GEEK4FOOD

Glocal Ecosystems and Expanded Knowledge for green skills and capability in the Food Sector

D3.2

The 3P-G4F platform

Co-funded by the European Union

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CONTENT

Acronyms List 4
1. Executive summary 1
2. Introduction 2
3. Methodology 4
4. General description of the 3P-G4F Hub 17
5. The landing page 19
6. The registration process 22
7. Educator 52
8. Entrepreneur 53
9. Policy makers 54
10. The Hive 56
11. User Management Board 57
12. Help and documentation 58
13. Geek4food as a Service for organizations 58
14. Conclusions 59
15. Annexes 60

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Acronyms List

G4F	Geek For Food
PaaS	Platform as a Service
KPI	Key Performance Indicator

PPP	Person-Public-Private

1. Executive summary

This report details the innovative features of the virtual "**Person-Public-Private**" (PPP) **GEEK4food platform** named "**3P-G4F Hub**" (demo).
The link of the platform in the project website is: https://skillpass.geek4food.com
The report includes the following description:
- A summary of the methodology of the design
- The main features of the 3P-G4F Hub, namely the registration process, the profiling, the different sections for individuals (intended also as learners/trainees), education/training providers, business/industry, policymakers.

2. Introduction

Within the GEEK4Food project, the activities developed within the **WP3** titled "**3P-G4F: digital ecosystem for green skills, training and knowledge transfer**" were focused on the design and deliver of a digital Platform (i.e. the "**Person-Public-Private-GEEK4Food, acronym 3P-G4F**) as a fit-for all collaborative virtual networking environment and a system for decision-making for learners, HE institutions, business and agri-food sector organisations/policymakers.

The 3P-G4F Hub is the tool that integrates the Green Skill Tool (WP2) and the following upgrades based on the WPs activities, updated according to the user experience, the major analyses deriving from the Green Skill Tool and the implementation of the solutions that the labor market will highlight as determinants, filtered by the matrix of the four *personas* according to the PPP model.
From now on, the Green Skill Tool (WP2) and the 3P-G4F Hub (WP3) (https://skillpass.geek4food.com) , combined, will be identified as a web-based platform, Geek4Food Platform, an add-on to the https://geek4food.com/ website, which guarantees their public visibility for the exploitation of the project results. In Figure 1, the landing page from the project website.

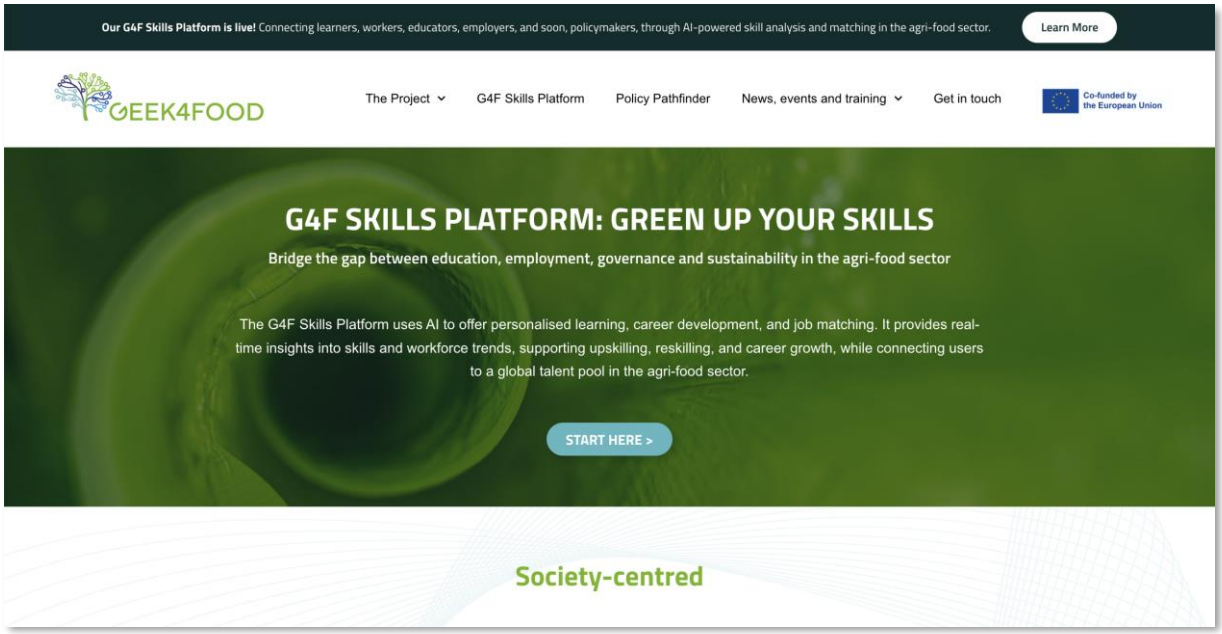


Figure 1 – https://skillpass.geek4food.com

The platform was intended to support the implementation of a cross-sectoral ecosystem (**GEEK4Food Hub**) by favouring the interplay and matching between the training providers (HEIs, as providers/donors of knowledge/skills/training) and "job seekers", graduates/professionals in terms of competences/knowledge/skills and private sector

demands for the green transition. The platform was planned to be designed to help individuals of different categories and related aims, i.e.

(i) **Graduates, professionals** and, more in general, employed staff, sectors in finding the training opportunities for current and future green skills/roles/professions (i.e. learners/trainees)

(ii) **HE institutions/training providers** to find solutions to deliver fast-track adaptation of ad-hoc study programmes and training

(iii) **Business and food sector organisations** to find a networking environment of different stakeholder's representatives dealing with green and sustainability of the food system

(iv) **Policymaker institutions** to support them in finding appropriate resources to underpin the future design of policy actions promoting the sustainable transformation of the food system by integrating the data provided by the labour market/ skills gaps analysis and activities of WP6.

The design and setting of the 3P-G4F platform were planned also to collate and integrate in a unique virtual environment the main outcomes of the GEEK4Food project (e.g. GEEK4Food AI-based tool, training modules and opportunities, the GEEK4Food Policy Pathfinder, reports and resources, etc.).

This **D3.2.** document is a brief report of the 3P-G4F platform, with the description of its main structure and features, having as reference the Deliverable D3.1. where the value proposition and business plan of the platform has been reported. The 3P-G4F platform after its launch will be subjected to validation and exploitation (T3.3.).

3. Methodology

The design and setting of the platform applied a **Human-Centred Design** and **Complexity Zero** approach and was performed according to the following steps:

i. Series of online **workshops** targeted to the "personas" identified in the project, i.e. students, teachers, industry and policymakers aimed to collect proper inputs, expectations and needs from the main target groups for the G4F platform design
ii. **Surveys** targeted to the "personas" identified in the project (see above); a 5th category was also identified based on the project objectives, i.e. entrepreneurs.
iii. **Workshop on "skills taxonomy" (in presence)**
iv. **Results analysis**
v. **Design and development**
vi. **Official launch**

i. Workshops

The workshops were organised as **individual online events**: two rounds for each target group were planned in order to widen the attendance and achieve a meaningful contribution from different countries and sectors.
a. Students: April 27, 2023, 3:00 pm, 23 May 2023, 11:00 am
b. Industry: May 4, 2023, 3:00 pm; 9th June 2023, 3:00 pm
c. Policymakers: May 11, 2023, 3:00 pm; 16th June 2023, 3:00 pm
All partners were invited to disseminate the invitation to attend the workshops to individuals of the respective target groups within their institutions and relative networks.
An initial workshop focused on the "academics" group expectations was organised on 10th March 2023) (see **Figures 1-4)**

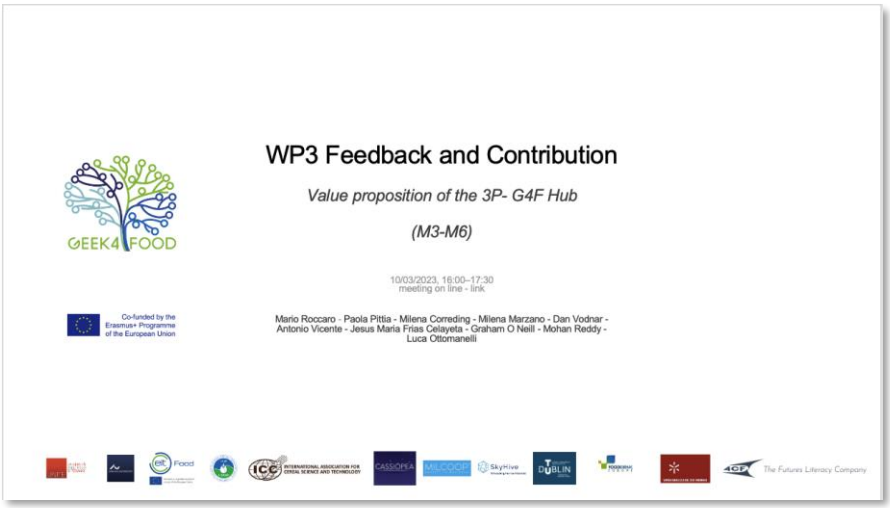
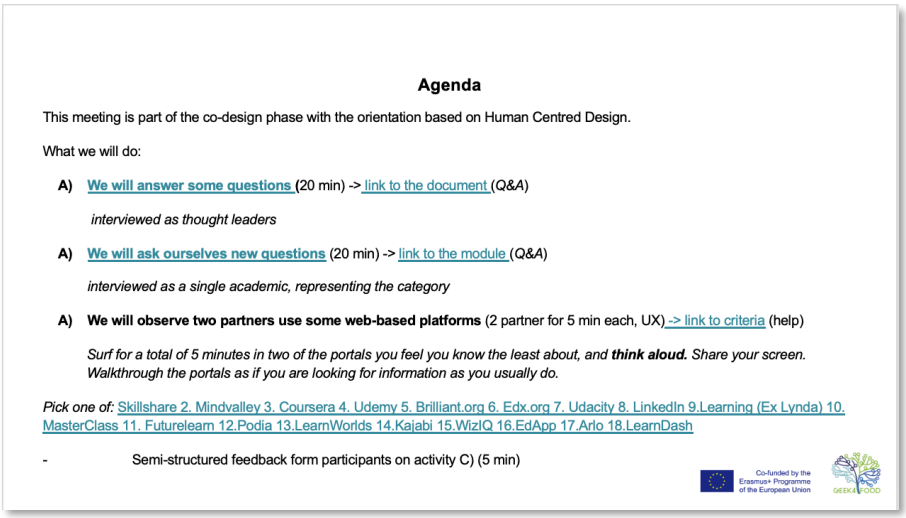


Figure 1 – User Workshop on March 10th, 2023



Agenda

This meeting is part of the co-design phase with the orientation based on Human Centred Design.

What we will do:

A) **We will answer some questions** (20 min) -> link to the document (Q&A)

interviewed as thought leaders

A) **We will ask ourselves new questions** (20 min) -> link to the module (Q&A)

interviewed as a single academic, representing the category

A) **We will observe two partners use some web-based platforms** (2 partner for 5 min each, UX) -> link to criteria (help)

*Surf for a total of 5 minutes in two of the portals you feel you know the least about, and **think aloud.** Share your screen. Walkthrough the portals as if you are looking for information as you usually do.*

Pick one of: Skillshare 2. Mindvalley 3. Coursera 4. Udemy 5. Brilliant.org 6. Edx.org 7. Udacity 8. LinkedIn 9.Learning (Ex Lynda) 10. MasterClass 11. Futurelearn 12.Podia 13.LearnWorlds 14.Kajabi 15.WizIQ 16.EdApp 17.Arlo 18.LearnDash

- Semi-structured feedback form participants on activity C) (5 min)

Figure 2 – User Workshop on March 10th, 2023 – agenda

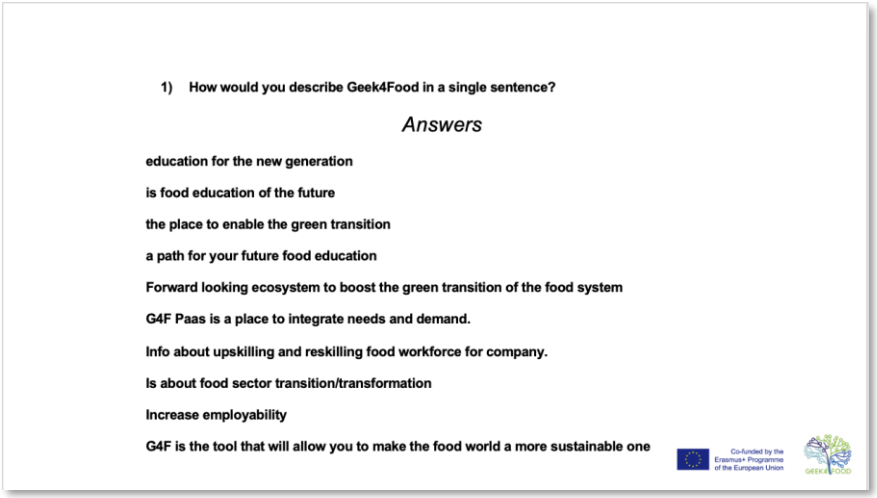
Good Design is Intentional

Human-centered design is an iterative process.

According to IDEO (and us), the **six** phases of the HCD process are:

1. **Observation**
   a. Making assumptions and hypotheses
   b. User research (Who are our users? What are their pain points? etc.)
   c. Empathy
   d. Understanding "context of use" (behavioral: **where** and **how**, and **by whom** would the product be used?)
2. **Ideation**
   a. Asking the right questions
   b. Personas
   c. Empathy maps
   d. Customer journey maps
   e. Sketching and ideating
3. **Rapid Prototyping** - designing and testing solutions
4. **User Feedback - User Testing**
   a. User testing and validation (does the product solve a problem?)
   b. Usability testing (is the product actually usable by people?)
5. **Iteration**
6. **Implementation**

Figure 3 – User Workshop on March 10th, 2023 – Human Centric approach



1) How would you describe Geek4Food in a single sentence?

Answers

education for the new generation

is food education of the future

the place to enable the green transition

a path for your future food education

Forward looking ecosystem to boost the green transition of the food system

G4F Paas is a place to integrate needs and demand.

Info about upskilling and reskilling food workforce for company.

Is about food sector transition/transformation

Increase employability

G4F is the tool that will allow you to make the food world a more sustainable one

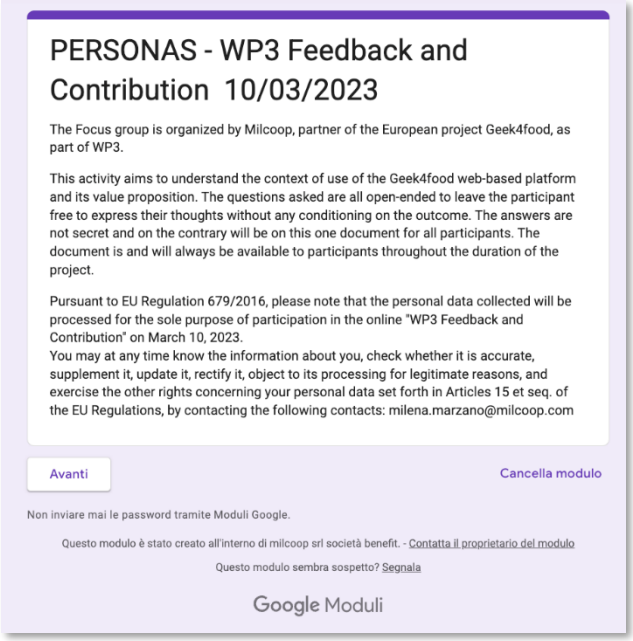
Figure 4 – User Workshop on March 10th, 2023 – question (example)

ii. Surveys

In parallel to the online workshop a survey was disseminated targeted to individuals of the four target groups as well as to a new target group, i.e. entrepreneurs, in order to collect suggestions also from interested parties that couldn't participate at the workshops **(Figure 5-7)**.

In the process of shaping the G4F platform model, the survey aimed to incorporate valuable insights gained from specific user workshops (March 2023). The main results from the survey is that a significant challenge for many users was a scarcity of time.

The respondents, especially those from business and policymakers have time constraints and indicated desired solutions that were respectful of their time constraints. In addition, they highlighted the admirable desire to positively impact not just their lives but also their surrounding environments - be it work, social, or even the larger context of the planet.


PERSONAS - WP3 Feedback and Contribution 10/03/2023

The Focus group is organized by Milcoop, partner of the European project Geek4food, as part of WP3.

This activity aims to understand the context of use of the Geek4food web-based platform and its value proposition. The questions asked are all open-ended to leave the participant free to express their thoughts without any conditioning on the outcome. The answers are not secret and on the contrary will be on this one document for all participants. The document is and will always be available to participants throughout the duration of the project.

Pursuant to EU Regulation 679/2016, please note that the personal data collected will be processed for the sole purpose of participation in the online "WP3 Feedback and Contribution" on March 10, 2023.
You may at any time know the information about you, check whether it is accurate, supplement it, update it, rectify it, object to its processing for legitimate reasons, and exercise the other rights concerning your personal data set forth in Articles 15 et seq. of the EU Regulations, by contacting the following contacts: milena.marzano@milcoop.com

Avanti Cancella modulo

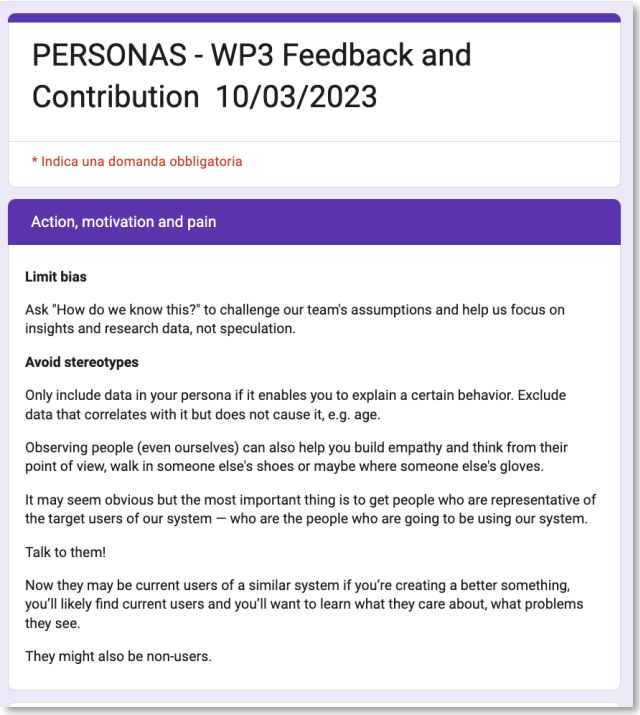
Non inviare mai le password tramite Moduli Google.

Questo modulo è stato creato all'interno di milcoop srl società benefit. - Contatta il proprietario del modulo

Questo modulo sembra sospetto? Segnala

Google Moduli

Figure 5 – User Workshop on March 10th, 2023



PERSONAS - WP3 Feedback and Contribution 10/03/2023

* Indica una domanda obbligatoria

Action, motivation and pain

Limit bias

Ask "How do we know this?" to challenge our team's assumptions and help us focus on insights and research data, not speculation.

Avoid stereotypes

Only include data in your persona if it enables you to explain a certain behavior. Exclude data that correlates with it but does not cause it, e.g. age.

Observing people (even ourselves) can also help you build empathy and think from their point of view, walk in someone else's shoes or maybe where someone else's gloves.

It may seem obvious but the most important thing is to get people who are representative of the target users of our system — who are the people who are going to be using our system.

Talk to them!

Now they may be current users of a similar system if you're creating a better something, you'll likely find current users and you'll want to learn what they care about, what problems they see.

They might also be non-users.

Figure 6 – User Workshop on March 10th, 2023

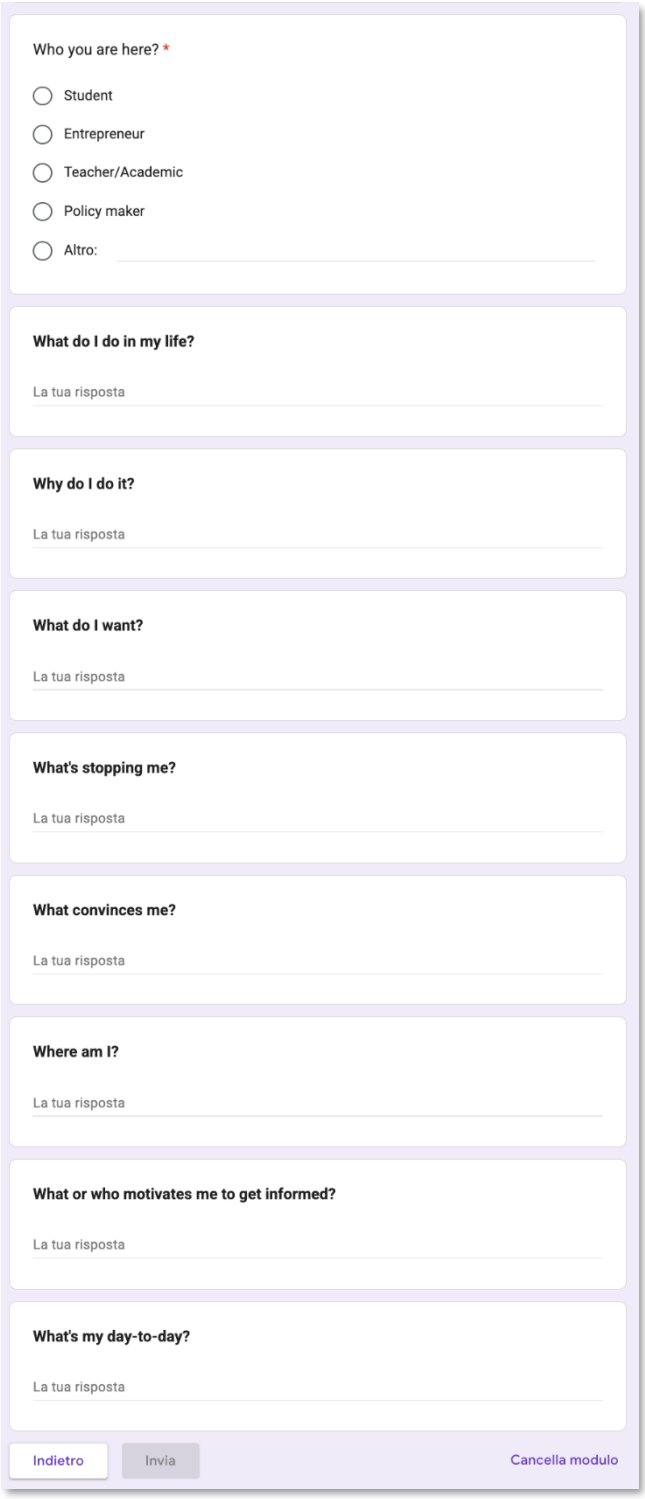


Figure 7 – User Workshop on March 10th, 2023 - Questions

Workshops participants and survey respondents highlighted also
- mobile accessibility catered to users' needs for flexibility and convenience, enabling them to learn at their own pace and in their own time.
- desire to make a positive impact. Actually, the 3P-G4F Hub, will be focused on green skills for the transition in the agri-food sector, connecting users to opportunities that not only advanced their careers but also contributed to a sustainable future.

In response to the suggestions and the survey results, the process of the platform's design and offerings started. The data gathered from the cross-sectional survey on March 10, 2023, revealed a compelling convergence of professional aspirations and psychological drivers across all designated **User Personas**.
While the technical requirements of Learners, Educators, and Entrepreneurs naturally diverge, the qualitative synthesis indicates a profound shared ontological commitment to **social and environmental efficacy**. This "**Impact-Driven**" consensus suggests that in the agrifood sector, the perceived value of a digital platform is fundamentally tied to its ability to facilitate tangible, positive contributions to the global "Green Transition."

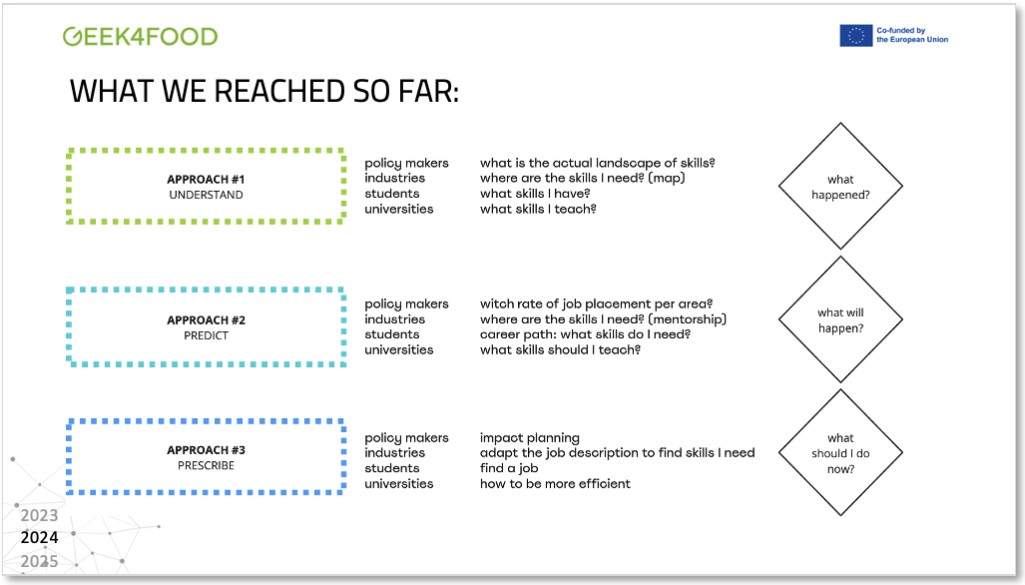


Figure 8 – WP3 fundamentals

The **UX (User Experience)** (**see Figure 8)** must act as a transparent conduit for productivity rather than a barrier. Scientifically, this alignment supports the **Technology Acceptance Model (TAM)**, where "Perceived Usefulness" is inextricably linked to the platform's capacity to respect the user's temporal boundaries while amplifying their professional impact.

This specific **"Understand"** phase worked as a retrospective diagnostic tool, answering the question **"what happened?"** by mapping the actual landscape of available skills and educational offerings across universities, students, and industry. This was mandatory for gaining the second stage, **"Predict,"** which shifts toward a prospective orientation. By analyzing job placement rates and forecasting career path requirements, this predictive

module addresses **"what will happen?"**, enabling mentorship and instructional alignment with future industrial needs.

The final and most sophisticated tier, **"Prescribe,"** represented the platform's decision-support peak, answering **"what should I do now?"** through active impact planning and targeted job description adaptation. This prescriptive capability empowers users to optimize their efficiency and find exact skill matches in real-time, effectively fulfilling the **"Beneficence" and "Autonomy" principles** of the capAI framework by providing actionable intelligence.

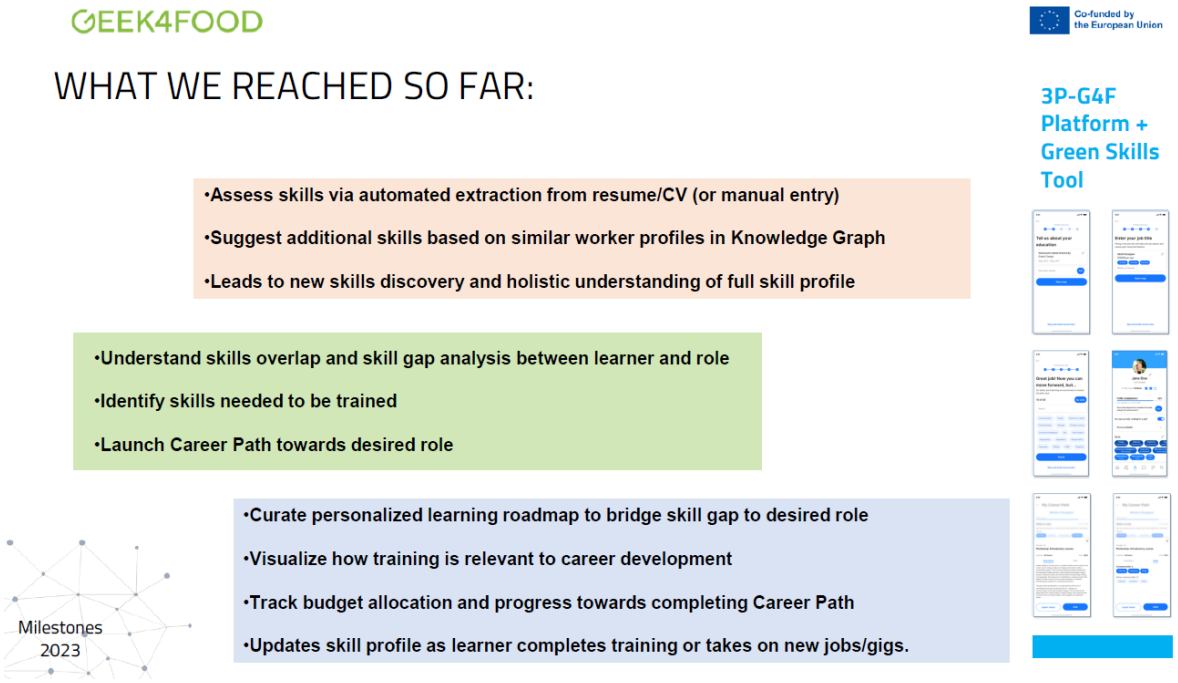


Figure 9 – Results of the user workshops

Utilizing principles of Human-Centred Design and Complexity Zero, and all the results, the following principles were applied in the design and development of the 3P-G4F platform

- **intuitive and efficient user experience with reduced time burden for the users**
- **offer of personalized recommendations** (e.g. training) based on their interests (i.e. target groups, specialization, career perspective, current and future skills need, etc.) and learning history
- **easy-to-be used, flexibility and convenience**, i.e. usability also by multiple devices, mobile phones included.

For the purposes of the GEEK4Food project, the 3P-G4F platform will be focusing on activities and aspects in support of the "green" and digital transition of the food system and for which dedicated taxonomies, skills needs and skills gaps analysis, training modules and other virtual components (e.g. policy library/policy path finder) will be developed.

Methodologically, this infrastructure enables a precise **gap analysis** by mapping the overlap between a learner's current profile and the specific requirements of a target role, effectively identifying the exact training interventions needed to launch a viable career path. The system then translates these diagnostics into a curated, personalized learning roadmap that visualizes

the direct relevance of training to long-term career development while simultaneously tracking budget allocation and progress. By maintaining a dynamic feedback loop that updates the skill profile in real-time as the learner completes modules or gains new professional experience, the platform fulfills the **technical robustness and explicability criteria** of the capAI framework.

iii. Workshop "skills taxonomy"

An in presence dedicated workshop on "*skills taxonomy*" in support of the design and implementation of the AI-based skills platform and of the 3P-G4G Platform was organised at the **M9 CM meeting in Milan, 11th September 2023**. Participants (14 people), after a presentation delivered by Mohan Reddy (SkyHive) and Milena Marzano (MilCoop) were invited to contribute with their opinions to dedicated surveys accessible by clicking to the following link:

https://2nlzrgcx.optimalworkshop.com/optimalsort/fdd0674b96ad4e0b0d2e346d00f88d47

During the workshop participants were asked to divide into groups and reply to a series of questions in an online survey that included the following questions:

1. **"Think about the persona "Learners""**

Please discuss with your group about the importance of each requirement for this specific category of user. Which of them would you include in the section dedicated?

2. **"Think about the persona ""Academic""**

Please discuss with your group about the importance of each requirement for this specific category of user. Which of them would you include in the section dedicated?

3. "**Think about the persona ""Policy Makers""**

Please discuss with your group about the importance of each requirement for this specific category of user. Which of them would you include in the section dedicated?

4. **"Think about the persona ""Industry""**

Please discuss with your group about the importance of each requirement for this specific category of user. Which of them would you include in the section dedicated?

5. **"Now let's think about some open tasks"**

- *How do you imagine specifically the policy pathfinder service?*
- *Which is the information you expect from the Green Skills Tool (Labour Market Intelligence) to be at the disposal of users? Please specify for each of the marketing personas.*

- *So far, what you and your group think that are the pain points of the platform, if any?*
- *What are the disruptive elements, so far, that you individuate in the platform we are creating?*

Some of the main answers are reported in the Table below (Table 1)

Questions	Frequency
1. "Think about the persona "Learners""	Mentorship: 83.3% Learning and Development: 83.3% Career pathways: 100% Labour Market Insights: 83.3% Skills passport: 66.7% Policy pathfinder: 0% Talent acquisition: 66.7% Workforce transformation: 33.3%
2. "Think about the persona ""Academic""	Mentorship: 83.3% Learning and Development: 83.3% Career pathways: 50% Labour Market Insights: 83.3% Skills passport: 33.3% Policy pathfinder: 83.3% Talent acquisition: 33.3% Workforce transformation: 66.7%
3. "Think about the persona ""Policy Makers""	Mentorship: 0% Learning and Development: 33.3% Career pathways: 33.3% Labour Market Insights: 100% Skills passport: 0% Policy pathfinder: 100% Talent acquisition: 0% Workforce transformation: 100%
4. "Think about the persona ""Industry""	Mentorship: 33.3% Learning and Development: 83.3% Career pathways: 66.7% Labour Market Insights: 100% Skills passport: 66.7% Policy pathfinder: 50% Talent acquisition: 83.3% Workforce transformation: 100%
How do you imagine specifically the policy pathfinder service?	- to inform on labor market opportunities to guarantee a specific link with industries' demand career days to stimulate research pathways via innovation policies. - Produce policy in education Show guidelines attached for geographical context (regional, national, EU) Policy validation (ways of verification) - Search engine on EU polices related to agri-food systems and programmes supporting agri-food systems transformation. - Evidence-based policies linked to the labour market. I.e., a bidirectional database: from policymakers to

	industry/academia; from industry/academia to policymakers. - 1. Access to SkyHIVE data + futures scenarios + results of foresight exercises (data + scenarios + predictions) - 2. Good practices in policymaking 3. A tool to see and bridge the gap between supply and futures green skills and competences

Table 1: results survey workshop 11 September 2023

iv. Results analysis

From **M9 till M13,** the results of all the activities i. to iii. were carefully analysed and used to design the 3P-G4F platform, that was presented briefly at the M13 Consortium meeting (Dublin, 12-13th January 2024).

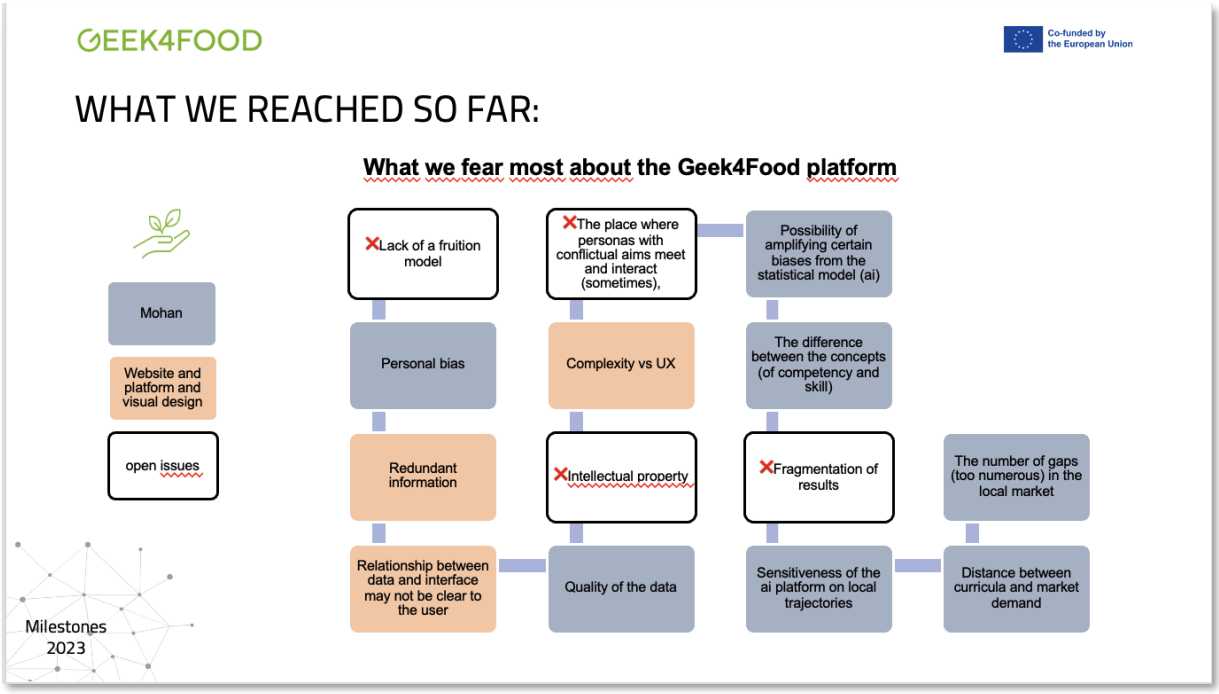


Figure 12 – Workshop "skills taxonomy" – Results Analysis – 1/2

The results analysis **(Figure 12)** reveals a sophisticated interplay between technological ambition and socio-technical learning, as stakeholders engaged in a pre-validation audit of the platform's conceptual and technical architecture to identify systemic friction points.
A primary epistemological concern emerged on the risk for the statistical model to amplify inherent AI biases, which, coupled with the identified fragmentation of results and the semantic ambiguity between the concepts of competency and skill, necessitated a more rigorous alignment with standardized labor market ontologies to ensure cross-border validity.

This technical complexity stands in direct tension with the necessity for high-level cognitive ergonomics, as participants highlighted the risk of redundant information and a lack of transparency in the relationship between complex data and the user interface, suggesting that any failure to translate high-dimensional diagnostics into actionable insights could lead to a

lack of fruition model for the target personas. Furthermore, the significant perceived distance between academic curricula and local market demand raises critical questions about the sensitivity of the AI platform to regional industrial trajectories and the potential for a one-size-fits-all predictive model to ignore localized economic specificities.

By structuring these concerns through the lens of specific personas—including learners, academics, policy makers, and industry leaders—the workshop successfully distinguished between the platform's disruptive innovation in green skills intelligence and its primary structural pain points, such as intellectual property concerns and the underdeveloped nature of the policy pathfinder service (WP6).

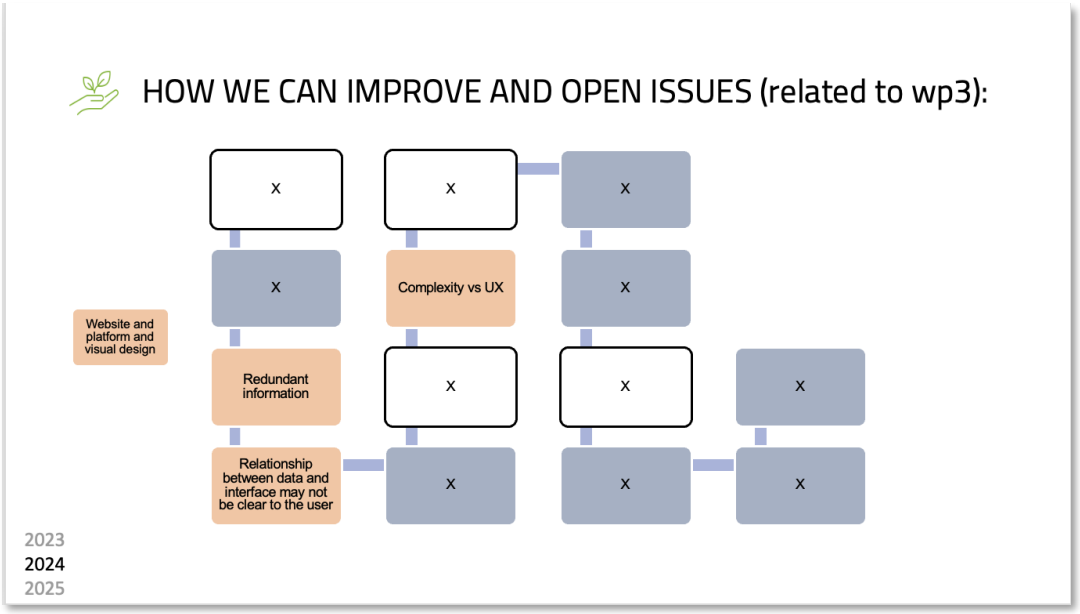


Figure 13 – Workshop "skills taxonomy" – Results Analysis 2/2

This milestone underscores a critical transition from conceptualizing systemic risks to identifying actionable areas for optimization within the GEEK4Food platform's visual and architectural design. Methodologically, the diagnostic focus centers on the crucial equilibrium between computational complexity and User Experience (UX), a thematic continuation of the earlier identified fears regarding data inscrutability (Figure 13).

Relationship between data and interface is as a primary open issue, highlighting the risk that the sophisticated algorithmic output managed by the project may remain opaque or semantically disconnected for the end-user if not bridged by a transparent visual narrative. This challenge is compounded by the identified presence of "Redundant information," which serves as a significant hurdle to cognitive ergonomics; such informational clutter risks overwhelming the stakeholder, thereby diminishing the platform's perceived utility and its status as a lean, efficient diagnostic tool.

From a technical perspective, these 2024 objectives represent the functional application of **Nielsen Norman's heuristic standards**, specifically the "Consistency and Standards" and "Aesthetic and Minimalist Design" criteria, aimed at transforming raw industrial metadata into

a navigable and intuitive interface. By isolating these specific friction points, the project team fulfills the **AI Literacy mandates of the EU AI Act**, ensuring that the final validation phase in 2026 can proceed with a system that is not only technically robust but also semantically aligned with the practical needs of the agrifood project community.

Overall, when looking at or using virtual platforms (sector-specific, or generalists etc,) respondents of all categories highlighted the limited time available: "**Time poverty**" concept, that refers to the lack of time experienced by individuals to engage in desired activities or meet various obligations. It is often associated with feelings of time pressure, stress, and a perceived imbalance between work (duty) and personal life (pleasure). Overall, people tend to view the use of networking platforms (and similar services) as a **waste of time**.
On the contrary, participants highlighted that virtual platforms must provide and have a real impact in our lives and organizations.

v. 3P-GEEK4Food platform design and implementation

This part of the project activities was developed from M13 till M26. To allow a smooth progress of the activities, weekly or bi-weekly online meetings were organised by SkyHive (or SkyHive by Cornerstone from M20 onwards) UNITE, EITFood and MilCoop.

Thanks to the results of the preliminary activities aimed to identify the features of the new virtual platform, and by considering the central role that a timely skill needs identification and analysis in respect to the job market trends is fundamental, the need arose for embedding the AI-Based tool (i.e. **GEEK4Food Skill pass**, **D2.1**) within the 3P-G4F platform, becoming the former one, the entry point of the platform itself for any interested party (Learner/trainee, business, entrepreneur, policymaker). In this way, the platform revolutionizes how workforces work, learn, evolve, and function and intend to offer an AI-based solution for all workforce development aspects for government, companies, educators, and workers/learners.

The 3P-G4F platform was designed and implemented with a focus on the education and training and by considering **two main target groups**, i.e. **learners/trainees** and **Higher Education/Vocational Education and Training providers** for which the GEEK4Food Skill Pass represent a key element to identify skills needs and gaps. For these two categories the platform was designed to provide easy solutions to upskill and reskill effectively, respecting time availability, inspirations (learners) and expertise (trainers).
Thereafter, the platform was developed for the **industry/business target group** and, at last, for the **policymakers** that was implemented by not made public and remained at a "concept level".
The design, setting and development of the 3P-G4F platform suffered of a series of unexpected events, including the change of partner, from SkyHive to SkyHive by Cornerstone occurred in a critical time of the project activities (from M18 till M24 when the amendment was approved) along with the extra time needed to align the taxonomy and lexicon of the agrifood sector considering the different EU and non-EU skills and competence frameworks (i.e. EITFood, ESCO, others).

vi. Launch

The 3P-G4F platform was **officially launched on M27, 31st March 2025**. Press releases, social media posts were published and widely disseminated by the partners to the wider community and sector-specific network.

4. General description of the 3P-G4F Hub

The **"Person-Public-Private" (PPP) GEEK4food platform** named "**3P-G4F Hub**" is accessible from the project website or at the following link: https://skillpass.geek4food.com

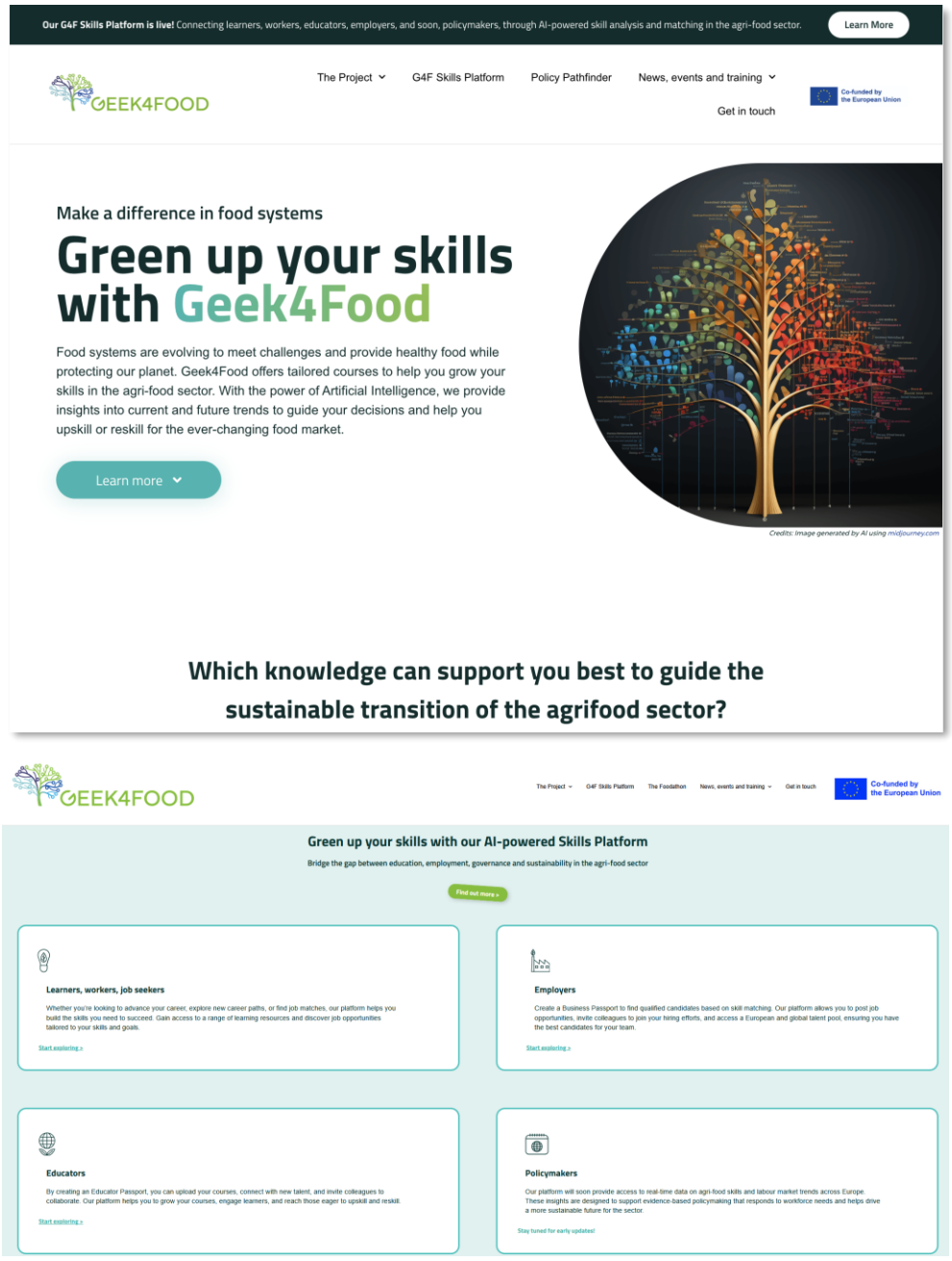


Figure 14 – 15 – Screenshots of the landing page of the 3P-G4F platform in the GEEK4Food website

The 3P-G4F Hub is the virtual networking environment that integrates the GEEK4Food Skill Tool (WP2, D2.1, i.e. GEEK4Food Skills Path) and the main additional and complementary tools

developed within the platform targeted to the Higher Education/training providers, industry/business and policymakers.
The virtual platform is designed for continuously updates and upgrades according to the user experience, the major analyses deriving from the Green Skill Tool and the implementation of the solutions that the Quantum Labor market® will highlight as determinants, filtered by the matrix of the four *personas* according to the PPP (3P) model.
Based on these premises, the Green Skill Tool (WP2) and the 3P-G4F platform (WP3), combined, from now onwards will be identified as the *web-based platform*, the "GEEK4Food Platform (or, by its acronym, *G4F Platform*)", linked as add-on to the GEEK4Food project website, thereby the public visibility for the exploitation of the main project outcome could be guaranteed. Figure 1 report the screenshots of the G4F platform from the home page of the project website.

A primary goal of this document is to elucidate the key features of the GEEK4Food Platform, with a unique focus on the strategies for transitioning from conventional to more sustainable practices. This sustainability is integral to generating new value for people, the environment, and the market.
The following Key Features will be explored:

Comprehensive Skill Profile
- Upload resume or complete a brief questionnaire
- AI-powered skill extraction and categorization
- Personalized dashboard for profile management

User Dashboard
- Interactive checklist for profile completeness
- Motivations tab for personal goal-setting
- "My Peak Potential" for skill assessment and improvement
- "My Job Match" for discovering opportunities
- "My Career Path" for visualizing career progression

Skills Analysis
- Current skills assessment
- Occupation-specific analysis
- Skill trends and relevance tracking

Salary and Career Intelligence
- Career progression pathways
- Similar occupation exploration

Hives: Collaborative Spaces
- Targeted skill development
- Exclusive job opportunities
- Networking with industry professionals

The platform allows users to receive important feedback relevant for his/her career with benefits that can be valorised in terms of skills enhancement or career progression. In particular:
- Reveal the true value of the skills
- Make informed career decisions

- Identify high-impact learning opportunities
- Understand salary potential across roles
- Connect with a vibrant sustainable agri-food professional community

The platform has been structured as a virtual, open and dynamic environment where the community engagement is the key to meaningful participation. It facilitates interconnected training systems, working in synergy with Higher Education institutions, each incorporating its own incentive and quality control system. By connecting multiple touchpoints with users, the establish a supportive, innovative, and responsive environment for the agri-food workforce's continuous growth and development.

The 3P-G4F Hub address the need to match the needed skills with an appropriate training path. The GEEK4Food Skill Pass (D2.1) at its foundation is powered by SkyHive's Human Capital Operating System (HCOS), also known as SkyHive **'Vertical Cloud'**. This sophisticated backend infrastructure enables real-time processing and analysis of extensive data sets at scale.
The HCOS works through three primary CORE components:

- Data Lakehouse
- Knowledge Graph
- Machine Learning Systems

These components work in conjunction with an Integration Hub to create a unified platform that connects and enhances all records systems.

The two outputs together, thus on a single platform, will contribute to the movement to action as the principle of change in the agri-food sector in Europe.

5. The landing page

The landing page (**Figures 16-18)** presents the 3P-G4F Hub and describes the activities available for the 4 user categories:

- Government
- Enterprise
- Educator
- Workers/learners.

Key Features
Job Market Insights

- Access real-time data on in-demand professions
- Explore opportunities across various sectors
- Track emerging career trends
- View demand patterns

Career Path Explorer

- Visualize your potential career trajectory
- Input your current skills and position

- Discover required skills for advancement
- Stay informed about industry trends

Adjacent Career Discovery

- Identify alternative career paths
- Explore unexpected opportunities in related fields
- Leverage existing skills in new ways
- Uncover non-traditional career transitions

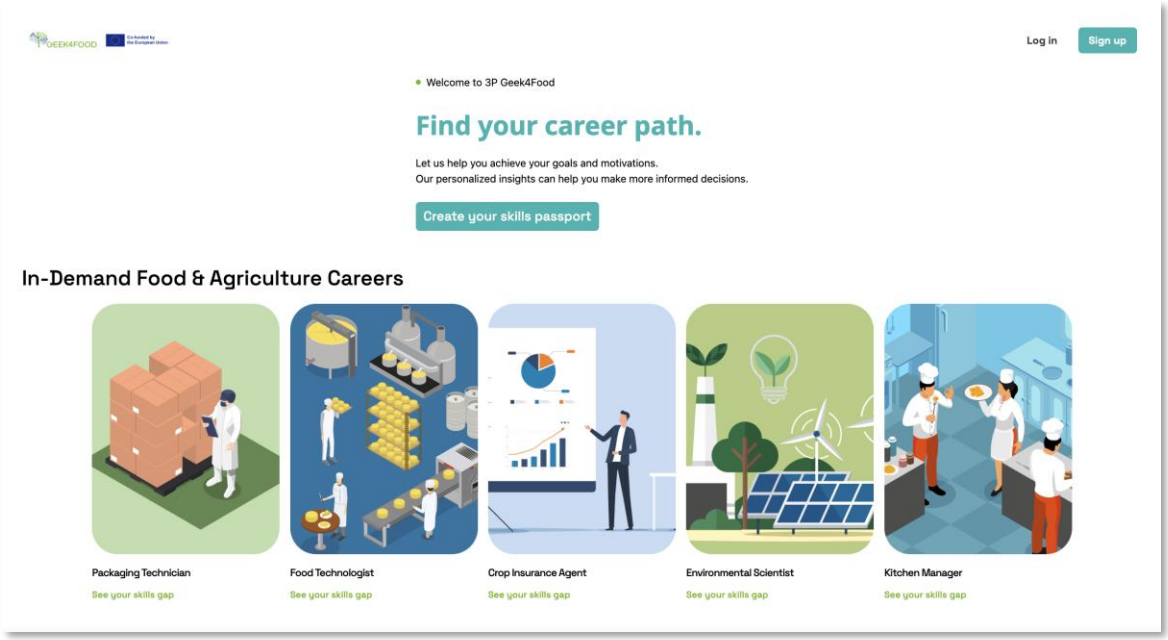


Figure 16 – Screenshot of the entry page of the 3P-G4F platform

The landing page opens with two substantial messages that invite possible, desirable actions:

- **View**
  - Your Skills match
- **Explore**
  - Your Possibilities
- **Find**
  - Your Career Path

The first two invite the user to "*see*" and "*explore*", while the third inform the user of what he/she will be able to achieve, i.e. the possibility of embarking on the career path, in this case the call to action is:

- **Create**
  - Your Skills Passport

This strategy aims to transversally involve the four categories of users that also correspond to marketing “personas”. The goal of optimizing time and maximizing the impact of one's actions leads to simplification by avoiding insignificant categorizations and always resorting to transversal and multi-objective invitations.

With the aim of providing the user with proof of the G4F platform's ability to provide the expected result, even before the desired result is encountered, the "demand" for jobs for five categories of job positions required by the labour market at the "real" moment is shown.

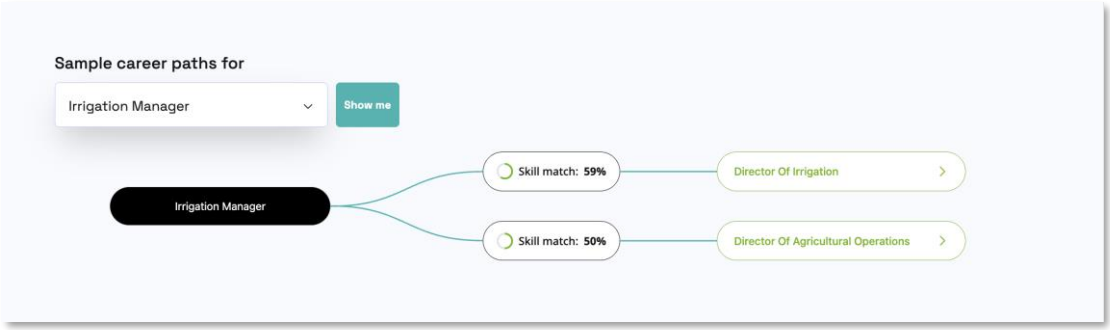


Figure 17 – Screenshot of the landing page (2)

In the starting section of the platform, including the user profile creation, the main activities are referred to the activities of the AI-based GEEK4Food tool, i.e. “G4F Skill Pass” that, as already mentioned, is now embedded in the G4F platform.
For sake of clarity, the term "Passport" combined with the term "Skills" is referred to the algorithm developed in WP2 by SkyHive to underline the transition to an AI-enabled "skills economy" rich in a database updated in real time in the labor market domain that, for the purposes of the project has been applied to the skills of interest of the agrifood sector and related job market..
At the top of the entry page, there is also a section titled "*Turn your hobbies into careers - Extract your skills*." This section is designed to help users turn their hobbies or practical/working experiences into relevant professional skills. Hobbies enrich the structured orientation path, which helps people to become aware of their attitudes, skills and professional aspirations.

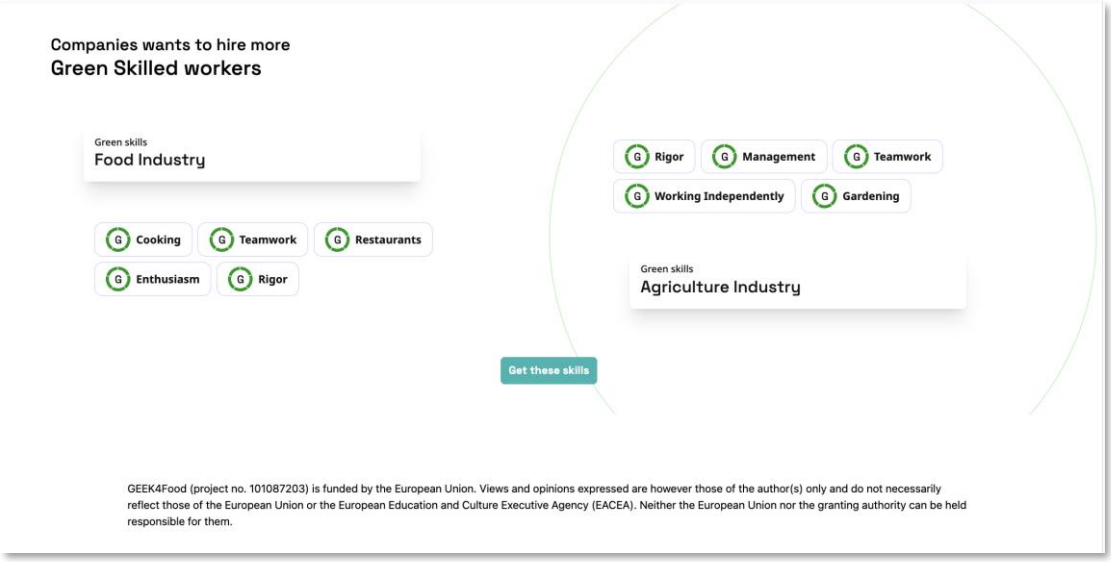


Figure 18 – Screenshot of the landing page (3)

6. The registration process

Onboarding

The onboarding process requires a series of steps to be carried out in sequence

- **Sign up for a GEEK4Food account**
- **Input your current professional information**
- **Explore personalized career paths and opportunities**
- **Access detailed insights about skill requirements**
- **Discover adjacent career possibilities**

The registration interface features a clean, professional design with good use of whitespace and clear typography. The system status visibility relies on introductory text, and the form effectively matches real-world concepts using clear labels and helpful placeholder examples. User control is standard for data input to share strong consistency with common web standards and internal layout/styling.

This page displays a standard GEEK4Food web form **(Figure 19),** identified as the first part of a two-step onboarding process. Graphically, the interface features a clean, professional design with good use of whitespace and clear typography. The system status visibility relies on introductory text, and the form effectively matches real-world concepts using clear labels and helpful placeholder examples.

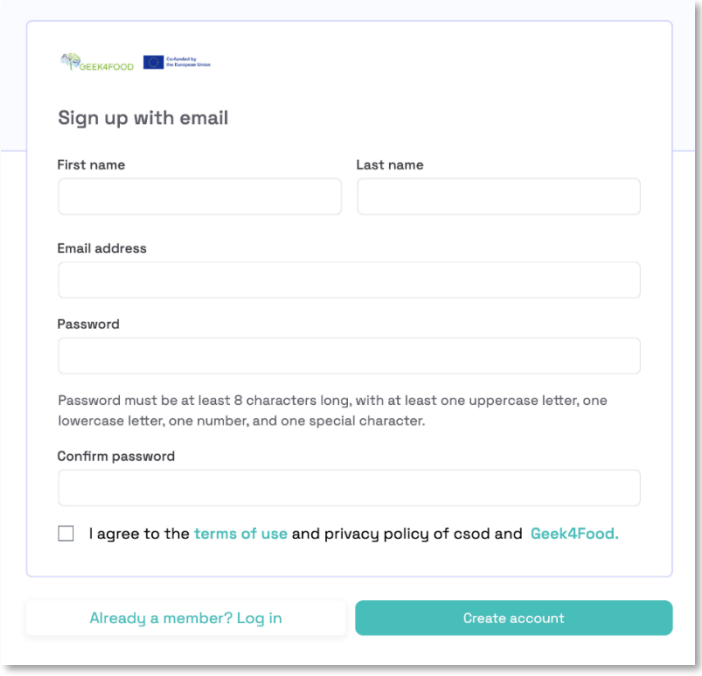


Figure 19 – Screenshot of the registration/sign in form

Sign Up

To sign up, the user must provide his/her own credentials, including:

- First name
- Last name
- Email
- Password
- Confirm password **(Figure 20)**

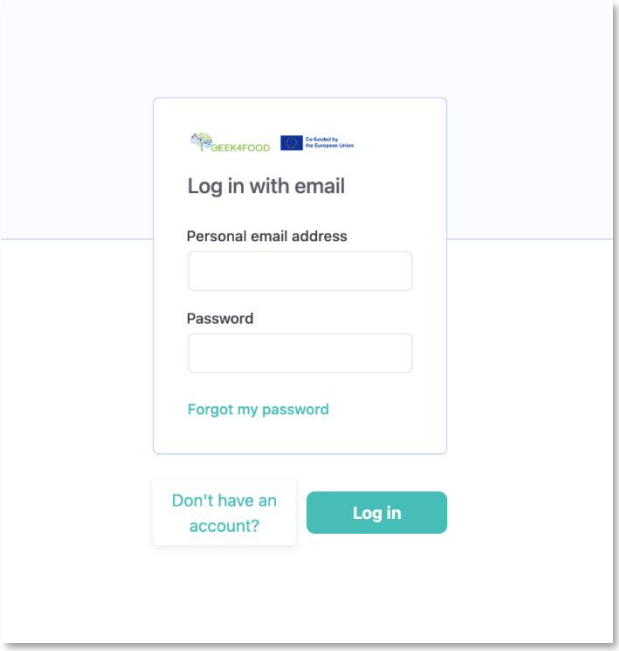


Figure 20 – Screenshot of the Log In form

Login

To log in (Fig.20), the user must use his/her own credentials (email address, password). The request for resetting the password is also included.

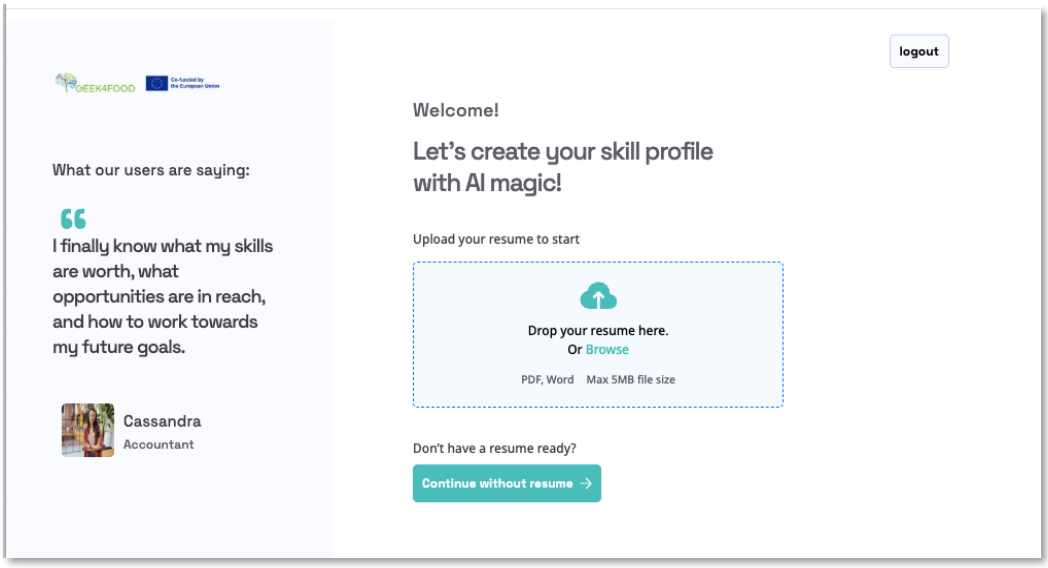


Figure 21 – Screenshot of "Welcome" area (Profile creation)

At login, the user could start using the platform entering in the skills analysis section through four main actions:

Welcome Area: In the page the user is invited to create his/her own skills profile using a process driven by Artificial Intelligence (AI) system. This section is designed to allow the upload of the curriculum (CV) called "resume" of the user (Fig.20)

Resume Upload Widget: In the middle of the page there is an interactive CV upload widget, which allows users to upload files in PDF or Word format up to a maximum of 5 MB. Users can drag the file directly into the drop area or use the "Browse" link to select the file from their device.

Alternative Option: Below the upload widget, a button allows users to proceed without uploading a resume, suggesting an option to fill out the profile manually.

Logout button: There is a logout button at the top right that allows users to log out of the platform at any time.

After registering and logging in, the user has two options to create the profile (Figure 21):

1. "Upload your resume to start"
2. "Continue without resume"

Option 1 (*Upload your resume to start*) is the quickest way to build the profile. Users have to click the blue box to browse for their resume file or drag and drop it into the designated area (in PDF or Word Format).

Once the resume is uploaded, the backend processes the file using the G4F Skill pass (D2.1) that automatically extract skills, work experience and educational details, synchronizing the data with the user profile in real-time.

Alternatively, for users without a pdf or word file of his/her CV, **Option 2** (*Continue without resume*) allows the user to manually proceed with the compilation of the profile, maintaining the flexibility of the flow. From a usability perspective, the interface combines responsive design and visual feedback to ensure a smooth and inclusive user experience, reducing cognitive load and improving accessibility (**Fig. 22).**

The collection of information from the users follows different steps, as follows:

1. Work experience
2. Educational experience
3. Life experience

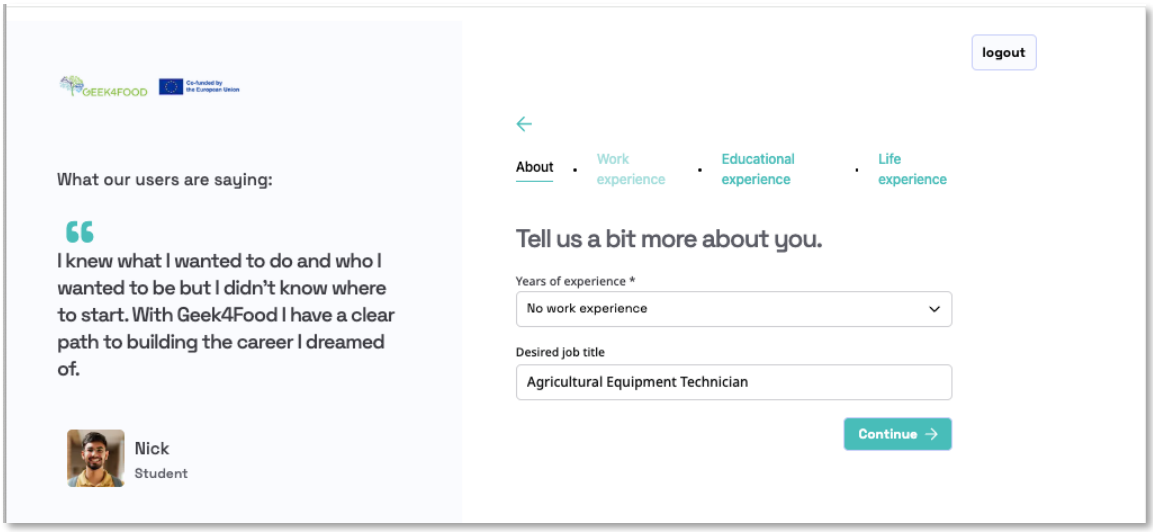


Figure 22 – Screenshot of the resume/CV creation webpage

1. Work experience

A drop-down menu allows the user to select the level of work experience starting from "*No experience*" as the system has been designed to **accommodate users with different levels of experience**, including newbies to the job market **(Figure 23)**.
This section uses a multi-step design wizard, broken down into key categories such as "*About*," "Work experience," "Educational experience," and "Life experience," ensuring a modular and intuitive structure for data entry. The user is guided in entering the data for both the years of work experience and the desired job title, using drop-down menus and input fields to standardize and simplify the collection of information.

As already described, the backend of the platform processes the data collected in real time, synchronizing it with the user's profile to **customize future recommendations** related to career paths, job opportunities and training resources. The interface is designed to be **clear and responsive**, reducing cognitive load during interaction, while the progressive layout improves accessibility and encourages form completion. Visual feedback, such as the

"*Continue*" button, ensures **smooth navigation** between the next steps, improving the overall user experience.

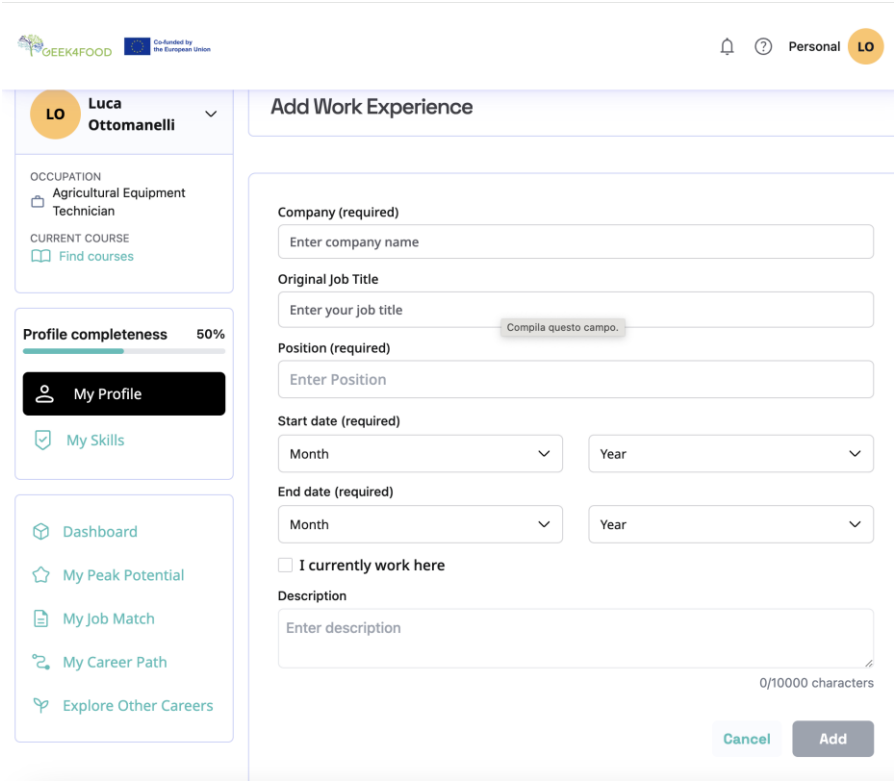


Figure 23 – Screenshot of the resume/CV creation webpage

The entry of data on work experience follows the classic logic of listing positions held, for a period of time, in an organization. The mapping of work skills is based on a structured approach that makes it possible both to identify the skills and knowledge of an individual starting from the positions held and to assess the degree of mastery.

Each required field is labelled, with visual cues such as "*Fill in this field*" to ensure real-time input validation and prevent errors. Users can enter key information such as the following ones, which can be selected via drop-down menus:

- **The company name**
- **The original job title**
- **The position held**
- **The start and end dates**

The "***I currently work here***" option allows for a personalized experience, adapting the form to include current roles.

The backend synchronizes the data provided with the user's profile, updating the percentage of completion of the profile, which is visually shown through an indicator. The feature supports a description field with a **maximum character limit**, to ensure sufficient detail without compromising readability or data handling. The interface uses a responsive layout, designed for **accessibility and usability on different devices**, while the "*Cancel*" and "*Add*" buttons offer intuitive control over the process of saving / cancelling the data entered.

The user can update the work experience any time in the user profile, by adding it in the specific option of the webpage. The inserted data are elaborated in real time, and the user profile and related skills are correspondently updated. The addition could be made also if the user has uploaded his/her resume/CV, to enhance the skills identification and mastery in a specific role, job, or professional profile.

2. Educational experience (including Languages and Certifications)

In this section (Fig.24), the user could create a comprehensive overview of his/her qualifications:

- **List your academic degrees**
- **Add professional certifications**
- **Include ongoing courses and training**
- **Specify language proficiencies**
- **Note completion dates and academic honors**
- **Share relevant hobbies and interests**

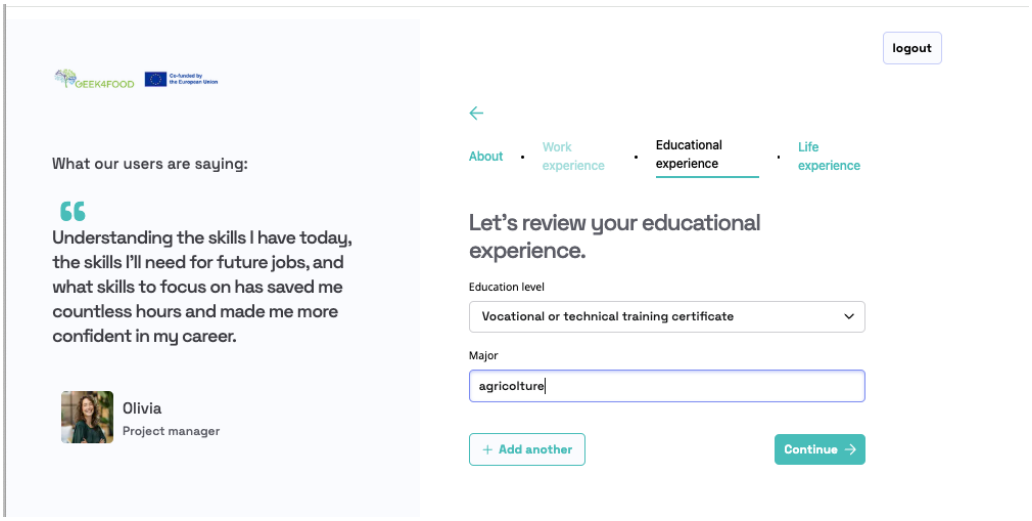


Figure 24 – Screenshot of the educational experience webpage

The interface uses a sequential and modular design, presenting fields including the level of education (e.g. "*Vocational or technical training certificate*") that could be selected via a drop-down menu and the "*Major*" field to specify the area of study, with free text input. The *"+ Add another*" option allows the iterative inclusion of additional qualifications, supporting users with complex educational paths.

The system processes the data entered and synchronizes it with the backend to dynamically update the user profile, improving the **personalization of recommendations** related to career paths and training opportunities. The progressive navigation bar guides the user through the different sections of the form, ensuring an intuitive and fluid user experience. The "*Continue*" button allows you to save data and progress through the compilation, while the layout is optimized for accessibility and responsiveness on different devices.

The user can update any time in his/her profile the educational experience, by adding it in the specific option of the webpage. The inserted data are elaborated in real time, and the user profile and related skills is correspondently updated.

In addition to the educational and professional experience, **additional landing pages** have been set on specific themes, in particular:

Student-focused: find your career path

- Jobs with the highest demand
- Sample career paths based on the top 30 in-demand jobs in your country
- Extracting skills from your hobbies
- Unemployed: increase your chances

Career insights to become a top applicant

- Work on what matters to you
- Join hive communities to stay informed
- Other careers with high skills overlap
- High-tech workers: find your peak potential

Career paths

- Join hive communities to stay informed
- Career insights to make yourself indispensable
- Green economy: 100 million new jobs

What is a green economy

- Green careers in demand
- Join hive communities to stay informed
- Companies want to hire more green workers

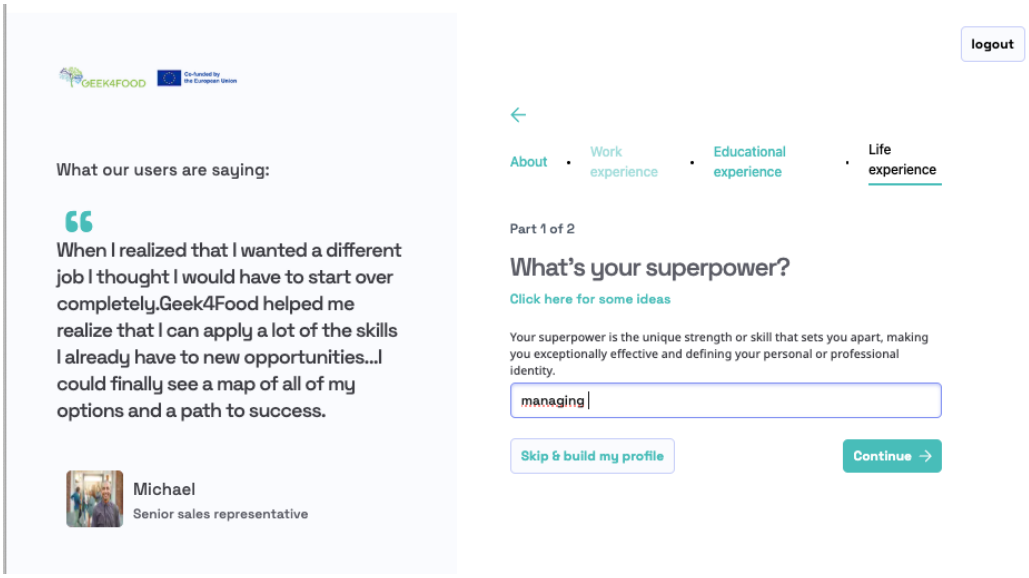


Figure 25 – Screenshot of the "superpower" webpage

To complete the skills and expectations description of the users, a dedicated question (and webpage) has been included where the user is asked to indicate his/her "*superpower*" (Fig.25). The concept of **superpower** applied to skill, and it represents the idea that each individual possesses a **unique set of skills and talents** that, when recognized and cultivated, can distinguish a person in an extraordinary way in their professional field. The "*superpowers*" are not necessarily common skills, but rather **distinctive strengths** that allow an individual to excel and bring unique value within an organization or project.

3. Life experience

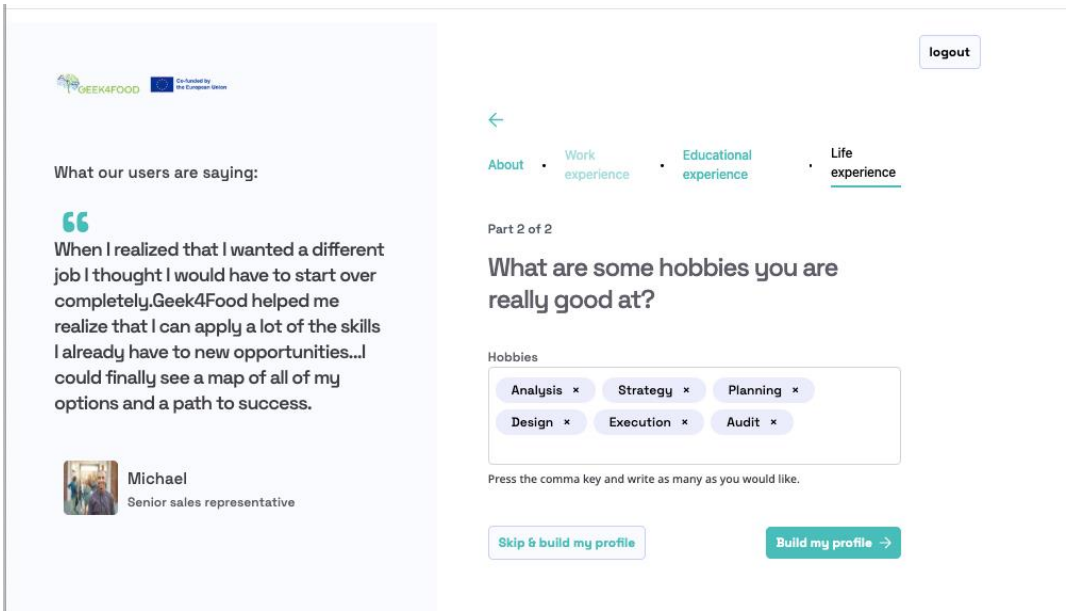


Figure 26 – Screenshot of the "Life experience" webpage

As in the excerpt, multi-step flow and breadcrumb navigation, including about **>work experience > educational experience > life experience**, the user is asked to include non-traditional hobbies, capabilities not easy to highlight from the resume/CV and overall identifiable as *soft skills* (Fig.26).

Figure 27 – Screenshot of the skills results (example) webpage

At the end of this process the AI system analyses the data, and, through a honeycomb layout, the platform visualizes the full list of the skills with the aim of mapping a continuum that goes from "*technical*" to "*human*" **(Figure 27)**.

Expertise levels are shown as:

- **Intermediate**
- **Advanced**
- **Experienced**

The user can revise the level of the individual skill if the user recognizes that the result doesn't fit with the user experience.

The 3P-G4F platform user interface, after having finalised the registration and in following interactions and signing in, allows he/her to visualise two submenu sections (left hand-side), the former focused on the personal profile ("*My profile*", "*My skills*") and the second including an interactive "*Dashboard*" along with a series of sections where the user could evaluate the career opportunities that will be described in the following sections.

My profile

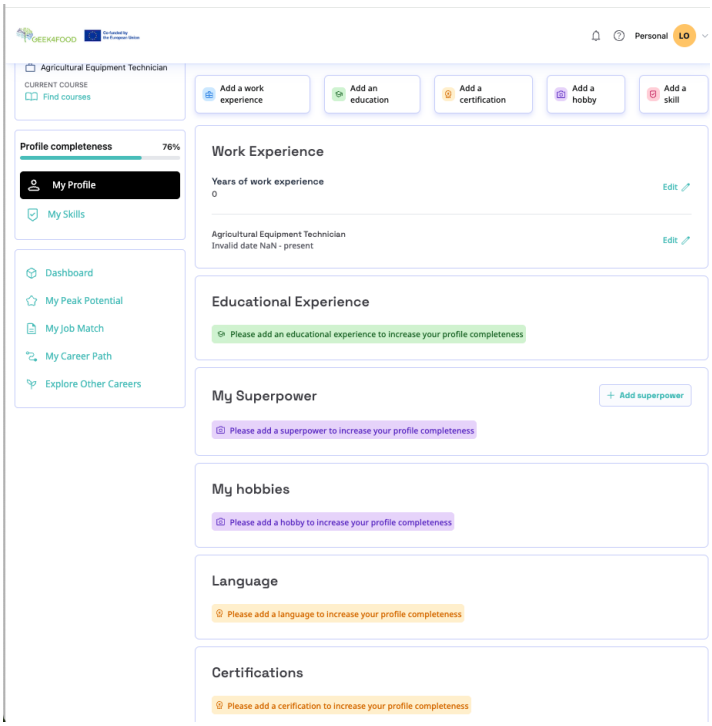


Figure 28 – Screenshot of the "my profile" sub-section (example) webpage

The "*My profile*" section (Fig. 28) visualizes a modular interface for the complete management of the user profile, organized into distinct sections covering work experience, educational experience, certifications, language skills, hobbies and personal characteristics ("Superpower"). Each module provides options to add or edit information via dedicated buttons, such as "*Add*" or "*Edit*", with visual feedback flagging incomplete or missing sections to increase the level of completeness of the profile. For each sub-section it includes an indicator of profile completeness in %, which is updated in real-time as new data is entered. Contextual messages inform the user how to complete the profile, while any errors in the data, such as invalid dates ("*Invalid date NaN*"), are highlighted for correction. The backend architecture validates and synchronizes the data entered, improving accuracy and allowing the system to generate personalized recommendations, such as career paths and learning opportunities.

Any time, after having completed all the sections of the registration step as new "profile", user can modify the user profile by adding extra/additional working or educational experiences, certificates, and hobbies (Fig. 29, Fig. 30).

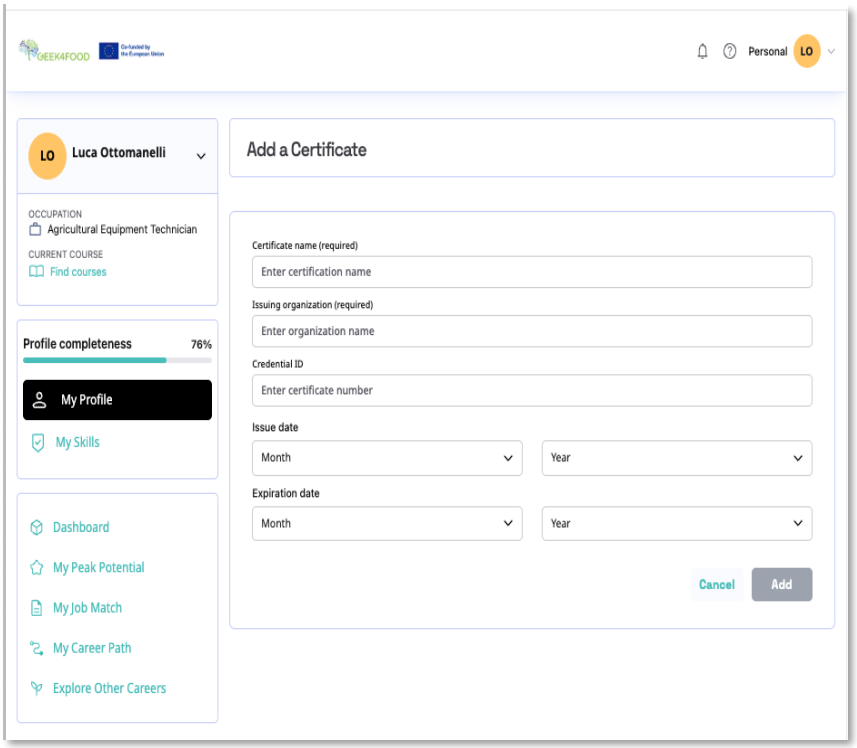


Figure 29 – *Screenshot of the "add certificate" webpage*

As regards **certificates**, the form is designed to collect detailed and structured information, with mandatory fields (e.g. certification name, issuing organization, certification ID expiration dates), which can be selected via drop-down menus. This structure allows you to ensure the **accuracy and completeness of the information** provided. The layout is optimized to ensure a **smooth user experience** across different platforms, improving certification management and making the user profile more competitive and complete.

The interactive "*hobbies*" add form allows users to supplement their profile with personal information related to **interests and non-professional activities** and the associated skill level via a drop-down menu ("Expertise level"). This structure ensures standardization in data acquisition and facilitates the categorization of information in the user profile.

At the end of the profiling, the visualization of the G4F platform for the user skills and competences occurs, with distinctive features:

- Skills are not isolated but interconnected
- There is a natural gradient between technical and human skills
- Skills can be categorized by level of experience.

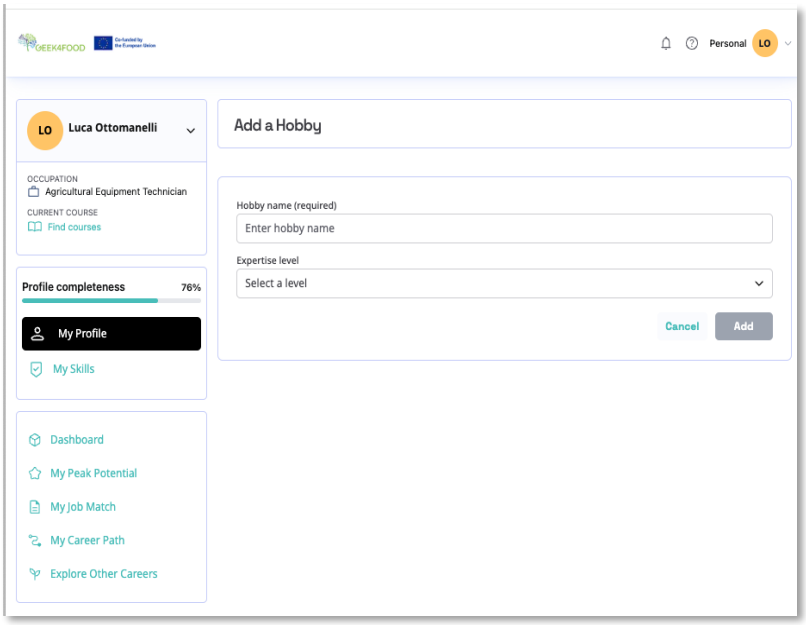


Figure 30 – Screenshot of the "add a Hobby" webpage

Moreover, the following features could be highlighted:

- **Text Analysis and Skill Extraction:** The NLP module of the G4F skill Pass processes the entire resume of the user, identifying both explicit skills and those inferred from the professional experience. The system has multilingual capabilities that enable effective parsing for a global audience of professionals

- **Advanced Skill Mapping:** Detected skills are systematically aligned with standardized industry frameworks using machine learning algorithms. This ensures precise categorization and industry relevance. For instance, a listed skill like "*data visualization*" is linked to broader domains such as "data analysis" and "business intelligence"

- **Comprehensive Skill Evaluation:** The system assesses skill proficiency by analysing various factors, including:

- Duration of skill usage
- Contexts of application
- Certifications and credentials obtained
- Projects and achievements that validate skill implementation

Dynamic Validation: Skills are cross-referenced with real-time labor market data to confirm their applicability and demand in the current job landscape. This ensures the skills remain accurate and relevant to evolving workforce needs.

My Skills

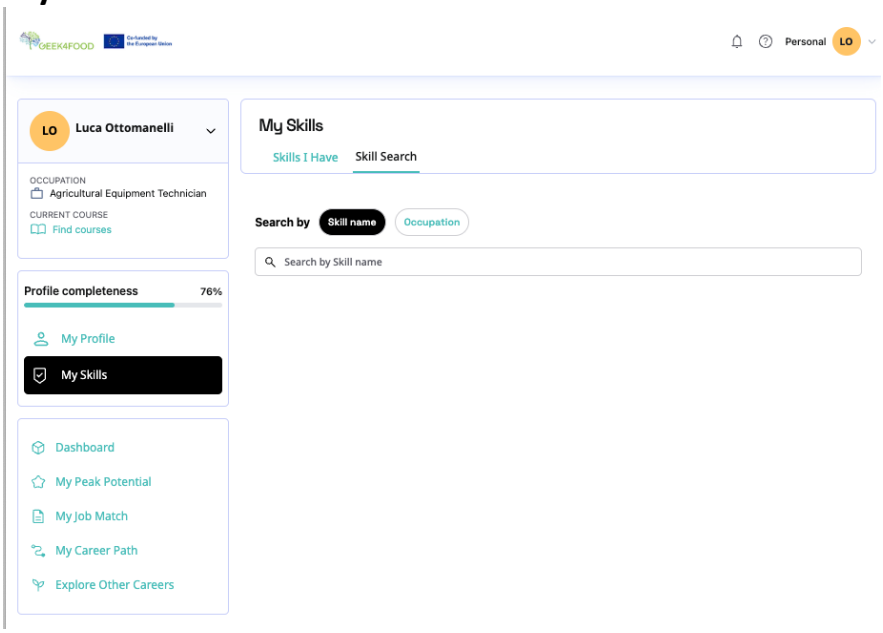


Figure 31 – Screenshot of the user dashboard webpage – "My skills" entry page

The skill management interface uses a minimalist design to allow users to search, add, and organize their skills intuitively (Fig. 31). The section is divided into two main tabs: **"Skills I Have",** which lists the skills already acquired by the user, and **"Skill Search",** which allows you to explore and add new skills to the profile. The layout is optimized for clarity, with interactive options that allow you to access additional details or custom actions. This approach allows for **efficient management of the user profile**, improving the visibility of registered skills and suggesting professional development paths based on labour market needs or personal goals. In the" Skills I have" module a dynamic search bar allows you to filter skills by name or occupation. This feature is supported by a backend that analyses and returns results in real-time, improving the user experience through quick and relevant responses.

The functional core of G4F Skill pass is based on a three-dimensional approach that integrates data collection, processing and presentation of results. All user data are processed through the AI-based G4F Skill pass that automatically categorizes the skills in different categories, i.e.

- Technical
- Human
- General
- Other

At the end, the interface translates this complex processing into a clear and immediate visualization, presenting a main dashboard that shows the fundamental metrics of the user's skill, i.e., the total skills mapped (in Fig. 32, 32 skills, divided into 28 technical and 4 human), the % of matching with the desired role and the gap analysis (44 skills recommended by the labour market).

The system also implements a progress tracking mechanism that monitors the completeness of the profile (Fig. 32: 76%) and provides constant feedback through messages of encouragement and professional development suggestions.

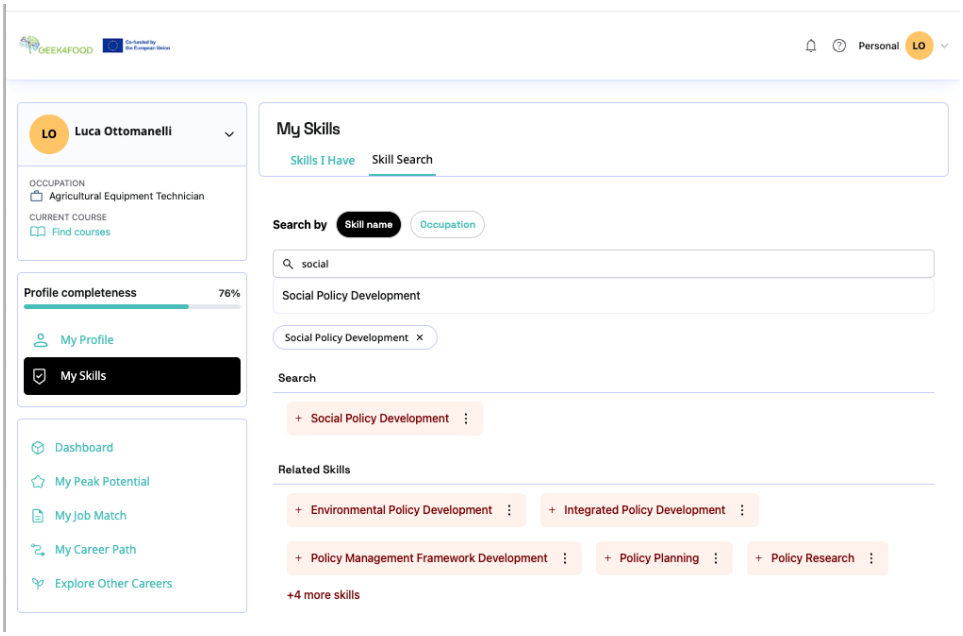


Figure 32 – Screenshot of the user dashboard webpage – "My skills; Skills I have" user experience

GEEK4Food implements advanced search for skills management through a multi-layered approach of research and related suggestions. The user interface is structured with a system of tabs ("Skills I Have" and "Skill Search") (Fig. 31) that clearly segments the display and search functions.

The "search" engine includes two filter modes ("*Skill name*" and "*Occupation*"), allowing a contextual search based on the user's needs.

The self-complete feature is activated as the user types the skill name (in this example, searching for "social"), presenting relevant results in real time (Fig. 31). Once a skill has been selected (in the example Fig.31, "Social Policy Development"), the system implements a pattern of related suggestions through a "Related Skills" section that shows related skills organized hierarchically (such as, *Environmental Policy Development, Integrated Policy Development, Policy Management Framework Development, Policy Planning and Policy Research*). This hint architecture is enhanced by a progressive expansion system ("+4 more skills") that avoids information overload by keeping the interface clean. Each skill is accompanied by a context menu (indicated by the ":" icon) that supposedly provides additional actions or details about the specific skill. The system also maintains visual consistency with the rest of the application, preserving user context through the profile completion indicator (76%) and the side navigation menu, thus ensuring a fluid and contextualized user experience.

The interface implements an intelligent search system with self-complete and skill correlation capabilities.

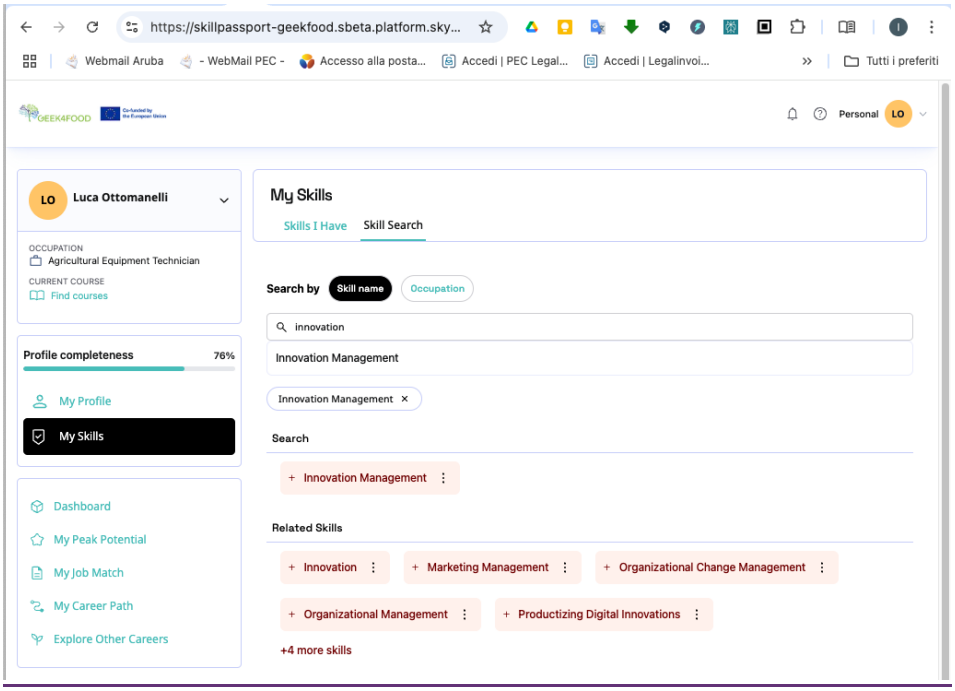


Figure 33 – Screenshot of the user dashboard webpage – "My skills; Skills I have" user experience

When the user types "*Innovation*" in the search field (Figure 33), the system activates a real-time suggestion engine that proposes "Innovation Management" as the primary result. Once this skill has been selected, the system automatically generates a removable tag (highlighted by the "×" symbol) and simultaneously activates a correlation algorithm that populates the "Related Skills" section with interconnected skills.
These correlations follow a logic of relevance based on professional patterns, showing skills such as *Innovation, Marketing Management, Organizational Change Management, Organizational Management and Productizing Digital Innovations*. The interface maintains a modular approach with two search modes ("Skill name" and "Occupation") and implements a progressive paging system indicated by the "+4 more skills", suggesting the existence of additional related skills accessible on demand. Each skill comes with a context menu (indicated by the ":" dots) that supposedly offers management options or additional details.

Change of the skills level

Through easy interaction, the user can select a specific skill (e.g., "Product Lifecycle Management") and change its level using a pop-up dialog (Fig. 34) where the user can select the level within a structured **five-levels ranking of mastery** (*Entry*, *Beginner*, *Intermediate*, *Advanced*, *Experienced*), each of which represents a progressive increase in knowledge and experience. After revision, the new level is saved through a confirmation button ("*Save level*"), updating the user profile in real time. This approach allows for **immediate, personalized feedback**, leveraging a two-way data flow between the user interface and the backend system to synchronize information and ensure an accurate representation of skills. The architecture is based on modular components that improve accessibility and simplify the skills management process.

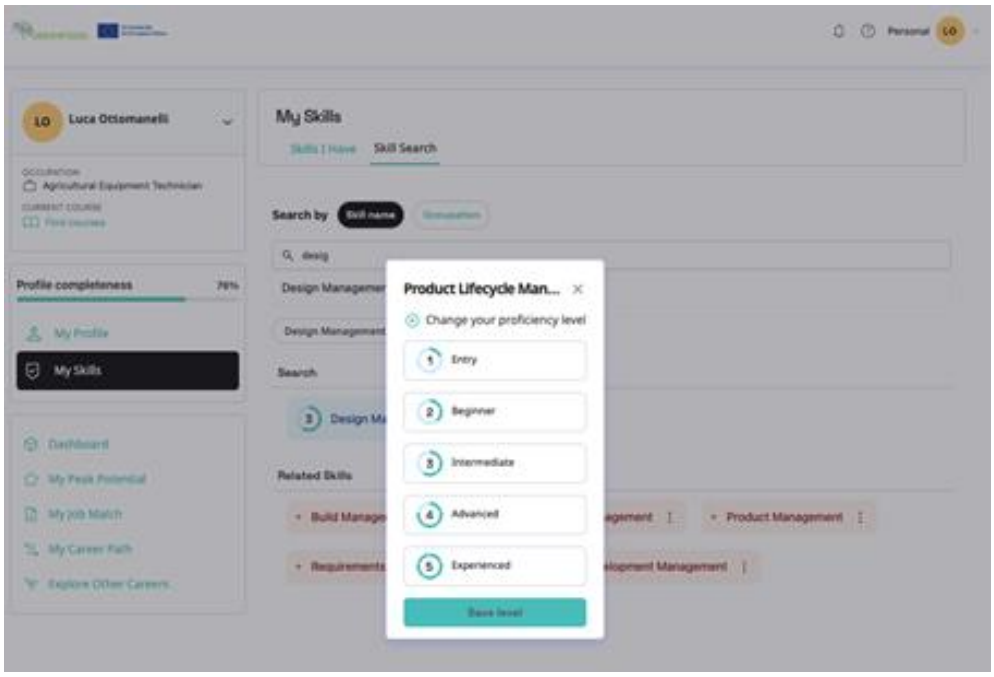


Figure 34 – Screenshot of the change level pop-up

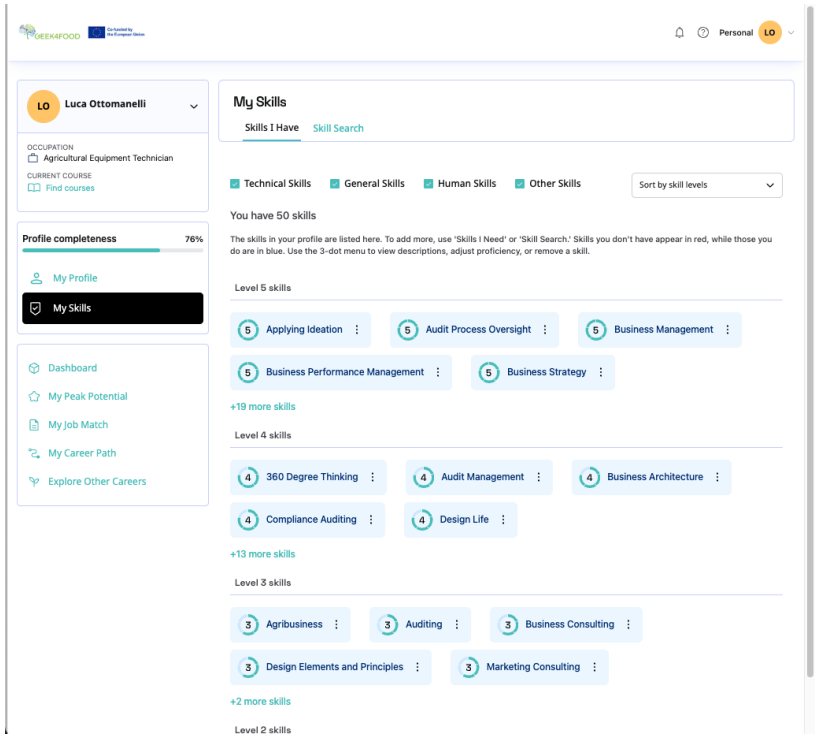


Figure 35 – Screenshot of the revised skills and related level user in "My Skills" section

The interface synchronizes data in real-time with the backend, ensuring constant and personalized profile updates (Figure 35).

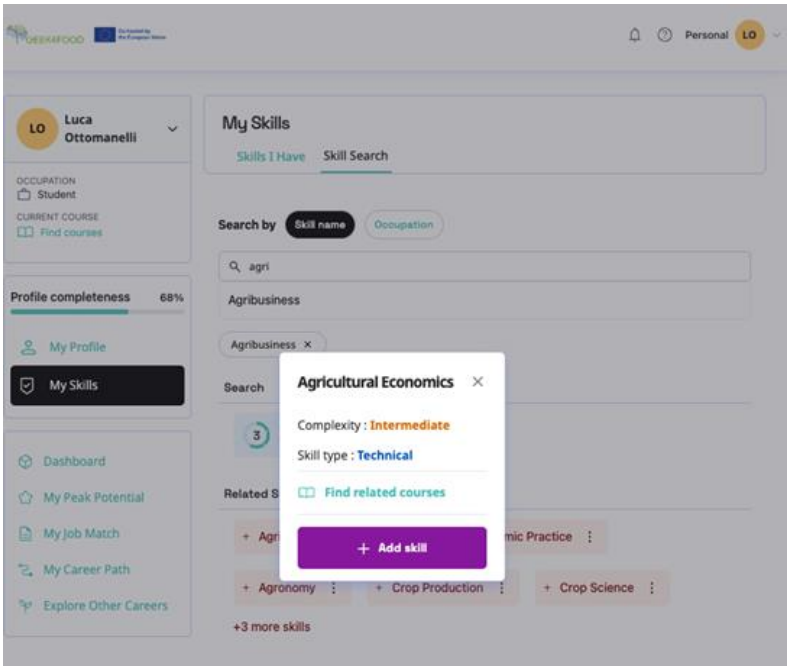


Figure 36 – Screenshot of the skills description and addition in the dashboard page

The Geek4Food Hub uses a modular, interactive user interface to allow users to explore, manage, and deepen their skills. Skills search can be done by name or occupation, with relevant suggestions and results displayed in real-time. Once a skill is selected (e.g., "Agricultural Economics"), the interface presents an informative pop-up that provides key details, such as the level of complexity (e.g., "Intermediate") and the type of skill (e.g., "Technical"). In addition, the user can add the skill to their profile via a dedicated button ("*Add skill*") or explore additional training opportunities via a link to related courses ("Find related courses") (Fig. 36). The interface connects skills to related skills, highlighting possible areas for growth or deepening, through an intuitive and accessible visual representation. The data flow is synchronized bi-directionally with the backend to dynamically update the user profile and ensure that the suggestions reflect the latest information.

The motivation dashboard

The motivation dashboard (Fig. 37) module of the platform is designed to cater to various career stages and professional needs of the user:

For **Individuals:**

- Set personal goals
- Find job opportunities
- Excel in your current role
- Explore new career paths

Each item/box of the dashboard represents a different motivation or goal of the user. By clicking on the box, the user can explore the options available for each of the different target groups/sector and explore specific items and options.

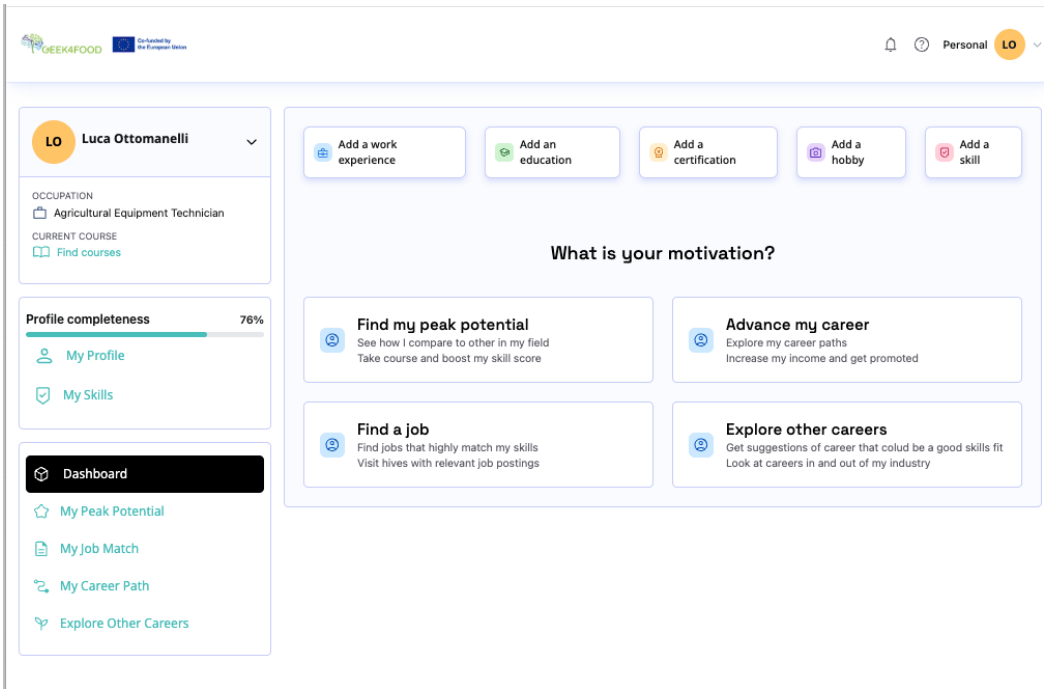


Figure 37 – Screenshot of the initial webpage of the user Dashboard

For Educators (Higher Education, training providers) Business and Government Users (higher level of registration, see sections "*Educator*", *Entrepreneur/business*, *Policy Makers*)**:**

- **Educators:** Analyse courses based on labour market data
- **Employers:** Access labour market insights for talent acquisition
- **Government Workers:** Evaluate and compare economic performance

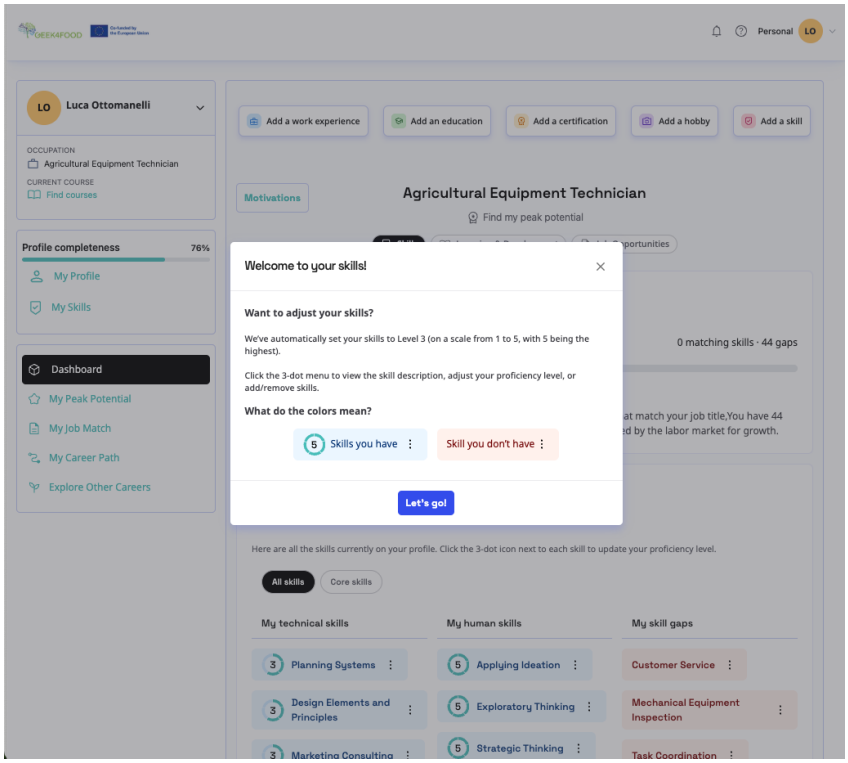


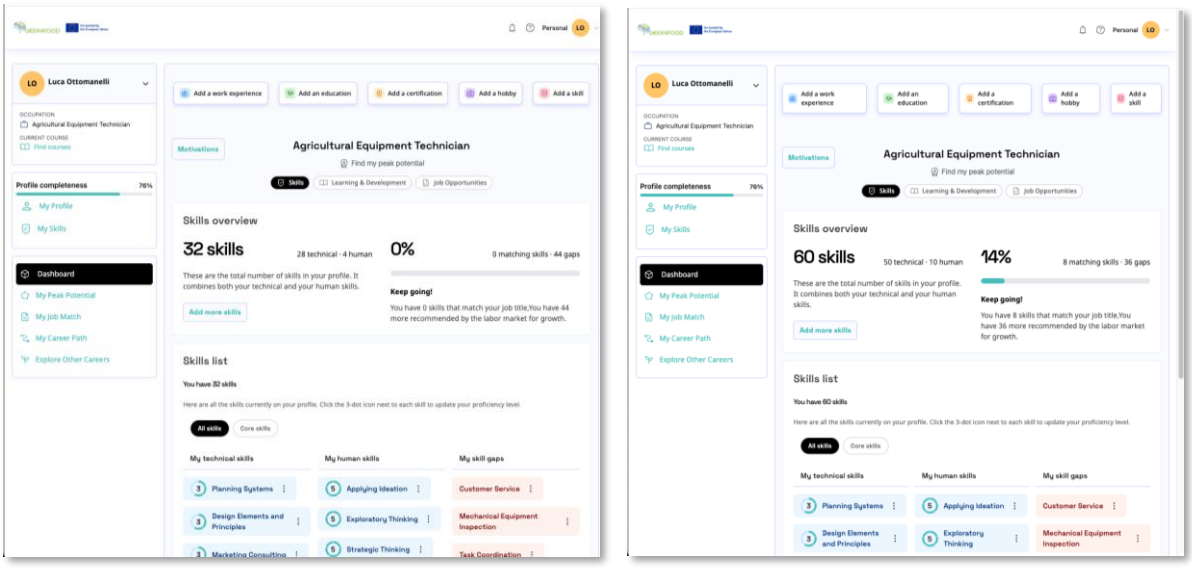
Figure 38 – Screenshot of the user dashboard webpage – skills gap

After profiling, the system categorizes the skills of the user and highlights the gap between current (*Skills you have*) and desired (*Skills you don't have*) skills towards a specific target job (Fig. 38 i.e. advance career, find a job, explore other careers).

The webpage also provides a visual guide to **what the colours associated with the skills mean**: ***blue*** for skills already possessed and ***red*** for missing skills.

The interface fully reflects the systemic approach, structured in the management of skills in the agri-food sector, in which assessment, gap analysis and development planning are in a single integrated tool.

As regards the current skills, the interface informs the user about the initial status of the skills, automatically pre-set at level 3 (medium) on a scale of 1 to 5, with level 5 representing the highest level. Then, the user can access a three-dot menu next to each skill to view its description, change the skill level, or add/remove skills. The back end dynamically synchronizes the updated data with the user's profile, allowing real-time monitoring of gaps (skill gaps) and matching skills. The responsive interface allows for efficient skills management through specific filters such as "*All skills*" and "*Core skills*", improving accessibility and ensuring smooth and personalized interaction for the user (Fig. 39 (a), Fig. 39 (b))



(a) (b)

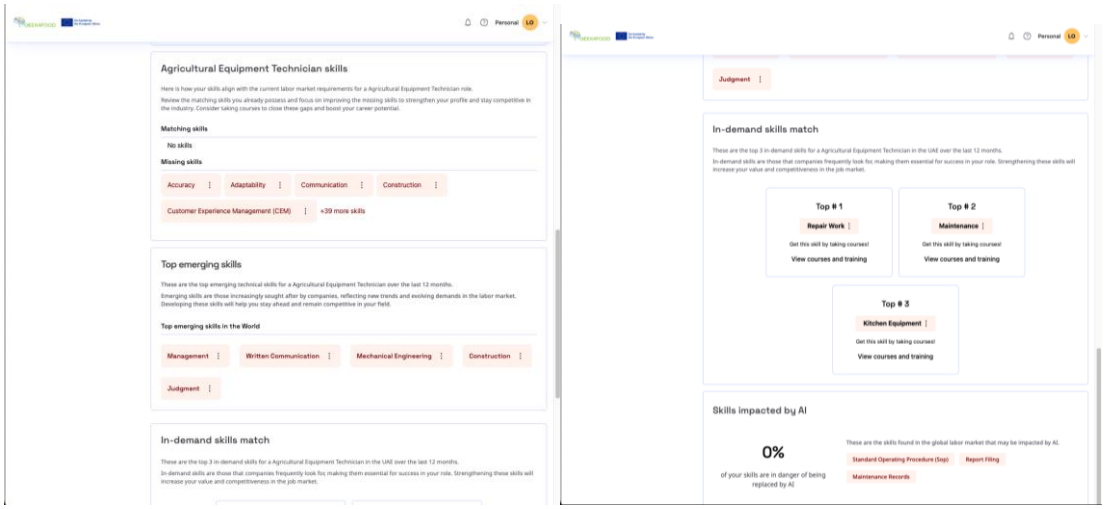
Figures 39(a), 39 (b) – Screenshot of the user dashboard webpage – skills resume, before (a) and after (b) addition of new work and educational experiences in the user "Profile" section.

The G4F platform provides an interactive dashboard that summarizes and analyses the user's skills in relation to his/her current professional role (e.g. "Agricultural Equipment Technician"). The interface allows the addition of information to your profile via dedicated buttons (e.g. work experience, education, certifications, hobbies, skills).

The "**Skills overview**" section offers a quantitative and qualitative representation of the profile, dividing the skills into technical and human, and calculating the percentage of

correspondence between the skills possessed and those required by the specific market or role. The number of skills gaps is also highlighted, with suggestions for bridging them.

As referred to the current role/job, the interface provides additional information in structured key sections: the "**Matching skills**", which indicate the skills already possessed and relevant to the role (in this case, none), and the "**Missing skills**", which highlight the gaps with respect to the demands of the sector (e.g. "Accuracy", "Adaptability", "Communication") (Fig. 40 (a)). In addition, a list of the "**Top emerging skills**" is provided, i.e. the most in-demand emerging skills globally, and the "**In-demand skills match**", which identify the most in-demand skills in specific geographical markets.



(a) (b)

Figure 40 (a) and 41 (b) – Screenshot of the user dashboard webpage: current skills gaps (a), in demand skills matching (b)

The platform integrates an analysis of labour market data with the skills recorded in the user's profile, returning targeted suggestions to improve competitiveness. Each skill is presented as a clickable element, allowing for further details or actions, such as adding to the profile or linking to related courses. The interface makes data understandable and accessible, synchronizing it in real time with a backend that uses matching algorithms to analyse market trends and provide personalized suggestions for professional development.
Eventually, the interface includes an analysis of the impact of AI on the user's skills. The "**Skills impacted by AI**" section indicates the percentage of skills that could be automated, reporting the specific ones (e.g. "Standard Operating Procedure (SOP)", "Report Filing") that could undergo changes (Fig. 41, (b)).
This approach combines global market data and predictive analytics to deliver personalized insights and action, synchronizing the user profile with technology and industry trends. The interface is designed to be informative and proactive, providing clear and actionable recommendations based on real-time analytics.

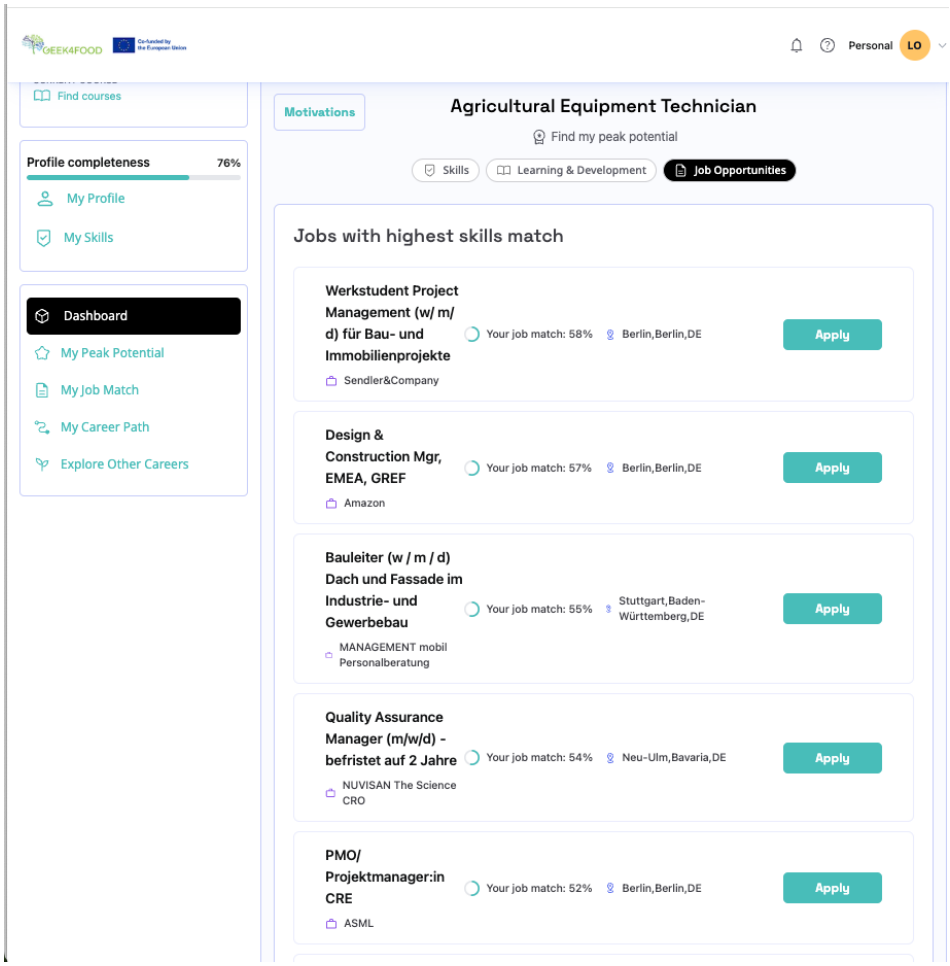


Figure 42 – Screenshot of the user dashboard webpage: Jobs with highest skills match

The last section of the Dashboard is dedicated to the "**Job Opportunities**" (Figure 42). This is an interactive interface that suggests job positions based on the degree of correspondence between the user's skills and the job requirements. Each job posting lists the position title, company, location, and a matching percentage that represents the alignment between the user's profile and the required skills. Opportunities are sorted by relevance, improving efficiency in finding relevant roles. The system uses a **matching engine** that analyses the user's profile, comparing it with the requirements of the roles available in the labour market. The information is synchronized in real-time with the backend, ensuring that the ads are up to date. Each opportunity includes an "*Apply*" button that directly links the user to the application process, simplifying the workflow. The interface is designed to be responsive and user-friendly, with a clear view that makes it easy to navigate and select the most suitable job openings, promoting targeted and informed professional planning.

My Peak Potential

The "*Peak Potential*" (**Fig. 43**) is a module dedicated to identifying the **maximum professional potential** based on the identified skills. During loading, the interface provides real-time feedback to the user with progressive animation and motivational messages that emphasize the shift from a traditional degree-based hiring model to a real-skills-cantered approach. Dynamic loading is indicated by a counter (e.g. "Loading your future... 3/6"), which represents a backend data processing pipeline, where the system analyses the user profile, compares the registered skills with databases of job roles or ideal training paths, and prepares the results.
This approach keeps the user engaged and allows the system to synchronize the processed data and customize the results based on the user profile, ensuring accuracy and relevance.

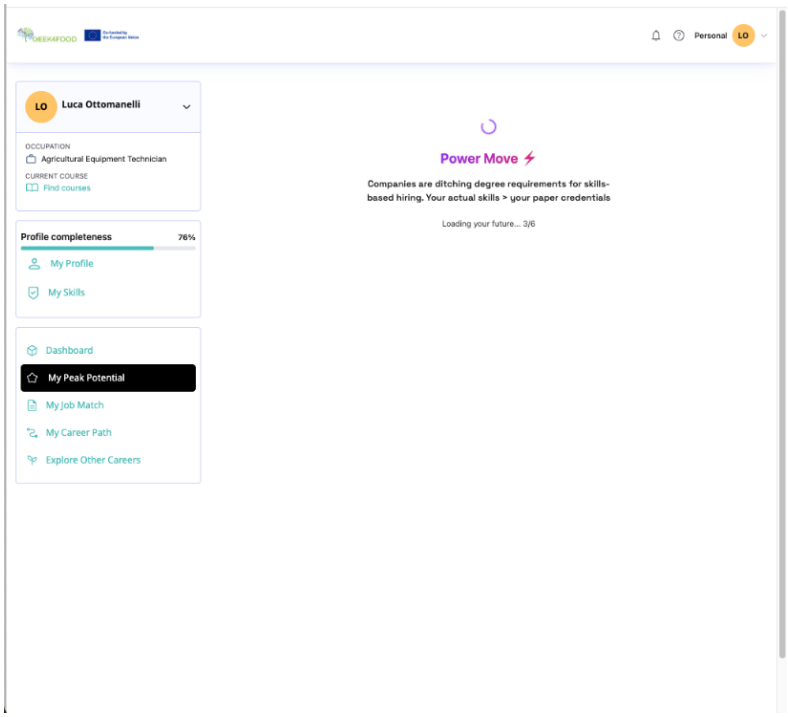


Figure 43 – Screenshot of the "Peak Potential" landing page

My Career Path

The "**Career path**" module offers a **visual and interactive representation of the user's career progression**. Based on the user's current role (e.g. in Fig. 44 "*Equipment Technician")* the system identifies and suggests progression paths (e.g., "Senior Maintenance Technician" or "Equipment Manager"). These paths are shown with graphical connections that highlight logical progression and transferable skills between the two roles.
The functional approach uses market data and matching algorithms to map the user's job title with equivalent or advanced roles available in the job market, providing a targeted and personalized overview. Each suggested role includes additional information, such as the number of paths available to reach it. The backend analyses the user's expertise and market requirements in real-time to ensure the relevance of the recommendations.

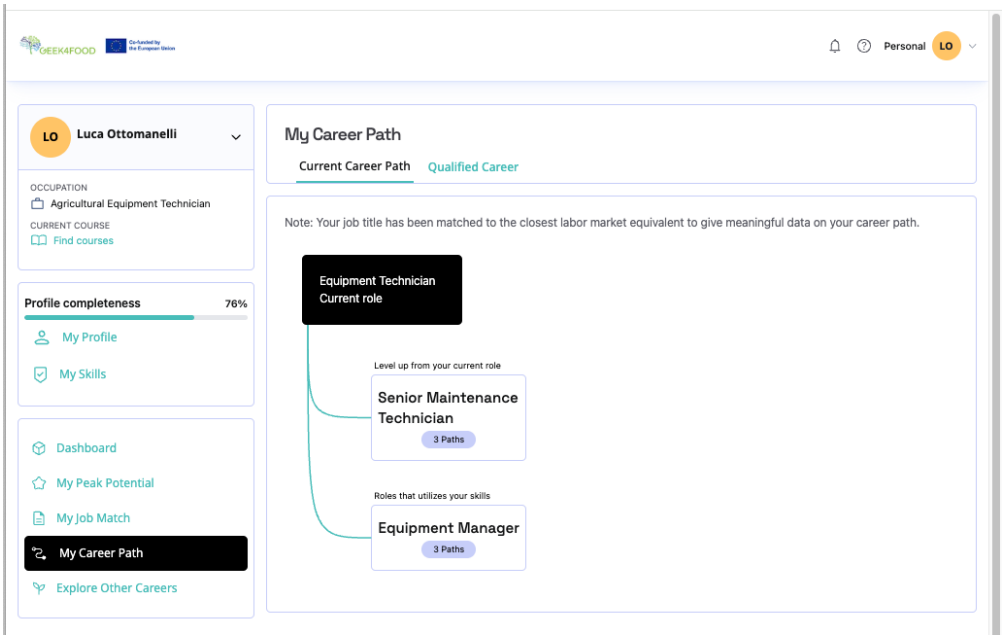
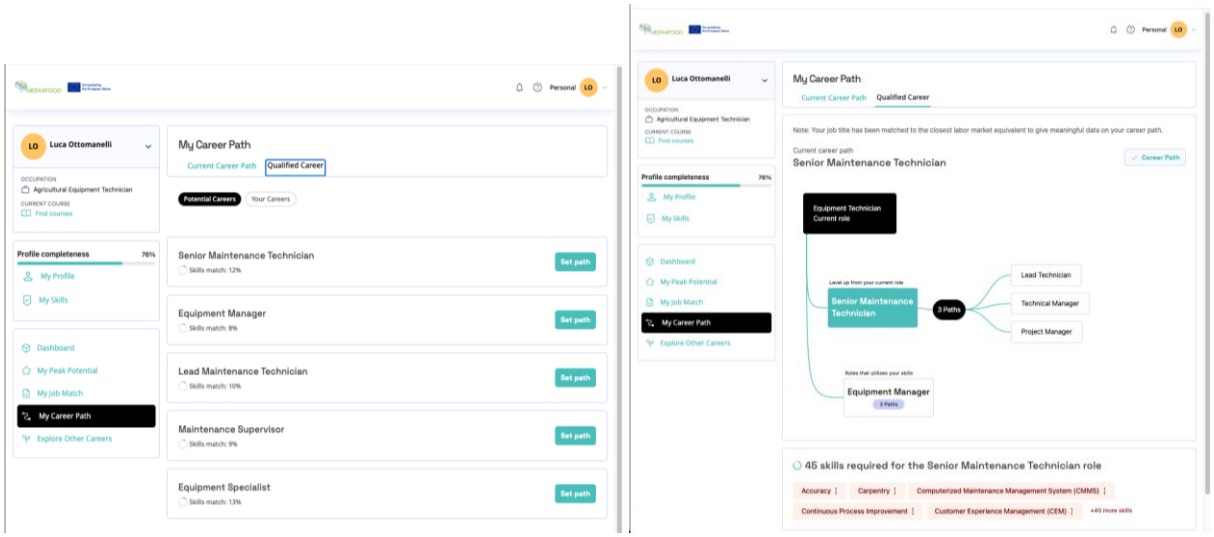


Figure 44 – *Screenshot of the "My career path" landing page*

The **"Current Career Path"** module provides a visual and interactive representation of the user's career path, highlighting the current role (e.g. "Equipment Technician") and opportunities for advancement, such as "Senior Maintenance Technician". The visualization uses linked nodes to clearly show potential career paths and related roles that leverage the user's skills (e.g., "Equipment Manager"). Each path includes an indication of the number of paths available (e.g. "3 Paths") and links to subsequent roles (e.g. "Lead Technician", "Technical Manager", "Project Manager").

Below the map, a detailed list of the skills required for the next role, such as "Accuracy", "Carpentry", or "Computerized Maintenance Management System (CMMS)", is provided, with the option to view other related skills. The system analyses the user profile data and compares it with market requirements, returning targeted suggestions. The architecture integrates a backend for skill matching and a user-friendly interface that makes the analysis and planning of the career path clear and immediate, improving accessibility and understanding of professional growth opportunities.

The "**Qualified Career**" section of the Career path module (**Fig. 45 (a), Fig. 46 (b))** uses an organized interface to suggest qualified job roles based on the user's skills and experience. Each suggested role (e.g. "Senior Maintenance Technician", "Equipment Manager") is accompanied by a percentage of "Skills match", which represents the degree of alignment between the skills possessed by the user and those required by the role. Next to each role, there is a "Set path" button that allows the user to select a preferred career path for personalized planning.



(a) (b)

Figure 45 (a), 46 (b) – *Screenshot of the "My career path" landing page*

The system analyses user profile data in real-time, combining it with labour market requirements to provide targeted recommendations. The results are processed and returned via a backend that integrates advanced matching algorithms, allowing users to quickly identify the most relevant opportunities for their professional growth. The interface is designed to be clear and responsive, with an intuitive separation between potential and existing careers ("Potential Careers" and "Your Careers"), improving navigation and understanding of the development options available.

Other Careers

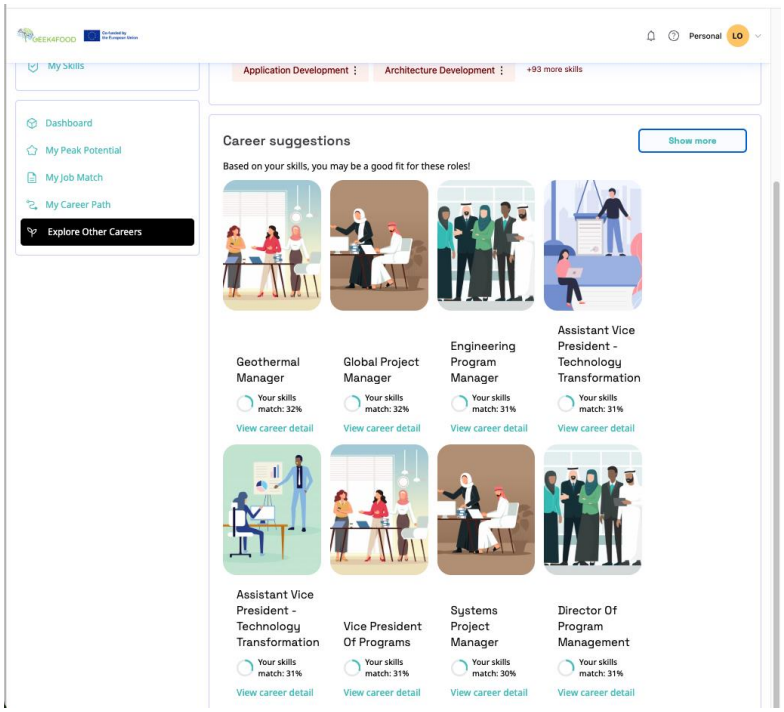
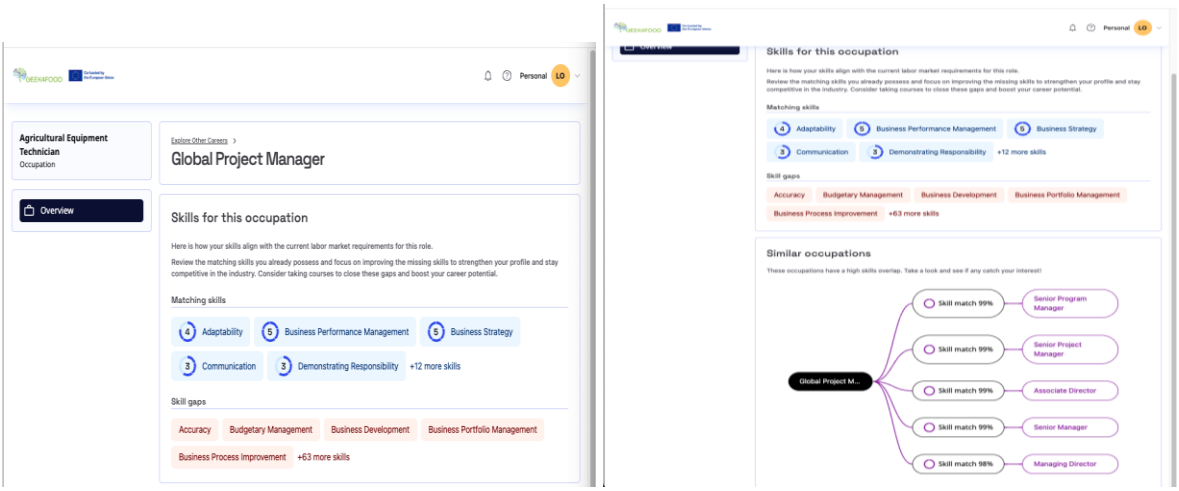


Figure 47 – *Screenshot of the "Explore other careers" landing page*

The "**Career Suggestions**" module **(Fig. 47**) uses a data-driven approach to provide recommendations of professional roles based on the user's current skills. The interface features a visual grid with career suggestions, such as "Geothermal Manager" or "Global Project Manager", each accompanied by a percentage of "Skills match" indicating the level of correspondence between the user's skills and the requirements of the role. Each suggestion includes a "View career detail" link that allows you to explore more information about the role.
The system uses advanced matching algorithms that analyse the user's profile, comparing their skills with a database of professional descriptions and market requirements. Recommendations are dynamically generated and categorized by relevance, making the experience personalized and intuitive. The responsive interface ensures a smooth user experience across desktop and mobile devices, with a "Show more" option to explore additional opportunities. This approach helps you identify alternative career paths and plan your career growth in a strategic and informed way.

The "Skills for this occupation" module analyses and visualizes the skills needed for a specific role, in this case "Global Project Manager". The interface divides skills into two main categories: **Matching skills**, which highlight the skills already possessed by the user and their level (e.g. "Adaptability", "Business Strategy"), and **Skill gaps**, which show the missing skills required for the role (e.g. "Accuracy", "Business Development"). Each skill is represented by an interactive label that can provide additional details or links to learning resources.

The system uses matching algorithms to compare the user's profile with the descriptions and requirements of the selected role. Data is synchronized in real-time with a database of skills and job requirements, offering personalized feedback. The interface is designed to be intuitive and informative, allowing the user to quickly identify areas for improvement and plan targeted professional development paths.



(a) (b)

Figure 48 (a), 49 (b) – *Screenshots of the "overview" of a selected "Other career" occupation*

The "**Skills for this occupation**" (Fig. 48 (a)) module extends the analytical functionality by providing not only a comparison between the user's skills and the requirements of the selected role ("Global Project Manager"), but also a list of similar occupations based on a high degree of overlap in skills. The interface has two main sections: matching skills and missing skills (skill gaps), organized into clickable categories for in-depth exploration. Below, a graphical display of similar occupations shows alternate roles (e.g., "Senior Program Manager," "Associate Director"), each with a matching percentage based on an advanced matching algorithm.
The backend of the system uses a recommendation engine to analyse the user's profile and map skills to different job roles, returning personalized suggestions. The visualization of similar occupations adopts a graph design that illustrates the relationships between roles and their level of compatibility, improving visual understanding of the available options.

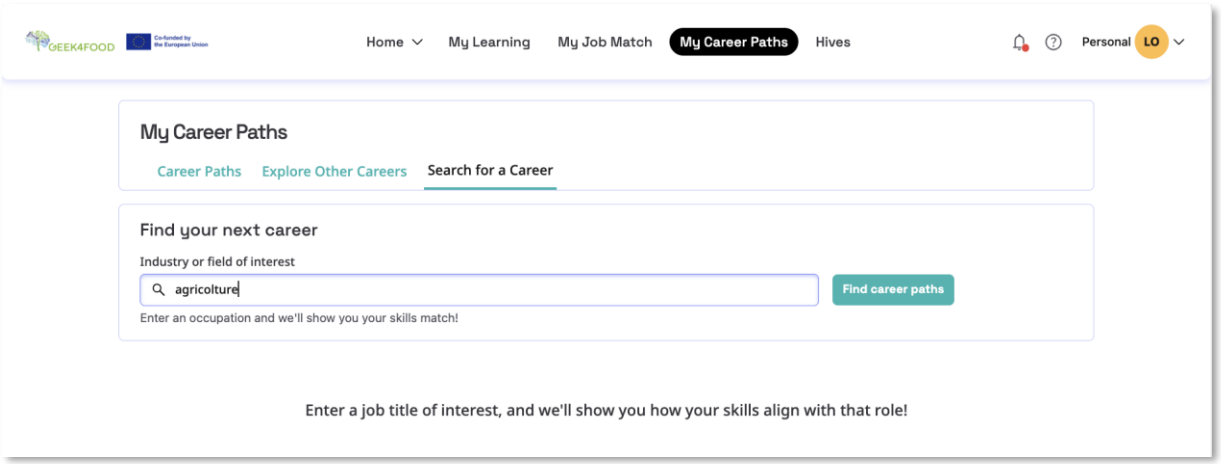


Figure 50 – User new career path finding

The transition interface within the "My Career Paths" module operationalizes a prescriptive diagnostic logic that effectively mitigates the "time poverty" identified in the project's foundational requirements. By entering a target sector such as "agriculture," **(Fig. 50)** the user triggers a multi-dimensional competency alignment sequence that cross-references their validated profile against the specific ontologies of the new professional field. This process moves beyond simple keyword matching, employing similarity modeling to identify transferable latent skills while simultaneously calculating the precise "delta" or skill gap between the user's current expertise and the target role's requirements. Consequently, the platform transforms a high-level career aspiration into a curated, data-backed learning roadmap.

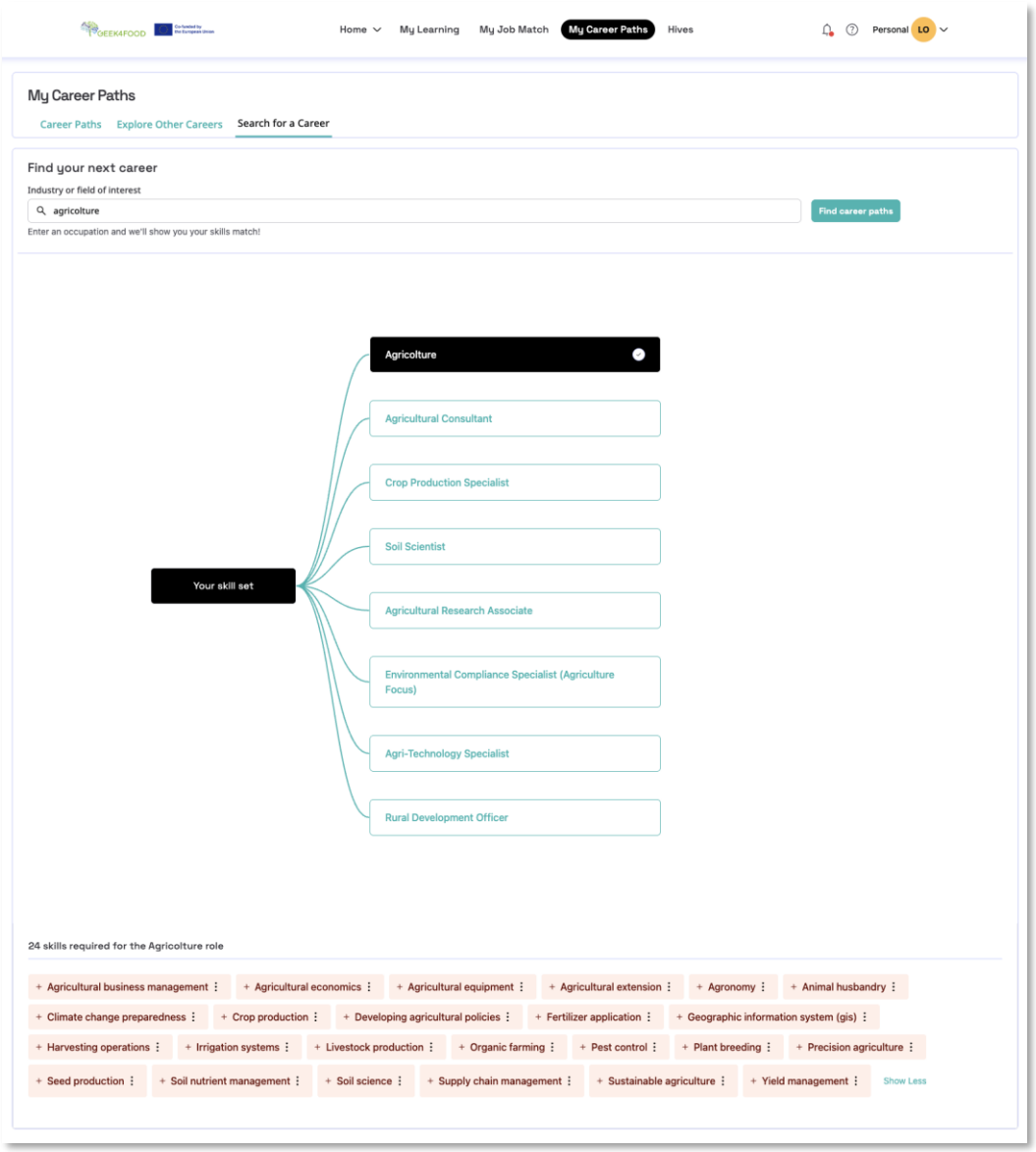


Figure 51 – Skills gap for new career path

The visualization of the "Agricultural" career pathway (**Fig. 51)** represents a sophisticated maturation of the **Predictive and Prescriptive** analytical layers established in earlier project milestones. Upon initiating a sectoral pivot, the user is presented with a dynamically generated **Skills Mind Map** that bridges the psychological gap between their existing "Your Skill Set" baseline and high-value professional nodes such as "Environmental Compliance Specialist" or "Agri-Technology Specialist". This structural transparency directly mitigates the "time poverty" identified in 2023 by providing an immediate, high-fidelity mapping of transferable competencies.

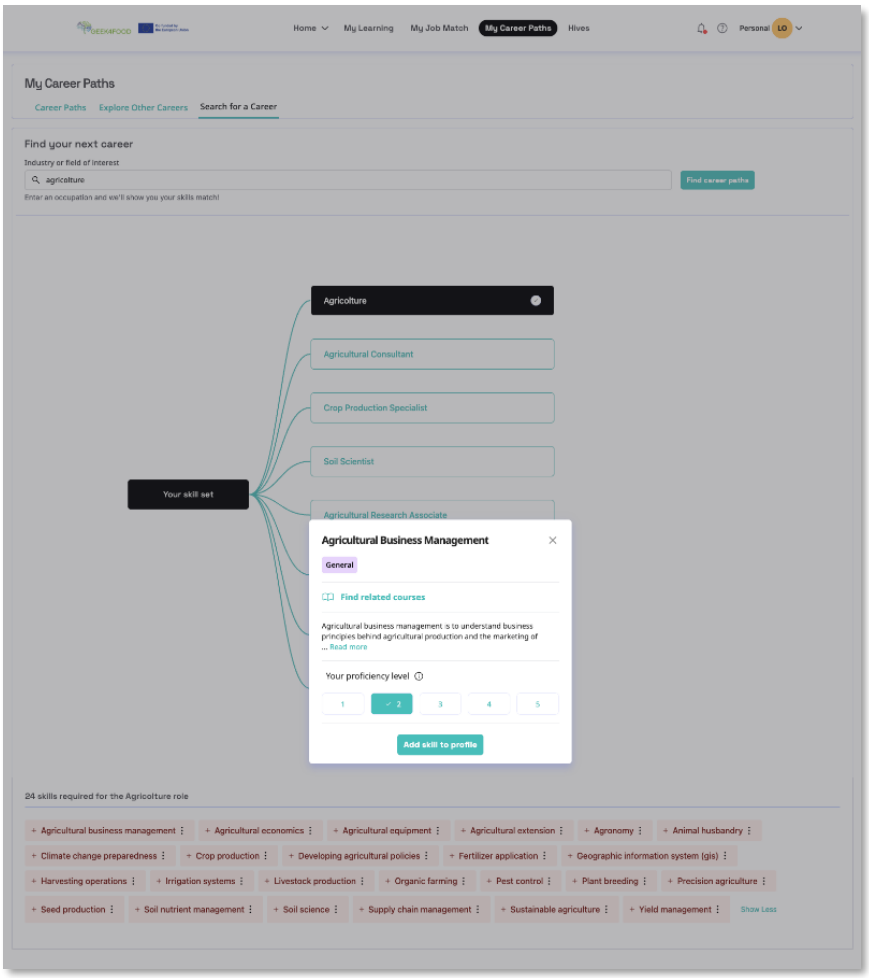


Figure 52 – My career path – Proficiency level

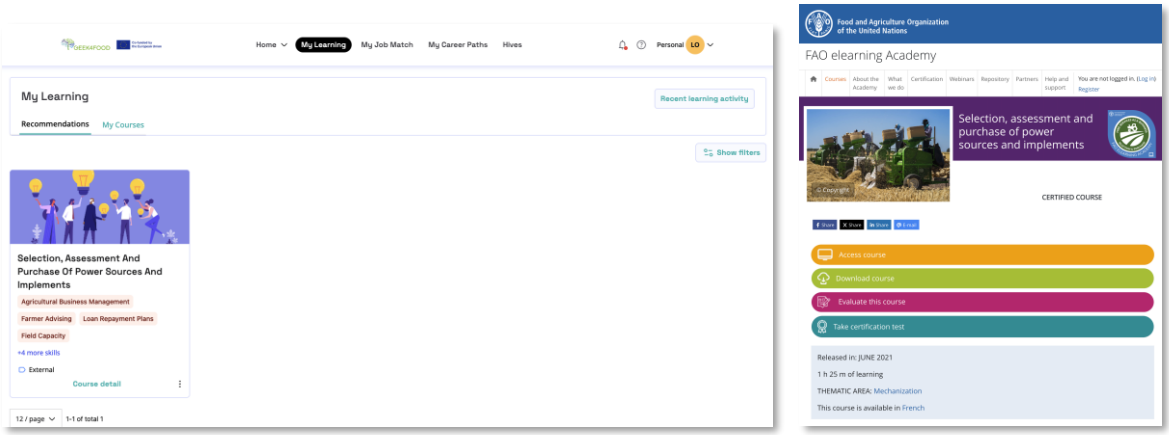
The granular interaction **(Fig. 52)** within the "Agricultural Business Management" modal deal with the final operational stage of the **"Prescribe"** logic, shifting from sector-wide mapping to individual competency validation. The specific interface allows the user to engage in **self-assessment and diagnostic verification**, a critical requirement for establishing "Autonomy" and "Human Agency" within the AI system's decision-making loop providing a clear definition of the competency and offering a "Find related courses" pathway. Technically, the **proficiency level slider (1-5)** serves as a standardized measurement tool that feeds back into the user's "Skills Passport," ensuring that the metadata remains dynamic and reflective of actual professional growth. This functional design successfully mitigates the "time poverty" identified in earlier milestones by centralizing definition, assessment, and training discovery within a single, frictionless touchpoint.

My Learning

An administrator of the Geek4Food platform can proceed with the onboarding of learners in his/her organization by creating profiles. This process includes the incorporation of learners' skills, experience and training (**Fig. 53 (a)).** In this case, the "Academy" user (also named Teachers") could integrate the GEEK4Food HUB within his organization. For example, an administrator at the University of Teramo can require each employee to create a Geek4Food profile to simplify the management of curricular information. To accomplish this, User can use the Employee method of the Employee API, which allows User to generate individual profiles.

Learners can automatically populate their profiles by uploading a resume in DOCX, DOC, RTF, or PDF formats, or a LinkedIn profile exported as a PDF. In these cases, the Parsers API's parse Resume method can automatically extract relevant information from the uploaded file. If a learner prefers not to upload documents or wants to manually add information not included in the imported files, they can enter the data using editable fields. In this context, Typeahead API methods provide predictive results to simplify the entry of skills, experience, and training.

Once the profile has been created and saved, learners can edit it at any time via the update Employee method of the Employee API.



a) b)

Figure 53 (a), 54 (b) – My Learning - recommendations to new skills

The transition to the **"Recommendations"** module (Fig. 53 (a)) represents the final operational fulfillment of the platform's prescriptive logic, effectively closing the "implementation gap" identified during the project's diagnostic phase so the high-dimensional data derived from the earlier skill gap analysis (Fig. 52) translated into an educational strategy designed to optimize the learner's market trajectory.
By suggesting real on-line course modules (Fig. 54 (b)) such as "Selection, Assessment and Purchase of Power Sources and Implements", the system provides a direct pedagogical bridge to bridge the "delta" in complex agricultural competencies like **Farmer Advising** and **Field Capacity**, these recommendations are derived from a **Knowledge Graph-driven matching engine (WP2)** that aligns course curricula with the user's specific professional "Skills Passport" and real-world market intelligence.

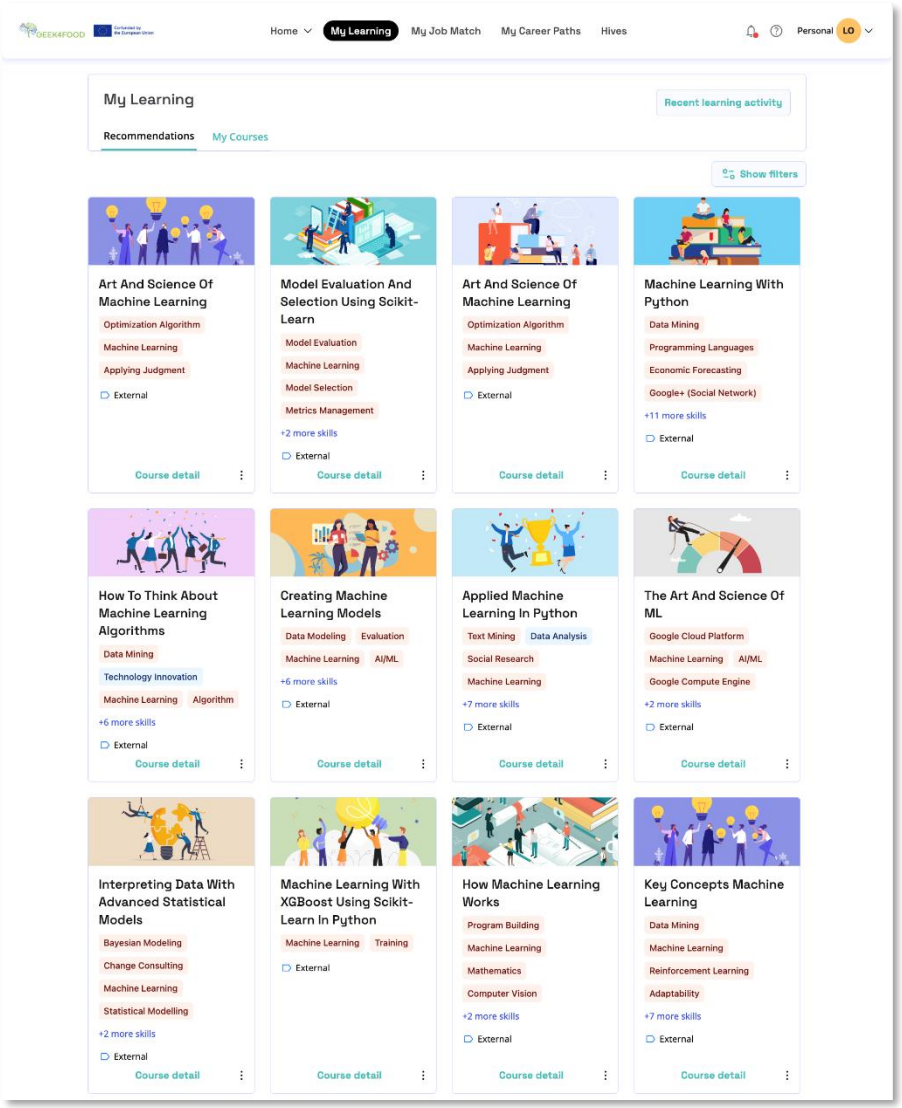


Figure 55 – My Learnings - other "skills" offers market oriented

The gallery within the **"My Learning Recommendations"** dashboard (Fig. 55) illustrates the successful large-scale deployment of the platform's predictive curation engine, showcasing a diverse curriculum designed to facilitate a comprehensive "skills" transition. The final "pedagogical" fulfillment, where the G4F platform moves beyond isolated skill suggestions to a multi-dimensional learning environment offer by categorizing courses based on specific technical ontologies, targets the precise skill gaps identified during the user's diagnostic phase. Technically, each recommendation is tagged with relevant competencies like Optimization Algorithm, Data Mining, and Economic Forecasting, which directly correlate with the user's personalized "Skills Passport".

7. Educator

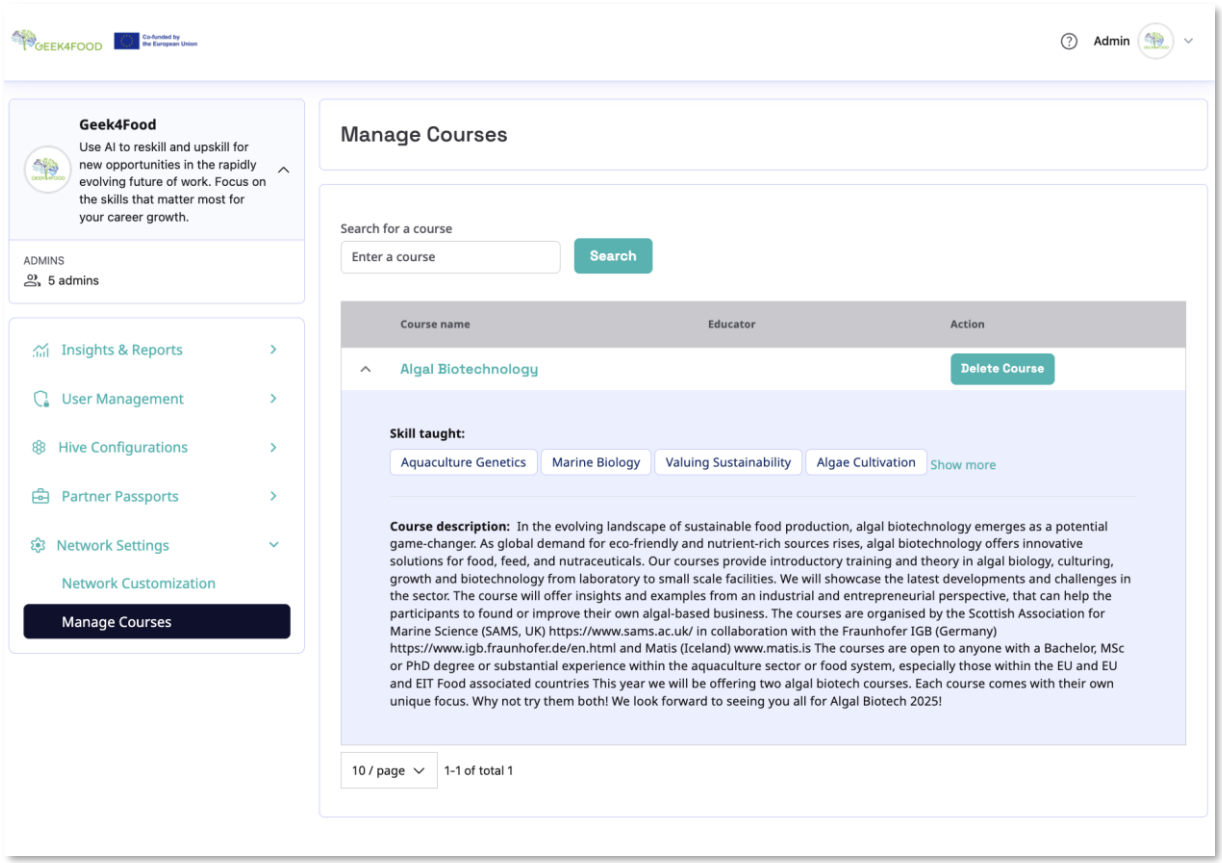


Figure 56 – Course management dashboard

The individual/learner/worker, can request to upgrade to an Educator-user level in the event he/she would like to represent an Higher Education institution and share the corresponding training offer within the GEEK4Food platform.

The "**Manage Courses**" administrative interface (Figure 56) for Educators users serves as the primary operational hub for the Educator Persona, institutionalizing a paradigm shift from traditional curriculum delivery to a dynamic, competency-aligned instructional model. Within this "Admin" ecosystem, teachers and trainers are empowered to curate high-level scientific content ensuring that modular educational offerings are semantically mapped to the industrial exigencies of sustainable food production bridging the gap between academic research and labor market intelligence.

This **“Educator”** module facilitates a sophisticated Human-in-the-Loop (HITL) intervention, allowing academic mentors to oversee and refine the skills extraction logic that feeds the global Knowledge Graph. The integration of Skill Gap Analysis at this administrative level allows educators to identify prevalent "competency deltas" within the student population, thereby enabling the design of "prescriptive" curricula that target precisely those areas where the agrifood sector lacks specialized human capital. This capability effectively mitigates the

"fear" of curricular distance from market demand, transforming the Educator from a passive instructor into a strategic asset of regional "green" trajectories policies.

The G4F platform's ability to host cross-institutional courses, collaborating with entities University or knowledge providers, confirms its status as a Socio-Technical Infrastructure for knowledge transfer ready to transfer educator-verified educational roadmap, fulfilling the Beneficence and Transparency principles of the capAI framework. The Manage Courses dashboard acts as the scientific engine for the GEEK4Food project, providing a traceable and reliable environment where academic expertise is directly translated into verifiable market value.

At this level, educators-users could share training offer of his/her institution that, based on the AI-tool could be categorized as a function of the skills and be included in the “My learning” experience of the learner-user.

8. Entrepreneur

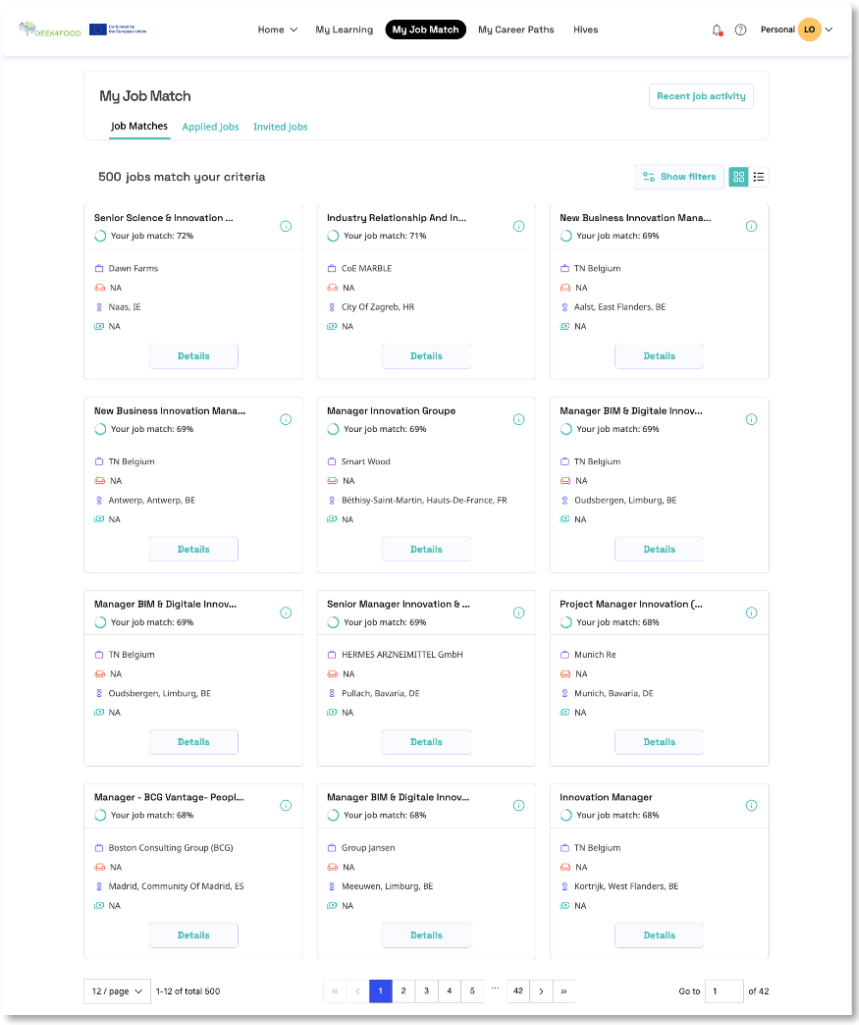


Figure 57 – My Job Match - entrepreneur functional fulfillments

The "**My Job Match**" dashboard (Fig. 57) acts like a DSS (Decision Support System) translating the market relevance and industrial scalability objectives offering a diagnostic lens for entrepreneurs and industry leaders who must govern human capital with precision. This “alignment engine” operates between competencies and vacancies, allowing industrial stakeholders to move beyond the rigidity of traditional job descriptions in favor of a dynamic workforce planning model centered on actual skills. The precise match percentage provides a quantifiable metric of professional compatibility, drastically mitigating the risk of operational friction and ensuring that every placement is inherently coherent with corporate growth trajectories. This integration of prescriptive diagnostics (WP3 model) within this module (WP2 engine) facilitates a "just-in-time" human resource management style, directly addressing the entrepreneur’s fundamental need to bridge operational gaps through scientifically grounded impact planning. The platform’s capacity to render data within the Skill Passports transparent across an entire regional ecosystem enables a superior level of technical awareness, transforming recruitment into an act of strategic engineering where sustainability goals and digital innovation targets find immediate correspondence in verified, available profiles. Consequently, the "My Job Match" environment definitively resolves the fear of "time poverty" identified in the project’s early stages by centralizing filtered, pertinent professional opportunities that restore operational agility to the enterprise while fully satisfying the literacy and transparency mandates required by European artificial intelligence regulations.

In a Company a learning and development specialist can start an upskilling initiative to identify employee skills gaps and recommend customized training courses.

The platform compares the employees’ skills with those required by the position, identifying both missing and partial skills, i.e. those that are present but have insufficient skill levels. These skills form the basis for searching for training courses via the career path interface, which returns a list of relevant courses, each with a quality score.

The search can be further refined by specifying keywords in the title parameter, focusing the results on specific topics. An alternative approach involves asking employees to add their desired skills to their profile, triggering an automated search for courses that support those development goals. This approach gives employees access to new training opportunities that align with their career aspirations.

9. Policy makers

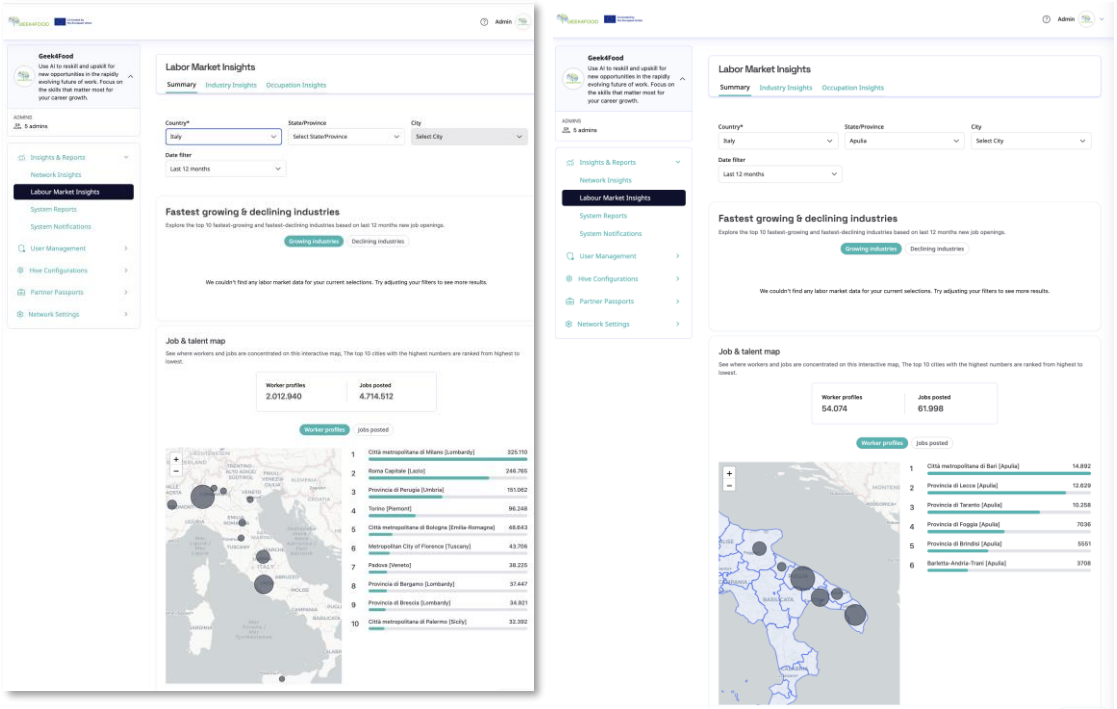
A Policy Maker or Educators and Entrepreneurs at the same time, may need to analyze search opportunities for new positions based on the geographic availability of qualified candidates. For example, if a company has offices in different metropolitan areas and a preference for hybrid work, remote work may be necessary if there are few candidates near the company's offices.

The first step involves normalizing position titles using the Job Title Normalization fields. Normalized stocks are used to analyze the supply and demand related to each location in the states and cities where the company operates. To get geographic data, the user needs to call the Location API to get the location ID for each state/region, which will then be used in conjunction with the normalized title to query the Labor Market Intelligence Stats application.

The latter returns the supply and demand values for the specified location, as well as a list of child IDs representing cities, allowing for further city-level analysis.

The supply of a position is defined as the number of job profiles corresponding to the normalized title in the selected geographical area, while the demand represents the number of job offers for that title. This analysis allows User to identify the areas with the greatest supply relative to demand, optimizing research efforts.

The analysis can be further refined using the Labor Market Intelligence Salary API, which provides average wages for each position in the desired geographies. By combining payroll data with supply and demand data, the HR director can identify new geographies on which to focus recruitment activities, optimizing availability in relation to the company budget.



a) b)

Figure 58 (a), 59 (b) – Policy Makers dashboard - Labor Market Intelligence module

This functionality operationalizes the "Understand" analytical tier by answering the fundamental question of where the requisite skills are geographically localized and how they align with current market openings. This level of transparency is essential for strategic regional planning, as it enables policy makers to identify emerging industrial clusters or, conversely, areas suffering from acute "skill gaps" that require targeted institutional intervention. An intuitive interactive map mitigates the risk of informational fragmentation, transforming raw statistical metadata into a coherent narrative of national professional development fulfilling the G4F project's commitment to providing a labor-market-oriented tool that fosters sustainable practices, as it empowers stakeholders to bridge the gap between academic supply and industrial demand through data-backed, localized decision-making.

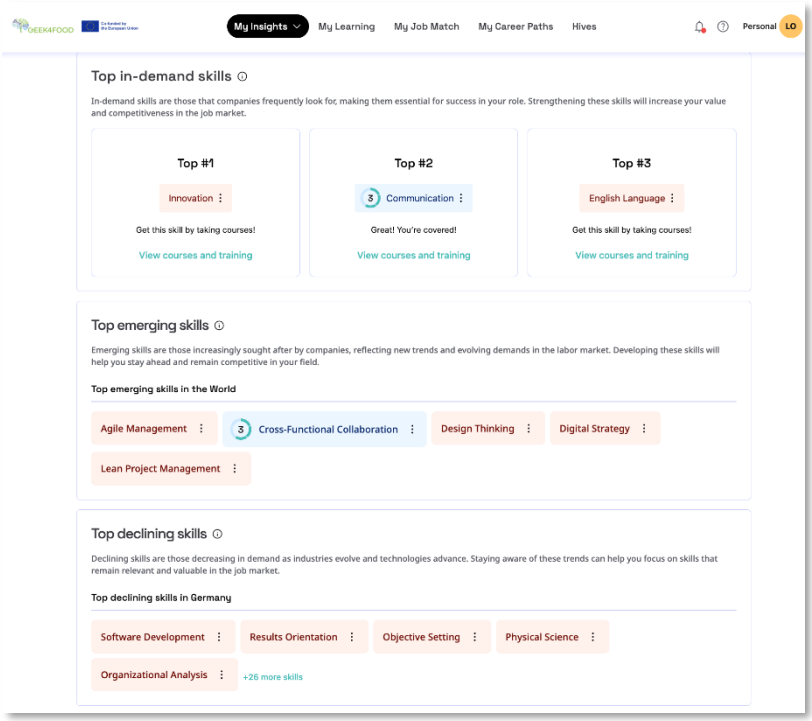
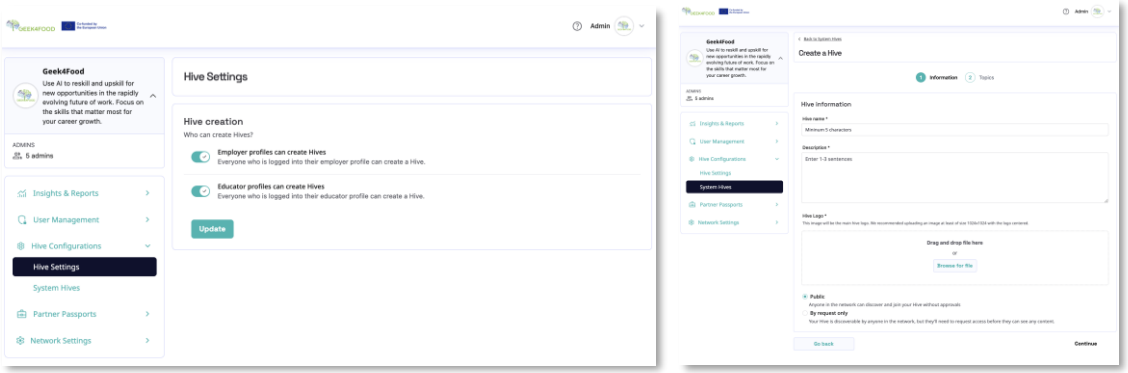


Figure 60 – Top in demand skills for Policy Makers

The identification of "**Top in demand skills**" or "**Top in declining Skills**" (Fig. 60) in specific regions offers a critical early-warning system for labor market obsolescence, enabling proactive reskilling initiatives. Conversely, the rise of other specific skills represents top emerging priorities worldwide confirming the platform's status as a central Hub for steering the European green and digital transition acting as a multi-stakeholder engine for institutional efficacy, providing the transparency and data-backed confidence needed to harmonize educational supply with the evolving demands of the industrial sector.

10. The Hive



a) b)

Figure 61 (a), 62 (b) – Hive Modules - WP3's unique features

The "**Hive Settings**" (Fig. 61 (a)) and "**Create a Hive**" (Fig. 62 (b)) modules within the 3P-G4F platform represents the definitive output of WP3 contribution to G4F project, serving as the functional nexus where the extensive developmental efforts of WP2 reach a very unique multi-purpose and multi-stakeholder unique Hub.
Both Employer and Educator profiles are enabled to generate specialized "Hives," the platform moves beyond simple data hosting to facilitate a structured, supply-chain-oriented community of practice for the creation of either Public or "By request only" clusters, mirroring the dual necessity for transparent knowledge transfer and the secure, investigation-led environments required to address sophisticated sectoral challenges, such as the traceability of honey purity.
The Hive-based architecture acts as the project's primary catalyst for policy alignment. GEEK4Food infrastructure fulfills its role as a multi-stakeholder engine, where the "from the hives" philosophy is translated into the professional accountability mandated by revised EU directives.
The transition from administrative Hive creation to active market surveillance confirms this module as the core product of the WP3 design effort, ensuring that the skills and protocols developed are directly applicable to the real-world demands of food safety and consumer trust.

11. User Management Board

To authenticate, the user needs the following details:

- Client ID - the id provided for Your organization's authentication.
- Client Secret - Your unique passcode that must be kept private.
- Token URL - the server User will use to request a token.
- Username - User may have more than one API user with different roles.
- Password - Used with Your username to authenticate.

Each authentication request is made using the client ID, client secret, username and password to request a token from the token URL. The token will expire after 30 minutes and should be refreshed before that happens.

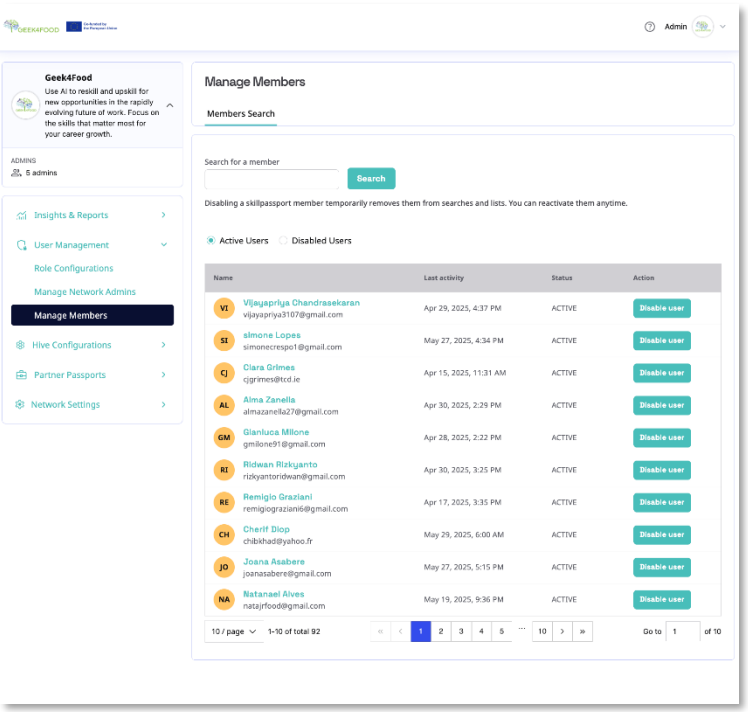


Figure 63 – Users management Admin board

12. Help and documentation

The Geek4Food platform prioritizes intuitive interaction design to minimize the need for supplementary instructional content. However, when user assistance is required, comprehensive help and documentation modules must be integrated to facilitate task completion. These resources should employ advanced information retrieval systems for enhanced searchability and be meticulously structured to align task-specific workflows.

Documentation adheres to principles of brevity and clarity, presenting users with actionable, task-focused content in a stepwise format. This ensures alignment with cognitive load optimization, enabling users to efficiently access and apply the required guidance. The design of these support systems should integrate seamlessly into the platform's UI, leveraging contextual help and adaptive recommendations to deliver a frictionless support experience.

13. Geek4food as a Service for organizations

The Geek4Food Platform API provides the capabilities for the scope of this project.
Principal functionality:

- **Extracting**
  - skills from resumes, job descriptions and any other text.
- **Matching**
  - people to jobs using a skills-first algorithm.
- **Browsing**
  - similar job titles in the global labour market.
- **Exploring**
  - the skills required for different positions.
- **Identifying**
  - training opportunities to close skill gaps.
- **Normalizing**
  - skills and job titles to WP2's dynamic ontology.
- **Managing**
  - talent acquisition based on skills and labour market data.

To use this API, authentication is needed, and an Oauth2 token as to be generated. The bearer token must be added to the header of all API calls, or the request will not be authorized.

14. Conclusions

The GEEK4FOOD project is positioned within a context of great strategic importance, addressing the crucial need to enhance "green" skills and professional capabilities within the European food sector.

This is a multi-objective challenge that, in many respects, appears to be just at the beginning of an era of multi-scenario transformations. The project's intrinsic ambition lies in the creation of a digital ecosystem – the 3P-G4F platform – conceived as a hub for training, knowledge transfer, and the building of collaborative networks.

This objective has implied, right from the conceptual phases, the need to tackle considerable complexity, given the diversity of the actors involved (educational institutions, companies, students, professionals) and the multiplicity of functions the platform is required to integrate (learning, networking, resource sharing).

The real challenge, and at the same time the main credit emerging from the design work of the WP3 leader and the project Partners, lies precisely in the ability to have translated this composite vision and these heterogeneous needs ("desiderata") into a coherent service architecture and an implementation strategy capable of addressing the future challenges of the training and work landscape, viewed as an interconnected and interdependent system.

The 3P-G4F platform represents the central GEEK4Food outcome through which the project aims to orchestrate significant change in the sector, promoting a culture of sustainability and providing the tools to implement it. The design of such an ecosystem required a profound capacity for synthesis, careful mediation between the expectations of the various stakeholders, and a clear vision of the final objectives, all while respecting technical constraints and available resources.

Therefore, beyond the specific implementations of the user interface, which are nonetheless tangible manifestations of this effort, the primary success of the design path conducted so far lies in having given shape to this digital ecosystem. Having conceived and initiated the creation of a virtual space capable of acting as a catalyst for the development of green skills and as a facilitator of synergies in the food sector is an achievement of considerable substance. It demonstrates the project team's ability to manage complexity, ordering priorities, and transforming a complex set of strategic objectives, co-funded by the European Union, into a concrete action plan and a targeted technological solution, thus laying the essential foundations for achieving the desired impact.

15. Annexes

G4F Hyper Space, link:
https://miro.com/app/board/uXjVPRX2pcw=/?share_link_id=425263753062

G4F Hub
https://geek4food.com/welcome-skills-platform/