SMEs – Raising Awareness and Learning on Digital data, data analysis and artificial intelligence

A

Transversal CPD Blueprint

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Transversal CPD Blueprint based on the SMERALD Approach

A Guide for Trainers, Teachers, and Educators

Developed under the SMERALD Project (Erasmus+ 2023–2025)

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I. Course Concept Summary

The **Transversal CPD Blueprint based on the SMERALD Approach** presents a comprehensive and transferable model for designing and implementing competence-oriented Continuous Professional Development (CPD) programmes. It provides step-by-step guidance on planning, structuring, and delivering short-term, high-impact professional learning activities. The guide helps trainers, teachers, and educators to design sessions that balance conceptual understanding and hands-on experimentation, while fostering awareness, digital confidence, and collaborative learning in Artificial Intelligence (AI) and data literacy contexts.

This section describes how to apply the blueprint in practice: from initial needs analysis and goal definition, through the sequencing of theoretical inputs and tool-based exercises, to the facilitation of group dynamics and competence validation. It explains the rationale behind each phase and how it supports awareness-building, skill activation, and reflection. Trainers can use it as a reference to replicate the SMERALD approach or to adapt it to their own thematic areas and audiences.

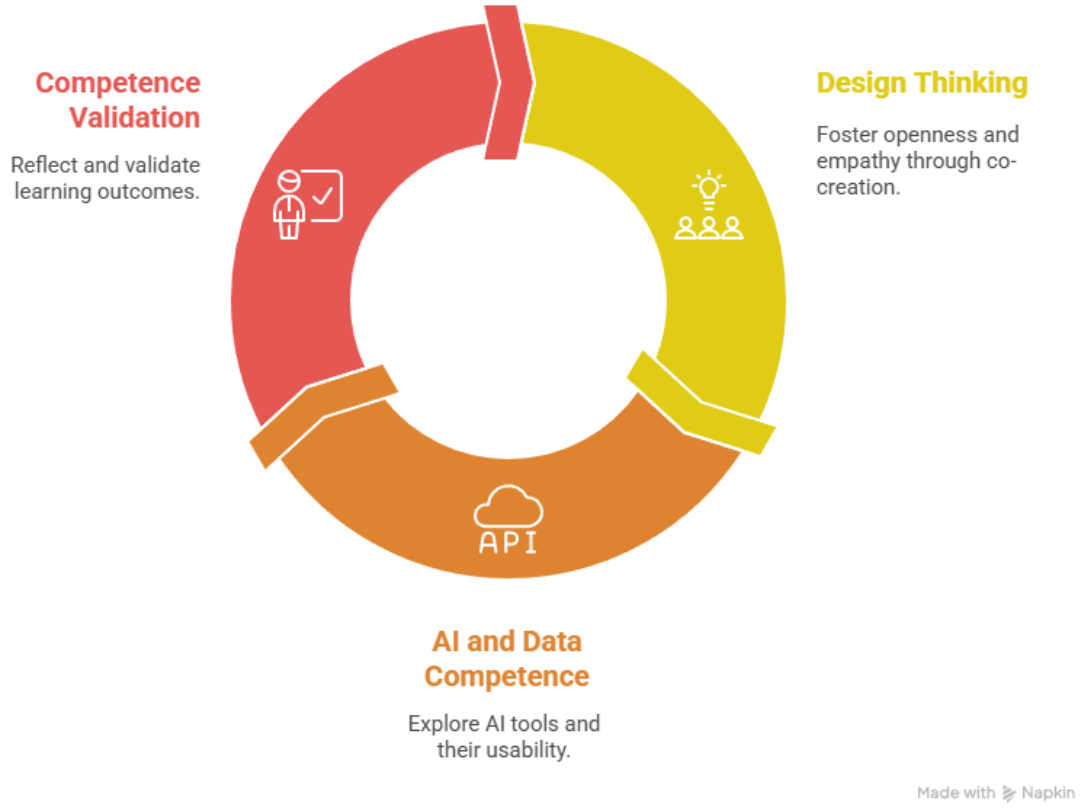
This CPD model was initially developed and piloted within the **SMERALD project**, where 24+ participants from SMEs and VET institutions co-created learning experiences focused on practical AI integration. The model emphasizes **awareness over expertise**, ensuring accessibility for professionals at the beginning of their digital journey.

Core Principles

1. **Design Thinking** – Builds empathy, creativity, and collaborative problem-solving.
2. **AI & Data Competence Building** – Encourages experimentation with tools and methods.
3. **Competence-Oriented Learning & Validation (LEVEL5)** – Supports reflection, recognition, and visible competence growth.

The learning cycle follows a recurring loop of **Theory → Practice → Reflection → Application**, which ensures sustained engagement and transfer to participants' professional contexts.

SMERALD Platform Cycle



II. General Structure of the Module

This section provides a detailed explanation of how to construct the module framework and why each element matters before presenting the structural table. It clarifies the relationship between the overall course design and individual training components.

The general structure serves as a roadmap for trainers when adapting the SMERALD approach to their own context. It begins with defining timing and context, then clarifies learning objectives, target groups, and the pedagogical model. Each element is interdependent: timing ensures pacing, context situates relevance, learning objectives set expectations, and the pedagogical model translates these into actionable learning experiences. Competence validation finally closes the cycle by ensuring measurable outcomes.

In practice, this section helps educators plan their own courses systematically. Trainers should consider: what resources are available, who the learners are, and how reflection and validation are embedded from the start. The following table outlines the recommended structure and its underlying rationale.

Aspect	Description	Purpose
Timing	4 full training days + 1-hour online pre-module + 1-week post reflection.	To provide structured exposure from orientation to application.
Context	European CPD framework for SMEs and VET professionals on AI and data competences.	To ensure cross-national exchange and replicability.
Learning Objectives	1. Understand AI and data analysis basics. 2. Apply AI tools practically. 3. Use Design Thinking to approach digital transformation. 4. Reflect on competence growth via LEVEL5.	To develop awareness, curiosity, and capability rather than technical expertise.
Target Group	SME managers, employees, and VET educators.	To bridge business and education in digital learning ecosystems.
Pedagogical Model	Blend of theory, hands-on activities, and reflection cycles.	To translate awareness into practical understanding.
Competence Validation	Pre: SPIDER self-assessment During: Peer & expert feedback Post: LEVEL5 validation	To track personal development and enable recognition.

Practical Design Philosophy

The practical design philosophy behind the SMERALD CPD focuses on combining structure with flexibility. Instead of listing separate principles, it can be described as a coherent approach where trainers plan short, high-impact sessions that maintain energy and accessibility for all participants. The learning experience follows dynamic loops of exposure, exploration, and reflection, where participants first encounter a concept, then test and discuss it, and finally evaluate its relevance to their work. Collaboration plays a central role throughout the process; facilitators, experts, and participants act as co-learners, exchanging insights and building confidence together. This continuous cycle transforms theoretical input into practice and reinforces competence growth through interaction and feedback.

- Encourage **short, high-impact sessions** with diverse engagement formats.
- Use **loops of exposure, exploration, and reflection** for learning reinforcement.
- Promote **collaborative facilitation** by experts and coaches.

III. The SMERALD CPD

The SMERALD CPD was implemented in **Palermo (December 2024)**, hosted by CNR with contributions from BLINC, SMART Revolution, and Dataninja. It responded directly to the need identified in the project proposal: to strengthen the digital transformation capacities of SMEs and VET providers by improving awareness, competence, and readiness for AI-driven processes. This need stemmed from evidence that many small and medium enterprises across Europe still face challenges in understanding data value, integrating AI tools into daily workflows, and fostering collaboration between technical experts and non-technical staff. The training aimed to close this gap by equipping participants with basic digital literacy and AI familiarity, while also creating an exchange space between business and education sectors.

The event brought together experts, educators, and SME representatives for an immersive four-day training designed around the SMERALD project's Competence Framework. Each of these principles guided the programme design: awareness of AI's potential and limits, reflection on professional practice, integration of new tools into workplace realities, motivation to experiment, and sustainability through continuous competence validation.

Beyond a typical workshop, it acted as a living laboratory for testing and refining competence-based learning in a real transnational context. The structure integrated interactive presentations that introduced core ideas, practical group work sessions that transformed theory into tangible examples, and validation activities that encouraged participants to reflect critically on their personal learning progress. Each segment was designed to link seamlessly with the Design Thinking framework, ensuring that participants moved logically from understanding problems to designing and testing AI-driven solutions. The ARIMS logic ensured that each step had both a cognitive and motivational anchor, connecting learning with application and long-term commitment to innovation. This combination of guided exploration, cross-sectoral collaboration, and reflective assessment turned the Palermo event into a benchmark for experiential CPD learning that demonstrated how AI competence development can be built from awareness to sustainable impact.

Structure and Group Setup

This section introduces how the training was organised both pedagogically and logistically to achieve the SMERALD CPD's objectives. It explains why certain group formats and facilitation methods were selected and how these choices supported interaction, reflection, and applied learning. The structure of the training was not accidental; it was intentionally designed to mirror the iterative nature of Design Thinking and the competence-based validation

approach. Before describing the group composition, it is essential to understand that every setting—whether pair work, mixed groups, or national clusters—was chosen to create progression from guided discovery to autonomous creation. This design ensured that participants could gradually build confidence, transfer insights across disciplines, and finally contextualise their prototypes within their own institutional or business environments.

- 24+ participants from four European countries.
- Groups alternated between **pairs**, **international teams**, and **national/company teams**.
- Activities followed an iterative learning loop: **exposure → practice → application → reflection.**
- A facilitation team of three guided Design Thinking stages and technical activities.

Agenda and Connections

Phase / Day	Focus & Flow	Learning Activities	Purpose / Transition	SMERALD Platform Link
Online Prep	Introduction & Reflection	Kick-off meeting, SPIDER self-assessment, orientation.	Establishes baseline awareness and motivation.	LEVEL5 SPIDER module
Day 1 – Empathise	Understanding AI relevance	Stocktaking, expert input, paired tool testing, icebreaker.	Creates shared understanding and interest.	AI in SMEs module
Day 2 – Define	Identifying problems	Prompting exercises, tool rotations, expert demonstrations.	Translates awareness into concrete problem statements.	Prompting & Data Analysis modules
Day 3 – Ideate & Prototype	Designing solutions	Collaborative prototyping and mock-ups using AI tools.	Turns ideas into tangible outcomes.	Design Thinking module
Day 4 – Test & Reflect	Presenting and validating	Group presentations, feedback,	Reinforces reflection and competence validation.	LEVEL5 Validation module

Phase / Day	Focus & Flow	Learning Activities	Purpose / Transition	SMERALD Platform Link
		LEVEL5 introduction.		
Post-CPD	Reflection & follow-up	Online feedback survey, optional validation entry.	Supports continuity and learning transfer.	SMERALD Learning Suite

Interlinkages:

Each day connected to the previous through shared prototypes and group roles. Participants built ownership by moving from **observation** (Day 1) to **creation** (Day 3) to **validation** (Day 4). The Design Thinking process provided the structural glue, ensuring a coherent flow between sessions.

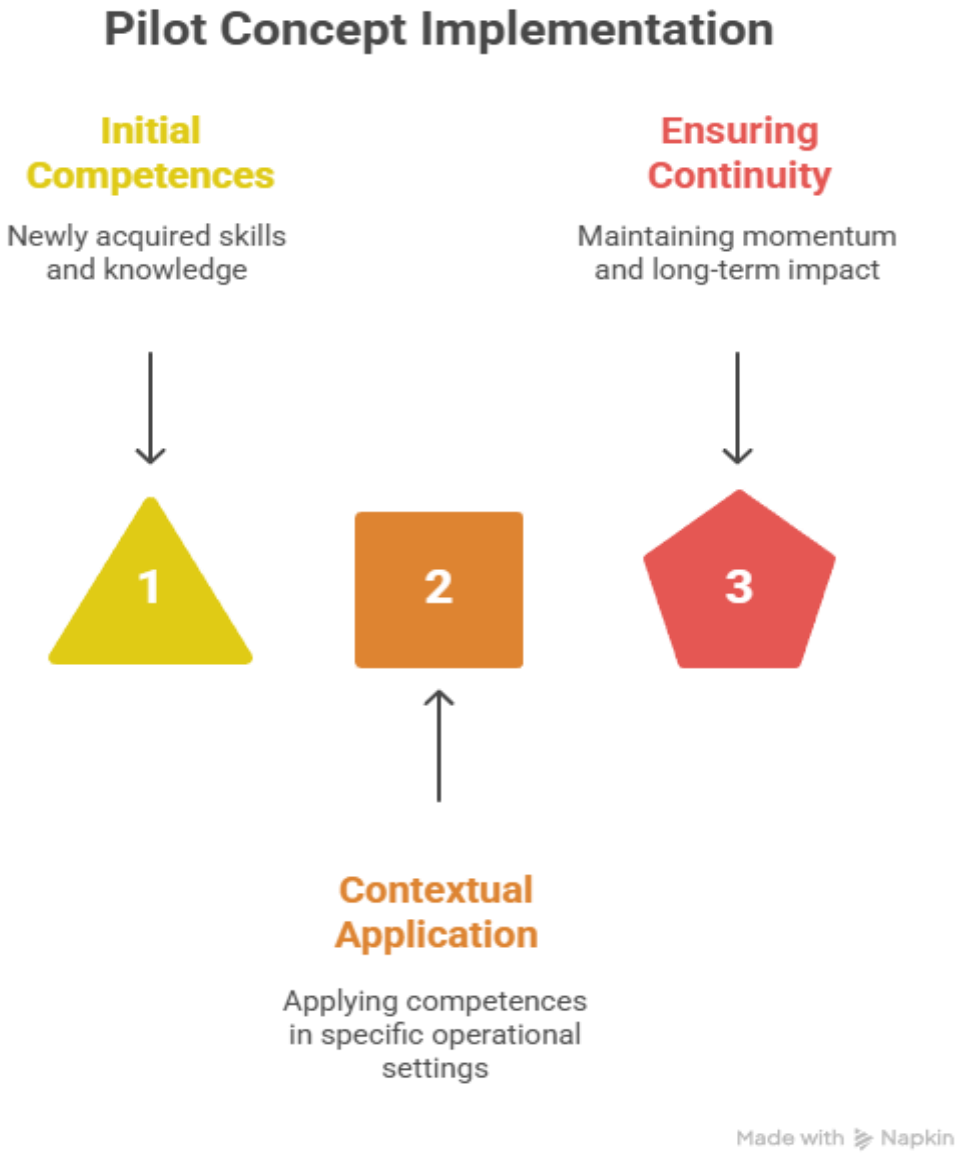
Output

The outputs of the SMERALD CPD went beyond simple deliverables; they reflected the underlying philosophy of the training. The results can be seen as the tangible and intangible evidence of the competence growth, creativity, and cross-sector collaboration that occurred during the four days in Palermo. Each outcome was directly linked to the needs formulated in the project application and the ARIMS framework: to promote Awareness, Reflection, Integration, Motivation, and Sustainability in AI adoption for SMEs and educators alike.

Participants produced AI-supported prototypes that addressed concrete SME challenges such as automating reporting, improving data interpretation, or visualising sustainability data. These prototypes functioned both as learning artefacts and as proof of concept for future applications. In parallel, the collaborative process of building these solutions fostered a shared vocabulary between VET trainers and business practitioners, breaking down silos and enabling new partnerships for digital transformation.

On a methodological level, the event generated refined guidelines for CPD structure, facilitation, and competence validation that can inform similar European initiatives. The reflection outputs—recorded through SPIDER diagrams, Mentimeter sessions, and narrative feedback—provided insight into behavioural change and competence progression. These reflections also helped identify motivational factors that influence SME participation in digital upskilling activities.

The **pilot concepts** developed during and after the CPD served as a bridge to future implementation phases planned for 2025. They were designed to test how the newly acquired competences could be applied within each organisation's specific operational context, ensuring continuity and long-term impact.



The reflections and evaluations collected via SPIDER, Mentimeter, and follow-up questionnaires were not isolated administrative exercises but formed an essential component of the learning process. Participants engaged in ongoing reflection, recording their personal

insights and learning milestones throughout the course. This continuous approach allowed them to see tangible progress, identify gaps in understanding, and adjust their learning strategies. Mentimeter served as a dynamic feedback tool during plenary sessions, enabling instant visualisation of opinions, emotions, and learning outcomes. The SPIDER diagrams provided individual competence profiles and visualised development across the LEVEL5 dimensions of knowledge, skills, and attitudes. The follow-up questionnaires, sent one week after the training, gave participants an opportunity to assess how they had begun to apply their new competences in practice. Combined, these instruments created a continuous reflection–feedback loop that embedded validation directly into the CPD journey, ensuring that awareness transformed into lasting professional growth.

IV. Transferable Aspects

This section explains how the insights, methods, and materials developed during the SMERALD CPD can be replicated, scaled, or adapted by other organisations, educators, or training institutions. It serves as a practical bridge between the initial SMERALD pilot experience and broader implementation in various European or national contexts. The goal is to highlight not only what can be transferred but also how and why the SMERALD approach works as a model for competence-oriented, awareness-based professional learning. By elaborating the mechanisms of transfer, this section helps readers understand how to translate the CPD's modular design, pedagogical tools, and validation methods into different environments, whether for SMEs, schools, or higher education settings.

A. Setting up a Learning Format

1. Start with a **reflection-based entry** (e.g., SPIDER self-assessment).
2. Build empathy by identifying participants' expectations and daily realities.
3. Combine **Design Thinking stages** with AI exploration for relevance and creativity.
4. Include multiple levels of facilitation (technical expert, reflective coach, moderator).
5. Alternate formats: short presentations, tool rotations, mixed-team work, peer dialogue.
6. End each loop with group presentations and structured reflection.

B. Using the SMERALD Platform

This part describes how the SMERALD Hub functions as both the technical backbone and the pedagogical ecosystem for delivering the CPD. The platform is not just a storage space for learning materials; it acts as an interactive environment that supports blended learning, competence tracking, and collaborative exchange. Through its modular structure, trainers can access presentations, toolkits, templates, and H5P-based activities that correspond to each Design Thinking phase. Learners benefit from direct engagement with resources, enabling self-paced review after sessions and deeper reflection on competence progress. This integrated use of the SMERALD Platform ensures that theoretical input, experimentation, and validation remain continuously accessible before, during, and after the training experience.

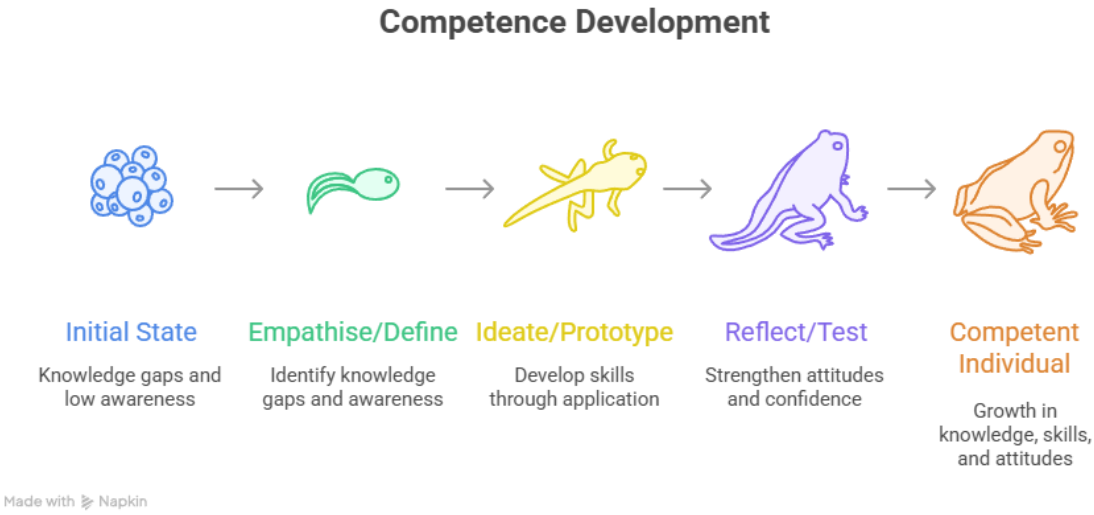
Training Component	SMERALD Hub Module / Resource	Purpose / Use in Course
Introduction to AI	AI for SMEs	Foundation for awareness and literacy.
Data Analysis	Data Literacy in SMEs	Understanding and interpreting datasets.
Prompting	Prompting Techniques (Basic–Advanced)	Hands-on practice in structured AI interaction.
Design Thinking	Design Thinking in Action	Templates, collaboration boards, and activity guides.
Reflection & Validation	LEVEL5 & SPIDER	Tools for competence recognition and feedback.
Case Studies	SMERALD Pilots Repository	Practical implementation references.

Each training component includes embedded **H5P self-reflection activities** combining knowledge material, exercises, and short quizzes. These elements can be directly linked into Moodle or other LMS environments.

C. Using the Competence Framework

This section explains the reasoning and pedagogical concept behind integrating the competence framework within the SMERALD CPD approach. The underlying idea is that competence development is not linear or purely knowledge-based; it evolves through experience, reflection, and feedback. Therefore, the SMERALD Competence Framework was designed to connect the practical Design Thinking stages with the theoretical LEVEL5

dimensions—Knowledge, Skills, and Attitudes. This connection ensures that every learning activity serves a defined developmental purpose.



The rationale for using this framework is to make learning visible and measurable, even in awareness-level training contexts. By mapping activities to competence dimensions, trainers and learners can observe how participants move from initial curiosity to applied confidence and reflective understanding. The concept encourages self-regulated learning, where participants become aware of their own growth trajectories and take ownership of their development. In this way, the competence framework acts both as a navigation map for trainers and as a mirror for learners, aligning all educational activities with the broader aim of sustainable competence building.

The SMERALD Competence Framework connects each learning phase to the LEVEL5 model dimensions:

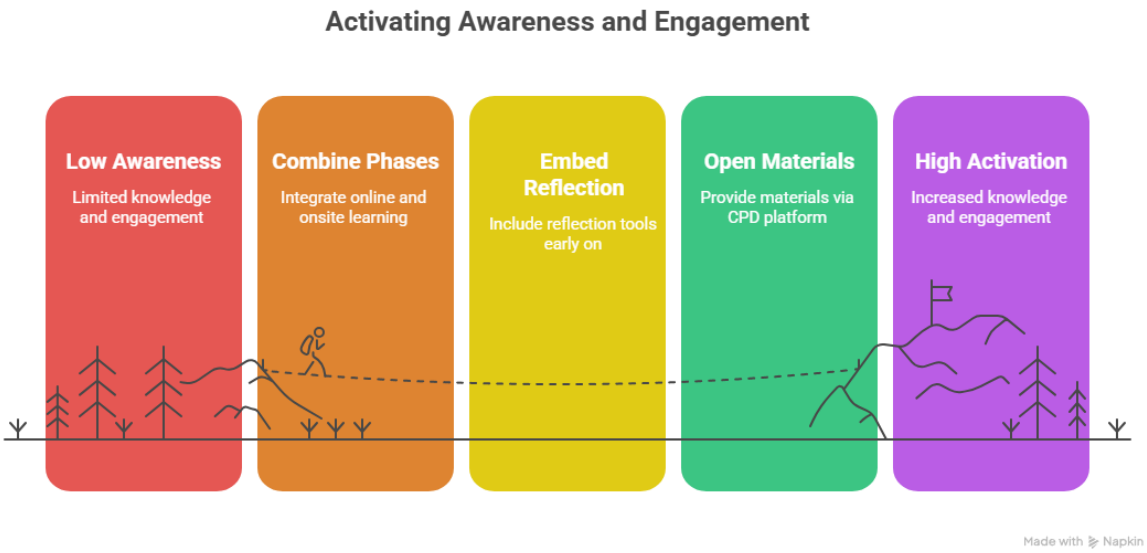
Design Thinking Phase	Competence Dimension	Learning Focus
Empathise / Define	**Knowledge**	Awareness and conceptual understanding.
Ideate / Prototype	**Skills**	Applying AI tools and methods collaboratively.
Test / Reflect	**Attitudes**	Building confidence, openness, and critical reflection.

Validation occurs through:

- **SPIDER diagrams** visualising growth.
- **Peer feedback sessions.**
- **Expert reviews and written reflections.**

D. Summary and Recommendations

This concluding section summarises the overall process and highlights the key aims of the SMERALD CPD approach, helping trainers and institutions understand how all the elements fit together into a coherent, transferable model. The purpose of this summary is to reconnect the practical components of the training—Design Thinking, competence validation, and platform integration—with the broader pedagogical rationale.



The SMERALD CPD demonstrates that competence development can occur even at an awareness level if learning is structured around interaction, reflection, and relevance. Its main goal is to empower participants to bridge the gap between understanding digital concepts and applying them in professional or educational settings. The process emphasises continuous loops of exploration, feedback, and validation that transform abstract ideas into

practical competence growth. The recommendations below distil the experience of the Palermo pilot into actionable principles that ensure each adaptation of the CPD maintains quality, relevance, and sustainability.

- Blend **online and in-person activities** for flexibility.
- Integrate **reflection and validation early** (don't postpone until the end).
- Provide open access to all course materials on the SMERALD Hub.
- Encourage **cross-sectoral co-creation** for richer ideas.
- Document and share prototypes as part of long-term competence tracking.