P4ELECS
Platform for Electrification Skills & Competences

P4ELECS Co-creating skills ecosystems for electrification in Europe

YEAR 1

30th Sept 2025
P4ELECS Workshops Days, Arnhem (NL)

Elena Gentilini, Sara Featherston, Giulia Marcocchia
with the fundamental support of Annick Dexters (KULEUVEN), P4ELECS Skills Ecosystems coordinators and especially Leon Verhoeven (HAN), Martijn van Bommel (ISSO)

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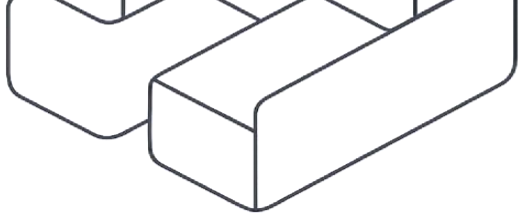

why are we here today?

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Agenda

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Part I

Co-creating skills ecosystems for electrification in Europe. Testimonials.

Connectr visit

Part II

Co-creating skills ecosystems for electrification in 5 EU regions. Preliminary results from interviews.

Elena Gentilini / Progetto Arcadia - P4ELECS

Lunch

Part III

Workshop "Skills ecosystem for the energy transition in The Netherlands: identify and prioritise leverage points for action.

Sara Featherston/Elena Gentilini

Part I - Co-creating skills ecosystems for electrification in Europe. TESTIMONIALS.

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Part I -TESTIMONIALS

- **Jan Cromwijk** - CRT Central Register of Technology (NL) “From Skills Intelligence to Unit Learning Outcomes (ULOs)”
- **Koen Maassen** - Topsector Energie (NL)
- **Christian Wildt, Maela Barcon -** Hanse Parlament and 3-LoE project (EU) “Approaches and experiences in initiating and strengthening cooperation between VET and HEI institutions. The 3-LoE project”
- **Cecile Weber** - Ecorys, Pact for Skills (EU) “Regional Skills Partnerships – A Pact for Skills initiative”

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Part I -TESTIMONIALS

Jan Cromwijk – Lead Skills and Project Manager EU projects
“From skills intelligence to unit learning outcomes”
CRT Central Register of Technology (NL)

CENTRAAL REGISTER TECHNIEK

The Central Register of Technology offers the most reliable and accessible digital platform for quality registration registers for all technical sectors, quality organizations, professionals, and professional companies, and their clients in the Netherlands.

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Part I -TESTIMONIALS

Koen Maassen Programme Manager for Human Capital
Topsector Energie (NL)

topsector energie

Topsector Energie NL is the driving force behind the innovations needed for the shift to an affordable, reliable, safe, and sustainable energy system. They help companies, knowledge institutions, governments, and societal organizations to work together on the energy system of the future.

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Part I -TESTIMONIALS

Christian Wildt, Maela Barcon - "Approaches and experiences in initiating and strengthening cooperation between VET and HEI institutions. The 3-LoE project"-
Hanse Parlament and 3-LoE project (EU)

3LoE

The comprehensive provision of green skills is a key priority of 3LoE. Addressing the challenges of energy, climate and environmental protection, 3LoE establishes Centres of Vocational Excellence on green economy and implements a wide range of vocational education, training and higher education measures concerning green economy, digitalization and entrepreneurship.

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Part I -TESTIMONIALS

Cécile Weber, Research Manager at Ecorys and member of the **Pact for Skills Support Services**

"**Regional Skills Partnerships – A Pact for Skills initiative**": The Pact for Skills Support Services will present the Regional Skills Partnerships initiative, including giving an overview of their place within the European Commission's wider Pact for Skills. The presentation will introduce the benefits of joining or creating a Regional Partnership, the process of establishing a Partnership, and examples of existing Regional Partnerships and their activities. Cécile Weber (presenter) is a Research Manager at Ecorys, and member of the Pact for Skills Support Services. The Pact for Skills Support Services, supported by Ecorys, provide assistance, information and networking opportunities to the members of the Pact for Skills. They assist regional actors in the creation of Regional Partnerships, and provide tailored support (such as ad-hoc research, for example) to the Partnerships once they are launched".

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Part II - Co-creating skills ecosystems for electrification in 5 EU regions. Preliminary results from interviews

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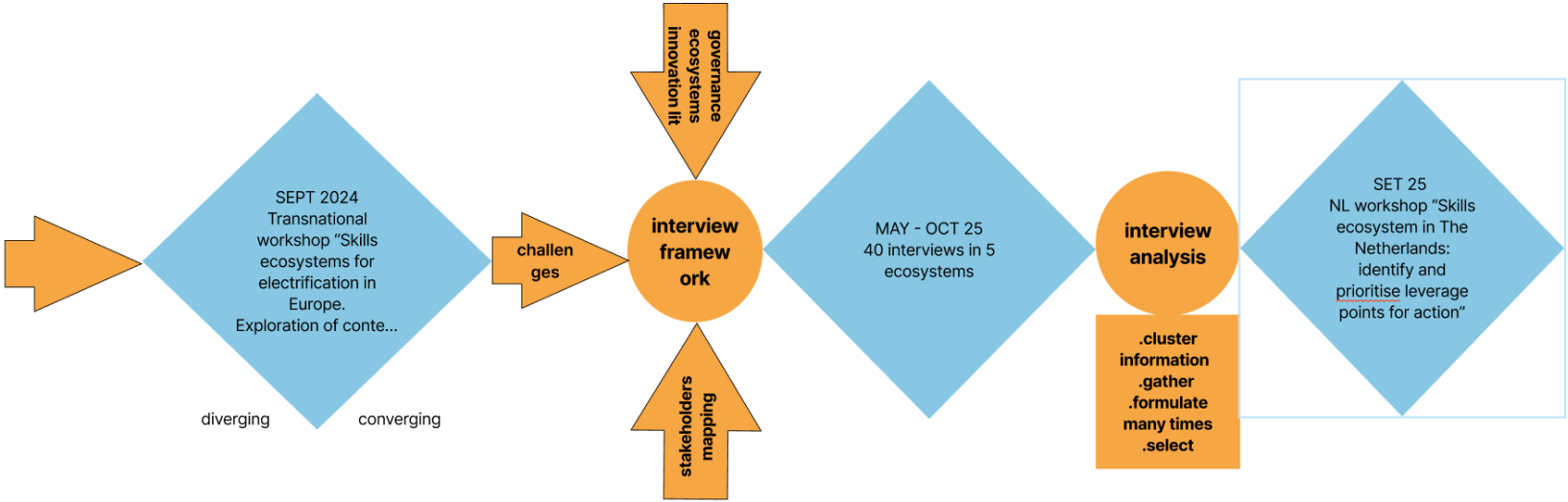
Co-creating skills ecosystems - the process up to now



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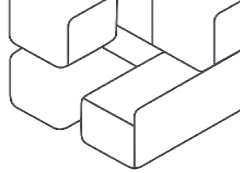
Interviews



5 ecosystems **BE**: Flanders – Limburg – Genk; **NL**: East Netherland – Gelderland – Arnhem; **DE**: North Rhine-Westphalia – Cologne; **IT**: Piedmont-Turin; **LV**: Riga

40 stakeholders, 8 from each ecosystem, from Research, Education, Industry, Policy
30 interviews up to today

Stakeholders were previously mapped, then selected by Skills Ecosystem coordinators with Progetto Arcadia

A full report will follow on www.p4elecs.com

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Methodology

Framework -
Results from First System Thinking Workshop in Genk Sept 2024
Stakeholder mapping in the 5 ecosystems
Inputs from system thinking (Sara Featherston), ecosystems (Elena Gentilini), innovation and governance literature (Giulia Marcocchia)

Analysis -
Cluster of challenges and sub-challenges, context and ecosystem descriptions, collaboration patterns and actors, stakeholder's role + functions

We selected and reframed 6 challenges for The Netherlands to discuss in the upcoming workshop – focus and goal variable.

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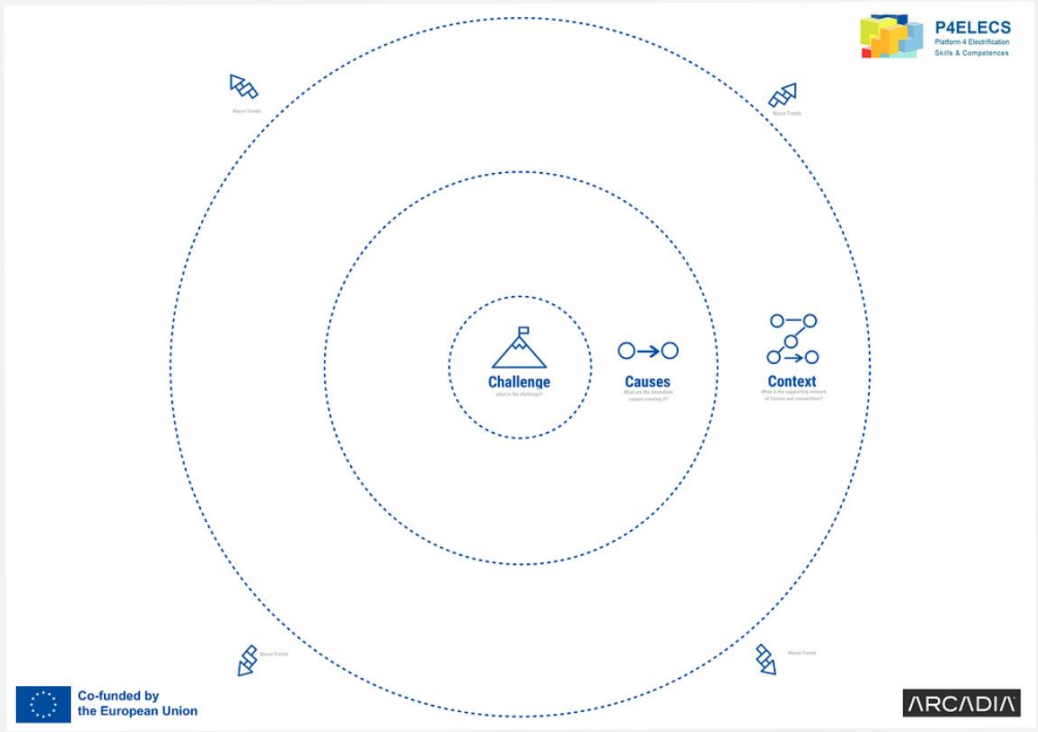
Methodology



The "5 Whys"

Ask "Why?" to find the first underlying cause.

Take the answer and ask "Why?" again to dig deeper.

Repeat the process up to five times (or more, if needed) until you've uncovered root causes.

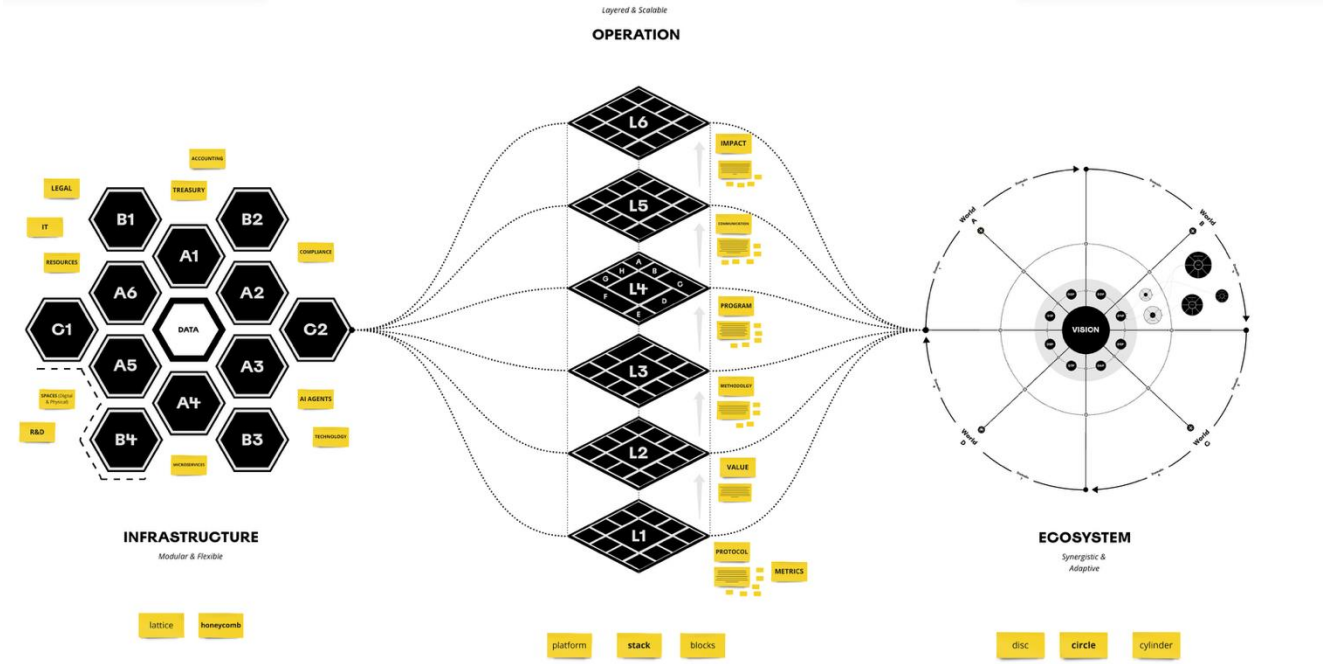
Have fun!

Different stakeholder perspectives

From this perspective, what are the causes contributing to this challenge?

This approach reveals blind spots and brings in more holistic, system-wide insights by considering various vantage points.

Methodology



Author: Kim Sellberg

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Methodology

Roles during Innovation Ecosystem Genesis: A Literature Review

Ozgur Dedehayir[a*], Saku J. Mäkinen[b], and J. Roland Ortt[c]

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Methodology

Planning Theory & Practice

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Communities, Heritage and Planning: Towards a Co-Evolutionary Heritage Approach

Karim van Knippenberg, Beitske Boonstra & Luuk Boelens

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Methodology

cedefop | European Centre for the Development of Vocational Training

GOVERNANCE OF EU SKILLS ANTICIPATION AND MATCHING SYSTEMS

Skills in Context

A guide to the skill ecosystem approach to workforce development

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Methodology

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What we looked for?

For each ecosystems

Main challenges – most recurrent OR developed
Sub-challenges - more specific challenges
Special roles with functions and specific challenges

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What will we also look for?

common challenges across ecosystems: to explore in the current workshop phase underlying structures and mindsets and future local action plans
initial comparison and ideas for transfer/cross/exchange/co-design/collaborate among ecosystems
ideas for the European level - as well as international cooperation

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NETHERLANDS

stay tuned...

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BELGIUM

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Belgium

Main challenge: ecosystem next phase

Despite being a very advanced ecosystem, the main challenge in Belgium seemed linked to the ecosystem development itself and where to go next. Lack of a **coherent strategy** at national level with **shared roadmaps**, many actors doing **overlapping things**, **“useless” competition** without integration, **knowledge dispersal** with no entry point for high quality training available, all mirrored by **fundings models** that do not support collaboration.

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BELGIUM

main challenges

National strategy and shared roadmaps
Regionally based, stakeholders feel that there is no coherent approach to innovation and subsequent roadmaps at national level.

Overlapping
There is an overlapping of activities and infrastructures. Stakeholders do not know each others agendas, they may differ but they many times have overlapping areas.

Competition vs integration – also of fundings
“Useless” competition among actors, especially at university level. There is no fundings supporting collaboration and the building of an advanced complementarity and integration of functions. Medium level infrastructures and labs proliferate, higher levl and larger infrastructures suffer.

Knowledge dispersal
There is no coordination in making training available, no entry point for high quality training, not comparable standards. Too many platforms with no clear guidance in finding the right training.

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“Converge existing initiatives, scale, scale them up, cross country, cross region, cross sector, whatever. Make them bigger. And secondly you have to give money to communicate ”

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“Let's not make another platform, but connect existing ones! ”

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go one level up in the ecosystem by coordinating, optimizing, scaling and integrating

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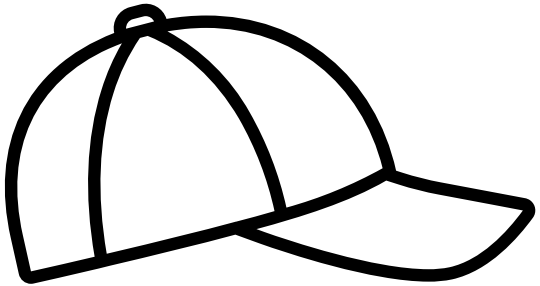
Belgium

a special role

THE INNOVATION RISK TAKER



Invests in innovation too risky for the market

Designs shared roadmaps for innovation including the human factor

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“social and mindset changes are more difficult to address than technological shifts; we underestimate the human factor”

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“technology and research transfer from uni is not working - they put IPR and you have to wait years. We could have solutions, but they are not implemented because we need more alignment research - industry, not only technological, but at management and executive level. They need to speak the same language”

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make innovation roadmaps that include changes at societal level

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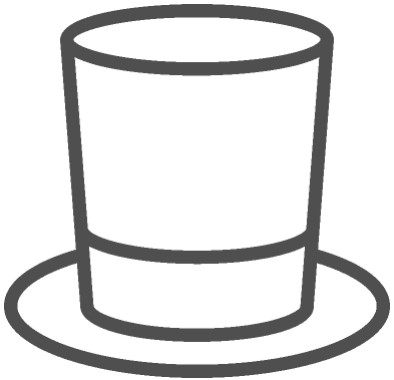
Belgium

a special role

A SUPPORTER OF THE LABOUR MARKET ORCHESTRA



Dedicated to ensure presence, keep everybody together and build better better relations based on knowing each other, to create trust for collaboration

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“because of the shortage of labour maket we need to collaborate so as to bring people quickly to a job and train them appropriately”

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"lack of trust: not right information shared, not correct stories around, not personal relations; we need to take the time to understand each other"

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“for example in skills intelligence there is not much aim to collaborate more.
Analysis might overlap, but agendas can be different and they do not know much on what others are doing and how that could be exploit”

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improve presence and trust within the collaboration between research education and work more on each organisation’s specialisation and links

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LATVIA

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Latvia

Main challenge: a supportive context

The electrification sector in Latvia faces a dynamic environment characterized by **rapid technological shifts**, yet significant challenges remain, particularly concerning keeping up with workforce development ensuring a common **basic skills** level, and **outdated policy and infrastructure**. Focus of the interview was the Public Lighting system

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Main challenges

Attracting and retaining talent: salaries disparities between academia and industry, perception of hard work, overburdened academics and dependency on external fundings, decreasing students in engineering, while the number of foreign students is increasing, their background knowledge is often questionable, requiring intensive personal guidance

Specialised Training Needs: lack of basic training for electricians working on the streets, need for programmes that blend electrical and IT for emerging control systems, rapid innovation risks to leave training behind, small number of experts; people obtaining advanced certifications, such as those for electrical project managers, often lack the necessary background knowledge**,** Latvia is now moving towards micro credentials, but the structure is still very new

Policy and funding allocation: the national law governing street lighting is considered outdated, Public procurement processes often set to default selecting the lowest price rather than high-quality products, hindering long-term sustainability and necessary investment in quality (e.g. Ministry-published Total Cost of Ownership calculator,), experts and industry associations are often not consulted by policy makers when developing new laws.

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Latvia

HIGHER EDUCATOR IN TRANSLATION

Is facing new top down management policies and administrative burdens
Support the re-organization of programmes and faculties according to innovation patterns to attract declining students
Often drawn to research for lack of fundings

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“0ne of the problems is to keep staff (for innovative projects) is because industry comes and says “OK, I will pay you 6K per month on hand” and (at the university) I can't do that”

”

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“That's why we oriented more on the research rather than the education budget because they are really low one, it's underpaid”

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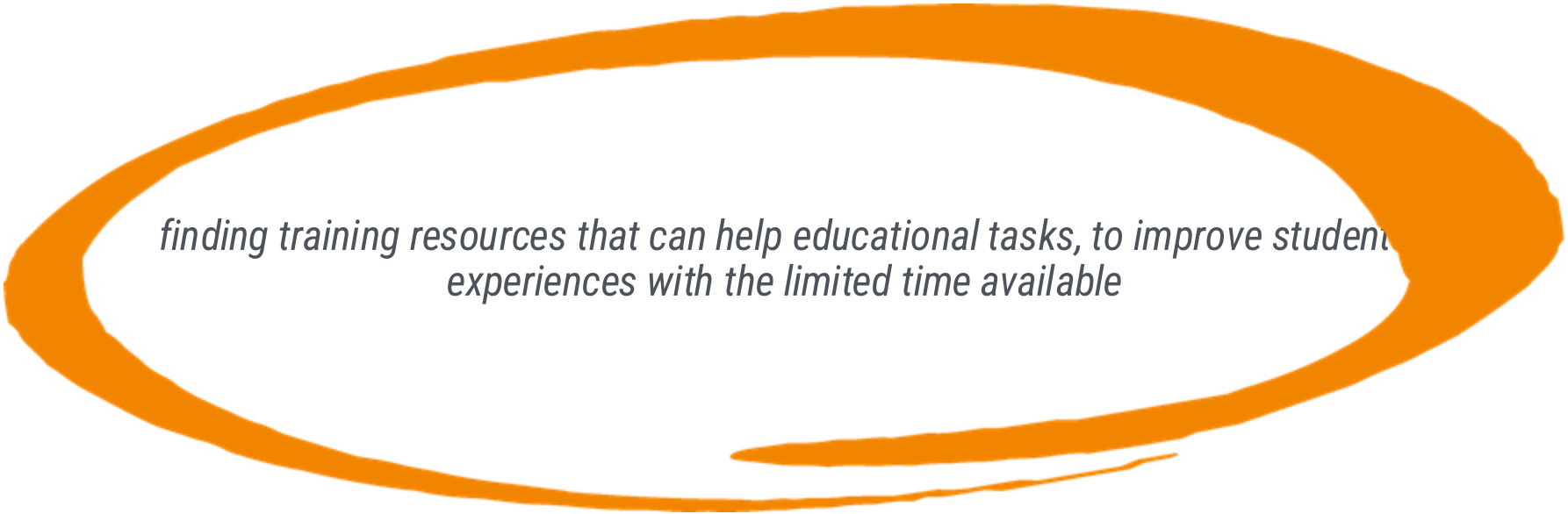

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GERMANY

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Germany

Main challenge: quality learning

Learners show **low motivation and responsibility,** institutions and companies struggle with **limited resources**, and both **teachers and students are overloaded**. Programs often fail to meet industry needs, while rigid regulations and fragmented funding block adaptation.

Together, these issues leave learners less prepared and strain the ability to build effective skills ecosystems.

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Germany: Learning challenges

Low Motivation & Responsibility
Learners often lack intrinsic drive, critical thinking, and accountability. Over-reliance on AI tools and weak ownership of learning make it difficult to prepare them for real-world complexity.

Overload & Inefficiency
Teachers face excessive preparation work, while students are overloaded with too many projects and exams. This dilutes deep learning and leads to frustration on both sides.

Resource Constraints
Both institutions and companies struggle with limited funding, staff, and infrastructure. Small firms lack training capacity, large universities are overstretched with large classes, and equipment demands remain high.

Mismatch with Market Needs
companies reluctant to invest in dual career models, reducing practical exposure for students

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“When I studied, I only had one subject with a with a project, but they're too much today, too many”

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“project work often involves a lot of stuff that doesn't really go to the **depths of the subject**, but go to organising meetings with other students that doesn’t really help”

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Quantity over depth: belief that more projects = more experience, when in reality it dilutes learning.

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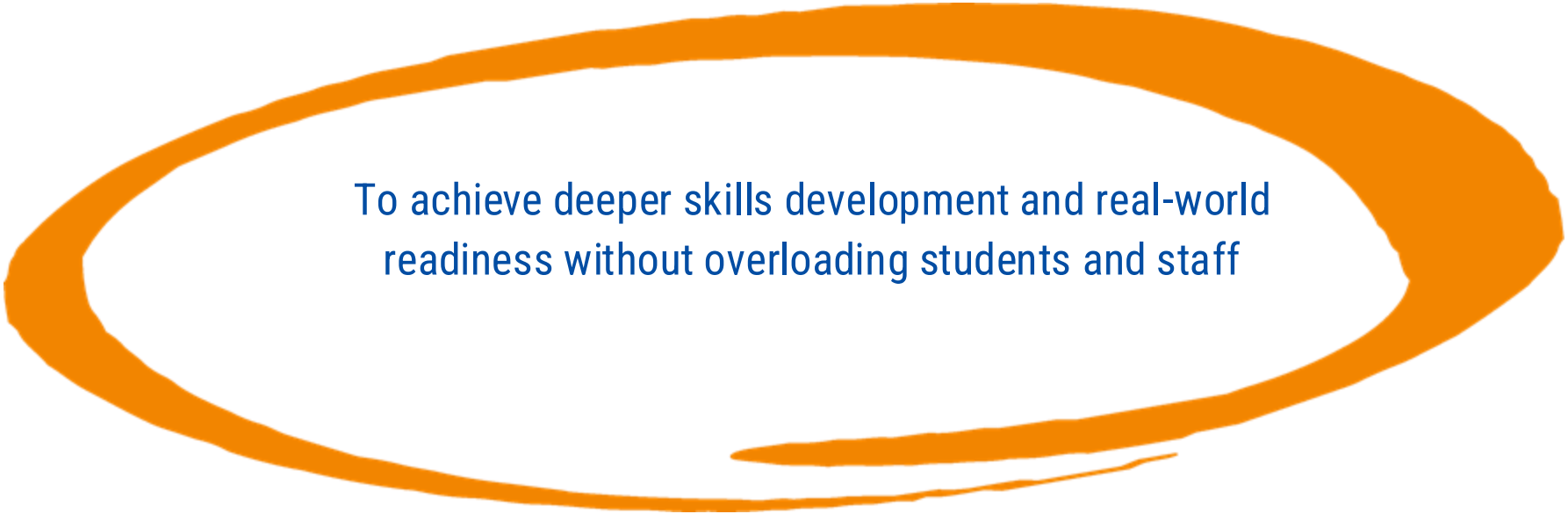

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Germany

sub challenge

Training today faces four connected challenges: it remains **costly and hard to access for SMEs and solo workers**; delivery formats juggle flexibility and depth but often **overburden trainers**; emerging technologies like **AI, avatars, and VR promise personalization** yet risk sidelining human interaction; and **industry-driven agendas keep the focus on engineers, leaving technicians and vocational learners behind**.

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training challenges

Accessibility Barriers

Training is costly and time-consuming, leaving SMEs and solo workers with limited access.

Emerging Tech

AI, virtual assistants, and VR could make training more personalized and effective, but risk losing human exchange.

Formats

Online and lab trainings offer value but face trade-offs: flexibility vs. networking, efficiency vs. heavy preparation.

Industry Alignment

Training is driven by company needs and focused on engineers, leaving technicians and vocational paths under-served.

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“For the online participants, they could see more than when being on site in front of the lab … everyone could see all the details.”

“But the preparation work, the effort for this was so high that all the teachers said no, not again.”

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“It's absolutely necessary to involve also technicians and professionals.”

“But our board said no, that's not our core action … our target group are the engineers.”

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“And the next big question is how AI will support trainings?”

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use emerging technologies and new training models to supports both company employees and independent professionals?

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ITALY

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Italy

Main challenge: slow training adaptation

There is a structural «inertia» that hinder the adaptation of the educational system to innovation.

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Italy

training challenges

Slow Curriculum Adaptation: The academic system suffers from "inertia," meaning curriculum changes required to introduce new courses (like those addressing System Integration or rapidly evolving fields like AI) can take at least **one and a half to two years** to implement.

Attracting and Retaining Talent/Motivating larger parts of students: attracting students to STEM and retaining trained talent are driven by factors like compensation and the desire for dynamic, mission-driven work environments (where they can provide a personal contribution to interesting challenges). Impact in the world.

Theoretical vs. Practical Knowledge and related educational approach: University curricula, such as engineering, tend to provide a largely **theoretical vision** of energy with little practical application. Graduates **expect to work on a theoretical level**, but complex challenges needs an interplay of both. The legislative framework does not support the involvement of professional figures in teaching And also, the super expert is alaso a good teacher?

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Italy

training challenges

Working at different scales for different aims: traditionally some sectors are strongly embedded in the local system, like automotive or aereospace, and are addressed locally. In many other the territorial aspect is left unnoticed and needs to be put more in relation with the sectors dynamics. There is also a need to address the international dimension, to prepare for natality loss or international cooperation.

Working on narratives
Complex challenges require complex narratives, developed by the interplay of several agents, and at the moment this task is not addressed.
As a result a simplified communication is unable to act upon learners vision and decisions.

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"we cannot even give up on the basic skills, so the university, as it is structured, does not have the capacity to adapt quickly unless, for example, through what we are trying to do, that is, to propose programs that we call minor"

“interest in science and technology declines throughout a student's academic career. It's important to increase the number of students pursuing science-technology majors and to understand the unknown facets of these science-technology majors, starting in high school”

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“Here is one thing that is often overlooked when we make these business arguments, it is the territory itself”

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Support educational innovation mindsets to overcome institutional and legal inertia and test new educational formats

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Italy

sub challenge

The "Mythological" System Integrator (SI) and multidisciplinarity complexity: The figure of the System Integrator is currently viewed as almost "mythological" and does not have a formal legal definition.

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ITALY

System integrator challenges

Multidisciplinarity complexity: the SI role is inherently multidisciplinary, requiring competence in a wide range of areas, including mechanics, programming, electricity, communications, and knowledge of various technologies. It is difficult to find a single school or university course that provides all these required multidisciplinary competences

EQF gap: The SI is needed to fill a significant competence gap that exists between the basic electrician (EQF 3/4) and the engineer (EQF 6), requiring a qualification level perhaps around EQF 6 (equivalent to a three-year university course).

Poor Implementation and Maintenance: Systems, even when mandated by regulations or incentives (like the 110 programme in Italy), are sometimes installed incorrectly or without proper criteria due to a lack of competence and control mechanisms. Furthermore, integrated systems are often **not properly maintained or operated** due to costs or a lack of subsequent knowledge

Lack of Market Awareness: The market often lacks awareness of the strategic importance of advanced functions like system integration. Demand often originates spontaneously from the **end customer** (e.g., residents frustrated by managing multiple applications) rather than being proactively proposed by industry

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"A multidisciplinary activity that requires many skills. In fact, system integrator comes from systems integration and means that. You need to know those systems, but beyond knowing the systems I need tointegrate, I also need to know the technologies that allow me to integrate those systems"

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“And the next big question is how AI will support trainings?”

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Develop new figures and educational paths that combine disciplinary sectors

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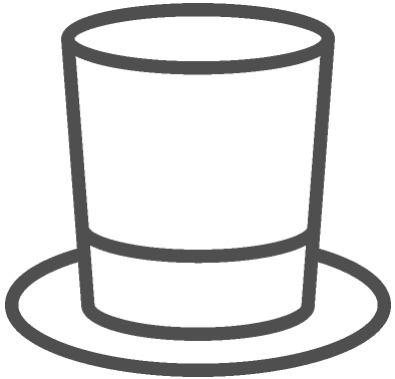
ITALY a special role

THE ENLIGHTENED INDUSTRY



Is working in an agile way to adapt to changing needs and capture innovation
Is honestly concerned how he can contribute to larger challenges – e.g. responsible use of AI with other actors without loosing control

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"nowdays collaboration needs agility in term of perimeters, duration and how to act: fast, clear on a specific topic with a short term concrete action and feedback"

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"risk taking on tech investment as an area of collaboration for private and public actors"

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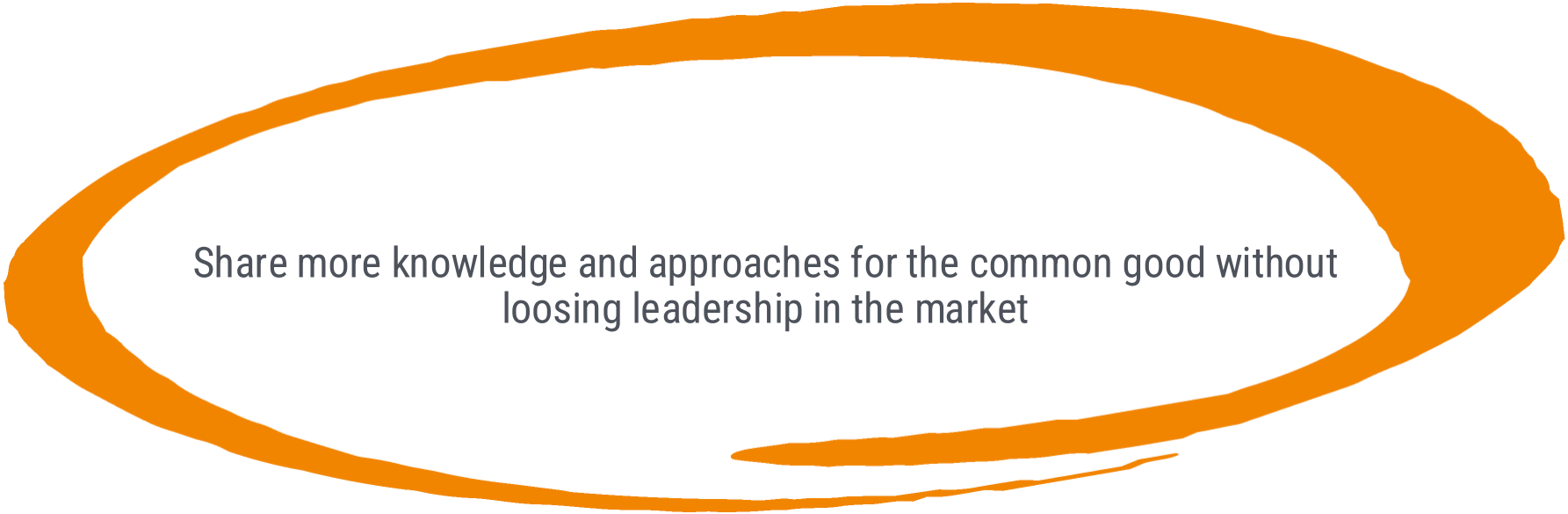
The enlighted industry main challenge



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Next steps

A full report will follow on www.p4elecs.com

Local workshops for system mapping and understanding + find leverage points for action will be organized in the remaining P4ELECS ecosystems between November 25 and March 26

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Thank you! Any query

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