



Curricula Design and Assessment of Training

Intellectual Output 2 – revision April 2023





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Glossary

This document uses general and specific terms related to learning and training as defined below.

Assessment: a process for evaluating a learner's knowledge, skills, and abilities in a particular area, often using a set of predetermined standards or benchmarks.

Competence: knowledge, skills, and attitudes practised in the digital domain.

Curriculum: a comprehensive plan for learning, including instructional materials, activities, and assessments.

DigComp: Digital Competence Framework for European Citizens.

Digitalisation: the process through which organisations use digital technologies to support organisational functions and further organisational mission.

Digital Culture: the relationship between humans and technology, informed by values and mission. A digital culture is developed and nurtured at individual, team, and system levels.

Digital Maturity: the development of digital capacity and the adoption of tools and models so that an organisation is ready to respond to the continually evolving digital environment.

Feedback: information provided to learners about their performance, including strengths and areas for improvement.

I01: Intellectual Output 1 of the EU3Digital project, *Framework of Digital Competences for Third Sector Organisations and Social Enterprises*.

I02: Intellectual Output 2 of the EU3Digital project, *Curricula Design and Assessment of Training*.

I03: Intellectual Output 3 of the EU3Digital project, *Digital Support for Social Impact: How digital competences can improve the action and impact of social enterprises*.

I04: Intellectual Output 4 of the EU3Digital project, titled *Toolkit on Digital Skills*.

Instructional design: the systematic process of developing instructional materials and activities that promote effective learning.

Learning outcomes: what learners should know, be able to do, and value as a result of integrating knowledge, skills, and attitudes learned throughout the course. They are stated in measurable terms.

NGO: Non-Governmental Organisation.

Patterns: describes a 'context' in which a 'problem' is likely to occur and then provides a 'solution' to the problem and the resulting 'consequence'.

SE: Social Enterprise.

Stakeholders: any person or group of people involved in an organisation and interested in its success. Key stakeholders in a third-sector organisation include the organisation's users, employees, staff, and board members.

Training Unit: a self-contained instruction unit within a more extensive curriculum, usually focused on a specific topic or set of skills.

TSO: Third-Sector Organization.

1. Introduction

To support citizens to become digitally competent, the European Commission has established a Digital Competence Framework for Citizens – DigComp (Punie et al., 2013; Vuorikari et al., 2022). Other digital competence frameworks followed, namely DigCompOrg for educational organisations (Devine, 2015) and DigCompEdu for educators (Redecker & Punie, 2017). However, no equivalent framework has been used to support the third sector's journey to digital maturity.

Digital development leverages many opportunities for third-sector organisations (TSOs) and social enterprises (SEs), as digital technologies and skills offer increased efficiency, outreach and growth and are vital for their capacity to innovate and deliver on their social mission.

EU3Digital is an Erasmus+-funded project that explicitly supports TSOs and SEs to make progress in digital transformation. It identified a framework of competences and developed training resources to improve those competences in individuals and organisations. The project partners are from Portugal, Croatia, Spain, the United Kingdom, and The Netherlands.

Based on the EU3Digital Competence Framework (Jacklin-Jarvis et al., 2022), a.k.a. as Intellectual Output 1 (IO1), this document, released as Intellectual Output 2 (IO2), aims to synthesise the background knowledge, research work, design principles and decisions, and the rationale behind the processes followed to design a curriculum, training plans, materials and assessment for all competences identified in the framework. In addition, we provide examples of specific training courses for the competences addressed by the three pilot exchange training sessions held in Portugal, Spain, and Croatia (C1, C2, and C3). These materials act as examples for trainers creating materials for the other competences.

This document aims to be easily understood by (1) people familiar with designing and implementing training for adults, regardless of their professional background, and (2) anyone willing to improve the digital competences of TSOs and SEs. Whether you are a seasoned trainer or a self-learner, this document is for anyone who wants to know how to develop digital competences that are key for TSOs and SEs to deliver their mission more effectively and efficiently and to achieve their goals better.

This introductory section provides the context and aims for the work developed under EU3Digital. Then it outlines the methodology used to derive the curricula, the training units, and the materials from the competences. It also presents the main dimensions considered in the curricula design, overviews the defined design principles, key concepts addressed, and training and assessment methods involved. Lastly, it sets the target proficiency levels for the curricula designed and concludes by presenting the doing a tour of the document and how to use it.

1.1. Objectives

The aims underlying the EU3Digital project can be seen as threefold. First, it aims to create awareness about the individual and collective essential digital competences through the EU3Digital Competence Framework (IO1). Second, it seeks to guide the development of those competences through a curated set of training resources selected, designed and developed specifically for easy adaptation by trainers in non-formal or informal educational contexts (IO2, IO4). Third, EU3Digital aims to bring insights from the research and pilot training activities and make recommendations to policymakers from different areas, such as education or the economy, to incentivise future initiatives in Europe (IO3). Figure 1 presents an overview of the main EU3Digital activities and results.

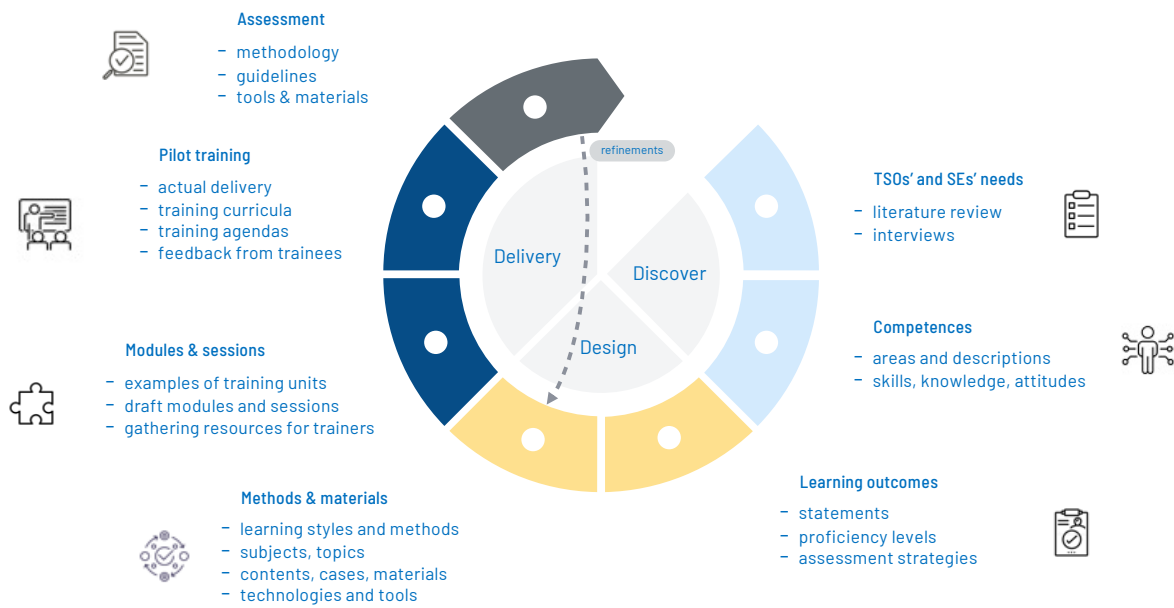


Figure 1. Overview of the EU3Digital activities and results.

1.2. EU3Digital Competence Framework

The EU3Digital Competence Framework (IO1) builds on an extensive literature review and interview findings undertaken for this project that highlighted needs and issues specific to TSOs and SEs (e.g., prioritising social mission), justifying the creation of a new digital competence framework. In addressing those specificities, the framework aims to complement, rather than replace or duplicate, well-known existing digital competence frameworks, namely: the DigComp for citizens and the ICT4NGO (ICT4NGO, 2018) for Non-Governmental Organisations (NGOs).

1.2.1. Knowledge, Skills, and Attitudes

Competences are a dynamic combination of cognitive and meta-cognitive skills, knowledge and understanding, interpersonal, intellectual, practical skills, and ethical values (González & Wagenaar, 2006). The EU3Digital Competence Framework identifies the competences that TSOs and SEs need, across the organisation or in a broader context, to benefit fully from digitalisation (Figure 2 and Figure 3).

Each framework competence is broken down into requisite knowledge, skills, and attitudes, which can be used to derive learning outcomes and develop training units and assessment approaches. The framework comprises twenty-two competences organised in five areas: digital tools, operational effectiveness, organisational culture and leadership, ethical practices, and participation and connection.

1.2.2. Competences Development

The wide range of training curricula and materials needed to address the full spectrum of competences and the organisation's diversity of scale, digital maturity, and social mission constitutes a major endeavour. Even if enough effort and resources are available, it will risk being outdated fast due to the pace of digital evolution and, most importantly, the need for mandatory case-by-case adaptation for each trainer and learning context.

However, the knowledge, skills and attitudes defined for each competence provide a good starting point for training providers to develop detailed training that best addresses the needs of TSOs and SEs in their particular context, drawing on local knowledge.

1 Digital tools				
	Competence	Knowledge	Skills	Attitudes
1.1.	Identify digital needs and functions of the organisation	<ul style="list-style-type: none"> Methods used to conduct research Organisational structure, functions and internal workflows 	<ul style="list-style-type: none"> Research Draw together information from a variety of sources 	<ul style="list-style-type: none"> Willingness to involve all stakeholders
1.2.	Identify, assess, procure and maintain appropriate hardware and software	<ul style="list-style-type: none"> Available tools The application of digital tools to organisational needs and functions Potential suppliers and partners 	<ul style="list-style-type: none"> Assess benefit versus cost (including hidden costs) Project management 	<ul style="list-style-type: none"> Readiness to invest in digital Forward-looking focus Curiosity - to find out what is as yet unknown Openness to new ways to source tools including those which are opensource, no-code, and free
1.3.	Gather, manage and analyse data to further social mission	<ul style="list-style-type: none"> Data protection laws Assessment of data reliability 	<ul style="list-style-type: none"> Practical data management (see ICT4NGO area 2) 	<ul style="list-style-type: none"> Readiness to engage in data-driven decision-making
1.4.	Track and act on the potential impacts of current and upcoming tools	<ul style="list-style-type: none"> Up to date with developments on the digital horizon - what is referred to by ICT4NGO as the next 'big thing'; currently AI, big data and blockchain Potential benefits for organisation and its social mission Potential for disruption 	<ul style="list-style-type: none"> Research Disseminate knowledge of future possibilities across the organisation to stimulate creative ideas Timely action based on that knowledge 	<ul style="list-style-type: none"> Resolution to be pro-active as well as reactive Respect and empowerment of bottom-up knowledge Prioritisation of long-term digital investment
2 Operational effectiveness				
	Competence	Knowledge	Skills	Attitudes
2.1.	Establish a coherent and efficient infrastructure through integration and rationalisation	<ul style="list-style-type: none"> Current digital activities of the organisation and their limitations Potential improvements in usability and efficiency Risks involved in digital transformation 	<ul style="list-style-type: none"> Digital transformation Procure help as needed Communicate well with stakeholders Inspire digital confidence across the organization 	<ul style="list-style-type: none"> Openness to change Drive to involve all stakeholders Sustained persistence Willingness to delegate and to invest
2.2.	Know when and how to outsource	<ul style="list-style-type: none"> Current organisational capacity Range of available options for outsourcing including private consultancy, second tier organisations, in-kind support from the private sector, competitions, datadives etc Outsourcing processes 	<ul style="list-style-type: none"> Research Analyse cost benefit Procure effectively to maximise impact and resources Project manage 	<ul style="list-style-type: none"> Openness to new ways of working and collaborating
2.3.	Train stakeholders to enable digital infrastructure to function effectively	<ul style="list-style-type: none"> Training needs of different user groups Accessibility issues Training resources already available 	<ul style="list-style-type: none"> Train or outsource Adopt learning styles appropriate to each user group Evaluate and record training achievements Develop an ongoing training programme 	<ul style="list-style-type: none"> Willingness to invest in training
2.4.	Evaluate and monitor efficiency and sustainability of digital infrastructure	<ul style="list-style-type: none"> Product lifecycles Diverse approaches to assessing efficiency and sustainability 	<ul style="list-style-type: none"> Collect and evaluate systemic data Include product lifecycle in decision-making Review regularly 	<ul style="list-style-type: none"> Commitment to solutions which perform best for the organisation and social mission rather than selecting those which are best known or most convenient
2.5.	Ensure the safety and security of infrastructure, data and stakeholders	<ul style="list-style-type: none"> Threats and potential solutions 	<ul style="list-style-type: none"> Take action to maintain safety and security (see ICT4NGO area 5) 	<ul style="list-style-type: none"> Prioritisation of safety Protection of vulnerable users

Figure 2. EU3Digital Competence Framework: areas 1 and 2.

1.2.3. Competences Assessment

Before developing a specific training curriculum, assessing target learners’ competences and identifying the needs and requirements of their job environment and role is helpful.

The competence framework is a valuable guide for individuals, TSOs and SEs to assess their digital maturity first and then define their digital strategy to improve the capacity, effectiveness, and efficiency to better pursue their social mission.

The following section presents the most relevant work done to derive the EU3Digital Curricula, Training and Assessment from the EU3Digital Competence Framework.

3 Organisational culture and leadership				
	Competence	Knowledge	Skills	Attitudes
3.1.	Organisational culture and leadership	<ul style="list-style-type: none"> Different types of digital journey, for example rapid transformation or small iterative steps Processes for strategising 	<ul style="list-style-type: none"> Assimilate diverse sources of information Plan and project manage Effectively communicate the digital vision and strategy to all 	<ul style="list-style-type: none"> Inclusion of digital within every strand of the organisation's work Commitment to listening
3.2.	Enable and empower bottom-up creativity and encourage innovation	<ul style="list-style-type: none"> In-depth understanding of the organisation's day-to-day work on the ground Co-design and prototyping methods 	<ul style="list-style-type: none"> Institute structures which support bottom-up idea generation and communication Encourage co-design practices Build digital confidence for diverse stakeholders Evaluate to generate knowledge 	<ul style="list-style-type: none"> Respect for collaborative practices and ideas Adaptability
3.3.	Distribute digital leadership across the organisation	<ul style="list-style-type: none"> Management structures and relationships Distributed forms of leadership 	<ul style="list-style-type: none"> Empower others Devolve digital responsibilities 	<ul style="list-style-type: none"> Acknowledgement that it is unlikely that one person can embody all the digital skills and knowledge required by the organisation Willingness to establish flatter leadership structures
3.4.	Explore digital service delivery	<ul style="list-style-type: none"> How the organisation's work could potentially embrace a digital inclusion agenda 	<ul style="list-style-type: none"> Move towards digital inclusion for all stakeholders who are experiencing any form of digital exclusion 	<ul style="list-style-type: none"> Commitment to digital inclusion
3.5.	Support digital confidence and continuous learning for all stakeholders	<ul style="list-style-type: none"> Attitudinal and educational barriers to digital participation 	<ul style="list-style-type: none"> Deliver inclusive learning packages which are evaluated and reviewed regularly Support stakeholders in self-education Provide face-to-face support where necessary Keep records and certify knowledge and skills 	<ul style="list-style-type: none"> Acknowledgement that face-to-face support might be necessary Readiness to give time to learning and reflection
3.6.	Establish principles and processes to manage continuous change	<ul style="list-style-type: none"> Ideas and programmes of organisational change e.g.theory of change 	<ul style="list-style-type: none"> Apply relevant change processes Involve and motivate stakeholders 	<ul style="list-style-type: none"> Willingness to embrace change and innovation Flexibility, agility, adaptability Willingness to enable and accept constructive criticism Openness to partnerships
4 Ethical practices				
	Competence	Knowledge	Skills	Attitudes
4.1.	Include all stakeholder groups within digital vision and strategy	<ul style="list-style-type: none"> Digital strengths and weaknesses of stakeholder groups The breadth and nature of the effects of digitalisation 	<ul style="list-style-type: none"> Collaborate effectively Communicate effectively 	<ul style="list-style-type: none"> Willingness to devolve decision making
4.2.	Understand and mitigate the negative consequences and risks of digitalisation	<ul style="list-style-type: none"> Consequences of digital change in the organisation for all stakeholder groups 	<ul style="list-style-type: none"> Assess potential harm Change direction or mitigate harm 	<ul style="list-style-type: none"> Commitment to listen and consider all stakeholder positions Adoption of a 'do no harm' approach
4.3.	Move forward on digital inclusion	<ul style="list-style-type: none"> Digital literacy gaps Mechanisms of exclusion and inclusion Accessibility issues 	<ul style="list-style-type: none"> Research Design and adopt user-focused digital products and interactions Provide suitable hardware, software and supported learning for those in danger of exclusion 	<ul style="list-style-type: none"> Perseverance with digital inclusion Flexibility
4.4.	Include social and environmental responsibility criteria when evaluating service providers and tools	<ul style="list-style-type: none"> Social evaluation techniques Social and environmental responsibility profile of digital tech companies (where available) 	<ul style="list-style-type: none"> Research Share knowledge with networks 	<ul style="list-style-type: none"> Commitment to social and environmental responsibility in all areas of work
5 Participation and connection				
	Competence	Knowledge	Skills	Attitudes
5.1.	Share knowledge and resources with peers	<ul style="list-style-type: none"> Awareness of what the organisation has to offer Awareness of gaps in knowledge and resources Communications for networking and knowledge sharing tools 	<ul style="list-style-type: none"> Communicate effectively Network widely and effectively 	<ul style="list-style-type: none"> Willingness to share resources and knowledge Respect for the principle of give and take
5.2.	Make use of existing networks to explore digital possibilities	<ul style="list-style-type: none"> Network relationships 	<ul style="list-style-type: none"> Build connections, communication and interactions Maintain diverse relationships 	<ul style="list-style-type: none"> Community values
5.3.	Discover the wider digital ecosystem and actively participate	<ul style="list-style-type: none"> Overview of the interrelationships between players in the ecosystem Value of the organisation's potential contribution to a third sector digital community 	<ul style="list-style-type: none"> Initiate new connections Practice blue-sky thinking 	<ul style="list-style-type: none"> Willingness to invest in being part of a community

Figure 3. EU3Digital Competence Framework: Areas 3, 4, and 5.

1.3. EU3Digital Curriculum Design

Curriculum design is concerned with much more than learning materials. It is a holistic plan for learning environments, considering the physical, digital, social, and psychological factors involved. It comprises intentional planning, organisation, and design of learning strategies, processes, materials, and experiences towards defined learning and performance outcomes (McDonald, 2021).

A curriculum is a complex structure involving many elements and highly intricate relationships between them. For the human mind, the hierarchical structure is the most accessible vehicle for complex thoughts. Therefore, we tend to see complex designs as hierarchical, but a curriculum design is often more complex than that.

EU3Digital Curriculum Design aims to optimise the learning process to achieve the best effectiveness and efficiency of the training envisioned for the target audience of EU3Digital.

The strategy followed for EU3Digital aims at creating curricula that are “open” enough to be quickly evolved and customised by trainers and, at the same time, “closed” enough to be immediately helpful and ready to be used in real training by trainers and trainees.

The curriculum design considered several factors and principles, which involved pondering many significant trade-offs before making the final decisions. This section presents the overall strategy with its ten design principles and associated decisions.

1.3.1. Backward Design Approach

The EU3Digital Competence Framework provides a solid foundation for designing generic curricula to support the development of specific training programmes, courses, and sessions addressing the competences identified.

Therefore, we decided to start from the competences to derive the respective learning outcomes and then work backwards to address the content and topics to be covered. Then, we define the learning strategies and instructional materials for the associated training units (Wiggings et al., 2005).

In addition to starting from competences being the most straightforward way, this design principle aims to ensure efficient and results-focused curricula with an end in mind.

1.3.2. Competence-Based Learning Outcomes

A learning outcome captures what a learner is expected to know, understand, and demonstrate after a learning experience. The main distinction between competence and a learning outcome is that a learning outcome is written to be measured or assessed (Hartel & Foegeding, 2004).

Therefore, the EU3Digital Curriculum defines learning outcomes in terms of the competences acquired by the learner and proven after the learning process. Such learning outcomes aim to preserve the curricula' adaptability, anticipative utility, and transferability.

This design principle aims to preserve traceability from competences to training and simplifies the curriculum design process.

1.3.3. Three Proficiency Levels

The learning outcomes defined for EU3Digital aim to cover all the six levels defined in Bloom's Taxonomy (Bloom et al., 1956; Anderson & Krathwohl, 2001): remember, understand, apply, analyse, evaluate, and create.

Therefore, based on these levels, the EU3Digital Curriculum is defined to address three proficiency levels of progression in the acquisition of competence in an approach similar to the one adopted by DigComp 2.2 (Vuorikari et al., 2022): foundation (remember), intermediate (understand), and advanced (apply, analyse, evaluate, create). For example, training and assessment for a learning outcome at the understanding level will likely be designed significantly differently than at the evaluation or development levels (Figure 4).

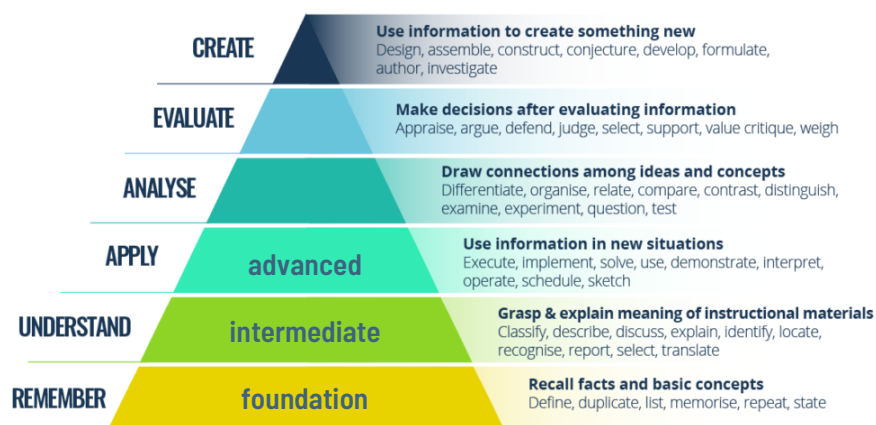


Figure 4. Three proficiency levels: foundation, intermediate, and advanced.

This design principle aims to help find the best alignment of curriculum elements to cover learners' competency gaps relative to a specific proficiency level.

1.3.4. Adult-Oriented Education

The EU3Digital Curriculum is exclusively designed for adult education. From an educational perspective, adults are assumed to have undertaken formal and informal education and be responsible, competent and active (Merriam & Brockett, 2011).

Adult learners are usually motivated by the desire for personal development and the practical benefits of training. They are most effective when experiencing their real problems and exploring solutions.

One of the most frequently used adult learning techniques is problem-based learning, where concrete problems are described, and participants are expected to provide possible solutions and evaluate them.

Therefore, for the EU3Digital Curriculum, the planned forms of education are problem-based, which can be adapted for use in workshops, online courses, webinars, and massive open online courses (MOOC).

This design principle aims to focus on curriculum elements with the best fit for adult learners.

1.3.5. Learning Styles Eclecticism

It is expected that adults can identify their preferred ways of learning, i.e., their own most effective learning style. Learning styles are characteristic preferences for alternative forms of taking in and processing information. These preferences can be assessed on four dimensions, as suggested by (Felder & Silverman, 1988): sensing or intuitive, visual or verbal, active or reflective, and sequential or global.

Kolb's theory of learning styles (Kolb, 1984) combines two processes for grasping information (concrete experience and abstract conceptualisation) with two methods for transforming knowledge into learning (active experimentation and reflective observation), leading to four learning styles: convergers, accommodators, divergers, and assimilators.

Therefore, considering the diversity of TSOs and SEs and the background of their collaborators, the curricula must be eclectic in learning styles.

This design principle covers diverse learning styles while keeping the curricula simple. When drawing on the EU3Digital curriculum to develop localised training resources, we encourage trainers to adapt the suggested methods to meet the needs of their target audience's learning styles, using our suggestions as a starting point rather than a final one.

1.3.6. Blended Learning Approach

Independently of the delivery methods used, training can use three types of approaches: synchronous, asynchronous, or blended (Graham, 2006).

Synchronous learning is when a live instructor interacts with a group of learners in real time, either in a classroom or online. Asynchronous learning is when there is no real-time communication between the learner and instructor or interaction. It is also called self-paced learning since it allows learners to do courses at their own speed.

Therefore, the approach defined for the EU3Digital Curriculum Design was to support blended learning, which combines synchronous and asynchronous learning.

This design principle aims to get the best of both worlds, support in-person and online training, and thus address a wide range of learning styles.

1.3.7. Learning Methods Flexibility

Training is about disseminating and acquiring knowledge, developing skills, and shaping behaviours and attitudes. For many years, workplace training has been conducted primarily in classroom settings, led by an instructor. In recent years, many other learning methods (aka training delivery methods) have become widely popular for their proven flexibility and effectiveness.

Finding the training methods that best fit the needs of organisations and individuals can be challenging and must be done correctly (Ervin & Hogan, 2013). Well-known training delivery methods range from highly interactive to self-study, in-person or virtual, such as instructor-led training, group discussions, group participation, hands-on activities, role play, on-the-floor training, mentor shadowing, interactive training tools, interactive learning guides, case studies, videos, simulations, podcasts, infographics, and animations.

The EU3Digital Curriculum prescribes a small set of learning methods but easily accommodates the trainers to include their preferred training delivery methods. This design principle aims at keeping the curricula' simplicity and flexibility.

1.3.8. Minimalist Instruction

The theory of minimalist instruction (Carroll, 1990) has foundations in the psychology of learning and problem-solving. Minimalist instruction intends to help design instruction material so people can learn faster and for longer. Learning is always complex and can be even more challenging if the instruction is complex. The key idea in minimalist instruction is to ensure the training material is not obtrusive.

One goal of the minimalist approach is to teach people what they need to know to do what they wish. Among other characteristics, minimalist instruction materials motivate people to train on real tasks and get started fast, addressing current topics very briefly in the order that seems best for the reader, supporting error recognition and recovery, and trying to explore readers' prior knowledge. This approach often involves using minimal text and visual aids and focusing on hands-on, interactive, and experiential learning. The idea is to use the least materials and instructions necessary to achieve the desired learning outcome.

Minimalist instruction is often used in technical skills training, as it allows learners to experiment and explore independently, reducing learners' cognitive load and allowing them to focus on core concepts. It also emphasises creating a learning environment where the learner is responsible for their self-directed learning.

Therefore, the instruction materials developed and gathered to support the designed curricula aim to follow the minimalist instruction theory.

This design principle aims at enabling people to learn faster and for longer, with more 'doing' rather than reading, and to help make errors and error recovery less traumatic and more pedagogically productive.

1.3.9. Pattern-based Approach

For an organisation to acquire and develop the competences needed to reach their optimal level of digital maturity and empowerment, strategic thinking is needed, multiple factors are considered and balanced (a.k.a. forces), and many design decisions made.

As developed by Christopher Alexander and his colleagues (Alexander, 1977), *patterns* are a way of capturing and conveying knowledge and experience in a structured, reusable format. A pattern describes a problem, a solution, and the context in which the solution is applicable. The idea behind patterns is that the problems and solutions related are specific enough to be helpful and general enough to be useful in a wide range of situations.

Patterns are intended to help designers identify and understand the forces and trade-offs involved, thereby easing solutions' development.

For all this, patterns are considered a powerful tool to document and communicate proven practices, design knowledge, and other forms of expert knowledge in complex fields involving large amounts of information.

Therefore, at EU3Digital, we adopted a pattern-based approach to developing minimal instructional materials. Each pattern helps the learner focus on one well-contextualised problem at a time. Learning in small steps reduces risk and helps build confidence.

This design principle aims to support a problem-centred curriculum design and enable learners to understand the rationale behind well-known proven solutions to the key problems related to each one of the EU3Digital Competences.

1.3.10. Open Curriculum

Learning implies constantly recalling, checking, rejecting, or modifying our constructs of reality. In a constructivist approach, knowledge is not passively passed through the senses or communication but built by learners through active interaction with new information, personal experiences, social interactions, and mediation (Piaget, 1964).

Since digital competences are, as in almost no other area today, subject to constant continuous changes, a constructivist approach may help embrace creativity, add flexibility, and support change in implementing learning and teaching processes.

Therefore, to teach EU3Digital competences, we decided to support constructivism using an open curriculum approach. In this educational approach, learners can design their own learning path instead of following a predetermined set of courses, thus having more control over what they learn, how they learn it, and when they learn it.

This design principle accommodates the demands of digital competences acquisition and is therefore seen as optimal for curriculum creation and training.

1.4. EU3Digital Training and Assessment

Based on the design principles mentioned above and existing literature, we outlined this EU3Digital Curriculum Design early on in the project and then refined it with the input of experts.

The curricula were concluded after incorporating all the experience gained in the three exchange pilot training activities provided for small groups of collaborators from national TSOs and SEs: first in Portugal (Jun 2022), then in Spain (Oct 2022), and later in Croatia (Jan 2023).

1.4.1. Assessment Methods

One of the essential goals of adult education is to gain insight into distinctive characteristics and opportunities, as well as the individual aspirations and expectations of the learners themselves.

It is imperative to design assessment instruments (e.g., questionnaires, essays, assignments) to appraise the competences of each learner. The content and the form of adult education would benefit if adjusted to learners' learning styles, after self-assessment, for example.

The TALOE (Time to Assessment Learning Outcomes in E-learning) project specialises in assessing learning outcomes. It provides a tool that can facilitate the choice of assessment methods according to the type of competences, freely available online at the project website, with tutorials and examples (Gil-Jaurena et al., 2015).

As an example, in the EU3Digital competence "2.4. Evaluate and monitor efficiency and sustainability of digital infrastructure", we can take the text of the competence and find that the verbs (Newton et al., 2020) that better fit are "Evaluate" (Checking) and "Analyse" (Organising).

The advice provided by the tool for this competence has three suggestions:

- Practical work – structured enquiry.
- Reflective practice – abstract conceptualisation.
- Essay – Problem.

Based on these suggestions, the responsibility for providing the assessment may choose one of the three according to their decision criteria and suitability. This procedure may be repeated for all competences, and three assessment techniques are defined per competence.

For the EU3Digital training units, we decided to use as often as possible three different assessment methods, one per proficiency level:

- Questionnaires to answer about presentation contents (e.g., multiple choice questions).
- Practical work to analyse and discuss case studies.
- Essays to propose and explain solutions to problems.

1.4.2. Training Units

To support the learning, each training unit provides a problem-solution approach for the competences (a.k.a. pattern summaries or patlets). In some cases, also provides small decks of slides outlining the most relevant topics.

In addition to these materials, EU3Digital partners aim to start curating a bank of learning resources, both existing and new ones, seeded by the new learning resources developed explicitly for EU3Digital and existing resources selected by the partners and their networks.

We expect that more resources will be selected, curated, and shared in the bank of EU3Digital Learning Resources by trainers and trainees.

The EU3Digital Curricula was designed to be implemented as one module per competence, grouped by competence area, using small instruction units, hereafter called training units. The training units are structurally similar but flexible in duration and target proficiency levels.

In practice, each training unit can be used for three levels:

- Foundation: a presentation of 20-40 minutes followed by a 10-minute questionnaire for self-assessment.
- Intermediate: same as above, plus a group activity of 20-60 minutes (e.g., reflective practice) to analyse and discuss case studies proposed by the trainees, preferentially, or trainer, followed by a qualitative assessment done by the trainer, a self-assessment, or a peer-assessment.
- Advanced: same as above, plus a report (essay) written in a group or individually to analyse, evaluate and propose solutions addressing the key challenges of one case study, with an estimated effort of 3-6 hours, followed by a qualitative assessment done by the trainer, or a self-assessment, or a peer-assessment.

EU3Digital Training Units are described using the format presented in Error! Reference source not found., with items tagged to ease cross-referencing when needed.

For example, #TU1.2, #LO1.2, #K1.2.* refer to the training unit, learning outcome, and knowledge items of competence numbered 1.2 in the EU3Digital Competence Framework, respectively.

The openness and flexibility of the training units are considered critical for the resilience of EU3Digital Curricula over time, enabling the curriculum to keep its value, to be easily changed, updated, or extended by trainers to embrace the expected frequent future changes in digital technology, education and needs of target learners.

#TU<aX.cY>	Title of the training unit
Overview	A short overview of the training unit is provided, using a problem-solution format derived from the respective pattern.
Learning outcomes	The learning outcomes are defined in a single sentence, directly derived from the respective competence descriptor, tagged with #LO<aX.cY>.
Knowledge	The knowledge items expected to be learnt are enumerated and tagged with #K<aX.cY.knowledgeZ>.
Skills	The skills expected to be developed are enumerated and tagged with #S<aX.cY.skillZ>.
Attitudes	The attitudes expected to be developed are enumerated and tagged with #A<aX.cY.attitudeZ>.
Topics	The topics suggested to be covered in the training unit are listed here.
Plan	The plan drafted for the training unit is presented here including estimated range of durations (minimum, maximum) for each part.
Materials	Recommended materials and resources to support the learning are listed here: slides, study texts, activities, assignments, etc.
Delivery	The delivery methods of the training unit are listed here.
Assessment	The levels of proficiency reachable by the training unit are described here together with the planned assessment methods.
Audience	The target audience suitable for the training unit is defined here.
Prerequisites	If the training unit has prerequisites from the participants, they are defined here.

Figure 5. Format and structure of each training unit (TU).

1.5. EU3Digital Learning Resources

Although specific training materials were already developed on a selected number of competences identified in the framework, namely for pilot training (C1, C2 and C3), there is a myriad of relevant resources available online, some very specific to a small part of a topic, others very general but crosscutting and useful to refer to.

Along with existing training materials, these are made available on an open-access online knowledge centre at eu3digital.com/resources for the benefit and use of adult education and third sector and social enterprise collaborators. The online platform aims to contain self-assessment tools, study texts, case studies, etc. At the time of the writing of this document, these materials were mostly gathered, developed, and curated, but by all partners, but more are expected soon.

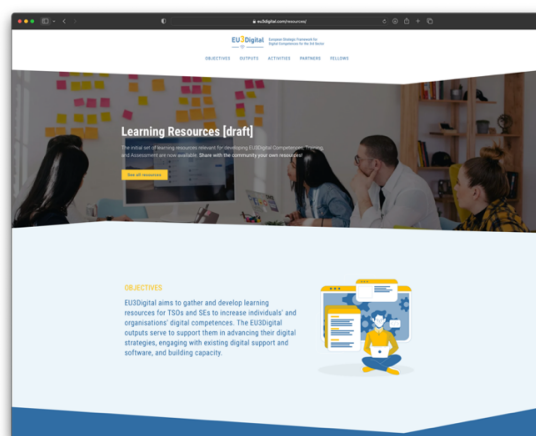


Figure 6. EU3Digital Learning Resources page.

1.6. A Quick Tour

The target audience for this document is individuals and organisations interested in developing digital competences of Third-Sector Organisations (TSOs) and Social Enterprises (SEs). This may include professionals internal or external to the target organisation, in different roles, from management to training. Additionally, this document is suitable for individuals in TSOs and SEs who want to improve their digital competences.

This first section of the document provides the context and a brief overview of the curriculum design approach followed, as well as the key design principles and decisions that were used to derive the EU3Digital Curricula and EU3Digital Training and Assessment from the EU3Digital Competence Framework.

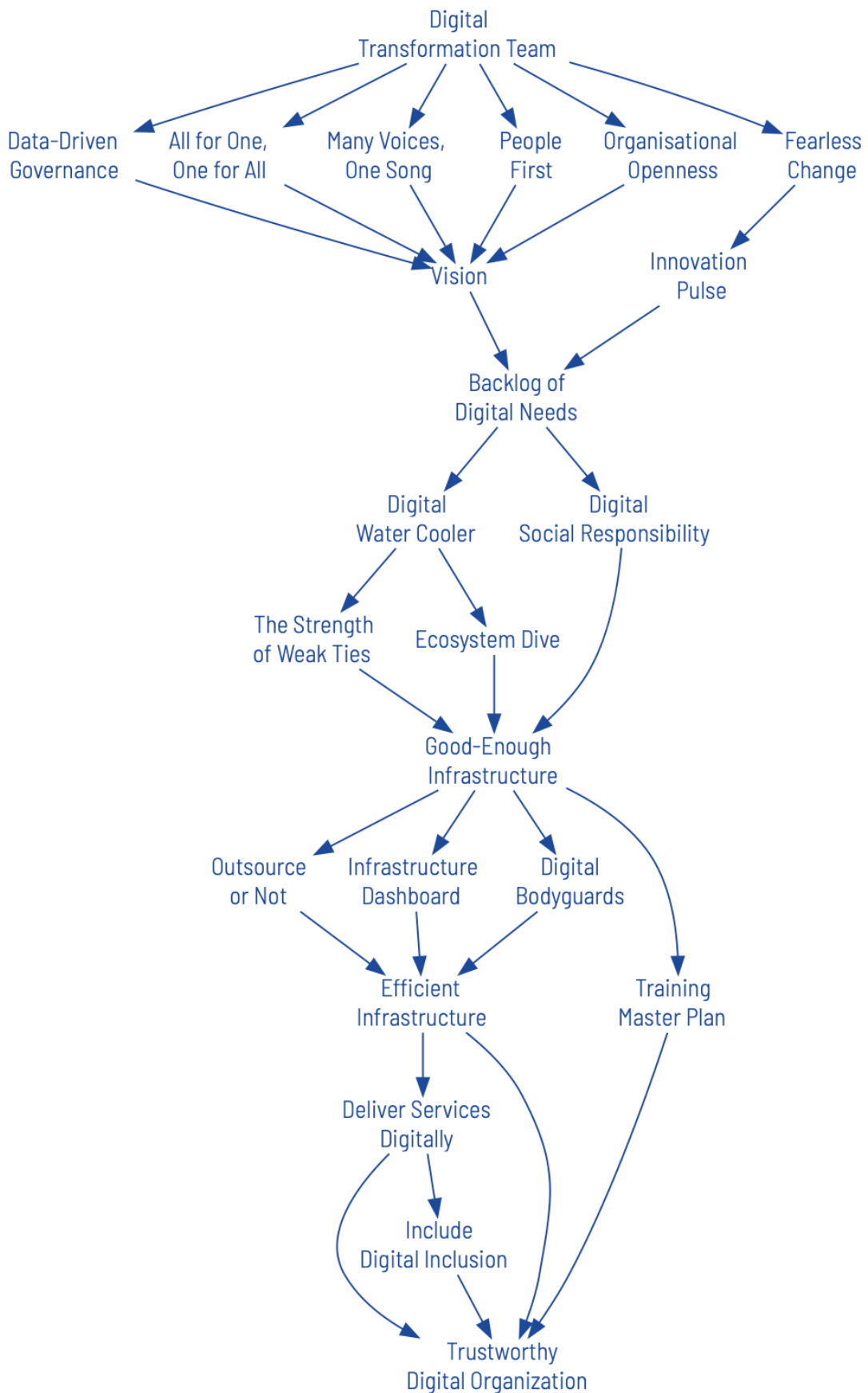
Section 2 presents all the training units designed to develop each one of the competences, organised by competence area. It starts with a fundamental training unit to provide a quick context and overview of the EU3Digital project and its outputs, namely the EU3Digital Competence Framework.

Section 3 provides guidelines on how to use the training units provided to implement your own training courses and sessions.

Section 4 summarises the document and outlines opportunities for future work to widen the design, development and dissemination of training courses and resources, thus leveraging the EU3Digital outputs beyond the project's timeline within third-sector networks and organisations.

The document ends with a list of references for the literature considered the most relevant.

2. Towards Trustworthy Digital TSOs and SEs



To shift from business as usual to responsible organisation, regarding trust and transparency in the digital world, TSOs and SEs need to understand their drivers for success, barriers, facilitators, needs, and support. However, building a trusted and transparent digital environment is a continuous process that requires specific knowledge, skills, and attitudes from the organisation, hereafter referred to as the EU3Digital Competences.

This section presents the set of twenty-three training units comprising the EU3Digital Curriculum. Each training unit is a base for specific training to provide your organisation with the competences necessary to lead a successful digital transformation journey towards a whole Trustworthy Digital Organisation.

Along the journey, you will be building your digital organisation, processes, and culture in parallel, addressing your topmost needs first, one by one, a little of each at a time, in a piecemeal growth process.

Each training unit focuses on one, and only one, competence and is designed to follow a problem-based learning approach. The figure above shows a graph that aims to guide you along the order in which we suggest developing the competences. The graph nodes are training units, and the lines represent the most relevant dependencies.

For each training unit, others above refine it, which you should have considered before, and others below it are candidates for the next steps. Instead of moving ahead in the graph, one by one, you should jump to any other training unit above or below. As perceived by the graph, there are many ways to sequence the training units, each giving a slightly different way of building a trustworthy digital organisation.

Although we encourage you to consider developing as much as possible all EU3D competences, you don't have to use all of the training units. It would be best to start by picking the essential competences for your organisation and then plan the respective training units into a sequence using the graph as a guide.

Many different sequences can work for your organisation, with as many or as few training units as the organisation sees fit and applied in what the organisation considers the best order.

Use your organisational knowledge, insight and intuition to decide whether to follow the dependencies. Feel comfortable changing your mind along the journey.

Here we offer a default, or archetypical, sequence for the central training units. It starts with the training unit that metaphorically builds "stronger" foundations for a trustworthy digital organisation. Subsequent training units incrementally "fortify" the foundations by developing more robust competences.

It is helpful to think of one training unit as one "blueprint" for trainers/learners to do their specific training/learning to reach their respective competence at the intended proficiency level.

The sequence presented doesn't feature all the competences but rather a core subset that we consider to provide the most relevant competences for many TSOs and SEs.

- **#TU0 Digital Transformation Team.** A stable cross-functional team with all necessary to deliver successive increments of the whole envisioned digital transformation.
- **#TU3.3 All for One, One for All.** Digital technologies promote flat structures, distributed leadership, empowering all in the organisation, and delegating responsibilities.
- **#TU4.2 People First.** Make sure people are the priority. Understand, assess, and mitigate the digitalisation's negative consequences and risks to adopt a "no harm" approach.
- **#TU3.1 Vision.** Articulate and refine a long-term sustainable vision for the digital transformation, widely communicated, engaging, dynamic and resilient enough.
- **#TU1.1 Backlog of Digital Needs.** Research and map your organisation structure, functions and workflows and create an ordered list of digital needs arranged by their delivery date.
- **#TU1.4 Digital Water Cooler.** Frequently update knowledge of future possibilities across the organisation on a physical wall to stimulate creativity and timely actions.
- **#TU5.2 The Strength of Weak Ties.** Use your existing networks to explore possibilities, opportunities, strategies, and improvements, among other things.
- **#TU1.2 Good-Enough Infrastructure.** Pick your topmost digital need, identify good-enough software and hardware options for your infrastructure, implement, protect it, and iterate.
- **#TU2.2 Outsource or Not.** Decide whether to outsource, considering potential social mission impact, correctness, time constraints, and management costs.
- **#TU2.1 Efficient Infrastructure.** Keep the infrastructure well integrated and stable, avoiding inconsistency, procuring help and communicating often and well with all.
- **#TU2.3 Training Master Plan.** Invest in training inclusively for all stakeholders. Create, maintain, and widely share a comprehensive ongoing training program.
- **#TU3.4 Deliver Services Digitally.** Embrace digital transformation with a solid commitment to wide digital service delivery and back-office functions.
- **#TU4.3 Include Digital Inclusion.** Research, design and adopt user-focused digital products and interactions, and provide suitable hardware, software and support learning for all.
- **#TU3.5 Trustworthy Digital Organization.** Commit to increasing digital confidence and continuous learning for all, removing barriers, and increasing digital inclusion.

The following sections build on the core training units above and introduce you to all the other ones, which add more detail and refinement to this foundational sequence.

Now it is time to explore them all and follow their dependencies. Reflect on how they touch on your experiences and look for them within your organisation. If one speaks to you, consider tailoring it and get your **Digital Transformation Team** to try it.

Let's go!

#TU0	Digital Transformation Team
Overview	While large organisations have an IT department with the skills and experience to deliver digital transformation distributed across different parts of the organisation, serving all other departments, many smaller TSOs and SEs don't, requiring division of labour and teamworking. This can increase inefficiency and slow down working as people coordinate across boundaries. It can make it difficult to deliver the complex changes involved in digital transformation. Therefore, it is important to consider how to form a stable and integrated cross-functional team, including all the talent necessary (organisational, digital, strategic, operational, etc.) to deliver successive increments of the envisioned digital transformation. In a small TSO or SE, this team may include staff, volunteers and board members, working together to understand the potential of digital in their context and to realise that potential.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively gain awareness of the advantages of digitalisation for TSOs and SEs and how to work together with others in a strategic way to implement digitalisation at an appropriate pace for the organisation. #L00
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • EU3D outputs. #K0.1 • the potential within your organisation to develop a digital team. #K0.2 • the gaps in digital competence in your own organisation. #K0.3 • to support you in the process of digitalisation. #K0.4
Skills	You will develop the following skills: <ul style="list-style-type: none"> • how to use EU3D outputs. #K0.1 • team working for digitalisation. #K0.2
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • willingness to consider going digital. #K0.1 • commitment to working with others in an enabling way. #K0.2 • commitment to a staged and strategic process of digitalisation. #K0.3
Topics	EU3Digital: motivation, objectives and results. EU3D Competence Framework. EU3D Curricula Design. EU3D Toolkit. EU3D Policy Paper.
Plan	Presentation: 'Digital Transformation Team' (20-45min) Activity: 'Discuss the topmost relevant competences' (20-90min) Assignment 'Develop a training for a competence' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Digital Transformation Team'. • Activity 'Discuss the topmost relevant competences'. • Assignment 'Develop a training for a competence'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone.
Prerequisites	Participants are expected to have basic knowledge and experience of third-sector organisations.

2.1. Digital Tools

#TU1.1	Backlog of Digital Needs
Overview	Even when everyone agrees on what the organisation should do and deliver, the team may need to know what it should provide first. Therefore, conduct research, map your organisation structure, functions and workflows and create an ordered list of digital needs arranged by their delivery date.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively identify digital needs and functions of the organisation. #L01.1
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • methods used to conduct research. #K1.1.1 • organisational structure, functions and internal workflows. #K1.1.2
Skills	You will develop the following skills: <ul style="list-style-type: none"> • research. #K1.1.1 • drawing together information from a variety of sources. #K1.1.2
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • willingness to involve all stakeholders. #K1.1.1
Topics	Digital transformation. Digital landscape. Organisational processes and workflows. Process improvement. Organisational digital needs. Digital strategy. Managing digital initiatives, projects, and impact assessment on the organisation. Digital culture. Digital risks.
Plan	Presentation: 'Backlog of Digital Needs' (20-45min) Activity: 'Enumerate the topmost digital needs' (20-90min) Assignment 'Definition of a backlog of short term digital needs' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Backlog of Digital Needs'. • Activity 'Enumerate the topmost digital needs'. • Assignment 'Definition of a backlog of short term digital needs'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management, digital transformation, or simply end-users looking for better ways to do their work.
Prerequisites	Participants are expected to have basic knowledge of their organisation and digital technology.

#TU1.2	Good-Enough Infrastructure
Overview	The team needs concrete steps often enough to move on with its overall digital transformation and correct its course based on frequent feedback from the end user. Therefore, pick your topmost digital need, identify concrete, viable options and software and hardware that seem good enough to add to your infrastructure, protect them, and iterate as needed.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively identify, assess, procure and maintain appropriate hardware and software. #L01.2
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • available tools. #K1.2.1 • the application of digital tools to organisational needs and functions. #K1.2.2 • potential suppliers and partners. #K1.2.3
Skills	You will develop the following skills: <ul style="list-style-type: none"> • benefit versus cost assessment (including hidden costs) . #K1.2.1 • project management . #K1.2.2
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • readiness to invest in digital. #K1.2.1 • forward-looking focus. #K1.2.2 • curiosity - to find out what is as yet unknown. #K1.2.3 • openness to new ways to source tools including those which are opensource, no-code, and free. #K1.2.4
Topics	Organisational infrastructure. Digital infrastructure. Digital tools. Hardware. Software. Network communications. Investment management. Project management.
Plan	Presentation: 'Good-Enough Infrastructure' (20-45min) Activity: 'Decide best infrastructure improvement' (20-90min) Assignment 'Proposal for infrastructure improvements' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Good-Enough Infrastructure'. • Activity 'Decide best infrastructure improvement'. • Assignment 'Proposal for infrastructure improvements'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone responsible for hardware and software procurement and maintenance in their organisation.
Prerequisites	Participants are expected to have basic knowledge of hardware and software concepts.

#TU1.3	Data-Driven Governance
Overview	The team works to contribute to overall value, but short-term thinking leads to improving just the small things. Therefore, let the social mission direct the team's attention to the greater scope and engage in data-driven decision-making.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively gather, manage and analyse data to further social mission. #L01.3
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • data protection laws. #K1.3.1 • assessment of data reliability. #K1.3.2
Skills	You will develop the following skills: <ul style="list-style-type: none"> • practical data management skills (see ICT4NGO area 2) . #K1.3.1
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • valuing data to drive decision-making on future actions and priorities. #K1.3.1
Topics	Data-driven decision-making. Data management processes. Data collection, cleaning and organising. Data analysis techniques and tools. Data presentation. Data protection ethics and laws.
Plan	Presentation: 'Data-Driven Governance' (20-45min) Activity: 'Identify candidates for data-driven decision-making' (20-90min) Assignment 'Proposal of a data-driven decision process' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Data-Driven Governance'. • Activity 'Identify candidates for data-driven decision-making'. • Assignment 'Proposal of a data-driven decision process'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in management, data protection and digital technologies.
Prerequisites	Participants are expected to have basic knowledge of management.

#TU1.4	Digital Water Cooler
Overview	Digital capabilities are critical to the organisation, but keeping up to date with developments on the digital horizon through reports and meetings wastes effort, often discouraging communication. This results in sharing too little. Therefore, research and frequently update knowledge of future possibilities across the organisation on a physical wall to stimulate creative ideas and perform timely actions based on that knowledge.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively track and act on the potential impacts of current and upcoming tools. #L01.4
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • keep up to date with developments on the digital horizon. #K1.4.1 • the potential benefits in the specific context of the organisation and its social mission. #K1.4.2 • potential for disruption. #K1.4.3
Skills	You will develop the following skills: <ul style="list-style-type: none"> • research. #K1.4.1 • dissemination of knowledge of future possibilities across the organisation to stimulate creative ideas. #K1.4.2 • timely action based on that knowledge . #K1.4.3
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • being pro-active as well as reactive. #K1.4.1 • valuing and empowering bottom-up knowledge. #K1.4.2 • prioritising long term digital investment. #K1.4.3
Topics	Research, assess and share state-of-the-art technologies and tools. Impact assessment of digital technologies. Risk management. Engaging stakeholders.
Plan	Presentation: 'Digital Water Cooler' (20-45min) Activity: 'Identify topmost impactful emerging technologies' (20-90min) Assignment 'Proposal for a technologies and tools monitoring system' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Digital Water Cooler'. • Activity 'Identify topmost impactful emerging technologies'. • Assignment 'Proposal for a technologies and tools monitoring system'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management, innovation and digital infrastructure.
Prerequisites	Participants are expected to have basic knowledge of technological management and research.

2.2. Operational Effectiveness

#TU2.1	Efficient Infrastructure
Overview	Organisations need consistency and predictability. Therefore, keep the infrastructure well integrated and stable, avoiding inconsistency, procuring help and communicating often and well with all stakeholders to inspire digital confidence.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively establish a coherent and efficient infrastructure through integration and rationalization. #LO2.1
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • current digital activities of the organisation and their limitations. #K2.1.1 • potential improvements in usability and efficiency. #K2.1.2 • the risks involved in digital transformation. #K2.1.3
Skills	You will develop the following skills: <ul style="list-style-type: none"> • digital transformation. #K2.1.1 • procurement of help as needed. #K2.1.2 • good communication with stakeholders. #K2.1.3 • inspiring digital confidence across the organisation. #K2.1.4
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • openness to change. #K2.1.1 • bringing all stakeholders on board. #K2.1.2 • sustained persistence. #K2.1.3 • willingness to delegate and to invest. #K2.1.4
Topics	Analysis of a digital infrastructure, namely its components, interoperability, integration, security, performance and scalability. Change management. Continuous improvement.
Plan	Presentation: 'Efficient Infrastructure' (20-45min) Activity: 'Describe and analyse one digital infrastructure' (20-90min) Assignment 'Assessment and plan to improve a whole digital infrastructure' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Efficient Infrastructure'. • Activity 'Describe and analyse one digital infrastructure'. • Assignment 'Assessment and plan to improve a whole digital infrastructure'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone responsible for hardware and software procurement and maintenance in their organisation.
Prerequisites	Participants are expected to have basic knowledge of IT hardware and software concepts, and technological architecture.

#TU2.2	Outsource or Not
Overview	A typical growing pain for the team is being pulled in several directions with limited time to finish the work. Therefore, decide whether to outsource, considering potential social mission impact, correctness, time constraints, and management costs.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively know when and how to outsource. #LO2.2
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • current organizational capacity. #K2.2.1 • the range of available options for outsourcing including private consultancy, second tier organisations, in-kind support from the private sector, competitions, datadives etc. #K2.2.2 • outsourcing processes. #K2.2.3
Skills	You will develop the following skills: <ul style="list-style-type: none"> • research. #K2.2.1 • cost benefit analysis. #K2.2.2 • procurement. #K2.2.3 • project management. #K2.2.4
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • openness to new ways of working and collaborating. #K2.2.1
Topics	Outsourcing concepts. Outsourcing partnerships procurement. Outsourcing management: challenges, monitoring, quality control, termination. Outsourcing best practices.
Plan	Presentation: 'Outsource or Not' (20-45min) Activity: 'Identify topmost opportunities for outsourcing' (20-90min) Assignment 'Plan for outsourcing an organisational function' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Outsource or Not'. • Activity 'Identify topmost opportunities for outsourcing'. • Assignment 'Plan for outsourcing an organisational function'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management.
Prerequisites	Participants are expected to have basic knowledge of management.

#TU2.3	Training Master Plan
Overview	If the team is uncertain about their knowledge and skills being enough to deliver the digital transformation at hand, it may be at risk, and training or outsourcing may help. Therefore, invest in training inclusively for all stakeholders. Create, maintain, and widely share a comprehensive ongoing training program with available relevant resources by regularly tracking the training needs of all stakeholders involved, valuable training resources, key training achievements and issues.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively train stakeholders to enable digital infrastructure to function effectively. #LO2.3
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • training needs of different user groups. #K2.3.1 • accessibility issues. #K2.3.2 • training resources already available. #K2.3.3
Skills	You will develop the following skills: <ul style="list-style-type: none"> • training delivery or outsourcing. #K2.3.1 • adoption of learning styles appropriate to each user group. #K2.3.2 • evaluation and recording of training achievements. #K2.3.3 • development of an ongoing training programme. #K2.3.4
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • willingness to invest in training. #K2.3.1
Topics	Digital infrastructure. Assessing stakeholders digital skills. Planning training programmes.
Plan	Presentation: 'Training Master Plan' (20-45min) Activity: 'Enumerate the topmost training needs' (20-90min) Assignment 'Plan for training: needs, options, costs.' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Training Master Plan'. • Activity 'Enumerate the topmost training needs'. • Assignment 'Plan for training: needs, options, costs.'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management and human-resource management.
Prerequisites	Participants are expected to have basic knowledge of training management.

#TU2.4	Infrastructure Dashboard
Overview	Organisations use today's digital infrastructures that generate and manage enormous volumes of data, using a myriad of products (software, hardware, communications) with lifecycles that must be configured and integrated to serve the organisation efficiently and sustainably. Therefore, provide an engaging digital dashboard to radiate relevant information related to strategy, operations, and maintenance of the digital infrastructure.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively evaluate and monitor efficiency and sustainability of digital infrastructure. #LO2.4
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • product lifecycles. #K2.4.1 • diverse approaches to assessing efficiency and sustainability. #K2.4.2
Skills	You will develop the following skills: <ul style="list-style-type: none"> • systemic data collection and evaluation. #K2.4.1 • inclusion of product lifecycle in decision-making. #K2.4.2 • regular reviews. #K2.4.3
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • commitment to solutions which perform best for the organisation and social mission rather than selecting those which are best known or most convenient. #K2.4.1
Topics	Organisational infrastructure. Digital infrastructure strategy. Management of infrastructure efficiency and sustainability. Monitoring. Compliance and governance.
Plan	Presentation: 'Infrastructure Dashboard' (20-45min) Activity: 'Draft a dashboard for the most critical aspects of digital infrastructure' (20-90min) Assignment 'Proposal of a dashboard for a digital infrastructure' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Infrastructure Dashboard'. • Activity 'Draft a dashboard for the most critical aspects of digital infrastructure'. • Assignment 'Proposal of a dashboard for a digital infrastructure'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone responsible for hardware and software procurement and maintenance in their organisation.
Prerequisites	Participants are expected to have basic knowledge of hardware and software concepts.

#TU2.5	Digital Bodyguards
Overview	Digital technology provides opportunities and challenges for human and data safety. Organisations storing personal data require special protection against data intrusions to robust shield from saboteurs. Therefore, create and disseminate practices and protection to ensure the safety and security of infrastructure, data, services, and users.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively ensure the safety and security of infrastructure, data and stakeholders. #LO2.5
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • threats and potential solutions. #K2.5.1
Skills	You will develop the following skills: <ul style="list-style-type: none"> • practical actions to maintain safety and security (see ICT4NGO area 5). #K2.5.1
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • prioritising safety. #K2.5.1 • prioritising protection of vulnerable users. #K2.5.2
Topics	Cybersecurity fundamentals. Physical security. Risk assessment and management of threats. Social engineering. Legal and regulatory compliance (e.g. GDPR, HIPPA).
Plan	Presentation: 'Digital Bodyguards' (20-45min) Activity: 'Identify topmost security and safety risks and threats' (20-90min) Assignment 'Plan for mitigation of security and safety risks and threats' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Digital Bodyguards'. • Activity 'Identify topmost security and safety risks and threats'. • Assignment 'Plan for mitigation of security and safety risks and threats'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management and digital infrastructure.
Prerequisites	Participants are expected to have basic knowledge of hardware and software concepts.

2.3. Organisational Culture and Leadership

#TU3.1	Vision
Overview	Overly specific requirements can make contributors into subservient machines. On the other hand, the absence of vision leads to ad hoc practices and processes. Therefore, stakeholders and potential future co-workers should articulate and refine together a long-term sustainable vision for digital transformation. The vision should be widely communicated, engaging, dynamic and resilient enough.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively develop a long-term sustainable vision and strategy for digital. #L03.1
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • different types of digital journey, for example rapid transformation and small iterative steps. #K3.1.1 • processes for strategising. #K3.1.2
Skills	You will develop the following skills: <ul style="list-style-type: none"> • assimilation of diverse sources of information. #K3.1.1 • project planning and management. #K3.1.2 • effective communication of the digital vision and strategy to all. #K3.1.3
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • including digital within every strand of the organisation's work. #K3.1.1 • commitment to listening. #K3.1.2
Topics	Organisational design. Stakeholders engagement. Digital vision. Digital strategy and roadmap. Organisational performance measurement. Continuous improvement. Change management.
Plan	Presentation: 'Vision' (20-45min) Activity: 'Draft a vision statement for digital' (20-90min) Assignment 'Develop a a strategy for digital' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Vision'. • Activity 'Draft a vision statement for digital'. • Assignment 'Develop a a strategy for digital'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management.
Prerequisites	Participants are expected to have basic knowledge of management.

#TU3.2	Innovation Pulse
Overview	It is easier for organisations to keep improving continuously with careful monitoring and empowering all to engage in innovation. Therefore, alternate moments of process improvement with periods of controlled operational activities. Institute structures supporting bottom-up idea generation and communication encourage co-design practices, generate and evaluate options, and act upon a few confidently.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively enable and empower bottom-up creativity and encourage innovation. #L03.2
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • an in depth understanding of the organisation's day-to-day work on the ground. #K3.2.1 • co-design and prototyping methods. #K3.2.2
Skills	You will develop the following skills: <ul style="list-style-type: none"> • establishing structures which support bottom-up idea generation and communication. #K3.2.1 • encouragement of co-design practices. #K3.2.2 • digital confidence building for diverse stakeholders. #K3.2.3 • evaluation. #K3.2.4
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • Valuing collaborative practices and ideas. #K3.2.1 • adaptability. #K3.2.2
Topics	Creativity and innovation: types, processes, barriers. Planning, building and sustaining a culture of inclusivity and diversity. Organisational learning. Continuous improvement.
Plan	Presentation: 'Innovation Pulse' (20-45min) Activity: 'Enumerate the topmost barriers to creativity and innovation' (20-90min) Assignment 'Plan for developing the existing culture of creativity and innovation' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Innovation Pulse'. • Activity 'Enumerate the topmost barriers to creativity and innovation'. • Assignment 'Plan for developing the existing culture of creativity and innovation'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management.
Prerequisites	Participants are expected to have basic knowledge of management.

#TU3.3	All for One, One for All
Overview	To achieve its objectives, the organisation must have good leadership and structure to ensure better organisation objectives and alignment with its values. Digital technologies enable and promote flat designs, enabling leadership distribution, empowering the organisation, and delegating responsibilities.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively distribute digital leadership across the organisation . #L03.3
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • management structures and relationships. #K3.3.1 • understanding distributed forms of leadership. #K3.3.2
Skills	You will develop the following skills: <ul style="list-style-type: none"> • empowering others. #K3.3.1 • devolving digital responsibilities. #K3.3.2
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • acknowledgement that it is unlikely that one person can embody all the digital skills and knowledge required by the organisation. #K3.3.1 • willingness to establish flatter leadership structures. #K3.3.2
Topics	Digital leadership. Digital strategy. Digital transformation. Change management. Stakeholders engagement.
Plan	Presentation: 'All for One, One for All' (20-45min) Activity: 'Discuss how to distribute digital leadership' (20-90min) Assignment 'Develop a strategy to distribute digital leadership' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'All for One, One for All'. • Activity 'Discuss how to distribute digital leadership'. • Assignment 'Develop a strategy to distribute digital leadership'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management.
Prerequisites	Participants are expected to have basic knowledge of organisational management.

#TU3.4	Deliver Services Digitally
Overview	Every day, we use the digital world to perform a range of tasks, and this has only increased with the COVID-19 pandemic. Unfortunately, for some people, the digital world is not yet fully accessible, affordable, or not taught the skills to participate fully. Therefore, embrace digital transformation with a solid commitment to wide digital service delivery and back-office functions.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively explore digital service delivery. #LO3.4
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • How the organisation's work could potentially embrace a digital inclusion agenda. #K3.4.1
Skills	You will develop the following skills: <ul style="list-style-type: none"> • steps towards digital inclusion for all stakeholders who are experiencing any form of digital exclusion. #K3.4.1
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • commitment to digital inclusion. #K3.4.1
Topics	Services engineering and management. Business process modeling. Digital services design, implementation and operation. Inclusive practice. Stakeholders engagement.
Plan	Presentation: 'Deliver Services Digitally' (20-45min) Activity: 'Enumerate the topmost candidates for digital services' (20-90min) Assignment 'Roadmap for a new inclusive digital service' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Deliver Services Digitally'. • Activity 'Enumerate the topmost candidates for digital services'. • Assignment 'Roadmap for a new inclusive digital service'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management, service delivery and digital transformation.
Prerequisites	Participants are expected to have basic knowledge of organisational management.

#TU3.5	Trustworthy Digital Organization
Overview	To shift from business as usual to responsible business, regarding trust and transparency in the digital world, organisations need to understand the drivers for success, barriers and facilitators, their needs, and support them. However, building a trusted and transparent digital environment is a continuous process. Therefore, commit to increasing digital confidence and continuous learning for all stakeholders, removing barriers to digital participation, increasing digital inclusion, supporting digital users, and certifying knowledge and skills.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively support digital confidence and continuous learning for all stakeholders. #LO3.5
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • attitudinal and educational barriers to digital participation. #K3.5.1
Skills	You will develop the following skills: <ul style="list-style-type: none"> • deliver inclusive learning packages which are evaluated and reviewed regularly. #K3.5.1 • support stakeholders in self-education. #K3.5.2 • offer face to face support where necessary. #K3.5.3 • recognise and certify knowledge and skills acquired. #K3.5.4
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • acknowledgement that face-to-face support might be necessary for some individuals. #K3.5.1 • ringfencing time for learning and reflection. #K3.5.2
Topics	Digital literacy and skills. Strategies, tools and resources for continuous learning using digital technologies. Digital communication. Critical thinking.
Plan	Presentation: 'Trustworthy Digital Organization' (20-45min) Activity: 'Identify topmost barriers for digital confidence' (20-90min) Assignment 'Plan for overcoming digital confidence barriers' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Trustworthy Digital Organization'. • Activity 'Identify topmost barriers for digital confidence'. • Assignment 'Plan for overcoming digital confidence barriers'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management and digital transformation.
Prerequisites	Participants are expected to have basic knowledge of organisational management.

#TU3.6	Fearless Change
Overview	The daily life of an organisation is more than just doing work; it's also about improving how we work. Therefore, embrace continuous improvement by putting all the impediments in the backlog and then action on the most important one, on the top, daily and weekly. Establishing principles and processes keen to enable and accept constructive criticism, openness, and transparency will lead to fearless change to improve flexibility, agility, adaptability, efficiency, and effectiveness.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively establish principles and processes to manage continuous change. #L03.6
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • ideas and programmes of organisational change e.g.theory of change. #K3.6.1
Skills	You will develop the following skills: <ul style="list-style-type: none"> • undertake relevant change processes. #K3.6.1 • bring stakeholders on board and carry them forward. #K3.6.2
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • embracing change and innovation. #K3.6.1 • flexibility, agility, adaptability. #K3.6.2 • making space for constructive criticism. #K3.6.3 • be open to partnerships. #K3.6.4
Topics	Change management. Effective communication. Stakeholders engagement. Culture building. Metrics. Best practices.
Plan	Presentation: 'Fearless Change' (20-45min) Activity: 'Enumerate the top 3 barriers to organisational change.' (20-90min) Assignment 'Report of a successful case of change management' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Fearless Change'. • Activity 'Enumerate the top 3 barriers to organisational change.' • Assignment 'Report of a successful case of change management'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management.
Prerequisites	Participants are expected to have basic knowledge of organisational management.

2.4. Ethical Practices

#TU4.1	Many Voices, One Song
Overview	A deep connection feels good. We all know what deep belonging feels like; we instantaneously feel deep inside that these are our people. Sharing work, participatory decision-making, collaborating, and communicating effectively are powerful, but they need gardening to ensure fertile soil. Therefore, be more effective to engage and connect all stakeholder groups within the digital vision and strategy and take care of their expectations, needs, concerns, and responsibilities.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively include all stakeholder groups within digital vision and strategy. #L04.1
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • the digital strengths and weaknesses of stakeholder groups. #K4.1.1 • the breadth and nature of the effects of digitalization. #K4.1.2
Skills	You will develop the following skills: <ul style="list-style-type: none"> • collaboration. #K4.1.1 • effective communications. #K4.1.2
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • willingness to devolve decision making. #K4.1.1
Topics	Digital vision. Digital strategy. Stakeholders mapping. Stakeholder digital needs and expectations. Ethical practice. Stakeholders engagement.
Plan	Presentation: 'Many Voices, One Song' (20-45min) Activity: 'Identify ethical dilemmas for stakeholder engagement' (20-90min) Assignment 'Plan for stakeholders engagement ' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Many Voices, One Song'. • Activity 'Identify ethical dilemmas for stakeholder engagement'. • Assignment 'Plan for stakeholders engagement '.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management.
Prerequisites	Participants are expected to have basic knowledge of organisational management.

#TU4.2	People First
Overview	Digital comes with many strengths but also with many weaknesses too. Therefore, make sure people are the priority, trying first to understand, assess and mitigate the negative consequences and risks of digitalisation for all stakeholder groups to enable the adoption of a “no harm” approach.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively understand and mitigate the negative consequences and risks of digitalisation. #LO4.2
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • the consequences of digital change in the organisation for all stakeholder groups. #K4.2.1
Skills	You will develop the following skills: <ul style="list-style-type: none"> • assessment of potential harm. #K4.2.1 • change of direction or mitigation of harm. #K4.2.2
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • willingness to listen and consider all stakeholder positions. #K4.2.1 • adopt a ‘do no harm’ approach. #K4.2.2
Topics	Digital literacy. Digital divide. Digital ethics. Digital well-being. Data privacy. Cybersecurity. Digital transformation and innovation. Artificial Intelligence and automation. Digital governance. Developing listening skills.
Plan	Presentation: 'People First' (20-45min) Activity: 'Discuss the topmost negative consequences of digitalisation' (20-90min) Assignment 'Plan for mitigation of negative consequences of digitalisation' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'People First'. • Activity 'Discuss the topmost negative consequences of digitalisation'. • Assignment 'Plan for mitigation of negative consequences of digitalisation'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management and digital transformation.
Prerequisites	Participants are expected to have basic knowledge of organisational management.

#TU4.3	Include Digital Inclusion
Overview	Digital technology has become increasingly embedded in the lives of individuals, communities, and businesses, making digital literacy in all sectors of society vital and urgent. It also created a wide gap between those with easy access and those without, also known as the “digital divide”. Therefore, ensuring universal access is more critical than ever before to ensure digital literacy for everyone. Research, design and adopt user-focused digital products and interactions, and provide suitable hardware, software and support learning for those in danger of exclusion.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively move forward on digital inclusion. #LO4.3
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • digital literacy gaps. #K4.3.1 • mechanisms of exclusion and inclusion. #K4.3.2 • accessibility issues. #K4.3.3
Skills	You will develop the following skills: <ul style="list-style-type: none"> • research. #K4.3.1 • user-focused design of digital products and interactions. #K4.3.2 • provision of hardware, software and supported learning for those in danger of exclusion. #K4.3.3
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • commitment to digital inclusion. #K4.3.1 • flexibility. #K4.3.2
Topics	Digital literacy. Digital inclusion. Digital access. Assistive technology. Digital safety. Digital security. Digital privacy. Digital citizenship.
Plan	Presentation: 'Include Digital Inclusion' (20-45min) Activity: 'Identify topmost issues of digital inclusion' (20-90min) Assignment 'Develop a strategy to overcome digital inclusion issues' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Include Digital Inclusion'. • Activity 'Identify topmost issues of digital inclusion'. • Assignment 'Develop a strategy to overcome digital inclusion issues'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management and digital transformation.
Prerequisites	Participants are expected to have basic knowledge of organisational management.

#TU4.4	Digital Social Responsibility
Overview	More and more organisations consider social responsibility one of their most important strategic obligations. In the digital era we live in nowadays, social responsibility should also be assumed in decision-making processes related to digital services, products, and infrastructures. Therefore, commit to including social and environmental responsibility criteria when evaluating service providers and tools.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively include social and environmental responsibility criteria when evaluating service providers and tools. #LO4.4
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • social evaluation techniques. #K4.4.1 • social and environmental responsibility profile of digital tech companies (where available). #K4.4.2
Skills	You will develop the following skills: <ul style="list-style-type: none"> • research. #K4.4.1 • knowledge-sharing with network. #K4.4.2
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • commitment to social and environmental responsibility in all areas of work. #K4.4.1
Topics	Social and environmental responsibility. Impact evaluation and monitoring. Decision making.
Plan	Presentation: 'Digital Social Responsibility' (20-45min) Activity: 'Elicit the topmost social and environmental threats of digitalisation' (20-90min) Assignment 'Report of a successful case of social and environmental decision-making' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Digital Social Responsibility'. • Activity 'Elicit the topmost social and environmental threats of digitalisation'. • Assignment 'Report of a successful case of social and environmental decision-making'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management and digital transformation.
Prerequisites	Participants are expected to have basic knowledge of organisational management.

2.5. Participation and Connection

#TU5.1	Organisational Openness
Overview	Personal interaction qualities both reflect and define organisation qualities. The openness of information and knowledge in your day-to-day behaviours and interactions supports transparency, which helps to align all peers and stakeholders and create a virtuous circle that makes it possible to inspect better and adapt the organisation. Therefore, commit to sharing knowledge and resources as much as possible with as many peers as possible.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively share knowledge and resources with peers. #L05.1
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • awareness of what the organisation has to offer. #K5.1.1 • awareness of gaps in knowledge and resources. #K5.1.2 • communications for networking and knowledge sharing tools. #K5.1.3
Skills	You will develop the following skills: <ul style="list-style-type: none"> • good communication. #K5.1.1 • effective networking. #K5.1.2
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • willingness to share resources and knowledge. #K5.1.1 • respect for the principle of give and take. #K5.1.2
Topics	Collaborative problem-solving. Knowledge management. Effective communication. Diversity, equity, and inclusion.
Plan	Presentation: 'Organisational Openness' (20-45min) Activity: 'Identify topmost important knowledge and resources to start sharing' (20-90min) Assignment 'Develop a plan to share knowledge and resources widely' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Organisational Openness'. • Activity 'Identify topmost important knowledge and resources to start sharing'. • Assignment 'Develop a plan to share knowledge and resources widely'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management and digital transformation.
Prerequisites	Participants are expected to have basic knowledge of organisational management.

#TU5.2	The Strength of Weak Ties
Overview	Interpersonal ties can be categorised as strong, invalid, or absent. A strong tie is someone within a close circle of family and friends. Strong ties are essential for a real community but they are less likely to carry new information and perspectives to their groups. Weak ties typically have large groups of followers and impact the networks of those followers. Absent ties are connections that might be expected to exist but don't. Therefore, use your existing networks of weak ties to explore digital possibilities, as it might generate opportunities, new strategies, recommendations, and improvements, among endless other options.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively make use of existing networks to explore digital possibilities. #L05.2
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • network relationships. #K5.2.1
Skills	You will develop the following skills: <ul style="list-style-type: none"> • initiating connection and action. #K5.2.1 • maintaining a wide variety of relationships. #K5.2.2
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • community values. #K5.2.1
Topics	Social networks. Networking tools and technologies.
Plan	Presentation: 'The Strength of Weak Ties' (20-45min) Activity: 'Discuss successful examples of networks use for digitalisation purposes' (20-90min) Assignment 'Plan to use networks for digitalisation purposes' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'The Strength of Weak Ties'. • Activity 'Discuss successful examples of networks use for digitalisation purposes'. • Assignment 'Plan to use networks for digitalisation purposes'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management and digital transformation.
Prerequisites	Participants are expected to have basic knowledge of organisational management.

#TU5.3	Ecosystem Dive
Overview	Value creation and capture became a collaborative affair involving multiple stakeholders within a value ecosystem. Managing is becoming increasingly complex, requiring a collective competence that many organisations must develop. Therefore, commit to discovering the broader digital ecosystem, assessing your potential contribution, and actively participating.
Learning outcomes	By the end of this training unit, it is expected that you have improved your skills, knowledge and attitudes to effectively discover the wider digital ecosystem and actively participate. #L05.3
Knowledge	You will be able to describe, explain and apply your knowledge about: <ul style="list-style-type: none"> • the big picture of how all players in the ecosystem interrelate. #K5.3.1 • the value of the organisation's potential contribution to a third sector digital community. #K5.3.2
Skills	You will develop the following skills: <ul style="list-style-type: none"> • make and maintain connections. #K5.3.1 • blue-sky thinking. #K5.3.2
Attitudes	You should have developed the following attitudes: <ul style="list-style-type: none"> • willingness to invest in being part of a community. #K5.3.1
Topics	Digital ecosystems. Online collaboration. Brainstorming techniques. Blue-sky thinking.
Plan	Presentation: 'Ecosystem Dive' (20-45min) Activity: 'Present one example of ecosystems powered by digital' (20-90min) Assignment 'Report of a digital ecosystem' (3-6h)
Materials	Participants should be provided with the following learning materials and resources: <ul style="list-style-type: none"> • Slides 'Ecosystem Dive'. • Activity 'Present one example of ecosystems powered by digital'. • Assignment 'Report of a digital ecosystem'.
Delivery	The training will be delivered in-person or online through a combination of lectures, case studies, hands-on group activities and assignments.
Assessment	Foundation – quiz about the lecture. Intermediate – discussion about the group activity. Advanced – qualitative evaluation of the case study report.
Audience	This training unit is suitable for anyone with a role in organisational management and digital transformation.
Prerequisites	Participants are expected to have basic knowledge of organisational management.

3. Build Your Own Training

Now that you know all the competences identified in the EU3Digital Competence Framework, the EU3Digital Curriculum Design, the EU3Digital Training Units, and how to sequence them for your needs, it is time to get started building your training courses to mitigate competence gaps.

The problem-based learning approach focuses learners on concrete problems, ideally from their organisations, and expects them to provide and evaluate possible solutions. For example, you can start by building your training to create awareness in your organisation of the advantages of digitalisation for TSOs and SEs using the outputs of EU3Digital. In the end, more people will be better informed, and forming a good Digital Transformation Team will be easier. Other common initial training units are **Vision** and **Backlog of Digital Needs**. Developing a **Training Master Plan** might help define which training needs to address first.

Although the training units were designed to be independent and autonomous, they are also modular and with similar characteristics, making them easy to reuse by combining, slicing, and extending them to best fit the training needs of your target audience.

To build your own training course, we suggest using the same format and structure of the training units (see Figure 5) and then filling the contents with the specific details of your own course, reusing as much as possible the details of the training units provided. To proceed, follow the steps below.

1. **Audience and Prerequisites.** Start by identifying who is the target audience of your training course and define the prerequisites that the course might have. Consider that although all EU3Digital competences are important to have available in your organisation, they are often distributed among several people, not necessarily everyone having them all, or, worse, only one person having them. In addition, some competences are more general, and the more people having them, the better; other competences are specific, and it would make sense to have only a few people with them.
2. **Learning Outcomes.** Identify the training units more relevant to your training objectives using your knowledge of the EU3Digital Competence Framework and the EU3Digital Curricula. Define the specific learning outcomes your training intends to achieve by picking and combining learning outcomes of the training units provided, and then, if needed, adding new learning outcomes. The training units will likely be used as well for the other details of the training course.
3. **Knowledge, Skills, and Attitudes.** Evaluate the audience's needs and gather their expectations for the course. Identify the knowledge, skills, and attitudes (KSAs) the audience already possesses, those they need to acquire, and at which level of proficiency. As a base for the assessment, you can use the KSAs of the reused training units reused.
4. **Plan, Topics, Materials, and Delivery.** With the learning outcomes and needs assessment results, develop the course plan, including the topics to be covered, the order in which they will be presented, and the instructional methods and materials that will be used. The training units suggest plans, topics, and types of materials. Reuse them all and finalize them to align with the learning outcomes and your course plan.
5. **Assessment.** Incorporate assessment and evaluation by reusing the details of the base training units. Adapt to your own concrete objectives to ensure that learners are making progress towards them. To facilitate this, you can use the strategy described earlier.
6. **Name and Overview.** At last, name your course and write a brief overview of it. Again, you can start by merging the reused training unit overviews and refining the result.

As an example, we present a pilot training course developed during the project. This training, named C1, was held from June 27th to 29th of 2022, in the facilities of Porto Innovation Hub, city of Porto, hosted by ESLIDER, and the training activities were led by Bruno Koić and Nikoleta Poljak, from DKolektiv, Croatia.

The competences addressed on the two days of this first pilot training were selected to be only a few, to fit in the duration of the training, and at the same time to be inclusive and wide enough to be engaging and enablers for further research and self-learning by the participants, after the training, in the context of their organisations. The competences of the EU3Digital Competences Framework selected were the following:

- #C1.1. Identify digital needs and functions of the organisation.
- #C1.2. Identify, assess, procure, and maintain appropriate hardware and software.
- #C3.1. Develop a long-term sustainable vision and strategy for digital.
- #C5.1. Share knowledge and resources with peers.

Although this training course was built before the conclusion of all training units presented above, this course can be seen as a possible result from merging the respective training units and then refined by its own trainers to fit the duration of 12 hours and the specific audience. Please find below the details of this training course. The respective materials will be available in the EU3Digital Learning Resources platform.

#C1	Organisational Digital Transformation: Developing Organisational Digital Capabilities for Third-Sector Leaders
Overview	<p>In recent years we have witnessed serious social, economic and political changes that directly affect third-sector organisations and increase the need to develop and demonstrate organisational efficiency and quality of services in the community. The recent COVID-19 pandemic further highlighted the fundamental need for third-sector social organisations to strengthen the capacity for strategic and effective use of digital skills and technologies for the benefit of their target groups.</p> <p>EU3Digital project and this two-day training are designed to develop and support more strategic and integrated use of digital competencies to improve basic and transversal skills of third-social sector leaders, employees, and professionals.</p> <p>The training will be led by adult education specialists Nikoleta Poljak and Bruno Koić. The training will also count with presentations from experts Carol Jacklin Jarvis (Professor at the Open University UK), Ademar Aguiar (Professor at the University of Porto) and Gerlinde Schmidt (Project Officer at the Euclid Network).</p>
Learning outcomes	<p>By the end of this training course, it is expected that you have improved your skills, knowledge and attitudes to effectively:</p> <ul style="list-style-type: none"> - identify digital needs and functions of the organizations #L01.1 - improve knowledge and skills about research methods and techniques #L01.1 - provide tools for targeting and analysing stakeholders relevant for digitalisation of organisation #L01.1 - develop skills for digital strategy development #L03.1 - present diverse tools for digital competencies development #L00 - provide information on appropriate hardware and software #L01.2 - provide platform for sharing knowledge/skills/experience among training participants #L05.1
Knowledge	(see above)
Skills	(see above)
Attitudes	(see above)

Topics	<p>The purpose and application of digital tools in organisational management and development.</p> <p>Identification of organisational digital needs through needs assessment and research.</p> <p>Analysis of key stakeholders relevant to the digitalisation of the organisation.</p> <p>Improving and/or developing skills for digital strategy.</p> <p>Digital tools in everyday work in an organisation.</p>
Plan	<p>Welcome/registration of participants</p> <p>The project purpose, partnership, intellectual outputs; benefits for third sector organisations</p> <p>Introduction of participants and trainers</p> <p>Expectations of the training and educational needs</p> <p>Training methodology: purpose, objectives, method of work</p> <p>Identification of digital needs of organisation</p> <p>Third sector in Portugal – opportunities and barriers to develop digital competencies</p> <p>EU Policy Framework</p> <p>Digital competencies – definition</p> <p>The research on digital competencies in third sector – IO1</p> <p>The purpose and importance of digital competence framework for third sector</p> <p>Identification of digital needs and capacity of organisation: methods and techniques</p> <p>A strategic approach to digital competencies development</p> <p>Involvement of stakeholders</p> <p>Teamwork/collaboration</p> <p>A strategic approach to digital competencies development strategic plan for increasing digital capability and digital competencies of organisation</p> <p>Teamwork/collaboration</p> <p>Organisational infrastructure for digital capability</p> <p>Emergency Toolkit on Digital Skills (IO4)</p> <p>Evaluation of training</p>
Materials	<p>Slides with all presentations. Different working sheets, questionnaires, cards, papers of different format and colour, markers, etc.</p>
Delivery	<p>The training methodology is based on interactive methods and approaches that support through:</p> <ul style="list-style-type: none"> - Development of knowledge, skills and attitudes that can be applied in the organization immediately after the training - Active participation, discussion, and exchange of experience with other organizations in a friendly environment - Peer learning and learning by doing
Assessment	<p>The levels of proficiency reachable by the training unit are described here together with the planned assessment methods.</p>
Audience	<p>10-15 representatives of third sector organisations from Portugal</p>
Prerequisites	<p>If the training unit has prerequisites from the participants, they are defined here.</p>

4. Conclusion

As mentioned, the EU3Digital project aims to support TSOs and SEs in their digital transformation by identifying digital competences and providing training resources to help each organisation succeed in their journey towards a whole Trustworthy Digital Organisation.

This document explained the methodology followed to build the curricula, training units, and materials, including the design principles, key concepts, and methods involved. The document provides a set of twenty-three training units to serve as a base to build your own training, using the same format and structure, and reusing as much as possible, the training units provided. As a practical example, we include a pilot training course developed during the project, named C1, held in Porto, led by Bruno Koić and Nikoleta Poljak, from DKolektiv, Croatia.

Although the more and stronger competences, the better, the fact is that each organisation is unique, and many different ways can work for your organisation. Therefore, we recommend using organisational knowledge, insight and intuition to determine the sequence of competences that best fit the needs. We provide an archetypical sequence for the central training units that starts with the foundational competences and then progresses into others.

Concluding, start your journey towards a **Trustworthy Digital Organisation** by creating awareness in your TSO or SE organisation of the advantages of digitalisation using the outputs of EU3Digital. Then form a good team and define a vision and an initial list of digital needs, involving as many stakeholders as possible. Build your infrastructure to be efficient and inclusive. Along the journey, you will be building your digital organisation, processes, and culture, all in parallel, addressing your topmost digital needs first, one by one, a little of each at a time, in a piecemeal growth process, adding value, doing great things, possibly slowly but steadily.

Soon, we expect to share more resources on the EU3Digital Learning Resources page of the project's website. We also expect to help develop a community around the results of EU3Digital and to support communities of practice at local, national, and European levels.

Enjoy the journey!

References

- Aguiar, A., Soeiro, A. (2023). *Curricula design and assessment of training (I02)*. EU3Digital. <https://eu3digital.com>
- Alexander, C. (1977). *A pattern language: towns, buildings, construction*. Oxford university press.
- Anderson, L. W., & Krathwohl D. R. (eds.) (2001). *A Taxonomy for Learning, Teaching and Assessing: A Revision of Bloom's Taxonomy of Educational Objectives: Complete Edition*. New York: Longman.
- Bloom, B. S., Engelhart, M. B., Furst, E. J., Hill, W. H., Krathwohl, D. R. (1956). *Taxonomy of educational objectives. The classification of educational goals. Handbook 1: Cognitive domain*. New York: Longmans Green.
- Carroll, J. M. (1990). *The Nurnberg funnel: Designing minimalist instruction for practical computer skill*. MIT Press.
- Devine, J., Punie, Y., Kampylis, P. (2015). *Promoting effective digital-age learning: a European framework for digitally-competent educational organisations*, Joint Research Centre, Institute for Prospective Technological Studies. <https://data.europa.eu/doi/10.2791/54070>
- Ervin, K.S. & Hogan, R.L. (2013). *Utilised TDMs as reported by Illinois ASTD members*, International Journal of Science Commerce and Humanities, Vol. 1 No. 5, pp. 279-290.
- Felder, R.M., and L.K. Silverman, "Learning and Teaching Styles in Engineering Education," Engineering Education, Vol. 78, No. 7, 1988, pp. 674-681.
- Gil-Jaurena, I., Soeiro, A., Aguado, T., Falcão, R., & Lössenko, J. (2015). *Time to assess learning outcomes in e-learning. Overview of a European multilateral project*. In INTED2015 Proceedings (pp. 3611-3616). IATED.
- González, J., & Wagenaar, R. (2006). *Tuning Educational Structures in Europe, Universities' contribution to the Bologna Process. An introduction (re-print 2008)* (also published in Albanian, French, German, Georgian, Italian, Lithuanian, Polish, Russian, Serbian and Spanish). University of Deusto Press.
- Graham, C. R. (2006). *Blended learning systems. The handbook of blended learning: Global perspectives, local designs, 1*, 3-21.
- Hartel, R. W., & Foegeding, E. A. (2004). *Learning: Objectives, competences, or outcomes?* *Journal of Food Science Education*, 3(4), 69-70.
- ICT4NGO (2018). *ICT Competency Assessment Standard for European NGOs*. <https://www.ict4ngo.org>
- Jacklin-Jarvis, C., Foster, T., Rees, J., Logan, K. (2022). *Digital Competences for Third Sector Organisations and Social Enterprises (I01)*. EU3Digital. <https://eu3digital.com>
- Kolb, D. A. (1984). *Experiential learning: Experience as the source of learning and development*. New Jersey: Prentice-Hall.
- McDonald, J. K., & West, R. E. (2021). *Design for Learning*. EdTech Books.
- Merriam, S. B., & Brockett, R. G. (2011). *The profession and practice of adult education: An introduction*. John Wiley & Sons.
- Newton, P. M., Da Silva, A., & Peters, L. G. (2020). *A pragmatic master list of action verbs for Bloom's taxonomy*. In *Frontiers in Education* (Vol. 5, p. 107). Frontiers.
- Piaget, J. (1964). *Part I: Cognitive development in children: Piaget development and learning*. *Journal Research in Science Teaching*, 2(3), 176-186. doi:10.1002/tea.3660020306
- Punie, Y., Ferrari, A., Brečko, B. (2013). *DIGCOMP: a framework for developing and understanding digital competence in Europe*, (Y.Punie, editor, B.Brečko, editor) European Commission, Joint Research Centre, Institute for Prospective Technological Studies. <https://data.europa.eu/doi/10.2788/52966>
- Redecker, C., Punie, Y. (2017). *European framework for the digital competence of educators: DigCompEdu*, (Y.Punie, editor) European Commission, Joint Research Centre. <https://data.europa.eu/doi/10.2760/159770>
- Schmidt, G., Gazeley, T. (2022). *Support for Digitalisation of Social Impact: How digital competences can improve the action and impact of the third sector (I03)*. EU3Digital. <https://eu3digital.com>
- Schmidt, G., Vietz, C. (2022). *Toolkit on Digital Skills: A hands-on toolkit to support Social Enterprises and Third Sector Social Organisations with going digital (I04)*. EU3Digital. <https://eu3digital.com>
- Vuorikari Rina, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2: The Digital Competence Framework for Citizens- With new examples of knowledge, skills and attitudes (No. JRC128415)*. Joint Research Centre (Seville site).
- Vuorikari, R., Kluzer, S., Punie, Y. (2022). *DigComp 2.2, The Digital Competence Framework for Citizens: with new examples of knowledge, skills and attitudes*, European Commission, Joint Research Centre. <https://data.europa.eu/doi/10.2760/115376>
- Wiggins, G., Wiggins, G. P., & McTighe, J. (2005). *Understanding by design*. Ascend.