

IARIA · EIML 2026

From Ora et Labora to Lude et Labora

The Digital Charterhouse: a Human-Centric GenAI Framework for NEET Reintegration and Territorial Digital Tourism

Michele Angelaccio · Michele Fasolo

Smartourism Research Lab — Management Engineering Department
University of Rome “Tor Vergata”



Agenda

- 1 Problem & Research Gap
- 2 Contributions
- 3 Background & Related Work
- 4 The Digital Charterhouse Model
- 5 Lude et Labora — Pilot
- 6 Use Case: The Olive Oil Journey
- 7 Analytical Evaluation
- 8 Conclusions & Future Work

Two parallel crises in the Italian context

GenAI in education is widespread but rarely tied to real socio-economic needs.

2.5M+

young adults aged 15–34

The NEET crisis

Italian young adults Not in Education, Employment, or Training — disconnected from both education and the labour market.

Source: ISTAT — Labour Force Survey, and Eurostat NEET rate for 15–34 in Italy at $\approx 24\%$ (~2.5 M); persistently the highest in the EU (Eurostat, 2012–2024).

Rich, but

underutilised

Heritage left on the table

Italy's cultural and territorial heritage remains largely underused as a driver of digital entrepreneurship and youth opportunity.

Source: UNESCO World Heritage List — Italy holds 60 inscribed sites (2024), the largest national portfolio; tourism share $\approx 13\%$ of Italian GDP (Bank of Italy / ENIT).

The research gap

Current GenAI deployments treat AI as a productivity layer grafted onto existing curricula.

Unresolved challenges

- Knowledge decontextualisation
- Learner deskilling
- Weak connection to real socio-economic needs
- Absence of long-term, ethically-grounded pedagogical architectures

What is needed

- Sustainability and ecological responsibility
- Explicit ethical reasoning and transparency
- Critical thinking woven into the curriculum
- Authentic, real-world problems grounded in place

Our four contributions

01

Formalize the Digital Charterhouse model

A human-centric GenAI ecosystem grounded in an Ethical Manifesto, PBL for local impact, and profession regeneration.

02

Present Lude et Labora as a living-laboratory pilot

Designed for NEET reintegration and the formation of AI Tourism Designers across Italian territories.

03

Provide a quantitative comparative analysis

Weighted scoring matrix demonstrating measurable superiority over standard GenAI frameworks (2.53× advantage).

04

Trace the pedagogical lineage

From earlier active-learning Digital Tourism courses to a GenAI-augmented, community-rooted ecosystem.

Background & related work

Three converging strands frame our contribution

Active learning in digital tourism

OTA Business Simulation at Tor Vergata — students built real booking portals, destination maps, and an outdoor Smartourism Hackathon at Tevere Park.

Cognitive · Digital · Action · Social outcomes
[Angelaccio & Zappitelli, 2023]

GenAI in education: state of the art

Systematic reviews confirm GenAI boosts motivation and engagement, but highlight the absence of long-term, ethically-grounded pedagogical architectures.

Gap:
frameworks with sustainability, ethics, critical thinking, authentic problems

AI, heritage and the future of work

Emerging frontier with both opportunity (AI-enhanced visitor experiences, intelligent itineraries) and risk (homogenising local identities through generic cloud content).

Our answer:
local RAG over curated territorial knowledge bases

The Digital Charterhouse — conceptual foundations

From medieval Carthusian monasteries (Chartreuse / Certosa) — communities where individual contemplation and communal purpose coexisted.



Reinterpreted as a digital ecosystem

Learners, guided by an ethical AI, pursue reflective, project-based inquiry within and for their local communities.

Three interdependent layers

CORE PROCESS

Project-Based Learning cycle

INFRASTRUCTURE

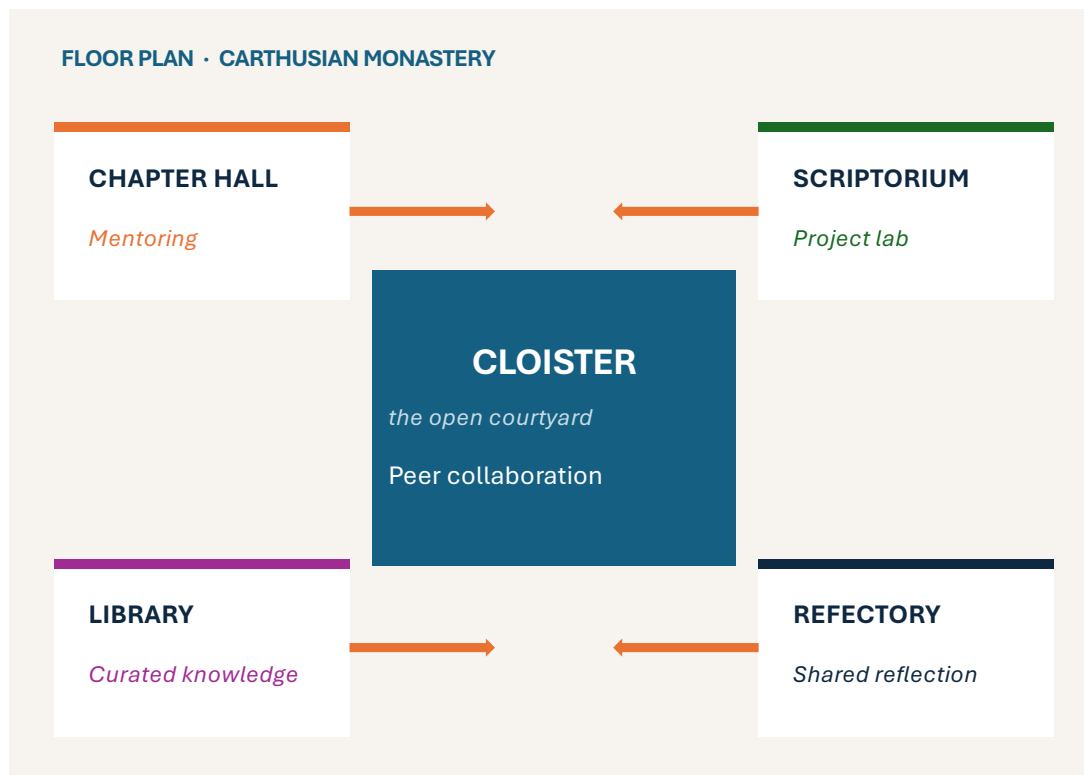
Local LLM (Ollama + RAG)

FOUNDATION

Ethical Manifesto

The Ancient Charterhouse as a Living Stage

A monastic blueprint enacted in the room — Play with Venice begins here.



LIVING PRESENTATION

Play with Venice

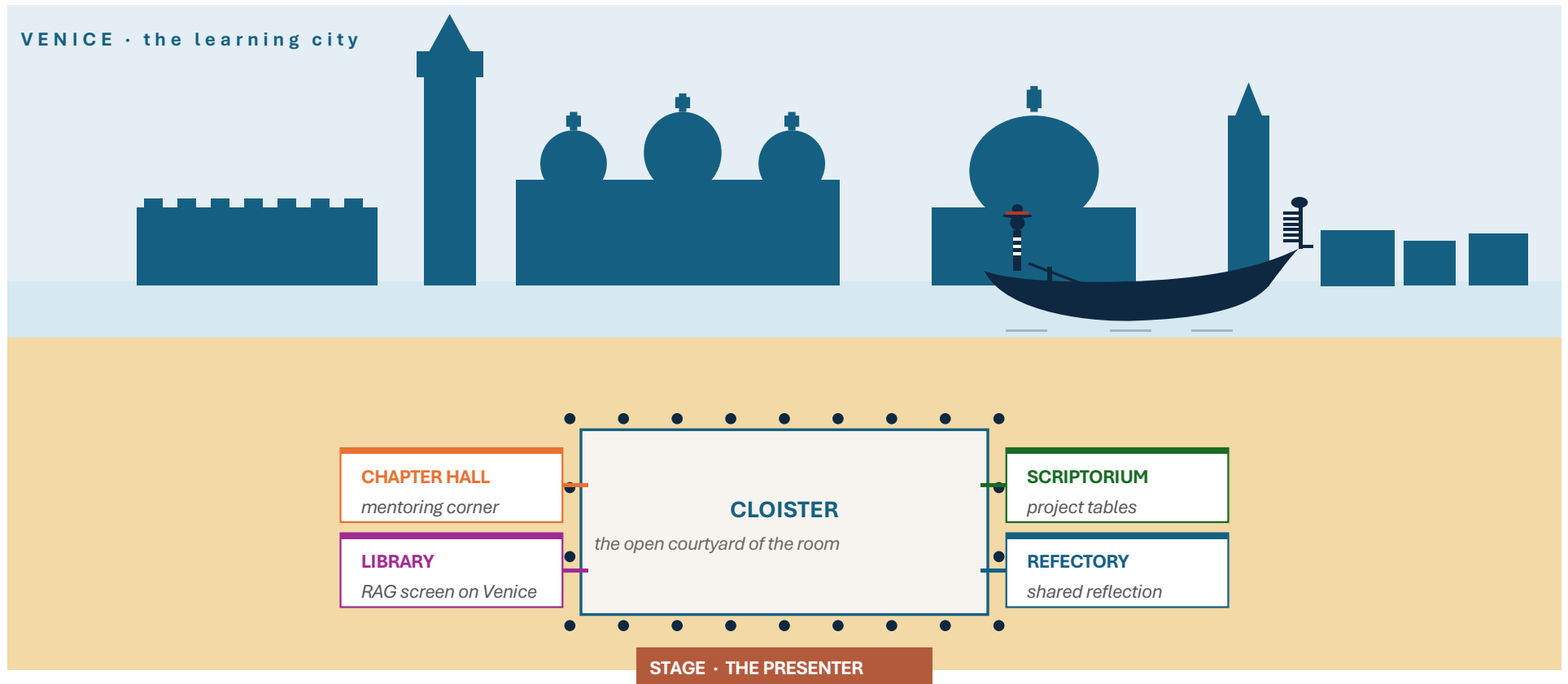
*The conference room becomes the Cloister.
The audience becomes the community.*

- ACT 1** Form the Cloister — attendees gather and partner up
- ACT 2** Enter the Chapter Hall — a mentor opens the Venetian theme
- ACT 3** Visit the Library — local RAG surfaces Venice heritage
- ACT 4** Work in the Scriptorium — draft a Venice itinerary together

Cue for the presenter: organise the Cloister among the people in this room.

Picturing the Living Stage

The conference room re-imagined as a cloister, with Venice rising on the horizon.



Attendees form the Cloister; four mentors animate the Chapter Hall, Scriptorium, Library and Refectory while Venice rises on the horizon as the live learning subject.

Ethical Manifesto

The non-negotiable foundation: three principles that constrain every layer of the framework.

1

PRINCIPLE 01

Human-Centricity

AI augments human intellect and creativity; it does not substitute for it.

ANCHORED IN

UNESCO Recommendation on the Ethics of AI (2021) · UNESCO AI Competency Framework for Teachers (2024) · EU AI Act (2024) — high-risk regime for AI in education

2

PRINCIPLE 02

Intellectual Transparency

AI contributions are made explicit; learners are guided to critically engage with and cite AI-generated content.

3

PRINCIPLE 03

Ecological & Social Responsibility

Privileges low-impact, locally deployed LLMs and targets local social and environmental challenges.

SOURCES · UNESCO, Recommendation on the Ethics of Artificial Intelligence, 2021 · UNESCO, AI Competency Framework for Teachers, 2024 · Regulation (EU) 2024/1689 (EU AI Act) — Annex III lists education/vocational training as a high-risk AI use case.

Three operational pillars

How the ecosystem operates day-to-day.

PILLAR 1

Ethical AI Tutor

A Socratic guide rather than an answer generator. Asks probing questions, draws on a curated local RAG knowledge base, and systematically enforces intellectual transparency.

PILLAR 2

PBL for Local Impact

An emergent curriculum driven by authentic community challenges — revitalising an artisan craft, improving rural tourism, solving a local environmental issue. Learning stays relevant and applied.

PILLAR 3

Regeneration of

The output of each learning cycle. A baker uses AI for personalised nutrition and digital marketing. A local olive-oil producer becomes an AI Tourism Designer (NEW PROFILE).

Platform architecture — four integrated components

A functional web-application mockup that embodies the Digital Charterhouse model.

01 THE TERRITORY Leaflet Map

Geographic visualisation of local context — kiln sites, artisan workshops, material sources — grounding learning in mappable reality.

02 THE ETHICAL AI TUTOR Chatbot

Context-aware interface to a local LLM. Clicking a map location triggers a RAG query returning historically accurate, site-specific answers.

03 THE CURATED KNOWLEDGE BASE Digital Library

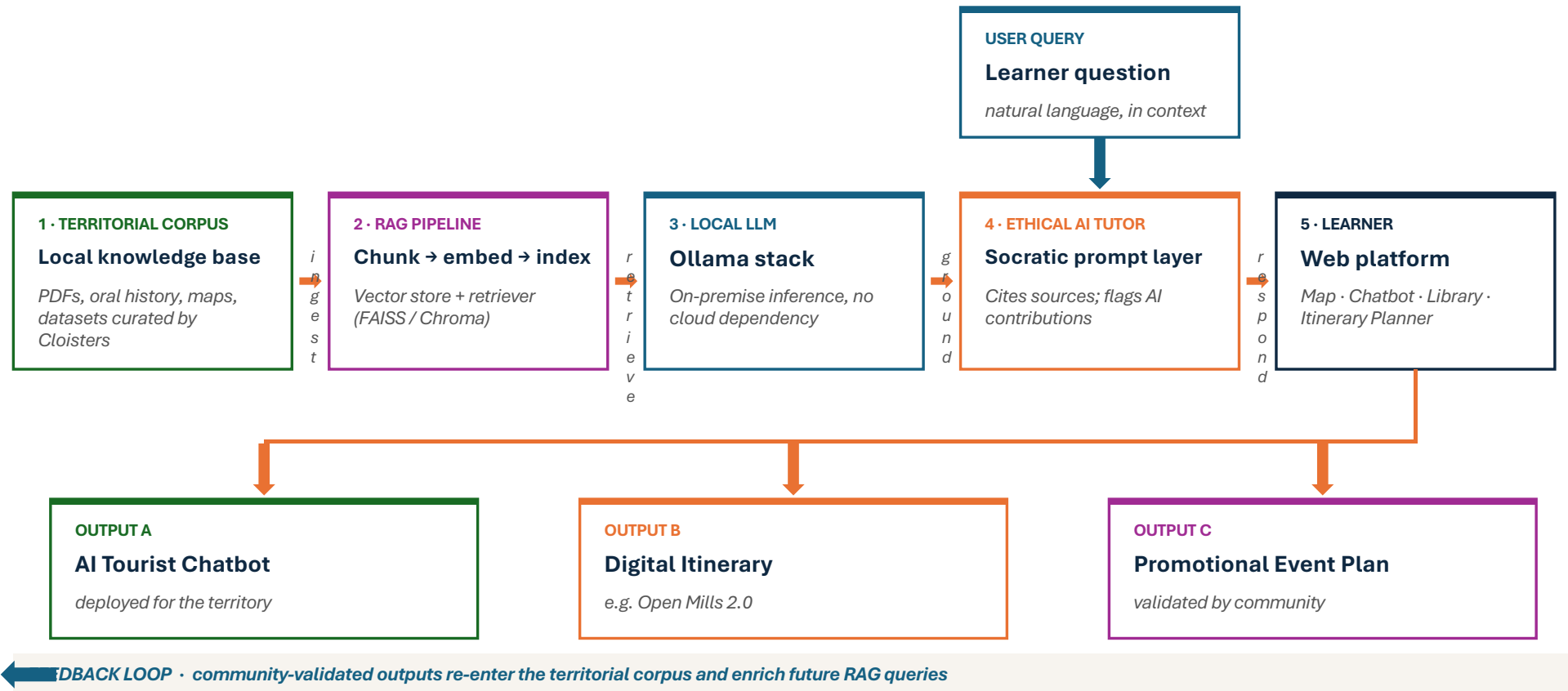
RAG-enabled repository of historical documents, technical papers, and artisan interviews — the territory's living memory.

04 THE PROJECT SCAFFOLD Itinerary Planner

Connects map locations, library resources, and chatbot sessions into a coherent project-based learning pathway.

System data flow — from territorial corpus to project output

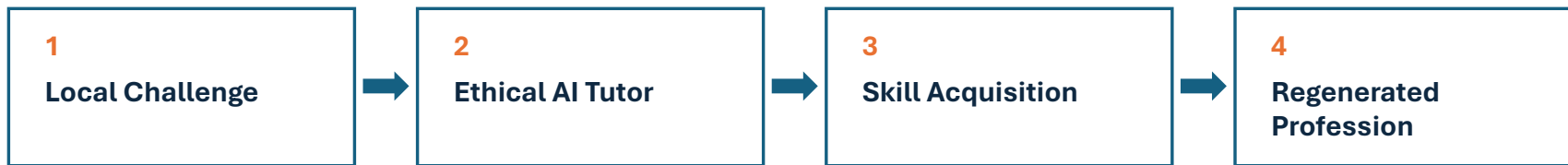
How a learner question becomes a grounded, citable, project-ready answer.



The Digital Charterhouse ecosystem

Three interdependent layers, linked by forward-flow and feedback.

CORE PROCESS · Project-Based Learning



FOUNDATION

Ethical Manifesto · Human-Centricity · Intellectual Transparency · Ecological & Social Responsibility

INFRASTRUCTURE · LOCAL CONTEXT

Local LLM (Ollama + RAG)

Locally-curated documents prevent generic cloud-based outputs.

Local Heritage & Community

Outcomes: sustainable impact, regenerated professions, skilled learners, community resilience.

From Ora et Labora to Lude et Labora

The playful dimension is the key to reaching and retaining disengaged NEET populations.

BENEDICTINE PRINCIPLE · CARTHUSIAN SPATIAL ORDER

Ora et Labora · Pray and Work

The motto belongs to the Benedictines; the architectural and cognitive grammar we adopt is Carthusian.

NOT A HISTORICAL REPRODUCTION · The Digital Charterhouse reinterprets selected **spatial and cognitive principles** of the Carthusian tradition — concentration, discipline, the alternation between productive solitude and regulated community, preservation of knowledge, and a moral economy of work — not its rule or theology.

DIGITAL CHARTERHOUSE PILOT

Lude et Labora · Play and Work

PLAY

—

CONNECT

—

WORK

Targeting NEETs across Lazio, Abruzzo, and Umbria · Outcome: AI Tourism Designers

SOURCES — Rule of St. Benedict (Regula Benedicti), c. 540 CE — Statuta Ordinis Cartusianis — Canto 1, Constituciones Cartusiae (c. 1127).

Lude et Labora · Play–Connect–Work

A NEET pathway built on monastic architecture as a digital pedagogy.

LUDE

PLAY

Experiment & Discover

- Ludic onboarding via serious games
- Creative challenges and real-world simulations
- Gamified learning pathways
- AI-assisted narrative games

ET

CONNECT

Build & Network

- 1-to-1 mentoring relationships
- Peer learning in the Cloister
- Intergenerational exchange in the Chapter Hall
- Trust and social capital

LABORA

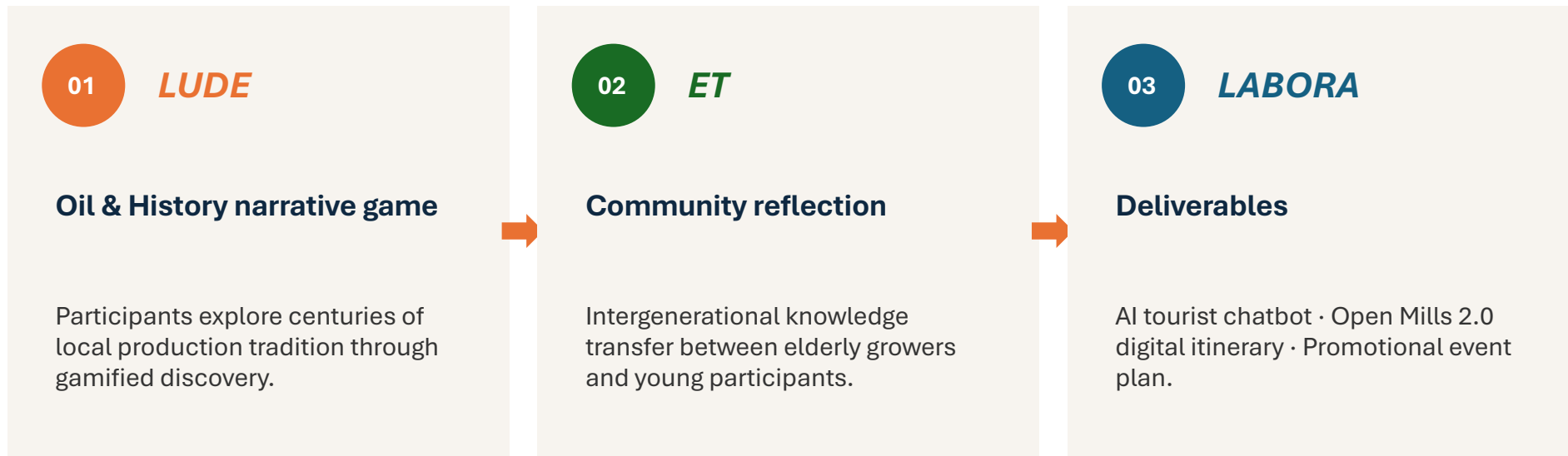
WORK

Create & Deliver

- Real project work for local territories
- DigComp and AI certifications
- Professional portfolio development
- Community-validated outputs

Use case · The Olive Oil Journey

A complete Lude et Labora cycle for an olive-oil producing territory.



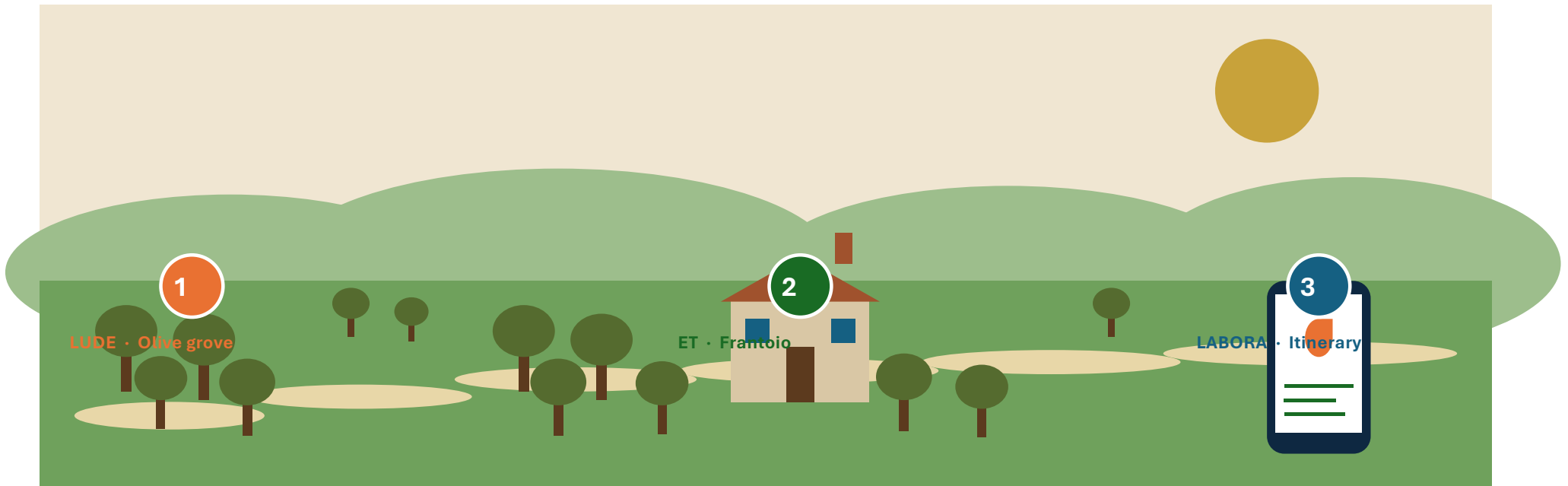
TRANSFORMATION OUTCOME

NEET → AI Tourism Designer

A skilled professional creating territorial value through digital innovation and cultural storytelling.

The Olive Oil Journey — a territorial picture

From the olive grove to the mill to the digital itinerary — *PLAY · CONNECT · WORK* in one landscape.



PLAY *Oil & History narrative game*

Participants discover centuries of local production traditions through gamified exploration.

CONNECT *Intergenerational reflection*

Elderly growers and young NEETs exchange knowledge inside the frantoio and the community space.

WORK *AI chatbot + Open Mills 2.0*

Participants deliver a tourist chatbot, a digital olive-mill itinerary, and a promotional event plan.

Partnership ecosystem

A two-tier alliance linking academic research with territorial communities.

TIER 1

The Academy

University of Rome "Tor Vergata"

ROLE

- Ethical AI Manifesto development
- Platform infrastructure
- Gamification methodology
- Research validation

TIER 2

Territorial Cloisters

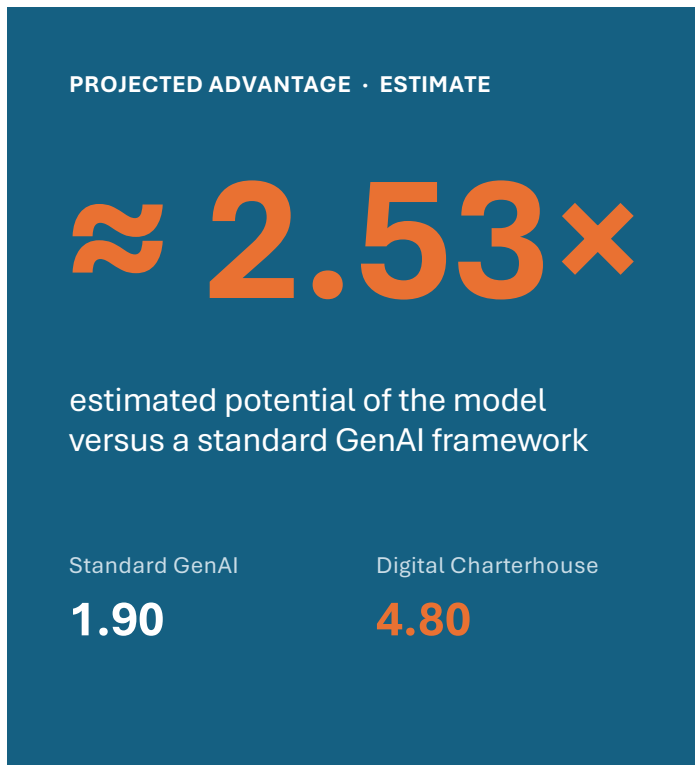
Non-profit associations & municipalities · Lazio, Abruzzo, Umbria

ROLE

- NEET identification and outreach
- Local cultural content development
- Community space activation
- Regional network coordination

Projected comparative advantage

Heuristic weighted score (0–5 per dimension) — an a-priori estimate of potential, not an empirical outcome.



	Traditional	DC
Contextual & pedagogical depth		
Relevance of AI outputs	1	5
Critical thinking support	2	5
Pedagogical alignment	2	5
Sustainability & ethics		
Data sovereignty	1	5
Environmental impact	2	4
Explicit ethical framework	1	5
Economic & practical impact		
Job market alignment	3	5
Operational cost efficiency	3	4
Tool integration cohesion	2	5

The 2.53× figure is an a-priori projection from a model-internal weighting; empirical validation through longitudinal studies is required.

Outcomes vs traditional training platforms

Lude et Labora benchmarked against generic e-learning, public NEET programmes and sector bootcamps.

Outcome dimension	Generic e-learning	Public NEET (Youth Guarantee)	Sector bootcamps	Lude et Labora
Completion rate	5–15%	55–65%	70–80%	80% (target)
Employment / entrepreneurship (6 mo)	20–35%	35–45%	60–70%	60% (target)
Territorial deliverables	None	Marginal (internships)	Generic portfolios	15 community projects (Y1)
Contextual / cultural grounding	Very low	Low	Low	Very high
Cost per learner (indicative)	€0–50	€800–2,500	€3,000–8,000	< €1,500 (est.)

Lude et Labora matches the best bootcamps on completion and placement while adding contextual grounding, ethical AI integration, and territorial impact.

CONCLUSION

A structured approach to rethinking space, community, and technology in education

TAKEAWAY 01

From tool to ecosystem

The Digital Charterhouse treats GenAI as one element within a learning ecosystem grounded in ethics, local context, and community purpose.

TAKEAWAY 02

Playful reactivation

Lude et Labora's Play–Connect–Work triad rebuilds relevance, belonging, and agency for disengaged NEET populations.

TAKEAWAY 03

Measured advantage

A 2.53× weighted score over standard GenAI courses, targeting 500+ NEETs, 80% completion, 60% placement in 6 months.

FUTURE WORK

Longitudinal and comparative empirical studies to validate completion, placement, and territorial-impact outcomes.

Grazie · Thank you

angelaccio@dii.uniroma2.it · michele.fasolo@gmail.com