It happened that in one of the sessions something was asked in the quiz about a topic that has not been explained. All the quizzes should be done the same way and not too easy; if the learner does not pass a quiz, the learner will not be able to continue. Use pictures.

I would like to introduce a kind of "test", which is not really a quiz, but which asks the trainees to reflect on what they have learned. How to realise such a test and how to realise valuable feedback to them?

Solution / implementation in the final TM:

Assignments should be helpful and not a stay-in-the-way for learners. The quizzes will be standardized so, that the same type of topics have the same type of quizzes. There will be no restrictions on moving forward when the learner will not complete the quiz.

Feedback received (internal):
The diaries from the TGM support to Trial committees in the project show that the support categories can be grouped in the following five main parts:
1. *Creating the baselines and innovation-lines.*
2. *Data collection and KPIs.*
3. *Utilization of the Test-bed technical infrastructure.*
4. *Evaluation & results analysis.*
5. *Solutions (i.e. selection, use in Trials, integration into the scenario).*

This shows that the main needs are expressed concerning support for the preparation and evaluation phases, including their inter-relations.

Solution / implementation in the final TM:

An overall introduction into the concept and its value will be added for the following topics:
1. Baseline and innovation-line: Process modelling methods (Swimming lanes, BPMN, etc.) that can be used for creating those artefacts will be described.

2. Data collection and KPIs: as this is not part of a CM practitioner's daily work, more tailored explanations in this area will be taken up in the TM. The methodology itself aims at an objective assessment of socio-technical innovation. The support in this area was and is focused on the very concept of data (e.g. qualitative vs. quantitative) and the means by which they can be collected (e.g. extracted from the Test-bed technical infrastructure, observations, or focus groups).

3. Utilization of the Test-bed technical infrastructure: The Test-bed's technical infrastructure is one of the main artefacts that have a direct implication on the Trial. From the simulation possibilities, to the connectedness of different solutions and their exchange of data, to the realism of the Trials and to the data collection and evaluation aspects, the technical infrastructure of the Test-bed is involved everywhere. Hence a lot of knowledge has to be transferred to the user. It is important to explain the whole range of possibilities the technical Test-bed offers but also to convey the potential implications. For example, the coverage with Wi-Fi can be crucial for some solutions and their connection but also for the Observer Support Tool.

4. Evaluation and results analysis: The objective assessment of innovative solutions is the very core of a Trial. Choosing the most promising solutions, connecting them to the Test-bed technical infrastructure (as much as needed) and embedding them in a realistic scenario is key. From the supporting activities, it can already be seen that the core information that has to be conveyed is still the one of the objective assessment of solutions with respect to reference data. Some basic knowledge on evaluation as well as analysis methods needs to be taught to the users of the TM. References will be given to external methods proven to be useful.

5. Solutions: some information will be given about selection, use in Trials and integration into the scenario. A detailed analysis of the solution selection process within DRIVER+ can be found in **D942.11 Report on review and selection process** (3)**.** Also, references to the TGM Handbook will be given.

Feedback received (internal and external):
Make the TGM less large and/or impressive. Show and tell that you could chose to keep it (a Trial) small and nevertheless learn from it. Even if you would have just 1 gap and 1 or 2 solutions the method is useful, and a trial might help you. Make this part of the message.

Solution / implementation in the final TM:
The scalability of the TGM and the entire Test-bed will be an important message in all sessions. It is also part of the user story line. Examples can be used to explain the different options between a very large and small Trial.

Feedback on -learning and contact-phase content

Feedback received (external):
What is the aim of the e-learning?
1. *To get everyone on the same level of knowledge before the contact-phase?*
2. *To give a short overview over the TGM to enable learners to more in-depth training on their own initiative?*
3. *To enable students to dive into the method starting from their own point of view and their own starting questions?*

Solution / implementation in the final TM:
A clear description of the aim of the e-learning will be added and repeated as often as necessary. In the role-definition the different aims will be elaborated (what kind of learner are you?).

Feedback received (external):
Combine theory and practice. E-learning should be obligatory before the contact-phase. The combination of e-learning and contact-phase is only attractive and useful for specific modules or even topics. The contact-phase should have a good balance between interactive working methods and presentations.

Solution / implementation in the final TM:
Face-to-face courses are a lot more difficult to organise and to attend (location, planning, costs, trainers, etc) and should only be invested in if effective and meaningful. Therefore a blended approach has been chosen. The contact-phase will be reduced to those topics that need discussion, reflection or learning from peers. The content of the contact-phase will only focus on topics that need more face-to-face clarification and practice opportunities. Tailoring of this content-phase needs to be done based on the results of the learners in the e-learning.

Feedback received (internal):
About the three dimensions: Explanation of the trial dimension should not only be described from the trial owner perspective, but TM should also provide general information about trial setup. This topic (different dimensions and their meaning for the trial) should be hosted by the introduction session and not evaluation session. What could be done is a short repetition of the explanation every time you need the subdivision in the session (like: "Remember: Trial dimension is about…. CM dimension is about…. Solution dimension is about….").

Solution / implementation in the final TM:
Explanation of the different dimensions will be given in the preparation phase. It will be repeated (in more or less the same way, like a mantra) every time it is needed.

Feedback received (internal and external):
The overall length of the e-learning is too long. There are too many presentations.
E-learning seemed to be very complete and thorough. The total e-learning module is far too long. Dependent of the type of learner, the person will start skipping elements or just gets lost and leaves the training. For those who know nothing about the topic, the e-learning is too hard. For those who know already a lot about organising Trials and using Test-beds, the e-learning is boring. Make it more modular to fit to different target groups (for example role-dependent).

Solution / implementation in the final TM:

TGM is comprehensive and full of relevant issues. A long e-learning program cannot be avoided for those who want to know every detail. At the other hand, the challenge is to explain just as much as needed (and not more) to enable learners to organise their own Trial. In the Trial the balance should be found between giving an overview and providing a sufficient level of detail. The final version of the TM will contain shorter and more specific videos. The first video of the topic will always provide an overview of what is there to be discovered. The contact might be divided over a few short videos, containing information on a deeper level. Due to role-dependent e-learning the learner will be able to choose the videos that are most interesting for him/her. A role description and a guide through the material, based on the role, will prevent the learner to skip essential elements or get lost.

Feedback received (internal and external):
Videos are too long and not consistent in quality. The voice-over should be done by a native speaker or with someone with very good English.

Solution / implementation in the final TM:
All the videos will be remade. The videos will be short and there will be 1 or 2 presenters with good English skills.

Feedback received (internal and external):
Make the e-learning as visual as possible (videos, photos, characters). Now some of the sheets are just read out loud.

Solution / implementation in the final TM:
For the final TM new visuals, icons and animations have been developed and will be used in a structured and recognisable way in the e-learning.

Feedback received (internal and external):
The interaction with the learner is low and that means they might lose their interest.

Right now the module is a presentation. Expected is a more attractive module, more like an animation or movie. Keep the same voice for every session. E-learning should almost be a kind of attractive game, which you don't want to leave until the end.

Solution / implementation in the final TM:
Attractiveness will be increased by the clear modular structure, the recognisable voices and the teasers to every topic. The interactive quizzes and assignments might bring some humour and offer the learner a sense of achievement when passing a quiz/assignment by answering sufficient questions correctly.

With the support and expertise of EASS, more modern lecture-style video will be made explaining the core methodological steps in this phase. These interactive presentations will be provided to the learners, asking them to reflect on the topic, do some small exercises "on the fly" and giving immediate feedback. H5P.org open source technology will be used to add the interactive quizzes/questions/assignments to the e-lecture videos.

Feedback received (internal and external):

Provide subtitles for every EU-country.

Solution / implementation in the final TM:
The feedback has also been translated in three ways:
1. The usage of the subtitles is not only a topic for TM and is to be discussed by the sustainability board and the CoE.
2. All presentations will have the same (professional) voice over, to enable the learners to get used to that voice and be familiar with the atmosphere in the videos.
3. A language check should be part of the final fine-tuning of the TM.

Feedback received (internal):
Add training objectives and the amount of time it takes to conduct the e-learning/contact phase.

Solution / implementation in the final TM:
An overall assumption on time based on the user role will be added and be stored in an easy to find place on the platform.

Feedback received (internal and external):
The assignments should be developed in a way that feedback is provided during the assignment (what are the right answers and why). A user-story will be helpful in doing this. Be very clear about which answers given/selected are correct (and why) and which ones are not (and why). The quizzes should have automatic feedback. It is important, that the e-learning is also sustainable after the project has ended.

Solution / implementation in the final TM:
Automatic feedback will be implemented for the specific assignments where this is possible. Feedback to the learners will be clear and easily understandable. With relation to the sustainability: trainers will be needed to provide feedback on the more difficult assignments, aiming at "do-it-yourself" tasks. This will be discussed in the CoE and the outcome cannot be referred to yet in this deliverable.

Feedback received (internal):
Audio volume of videos varies too much.

Solution / implementation in the final TM:
Because the videos in the new version will have a voice over from one person, it is feasible to have the same volume for all sessions.

Feedback received (internal):
Dissemination of results beyond your own organisation: what exactly is the message, particularly after the DRIVER+ project? This has a strong relation with the sustainability discussion.

Solution / implementation in the final TM:
Depending on the outcome of the sustainability discussion, the sub-session on dissemination will focus less or more on project related dissemination. Anyhow, the topic of dissemination of results to stakeholders will be elaborated more.

Feedback received (external):
Explain the structure of training and contact-phase in the beginning (expectation management), highlights: what should not be missed or left out; what is optional, explain the inherent logic of TGM, use live Trial examples (videos, data, interviews, etc). Discussions/co-creation/ exchange of experiences have been appreciated and should be encouraged in the contact phase. Provide enough breaks in between the intense group assignments/workshops. For example, better schedule 2 days of 6 hours, than 1.5 days of 8+4 hours.

Solution / implementation in the final TM:
The structure of the contact phase will be explained in the beginning. Trainers will be provided list of topics and explanations on how to conduct the contact-phase. They will also have examples of possible schedules available, combined with the warning of not overloading the learners during the contact phase.

Feedback received (internal):
Topics in the contact-phase that need special attention:
- *Explain structure of training and contact-phase in the beginning (expectation management).*
- *Questionnaires: how to prepare them and how to use them in the most effective way!*
- *Analysis: explain better how to organise this.*
- *Milestones: something about planning and different loops for preparation, execution and evaluation.*
- *Highlights: what should not be missed or left out; what is optional.*
- *Measurement of non-technical aspects (soft skills).*
- *Data collection: how to automate?*
- *Explain the inherent logic of TGM.*
- *Use live trial examples (videos, data, interviews, etc.).*
- *Elaborate more on the tasks (debriefing: what is the right answer?) instead of plenary feedback from the groups.*
- *Mix of learning methods: might work well if explained why a specific method has been chosen for what goal/aim.*
- *Use a story line or (simplified) example as red line in the contact phase.*

Solution / implementation in the final TM:
All recommendations will be assessed for el in the contact-phase (material and instructor notes).

Feedback received (internal):
Discussions/cocreation/ exchange of experiences have been appreciated and should be encouraged in the contact phase. And if during the contact-phase the trainer will be at the table or not: describe what would he/she do.

Solution / implementation in the final TM:
Best practices and the expected behaviour of instructors should indeed be included in the instructor notes. The recommendations in this feedback will be elaborated in the contact-phase (material and instructor notes).

Feedback received (internal):
Will all learners have to take part in the contact-phase?[3]

Solution / implementation in the final TM:
The final version of the TM is role dependent. Not all learners will have to go through the whole content, but only through the material that is needed based on the learner's profile and thus on their specific role in the organization of a Trial. In the new version the topics and sessions will be connected to specific roles, the same will be done for the contact phase. The learner will be given list of topics to be studied based in the e-learning as well as in the contact-phase based according user's profile (Trial organizer, solution provider,

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[3] *The original feedback was 'Why do all the participants (CM innovators and practitioners) take part in the contact phase?'. This feedback was related to the setup of the updated Workshop 0, in which all participants attended the contact-phase for providing feedback. The original feedback has been translated to the question above.*

developers and technicians). Not all learners have to follow a contact phase. It depends on their role and that will be indicated in the platform, in the same way as role dependent learning for the different sessions.

Feedback on the e-learning platform technique

Feedback received (internal):
The log-in procedure at the Estonian Moodle is complicated and time-consuming. E-learning should be on a universal platform and easy to access.

Solution / implementation in the final TM:
Decided is to implement the final version of the TM in Moodle and at the meantime agree on the arrangement that the TM will be transferred to a more suitable platform, supported by one or multiple CoE. The TM will be elaborated in such a way to ensure the possibility of transferring it to another platform. The registration procedure is to be clarified in the TM's tutorial, which should (also) be accessible outside the e-learning platform.

Feedback received (internal and external):
E-learning is used in many different organizations for online courses. Often this e-learning is followed by a face-to-face contact-phase (e.g. called "residential course"). The main implementation suggestion was to start with an online virtual classroom with all participants to share expectations and experiences.

Solution / implementation in the final TM:
The needs or wish for contact with fellow learners can be difficult to implement. In future it will be unknown how many learners will be using the TM in the same period. The possibility and level of contact between learners will be part of the sustainability discussion and the role to be taken by CoE.

Feedback received (internal and external):
Provide interfaces to contact other learners and Trial-organizers.
Provide and moderate a forum where the students can discuss the topics.

Offer a forum for discussions with a trainer providing feedback.
Suggestion is to have a working mode "in between" the e-learning and the contact phase, like having a dedicated online session in which learners can discuss with the instructor(s). Learners may ask questions, share thoughts, make appointments for bilateral contact, etc. Instructors may collect questions to be able to answer them later, for example in an extra video.

Solution / implementation in the final TM:

A forum was requested from the learner point of view. It might be attractive to exchange experiences, ask questions and receive real-time replies. Especially during a project this works well, because people are cooperating and working on the same topic. At the other hand, it is unknow yet how much the TGM and TM will be used after the project. To provide learners contact with other Trial Organisers and other learners seems to be a good idea in general, to motivate and inspire each other.

Some information on „Pan-European networks and references" will be added to the content of the sessions to provide contacts to other learners and Trial organizers, but forums for discussion will not be provided in the TM's training package itself. Feedback from the learners and instructors will be provided to/by the CoE directly and it is their decision how/when to set up such a feature in the platform in which the TM is implemented (e.g. a forum in EASS's Moodle based e-learning platform).

Feedback received (internal):
Forums shouldn't be empty at the start, as this demotivates to fill them (few people want to be the first to start a discussion or to ask questions). Old content also demotivating, so maybe thought has to be given to regular update-checks.

Solution / implementation in the final TM:
The content of a forum (old, existing, new) is part of the sustainability discussion. For a good and interesting forum a moderator or chair is needed. If forums are provided within a CoE's implementation of the TM, this feedback need to be taken in account. A link with CMINE might be logical, but all this sustainability issues are currently under discussion.

Feedback received (internal and external):
The view of the course is not comprehensive.

Solution / implementation in the final TM:
In the final version, the assignments will be part of the e-learning modules. In this way they will not "disturb" the list in the platform, the list will be shorter, and the overview will thus be restored. When creating the reference implementation, EASS will assess all possibilities related to this wish for the look and feel of the training environment (platform).

Feedback on sustainability

Feedback received (internal and external):
How will the availability and the moderation of the Training Module be organised after the end of the project? Who will be the instructors of the contact-phase?

Solution / implementation in the final TM:

The e-learning course will be designed as automatic as possible, not only the start and finalisation of the different modules, but also the way the learners receive feedback on assignments (for example by using multiple choice and explaining option, good or bad). Even if the course itself is mostly automatic, the learning environment needs technical support, support in case of problems. Also, the availability of trained teachers should be organised, both for providing feedback on questions and/or assignments and for providing the prepared contact-phases.

CoE should provide both technical assistance and trained instructors to reply to the learners and to act during the by the CoE organised contact phases. Continuation of Trial support itself should also be one of the decision points in the setup of the CoE.

Feedback received (external):
Good guidance by experienced instructors is essential to have good training effectiveness; both in the e-learning and the contact-phase (provide feedback with a follow-up in the contact-session).

Only if specific dedicated "knowledge centres" or helpdesks (with teachers) would be defined, for the TGM (maybe one for every EU-country?) it might be sustainable. You need to have support from educated people in organising trials after the project.

Solution / implementation in the final TM:
For the contact-phase a "Train the Trainer" programme will be developed in which trainer notes on all topics will be provided. A detailed tutorial of the structure as well as the content and assignments will be developed. The instructor will have this tutorial for the contact phase. In the tutorial the essentials steps are elaborated, the assignments are provided with the right answers, links to cases, etc.

Feedback received (external):

Why not involve companies/industries as users? For example, the Rotterdam Harbour knows a lot about risks and risk managers, who would love to use the methodological way of testing solutions for their crisis organisation.

Solution / implementation in the final TM:

To involve companies and industries is indeed one of the topics of the sustainability tasks within the project. In the final TM this idea cannot be elaborated; it is one of the topics to be discussed in the project's Sustainability Board and with CoE to be established.

Annex 4 – Detailed design of each session

This annex contains the detailed design for each (sub-)session, using a standardized design template explained in the first sub-section. The sessions are listed according to the structure presented in Table 3.1. Note that per (sub-)session, both the e-learning and contact-phase contents (if applicable) are described in one table. While the e-learning content is static (meaning the same for all learners if they follow that session) the contact-phase content is to be tailored by the TM instructors.

Explanation of the detailed design template used for each (sub)session

To use a consistent, structured approach in defining each session in detail, the session's design documented in this annex uses a standardized template. For an elaborate explanation of this template, readers are referred to the design of the previous TM version 2, as described in **D924.11** (2), since in this report the same template is used and was proven to work well.

The template is a simplified version of the one in use Frontex (i.e. European border and coastguard agency) (4) and many other law enforcement oriented training and education institutions (including EASS) which apply the European Higher Education standard and Sectorial Qualification Framework for setting up learning content (i.e. applicable to the European Academic Credit Transfer System (5)).

The learning objectives for each (sub-)session are formulated as much as possible using Bloom's Taxonomy of measurable verbs (i.e. action verbs) (6). This results in a definition in observable learner behaviour, thereby making it possible for instructors (and automatic e-learning assessment systems) to check whether the objectives have been met.

The learning strategy describes how the (sub-)session is executed, making use of suitable delivery methods as listed in section 3.3.2 and Annex 5. The last cell of each detailed design table lists which part(s) of the user-story will be used to illustrate the sub-session's topic (see also section 3.3.3 about the user-stories and other examples to be used).

Detailed design of Session 1: Introduction

Table A3: Training design of Session 1: Introduction

Session 1: Introduction *What is a Trial, why to use the pan-European Test-bed and how to use this Training Module?*
Target groups and entry requirements
Target groups: All learners mandatory. **Entry requirements:** - none -
Duration
Duration e-learning: approx. 15 min.
Learning objectives

Have <u>knowledge</u> or <u>understanding</u> of:
Knowledge of:
    • The pan-European Test-bed, which consists of the Trial Guidance Methodology, supportive tools and methods, and a network of users (e.g. CMINE and CoU) and Centres of Expertise.
 	
Comprehension of:
    • What a Trial is.

- The multiple roles that are involved in a Trial and the learner's own role in this.
- The existence of the TGM Handbook and TGT and its use for organizing a Trial.

Be <u>able</u> to:
- Select those basic and advanced parts of the sessions, which are applicable to the learner's specific role in organising a Trial and his/her own interests.
- Operate the TM's interface, navigate through the (sub-)sessions and use the quizzes, assignments, achievements and forum functions.

Take <u>responsibility</u> for:
- Scheduling own training efforts to complete (parts of) this module to meet the learner's personal training objectives.
- Referring colleagues and fellow organisation committee members to (parts of) this TM.

Learning strategy e-learning

- **Trials and the pan-European Test-bed: what it is and what it offers.**
  - Video triggering curiosity into the topics of a Trial, why to organize it and using the aspects of the pan-European Test-bed as support for organizing an own Trial.
- **Introduction to this Training Module.**
  - Video welcoming the learner to the Training Module, stressing its importance and providing links to the CoEs, CMINE and CoU.
  - Introduction e-lecture, explaining the blended approach, explaining the main organizers and stakeholders of a Trial and that this TM serves a heterogeneous training audience, providing a listed summary of all e-learning and contact-phase sessions and mentioning the use of a user-story as hearth-beat throughout the TM.
- **Tutorial video of how to use the e-learning's interface.**

Learning strategy contact-phase

- In the second "Intro to this TM"-video, an overview of the contact-phase sessions is provided.

Parts of user-story and examples to be used

- Video footage of previous Trials could be used in the first video.

Detailed design of Session 2: Preparation phase

Session 2.1: Prerequisite

Table A4: Training design of Sub-session 2.1: Prerequisite

Session 2.1: *Prerequisite Gap selection and setting the context of a Trial*
Target groups and entry requirements
Target groups: 1. Trial organisers and 2. Practitioners mandatory. Other groups 3. Solution providers and 4. Developers and technicians optional. **Entry requirements:** Having completed session 1.
Duration

Duration e-learning: Basic content approx. 15min. Advanced content approx. 20min extra.
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge of: • Existence of the CM taxonomy. • Existence of the Portfolio of Solutions. Comprehension of: • How a Trial differs from an exercise. • What a CM gap is. • How it is embedded in a specific context – the Trial context. • The baseline and innovation-line and where these are needed. • Understand the concepts of the Trial dimension, CM dimension and Solution dimension.
Be <u>able</u> to: • Select and detail out those CM gaps applicable to the learner's own Trial. • Setting the context of the learner's own Trial, by using the Trial context template for analysing the (im)possibilities and side-restrictions.
Take <u>responsibility</u> for: • Bringing together required people and resources to prepare, execute and evaluate a Trial.
Learning strategy e-learning

Basic part:
 	
• **The gaps and context of your Trial.**
    o E-lecture explaining:
        ▪ Start for a Trial can be a gap or an interesting solution.
        ▪ A Trial differs from an exercise, yet there are also great similarities.
        ▪ Selecting and detailing those gaps applicable to you.
        ▪ Drawing an initial baseline (and that the innovation-line will follow).
           This links to Session 6.3: Drawing a Baseline and Innovation-line.
        ▪ 3 dimensions of a Trial: the Trial dimension, CM dimension and Solution dimension.
        ▪ Setting the side-restrictions of your Trial.
    o Trial context template provided as downloadable document.
    o Quiz about differences and similarities between Trials and exercises.
 	
    Advanced part(s):
 	
• **Gap validation.**
    o Animated PPT.
    o Documentation (deliverable **D922.11** (7)).
• **Roles in your Trial committee.**
    o Animated PPT.
    o Link to Session 5.1 TGT and TAP.

Learning strategy contact-phase
No contact-phase foreseen for the Step 0 in itself, but direct links to:

- Session 2.2: Six-step approach.
- Session 6.3: Drawing a Base-line and Innovation-line.

Parts of user-story and examples to be used
- User-story: Introduction. Explanation that this is different compared to what you do normally. You will be shown that you can use an innovative methodology to assess the value of solutions (tools, software, etc.) to your organisation. Why would you use this methodology? Does it fulfil a need in your organisation? What could be the worst or the best outcome from trialling solutions? Is it worth the work?   - User-story: Starting point. Your starting point can be either an organisational need ("you feel a rock in your shoe") or a promising new tool or innovative solution ("have you seen that?"). Both starting point are perfect for using the TGM. Now we are going to lead you into the method   - User-story: "Good to know". Although we tell one story line to you, please keep in mind that every piece of it is scalable. During any step or decision, you can make it larger and smaller. You can adjust the method exactly according to your needs.

Session 2.2: Six-step approach

Table A5: Training design of Sub-session 2.2: Six-step approach

Session 2.2: Six-step approach *Trial Objective, Research Question, Data Collection Plan, Evaluation Approach, Scenario, Solution Selection*
Target groups and entry requirements:
Target groups: 1. Trial organisers mandatory. Other groups 2. Practitioners 3. Solution Providers and 4. Developers and technicians optional. **Entry requirements:** Having completed session 2.1
Duration
Duration e-learning: Basic content approx. 20min. Advanced content approx. 40min extra. **Duration contact-phase:** 90-120min questions & answers.
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge of: - The six steps.   Comprehension of: - Why data collection is key, what reference data is, how data can be collected.   - What is evaluation in a nutshell?   - Difference between Trial context and scenario.
Be <u>able</u> to: - Explain to a third party the six-step approach in a nutshell.   - Explain the key aspects: reference data, data collection, evaluation.
Take <u>responsibility</u> for:

- Bringing together required people and resources to prepare, execute and evaluate a Trial.

Learning strategy e-learning

Basic part:

- **The six steps.**
    - E-lecture explaining:
        - Trial Objective.
        - Research Question.
        - Data Collection.
        - Evaluation Approach.
        - Solution selection.
        - Scenario design.

Advanced part(s):

- Setting SMART Trial objectives (slides with voice-over or video + documentation).
- Writing good research questions (slides with voice-over or video + documentation).
- Options for data collection (slides with voice-over or video + documentation).
- Options for evaluation approaches (slides with voice-over or video + documentation).
- Processes for solution selection, including an elaborate call for applications (video interview with visuals + documentation + link to Session 6.3: PoS + link to Session 5.4: Drawing a base-line and innovation-line).
- Scenario design (video interview with scenario expert + documentation).

Learning strategy contact-phase

The e-lecture and advanced parts only give a (very basic) overview and introduction. A contact-phase is needed where questions can be answered (i.e. Q&A session with instructor). Furthermore, there will be more information available (e.g. as a ppt with voice over). Topics to which questions are foreseen are:

- Relation between gap – Trial context – baseline.
- Relation between Trial set up – data collection – evaluation approach & metrics.
- Relation between baseline – innovation-line – data collection plan – evaluation approach.
- Data collection: possibilities and restrictions by using the technical test-bed, observers etc.
- Solution selection and data collection – pitfalls?

Relation to other sessions:
- Session 2.1: Step zero (linked to the gaps).
- Sessions 3, 4 and 5 (linked to data collection, evaluation approach and scenario).
- Session 6.3 (linked to the solution selection step).

Parts of user-story and examples to be used

- User-story: The very beginning. You meet with your fellow managers. You discuss (over coffee) the exercises of the last few years. Someone says: Every time we do the evacuation exercise, we meet the same difficulties. Why don't we look for a real solution?
- User-story: context, what is missing, what do we need? You could use one of the exercises, to try something new, changing the process, or using some tool. You use the metaphor to find out more on the context and you ask your colleagues: "That rock in our shoe: where is it hurting most?"
- User-story: Formal decision. You take your time to reflect with your colleagues on the

> organisational needs.
> - User-story: Six-step approach: You organise a brainstorming session with direct colleagues to find answers on the following questions: Who is involved and should contribute in what roles? Do we use internals only or do we need to ask support from externals (Centre of Expertise)? What specific situation do we need? How are we working right now (what is the simplified draft baseline)? What is to be improved? How much time is needed to organise this event, the full Trial?

Session 2.3: How to iterate within the six-step approach

Table A6:: Training design of Sub-session 2.3: How to iterate within the six-step approach

Session 2.3: How to iterate within the six-step approach
Target groups and entry requirements
Target groups: 1. Trial organisers mandatory. Other groups 2. Practitioners 3. Solution Providers and 4. Developers and technicians optional. **Entry requirements:** Sessions 1, 2.1 and 2.2 completed.
Duration
Duration e-learning: Basic content approx. 15 min. Advanced content approx. 20min extra.
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge of: • What needs to be done until when (critical / nice to have) as described in the TGT and TAP. • Technical & Methodological milestones to achieve as described in the TAP. Comprehension of: • The iterative nature of the preparation phase. • The functional components of the Test-bed technical infrastructure, what they offer and the implications of its use. • The relation between technical integration (solution testing procedure) and the six-step approach.
Be <u>able</u> to: • Go through the six-step approach multiple times in an iterative, non-sequential manner. • Select those technical infrastructure components and simulators needed for a Trial.
Take <u>responsibility</u> for: • Leading the iterative process of preparing a Trial, from a methodological, technical and practical point of view. • Guiding the technical preparations according to the Trial design.
Learning strategy e-learning

• E-Lecture.
    ○ Iterative nature of the six-step approach.
    ○ Link to technical infrastructure (Session 5.2) and the implications of it on the Trial design.
    ○ Link to TGT and TAP (Session 5.1)).

• Individual assignment providing statements with iteration dilemmas.

Learning strategy contact-phase
No contact-phase envisioned for this specific sub-session, but the iterative nature will be covered in the contact phase of session 2.2.

Parts of user-story and examples to be used
• User-story: Iteration of the six-step approach (all steps separately, accompanied by examples). When you start with the Trial preparation you will definitely at some point realize that "things are changing while you are working on them". So be prepared for some iterations in the preparation process. Don't worry, it takes some time, but you can be sure the Trial preparation will improve by allowing iterations! • User-story: Selection of infrastructure components. With the Trial committee you define the Trial objective and infrastructure as SMART as possible.

Detailed design of Session 3: Execution phase

This session consists of four sub-sessions, first explaining how Trial execution looks like, followed by a sub-session on the proposed steps of the trial maturation process, then the aim and structure of the Trial Integration Meeting (TIM) and a sub-session on the Dry Runs.

Session 3.1: Running a Trial

Table A7: Training design of Sub-session 3.1: Running a Trial

Session 3.1: Running a Trial
Target groups and entry requirements
Target groups: Mandatory for all 4 target groups. **Entry requirements:** Learners should have completed both previous sessions (1-2).
Duration
Duration e-learning: 10 min e-lecture + 5 min quiz completion.
Learning objectives

Have a <u>knowledge</u> or <u>understanding</u> of:
Knowledge of:
    • A model Trial run.
    • Roles and actors during Trial
 	
Comprehension of:
    • Recognition of differences between a test or a technical integration and a Dry Run.

Be <u>able</u> to: • Actively contribute to trial during its run by following the scenario script, timetable and data collection plan.
Take <u>responsibility</u> for: • Recognizing a plan deviation and reporting it to Trial Director (e.g. pause, rewind or stop).

Learning strategy e-learning

• E-lecture (presenter slides with further explanation (as a voice over or video capture)):
    ○ Different aspects of execution (The model Trial execution and its core elements).
• Quiz:
    ○ Preparing vs. executing vs. running a Trial – Frequent and difficult questions.

Learning strategy contact-phase
No contact-phase envisioned for this sub-session.
Parts of user-story and examples to be used
• User-story: Showcasing the core-aspects of a Trial (i.e. fictive Trial) • Example: Relevant videos from previous Trials.

Session 3.2: Steps in the execution-phase

Table A8: Training design of Sub-session 3.2: Steps in the execution-phase

Session 3.2: Steps in the execution-phase
Target groups and entry requirements
Target groups: Mandatory for 1. Trial organizers, 3. Solution providers and 4. Developers and technicians; Advised for 2. Practitioners. **Entry requirements:** Learners should have completed both previous sessions (1-2). Having completed session 5 Supportive Tools is advised.
Duration
Duration e-learning: 15 min e-lecture + 5 min quiz completion.
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge of: • Elements, structure and outcomes of each step in the Execution phase. • Execution maturation processes. Comprehension of: • Reasoning behind practical execution steps and stages. • Recognition of expected readiness level.
Be <u>able</u> to: • Implement a proposed method to set a draft Trial execution planning. • Anticipate necessary amount of time and effort for the given Trial execution.
Take <u>responsibility</u> for: • Executing a Trial as one of Trials coordinators.
Learning strategy e-learning
• E-lecture (presenter slides with further explanation (as a voice over or video capture)):

○   Different steps in final preparations of execution of a Trial.   ●   Quiz: Steps and Stages – the checklist.

Learning strategy contact-phase
No contact-phase envisioned for this sub-session.

Parts of user-story and examples to be used
●   User-story: Simplified Execution phase user-story, including Trial Integration Meeting and both Dry Runs will be presented here. This will be used as an introduction to both successive sub sessions 3.3 and 3.4.   ●   Example: The timeline of activities from previous Trials. Relevant readiness checklists from previous Trials.

Session 3.3: Transition from preparation to execution: Trial Integration Meeting

Table A9: Training design of Sub-session 3.3: Transition from preparation to execution: TIM

Session 3.3: Transition from preparation to execution: Trial Integration Meeting
Target groups and entry requirements
Target groups: Mandatory for 1. Trial organizers, 3. Solution providers and 4. Developers and technicians; Advised for 2. Practitioners.   **Entry requirements:**   Having completed Session 3.1 and session 4 is advised.   Having completed sessions 5.1 *TGT and TAP* and 5.2 *Test-bed technical infrastructure* is advised.
Duration
Duration e-learning: 20 min e-lecture + 5 min assignment completion.   **Duration contact-phase:** 30min questions & answers + 2hrs group assignment.
Learning objectives

Have a <u>knowledge</u> or <u>understanding</u> of:
 Knowledge of:
 ●   Elements, structure and outcomes of preparation and execution activities between solution selection and Trial execution.
 ●   Role, scope and extent of TIM meeting.
     ○   Differentiation between technical and conceptual track of TIM meeting.
     ○   Elements, structure and outcomes of each track.
 ●   Process of integrating the results of above into a harmonized Trial script.
 	
 Comprehension of:
 ●   Technical & methodological milestones to achieve as described in the TAP.
 ●   Reasoning behind and goals of TIM meeting.
 ●   Interconnections between processes (tests and arrangements) conducted during TIM.

Be <u>able</u> to: ●   Lead the preparation of: draft innovation line, solution interactions and data integration scheme, solution Use-Cases, preliminary data collection plan and evaluation approach.   ●   Implement proposed method and tools to set a Trial preparation schedule and planning.

• Evaluate progress of all activities between solution selection and Dry Run 1.

Take responsibility for:
- Executing all Trial integration activities and leading the TIM meeting.
- Monitoring the progress during preparatory activities.
- Achieving readiness to start preparation steps for Dry Run 1.

Learning strategy e-learning

- E-lecture (presenter slides with further explanation (as a voice over or video capture)):
  - Steps, stages and key events between solution selection and Trial execution.
  - Trial Integration Meeting – objectives and methods.
  - Assessing the readiness level at subsequent execution stages.
  - Achieving the readiness for Dry Run 1.
- Assignments:
  - Individual assignment: drawing the responsibility matrix for TIM and for Trial preparation.

Learning strategy contact-phase

The e-lecture gives an overview and introduction to main conceptual and technical processes carried in execution phase. A contact-phase is needed where questions can be answered (i.e. Q&A session with instructor). In addition, during the contact-phase experimental learning method will be utilized (e.g. group assignments: guide through small TIM meeting, or discussion over former DRIVER+ Trials critical decisions and their reasoning).
Expected duration: 30min Q&A, 30min group assignment completion, on request 2hrs contact-phase group work.

Parts of user-story and examples to be used

- User-story: The organisation and outcomes of TIM. Who to invite? It is the first overall meeting between all stakeholders in the Trial (practitioners, solution providers, technical support). Duration of the meeting might be 1 or 2 days. What elements are in the programme?
- Example: The timeline of activities. Relevant readiness checklists from previous Trials.

Session 3.4: Trial rehearsals in Dry Run 1 and 2

Table A10: Training design of Sub-session 3.4: Trial rehearsals in Dry Run 1 and 2

Session 3.4: Trial rehearsals in Dry Run 1 and 2
Target groups and entry requirements
Target groups: Mandatory for 1. Trial organizers, 3. Solution providers and 4. Developers and technicians; Advised for 2. Practitioners. **Entry requirements:** Having completed Sessions 3.1, 3.2 and 4 is advised. Having completed sessions 5.1 *TGT and TAP* and 5.2 *Test-bed technical infrastructure* is advised.
Duration
Duration e-learning: 15 min e-learning + 5 min quiz completion + 15 min assignment completion.

Learning objectives

Have a <u>knowledge</u> or <u>understanding</u> of:

Knowledge of:
- Elements, structure and outcomes of rehearsals.
- Role, scope and detailed extent of each Dry Run.
- Process of integrating results of Dry Run's into Trial planning.

Comprehension of:
- Reasoning behind and goals of rehearsals.
- Required Trial execution resources.
- Differences between 1st and 2nd tier rehearsals (DR1 and DR2).
- Role of a Trial rehearsal as the staff's practical training for Trial execution.
- Range and scope of possible corrections carried out in mid-rehearsal final preparation stage.
- Practical adaptations before executing a Trial.

Be <u>able</u> to:
- Implement the proposed method and tools to set a Trial execution schedule and planning for it.
- Prepare and lead a Dry Run.
- Evaluate the Trial readiness.
- Practically test the data collection and evaluation approach.
- Implement the proposed method and tools to set corrective activities schedule and planning.

Take <u>responsibility</u> for:
- Confirming the readiness for execution.
- Executing all rehearsals and defining the corrective actions.
- Monitoring progress during mid-rehearsal stage.
- Achieving readiness to carry out a Trial.

Learning strategy e-learning

- E-lecture (presenter slides with further explanation (as a voice over or video capture):
  - Dry Running a Trial for the first time.
  - Implementing corrective actions.
  - Final readiness evaluation during the second Dry Run.
- Checklists:
  - Trial practical preparation and maturation checklist.
- QUIZ:
  - Readiness for rehearsing: Am I ready for it?
  - Dry Runs – key elements.
- Assignment:
  - Case method: narrative problematic situations (decision forcing cases) followed by a suggested solution.

Learning strategy contact-phase

No contact-phase envisioned for this sub-session.

Parts of user-story and examples to be used

- User-story: The organisation and outcomes of Dry run 1. Deploy all the technical components, security issues, access to rooms, etc. Perform a readiness review (checklist) of solutions, integration, testbed, data collection, scenario and a full technical check. This is also the moment

to train the observers. First run a version of the Trial around the table and thereafter run the Trial in the simplified version, without practitioners but with every piece of software connected.

- User-story: The organisation and outcomes of Dry run 2. Dry run 2 is a full-dress rehearsal. The technical setup and technical check should not cause any problems. You will run the Trial without real practitioners, but with stand-ins. They all focus on own task and job! Don't forget to do the full-scale data collection. Don't let the participant go, before the after-action evaluation (hot wash) – feel responsible for the immediate serious talk through about tips and tops (first impressions, final improvements).
- Example: Schedule and rehearsal planning from DR1 & 2.

Detailed design of Session 4: Evaluation phase

This section consists of 4 sub-sections, each linked to one step of the evaluation-phase.

Session 4.1: Data quality check

Table A11: Training design of Sub-session 4.1: Data quality check

Session 4.1: Data quality check
Target groups and entry requirements
Target groups: 1. Trial organisers mandatory. Other groups 2. Practitioners 3. Solution Providers and 4. Developers and technicians optional. **Entry requirements:** Having completed Session 1 and Session 3.1.
Duration
Duration e-learning: 5 minutes e-learning (explaining the main procedure of data reality check with the help of icons) + 10 minutes in-depth learning (presentation) + 10 minutes assignment completion. **Duration contact-phase:** a half-day group-work.
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge of: • Different procedures and methods for data quality check. Comprehension of: • The importance to do a quality check as soon as possible after the Trial. • The needs to verify that (and why) the data collection plan, the evaluation techniques, the metrics and the evaluation questions have been formulated in the preparation phase.
Be <u>able</u> to: • Structure the collected data in a predefined manner (preparation phase, execution phase: define the data collection and data storage plan in high level of detail – automatic saving or are after action manual actions needed?) and remember to distinguish the three dimensions. • Check the completeness of the data collection, immediately after the Trial (e.g. outliers, remarkable measurements). • Collect missing or incomplete data with different methods (e.g. interviews, logfiles, questionnaires, surveys, and focus group sessions). • Check the quality of the data, and with the help of valid arguments delete data of insufficient quality, including a final check on privacy-sensitive data.

- Establish the truth, accuracy, or reality (including the influence of different dimensions on each other) of the revised data collection and to structure it for the next step (i.e. data analysis).

Take responsibility for:
- Checking and structuring and the data that has been collected during the Trial.
- Collecting missing data.
- Determining a verified and structured set of collected data.

Learning strategy e-learning

E-lecture
- Overview of types of data, collected by different means, according to the data collection plan.
- Explanation of the difference between quantitative and qualitative data and how to use them.
- Check for completeness and quality (vagueness or errors).
- Explanation of what to do in case of missing, vague or erroneous data: how to collect additional information directly after the Trial.

Assignment:
Quiz on the difference between quantitative and qualitative data.
Review of data collection plan: what kind of objective data could you collect and how (timeliness, accurateness, relevance, completeness, cost effectiveness).

Learning strategy contact-phase

During the contact-phase, practice and "understand by doing" is offered regarding the different evaluation steps, both during preparation (e.g. set-up a data collection plan) and during evaluation (e.g. checking the collected data. This phase is guided by a data professional and is demand-driven. During the contact-phase there are plenty opportunities to discuss critical decisions in the Trial evaluation procedures with persons with the same background and possible additional experience. This is also the best time and place to receive explanation on the relevance of a proper evaluation of the Trial (feel the heart beat). Discussions are foreseen on the topics:

- How to collect the right data and evaluate them after the Trial?
- How to describe and prepare the different roles and performances related to the evaluation phase? (First Impression Evaluator, Trial Evaluators, Observers)
- Are you aware of the relevance of the collection of qualitatively high-level data for the next steps, for example to be able to answer research questions, based on measurements and analysis?
- Look back to your preparation and refine the data collection plan and evaluation metric: How does a detailed and specific evaluation plan look like? What are the criteria?
- How to avoid bias in the data (=supporting or opposing events in an "unfair" way, because of allowing personal opinions to influence your judgment)?
- How to deal with the fact that the Trial setup might not be sufficiently representative and reliable for drawing conclusions about the operational benefits of specific solutions?

Parts of user-story and examples to be used

- User-story: Immediately after the Trial, save and check the data. During the Trial a lot of data has been gathered. Be sure that this data will stay available after finishing the Trial. The solution owners, the observers, the Trial owner, everyone should know how and where to store the collected data. You do the check immediately. Why? In case something is missing, you can chase after it and the essential pieces of information might be rescued.

- Examples of collected data: data quality check. Data quality is objectively a good thing, but how do you know what quality data looks like? How can you assess your data quality to determine how your data will help you assessing the solutions? There is no single list of data quality checks. Defining what you do with your data and what you need it to do truly informs your evaluation. Is the data well structured, and in a manner that can be easily consumed? How reliable is the data? Can you trust it? Is it fit for purpose? How consistent is this data? Is it complete?

Session 4.2: Data analysis

Table A12: Training design of Sub-session 4.2: Data analysis

Session 4.2: Data analysis
Target groups and entry requirements
Target groups: 1. Trial organisers mandatory; 2. Practitioners and 3. Solution providers optional. **Entry requirements:** Having completed Session 1, Session 3.1 and Session 4.1
Duration
Duration e-learning: 5 minutes e-learning (explaining the main procedure of data with the help of icons) + 10 minutes in-depth learning (presentation) + 10 minutes assignment completion. **Duration contact-phase**: a full-day group-work.
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge of: Different data analysis techniques. Comprehension of: - Different data types and the possible usefulness for evaluation purposes.   - Visualisation techniques and skills.
Be <u>able</u> to: - Define and formulate a data analysis team.   - Choose and use the best (most relevant) analysis technique, related to the collected data and purpose of the Trial.   - Analyse quantitative data and qualitative data in a proper way.   - Relate the data to the KPI's (scores) and to identify preliminary conclusions on the KPI-performance and the metrics (thresholds).   - Perform a global visualisation of the data (how much collected, what type, completeness, relevance, highlights).   - Find relations inside the collected data and with predefined gaps and questions.
Take <u>responsibility</u> for: Fully structured data analysis.
Learning strategy e-learning
E-lecture: - Step by step explanation of data analysis in the data analysis team: structure, aggregate, determine raw outcomes, identify patterns, preliminary conclusions, first relations to KPI's, formulation of answers to research questions.   - Visualise the data contributions to three dimensions.

- Determine and visualise the gaps and the data that might contribute to bridge the gap.

Assignment on visualisation:
- With the help of a predefined and provided data set, practice with different visualisation methods. Assignment is to review the data in different dimensions and visualise the contribution to them.

Learning strategy contact-phase

- The first topic in the contact phase is how to choose a systemized method or technique for aggregating, analysing and re-analysing data. The data analysis team should be organised in such a way that they are able to describe and perform the data analysis.
- The next topic in the contact phase is to determine a few pitfalls and how to avoid them:
  - Tunnel vision: how to avoid that (from the start!) in your data analysis team.
  - Unexpected outcomes: how to determine them, how to deal with them.
- The learners have had the possibility to bring in their own data collection and to define specific questions or issues related to the data analysis. This will be addressed and discussed during the contact phase. In case there is no actual data collection, a predefined dataset could be used.

Parts of user-story and examples to be used

- User-story: Data analysis. You will go through a process of inspecting and https://en.wikipedia.org/wiki/Data_transformationtransforming, and with the goal of discovering useful information. You will use the analysis to work toward conclusions, but not too fast. Be sure that you really look objectively to the data and report them without prejudice, transforming data and with the goal of discovering useful information. You will use the analysis to work toward conclusions, but not too fast. Be sure that you really look objectively to the data and report them without prejudice.

Session 4.3: Data synthesis

Table A13: Training design of Sub-session 4.3: Data synthesis

Session 4.3: Data synthesis
Target groups and entry requirements
Target groups: 1. Trial organisers mandatory; 2. Practitioners and 3. Solution provider optional. **Entry requirements:** Having completed Session 1, Session 3.1 and Session 4.1 and 4.2.
Duration
Duration e-learning: 5 minutes e-learning (explaining the main procedure of data with the help of icons) + 10 minutes in-depth learning (examples and formats). **Duration contact-phase:** a half-day group-work (led by an experienced Trial owner or Trial host).
Learning objectives
Have a knowledge or understanding of: Knowledge of: • How to extract data from a dataset for synthesis purposes. Comprehension of: • The importance of using well-formulated research questions in a Trial.

- Formulating lessons learned, in such a way that organisations really learn from recent activities.

Be able to:
- Organise an effective meeting to extract data for synthesis purposes.
- Answer the research questions and to support these answers with empirical evidence (and reasoning) gathered during the Trial.
- Formulate the degree to which the Crisis Management performance objective, the solution objective and Trial objective have been achieved.
- Indicate the level of improvement of Crisis Management performance during the Trial.
- Specify the effect of the solution on Crisis Management and the usability of the solution.
- Provide a full scale overview of the Trial results, based on the analysed data and embedded in a relevant context (related conclusions to gaps).
- Consider the ethical, legal and societal issues related to the conclusions.

Take responsibility for:
- Determining the lessons learned, to be followed by actions (next steps).
- Putting results in context, not losing any piece of valuable information.
- Objective assessing solutions within the Trial context.

Learning strategy e-learning

E-lecture:
- Be sure that you understand at this point the three dimensions in the Trial. Take the step to bridge the gap: explanation of how data (Trial dimension) can be used to bridge the gap and to use the solution (solution dimension) to support you and your organisation in future (CM dimension).
- How to validate your results (what makes a conclusion valid?)
- Link to KPI's and objectives: did you reach your goals? Why/why not?

At the end of the e-lecture, a format for standard presentation data synthesis meeting is being provided (downloadable document provided to learners as checklist/template), with the following info:
- What results are remarkable? Why? Can they be explained?
- Did you expect these results? Why or why not? Check with the audience: do they have the same opinion?
- What are possible explanations for these results in three dimensions?
- What are the main conclusions based on these results? Here think about your initial gaps and Trial Objectives. Have you bridged your gap? At least partly? Let the audience add to the list with their analysed insights.
- Are the results generalizable? To what and in what dimension? Why or why not?
- What can be concluded about the solution? Did it address your gaps as expected? Why or why not?

In this step no (group) assignment is developed, because data synthesis is too specific to generalize. In the contact phase the student should bring their own material (i.e. a pre-analysed data collection).

Learning strategy contact-phase

- In the contact phase the students learn to present their own data (narratively and/or statistically). They will be informed about the guidelines as to how to present a synthesis. A synthesis could include numerical and graphical presentations of the data.
- Sense making: Tips and tricks in finding strength and consistency of the evidence and investigate reasons for any inconsistencies.

• Discussion on what can go wrong in data syntheses and how to avoid this?

Parts of user-story and examples to be used
• User-story: Meeting with practitioners. Make sure to gather the practitioners and put the collected and analysed data into context. Don't give your own analysis yet, let them accompany you in understanding the results and defining lessons learned. • Example of data synthesis, answering the questions above with an example.

Session 4.4: Dissemination of results

Table A14: Training design of Sub-session 4.4: Dissemination of results

Session 4.4: Dissemination of results
Target groups and entry requirements
Target groups: 1. Trial organisers mandatory; 2. Practitioners and 3. Solution provider optional. **Entry requirements:** Having completed Session 1, Session 3.1.
Duration
Duration e-learning: 5 minutes e-learning (explaining the main procedure of dissemination with the help of icons) + 10 minutes in-depth learning (examples). **Duration contact-phase:** a full-day group-work (guided by a communication specialist).
Learning objectives

Have a <u>knowledge</u> or <u>understanding</u> of:
Knowledge of:
• Various dissemination methods and strategies.
• Communication skills to:
    o Translate the results to a broad audience
    o Show the benefits and uptake of using TGM in Trials.
    o To make the results available and usable for future decision making.
 	
Comprehension of:
• Value of lessons learned in Trials for own organisation and stakeholders.
• Value of lessons learned in Trials for other organisations, which have not at all been involved yet.

Be <u>able</u> to: • Start a useful discussion of the results (relevance for other organisations, review of the conclusions by participants and solution providers). • Document all results in a proper way (knowledge database, PoS, Lessons Learnt Framework). • Use different communication channels in dissemination (social media, popular articles, research papers, website, newsletter, interview, multimedia, animation, presentation, pitch, etc.). • Reflect on the ethical, societal and legal aspects of dissemination.
Take <u>responsibility</u> for: • Letting others know what you learnt organising and performing a Trial. • Disseminating the results internally, choosing the best communication method out of several options: presentation, explanations, recommendations, lessons learnt, examples of solution implementation, et cetera.

- To disseminate the results externally (plan this dissemination to whom and why/when/how).

Learning strategy e-learning
E-lecture: • Summary of setup of Trial (gaps, research questions, dilemmas, solutions, execution/implementation) – focus on questions and answers. • What results should be disseminated internally, to whom and how and why? Explanation of reasonable internal documentation. • Why is the result of the Trial interesting for externals (differentiation to three dimensions) – specific target group: solution providers. • Sustainability of the results: how to guarantee that the results and gained knowledge will stay "alive" and will be implemented in the right way? List of examples (with short explanations in easy to access presentations): • Overview of how Lessons Learned Framework, Knowledge database and PoS can be used after the Trial. • Short example of the list of gaps being bridged and answered during a Trial. • Short example of one or two research questions being answered with data collection. • Overview of dilemmas during the preparation and execution phase and how they can be overcome. • Tips and tricks for the dissemination to solution providers: how to produce valuable feedback, how to learn (both ways) from the Trial results.

Learning strategy contact-phase
• The contact phase is organised together with a communication expert. • The contact phase starts with Practice: talk about your Trial, indicate the evaluation troubles and results, formulate questions on how to improve the evaluation phase for your organisation. This is a guided group discussion and may lead to several in depth sub sessions. • The aim of the contact phase is to get convinced that the time spent on the whole Trial has been worth. This "belief" is the power behind effectual and fruitful dissemination. • The contact-phase ends with personally noting down future work: make an overview of what you would do differently the next time and why; inspire your audience to use the TGM in future.

Parts of user-story and examples to be used
• User-story: After the Trial – dissemination. After the Trial you probably would like to share (or will have to share) your approach, the setup, the execution and the results with a variety of different stakeholders that all have different interests, priorities, logics and values. Explaining to them why you did this and how the organisation benefitted from the Trial is a huge task, but don't worry: it is up to you to decide who should know a small piece or the whole story. Ask your preparation team in the very beginning: how/what are we going to gain from the dissemination? How does this information sharing help us in future steps?

Detailed design of Session 5: Supportive tools and methods

This session contains six sub-sessions providing training materials for specific tools and methods which can be used during the preparation-, execution- and/or evaluation-phases of a Trial.

Session 5.1: TGT and TAP

Table A15: Training design of Sub-session 5.1.1: Trial Guidance Tool

Session 5.1.1: Trial Guidance Tool
Target groups and entry requirements
Target groups: 1. Trial organiser mandatory. **Entry requirements:** Having completed session 1, 2 – Session 6.2: Portfolio of Solutions Session 6.2 is advised.
Duration
Duration e-learning: 45 min.
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge of: - Relation between TGT and TGM.   - The importance and purpose of using a TGT to apply the methodology.   - How the six-step approach is depicted in the TGT.   - Relation between TGT and PoS.   Understanding of: - How all Trial phases (preparation, execution and evaluation) are supported by the TGT.   Comprehension of: - Aims and functionalities of each software component.
Be <u>able</u> to: Navigate the TGT platform and implement the TGM.
Take <u>responsibility</u> for: - Managing their own team in the TGT.   - The correct implementation of the TGM.
Learning strategy e-learning

Basic part:
 	
• **TGT components and relation to the TGM.**
    o E-lecture explaining the basic components of the TGT and the relation to the TGM.
 	
Advanced part(s):
 	
• **Trial definition (preparation phase).**
    o E-lecture and tutorial are divided into several sections explaining the formulation of:
        ▪ Trial context.
        ▪ Trial Gaps.
        ▪ Trial Objectives.
        ▪ Research questions.
        ▪ Data collection plan.
        ▪ Evaluation approaches and metrics.
        ▪ Trial scenarios.
        ▪ Related Solutions.

▪ Test cases.
• **Trial execution and evaluation phases.**
○ Short e-lecture explaining how Trial execution and evaluation phases are supported by the TGT.

Learning strategy contact-phase
No contact-phase envisioned for this sub-session.
Parts of user-story and examples to be used
• User-story: Supportive tools and how/when/where to use them.

Table A16: Training design of Sub-session 5.1.2: Trial Action Plan

Session 5.1.2: Trial Action Plan
Target groups and entry requirements
Target groups: 1. Trial organiser mandatory. **Entry requirements:** Having completed session 1 and 2, session 6.1.1 is advised.
Duration
Duration e-learning: 20 min.
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge/understanding of: • The TAP structure and content. • The concept of a "living document". • The "TAP completion schedule". • "The Trial Event phases and their results" schematics. • The role of TAP snapshots. Comprehension of: • Difference between the TAP and a report on Trial preparation and execution. • TAP role in the process of preparation and execution of a Trial. • Roles and responsibilities inside TAP. • What part and to what extent TAP structure may be modified. • Why it is important to keep TAP concise by removing redundant and unnecessary information.
Be <u>able</u> to: • Identify TAP roles & assign responsibilities for sections. • Perceive the consequences of delaying any part of the TAP. • Compose the TAP completion plan and review schedule and explain it to colleagues.
Take <u>responsibility</u> for: • Assigning roles and delegating subsequent tasks and TAP sections. • Assessing the tap completion in accordance to set time schedule.
Learning strategy e-learning
E-lecture (presenter slides with voice over and short animations – *"explanimation"* method):

- Purpose and scope of the Trial Action Plan as a "living document".
  - o Animated PPT with voiceover.
  - o Presents the TAP utilisation within the context of exemplary user-story.
  - o Reference to the download of the most up-to-date TAP template file.
- TAP content and structure, snapshots as a method of keeping the TAP concise.
  - o Animated PPT with voiceover.
  - o Showing the TAP template's structure.
- Role of TAP during Trial Preparation Phase and its subsequent steps.
  - o Animated PPT with voiceover.
  - o Showing the preparation steps in the TAP template.
- Role of TAP during Trial Execution Phase and its subsequent steps.
  - o Animated PPT with voiceover.
  - o Showing the execution steps in the TAP template.

QUIZ:
- Quiz with questions on TAP.

Learning strategy contact-phase
No contact-phase envisioned for this sub-session.

Parts of user-story and examples to be used
- User-story: Trial Action Plan.   - Example: Link to official DRIVER+ TAP template (available after its official release).   - Example: Links to completed TAP's of DRIVER+ Trials.

Session 5.2: Test-bed technical infrastructure

Table A17: Training design of Sub-session 5.2: Test-bed technical infrastructure

Session 5.2: Test-bed technical infrastructure
Target groups and entry requirements
Target groups: 1. Trial organizer and 4. Developers and technicians mandatory.   3. Solution providers optional.   **Entry requirements:** Having completed sessions 1 and 3.1; sessions 2.1-2.3 are advised.
Duration
Duration e-learning: Basic content approx. 10 min; Advanced content approx. 15min.
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge of: - The software components available for Trial operators and those extra for developers.   - Where to find detailed (developer) documentation per component and installers.   Comprehension of: - The aims and functionalities of each software component.
Be <u>able</u> to: Select components needed/wanted for their own Trial.

- Identify simulators and data-sources needed to support their own Trial.
- Find and go through user manuals/tutorial for those components selected.
- Brief IT-experts/developers about their own Trial, why the selected components are needed in their own Trial and potentially which connections to solutions/simulators are to be developed.

Take <u>responsibility</u> for:
- Arranging internal or external IT-support to get the Test-bed technical infrastructure up and running for their own Trial.

Learning strategy e-learning

Basic part:

- **The Test-bed technical infrastructure.**
    - Explanimation regarding the infrastructure's core components.
    - Explanimation regarding the infrastructure's developer extras.
    - Links to GitHub (open source components + developer documentation).

Advanced part(s):

- **Technical preparations and software development.**
    - Interview video with infrastructure implementer explaining:
        - Technical preparation process.
        - Interdependencies between technology, Trial context and Trial scenario development.
        - Possibilities for technical support from CoEs.

Learning strategy contact-phase

No contact-phase envisioned for this sub-session.

Parts of user-story and examples to be used

- User-story: Preparing the technical infrastructure.

Session 5.3: Gap assessment methods/gap selection

Table A18: Training design of Sub-session 5.3: Gap assessment method / gap selection

Session 5.3: Gap assessment methods/gap selection *Gap selection and setting the context of a Trial*
Target groups and entry requirements:
Target groups: 1. Trial organizers mandatory; 2. Practitioners optional. **Entry requirements:** Having completed session 1.
Duration
Duration e-learning: 20 min
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge of:

• What is a gap and how to identify it?   Comprehension of: • Methods to find gaps (feedback loops, incident/accident reports/brainstorming).   • Which personnel to involve in this process.   • How the gaps are embedded in their Trial context (people, actions, equipment, information exchanges etc.).
Be <u>able</u> to: • Identify gaps, the involved roles, actions, tools and information exchanges.   • Assess which gaps to address.
Take <u>responsibility</u> for: • Bringing together required people and create an atmosphere in which gaps can be discussed.
Learning strategy e-learning

Basic part:
 	
 • E-lecture explaining:
     o "Gap-culture": Why identifying a gap is something good.
     o How to identify gaps: Continual improvement process, brainstorming, lessons learnt framework.

Learning strategy contact-phase
No contact-phase envisioned for this sub-session.
Parts of user-story and examples to be used
• User-story: Gap selection. You can use Crisis Management Taxonomy to find out which CM-function your gap is addressing. Using the taxonomy brings you added value: you will find out which CM-function your needs are connected to, to narrow down the problem. The taxonomy might help you to focus your need in standard words.

Session 5.4: Drawing a Baseline and Innovation-line

Table A19: Training design of Sub-session 5.4: Drawing a Baseline and Innovation-line

Session 5.4: drawing a baseline and innovation-line   *the reasoning and techniques of baseline and innovation-line*
Target groups and entry requirements
Target groups: 1. Trial organisers, 2. Practitioners and 3. Solution providers mandatory.   **Entry requirements:** Having completed session 1, session 2.1 and 2.2.
Duration
Duration e-learning: 20 min.   **Duration contact-phase:** approx. 2hrs.
Learning objectives

Have a <u>knowledge</u> or <u>understanding</u> of:

Knowledge of:

- Elements of a baseline: personal, actions, tools, information exchanged, decisions taken.
- Process modelling technique (swim lanes and Business Process Modelling Notation (BPMN) as examples).

Comprehension of:

- The concept of a baseline and innovation-line – what is it good for?

Be <u>able</u> to:

- Select and detail out those CM gaps applicable to the learner's own Trial.
- Drawing a baseline and innovation-line.
- Use the baseline and innovation-line as means of communication with solution providers.

Take <u>responsibility</u> for:

- Creating a first draft of your "gap-process"-baseline.

Learning strategy e-learning

- E-lecture explaining:
  - The elements of a baseline and the rationale behind them.
  - Process modelling in a nutshell.
  - BPMN, swim lanes as examples for modelling techniques.
  - How to use the baseline to create the innovation-line.

Learning strategy contact-phase

Group assignment for learners to model a small baseline based on their gap. Learn to interact as a group and to explain the concept to a third party. Create an innovation-line from that baseline and learn how to use it as mean of communication to the solution provider.

Parts of user-story and examples to be used

- User-story: Baseline & innovation-line. To be able to compare the results of the innovation line (working with a tool or solution) you need a baseline, describing how you work right now. It is the day to day working procedure, just describe it. Be aware that it is different to describe the baseline in following the plans or how you normally work.

Session 5.5: Societal Impact Assessments

The aim of the workshop is to present an overview of a structured methodology for assessing the societal impact of Crisis Management solutions. This methodology was originally designed to be used by the trainers who will train the DRIVER+ consortium in how to carry out Societal Impact Assessments (SIAs), but a final version of the SIA framework (i.e. the methodology) will be designed so that it can be used beyond the project. A SIA refers to assess the way in which Crisis Management solutions might create (unintended) negative or positive impacts on society at large.

Table A20: Training design of Sub-session 5.5: Societal Impact Assessments

Session 5.5: Societal Impact Assessments
Target groups and entry requirements
Target groups: 1. Trial organizers and 3. Solution providers mandatory. **Entry requirements:** Knowledge about the basic features of the solutions they are working with and completion of sessions 1, 2.1 and 2.2.
Duration
Duration e-learning: 15 min e-lecture. **Duration contact-phase:** 45 min introduction + 2 hours of implementation of the methodology (physical workshop with group work/contact phase) + 15 minutes to assess the workshop by filling in a questionnaire (in person, at the end of the workshop).
Learning objectives
Have a knowledge or understanding of: Knowledge of: - Why societal impact is a crucial part of European Crisis Management.   - How the work the target group is engaged in, in terms of solution application and development, can have unintended impacts on society which can be assessed.   Comprehension of: - How CM solutions can have unintended impact on society in various ways.   - How "societal impact" differs from "effect" and "efficiency", and how societal impact relates to accountability.   - Why unintended impacts and societal impact cannot be quantified.
Be able to: - Recognize real life examples of societal impact of solutions.   - Identify societal impacts of specific functions of CM solutions that have been discussed as part of the SIA training session.   - Conduct a SIA, using the methodological tool (SIA framework).   - Critically review SIAs conducted by others.
Take responsibility for: - Assessing the functions of the solutions before designing or using them.   - Carrying out a SIA where needed.
Learning strategy e-learning
Introduction/ presentation (e-lecture):   - A presentation on the concept of SIA, and why this is crucial to European CM.   - The introduction emphasises and illustrates the unintended effects that CM solutions may have on society. In line with the SIA methodology presented later, a case study is briefly presented to detail the benefits and outcomes of using the framework.   - This presentation gives a detailed introduction into the concept of societal impact assessment. This means that the audience will begin to understand why a SIA will provide a different perspective to previous analysis of a solution. The session also details several of the benefits of using the SIA framework, including the increased accountability

it provides for solutions.

Feedback of the session (in an online document/forum):
- Questionnaire assessing the SIA.

Learning strategy contact phase

After having followed the 15-minute e-lecture introducing SIA in the context of CM and understanding why it is beneficial to undertake a societal impact assessment themselves, the next step is for the learners to be introduced to the framework and the criteria with which they will perform the assessment. Based on the presentation of the SIA framework in the e-lecture, this activity will start with the trainer introduces the working definition of SIA, the 5 steps that comprise the assessment framework (including a detailed explanation and examples of each of the societal impact criteria) and several examples to illustrate the use of the framework.

The second part of the contact phase presentation allows the learners to use the framework themselves through case study group work. They will first use a partially completed framework to apply the criteria themselves, before the second phase requires them to undertake a full assessment as part of a group, creating the crisis, and detailing the CM solutions them.

Individual/ group work implementing the methodologies
- A SIA refers to the way in which Crisis Management solutions might create (unintended) negative or positive impacts on society at large. During this activity, the learners conduct assessments in groups using two case studies. The assessments are based on the functions of the specific CM solutions are associated with that case study. The second part of the group work phase allows the groups to use the framework with a solution or crisis that they are familiar with from their own work or experience. Every component is supported by training material to illustrate and summarize the most important points and give room to conduct one's own assessments.

Feedback of the session (paper questionnaire distributed at the end of the contact phase activity followed if needed by an online update of the document)
- Questionnaire assessing the SIA. The learners will have the possibility to update (online) the questionnaire filled in after the e-lecture.

Parts of user-story and examples to be used

- User-story: Preparation of the Trial. In a qualitative way the usability of solution and the ability to implement it can be assessed (fitness for implementation in legacy system related to IT, procedures and legal/ethical/societal aspects), for example with the help of questionnaires.
- Example: Interview of partners and external learners after a SIA (shown at the end of the e-learning presentation).
- Example: Short video of a learner giving a SIA by her/himself (shown at the end of the contact-phase).

Session 5.6: Lessons Learned Framework

Table A21: Training design of Sub-session 5.6: Lessons Learned Framework

Session 5.6: Lessons Learned Framework *Use and application context of the LLF*
Target groups and entry requirements
Target groups: 1. Trial organizers mandatory, 2. Practitioner optional. **Entry requirements:** none.
Duration
Duration e-learning: 15 min.
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge of: - The LLF and its elements.   Comprehension of: - Why the LLF is useful.   - Where in your organization it can be applied.   - How it can help in identifying gaps.
Be <u>able</u> to: Fill in the LLF.
Take <u>responsibility</u> for: Being able to explain the value of the LLF to a third party.
Learning strategy e-learning
Basic part: - E-lecture explaining: - The LLF and its elements.   - The Lessons Learnt Framework.   - Assignment: - Fill in the LLF for an incident/accident the learner experienced last year.
Learning strategy contact-phase
No contact-phase foreseen for this sub-session.
Parts of user-story and examples to be used
Not part of user-story.

Detailed design of Session 6: Pan-European networks and references

This session contains three sub-sessions providing references to other organisations (e.g. CoEs), the glossary and a training sub-session on what can be found in and how to use the Portfolio of Solutions.

Session 6.1: Networks - Centres of Expertise, CMINE and Community of Users

Table A22: Training design of Sub-session 6.1: Networks – CoE, CMINE and CoU

Session 6.1: Networks - Centres of Expertise, CMINE and Community of Users *Where DRIVER+ is embedded in and further information can be found*
Target groups and entry requirements
Target groups: 1. Trial organisers mandatory. Other groups 2. Practitioners 3. Solution Providers and 4. Developers and technicians optional. **Entry requirements:** none.
Duration
Duration e-learning: 15 min.
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge of: • The Centres of Expertise and where to find them. • The CMINE. • The CoU. • What kind of additional information on Trials can be found in the PoS. Comprehension of: • The fact that there are different points of contact for information and support within the EU.
Be <u>able</u> to: • Explain to a third party which network is helpful for which kind of question. • Search for support, further information, reflections on Trials etc.
Take <u>responsibility</u> for: • Collecting contact information and knowing whom to ask for what.
Learning strategy e-learning

• E-lecture explaining:
   o What is a Centre of Expertise? What is their role in supporting and conducting Trials?
   o What is the CMINE? What is their role in supporting a Trial? What kind of questions can be asked here?
   o The European Community of Users (CoU) and how is it related to DRIVER+.
• List of contact details of DRIVER+ CoEs, CMINE and the European CM CoU.

Learning strategy contact-phase
No contact-phase foreseen for this sub-session.
Parts of user-story and examples to be used
Not part of the user-story.

Session 6.2: Portfolio of Solutions

Table A23: Training design of Sub-session 6.2: Portfolio of Solutions

Session 6.2 Portfolio of Solutions
Target groups and entry requirements
Target groups: 1. Trial organisers and 3. Solution providers. **Entry requirements:** Having completed Sessions 1 and 2.1 is advised.
Duration
Duration e-learning: 30 min.
Learning objectives
Have a <u>knowledge</u> or <u>understanding</u> of: Knowledge of: - PoS structure and content.   - Solution advertisement and its benefits.   - Solution discovery.   - CM taxonomy.   Comprehension of: - Aims and functionalities of each software component.
Be <u>able</u> to: - Describe their own solution in the PoS.   - Identify potential solutions to be used in a Trial.
Take <u>responsibility</u> for: - Advertising their own solution(s) – solution providers.   - Discover solutions that claim to address CM functions mentioned in Trial Gaps.
Learning strategy
Basic part: **PoS components and benefits of using it.**   - E-lecture explaining the basic components of the PoS and what benefits it provides.   **Advanced part(s):**   **Describing their own solution.**   - E-lecture and tutorial divided into several sections explaining: - How to provide basic solution description.   - Solution use cases and relation to CM functions.   - Adding references to where the solution was used (example: in a Trial).   - Solution documentation.   - Feedback section.
Links to contact-phase
No contact-phase envisioned for this sub-session.

Parts of user-story and examples to be used
• User-story: Discovering possible solutions. How to organise a solution selection? Listen and look to the pitches with you gap and the research question in the back of your thoughts. Would it help you and your organisation, and how/where/when?

Session 6.3: Training Module glossary

At the end of the final TM, a glossary section will be included providing learners a list of core terms and concepts used throughout the (sub-)sessions. This glossary has no training objectives in itself, but just serves as a base of reference to the learners. Elaborate explanations of these terms/concepts and how to use them is given in the other applicable (sub-)sessions.

Annex 5 – Training delivery methods suitable for the final TM

This annex describes the training methods as found suitable for either the TM's e-learning part or contact-phase in more detail, thereby serving as extra information for the suitable training delivery methods, as listed in section 3.3.2. The descriptions of the methods described in this annex stem from education theories by Kolb (8) and Biggs (9) and descriptions of teaching methods documented by Bourner (10) and Illeris (11).

For e-learning:
- **Video** – fit for introducing a topic or providing an example in a very appealing method via 1-directional knowledge transfer to the learner. Usually lasting for not more than 10 minutes. Examples are a project's dissemination output or a video from YouTube.
  - + Appealing due to high-quality visuals.
  - + Especially effective for visual learners (i.e. those who learn most effectively when seeing a visual about the topic).
  - + No opportunity for learner to respond.
  - + No opportunity to check/test knowledge transfer.
  - + Little effort to include if pre-existing (e.g. from online source or from another project).
  - o Hard to find pre-existing video content that exactly matches the needs.
  - o Very time- and resource-consuming, if it has to be edited or created from scratch.
- **E-lecture** – fit for explaining a topic in a basic up to very detailed level. Usually footage of the lecturer and his/her presentation slides and/or blackboard writings. Intended for 1-directional knowledge transfer to learner. Examples are a video-recording of a real-life lecture or a specifically recorded video of just the lecturer/presenter and the slides/visuals.
  - + Coherent with educational experience of most learners at the age of 25 and up.
  - + Suitable and feasible for a wide range of basic and advanced topics.
  - + Can create a basic interpersonal bond between presenter and learner.
  - + Especially effective for audio learners (i.e. those who learn most effectively when a topic is presented to them).
  - − No opportunity for learner to respond.
  - − No opportunity to check/test knowledge transfer.
  - o Learner motivation highly dependent on length and presenter quality.
  - o Easy to convert an existing lecture into an e-lecture (i.e. from the content point of view).
  - o Requires moderate investments in time and resources for capturing and editing, due to static camera viewpoints. Some academies and most universities have such in-house facilities.
- **Presenter slides with voice-over** – similar as e-lecture, but without a video capture of the presenter. Usually containing a scripted, professional voice-over.
  - + Suitable and feasible for a wide range of basic and advanced topics.
  - + Especially effective for audio learners (i.e. those who learn most effectively when a topic is presented to them).
  - − No opportunity for learner to respond.
  - − No opportunity to check/test knowledge transfer.
  - − Learner motivation is highly dependent on the length and quality of the slides and voice-over.
  - o Easy to convert an existing lecture into slides with voice-over.
  - o Moderately time consuming to create high-quality slides and voice-over text.
- **Video interviews** – fit for 1-directional knowledge and experience transfer between the expert being interviewed and the learner. Usually a scripted video of 5-30 minutes between the interviewer and one or more persons being an expert or having first-hand experience in the topic to be trained. Often used to convey example cases, but it can also contain basic explanations, more advanced in-depth contents

and advices/suggestions. Examples are interviews with specific methodological experts, persons who have implemented/used a tool before, or persons who have organised a similar event before.

- + Especially suitable and feasible for providing examples.
- + Appealing as it can create a basic interpersonal bond with the learner, as the learner can relates themselves with the interviewee.
- + Especially effective for audio learners (i.e. those who learn most effectively when a topic is presented to them).
- − No opportunity for learner to respond.
- − No opportunity to check/test knowledge transfer.
- o Little effort to include if pre-existing (e.g. interview about example pre-made for other aims).
- o Hard to find pre-existing interview content that exactly matches the needs.
- o Requires moderate investments in time and resources for capturing and editing, but requires good scripting of interview in advance.

- **Explanimation (i.e. animated video explaining a topic)** - fit for a concise explanation of a topic provided in a 1-directional knowledge transfer to a learner in a very appealing, contemporary manner. Usually following a user-story and lasting for not more than 5-10 minutes. Examples are cartoon-like animations on YouTube explaining a method, the workings of a commercial service or explaining an important historic event in a funny way.
    - + Appealing due to high-quality visuals and sense of humour.
    - + Especially effective for visual learners (i.e. those who learn most effectively when seeing a visual about the topic).
    - − No opportunity for learner to respond.
    - − No opportunity to check/test knowledge transfer.
    - o Little effort to include if pre-existing (e.g. from online source or from other project).
    - o Very time- and resource-consuming, if it has to be edited or created from scratch.

- **Tutorial videos –** fit for explaining interfaces of products and software applications and for providing a step-by-step guide to resolve issues with these. Providing a 1-directional practical ability-transfer to learners. Examples are YouTube tutorials in how to use the headings functionality of MS Word, how to apply smoky eye make-up or how to code an automatic photo-editing script in Adobe Photoshop.
    - + Suitable and feasible for explaining step-by-step guides into a wide range of functionalities and issue solving processes.
    - + Easy for the learner to scroll back and forth when running it in parallel with using the tool.
    - − No opportunity for learner to respond.
    - − No opportunity to check/test knowledge transfer.
    - o Used nowadays to explain the workings of most consumer products and software applications, and therefore often expected to exist for such products.
    - o Moderately easy to create in high-quality with screen capture software or a video camera, a well thought-over script and by using a professional voice-over.

- **Checklists, user manuals and other written and visual documentation** – fit for providing written explanations (i.e. 1-directional knowledge transfer to learner) and for providing reference to more advanced topics or to topics/tools/methods used less often. Examples are a checklist for a methodological step, a user-manual for a software application or a deliverable document that serves as an example of a previous Trial.
    - + Especially effective for text learners (i.e. those who learn most effectively when seeing a visual about the topic).
    - + Can also be used easily when applying the topic after conducting the e-learning (e.g. in assignments or when organising a Trial).
    - − Ineffective for knowledge transfer for visual, audio and experience learners.
    - − No opportunity for learner to respond.
    - − No opportunity to check/test knowledge transfer.
    - − Learner motivation is highly dependent on the length and author quality.

- o   Little effort to create and include, especially concerning deliverables and documents already created for other purposes.
- **Quizzes and tests** – fit for providing short, interactive intermezzos between 1-directional knowledge transfer sections. Can come in the form of a single question to trigger learning awareness up to a full list of questions to answer, thereby to check the level of knowledge transfer. Usually, upon submission of the answers, feedback is directly provided to the learner, stating the amount of questions answered (in)correctly and if needed providing advice to re-visit some specific topics or directing the learner to in-depth sections. One example is a short quiz presented in the middle of an e-lecture in which the learner has to link terms with their correct definition or put the phases of a process in the correct order. Another example is a full test at the end of a session, in which several questions are presented regarding the reasons for and correct order of the steps in the evaluation phase.
    - +   Provides the ability to automatically check the level of knowledge transfer achieved.
    - +   Provides direct feedback to the learner of his/her current level of knowledge transfer and why the selected answers are (in)correct.
    - +   Can provide learner-specific directions to advanced, in-depth topics.
    - −   Not effective for knowledge transfer in itself, but links to knowledge transfer sessions can be given.
    - o   Whether a quiz or test functions (de)motivating the learners to continue depends on the formulation and difficulty level of the questions and of the tone-of-voice of automatic feedback provided for (in)correct answers.
    - o   Only possible when feedback can be provided automatically and thus only possible for questions that have a clearly correct and incorrect answers.
    - o   Most e-learning platforms provide functionality for easy creation of quizzes and tests.
    - o   H5P.org offers such technology by using an open source license. Both Moodle (i.e. the technology on which EASS's e-learning platform is based) and Drupal (i.e. the technology on which the TGT and PoS are based) offer H5P.org add-ons. Furthermore, H5P.org technology can also be used in YouTube videos, in case TM's videos are also to be offered openly outside a CoE's learning content management system.
- **Individual assignment** – fit for providing a more complex question/assignment to learners than possible via a quiz question with automatic feedback. This type of assignments is usually used for question with a less clear (in)correct answer and are therefore often graded by an instructor (i.e. human-in-the-loop grading system and thus not automatically by the e-learning system). Examples are questions asking a learner to write down his/her own expectations or ideas for a Trial or an assignment to use a previously method him-/herself to analyse an example case.
    - +   Allows instructors to check the level of knowledge transfer in detail.
    - +   Provides feedback to the learner.
    - −   In case instructors have to grade the answers submitted, there will be a delay between the submission and the learner receiving feedback (including directions to revisit a topic or to follow an in-depth sub-session).
    - −   Not effective for knowledge transfer in itself, but instructor feedback can link (back) to knowledge transfer sessions.
    - o   Only applicable for assignments that takes the learner no more than 1-5 minutes to write down his/her answer, or else it would break the learners progress in the e-learning too much.
    - o   (De)motivating aspect of the feedback depends on the delay between the submission of answers and the feedback received and the tone-of-voice of feedback provided.
    - o   Most e-learning platforms provide functionality for easy creation of free text assignments.
- **Take-home assignment** – similar to individual assignments, but should be used for more complex tasks requiring the learner more than 5 minutes to complete. Instructors also need considerable time to grade the submitted answers/reports. Examples are a task to create an evaluation report based on sample data or the task to prepare a mini-Trial around a given baseline and CM gap. A take-home assignment could also function as a test or exam, but note that when this test functions as a pass/fail

mechanism for (a part of) the e-learning course, measures must be put in place to restrict improper ways to pass the test (e.g. plagiarism).

+ Allows instructors to check the level of knowledge transfer in detail.
+ Provides detailed feedback to the learner.
− In case instructors have to grade the answers submitted, there will be a delay between the submission and the learner receiving feedback (including directions to revisit a topic or to follow an in-depth sub-session).
− Not effective for knowledge transfer in itself, but instructor feedback can link (back) to knowledge transfer sessions.
o (De)motivating aspect of the feedback depends on the delay between the submission of answers and the feedback received and the tone-of-voice of feedback provided.
o Most e-learning platforms provide functionality for easy creation of free text assignments.

- **Discussion forum** – fit for sharing questions, answers, practical advices, submitted (take-home) assignment and feedback amongst learners and between learners and instructors. Examples are a generic question and answer forum, a forum on which learners submit their take-home assignments and can provide constructive feedback to each other's assignments, and a feedback forum in which learners can share their training expectations and feedback how they rate the sessions.
    + Allows learners to contact each other and develop an interpersonal bond with fellow learners.
    + Allows learners and instructors to provide (continuous) feedback to each other's work.
    + Allows learners to ask any question and for learners and instructors to answer these questions.
    − Delay in feedback/replies received on submitted question/assignment can limit the ability for learners to continue.
    − Not effective for knowledge transfer in itself, but answers and feedback can link (back) to knowledge transfer sessions.
    o Correctness of feedback and answers provided by other learners depends on the level of understanding of them and is thus questionable and therefore also treated as such by learners receiving these feedback and answers.
    o (De)motivating aspect of forums depends on the tone-of-voice of replies given by both learners and instructors (e.g. constructive vs. destructive feedback) and thus on the level and speed of moderation.
    o Most e-learning platforms provide functionality for instructors to create and moderate forums and for learners to add messages and files to these forums.

- **Achievements** – fit for marking progression in the e-learning, indicating the level of knowledge and ability transfer and motivating learners to continue or to achieve an even higher level of understanding. In principle, this is a game-tactic, but nowadays ever more used in numerous types of applications. Examples are grading of assignments (e.g. 1-10 score instead of pass/fail), providing a star/medal/gimmick when completing a sub-session or quiz, or listing the top 3 submitted take-home assignments.
    + Provides learners with a clear insight in their progress and understanding of the training contents.
    + Motivates learners to continue learning and stimulates outstanding participation and thereby deep understanding of the training contents.
    + Allows instructors to link the level of understanding with a generically understandable scale (i.e. instead of just a pass/fail).
    − If executed with too many game-like metaphors, it can be perceived childish.
    − Does not transfer knowledge or abilities in itself.
    o Most e-learning platforms provide some kind of achievement functionality.

For the contact-phase:

- **Presentation or lecture** – similar to e-lectures provided via e-learning, but in this case with the instructor being face-to-face with learners. In the core being 1-directional knowledge transfer. Same (dis)advantages and implementation options as for e-lectures, with additional:
  - + Learners can directly ask questions (i.e. bi-directional knowledge transfer).
  - – Considering the 1-directional knowledge transfer core, no effective use of instructor man-power.
  - o Often used for introduction to interactive assignments and to recapitulate (summaries) of applicable e-learning parts required for these assignments.
- **Question & answer session (Q&A)** – a face-to-face session between learners and an instructor fit for providing tailored answers to questions that have been raised by learners. Preferably, the learners note down the questions in advance (e.g. in the e-learning) for an instructor to well prepare the answers to them. This kind of Q&A sessions are scheduled at both the start (i.e. relating to the pre-completed e-learning) and at the end of a contact-phase (i.e. relating to the topics covered by the contact phase).
  - + Learners can ask questions multiple times and they receive tailored answers.
  - + Instructors can check whether the training content delivered and the answers provided are well understood.
  - + Learners could ask unexpected questions that are hard to answer, if not prepared well.
- **Checklists, manuals, leaflets and other documentation** – completely similar to these types of documentation provided via e-learning. Refer to this e-learning method to see its (dis)advantages and implementation considerations.
- **Individual assignment** – similar to individual assignment provided via e-learning. Refer to this e-learning method to see its (dis)advantages and implementation considerations. Note that during the contact-phase, instructors can provide almost immediate feedback and learners can directly ask guidance during the assignment and directly ask questions when receiving feedback.
- **Group assignment** – fit for triggering joint (multi-disciplinary) work on an assignment. Especially good for topics of analysis and synthesis and for triggering joint discussions amongst several learners. Usually followed by a plenary presentation / discussion / feedback moment. Examples are group assignments to work on data analysis steps, or to reflect on a learner's design of a (mini-)Trial.
  - + Allows instructors to check the level of knowledge and ability transfer in detail.
  - + Provides detailed feedback to the learners, either individually or as a group.
  - + Can stimulate knowledge transfer between multi-disciplinary group members.
  - – Not effective for knowledge transfer in itself, but instructor feedback can link (back) to knowledge transfer sessions.
  - – Can be de-motivating dependent on group dynamics or can allow learners to pass without actively working in the assignment.
  - o Each group could be coached by a facilitator, to prevent group dynamics causing a negative learning experience for some members of the group.
  - o Although most individual and take-home assignments into analysis and synthesis can be converted with relatively little effort into group assignments, one should account for the level of complexity being sufficiently high that all group members have a substantial task to complete the assignment.
- **Plenary discussion** – fit for jointly – meaning both learners and instructor(s) – enriching the knowledge and ability transfer by posing questions or statements, followed by a joint discussion about the different aspects/answers to these. These plenary processes can be observed during the group assignments and Q&A sessions, but can also be executed as stand-alone activities. Examples are a plenary sessions about training expectations, a plenary presentation of (group) assignment results or a plenary discussion about controversial statements posed by an instructor.
  - + Allows instructors to check the level of knowledge and ability transfer in detail.
  - + Provides direct detailed feedback to the learners.
  - + Can stimulate knowledge transfer between multi-disciplinary group members.

> + Instructors can easily link back to other knowledge/ability transfer sessions and assignments, or can mix up plenary discussions with knowledge/ability transfer intermezzos.
> − Can be de-motivating dependent on group dynamics or can allow learners to pass without actively participating in the discussions.
> o Instructors should not only send information and discussion topics, but also facilitate a joint discussion in which all learners participate.

- **Test / Exam –** similar to a test in the e-learning, but providing more time for learners to complete it and allowing instructors to observe the learners during completion (e.g. observe group behaviour or monitor for improper passing strategies).
    - + Allows instructors to check the level of knowledge transfer achieved.
    - + Provides feedback to the learner of his/her current level of knowledge transfer and why the selected answers are (in)correct.
    - + Can provide learner-specific directions to (revisit) specific topics.
    - − Not effective for knowledge transfer in itself, but links to knowledge transfer sessions can be given.
    - − Usually requiring substantial time for instructors/examiners to grade the submitted answers/reports.
    - o Especially used in courses awarding a certificate.

Annex 6 – Gantt chart for final TM creation activities

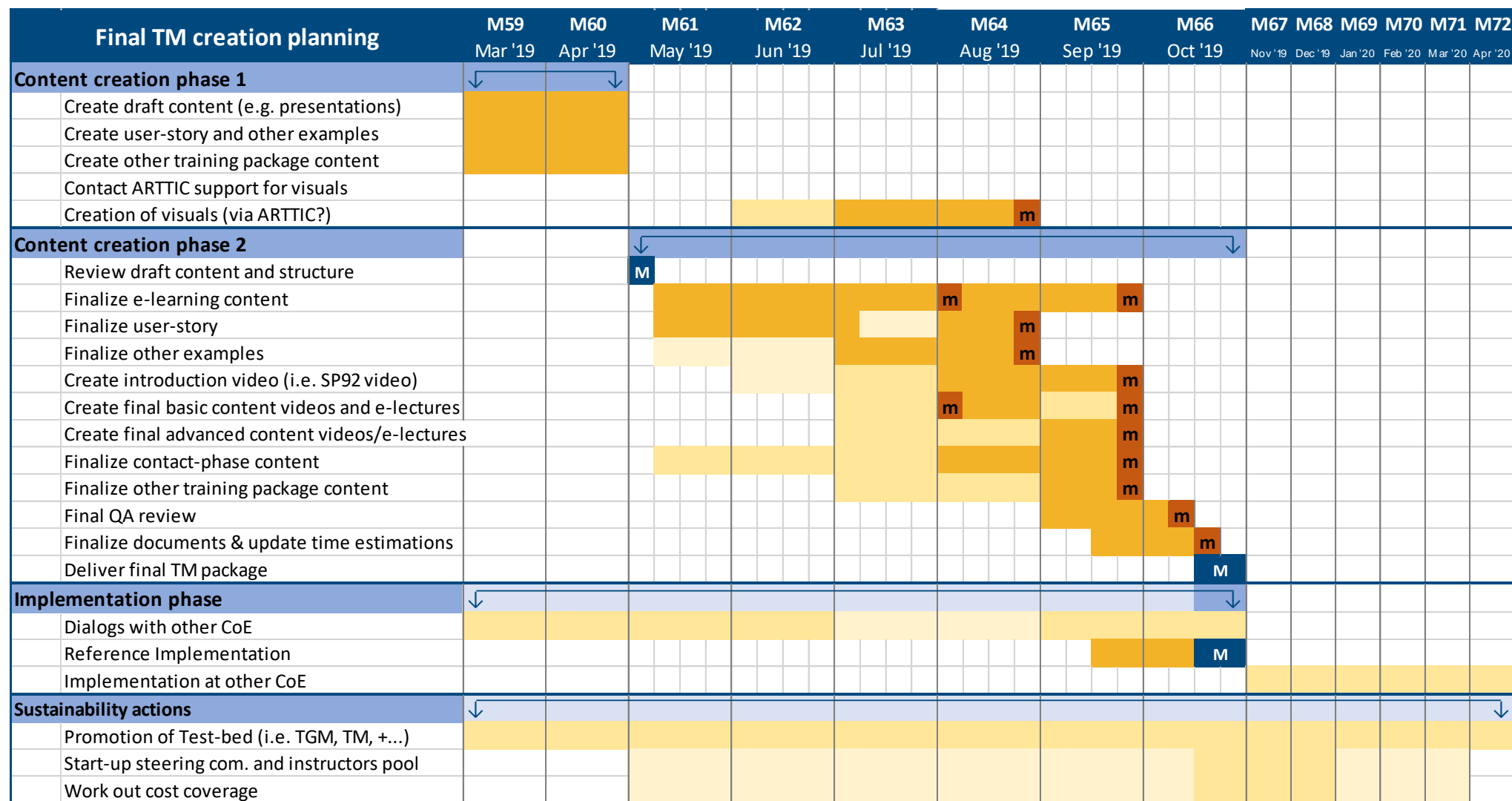| Final TM creation planning	M59 Mar '19	M60 Apr '19	M61 May '19	M62 Jun '19	M63 Jul '19	M64 Aug '19	M65 Sep '19	M66 Oct '19	M67 Nov '19	M68 Dec '19	M69 Jan '20	M70 Feb '20	M71 Mar '20	M72 Apr '20
Content creation phase 1	↓	↓												
Create draft content (e.g. presentations)														
Create user-story and other examples														
Create other training package content														
Contact ARTTIC support for visuals														
Creation of visuals (via ARTTIC?)						m								
Content creation phase 2			↓					↓						
Review draft content and structure			M											
Finalize e-learning content						m	m							
Finalize user-story						m								
Finalize other examples						m								
Create introduction video (i.e. SP92 video)							m							
Create final basic content videos and e-lectures						m	m							
Create final advanced content videos/e-lectures							m							
Finalize contact-phase content							m							
Finalize other training package content							m							
Final QA review								m						
Finalize documents & update time estimations								m						
Deliver final TM package								M						
Implementation phase	↓							↓						
Dialogs with other CoE														
Reference Implementation								M						
Implementation at other CoE														
Sustainability actions	↓													↓
Promotion of Test-bed (i.e. TGM, TM, +...)														
Start-up steering com. and instructors pool														
Work out cost coverage														

Figure A7: Large print Gantt chart planning for creation activities of the final TM (Blue M being a delivery milestone, dark-orange m being an intermediate milestone)