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

The LEARNING Design

Prepared by

Smart Revolution

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SMERALD

SMERALD: The Learning Design

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

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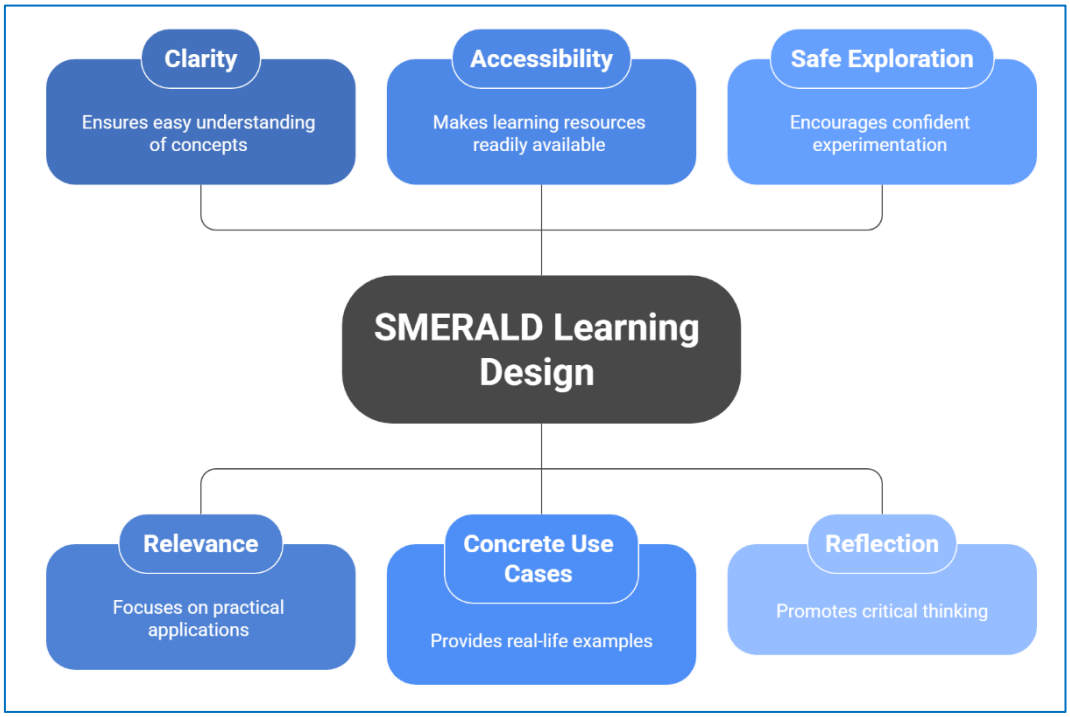
Introduction

… to the SMERALD Learning Design

The SMERALD Learning Design is intended to provide the pedagogical foundation that underpins all training, piloting, and competence-oriented learning activities within the project. It has been designed to respond directly to the needs of SMEs and VET professionals, who, it is understood, face increasing pressure to understand, evaluate, and apply AI, Digital Data, and Data Analysis in their daily work. This can often leave them with little time or resources to engage with long, theory-heavy training programmes. It is fair to say that this challenge is intensified by the rapid acceleration of technological development: tools evolve faster than traditional curricula can adapt, and many organisations struggle to identify where to begin or how to translate abstract concepts into practical value.

SMERALD therefore adopts an approach that bridges this gap by prioritising clarity, relevance and accessibility. It has been suggested that it reduces unnecessary complexity, focuses on concrete use cases, and builds a learning environment where participants can explore new ideas confidently and safely. By grounding learning in authentic work situations and supporting reflection on real-life challenges, the SMERALD Learning Design has the potential to empower learners to develop digital competences through experience rather than theory alone.



This chapter endeavours to introduce the overall logic, purpose, and educational framing of the SMERALD approach. It is suggested that the learning design was influenced by the project's conceptual ambitions, as well as insights gathered during the research phase, the piloting activities, and the transnational CPD. In our work with SMEs, educators, technical experts and organisational leaders, it became increasingly apparent that effective learning environments would benefit from being grounded in the realities of everyday work.

Many participants expressed uncertainty about where to start, how to evaluate new technologies, or how to integrate AI and data-related tools into existing workflows—yet they also demonstrated a strong willingness to experiment when learning was structured, relevant, and safe to explore. It is hoped that these observations have contributed to the development of the SMERALD learning architecture, which has been designed to blend foundational knowledge, hands-on experimentation, reflective dialogue, and competence validation.

In this way, the learning design could be said to function as a bridge between theoretical understanding and practical transformation. It is my understanding that the book sets the stage for the subsequent chapters by explaining why learning design matters, how competence-oriented principles shape the training ecosystem, and in what way the SMERALD Learning Suite reflects a coherent and practical structure.

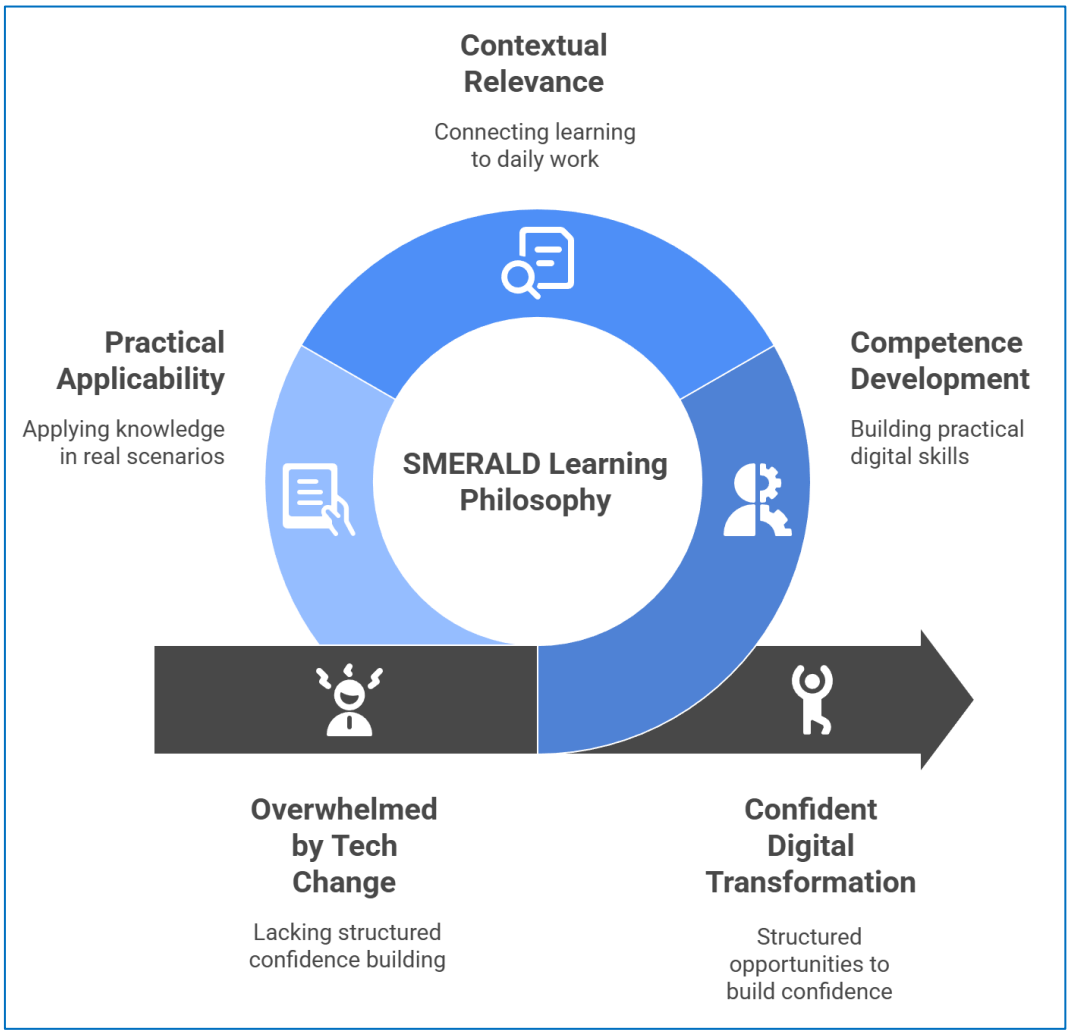
At the heart of the SMERALD Learning Design, there are three central ideas that we believe are fundamental to its success:

I. It has been suggested that SMEs might benefit from learning opportunities that are flexible, modular and immediately applicable. It is important to ensure that training is directly connected to workplace tasks, real problems, and practical workflows.
II. It is suggested that competence-oriented learning is essential for sustainable digital transformation. While knowledge is undoubtedly important, it is perhaps even more crucial to emphasise the need for learners to develop the skills and attitudes required to apply concepts confidently in real contexts.
III. It is recommended that learning pathways be designed to be adaptive and open. Participants are at liberty to choose their own entry point and progress at a pace that feels comfortable to them. They will engage in learning cycles that combine theory, practice, reflection, and validation.

This chapter respectfully suggests that the SMERALD Learning Design could be considered as a conceptual framework and a practical guide for trainers, course designers, and organisations aiming to support SME digital readiness. It is my understanding that it not only introduces the underlying rationale of the approach, but also highlights the interplay between research insights, piloting experiences, and the evolving needs of SMEs. By examining the development of the project's training structure, from its initial assumptions to its refined didactic decisions, it becomes evident why specific formats, patterns, and modular structures were chosen. The chapter therefore seeks to provide a foundation for understanding how the final modules on the platform were designed, how they interconnect to form a coherent learning ecosystem, and how this ecosystem could be adapted or expanded in future training contexts.

Learning Philosophy & Didactic Foundations

The SMERALD Learning Philosophy is built on the conviction that meaningful digital transformation in SMEs and VET environments must be driven by competence development, contextual relevance, and practical applicability. In a landscape where AI, digital data and data analysis are evolving rapidly, learners require more than fragmented knowledge or isolated tool demonstrations — they need a coherent learning framework that empowers them to understand, apply and reflect in ways that are directly connected to their day-to-day work. This conviction grew out of the project's early research activities, where participants from different sectors repeatedly emphasised that they felt overwhelmed by the speed of technological change yet lacked structured opportunities to build confidence.



During interviews and focus groups, many SME representatives and VET trainers described experiences of trial-and-error learning, uncertainty around choosing appropriate tools, and the fear of making mistakes in front of colleagues or clients. It was suggested that a key challenge was that while there was a lot of interest in AI, there was a lack of accessible, competence-oriented learning environments, which meant that uptake was not as significant as it could have been. SMERALD has therefore chosen to ground its philosophy in the real needs expressed by learners—support, clarity, relevance, and a safe space to explore emerging technologies.

This chapter seeks to introduce the didactic foundations that shape the entire SMERALD learning ecosystem. It explains the principles that guide the design of learning pathways, modules, and activities on the platform and outlines why competence orientation, modular flexibility, and workplace-based application serve as the core pillars of the SMERALD approach.

The chapter is structured into four key sections:

1.1 Competence-Oriented Learning in SMERALD

Competence-oriented learning lies at the heart of the SMERALD approach. SMERALD is not solely focused on knowledge acquisition; it emphasises the interconnected development of knowledge, skills and attitudes. This triad allows learners to navigate real-life work situations with confidence. This focus emerged directly from the project's research phase, where SMEs and VET professionals repeatedly indicated that knowing about AI or data concepts was not enough; they needed the practical ability to apply these concepts in unpredictable, often time-pressured contexts. Participants described situations where they felt technically informed but unsure how to translate insights into decisions, workflows, or new habits.

In the context of SMERALD, competence development is regarded as a comprehensive process. This involves the acquisition of essential knowledge, the practical application of specific skills in authentic tasks, and the cultivation of attitudes such as curiosity, critical thinking, adaptability, and digital confidence. These dimensions reinforce one another and create the conditions for real behavioural change, supporting learners as they integrate AI and data tools into their daily routines and long-term professional growth.

This approach is informed by the LEVEL5 system, which supports:

- The programme includes structured reflection on personal development.
- The identification of meaningful learning outcomes is of paramount importance.
- Furthermore, there is a need to validate informal and non-formal learning experiences.

SMERALD combines theoretical understanding with hands-on experimentation, ensuring that learners not only acquire knowledge of AI and data tools, but also learn how to use them effectively and why they may benefit their organisation.

1.2 Learning in SMEs: Real Contexts and Real Constraints

SMEs are faced with specific learning conditions, including limited time, variable workloads, a range of skill levels among staff members, and a requirement for immediate practical outcomes. Traditional long-form training formats often fail to align with these realities. During the SMERALD research phase, many SME representatives described learning as something that must "fit between tasks" rather than occur in dedicated blocks of time. It was also noted that digital learning is often postponed due to a lack of guidance, confidence, or feelings of being overwhelmed by the speed of technological change.

The SMERALD Learning Design is designed to respond to these conditions by promoting:

- Micro-learning elements that can be completed quickly and flexibly, thereby reducing the threshold for participation.
- Examples that are contextualised to reflect authentic SME workflows, ensuring immediate applicability and relevance.
- Activities based on learning through practical experience are linked to the business challenges that already exist, and enable learners to develop their competence by working on real problems.

The low-threshold entry points are designed to enable engagement by beginners and sceptical learners without the feeling of being judged or left behind.

The pilot phase demonstrated that SMEs learn most effectively when they can explore AI and data tools in relation to their own documents, workflows and communication patterns. When

learners recognise that minor adjustments, such as enhancing documentation processes or generating first drafts, can result in significant time savings and reduce stress, motivation levels noticeably increase. SMERALD supports SMEs in adopting AI as a practical solution to everyday challenges by embedding learning in the workplace and providing ongoing experimentation support.

1.3 Formal, Non-Formal and Informal Learning Modes

The SMERALD approach recognises that digital competence develops across different environments and moments, embracing all three dimensions of learning.

- Formal learning, such as the transnational CPD course, provides structured input, shared vocabulary, and guided practice. It helps participants establish fundamental understanding and connect with others facing similar challenges.
- Non-formal learning, incorporating guided exercises, pilot tasks and structured activities, supports learners as they test new tools in semi-supported environments. These activities are designed to mirror real business scenarios, offering a safe but realistic space to experiment.
- Informal learning, which emerges naturally through day-to-day experimentation with AI tools, reflection on mistakes, and collaborative problem-solving, is often the most powerful driver of competence growth. In many SMEs, this type of learning already occurs, albeit without structure or recognition.

SMERALD is a tool that strengthens informal learning by providing direction, frameworks and validation. The SPIDER self-assessment and the LEVEL5 approach are tools that learners can use to gain awareness of their informal learning and its contribution to their professional development. This blended perspective mirrors the real conditions of digital transformation: knowledge is acquired during workshops, tested during tasks, refined through mistakes, and consolidated through reflection. SMERALD creates coherence across learning modes, transforming everyday experimentation into measurable competence gain.

1.4 The role of micro-credentials in SMERALD

Micro-credentials provide a structured way of recognising and documenting learning achievements. Within SMERALD, they serve two key purposes:

- They provide learners with clear, achievable milestones that reflect genuine competence gains, which is particularly beneficial for those who are new to AI or uncertain about their progress.
- These units are designed to support future scalability and valorisation by offering a transparent, modular framework for learning. This framework can be combined, extended, or integrated into larger qualification frameworks as required.

The adoption of micro-credentials was initiated by the pilot programme. SMEs reported that traditional certificates felt too broad or too detached from their actual learning. Micro-credentials, on the other hand, recognise specific achievements such as mastering AI-supported writing, improving data awareness or integrating simple automation tools into workflows.

Each SMERALD micro-credential includes essential elements such as learning outcomes, workload, assessment methods, and competence validation. These resources have been designed to be stackable, allowing learners to build personalised learning pathways that align with their professional needs and organisational context. This modular approach is a key enabler for SMEs and VET providers to establish a dynamic learning culture, where incremental progress leads to significant and sustainable change.

Together, these four components—competence orientation, SME-focused design, blended learning modes, and micro-credential structures—form the foundation of the SMERALD Learning Philosophy. They ensure that learning remains practical, meaningful, and sustainable, ultimately enabling SMEs and VET professionals to engage with AI and data-driven innovation in a confident and informed way.

Learning Philosophy

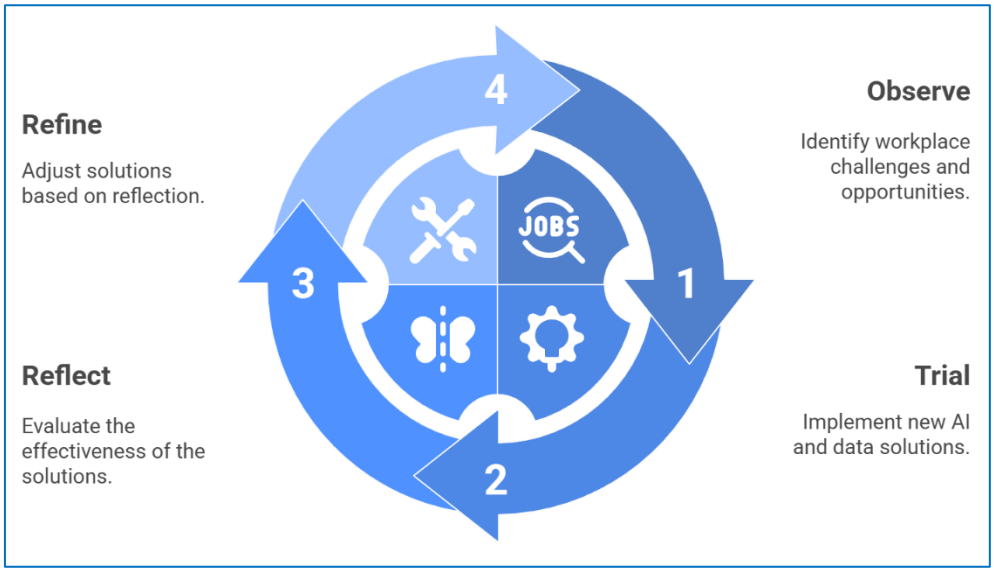
… in the SMERALD Project

*This chapter presents the pedagogical backbone of the SMERALD approach and explains **why and how SMEs learn effectively** within this framework. Drawing on evidence from the cross-country pilots (Bulgaria, Germany, Greece, Italy) and the insights summarised in the SMERALD Implementation Strategy Report, this chapter integrates theory and practical experience into a coherent learning philosophy. Each section begins with an introduction explaining its purpose and how it supports the overall approach. This allows readers to understand not only what SMERALD proposes but why each element matters for SME-oriented learning.*

2.1 Core Orientation

This section introduces the foundational purpose of the SMERALD learning philosophy. It clarifies why a traditional training approach is insufficient for SMEs and explains how the project connects learning with real workplace challenges. The goal is to provide readers with a clear understanding of how learning becomes an integrated, practice-driven process within the SMERALD approach.

The learning philosophy of SMERALD builds on the insight that **AI and data competences cannot be taught through traditional training formats** in SMEs. They must be integrated into everyday work, aligned with existing tasks, and directly connected to processes employees already understand. Instead of offering abstract knowledge about AI systems, SMERALD focuses on **empowering learners to act**, to make informed decisions and to recognise opportunities for improvement in their own workflows.



This foundation is shaped by three core principles:

- **Real-world usability:** Learning should translate into concrete improvements the next day—better documentation, clearer communication, more efficient workflows.
- **Competence-oriented progression:** Development is measured using observable behaviour and performance, not just knowledge reproduction.
- **Action-focused learning:** The starting point is always an activity or task, from which knowledge naturally emerges through application.

The resulting learning culture encourages curiosity, experimentation and iterative improvement. Learners repeatedly move through cycles of *observation → trial → reflection → refinement*, steadily building confidence and competence.

2.2 Competence Orientation as the Framework

This section explains how competence orientation structures the learning process in SMERALD. It shows why SMEs benefit from a development model that focuses on observable performance and describes how Knowledge, Skills and Attitudes form a coherent framework for designing, delivering and assessing learning activities.

The competence orientation is a central pillar in SMERALD because SMEs require **practical proficiency**, not academic depth. The LEVEL5 model and SPIDER reflection questionnaire help

structure this progression. Each module is designed to foster growth across the three dimensions:

Knowledge

- Understanding of AI fundamentals, terminology and capabilities
- Awareness of data processes, data quality and simple analytical structures
- Comprehension of transparency obligations, risk factors and ethical considerations

Skills

- Ability to prompt, evaluate and iterate AI-generated material
- Capability to integrate AI tools into documentation, communication and workflows
- Competence in identifying useful AI features and rejecting unreliable output

Attitudes

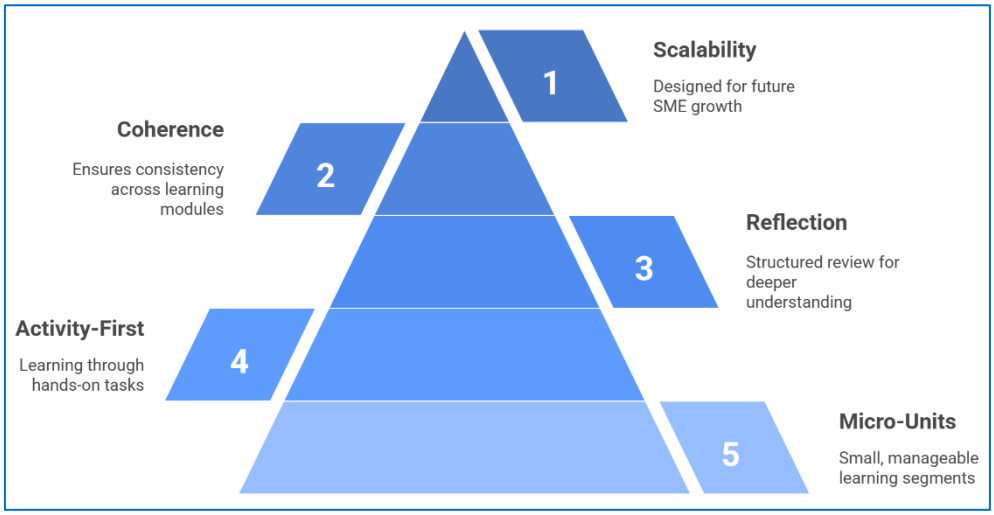
- Willingness to experiment even without full certainty
- Awareness of responsibility and transparency in digital processes
- Openness toward new digital tools and a constructive mindset toward change

By embedding these dimensions into all modules, the project ensures that learning outcomes are **traceable, assessable and transferable**—both for individuals and organisations.

2.3 The SMERALD Didactic Pattern

This section outlines the didactic backbone of SMERALD—the principles that guide how learning units, modules and activities are designed. It describes the practical logic behind micro-units, activity-first learning and reflection, ensuring the reader understands how the project creates clarity, engagement and applicability for SME staff.

The didactic pattern was developed through extensive project experience and pilot feedback. It defines *how* learning is delivered, ensuring coherence across modules and scalability for future SMEs.


1
Scalability
Designed for future SME growth
2
Coherence
Ensures consistency across learning modules
3
Reflection
Structured review for deeper understanding
4
Activity-First
Learning through hands-on tasks
5
Micro-Units
Small, manageable learning segments

Micro-Units

These short modules break down complex topics into manageable learning steps. They support:

- focus and clarity
- low entry barriers
- repeatable practice moments
- flexible integration into work schedules

Demonstration → Experimentation → Application

This triad reflects how adults learn best in professional contexts:

- **Demonstration:** Learners see a concrete, understandable example in action.
- **Experimentation:** They try the concept or tool themselves with minimal risk.
- **Application:** They transfer the approach to their own environment, creating actual value.

Activity-First Approach

Instead of starting with theory, SMERALD introduces theory *only when needed* to support an action. This keeps content relevant and removes unnecessary cognitive load.

Structured Reflection and Validation

Reflection questions, SPIDER self-assessments and optional LEVEL5 validation enable learners to articulate progress, build awareness of strengths and identify next developmental needs.

Time-Efficiency and Accessibility

All steps are optimised for learners who have limited time, diverse backgrounds and varying levels of technical confidence.

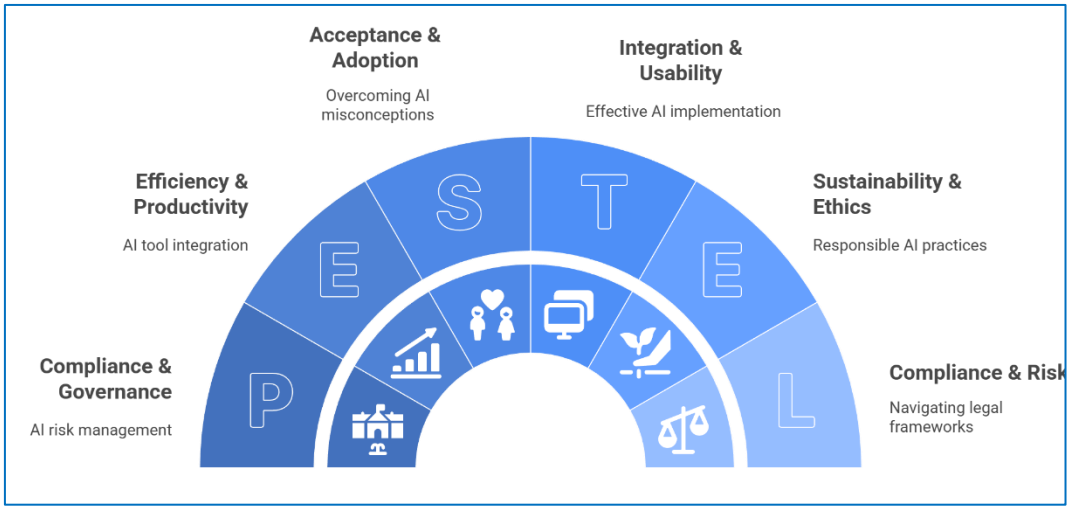
2.4 Learning Fields & Action Fields

This section introduces the two-layer structure used to organise learning content within SMERALD. Learning Fields describe what competences are developed, while Action Fields show where and how these competences become useful in real SME contexts. Together, they form a practical map for designing modules and learning pathways.

To support individual learning pathways, SMERALD uses two structuring perspectives: **Learning Fields** (competence areas) and **Action Fields** (practical domains in which AI can add value).

Learning Fields (Competence Areas)

This subsection expands each Learning Field in depth. Each Learning Field represents a core area of competence that SMEs need to effectively use AI and digital data in daily operations. The purpose of detailing these fields is to show why each is essential, what practical problems it addresses in SMEs, and how it supports the SMERALD learning philosophy. The Learning Fields are intentionally broad so they can be adapted to different SME roles, sectors, and levels of digital maturity.



1. **AI Fundamentals & Usability**

   Purpose and relevance: This field establishes the conceptual foundation that allows learners to make sense of AI tools, understand their limitations, and use them effectively. SME staff often approach AI with uncertainty or misconceptions (e.g., overestimating what AI can do or fearing job displacement). By providing clear, digestible explanations of what AI *is*, *how it works*, and *what it can realistically support*, this field removes psychological and technical barriers. *What it solves in SMEs:* Misunderstandings about AI, fear of technology, inconsistent tool usage, unrealistic expectations. *How it connects to SME realities:* SMEs need fast onboarding to AI—not theoretical depth. This field helps employees feel confident enough to experiment with tools and integrate them into existing workflows.

2. **Data Literacy & Workflow Integration**

   Purpose and relevance: Many SMEs collect data but do not use it effectively. Employees often lack the skills to clean, organise, interpret, and apply data to decisions. This field focuses on practical data skills—working with spreadsheets, recognising patterns, understanding basic analytics—and integrating data into meaningful workflows. *What it solves in SMEs:* Fragmented data use, low data quality, inefficient processes, limited analytical insight. *How it connects to SME realities:* SMEs need simple, actionable data methods to support decisions in marketing, operations, HR, finance and client work. This field equips staff with exactly those everyday competencies.

3. **AI Tool Exploration & Structured Prompting**

   Purpose and relevance: AI tools become valuable only when staff can use them effectively. This field builds hands-on proficiency by teaching structured prompting, tool selection, and evaluation of tool output. It empowers staff to test various AI solutions and identify which tools are best for their needs. *What it solves in SMEs:* Inefficient trial-and-error, unreliable outputs, dependency on "super-users," inconsistent quality of AI-generated work. *How it connects to SME realities:* Employees can immediately apply prompting techniques to documents, emails, reports, customer communication, or creative tasks. This field reflects the SMERALD principle of learning by doing.

4. **Risk, Ethics & Responsible Use**

   Purpose and relevance: SMEs often fear legal or ethical risks when using AI, particularly regarding data protection, accuracy, transparency and organisational liability. This field ensures that employees understand how to use AI responsibly, avoid risky behaviour, and align practices with privacy obligations. *What it solves in SMEs:* Fear of

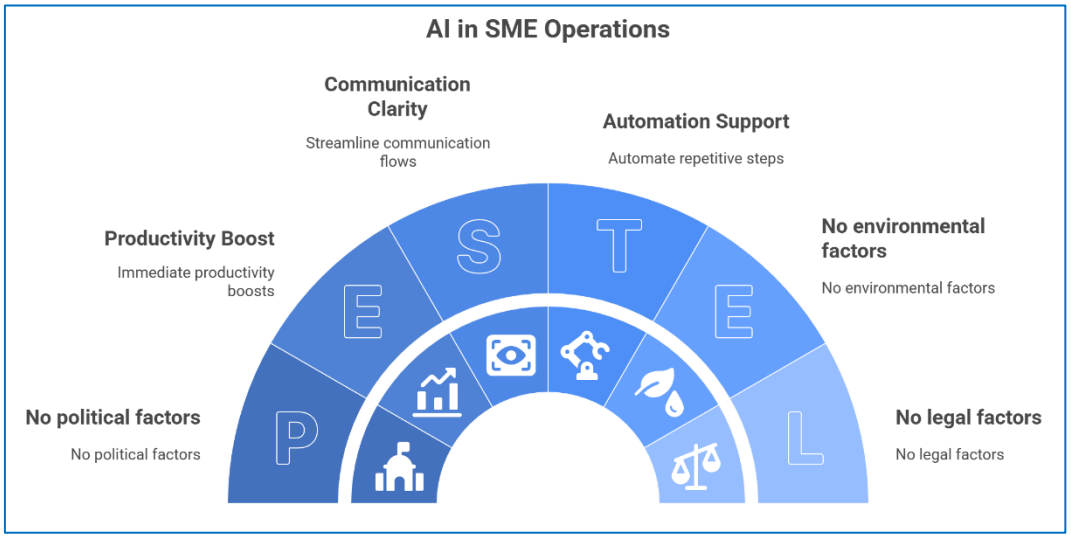
compliance issues, misuse of sensitive data, lack of clarity in transparency and documentation, staff uncertainty around AI risks. *How it connects to SME realities:* SMEs need clear, simple rules for safe AI use—not lengthy legal frameworks. This field translates risk management into practical behaviour (e.g., "never upload client data," "document all AI-supported outputs").

5. **Documentation & SME Quality Standards**

   Purpose and relevance: Documentation is often a bottleneck in SMEs. This field supports more consistent, transparent workflows by improving documentation habits and clarifying quality standards. AI becomes a tool to streamline documentation processes and ensure quality. *What it solves in SMEs:* Time-consuming documentation tasks, inconsistent reporting, knowledge loss, inefficiencies in communication with clients or partners. *How it connects to SME realities:* Most SME staff struggle with documentation because it is time-intensive and often deprioritised. AI-supported workflows help teams document work quickly and consistently, improving both productivity and transparency.

Action Fields (Practice Domains)

This subsection expands the Action Fields with the same level of depth and explanation as the Learning Fields. Each Action Field describes a concrete business domain where AI and data competences can directly transform daily practice. While the Learning Fields define what learners develop, the Action Fields define where these competences become visible in real SME workflows. Their purpose is to guide trainers, SMEs and learners in identifying high-impact application areas, ensuring that all learning activities remain practical, relevant and immediately transferable.



1. **Documentation Workflows**

   Purpose and relevance: Documentation is one of the most time-consuming activities in SMEs. Staff spend large portions of their day writing emails, meeting notes, reports, proposals, or summaries—often without standardisation. AI-supported documentation offers a major opportunity to save time, increase clarity and remove inconsistencies. *What it solves in SMEs:* Low documentation quality, duplication of work, unclear responsibility, knowledge loss when employees leave. *How it connects to SME realities:* Almost every SME role depends on documentation. Improving this domain creates quick wins and immediate productivity boosts.

2. **Internal Communication**

   Purpose and relevance: Internal communication often becomes fragmented as SMEs grow. Messages are sent through multiple channels, information gets lost, and misunderstandings cause delays. AI can help structure, clarify and streamline internal

communication flows. *What it solves in SMEs:* Information overload, unclear instructions, inconsistent communication styles, lack of shared reference materials. *How it connects to SME realities:* Coordinating across departments, hybrid teams and rapid project cycles requires clear communication. Improvements here directly increase operational efficiency.

3. **External Communication**

   Purpose and relevance: SMEs frequently struggle to maintain a professional and consistent external presence because marketing and communication tasks are time-intensive. AI tools can support content creation, visual design and message optimisation. *What it solves in SMEs:* Irregular posting schedules, inconsistent branding, lack of capacity for outreach, low-quality marketing materials. *How it connects to SME realities:* Many SMEs rely on a small communication team—or a single person. AI-supported communication helps maintain visibility without additional staffing.

4. **Customer Interaction**

   Purpose and relevance: Customer interaction often defines the reputation and success of SMEs. AI can help respond to requests, structure FAQs, personalise communication and support customer-facing workflows. *What it solves in SMEs:* Slow response times, repeated manual communication, inconsistent service quality, limited feedback analysis. *How it connects to SME realities:* SMEs need to remain competitive by offering responsive, personalised communication despite limited staffing resources.

5. **Process Optimisation**

   Purpose and relevance: Many SMEs operate with organically grown, unstructured processes. AI and data analysis can uncover bottlenecks, automate repetitive steps, and support smarter decision-making. *What it solves in SMEs:* Inefficiencies, unclear responsibilities, outdated procedures, lack of process transparency. *How it connects to SME realities:* SME growth depends on improving productivity and consistency. Process optimisation supported by AI helps organisations scale more sustainably.

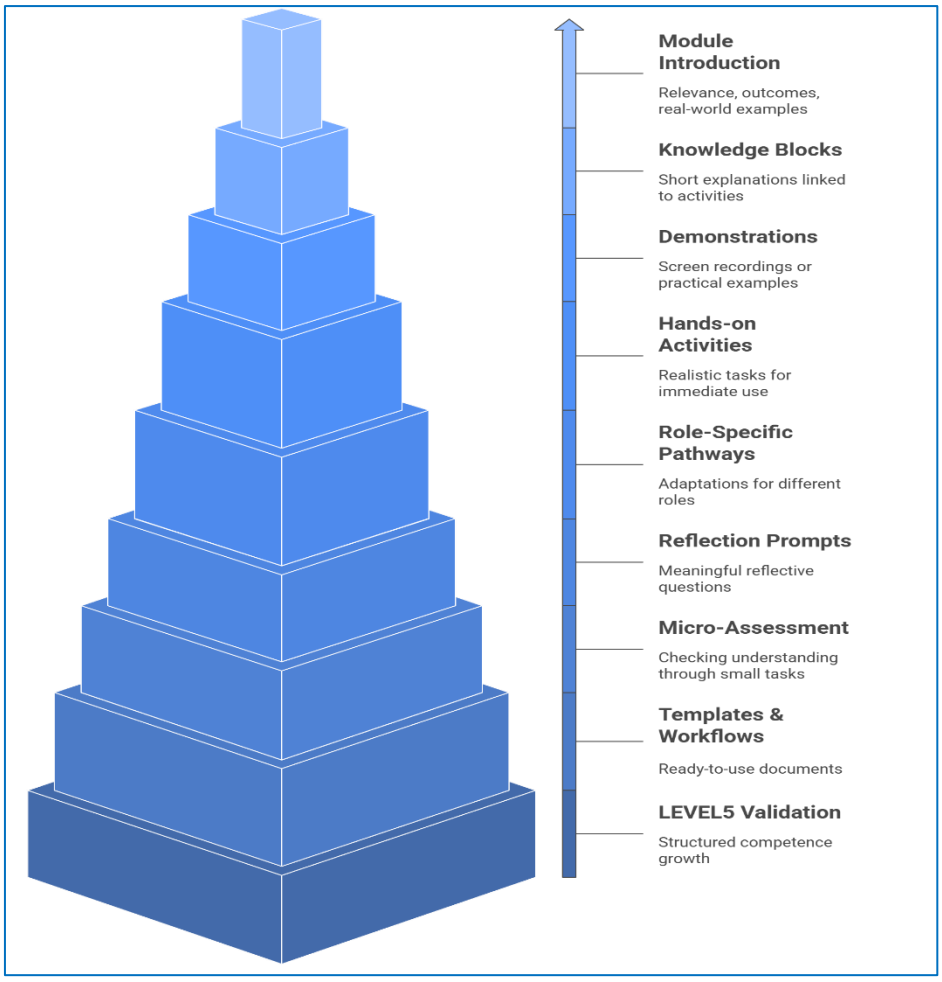
Together, these fields form a matrix that guides the development of each module, activity and practical example.

2.5 Course & Module Pattern of the SMERALD Platform

This section explains how the SMERALD platform translates the learning philosophy into a coherent modular structure. It details how each module is organised, how learners navigate the platform and how the progression logic ensures both immediate relevance and long-term competence growth.

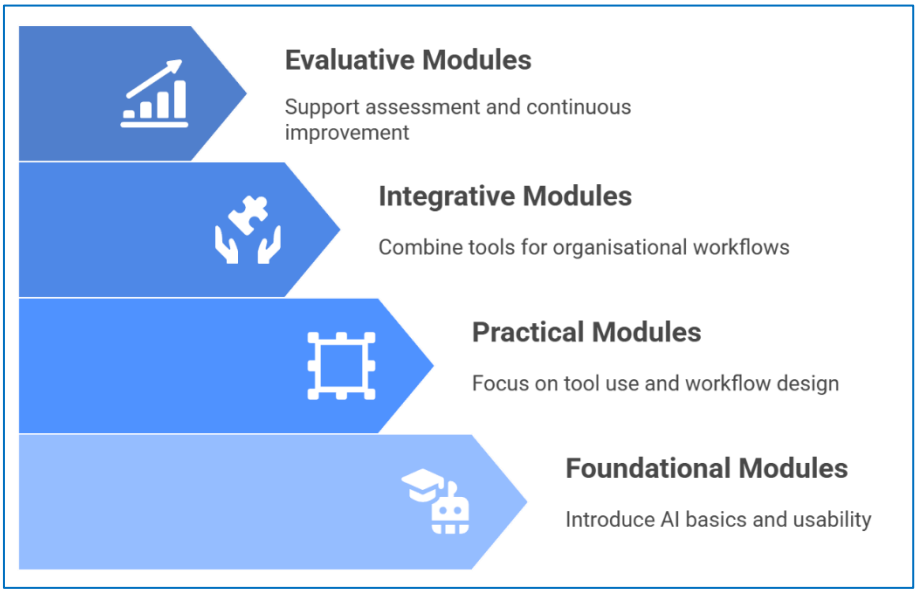
The SMERALD platform acts as a **living learning environment**, designed for sustained skill development and continuous adaptation. Each module follows a consistent pattern for easier navigation and faster learning.

Module Structure



1. **Module introduction** – relevance, expected outcomes, real-world examples
2. **Knowledge blocks** – short, focused explanations linked to an activity
3. **Demonstrations** – screen recordings or practical examples
4. **Hands-on activities** – realistic SME tasks designed for immediate use
5. **Role-specific pathways** – adaptations for management, admin staff, marketing, etc.
6. **Reflection prompts** – short but meaningful reflective questions
7. **Micro-assessment** – checking understanding through small, targeted tasks
8. **Templates and workflow sheets** – ready-to-use documents
9. **Optional LEVEL5 validation** – structured competence growth

Progression Logic



- **Foundational modules** introduce concepts like AI basics, transparency and usability.
- **Practical modules** focus on tool use and workflow design.
- **Integrative modules** combine multiple tools for organisational workflows.
- **Evaluative modules** support assessment, reflection and continuous improvement.

This structure ensures long-term learning pathways instead of isolated workshops.

2.6 SMERALD Vision – A Brief Summary

This section replaces the pilot-focused analysis with a concise summary of the overarching SMERALD vision. Its purpose is to help readers clearly understand the strategic intent of the project before engaging with later chapters. The vision describes why SMERALD exists, what it wants to change in European SMEs, and how its learning philosophy supports that mission.

The SMERALD vision is built on a simple but pressing reality: **SMEs need practical, accessible, and flexible pathways to develop AI and data competences if they want to remain competitive in a rapidly changing digital economy**. Many lack the internal capacity, time, or specialised staff to launch complex training programmes. SMERALD responds to this challenge with a competence-based learning approach that empowers SMEs to:

- explore AI tools safely and confidently,
- integrate data-driven thinking into daily work,
- make better decisions based on evidence rather than intuition,
- support staff in developing skills through short, actionable learning units.

The vision emphasises *empowerment*, not technological dependency. By giving SMEs the tools, competences and learning structures they need, SMERALD ensures that organisations can adapt, innovate and grow sustainably—no matter their size or sector.

2.7 The SMERALD Approach – Key Principles

This section replaces the previous synthesis with a clear explanation of the SMERALD approach. It highlights the core principles that shape the learning experience and shows how these principles work together to make competence development realistic and impactful for SMEs.

The SMERALD approach turns digital transformation into a manageable, step-by-step process. It is defined by the following principles:

1. Competence-based learning

SMERALD focuses on what learners can *do* with AI and data—practical outcomes, observable performance, real behavioural change.

2. Modularity and flexibility

Learning units are short, focused and adaptable. SMEs can build customised learning pathways that fit their working rhythms, workloads and priorities.

3. Practical relevance as the starting point

Every learning activity is connected to real SME tasks: documentation, communication, process optimisation, customer interaction. Nothing remains abstract.

4. Integration into daily work

Instead of separating training from practice, SMERALD blends both. Staff learn through activities they can immediately apply to their everyday responsibilities.

5. Reflection and validation

Tools such as the SPIDER questionnaire and the LEVEL5 methodology help learners recognise progress, identify development needs and maintain motivation.

6. Responsible and transparent AI use

The approach builds organisational confidence by embedding ethical, legal and transparent AI practices into every module.

Together, these principles ensure that SMEs do not just "learn about AI" but **actively develop the competences needed to benefit from it**. This transforms AI and data from abstract buzzwords into practical tools that support growth, innovation and long-term resilience.

This final section synthesises the chapter by showing how the learning philosophy supports the broader aims of the SMERALD project. It explains how the described principles contribute to building long-term organisational capability, ensuring that SMEs can meaningfully integrate AI into their operations.

The learning philosophy fully supports the project vision:

- **Scalable:** Modules can be adapted to different sectors and SME sizes.
- **Accessible:** Content is approachable even for beginners.
- **Flexible:** Learners can follow personalised pathways.
- **Relevant:** Activities reflect real SME challenges.

- **Responsible:** Ethics and transparency are embedded throughout.

The aim is not simply to transfer knowledge but to build **sustainable organisational capabilities** that enable SMEs to adapt, innovate and remain competitive in a digital economy.

Learning Design Framework

… for SMERALD

This merged chapter provides a unified theoretical background for the SMERALD CPD training and the platform-based learning offer. It integrates the Learning Fields (competence areas) and the Action Fields (practical SME domains) into a single coherent design framework. This framework underpins both the CPD course and the modular platform structure, while the detailed CPD Concept and the Platform Manual remain separate, dedicated documents. The purpose here is to describe the conceptual logic—not operational steps—behind how SMERALD learning experiences are designed, structured, and connected to SME realities.

3.1 Purpose of the Unified Learning Design Framework

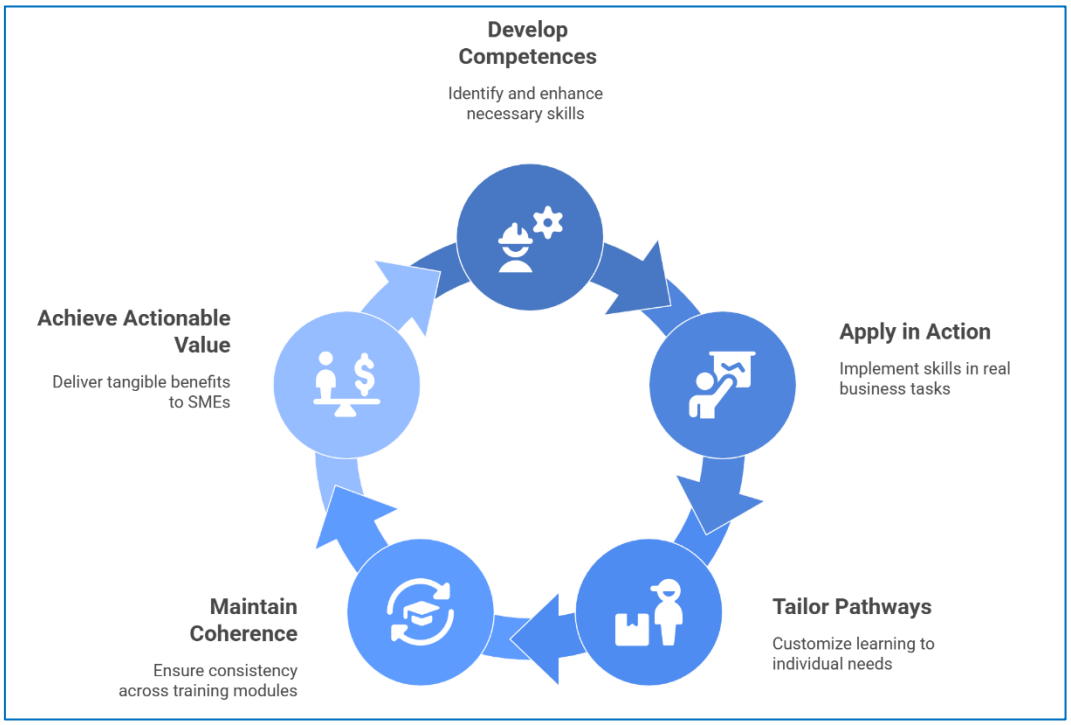
This section sets the stage for the entire chapter by explaining why SMERALD requires a unified, theory-driven design framework. While SMEs often operate under tight time constraints and diverse competence levels, they still need a structured system that ensures learning remains coherent, relevant and sustainable. The unified framework brings together competence development (Learning Fields) and practical application (Action Fields) to form one consistent logic. By doing so, it eliminates fragmentation, reduces design inconsistencies, and guarantees that all learning experiences—whether delivered through the CPD course or the platform—are aligned with the same vision and principles. This section prepares the reader to understand why this merger is essential for building effective, transferable and scalable learning experiences across Europe.

SMEs require a learning design that is practical, adaptable and directly linked to real business tasks. By merging Learning Fields (what competences are developed) with Action Fields (where these competences are applied), SMERALD provides a clear blueprint for designing training experiences that:

- follow a logical competence progression,

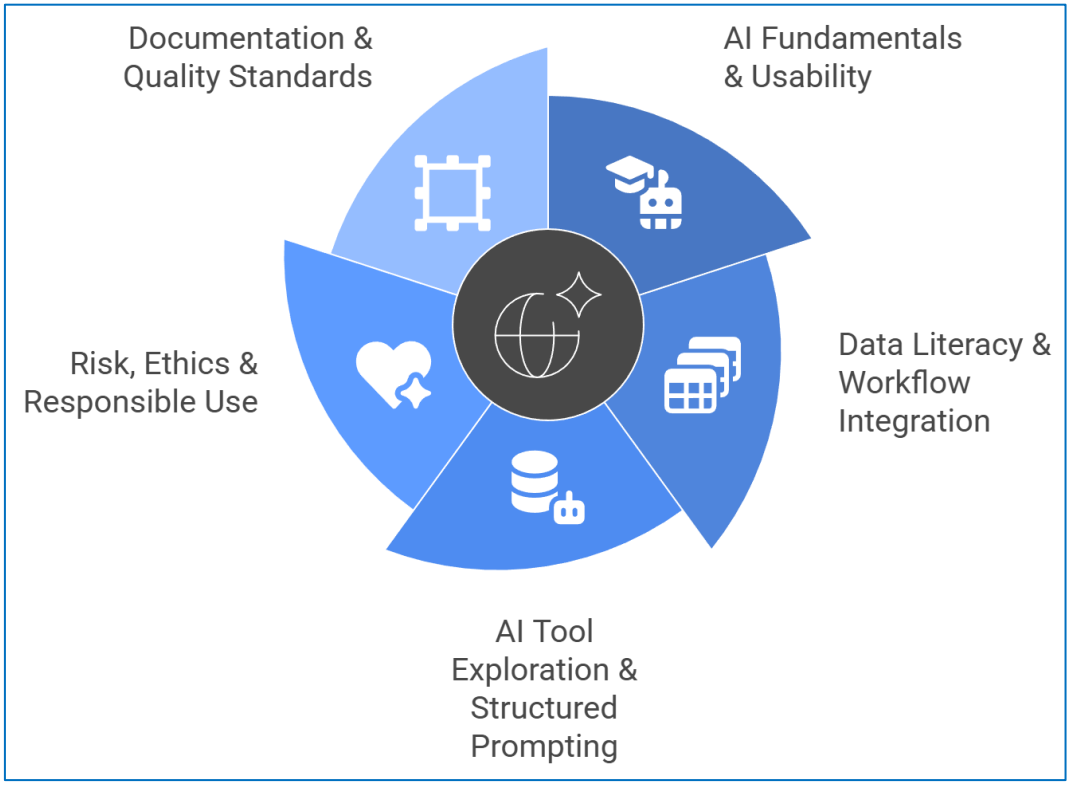
- support immediate transfer into daily SME workflows,
- offer flexible pathways tailored to different roles and experience levels,
- maintain coherence across CPD training and platform modules,
- ensure that learning always leads to actionable value.

This merged structure serves as the theoretical foundation for the CPD course and the platform modules, while operational mechanics remain in separate documents.



3.2 Learning Fields — Competence Development Structure

This section introduces the Learning Fields as the primary structure guiding competence development within SMERALD. It explains why these fields exist, how they were derived from SME needs, and how they organise the competencies required for meaningful AI and data integration. The Learning Fields are not abstract categories but reflect the actual capability gaps observed in SMEs across Europe. They ensure that training remains systematic, targeted and connected to the realities of modern digital work. Before moving into the bullet point structure below, readers are given a conceptual understanding of how Learning Fields act as the backbone for every module, activity and competence outcome in the SMERALD approach.



The five Learning Fields represent the essential competences needed to integrate AI and data-supported work in SMEs:

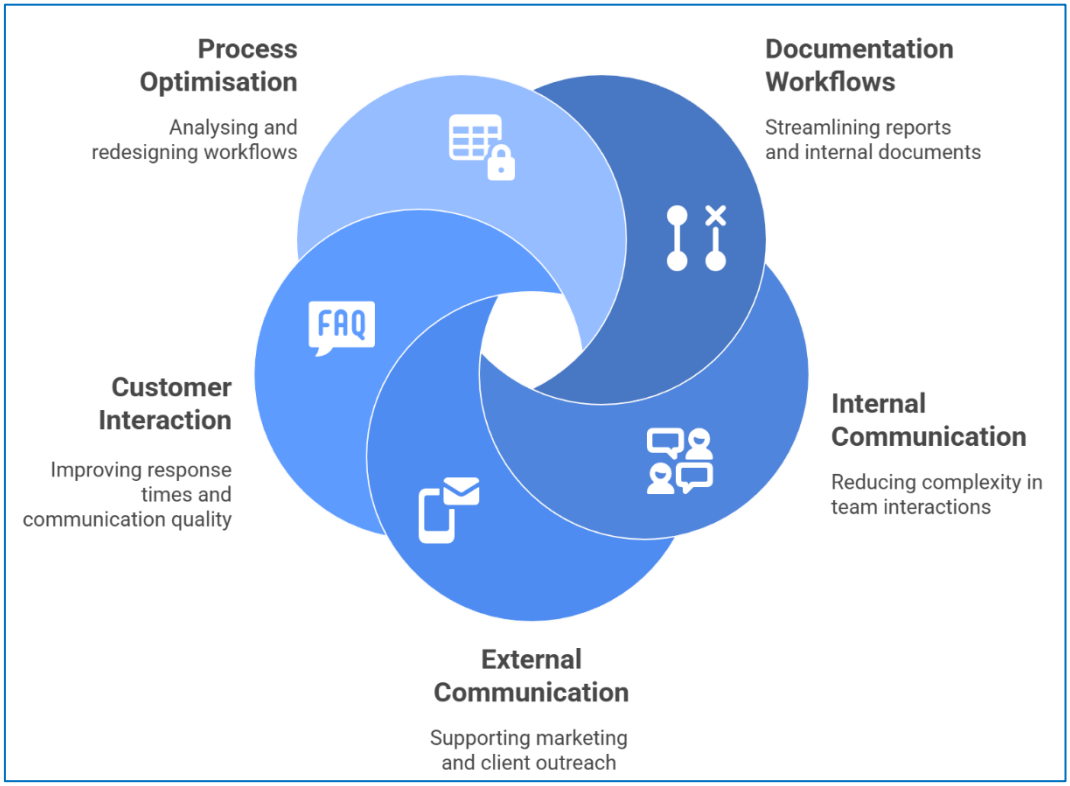
1. **AI Fundamentals & Usability** — establishing a confident, realistic understanding of AI.
2. **Data Literacy & Workflow Integration** — enabling staff to interpret, structure and apply data effectively.

3. **AI Tool Exploration & Structured Prompting** — turning AI tools into usable aids for daily work.
4. **Risk, Ethics & Responsible Use** — ensuring compliance, transparency and safe tool use.
5. **Documentation & Quality Standards** — improving consistency and efficiency in SME knowledge work.

Each Learning Field addresses a practical SME need and provides the competence backbone for module creation and activity design.

3.3 Action Fields — Practical Application Domains

This section expands on the Action Fields by providing a narrative explanation of why they exist and how they function within the overall design logic. Unlike Learning Fields, which focus on competence development, Action Fields represent the practical domains where these competences become visible. They are grounded in real workflows and reflect high-frequency, high-impact areas where SMEs can quickly benefit from AI-supported processes. Before presenting the bullet points, this introduction clarifies how Action Fields help translate abstract competences into observable improvements in documentation, communication, or process efficiency, making the SMERALD design highly relevant and implementation-ready.



The five Action Fields represent high-frequency domains in which SMEs benefit immediately from AI-supported workflows:

1. **Documentation Workflows** — streamlining reports, summaries, protocols and internal documentation.
2. **Internal Communication** — reducing complexity in team communication and clarifying collaborative work.

3. **External Communication** — supporting marketing, outreach and client-facing communication.
4. **Customer Interaction** — improving response times and the quality of customer communication.
5. **Process Optimisation** — analysing workflows, identifying bottlenecks and redesigning tasks.

These Action Fields ensure that learning remains rooted in real SME practice and provides direct value.

3.4 Integrating Learning Fields and Action Fields — The Core SMERALD Design Logic

This section provides an extended conceptual explanation of how Learning Fields and Action Fields merge into one cohesive design mechanism. It clarifies that SMERALD does not treat competence development and practical application as separate layers but as interdependent components of the same system. The introduction highlights why this integration is crucial for SMEs: it avoids isolated learning, ensures immediate relevance, and creates a bridge between theoretical competence and daily tasks. The floated text offers trainers and stakeholders a clear understanding of how the merged structure supports module creation and course planning before moving into the illustrative examples below.

The SMERALD design logic is built on the principle that **competence development (Learning Fields) should always lead to observable improvements in SME practice (Action Fields)**. Therefore, every SMERALD module—whether part of the CPD training or the online platform—is designed by linking one Learning Field with one (or more) Action Fields.

Examples of Integration

- **AI Tool Exploration (Learning Field)** + **Documentation Workflows (Action Field)** → Modules on AI-supported documentation.
- **Data Literacy (Learning Field)** + **Process Optimisation (Action Field)** → Modules on data-driven workflow analysis.
- **Risk & Ethical Use (Learning Field)** + **Customer Interaction (Action Field)** → Modules on transparent, compliant client communication.

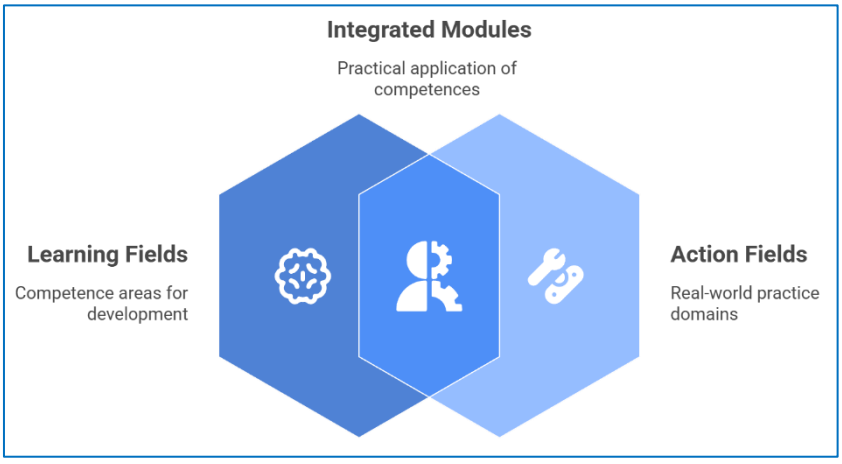
This integration ensures that the theoretical competence development model translates seamlessly into practical, actionable tasks.

3.5 The SMERALD Course Structure Derived from the Combined Fields

This section opens with a fuller explanation of how the merged structure automatically generates the architecture of the SMERALD CPD and platform-based courses. The introduction clarifies that the combination of Learning Fields and Action Fields is not merely conceptual but directly influences how training is sequenced, categorised and expanded. The floated text ensures that readers understand the logic behind foundational, practical, integrative and reflective modules before the bullet points summarise these categories.

Because Learning Fields define the competences and Action Fields define the practice domains, combining them creates a natural course structure with:

- **Foundational modules** (AI basics, usability, data fundamentals),
- **Practical modules** (tool use, workflow support, documentation, communication),
- **Integrative modules** (cross-field tasks, multi-step workflows),
- **Reflective & responsible use modules** (ethics, transparency, risk mitigation),
- **Evaluation/validation modules** (competence reflection and demonstration).



The specific operationalisation of these modules is handled separately in:

- **The CPD Concept Document**, and
- **The SMERALD Platform Manual**.

This chapter therefore provides the conceptual blueprint for those documents.

3.6 Purpose of the Unified Framework for Trainers and SMEs

This concluding section expands the introduction to highlight why the unified framework is valuable for trainers, SMEs and system designers. It explains how the merged structure supports strategic planning, guarantees didactic consistency and ensures long-term usability. The floated text clarifies that this framework acts as the bridge between the SMERALD vision and practical implementation across contexts, preparing the reader for the operational documents that follow outside this chapter.

By merging the Learning Fields and Action Fields into one structured system, SMERALD ensures that:

- learning remains relevant across countries and sectors,
- module development follows a consistent logic,
- trainers have a clear design pathway,
- SMEs can quickly identify where value will be created,
- the platform and CPD remain coherent and mutually reinforcing.

This unified framework provides the theoretical backbone for all subsequent training and platform development while keeping operational details in their respective dedicated documents.

The Learning Pathways

… in SMERALD

This chapter outlines the SMERALD Learning Pathways in a formal, structured, and informational format. The purpose is to define the logic, structure and role of pathways within the SMERALD learning system. All descriptive elements have been rewritten to ensure clarity, precision and professional tone.

4.1 Purpose of Learning Pathways

SMERALD Learning Pathways serve as the structural mechanism that transforms the learning philosophy and design framework into a coherent, competence-oriented route for learners. Their purpose is not only to provide orientation but to ensure that competence development unfolds in a deliberate and logically sequenced manner across the entire SMERALD system.

Learning pathways are necessary because SMEs typically operate with:

- limited time for structured training,
- heterogeneous digital competences across staff,
- diverse task profiles that require targeted upskilling,
- a need for immediately applicable results rather than abstract training.

Pathways address these realities by offering a structured progression that links modules, competences and real-world applications. They help learners understand:

- where their learning journey begins,
- what developmental steps follow logically,
- which competences they will acquire,
- how these competences translate into workplace tasks.

For SMEs, pathways provide a planning instrument that brings transparency to staff development. Instead of scattered training activities, organisations can implement coordinated learning strategies aligned with departmental functions and operational needs.

4.2 Foundations of Learning Pathways

The foundation of SMERALD pathways is the systematic alignment between competence development (Learning Fields) and workplace application (Action Fields). This structure ensures that learning remains both theoretically sound and practically relevant.

Conceptual background

Learning Fields define the competences that need to be developed for responsible and effective use of AI and data tools. They include knowledge components (e.g., AI principles), skills components (e.g., prompting), and attitudinal components (e.g., openness, responsibility).

Action Fields define the organisational areas where these competences are applied. They represent typical SME domains in which AI and data can immediately improve efficiency, clarity or quality.

By linking these two dimensions, pathways:

- avoid isolated competence development,
- ensure that modules build on each other in a logical sequence,
- enable immediate transfer of learning outcomes to real tasks,
- support modular and scalable course structures.

Table 1 — Combination Logic

Learning Field	Action Field	Resulting Pathway Example
AI Fundamentals	Documentation Workflows	From AI basics → structured AI-supported reporting
Data Literacy	Process Optimisation	From data reading → workflow improvement
Prompting & Tools	Internal Communication	From prompting → improved information flow
Responsible Use	Customer Interaction	From ethical use →

Learning Field	Action Field	Resulting Pathway Example
		transparent communication
Documentation Standards	External Communication	From templates → consistent outreach materials

This underlying logic ensures that pathways always reflect both competence requirements and workplace relevance.

4.3 Types of Learning Pathways

Learning pathways must accommodate the diversity of SME environments. SMERALD therefore defines pathway types that reflect different learning needs, organisational roles and development goals.

Conceptual background

Pathway types help trainers and SMEs determine which modules and competences are most relevant for specific roles or tasks. They also support differentiated development strategies across departments, ensuring that staff acquire the competences needed for their operational responsibilities.

Table 2 — Role-Based Pathway Examples

SME Role	Pathway Type	Competence Emphasis
Manager	Foundational + Hybrid	AI basics, responsible use, optimisation
Administrator	Action-Focused	Documentation, internal communication
Marketing Staff	Role-Specific	Prompting, visual/text communication
Project Officer	Hybrid	Documentation, data literacy, coordination
Customer Support	Action-Focused	Customer communication, responsible AI

These pathway types provide a logical starting point for designing tailored learning experiences that remain aligned with the SMERALD framework.

These categories offer orientation for designing learning routes while allowing customisation based on organisational and individual needs.

4.4 Mechanisms of Pathway Progression

Progression within SMERALD pathways is based on the principle that competence development unfolds incrementally and must match the learner's ability to apply new knowledge and skills in workplace contexts.

Background

Traditional training programmes often rely on linear progression or time-based advancement. SMERALD instead uses competence-based progression, where advancement depends on the learner's readiness to take on more complex tasks, reflect on their development, and apply competences confidently.

Progression typically involves:

- **Conceptual expansion:** moving from basic familiarity to understanding key principles.
- **Practical consolidation:** applying competences repeatedly across Action Fields.
- **Complex task handling:** integrating multiple competences in multi-step workflows.
- **Reflective growth:** evaluating personal development and identifying next steps.
- **Contextual adaptation:** adjusting pathway speed or depth based on SME needs.

This approach supports sustainable learning and prevents cognitive overload while ensuring that competences become operational in daily work.

4.5 Linking Pathways to SME Organisational Contexts

Learning pathways support organisational development by connecting competence-building efforts with departmental responsibilities and strategic priorities.

Background

SMEs often struggle with fragmented training practices that lack internal alignment. SMERALD pathways provide a structured approach to assigning relevant modules to staff, coordinating cross-team development efforts and ensuring that learning contributes meaningfully to digital readiness.

Table 3 — Departmental Alignment

Department	Priority Competences	Pathway Focus
Management	Responsible AI, fundamentals	Foundational + Hybrid
Operations	Data literacy, documentation	Action-Focused
Marketing	Communication, prompting	Role-Specific
Administration	Documentation standards, workflow integration	Action-Focused
Customer Service	Communication clarity, responsible use	Hybrid

This alignment allows SMEs to embed learning within their operational structures and long-term development strategies.

4.6 Role of Learning Pathways in the SMERALD System

Learning pathways ensure coherence and usability across the entire SMERALD framework. They translate theoretical design elements into structured, user-oriented development routes.

Background

The SMERALD system integrates multiple components: the learning philosophy, competence framework, design patterns and modular structure. Pathways serve as the binding element that connects these components into an implementable, navigable system.

At system level, pathways:

- provide a consistent competence progression logic,
- guide module sequencing and learner navigation,
- ensure alignment across CPD and platform modules,
- support scalability by enabling repeatable pathway structures,
- enhance usability for SMEs and trainers.

As a result, pathways transform SMERALD from a modular content library into a structured learning ecosystem.

Courses on the Platform

Overview of SMERALD Courses

This chapter provides a concise overview of the SMERALD courses available on the platform. It serves as an orientation tool for trainers and SMEs by offering short summaries of each course and indicating their position within the overall SMERALD learning system. Detailed operational descriptions and implementation guidance are provided separately in the ***Learning Suite Manual****.*

5.1 Overview and Purpose

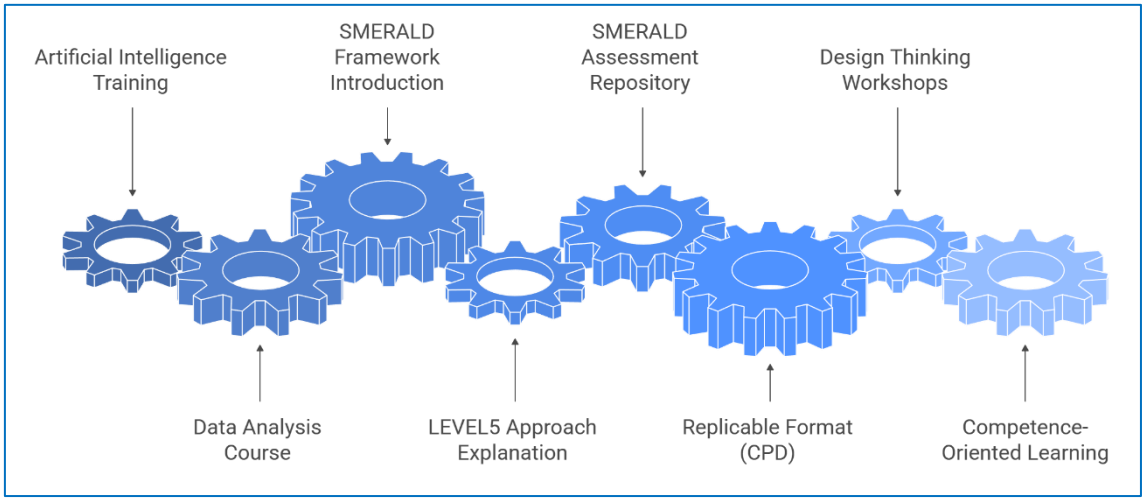
The platform contains a set of modular courses that are systematically derived from the SMERALD Learning Philosophy, the defined Learning Fields, Action Fields and the associated Didactic Patterns. Each course is designed as a modular learning unit that follows the SMERALD competence logic, ensuring coherence across knowledge-building, skills application and attitude development. The courses also reflect the project's core intention to provide scalable, adaptable and workplace-relevant learning opportunities for SMEs. As the conceptual and methodological foundations have already been explained in previous chapters, this section focuses on outlining how these courses operationalise the framework rather than repeating the underlying theory.

The purpose of this chapter is to:

- list the available courses in a clear format,
- provide short summaries (approx. three lines each),
- reference the Learning Suite Manual for operational guidance and technical implementation.

5.2 List of Courses

Below is the updated and complete list of courses available on the SMERALD platform. Each summary provides the core purpose, target audience and main learning contribution of the course.



1. **Artificial Intelligence**
   A modular, competence-based training designed for SME professionals and trainers exploring how AI tools can support daily business practices. The course follows a practical learning journey aligned with LEVEL5 and the SMERALD competence model, ensuring balanced development of knowledge, skills and attitudes.

2. **Data Analysis**
   Guides learners through the entire data lifecycle—from collection and cleaning to analysis and visualisation. The course enables participants to transform raw data into meaningful insights and actionable business decisions.

3. **SMERALD – A Competence Framework**
   Introduces the SMERALD Competence Framework based on the LEVEL5 taxonomy. Covers the development of knowledge, skills and attitudes across five quality levels and explains how competences are demonstrated and validated in practical SME contexts.

4. **The LEVEL5 Approach**
   Explains LEVEL5 as a holistic validation and learning system for competence-oriented training. Emphasises its suitability for informal and non-formal learning environments where structured learning plans are not predefined.

5. **The SMERALD Assessment Repository**
   A structured course for VET professionals and SME trainers introducing 16 competence-oriented assessment methods. Builds capability to design authentic, learner-centred assessments using tools such as the SMERALD Competence Framework, SPIDER reflection tool and LEVEL5 validation approach.

6. **The Replicable Format (CPD)**
   Presents the SMERALD CPD as a transversal and replicable training model. Designed to build awareness, curiosity and practical capability for integrating AI and data-driven thinking into professional practice without requiring expert-level knowledge.

7. **Facilitation of Design Thinking Workshops**
   Provides an introduction to the multi-step, iterative Design Thinking process. Explains techniques and tools used to facilitate each step, supporting innovation, problem-solving and user-centred idea development.

8. **Competence-Oriented Learning and Validation (COL&V)**
   Strengthens competences related to designing and delivering competence-oriented learning. Structured into four thematic learning units based on the REVEAL publication, with flexible, individually accessible modules.

Summary and Closing Reflections

This chapter provides a consolidated summary of the SMERALD Learning Design, bringing together the conceptual, structural and methodological elements described in the previous chapters. It is intended to give trainers, partners and SMEs a clear final overview of the approach while pointing towards its operational application in the Learning Suite Manual and CPD Concept Document.

6.1 Consolidated Overview of the SMERALD Approach

The SMERALD Learning Design is built on a coherent framework that integrates competence development, workplace relevance and modular learning structures. It provides SMEs with an adaptable system that aligns training activities with real organisational needs and supports sustainable digital transformation.

Key elements include:

- **Learning Philosophy** – establishes SMERALD as a competence-driven, practice-oriented and SME-focused model.
- **Learning Fields** – define the specific competences to be developed, covering knowledge, skills and attitudes.
- **Action Fields** – reflect the workplace contexts in which competences are applied.
- **Didactic Patterns** – ensure that learning is structured, accessible and aligned with practical tasks.
- **Learning Pathways** – translate the conceptual structure into structured development routes for different learner profiles.
- **Course Offer** – provides modular, interoperable and scalable learning units that operationalise the approach.

These elements form a comprehensive and interlinked system that ensures conceptual clarity and practical relevance.

6.2 System-Level Coherence

The SMERALD Learning Design creates coherence across learning activities through:

- clear competence progression,
- consistent use of Learning and Action Fields,
- alignment of CPD and platform modules,
- adaptable pathways for different SME roles,
- a shared reference point for trainers and organisations.

This coherence ensures that learning remains targeted, structured and transferable, even when implemented in diverse national, sectoral or organisational settings.

6.3 Practical Relevance for SMEs

The SMERALD approach is specifically tailored to the needs and constraints of SMEs. It provides:

- short, modular and flexible learning formats,
- immediate workplace application,
- transparent mapping of competences to roles and tasks,
- tools for meaningful assessment and reflection,
- a scalable model suitable for ongoing development.

This enables SMEs to build resilience, strengthen digital capacity and integrate AI and data competences responsibly.

6.4 Final Remarks

The SMERALD Learning Design offers a robust conceptual foundation for competence-oriented training in AI and digital data within SMEs. Its modularity and flexibility allow it to be used across sectors and adapted to various training contexts. The operational realisation of

this design—implementation, technical integration, assessment procedures and activity templates—is documented in the **Learning Suite Manual** and the **CPD Concept Document**.

Together, these resources form a complete learning system that supports trainers, SME professionals and organisations in implementing meaningful, structured and sustainable digital competence development.