AIRECH – AI for REsilient Crafting Hub

Erasmus+ KA220 Project no. 2025-1-IT01-KA220-VET-000351799

Guidelines for the replicability of the model

Work Package 2 – Construction of the Knowledge Base of conversational agents based on generative AI

Building the digital memory of trades of excellence: a Knowledge Base model for conversational agents based on generative Artificial Intelligence



Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Sommario

Project fact sheet 5

Preliminary methodological note 6

1. Introduction to the project 6

1.1 The context and the problem addressed 6

1.2 General and specific objectives of the project 7

1.3 The partnership: composition, roles and skills 8

1.4 The model: the logic of the “Resilient Crafting Hub” 9

1.5 The pilot production systems 10

1.6 Project architecture: work packages and timeline 10

1.7 Target group and beneficiaries 11

1.8 Why these guidelines: purpose and intended readers of the document 11

1.9 Tools 12

Infographic of the four Work Packages; Timeline 12

2. The Knowledge Base construction model: overview 13

2.1 What a “proprietary” Knowledge Base is, and why the project chose this approach 13

2.2 The three phases of the process 14

2.3 Cross-cutting guiding principles 14

2.4 Tools 15

Summary table of the three phases of the process; Concept map of the five cross-cutting guiding principles 15

3. Phase 1 – Initial alignment – AI Confidence 17

3.1 Objective of the phase and why it cannot be skipped 17

3.2 Who needs to be involved 17

3.3 How to organise AI Confidence: format, duration, mode 18

3.4 Expected outputs and how to verify them 18

3.5 Operational replicability checklist – Phase 1 – AI Confidence 19

3.6 Tools 19

Sample format/agenda for the initial alignment session; Working outline for the small-group exercise; Learning-assessment model and satisfaction questionnaire 19

4. Phase 2 – Collection and processing of multiformat material 22

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

4.1 Types of sources to map and collect 22
4.2 Collecting tacit knowledge: interviews with senior workers 22
4.3 The collaborative role between Vocational Training and business 23
4.4 Processing materials: cleaning, formatting, encoding 23
4.5 Source quality criteria 23
4.6 Ethical and safeguarding aspects in collection 24
4.7 Operational replicability checklist – Phase 2 – Collection and processing of material 24
4.8 Tools 24
Source classification grid by type; Semi-structured interview outline; Informed consent model; Material-processing checklist; Source quality assessment grid 24
5. Phase 3 – Development of the Knowledge Base on the platform 27
5.1 From raw archive to knowledge domain 27
5.2 The “system prompt”: structure and function 28
5.3 Managing copyrighted material and citing sources 28
5.4 The supervisory role of the AI development partner 29
5.5 Output of the phase 29
5.6 Operational replicability checklist – Phase 3 – Knowledge Base Development 29
5.7 Tools 30
Standard six-folder structure of the Knowledge Base; System prompt template (fixed and customisable part); The three content-management modes on the platform; TOPIC index file model 30
6. The ethical framework applied to the Knowledge Base 33
6.1 Why two separate checklists 33
6.2 Knowledge Base ethical checklist: the five categories 35
6.3 Chatbot behaviour ethical checklist (preview) 35
6.4 How to integrate the ethical check into the KB collection/development process 35
6.5 Tools 36
Knowledge Base ethical checklist; Chatbot behaviour ethical checklist (preview) 36
7. Critical success factors and recommendations for replicability 41
7.1 What worked well in the pilot cases 41
7.2 Issues encountered and how they were handled 41
7.3 Conditions for replicating the model in a new context 42

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

7.4 Possible sectoral and geographical adaptations 43

7.5 Tools 44

Summary table of success factors, issues and solutions; Self-assessment grid for replicability conditions; Sectoral adaptation matrix for the six-folder structure 44

8. Conclusions and link to the second package of guidelines 47

Bibliography and web references 49

1. Project resources 49

2. European Union regulatory and ethical references 49

3. Scientific references on AI ethics 50

4. Policy and programme references 50

5. Statistical data and scenario sources 51

6. International resources on artificial intelligence ethics 51

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Project fact sheet

Title: AI for REsilient Crafting Hub
Acronym: AIRECH
Programme: Erasmus+ KA220-VET – Cooperation Partnerships in Vocational Education and Training
National Agency: IT01 – INAPP (Italy)
Duration: 24 months — from 02/11/2025 to 01/11/2027
Total budget: € 250,000

Partnership (8 organisations, 4 countries)

Organisation	Country	Role
Cisita Parma scarl	Italy	Applicant / Coordinator and VET Provider
Tanara Giancarlo SPA	Italy	Business Partner (Prosciutto di Parma DOP)
Menų ir dizaino mokymo centras (MENDIZ)	Lithuania	VET Provider (jewellery course)
Kauno prekybos, pramonės ir amatų rūmai (KAUNAS CCIC)	Lithuania	Business Partner (Kaunas Chamber of Commerce, Industry and Crafts)
Strokovni izobraževalni center (SIC) Ljubljana	Slovenia	VET Provider (textile-fashion course)
Andreja Stržinar (AS Unikat)	Slovenia	Business Partner (textile-fashion)
Ex Machina Italia Srl	Italy	Technology partner – AI development expert
Stichting Fontys	Netherlands	Technology partner – AI ethics expert

The three pilot production systems
1. Prosciutto di Parma DOP (Italy) — protected-designation food supply chain
2. Jewellery/goldsmithing (Lithuania) — goldsmithing and jewellery-making
3. Textile-fashion (Slovenia) — making of historical costumes

Project objective
To build and test a "Resilient Crafting Hub" model: a network among VET providers, businesses, trade associations and technology partners to safeguard, preserve and pass on the knowledge of excellent craft trades at risk of not being handed down to the next generation, through conversational agents based on generative AI (one per production system), built on proprietary Knowledge Bases.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Preliminary methodological note

This package of guidelines responds to the need to model the process followed in Work Package 2 (WP2) of a large-scale European cooperation project among VET (Vocational Education and Training) providers, businesses and technology partners – that is, to make it transferable, understandable and reusable by third parties (other VET providers, businesses, technology partners, public decision-makers) – aimed at building the proprietary Knowledge Base (KB) of educational conversational agents based on generative Artificial Intelligence (GenAI).
The model described has been tested on three excellent European craft production systems, today exposed to the risk of a failure to pass on knowledge due to generational turnover difficulties. The document aims to turn the experience gained into a replicable pathway, structured in phases, roles, criteria and tools that other production and training contexts can adapt to their own specificities.
The guidelines cover the whole course of WP2, from the partnership's initial alignment on the technology used, through the collection and processing of craft-related material, to the development of the Knowledge Base (KB) on the proprietary platform. A specific chapter is dedicated to the ethical framework applied to building the KB.
The document does not address the subsequent phases of the conversational agent's life cycle, which are the subject of the second package of guidelines dedicated to WP3.

1. Introduction to the project

This section presents the project as a whole and is written to be understood by readers who consult only this document.

1.1 The context and the problem addressed

The project originates within a European scenario characterised by a growing mismatch between labour demand and supply, documented by the relevant European statistical sources (Eurostat) and recognised as a risk to the Union's development capacity and competitiveness. The ageing of the active population, reduced internal mobility, the mobility of young people towards other contexts and the contraction of the workforce all contribute to widening the gap between the skills required by the labour market and those actually available. The European Commission has responded to this scenario with an Action Plan

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

dedicated to tackling the shortage of labour and skills, which identifies raising the training and labour-market activation of women, young people and immigrants as one of the priority levers. Within this general framework sit excellent artisanal production chains, of strong historical, cultural and identity-related value for the territories in which they developed, today particularly exposed to the so-called demographic winter: the exit from the production system of the senior generations who hold the craft know-how is not matched by adequate generational turnover, with the concrete risk that the heritage of skills accumulated over time will be dispersed.
The project aims to address this specific risk, strengthening the synergy between the VET system and the production fabric that draws its workforce from it, trialling Generative Artificial Intelligence (GenAI) as a connecting tool.

1.2 General and specific objectives of the project

The project pursues a set of general objectives that can be traced back to three interconnected priorities:

- the digital transformation of VET teaching
- the inclusion of the most fragile and vulnerable target groups
- the contribution to the innovation of Vocational Education and Training systems

In line with these priorities, the project intends to:

- innovate, in a digital, inclusive and attractive way, the teaching of the VET organisations that train the skills for at-risk artisanal production systems
- create a resilient hub model in which VET providers, technology partners, businesses and business associations collaborate to ensure the continuity of knowledge at risk of not being passed on
- introduce into teaching GenAI-based tools capable of preserving such knowledge and making it usable as a learning object
- develop in teachers and students the emerging digital skills linked to a correct, responsible and ethical use of AI.

These general objectives are linked to the specific objectives of the operational work packages:

- build the KB for the conversational educational agents (the subject of WP2, documented here)
- train the agents through prompting, test them, validate them on a technical and ethical basis and publish them on the web (the subject of WP3 and of the following package of guidelines)
- disseminate the project's results to a wide audience in order to multiply its impact and replicability potential.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

The logical thread running through the entire project design is therefore linear: from a specific need – the risk of knowledge not being passed on – an objective follows (the digital patrimonialisation of know-how through GenAI), and from this a concrete result follows (conversational agents equipped with a proprietary KB for passing on knowledge to younger generations, innovating VET teaching).

1.3 The partnership: composition, roles and skills

The partnership is organised according to a structure designed to represent, in a balanced way, all the components needed to implement the model: general coordination, the VET system, the business system and the technology-expert system.

The table below summarises the type and functional role of each component.

Partner type	Functional role in the project			Indicative number
	WP2	WP3	WP4	
Coordinating body (Applicant)	General coordination, quality management, dissemination, drafting of the multilingual guidelines for WP2	General coordination, dissemination, drafting of the multilingual guidelines for WP3	General coordination	1
VET Provider	National contact for material collection and KB development in its own country; involvement of teachers and students	Conducting the training and testing trial in its own country; co-drafting of the validation report	Leading organisation of the multiplier events in its own country	1 per country involved
Business Partner (individual centres of excellence or Trade Associations)	Supply of materials, production specifications and access to senior workers who hold the know-how; active collaboration with the VET Provider	Participation in the testing groups in collaboration with the VET Provider; contribution to drafting the validation report	Participation as a testimonial at the multiplier events in its own country	1 per country involved
Technology partner – AI development expert	Conducting the initial alignment, provision of the platform,	Remote technical support; validation of validation reports and optimisation of	Participation in the multiplier event in its own country	1

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Partner type	Functional role in the project			Indicative number
	WP2	WP3	WP4	
	technical supervision of KB development	the models; leader of publication on the web		
Technology partner – AI ethics expert	Definition of ethical criteria, validation of the model's ethical aspects, contribution to the ethical framework applied to the KB	Remote support; leader of model validation, defining the criteria and format of the validation reports (drafted by the VET-Business Partner pairs)	Leader of the multiplier event in its own country	1

The partnership combines organisations with many years of experience in managing European cooperation projects and organisations accessing this type of programme for the first time, according to a model that values the transfer of skills between more experienced partners and partners newer to transnational collaboration. In the specific case of the AIRECH project, the composition also reflects three different vantage points on the reference production system: the small artisan workshop-enterprise, the structured medium-sized enterprise, and the trade representative body at territorial level.

1.4 The model: the logic of the "Resilient Crafting Hub"

The model underlying the project is based on a four-part network that stably links four types of actors: the VET system, the business system, the trade associations representing the production sector, and two technology partners with GenAI expertise, the former as developers, the latter as ethical methodologists.

This network configuration, called the "Resilient Crafting Hub", is based on the premise that safeguarding an at-risk trade cannot be entrusted to a single actor, but requires structured collaboration among those who train new generations, those who hold the production know-how, those who represent collective and supply-chain interests in the territory, and those who provide the enabling technology, ethically validated.

The logic of the model provides for Vocational Education and Training to act as a bridge between artisanal knowledge – often tacit and not formalised – and the new generations who are learning, while the technology partner on one hand and the ethics-expert partner on the other translate this knowledge into a structured, digital, secure, ethical and inclusive knowledge domain, queryable through a proprietary conversational agent.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

The project shows how trade associations also play a role in mediation and in widening the network towards other businesses in the same sector, thereby broadening both the base of available materials and testimonies and the project's impact and the perception of the AI tool as useful and safe.
This architecture is designed to be transferable to other sectoral and geographical contexts that present a similar network structure, even if made up of organisations of a different nature and size.

1.5 The pilot production systems

The model has been tested on three European artisanal production systems, which share a high historical-cultural value, a strong link with their territory of origin, and the same risk of knowledge not being passed on, even though they belong to different production fields.

The table below presents the three cases in comparative form, indicating the types of partner involved in each context.

Production system	Distinctive features	Partners involved per country
Artisanal food production under a protected designation of origin (PDO)	Historic meat-processing supply chain in a district of agri-food excellence; codified production specification	VET Provider and Business Partner of the Prosciutto di Parma supply chain
Goldsmithing and jewellery-making	Centuries-old technique of metalworking and stone-setting	VET Provider in the goldsmithing sector and trade representative body
Making of historical costumes	Textile design, weaving, knitwear, embroidery, felting, making of garments using old patterns and techniques	VET Provider in the textile sector and Business Partner in the fashion/textile field

1.6 Project architecture: work packages and timeline

The project is organised into four work packages. The first is dedicated to management and general coordination. The second, the subject of this document, concerns the construction of the conversational agents' KB. The third concerns training through prompting, testing, technical-ethical validation and publication of the agents on the web. The fourth is dedicated to multiplier events, aimed at disseminating the results to a wide audience of potential parties interested in replicability.
Work package 2, documented here, is positioned in the first year of the project's life cycle (which lasts two years), immediately after the kick-off, and precedes work package 3, dedicated to

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

training and publishing the agents. Within it, three phases can be distinguished in logical sequence, described in the following chapters:

- an initial partnership alignment on the technology used (AI Confidence, activity 2.1)
- a phase of collecting and processing craft-related material (activity 2.2)
- a phase of developing the AI agent's Knowledge Base (one per trade) on the platform (activity 2.3)

At the end of the work package, these guidelines will be drafted, subject to review and validation by all partnership members before release as an Open Educational Resource (OER), and published on the Erasmus+ Project Results Platform and other open, free dissemination channels.

1.7 Target group and beneficiaries

The project's direct beneficiaries fall into three macro-categories:

- The VET system: head teachers or heads of training bodies, subject teachers, and students in the final years of the VET pathway, including a share of vulnerable learners (disability, specific learning disorders, migrant background, language barriers, socio-economic disadvantage or other forms of fragility)

- The business system: managerial or technical figures with distinctive trade know-how, and senior workers who hold the tacit knowledge of the production process

- Experts from the technology partners, involved in the development and ethical supervision of the technology used

Indirect beneficiaries include other VET systems not directly involved in the partnership, other artisanal supply chains exposed to similar risks of knowledge loss, and public decision-makers responsible for education, vocational training and employment policies, who are potential recipients of the project's results for the purposes of steering educational and employment policy.

1.8 Why these guidelines: purpose and intended readers of the document

The document is aimed at third parties interested in replicating, in whole or in part, the model for building a proprietary KB for conversational agents based on generative AI in education and training: other VET organisations, other craft sectors at risk of losing their knowledge, other national and European contexts. The guidelines have an operational purpose: to provide a methodological pathway, a set of quality criteria, and a set of working tools (checklists,

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

templates, models) that make it possible to replicate the process even without prior experience in using this technology.

1.9 Tools

Infographic of the four Work Packages; Timeline

1. Infographic of the four Work Packages

WP	Content	Sequence relationship
WP1	Project management and general coordination	Cross-cutting, covers the entire life cycle
WP2 (the subject of these guidelines)	Construction of the conversational agents' Knowledge Base	Divided into 3 phases (Initial alignment → Collection and processing → KB development)
WP3 (second package of guidelines)	Training through prompting, testing, technical-ethical validation, web publication	Follows directly from WP2: requires an already-developed KB as input
WP4	Multiplier events and dissemination of results	Follows WP3, closes the project cycle

2. Timeline

Work Package / Activity	Duration
WP1 – Project management	M1–M24 (entire life cycle)
Kick-off meeting (remote)	M1
WP2 – Construction of the Knowledge Base	M1–M10
2.1 Initial alignment (AI Confidence)	M1–M2
2.2 Collection and processing of material	M3–M7
2.3 Development of the KB on the platform	M6–M10
Transnational project meeting (remote)	M8
Release of WP2 Guidelines (this document)	M9–M10
WP3 – Training, testing, validation and publication	M11–M20
3.1 Training and testing	M11–M15
Transnational project meeting (in person)	M15
3.2 Validation	M16–M20
3.3 Publication on the web	M19–M20
Release of WP3 Guidelines (second package)	M19–M20
WP4 – Multiplier events	M21–M24
Transnational project meeting (in person)	M21

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

2. The Knowledge Base construction model: overview

This section bridges the general introduction and the operational chapters, and goes into the specific detail of WP2.

2.1 What a "proprietary" Knowledge Base is, and why the project chose this approach

A conversational agent based on GenAI can be built in two profoundly different ways. In the first case, the agent draws on an open knowledge domain, typical of generative systems freely available on the web, without close control over the sources and therefore exposed to a high risk of inaccurate, irrelevant answers not consistent with the objectives, methods and responsibilities of teaching. In the second case, the agent draws exclusively on a proprietary, accurate and secure KB: a closed knowledge domain, built ad hoc from sources and materials selected and validated by those who best know the reference sector.
The model tested in the AIRECH project and described in these guidelines adopts the second approach. The choice is motivated by four sets of reasons: reliability of the answers provided by the agent, confined to the informational scope defined by the KB; reduced risk of hallucinations and bias in the answers; the possibility of exercising precise ethical control over the content the agent uses; protection of company know-how, which remains confined within a non-public domain not reusable by parties outside the project, while also remaining reshapeable and expandable.

The table below summarises the comparison between the two approaches:

Dimension	Open KB (generic domain)	Proprietary KB (adopted model)
Control over sources	Absent/limited	Sources selected and validated by sector experts
Reliability of answers	High risk of inaccurate or irrelevant answers	Answers confined to the defined informational scope
Risk of hallucinations/bias	High	Reduced
Ethical control over content	Difficult to exercise precisely	Precise ethical control possible
Protection of know-how	Absent (public domain)	Know-how confined within a non-public domain, but reshapeable and expandable

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

2.2 The three phases of the process

The KB construction process is divided into three phases in logical sequence, designed to be applied in any new replication context regardless of the sector or trade concerned:

- Phase 1 – Initial alignment ("AI Confidence"): a moment of shared understanding and training among all those involved, preliminary to starting the material collection

- Phase 2 – Collection and processing of multiformat material: identification, collection, cleaning and encoding of the knowledge sources relating to the trade in question

- Phase 3 – Development of the KB on the platform: transfer of the processed materials from the proprietary cloud repository to the technology platform through automatic import, and construction of the conversational agent's knowledge domain

This three-phase structure constitutes the model's exportable core: its application does not depend on the specific characteristics of the trade being replicated, but only requires adapting the content handled in each phase to the new sectoral context.

2.3 Cross-cutting guiding principles

Five principles run across all three phases of the process, regardless of the sector or trade concerned:

- Ethics and regulatory compliance: respect for the ethical principles applied to building the KB (detailed in chapter 6) and compliance with European regulations on AI and personal-data protection.

- Inclusivity of target groups: constant attention to ensuring the participation of everyone involved in collecting and processing the materials, including the most vulnerable profiles among the students involved.

- Quality and traceability of sources: adoption of explicit criteria for assessing the reliability, relevance and completeness of the materials collected, and maintaining traceability of their origin.

- Structured collaboration between VET and business: clear definition of roles and responsibilities in collecting and processing the materials, valuing the contribution of teachers, students and craft masters.

- Technical and ethical supervision by the expert partners: the constant presence, even remotely, of two complementary specialist skills – technical and AI ethics – which support the process in distinct, non-overlapping roles. The technology partner ensures the technical coherence of the system and prevents errors in building the knowledge domain; the ethics-expert partner

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

makes available to the partnership its own reference methodological framework (Moral Design, see §6.1), introduced from the initial alignment phase onward, and translates its principles into a concrete operational tool – the Knowledge Base ethical checklist (see §6.2) – applied by each team throughout the collection and development of materials, thereby continuously, not just initially, verifying compliance with the principles of transparency, non-discrimination and respect for human dignity; it also co-defines the validation criteria for the conversational agents used in the next phase (in the AIRECH project this role is assigned, in WP3.2, precisely to the AI ethics-expert partner). The two figures thus work alongside one another without overlapping: the former oversees the technical coherence of the system and the development of the AI agents, the latter the value-based and methodological coherence of the choices made throughout the process of building the agents' knowledge domain.

2.4 Tools

Summary table of the three phases of the process; Concept map of the five cross-cutting guiding principles

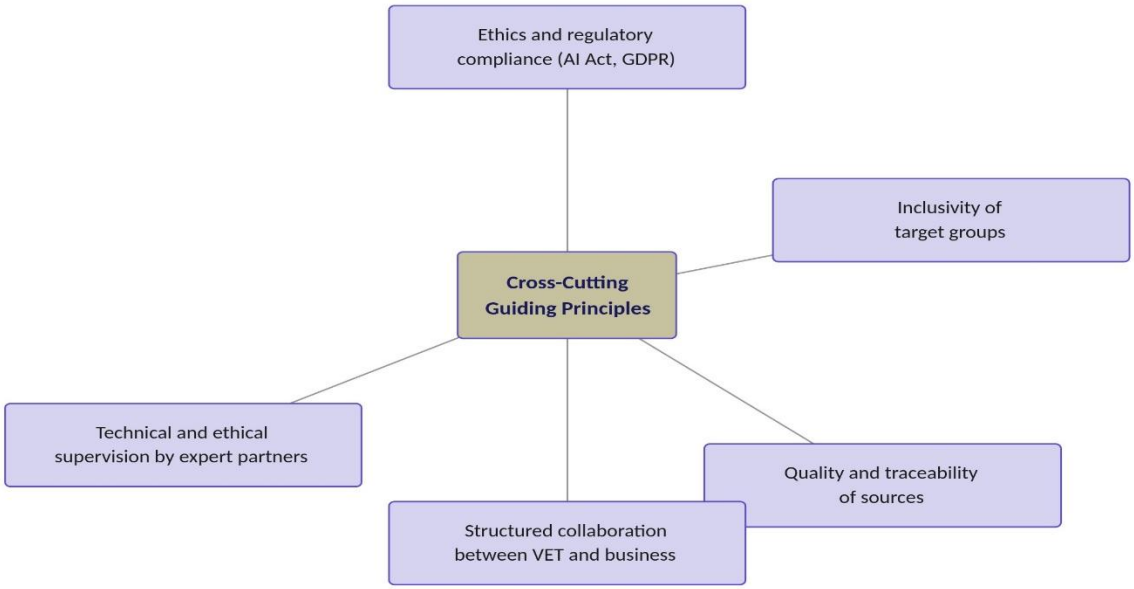
1. Summary table of the three phases of the process

Phase	Content	Expected output
Phase 1 – Initial alignment (AI Confidence)	Shared understanding and training among all those involved, preliminary to collecting materials	Shared alignment on technology and objectives
Phase 2 – Collection and processing of multiformat material	Identification, collection, cleaning and encoding of knowledge sources relating to the trade	Multiformat materials collected and processed
Phase 3 – Development of the KB on the platform	Automatic transfer of processed materials from the proprietary cloud repository to the platform, and construction of each AI agent's knowledge domain	KB developed, ready for training (WP3)

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

2. Concept map of the five cross-cutting guiding principles



Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

3. Phase 1 – Initial alignment – AI Confidence

This chapter describes how to replicate the moment of shared understanding and initial training among those involved, before starting the collection of materials.

3.1 Objective of the phase and why it cannot be skipped

The initial alignment phase responds to a need that recurs in contexts intending to introduce a GenAI system into teaching for the first time: the presence of a digital-skills gap on both the VET side and the business side, which makes a shared moment of understanding necessary before starting any operational activity (led by the technology partner). Skipping this phase exposes the project to the risk of misunderstandings about what the conversational agent can and cannot do, of misaligned expectations among partners, and of ethical constraints not adequately shared from the outset.
AI Confidence therefore serves to close the initial digital-skills gap of those involved, to share the project's purposes and the resulting ethical constraints, and to jointly formalise the tool's objectives and expected results, both in terms of professional-knowledge patrimonialisation and in terms of supporting students' learning and teachers' instruction.

3.2 Who needs to be involved

Replicating the phase requires the presence of a minimum set of profiles:

- a VET contact person, responsible for the link between the project and the teaching of the VET organisation involved
- a business contact person, chosen among figures with distinctive trade know-how (entrepreneurial, managerial or technical), responsible for the link between the project and the production system
- a GenAI technology expert, responsible for presenting the platform and the type/characteristics of the agent and its operating and use modes
- an expert in ethics and the impacts related to the use of AI in teaching, responsible for sharing the constraints to be respected on this front throughout the whole process

Each of these profiles brings a complementary and indispensable perspective: without the VET contact person, the phase would lose its link with teaching; without the business contact person, access to trade know-how would be missing; without the technology expert, participants would not gain the necessary mastery of the tool; without the ethics expert, the project would risk

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

proceeding without a shared frame of reference on the limits, responsibilities of use, and impacts of AI.

3.3 How to organise AI Confidence: format, duration, mode

The phase can be organised by alternating remote and in-person sessions. It is good practice to include an initial videoconference part, possibly accompanied by moments of individual self-learning, dedicated to presenting the platform and the agent's structure, its operating mechanisms and its potential, followed by an in-person part dedicated to joint work among the partners. In the in-person session, it is useful to include small-group work, organised by country or production context, in which the pair formed by the VET contact person and the business contact person tries out building a simulated agent before starting development of the real one. The content to be covered in the AI Confidence phase concerns:

- the characteristics and operation of the technology platform chosen for developing the conversational agent
- sharing and formalising the AI agent's intended purposes, linked to the project's objectives, with particular reference to its use in VET for teachers' instruction and learners' learning
- the content and the expected interaction objectives with the agent
- the tool's multilingual functionality (which increases usability and replicability)
- the whole path for creating the agent, from the KB (see chapter 5) to prompting, testing and release
- the type and the response parameters the agent must guarantee
- the legal and ethical aspects connected to the use of AI, including social and teaching/training implications
- an introduction to the Moral Design framework as a shared ethical frame, preliminary to the checklists presented in chapter 6.

3.4 Expected outputs and how to verify them

At the end of AI Confidence, the tool's objectives and expected results must be formalised and shared by all the partners involved. This outcome can be verified through different tools: a learning-assessment moment, aimed at checking that the content covered has actually been acquired by participants, and a satisfaction questionnaire, aimed at gauging the level of engagement and satisfaction expressed by participants regarding the phase carried out. A positive outcome from these verification tools is the condition for proceeding to the next phase of the process.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

3.5 Operational replicability checklist – Phase 1 – AI Confidence

- A contact person has been identified for each of the four required profile types (VET, business, technology, ethics)
- A programme alternating remote and in-person moments has been defined, with agreed content
- Practical small-group work on a simulated case has been planned, before starting the real collection of materials
- The tool's objectives and expected results have been formalised and shared with all partners
- A learning-assessment tool and a satisfaction questionnaire have been prepared

3.6 Tools

Sample format/agenda for the initial alignment session; Working outline for the small-group exercise; Learning-assessment model and satisfaction questionnaire

1. Sample format/agenda for the initial alignment session

Module	Mode	Content
Session 1	Remote (videoconference)	AI fundamentals: history, key concepts, ML vs traditional programming, LLM, RAG, hallucinations and bias, AI Act. Assessment quiz + use case
Following sessions (one per team/replication context)	Remote, interactive	Practical exercise led by the team leader: creating the agent, prompt, content, functions, publication, group testing
Final module	In person (2 days, at the coordinating body)	Day 1: project management + advanced mastery of the platform. Day 2: introduction to the next phase (material collection), planning and responsibilities

2. Working outline for the small-group exercise

As indicated in §3.3, in the in-person session it is useful to include small-group work, organised by country or production context, in which the pair formed by the VET contact person and the business contact person tries out building a simulated agent before starting development of the real one.

Objective: to allow each VET-business pair to try out, first-hand, on a simulated case based on their own organisation, the first steps of building a conversational agent, before tackling development of the real agent.

Expected results: an initial body of multiformat material collected by each group on its own organisation, based on the content indicated in the table below, and a practical test of prompting and interaction simulation with the agent, useful for letting the VET-business pair

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

experience first-hand how the platform works, in view of developing the real agent in the following phases.

Field	Content to be collected
Organisation presentation	Type, field of activity, identity elements to communicate
Materials available immediately	Presentations, website, documents already available in digital format
Existing media channels	Video, social media/YouTube channels, images
Presentation text in the working language	Brief description of the organisation, for building the demonstration agent

3. Learning-assessment model and satisfaction questionnaire

A. Learning assessment – structure

Parameter	Value
Duration	30 minutes
Format	Multiple-choice questions (4 options)
Pass threshold	Maximum 5 errors out of 20 questions (per module)

Thematic areas covered (representative example per area):

Area	Sample question
Historical and conceptual foundations of AI	E.g. when the term “Artificial Intelligence” was coined, and by whom
Machine learning and neural networks	E.g. the difference between traditional programming and machine learning
Language models (LLM)	E.g. what tokens are, the context window, hallucinations
AI risks and ethics	E.g. bias and algorithmic discrimination, AI Act requirements
Prompt engineering	E.g. the goal of prompt engineering, few-shot techniques, chain-of-thought
RAG and functions	E.g. what RAG means, the benefits of using tools/functions with LLMs

B. Satisfaction questionnaire

Section	Content
Personal details	Home organisation; activities attended (online sessions / self-learning / in-person meeting); self-learning hours actually completed versus those planned
Learning (1-5 scale, “not at all” → “completely”)	Acquisition of the theoretical concepts presented; acquisition of practical skills; ability to apply what was learned to the project's objectives
Training process (1-5 scale)	Opportunity to ask questions and clarify doubts; achievement of the expected objectives; level of engagement and interest; effectiveness of the teaching method
Overall satisfaction (1-5 scale)	General satisfaction with the experience; effectiveness of the project coordinator's coordination and communication; satisfaction with the

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

	running of any in-person meeting; adequacy of the coordinator's skills during the meeting
Open feedback	Free comments and suggestions for the coordinator and/or the technology partners

Note: all questions require an answer

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

4. Phase 2 – Collection and processing of multiformat material

Chapter representing the methodological core of the patrimonialisation of trade know-how.

4.1 Types of sources to map and collect

The material relevant to building each trade AI agent's KB can be traced back to four macro-categories, adaptable to other trades by changing their specific content while keeping the classification structure:

- company documentation and production specifications, including manuals, procedures and internal technical documentation

- interviews with senior workers holding professional know-how, identified by the Business Partner

- teaching materials used in VET and relevant to the trade under investigation, including textbooks and existing teaching resources

- other documentary sources or data, even unstructured, deemed consistent with building the KB for the specific trade

Mapping the available sources should be carried out at the start of the phase, jointly involving the VET contact person and the business contact person, so as to identify from the outset any gaps to be filled by producing new material, in particular through interviews with senior workers or ad hoc videos, for example on the stages of the production process.

4.2 Collecting tacit knowledge: interviews with senior workers

Interviews with senior workers are the model's distinctive element and the core of the patrimonialisation process, since they make it possible to extract tacit, experiential knowledge that is rarely expressed in written documents or formal specifications. Identifying key informants should favour people with long direct experience in the production process, ideally close to leaving the production system, and representative of the different stages or techniques of the trade in question.
The interview structure should be designed to bring out experiential knowledge rather than information already available in documentary form: good practices developed over time, solutions to recurring problems, sensory or qualitative criteria that are difficult to

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

formalise, anecdotes and historical memories linked to the trade. Before proceeding with collection, it is necessary to obtain the informed consent of the interviewee and clearly define how the personal data collected will be processed.

4.3 The collaborative role between Vocational Training and business

The collection of materials is based on a division of tasks between the VET organisation and the Business Partner. The former actively involves teachers and students in the collection and interview activities, valuing the strong added teaching value that this experience brings for the students themselves. The latter facilitates access to company documentation and senior workers, including from other production entities in the same sector, possibly with the mediation of a trade association. Direct student involvement in collection and interviews should not be seen merely as an organisational arrangement, but as an integral part of the learning experience envisaged by the model.

4.4 Processing materials: cleaning, formatting, encoding

Once collected, the raw material must be prepared for entry into the platform through a process of cleaning, format standardisation and encoding. This technical step often requires specific digital skills, not always evenly present across all the teams involved: it is therefore advisable to identify, for each team, at least one person with digital skills dedicated to transforming the materials (for example from audio/video recording to text transcription, or from breaking down presentations to converting non-editable documents into formats “digestible” by the platform). This phase involves an important function of remote support from the AI-development technology-expert partner, which can be delivered through ad hoc meetings with individual teams/countries.

4.5 Source quality criteria

Assessing the adequacy of the material collected for each production system is based on four criteria: reliability and authoritativeness of the documentary source, relevance of the information contained to the trade's thematic scope, completeness of the material collected with respect to the various stages or techniques of the production process, and consistency of the content with the tool's teaching objectives. It is good practice to organise the collected material into thematic clusters, so as to make any areas of over-representation or informational gaps evident before proceeding to the KB development phase.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

4.6 Ethical and safeguarding aspects in collection

The collection phase entails specific responsibilities on the ethical level and for safeguarding those involved: managing the intellectual property of company know-how, to be clarified beforehand with the Business Partner; the informed consent of the workers interviewed, to be obtained before collection; the protection of any personal data collected, to be handled in line with the relevant European regulations; attention to bias and representativeness of the material collected, with particular regard, for example, to an adequate variety of gender and origin among the informants involved.

4.7 Operational replicability checklist – Phase 2 – Collection and processing of material

- The available sources have been mapped for each of the four categories identified, highlighting any gaps
- The key informants for interviews with senior workers have been identified, with prior agreement with the Business Partner and informed consent
- The division of tasks between the VET Provider and the Business Partner has been defined, with the direct involvement of teachers, students, business owners and senior workers, and any officials from business associations or other trade stakeholders
- At least one person with an adequate level of digital skills to carry out the processing of materials has been identified for each team
- The material collected has been assessed against the four source-quality criteria and organised into thematic clusters
- The aspects of intellectual-property protection, privacy and representativeness of the material have been checked

4.8 Tools

Source classification grid by type; Semi-structured interview outline; Informed consent model; Material-processing checklist; Source quality assessment grid

1. Source classification grid by type

No.	Collection date	Source type	Title/ Description	Author/ Source	Language	Format	Category/ Content	Link

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

2. Semi-structured interview outline

Section	Content
Context	Sector/trade; type of craft work; context (artisan workshop / structured business / other); role and area of expertise; years of experience
Work processes and techniques	Description of the complete step-by-step process; knowledge needed for each stage; essential practical skills; stages requiring more experience
Knowledge and mastery	Skills that can only be learned through direct experience; signs/indicators of correct progress in the work; the difference between a true master and a worker
Quality and assessment	Criteria for recognising a job well done; technical or regulatory standards to be respected; consequences of not meeting the standards
Safety and rules	Main risks of the trade; errors/behaviours that compromise the result; essential safety practices
Mistakes in the trade	Common beginner mistakes; a significant mistake experienced first-hand and the related lesson learned
Transmission and learning	Where to start when teaching the trade to a young person; aspects requiring practical demonstration; resources recommended to an apprentice
The future of the trade	Risks of the trade being lost if not passed on; the most important value to preserve for the future
Closing	Date and place of the interview

3. Informed consent model

Section	Content
Purpose of the interview	Explanation of the purpose: preserving trade knowledge through interviews as a source for a generative AI system and related knowledge tools
Use of the material	The content will be processed, summarised and abstracted together with other sources; the words will not be reproduced verbatim unless otherwise agreed; the AI system will generate new content and will not act as a searchable archive of the interview
Data processing	The interview may be recorded and transcribed; secure storage, use limited to the project and related research/development activities; access restricted to the project team and authorised collaborators
Voluntary participation	The right not to answer individual questions or to stop the interview at any time
Permission	Statement of understanding and authorisation to use the content as described
Signature	Date, participant's printed name and signature

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

4. Material-processing checklist

Check	Criterion
Text format	Files converted into text format, PDF with selectable text, or Word/RTF/HTML
Scanned material	Passed through OCR; readability of the extracted text checked
Audio/video material	Transcribed into text format before entry
Length of content	Text split into blocks that are not excessively long, for effective processing
Non-textual material (images, tables)	Accompanied by a textual description of the content

5. Source quality assessment grid

Criterion	Rating (High / Medium / Low)	Notes
Reliability and authoritativeness of the source		
Relevance to the trade's thematic scope		
Completeness with respect to the stages/techniques of the production process		
Consistency with the tool's teaching objectives		

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

5. Phase 3 – Development of the Knowledge Base on the platform

Chapter describing the transition from the material collected to the structured KB.

5.1 From raw archive to knowledge domain

Once processed, the materials are deposited in a proprietary cloud repository, shared among all partners (e.g. Google Drive), organised according to a standard structure, applicable to any replicated trade, divided into six thematic folders. From here, an automatic import mechanism set up by the technology partner periodically retrieves the materials and makes them available within the conversational agent's platform (see §7.2): the technology provider therefore does not receive the materials through direct manual upload to the platform, but through automatic synchronisation from the proprietary cloud repository. The 6 thematic folders are:

- Persona, dedicated to the identity and character of the artisan-mentor figure represented by the agent
- Production Process, dedicated to the stages or techniques of the production process and the informational core of the KB
- Narrative Style, dedicated to the agent's communication tone
- History/Historical Background, dedicated to the historical-cultural context of the trade
- Standards, dedicated to production specifications and any sector certifications
- Assessment, dedicated to the question bank and the scenarios for assessing the skills acquired

On the technical side, the documents imported into the platform from the proprietary cloud repository are converted into a structured text format (Markdown) and made callable as functions within the conversational agent's prompt, so as to form the informational scope within which the agent can work out its answers to the interactions it receives.
Operationally, the technology platform used provides three complementary ways of managing content:
- manual creation of multimedia content (useful for images, PDFs and videos to be shown in response to specific questions)
- bulk import of text documents, automatically turned into question-answer pairs relevant to the content uploaded: each imported piece of content is associated with one or more question variants and recall keywords, so that when the agent receives a query matching one of them, it responds by returning the matched material (for example, content on goldsmithing can be retrieved through several phrasings of the same question or through keywords relevant to the technique described)

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

- access to content through function calls, which keeps the document's original structure without breaking it down, and is the mode consistent with the TOPIC-based retrieval mechanism (see §5.7). In this mode, text documents are normalised to PDF format before upload. At the end of entering all the materials for a production system, an index file is also created, to be placed in the Production Process folder, summarising the complete list of TOPICs recorded: this file supports the correct retrieval of the multimedia content associated with each subject.

5.2 The "system prompt": structure and function

For the sake of the model's replicability, it is important to clarify that the system prompt and the Knowledge Base are two distinct, complementary elements: the KB defines the knowledge domain the agent can draw on, while the system prompt defines its identity, behaviour and relational style. The model provides for a system-prompt template divided into two parts: a fixed part, common to all the agents developed in the project, and a customisable part for each context, which defines name, identity, character traits, opening and closing conversation style, and behavioural traits to avoid.

A point relevant to replicability is the conversational agent's multilingual nature: the end user can address the chatbot in the national language of the context in which it was developed, while English remains the common language of the technical infrastructure, consistent with the fixed part of the system prompt described above. This setup allows each team to customise the interaction in its own reference language without having to modify the common technical system, thereby ensuring both the model's uniformity and its multi-country usability and transferability.

As an illustrative example, one of the agents developed in the AIRECH project, relating to the food sector, was built around a narrative identity consistent with the trade it represents (Prosciutto di Parma processing): patience, sensory acuity and the role of a mentor towards those who are learning. This type of characterisation, built from the trade's distinctive traits rather than generic elements, can serve as a useful reference for customising the system prompt in other replication contexts.

5.3 Managing copyrighted material and citing sources

Managing material covered by copyright is a recurring challenge in this type of process. The practical rule adopted in the model provides that the use of copyrighted material must occur exclusively through limited quotations or faithful abstracts, with explicit mention of the source, giving priority to original material or material released under an open licence. In keeping with this principle, it is advisable for the answers provided by the conversational agent to always cite the original source from which the information is drawn, so as to ensure transparency and traceability in the interaction with the end user and to encourage further study and new research on the subject.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

5.4 The supervisory role of the AI development partner

During this phase, the AI-development technology-expert partner acts as a technology methodologist and technical validator of the informational system built by each team, aimed at preventing inconsistencies in the KB structure and issues in data ingestion, and ensuring its overall soundness and structural uniformity. This methodological-guidance and supervisory function is exercised mainly remotely, including through consultancy sessions dedicated to individual VET-Business teams based on their needs, issues and customisations, while keeping ownership of the process with each national context and preserving the system's uniformity (which is essential for replicability).

5.5 Output of the phase

At the end of the phase, a KB is considered “developed” when the materials collected and processed have been imported into the platform from the proprietary cloud repository according to the six-folder structure described, the informational scope is consistent with the teaching objectives defined in the initial alignment phase, and the knowledge base is ready for the next training phase through prompting, which is the subject of the second package of guidelines (WP3). This phase of the model provides for the development of one KB for each production system involved.

5.6 Operational replicability checklist – Phase 3 – Knowledge Base Development

- The processed materials have been organised according to the standard six-thematic-folder structure
- The system prompt has been prepared, in both its common fixed part and its part customised for the specific context
- The handling of copyrighted material has been checked, with explicit citation of sources.
- Technical supervision of the overall system by the AI-development technology-expert partner has been carried out.
- The KB is consistent with the teaching objectives defined in the initial alignment phase and is ready for the training phase.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

5.7 Tools

Standard six-folder structure of the Knowledge Base; System prompt template (fixed and customisable part); The three content-management modes on the platform; TOPIC index file model

1. Standard six-folder structure of the Knowledge Base

System prompt (fixed)	Knowledge base RAG (retrieved)
1. Persona	
Character definition • Name, era, craft role, epithet • Personality traits, sensory skills • Mission: teaching the trade with a lived-in voice • Language rules, handling off-topic subjects	**Historical sources on the character** • Biographical documents, oral traditions • Anecdotes, remembered episodes • Domain-specific archive documents • → "persona" folder: character_history_file1, character_history_file2
2. Narrative style	
Style instructions • Register: formal / dialectal / poetic • Tone mode: mentor / narrator / examiner • Emphasis on technical/sector vocabulary • Links the trade to place and cultural identity	**Stylistic reference corpus** • Period texts, guild manuscripts • Ethnographic interviews, proverbs • Regional expressions, technical glossary • → "narrative" folder: character_history, style_corpus
3. Production process (main learning path)	
Sequence of stages and navigation logic • Ordered list of stages (Prosciutto example) • Rules for transitioning between stages • Activation criteria for each teaching block • Keywords for cross-cutting modules • Rules: never skip stages, never invent technical data	**Technical content per stage** • Parameters: time, temperature, materials • Sensory descriptors per stage • Common mistakes and corrections • Tools and technical glossary per stage • → "process" folder: content_phase_one, content_phase_two • → "process" folder: lookup_media, style_corpus
Prosciutto: salting → resting → lard coating → curing. Costumes: cutting → weaving → embroidery → assembly. Jewellery: casting → filing → stone-setting → finishing.	
4. History, territory and cultural identity	
Narrative framing instruction • Links the trade to the narrative setting • Reference to heritage where contextually relevant • Weaves history into the technical steps	**Historical and geographical content** • Origins, trade routes, guild history • Historical/curious examples, museum sources • → "history" folder: history_background

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

5. Standards, certifications and regulations	
Guardrail instruction • Always cite the official standard • Never invent regulatory values	**Official regulatory documents** • PDO / GI specifications, guild rules • → "regulations" folder: certification_domain
6. Cross-cutting modules and assessment	
Assessment logic • Rules for open-ended questions • Competence rubric: novice → master • Formative feedback criteria • Module activation triggers	**Question bank and scenario library** • Domain-specific quizzes per stage • Real-world problem scenarios • Reference answers, error keys • → "assessment" folder: quiz_[shared/domain]
Fundamental separation principle Prompt: stable identity, behavioural rules, flow logic, assessment criteria — invariant across sessions. RAG: facts, measurements, sources, scenarios, regulations — domain-specific, independently updatable.	

2. System prompt template: fixed part and customisable part

System Prompt Template — General Structure	
Fixed part (common to all agents)	**Customisable part (for each partner)**
Invariant template rules • General persona rules (language, ending the conversation, what the character would never say) • Narrative style instructions, invariant regardless of the active topic • TOPIC / TOPIC_FUNC classification logic for retrieving knowledge and attachments • Competence-rubric assessment module (novice → master)	**Fields to fill in per domain** • CHARACTER_NAME, EPITHET, HISTORICAL_ERA, PLACE_OF_ORIGIN • TRAIT_1, TRAIT_2, TRAIT_3 and distinctive SENSORY_SKILL • REGISTER and TONE_MODE of the narrative style • Domain TOPIC register (folder name = TOPIC value = .md file name), with classification criteria
Real example — agent "Mastro Medardo" (Prosciutto di Parma) Name and epithet: Mastro Medardo, "the Nose of Langhirano" Dominant traits: patience · artisanal rigour · pride in tradition Register: colloquial but authoritative, with Emilian dialect inflections TOPICs recorded: leg_selection · salting · curing · curing_microbiology · pdo_specification	

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

3. The three content-management modes on the platform

Content Management Modes on the Platform

Three complementary approaches

1 · Manual multimedia creation When: specific hand-curated content — images, PDFs, videos to be shown in response to precise questions How: the media is attached to existing content, or dedicated content is created with a title/description and the file is uploaded in the Media section	2 · Bulk document import When: rapid enrichment of the KB from already-existing text material How: the document (PDF, .docx, .txt, .odt, .rtf, .html) is automatically turned into question-answer pairs; OCR available for scanned documents	3 · Function-based access When: content that must keep its original structure, consistent with the TOPIC/TOPIC_FUNC mechanism How: the document is not broken down into Q&A: the agent retrieves it as-is through a function, according to the activated TOPIC

The three modes are complementary, not alternative

They are combined within the same Knowledge Base depending on the type of material and the intended use by the agent

4. TOPIC index file model

TOPIC Index File Model

To be placed in the Production Process folder once material upload is complete

Field	Content
TOPIC name	= name of the corresponding folder on Drive (and of the file)
Brief description	Type of questions for which the agent should use this TOPIC's content
File reference	Exact name of the TOPIC with .md extension
Example (Medardo)	*curing — "questions on timing, temperature, salt dosage in dry salting" — curing.md*

Compilation rules

One row for each TOPIC recorded in the system prompt's register

The file should be filled in and placed in Production Process only once upload is complete — it supports the correct retrieval of the multimedia content associated with each subject

Co-funded by the European Union

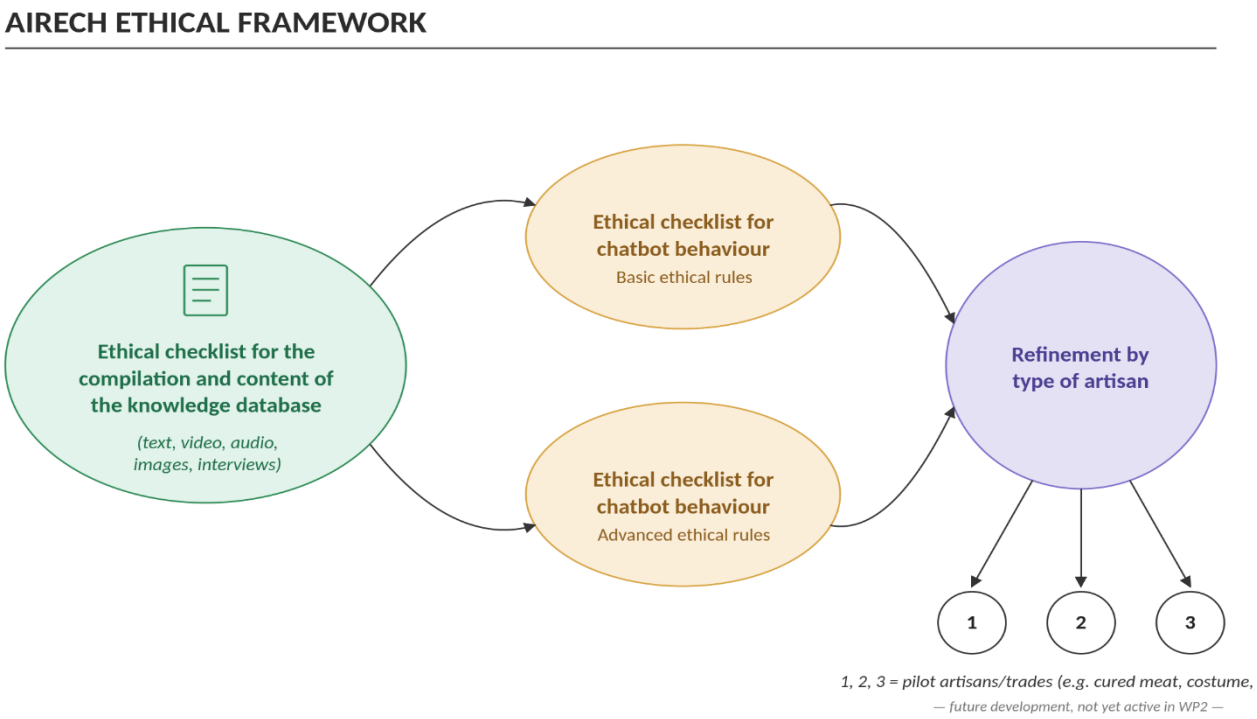
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

6. The ethical framework applied to the Knowledge Base

This chapter turns into an operational tool the ethical principles already introduced in section 2.3, through two separate checklists that can be applied by each partner to its own materials.

6.1 Why two separate checklists

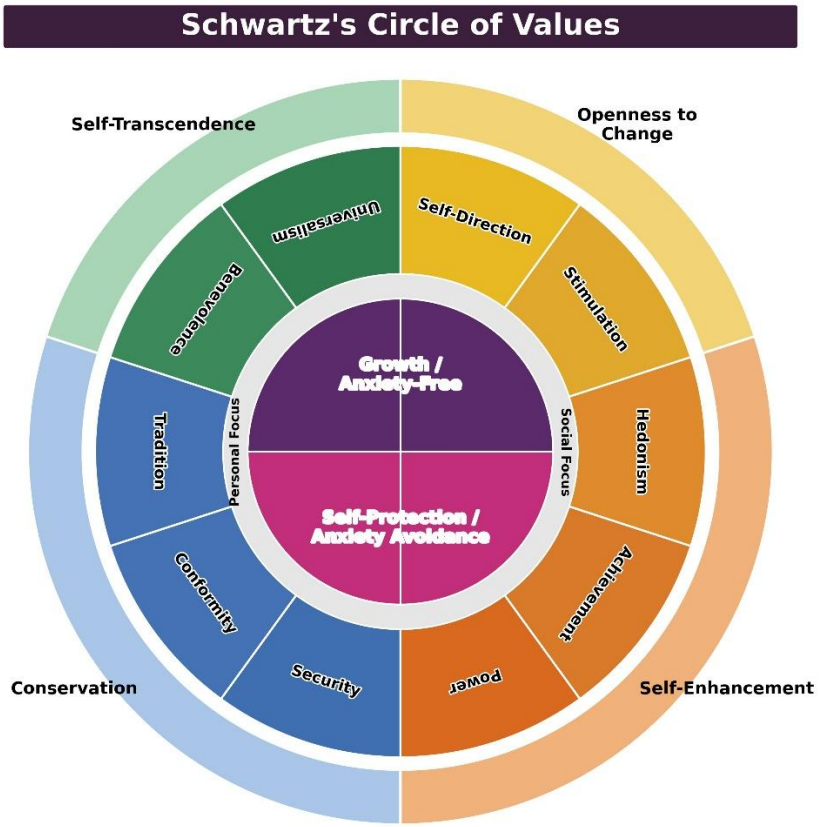
The model's ethical framework distinguishes two verification tools with different natures and timing. The first checklist concerns the KB and is relatively static: it can be applied progressively, as materials are added to the knowledge domain, without requiring the agent to interact with a user.
The second checklist concerns the chatbot's behaviour in use and is instead dynamic: it requires active testing of the conversational agent and is therefore applied operationally in the project's next phase, the subject of the second package of guidelines (WP3 guidelines).
In this chapter, the second checklist is presented only as a preview, as a reference framework.



Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

The two checklists presented here are based on ethical-awareness work already begun in the initial alignment phase (AI Confidence): the AI ethics-expert partner introduced, in person, on that occasion, its own reference methodological framework – Moral Design, an approach that integrates individual morality into the technology-design process – shared with the whole partnership as a common framework for the whole of WP2.
From this framework come the tools referred to in this chapter: TICT (Technology Impact Cycle Tool), a canvas for structured analysis of technology's impact on human values, transparency, stakeholders, sustainability, data and inclusivity; the Schwartz circle of values, a reference model of personal and social values that can be activated in design; the Moral Design Game, a playful exercise for guided exploration of technology-related ethical dilemmas; the Moral Data City Hunt Method, a bottom-up research method that gathers the perspectives of a diverse group of citizens/stakeholders through open interviews conducted in neutral language ("clean language"), so as to bring out their underlying values without influencing them.
These tools were used in Phase 1 for training and awareness-raising purposes across the whole partnership – not as a procedure reapplied to the materials collected in WP2 – and constitute its shared methodological foundation.



Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

6.2 Knowledge Base ethical checklist: the five categories

The ethical checklist applied to the KB is organised into five verification categories:

- Ownership of materials: checking usage licences, withdrawal rights, and the terms of use of photographs or other multimedia content.

- Privacy and personal data: checking the correct handling of any personal data contained in the materials collected.

- Respect for the artisan: correct attribution of the knowledge collected, and care to avoid oversimplifying the traditional knowledge represented or attempting to appropriate “trade secrets”.

- Data integrity: care to avoid reproducing stereotypes, and diligence in documenting any areas of informational uncertainty.

- Data sustainability: providing for backup arrangements and governance of the KB over time, even beyond the project's duration.

For each category, completion involves a positive, negative or uncertain answer, accompanied by a change-log column intended to document any mitigation actions taken in response to an identified issue.

6.3 Chatbot behaviour ethical checklist (preview)

The second checklist, whose operational application is the subject of the second package of guidelines, is organised into six categories: transparency, safety, privacy, respectful behaviour, accessibility and inclusivity, accuracy. It is referred to here for the completeness of the overall ethical framework, since its conceptual design already guides, from this stage onward, the choices made in building the KB.

6.4 How to integrate the ethical check into the KB collection/development process

The KB's ethical checklist should be applied at a specific point in the workflow: after organising the materials into the standard six-folder structure (see §5.1) and before moving on to the conversational agent's training phase. Responsibility for the check lies with each VET-Business team, which fills in the checklist for its own materials before considering its KB complete, with the option of requesting support from the AI ethics-expert technology partner for more complex cases.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

6.5 Tools

Knowledge Base ethical checklist; Chatbot behaviour ethical checklist (preview)

1. Knowledge Base ethical checklist

Ethical Checklist for the Knowledge Database

☑ Positive · ☒ Negative · ? Not sure

Question	☑	☒	?	Change log / explanation	Purpose
CONSENT AND OWNERSHIP OF MATERIALS					
Informed consent from the interviewee for: recording the interview, archiving, use for AI training, educational reuse	☑	☒	?		*Many chatbots are trained on material collected without the explicit permission of its owners. This checklist ensures ethical collection, storage and use.*
Written agreements on: copyright ownership, licensing terms, revocation rights	☑	☒	?		
Explicit permission for: photographs, voice recordings, video	☑	☒	?		
Collection carried out with respect for indigenous, local and family knowledge traditions	☑	☒	?		
PRIVACY AND PERSONAL DATA					
Data collection minimised (only where necessary)	☑	☒	?		*Data collected/archived only when absolutely necessary, and securely.*
Removal of unnecessary sensitive personal information	☑	☒	?		
Retention periods defined for recordings and interviews	☑	☒	?		
Secure storage guaranteed	☑	☒	?		
Controlled access guaranteed	☑	☒	?		
Compliance with current privacy and data-protection regulations	☑	☒	?		
RESPECT FOR THE ARTISAN					
Visible and appropriate credit given to the artisans	☑	☒	?		*Data collected/created in good collaboration with the artisans.*
Payment, royalties, access benefits explicitly agreed	☑	☒	?		

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Question	☑	☒	?	Change log / explanation	Purpose
Avoiding the extraction of sacred, secret or culturally restricted techniques	☑	☒	?		
Community rules and transmission traditions respected	☑	☒	?		
Avoiding the "flattening" or excessive simplification of traditions	☑	☒	?		
Mechanisms created for review/updating of materials by the artisans	☑	☒	?		
DATA INTEGRITY					
Techniques and terminology checked with sector professionals	☑	☒	?		*Compliance with the artisan's professional integrity; traceability of data collection and origin.*
Multiple voices, styles and craft regions represented	☑	☒	?		
Stereotypes or inaccurate representations avoided	☑	☒	?		
Under-represented groups and minority traditions included	☑	☒	?		
Uncertainties or divergent methods documented where relevant	☑	☒	?		
Provenance of data maintained (who, when, where, under what conditions)	☑	☒	?		
Measures in place to prevent disinformation or false craft knowledge	☑	☒	?		
DATA SUSTAINABILITY					
Files stored in durable formats	☑	☒	?		*The KB must be organised so that the knowledge is durably protected, reliable, and ready for future updates.*
Backup and archiving standards maintained	☑	☒	?		
Defined who manages the dataset over time	☑	☒	?		
Future updates and corrections planned	☑	☒	?		

Static: filled in progressively, as materials are added to the KB — does not require the agent to interact with a user.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

2. Chatbot behaviour ethical checklist (preview)

Chatbot Ethical Checklist

☑ Positive · ☒ Negative · ? Not sure

Question	☑	☒	?	Change log / explanation	Purpose
1 · TRANSPARENCY					
Clearly states (or it is evident from the UX) that it is an AI system	☑	☒	?		*Chatbots must make it clear that they are chatbots; where there are limits, they should encourage learning from "real" artisans/workshops.*
Clearly states (or it is easy to discover) which sources it uses	☑	☒	?		
Clearly states the limits of its own knowledge	☑	☒	?		
Explains when uncertainty exists	☑	☒	?		
Makes sure not to pretend to be a master artisan	☑	☒	?		
Clarifies how the underlying technology works (which LLM/company)	☑	☒	?		
The organisation is transparent about its business model (if any)	☑	☒	?		
It is possible (and easy) to submit complaints or questions about the chatbot	☑	☒	?		
2 · SAFETY					
Warns about dangerous tools, chemical substances, heat or hazardous machinery	☑	☒	?		*Craft trades carry real-world safety risks: the chatbot must handle this carefully.*
Avoids unsafe step-by-step instructions lacking precautions	☑	☒	?		
Encourages supervision for beginners	☑	☒	?		
Includes PPE recommendations where relevant	☑	☒	?		
Encourages verification for safety-critical techniques	☑	☒	?		
3 · PRIVACY					
Data collection complies with privacy and data-protection regulations	☑	☒	?		*During conversation, personal data useful to the quality of the response may be collected — but within ethical limits.*
Avoids collecting unnecessary user data	☑	☒	?		
Avoids storing sensitive conversations without consent	☑	☒	?		

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Question	☑	☒	?	Change log / explanation	Purpose
Protects uploaded media and students' interactions	☑	☒	?		
Is clear about the data collected and the options available to the user	☑	☒	?		
4 · RESPECTFUL BEHAVIOUR					
Gives credit to artisans and traditions where possible	☑	☒	?		*Attention to the risk of disrespectful appropriation or trivialisation of cultural traditions.*
Avoids disrespectful appropriation of cultural traditions	☑	☒	?		
Avoids trivialising ceremonial or heritage trades	☑	☒	?		
Handles sensitive traditions with care and in context	☑	☒	?		
5 · ACCESSIBILITY AND INCLUSIVITY					
Avoids gender, cultural or socio-economic stereotypes	☑	☒	?		*The educational chatbot is designed to preserve craft trades: checking accessibility and inclusivity is essential.*
Uses inclusive language and examples	☑	☒	?		
Provides subtitles/transcripts where possible	☑	☒	?		
Ensures multilingual inclusivity where relevant	☑	☒	?		
Everyone will have access to the chatbot	☑	☒	?		
Provides for fair pricing so that access is possible for everyone	☑	☒	?		
Does not create new unacceptable differences between those who have access and those who do not	☑	☒	?		
Distinguishes between beginner, intermediate and expert knowledge	☑	☒	?		
6 · ACCURACY AND RELIABILITY					
Avoids inventing techniques or historical facts	☑	☒	?		*Chatbots are prone to confabulation, overconfidence or bizarre errors.*
Indicates the level of reliability when uncertain	☑	☒	?		
Distinguishes verified knowledge from inferred suggestions	☑	☒	?		

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Question	☑	☒	?	Change log / explanation	Purpose
Human experts periodically review outputs regarding respectful behaviour	☑	☒	?		
Allows reporting of: incorrect information, harmful output, cultural inaccuracies	☑	☒	?		
Includes correction and continuous-improvement mechanisms	☑	☒	?		
7 · GENERAL ASPECTS OF THE CHATBOT					
Could impostors, thieves or scammers abuse the chatbot?	☑	☒	?		*General ethical questions found on www.tict.io* * *not covered by the previous categories.* * Fontys' Technology Impact Cycle Tool, a free tool for assessing the social impact of technologies.
Could ill-intentioned actors use it to subvert or attack the truth?	☑	☒	?		
Could it be used to pit ethnic, social, political or religious groups against one another?	☑	☒	?		
Measures to prevent the chatbot from becoming a source of dependency	☑	☒	?		
Verified that users do not become excessively dependent	☑	☒	?		
Puts users in a position to make better decisions	☑	☒	?		
Designed to be energy-efficient	☑	☒	?		
Transparent about energy or water consumption	☑	☒	?		
Takes energy efficiency into account when answering about craft trades	☑	☒	?		

Dynamic: requires active testing of the conversational agent — operational application in the second package of guidelines (WP3), presented here as a preview for the completeness of the framework.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

7. Critical success factors and recommendations for replicability

Evaluative summary chapter, based on the experience gained during Work Package 2 activities, intended for those who must decide whether and how to apply the model.

7.1 What worked well in the pilot cases

The experience gained in the different contexts confirms in the field the effectiveness of the elements described in the previous chapters. Direct student involvement in collection and interviews, the synergy between the VET organisation and the Business Partner in finding informants, and the standard six-folder structure proved to be decisive enabling factors, also replicable in other sectors.

The value – including the human value – of the availability shown by the senior workers interviewed should also be highlighted, described by the partners as a valuable experience for the business itself as well.

The flexibility of the platform and AI-agent model adopted also had a positive impact; it was introduced step by step by the technology partner through a teaching method based on practical demonstrations of how the platform works and how the chatbot is populated, organised into working groups divided by country and reference craft system. A particularly effective measure was running the AI Confidence session directly on the same chatbots that would later become the project's official ones, emptied of the test content at the end of the training session. This allowed teams to become familiar right away with the real tool, rather than with a separate demo environment. This was complemented by ongoing remote consultancy from the technology partners, available throughout the whole collection and development phase.

A further success factor was the balance between different types of sources in building the KB: as envisaged by the project, the material collected for each production system combined company sources and production specifications, interviews with senior workers to extract tacit knowledge, teaching materials already used by the VET organisation, and further, even unstructured, documentary sources. This plurality of sources made it possible to build a richer knowledge base, less exposed to the risk of one-sided information than using a single type of material.

7.2 Issues encountered and how they were handled

The experience highlighted some recurring issues, together with the solutions adopted for them. Persistent unevenness in digital skills among the teams, made more critical by the growing

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

complexity of the KB-development activities – which the methodology adopted links, from this stage onward, to chatbot training, the first activity of WP3 (duration: six months) – caused difficulties in converting video to text, handling non-editable PDFs, and breaking down presentations.
The solution adopted was to schedule individual technical meetings with the country teams to realign on classification methods and to reinforce digital skills in a targeted way.
Not all the material collected proved immediately usable: this required targeted reworking of the content, not limited to simple classification by origin or format. The mediation of the project's Business Partner also proved decisive: it activated its own network of professional relationships built up in the territory – trusted relationships with other craft masters, suppliers and long-standing collaborators in the supply chain – to identify highly skilled informants who were available and highly cooperative. Any initial caution about sharing information within an artificial-intelligence system was overcome through transparent communication of the project's purposes, valuing the direct contribution of expert workers in the information provided, and not using personal data or information.
Finally, handling material with doubtful copyright status, for example from digital libraries with restricted access, required the introduction of a preventive check of usage licences.
To manage the conversion of materials, the partnership chose to rely on a proprietary cloud repository, shared among all partners (Google Drive), where the materials were sorted and standardised according to the six-folder structure before being transferred to the platform through an automatic import mechanism set up by the technology partner. To facilitate this step, the chatbots under development were temporarily published on the web environment of the project's official website: this is purely an instrumental publication, aimed at making automatic import of the materials from Drive possible, and not the official publication aimed at end users, which will only happen at the end of WP3 – the next work package, dedicated to training, testing and validating the agents. On the operational side, it proved useful to proceed gradually, first filling the Production Process folder, the chatbot's teaching core, and only afterwards the other folders in the standard scheme, in order of greater relevance to the specific crafts.
Manual upload of materials to the platform also proved, in the start-up phase, more burdensome than expected: handling large quantities of textual and photographic content in this way requires considerable processing time and can generate error messages during upload, which should be factored into the time planning for this phase.

7.3 Conditions for replicating the model in a new context

Based on the experience gained, some recommended starting conditions can be identified for those intending to apply the model to other at-risk trades or sectors: the presence of

Co-funded by the European Union
Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

a strong supply-chain link between VET and business in a given territory; the availability of expert informants who are genuinely reachable, ideally through the mediation of a structured business representative of its own territory or a trade association; access to an AI-expert technology partner able to provide and transfer a solid structure and ongoing support for the GenAI model provided, and to an AI-ethics-expert partner, distinct from the first, able to support the teams in interpreting the ethical checklist in the more complex cases; the availability, within each team involved, of at least one resource able to carry out the conversion/standardisation of the materials collected for correct "ingestion" into the platform; access to a cloud infrastructure shared among all partners, which is also proprietary in nature and reserved to the consortium (see §5.1). This intermediate environment does not only perform a technical transfer function towards the official platform, but also constitutes a preliminary workspace in which materials can be organised, checked and corrected before import: this prevents raw content, not yet subjected to the quality criteria described in chapter 4, from flowing directly into the conversational agent's real knowledge domain.
Alongside these conditions, as a cross-cutting requirement, is the application of the KB's ethical checklist described in chapter 6, to be carried out in parallel with collecting and developing the materials.
It should be noted that the conditions described here concern only the replicability of work package 2, the subject of these guidelines: the replicability of the following phases – training, testing and validation of the conversational agent – is addressed in the second package of guidelines, dedicated to WP3.

7.4 Possible sectoral and geographical adaptations

The model described in these guidelines was designed to be transferable to other trades and craft supply chains exposed to similar risks of knowledge loss: among the fields already identified during the project's needs analysis are, by way of example, glassworking, lutherie, ceramics and woodcraft. Adapting the model to a new sector in particular requires reflection on how to organise the folder dedicated to the production process (Production Process): depending on whether the trade being replicated has a predominantly linear production process or a more cross-cutting one, the organisation of the content can follow a logic based on sequential stages or one based on the technique or technology used.
A further aspect to consider when adapting the six-folder structure (see §5.1) is the different specific weight the clusters take on depending on the greater or lesser degree of regulatory

codification of the different production fields. In trades linked to a protected designation of origin with a binding specification – as is the case, for example, with Aceto Balsamico Tradizionale di Modena DOP, whose production is governed by a specification that precisely defines raw materials, minimum ageing times in batteries of casks made of different woods, and

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

the control system of the protection Consortium – the Standards cluster is particularly substantial and binding, while History plays a role of narrative accompaniment.
Conversely, in trades without a codified protected designation – for example glassworking, lutherie or bobbin lace – there is no comparable binding specification: the product's identity and authenticity rest mainly on oral tradition and the territory's historical-cultural context. In these cases, it is the History/Historical Background cluster that becomes the KB's most decisive component, while Standards is reduced to a few optional indications. Whoever replicates the model will therefore need to assess, case by case, which of the two clusters deserves greater documentary depth.
A further factor to manage when replicating the model in other national contexts is terminological consistency across the languages involved: adopting a shared glossary of the trade's and process's key terms (particularly for the names of the six folders and the main TOPICs) facilitates the work of translation teams and reduces the risk of semantic inconsistencies between the Knowledge Base's language versions. The platform model used also provides a chatbot Vocabulary function, to be customised with trade-specific terms.

7.5 Tools

Summary table of success factors, issues and solutions; Self-assessment grid for replicability conditions; Sectoral adaptation matrix for the six-folder structure

1. Summary table of success factors, issues encountered and solutions

Success, Issues and Solutions		
Success factor	**Issue encountered**	**Solution adopted**
Mediation of the Business Partner's professional network to identify highly skilled, available and cooperative informants	Any initial caution about sharing information within an artificial-intelligence system	Transparent communication of the project's purposes, valuing the direct contribution of expert workers, and not using personal data or information
Direct student involvement in collecting materials and conducting interviews	Unevenness in the team's digital skills	Individual technical meetings per country team + targeted reinforcement of digital skills
Availability and emotional engagement of the senior workers	Not all collected material immediately usable	Targeted reworking of content, not just classification by origin/format

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Standard six-folder structure, a shared method across different contexts	Materials with doubtful copyright status (e.g. restricted-access digital libraries)	Preventive check of usage licences/extractable text quotas and production of summaries faithful to the original
Ongoing remote consultancy from the technology partners	Difficulty converting materials into a format the platform can digest	Shared cloud repository (GDrive) + automatic import to the platform set up by the technology partner
AI Confidence conducted on the same chatbots that later became official	Burdensome manual upload, formatting errors	Time planning + gradual roll-out starting from the Production Process folder

2. Self-assessment grid for replicability conditions

Minimum Conditions Self-Assessment

To be filled in before starting to replicate the model in a new context

Condition	**Yes / No**
There is already a structured supply chain between a VET body and a business in the sector	☐
Expert informants who are genuinely reachable are available (ideally through a business or trade association)	☐
It is possible to access an AI-expert technology partner able to provide a standard structure and ongoing support, including remotely	☐
Each team involved has at least one resource with basic digital skills for converting/standardising materials	☐

The conditions listed here concern only the replicability of WP2 (building the Knowledge Base). The replicability of training, testing and validating the agent is addressed in the second package of guidelines (WP3).

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

3. Sectoral adaptation matrix for the six-folder structure

Sectoral Adaptation of the Six Folders

How the cluster's weight changes according to the type of process and regulatory codification

Variable	Linear process / binding specification	Cross-cutting process / no binding specification
Real examples	Aceto Balsamico Tradizionale di Modena DOP; Prosciutto di Parma DOP	Glassworking; lutherie; bobbin lace; artistic ceramics
Production Process folder	Organised by sequential stages (the process follows a fixed, codified order)	Organised by technique/technology used (the process can vary from workshop to workshop)
Standards folder	Substantial and binding: specification, EU regulations, the Consortium's control system	Reduced to a few optional indications, often absent
History/Historical Background folder	Plays a role of narrative accompaniment	The KB's most decisive component: identity and authenticity are based on oral tradition and historical-cultural context

The six-folder structure remains common and should not be altered: only the relative weight assigned to each cluster changes during population.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

8. Conclusions and link to the second package of guidelines

The pathway described ends with a KB that is developed and ready to be put at the service of the conversational agent, but not yet able to interact with an end user.
The second package of guidelines, dedicated to the following work package (WP3, duration 10 months), addresses the phases that complete the agent's life cycle:

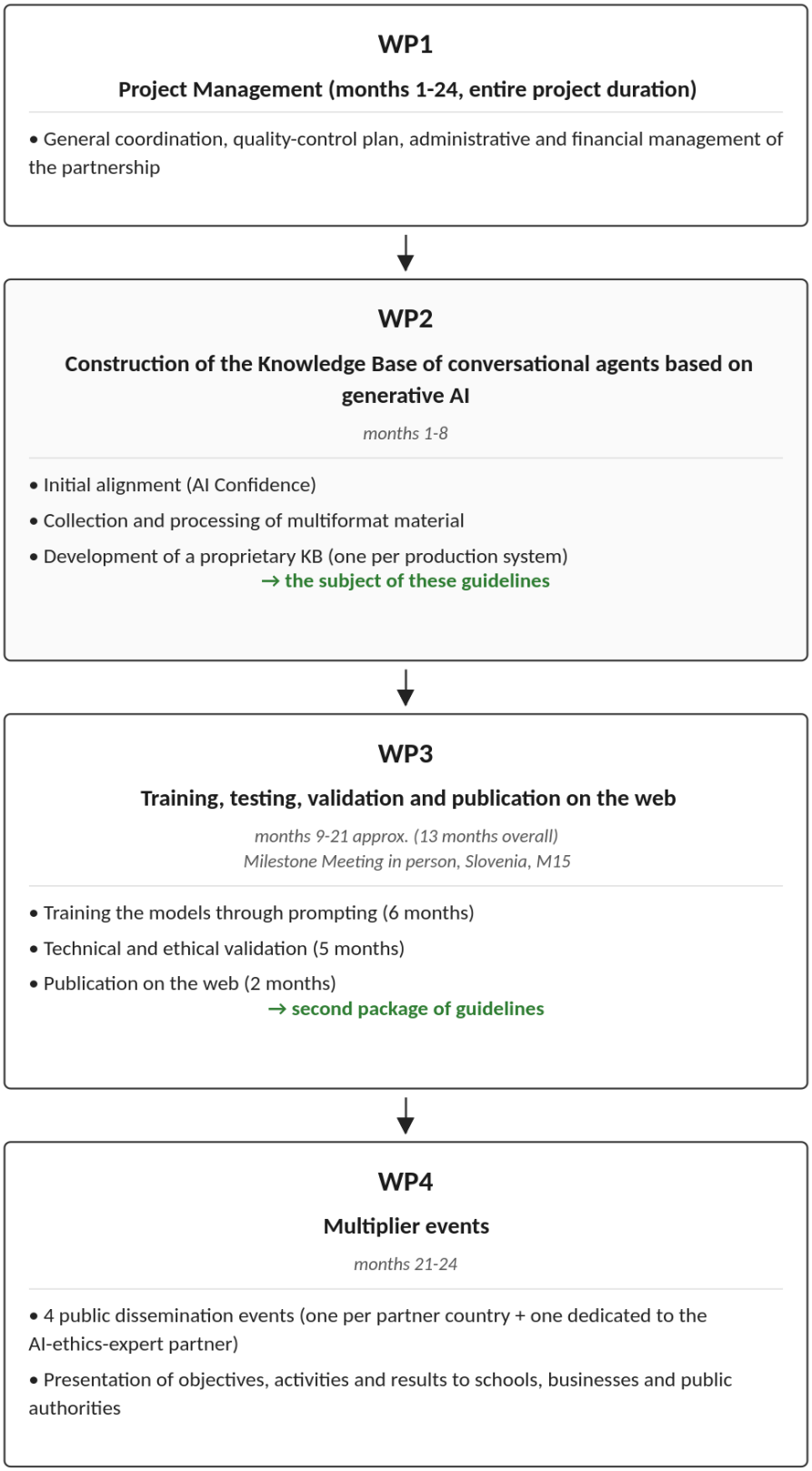
- training through prompting and testing of interactions on working groups that are either homogeneous (made up solely of students, solely of teachers, or solely of business figures) or mixed, formed by the teaching and production partners of each country, following a logic of collaborative work that favours the exchange of views and inclusive support for more vulnerable users
- technical and ethical validation of its behaviour in use (quality and usefulness/impact of the interactions on learning)
- publication on the web

Only at the end of this second pathway does the conversational agent become a fully operational tool, available for teaching and, prospectively, for the business system and other “triple helix” resilient hubs, following the Triple Helix model proposed by Etzkowitz and Leydesdorff, which describes structured collaboration between the training/research system, the production world and institutional actors as the engine of innovation in a knowledge economy: the same networking logic between VET, businesses and technology partners on which the AIRECH model is based.

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

AIRECH Project Work Package Structure



This document covers WP2; the second package of guidelines will cover WP3

Source: KA220-VET-636F66EE, Work Package section

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

Bibliography and web references

1. Project resources

- Website: http://www.airech.eu/
- Instagram page: https://www.instagram.com/airechproject/
- LinkedIn page: https://www.linkedin.com/company/airech-project/posts/?feedView=all

Below are the regulatory, ethical and policy references already cited in the body of the text, supplemented with further resources useful to anyone intending to replicate the model described in these guidelines.
The reference bibliography and web references will be updated with the following package of guidelines.
Bibliografia e sitografia di riferimento saranno aggiornate con il successivo pacchetto di linee guida.

2. European Union regulatory and ethical references

- Regulation (EU) 2024/1689 of the European Parliament and of the Council laying down harmonised rules on artificial intelligence (Artificial Intelligence Act) - https://eur-lex.europa.eu/eli/reg/2024/1689/oj

- Regulation (EU) 2016/679 of the European Parliament and of the Council, on the protection of natural persons with regard to the processing of personal data (GDPR) - https://eur-lex.europa.eu/eli/reg/2016/679/oj

- Regulation (EU) No 1151/2012 of the European Parliament and of the Council, on quality schemes for agricultural products and foodstuffs (PDO/PGI specifications) - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32012R1151

- Charter of Fundamental Rights of the European Union - https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:12012P/TXT

- Treaty on European Union, Art. 2 (the Union's founding values)

- European Commission, Ethical guidelines on the use of artificial intelligence and data in teaching and learning for educators, 2022 - https://data.europa.eu/doi/10.2766/153756

- High-Level Expert Group on Artificial Intelligence (AI HLEG), Ethics Guidelines for Trustworthy AI, European Commission, 2019 - https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai

- European Commission, European Declaration on Digital Rights and Principles for the Digital Decade, 2023 - https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=OJ:C:2023:023:FULL

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

3. Scientific references on AI ethics

- Schwartz, S. H. (1992), “Universals in the content and structure of values: Theoretical advances and empirical tests in 20 countries”, Advances in Experimental Social Psychology, 25, 1–65.

- Wernaart, B. (Ed.) (2022), Moral design and technology, Wageningen, Wageningen Academic Publishers.

- Kamp, J.-A. M., van der Vorst, R. (2022), “Moral impact: Why we need to think harder about the impact of technology (and how we put this into practice)”. In: Wernaart, B. (Ed.), Moral design and technology, Wageningen, Wageningen Academic Publishers, chap. 3.

- van Veen, M., Wernaart, B. (2022), “Building a techno-moral city – Reconciling public values, the ethical city committee and citizens' moral gut feeling in techno-moral decision making by local governments”, paper presented at the OpenLivingLab Days Conference, Turin, 21-23 September 2022.

- van Kollenburg, J.W.M., Jeedella, S.Y., van Kollenburg, P.A.M., Kargas, S. (2017), “Towards a new curriculum to support the changing front end innovation landscape: Educating engineering students to effectively participate in iterative data-enabled product development processes”, 45th Annual Conference SEFI 2017, Angra do Heroísmo, Terceira Island, Azores, Portugal.

- Mollick, E. (2024), Co-Intelligence: Living and Working with AI, London, WH Allen

- TICT, Technology Impact Cycle Tool, an open-source tool for analysing the ethical and social impact of technology - www.tict.io

4. Policy and programme references

- European Commission, Digital Education Action Plan 2021-2027 - https://education.ec.europa.eu/focus-topics/digital-education/actions/plan

- European Commission, Action plan on labour and skills shortages in the European Union, March 2024

https://employment-social-affairs.ec.europa.eu/news/commission-sets-out-actions-tackle-labour-and-skills-shortages-2024-03-20_en

- European Commission, Erasmus+ Programme Guide

https://erasmus-plus.ec.europa.eu/erasmus-programme-guide

- Erasmus+ Project Results Platform – dissemination platform for Erasmus+ project results - https://erasmus-plus.ec.europa.eu/projects

- Etzkowitz, H., Leydesdorff, L. (2000), The dynamics of innovation: from National Systems and “Mode 2” to a Triple Helix of university-industry-government relations, Research Policy, 29(2), 109-123 - https://www.leydesdorff.net/th12/th12.pdf

- Etzkowitz, H. (2008), The Triple Helix: University-Industry-Government Innovation in Action, New York, Routledge (a more accessible, monograph version of the same model)

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.

5. Statistical data and scenario sources

- Eurostat, data on population ageing, the labour market and the mismatch between skills demand and supply in the European Union - https://ec.europa.eu/eurostat

- Cedefop, Skills Forecast: projections to 2035 on employment, skills and imbalances between labour demand and supply in EU countries - https://www.cedefop.europa.eu/en/projects/skills-forecast

- Cedefop, Vocational education and training (VET) occupations in shortage: from evidence to coordinated policy responses, 2026 (shortages of qualified staff in VET trades, including the food sector) - https://www.cedefop.europa.eu/en/publications/9209

- European Commission (DG ECFIN), 2024 Ageing Report: long-term economic and demographic projections for the European Union - https://economy-finance.ec.europa.eu/publications/2024-ageing-report-economic-and-budgetary-projections-eu-member-states-2022-2070_en

6. International resources on artificial intelligence ethics

- UNESCO, Recommendation on the Ethics of Artificial Intelligence, adopted in November 2021 - https://www.unesco.org/en/artificial-intelligence/recommendation-ethics

- OECD, OECD AI Principles - https://oecd.ai/en/ai-principles

- IEEE, Ethically Aligned Design – A Vision for Prioritizing Human Well-being with Autonomous and Intelligent Systems - https://standards.ieee.org/industry-connections/ec/ead-v1/

© 2026 AI for REsilient Crafting Hub Consortium
This work is licensed under a Creative Commons Attribution - ShareAlike 4.0 International License (CC BY-SA 4.0).
This work is licensed under a Creative Commons Attribution - ShareAlike 4.0 International License (CC BY-SA 4.0).

Co-funded by the European Union

Funded by the European Union. Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union or the European Education and Culture Executive Agency (EACEA). Neither the European Union nor EACEA can be held responsible for them.