C.L.A.I.M.

Artificial Intelligence for Competences and Learning

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TEACHING MATERIAL MAPPING

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INDEX

MAPPING EDUCATIONAL RESOURCES

The partnership paid particular attention to the resource mapping phase, in the shared belief that the added value of the "CLAIM" model is not only represented by the useful support of the "TaiLENT" platform tools, but above all by the fact that the platform itself was designed and created by CONFORM with the clear intent of providing personalized training responses based on the skill gaps identified through the administration of Self-Assessment and/or hetero-evaluation questionnaires and/or interviews/conversations for the analysis of the professional profile.
The "competence based" approach represents the element of novelty and of greatest added value of the recommendation system of the "TaiLENT" platform in support of the CLAIM Model, which differs from similar systems in the training field, mainly designed and applied for E-learning, which instead are based on the approach of suggesting teaching resources according to:

- of the course objectives
- of the form of content best suited to the user's learning style.
- of the user's cognitive profile

The main training recommendation systems

In the sharing phase of the activities to be carried out for the mapping of educational resources, which will have to feed the "TaiLENT" recommendation system, the CONFORM partner, in order to understand the main characteristics and operating methods of the system created and made available to the partnership with the "TaiLENT" platform, as a support tool for the effective application of the CLAIM Model, highlighted the methodological logics adopted by the other training recommendation systems, which can be classified based on the interaction with the user, the learning capacity and the inference techniques adopted to provide suggestions.
The methods adopted by these systems are distinguished into pure (collaborative, demographic, content-based, utility-based and knowledge-based) and hybrid which combine the pure methods, minimising the weak points of each, as briefly reported below:

- **Pure "Collaborative" Method**
  The collaborative method is one of the most widespread, based on the aggregation of user ratings to generate new suggestions, in relation to the similarities between their preferences. This method creates a user profile, updated in real time during interaction with the system, using ratings that can be binary (like/dislike) or on a numerical scale (degree of preference). Recent preferences are weighted more.
  There are two main categories of collaborative algorithms:
  - **Memory-Based Algorithms**: they rely on users' rating histories to predict future preferences.
  - **Model-Based Algorithms**: They use models, learned by the system, to generate recommendations, employing techniques such as neural networks and clustering.

  Among the limitations of the method, there is the Cold-Start problem, which occurs when a system is new and has a limited number of evaluations. In addition, there is the Banana Problem, where very common objects are recommended to all users, even if they do not reflect their true interests.
- **Pure "Demographic" Method**
  The demographic method is based on assigning users to defined groups based on their personal attributes, such as age, geographic location, or other demographic characteristics, and then generating targeted recommendations based on that class. One of the main strengths of the demographic method is that it does not suffer from the new user problem, as recommendations are made using information already provided by the user. However, collecting this data can be hampered by privacy concerns and users' reluctance to provide personal information, especially in online contexts. Additionally, the method does not allow for cross-genre content suggestions, further limiting its flexibility. Although the demographic method offers a relatively simple and straightforward solution, its applications are limited due to the difficulty in acquiring sensitive data and the limited ability to make cross-genre recommendations, making its use rather rare.

- **Pure "Content-Based" method**
  The content-based method is an evolution of information filtering techniques, in which the recommendation is based on the intrinsic characteristics of the objects of interest. Each object, such as a product or content, is described through a "profile" that summarizes its distinctive properties. When a user interacts with the system, a "user profile" is created that reflects his or her past preferences. Subsequently, recommendations are generated by comparing the similarity between the user's profile and those of the available objects.
  One of the main limitations of the content-based method is the tendency to generate highly specialized and predictable suggestions, based solely on the user's previous choices.
  This approach can lead to some repetitiveness in recommendations, reducing the variety and effectiveness of the proposals. Another disadvantage of the method is its dependence on the quality and quantity of descriptive data available for each object. Although metadata languages have improved the description of multimedia resources, in some situations collaborative systems can be more effective than content-based systems due to their ability to suggest objects outside of the user's past preferences.
- **Pure "Utility-Based" method**
  The Utility-Based method is distinguished by its ability to suggest objects based on the utility function, which compares the user's needs with the available options, without trying to create long-term generalizations. Unlike other methods, it focuses on maximizing user satisfaction by calculating the best match between the user's preferences and the object's features. The creation of the utility function depends on the user's choice of which features to prioritize, with the risk that this evaluation may be incorrect. Furthermore, any changes in user preferences would require a revision of the function, making this method sensitive to dynamic changes in needs.
- **Pure "Knowledge-Based" method**
  The Knowledge-Based method relies on functional knowledge to suggest objects based on the user's explicit needs and preferences, using predefined rules to determine how an object satisfies those needs.
  The system uses three types of knowledge: catalog knowledge (information about objects and their characteristics), functional knowledge (connections between objects and user needs), and user knowledge (information about the user, such as demographic data).
  The method has one main difficulty: the knowledge-acquisition phase, which requires a significant investment to collect and structure the necessary information. However, once this phase is overcome, the method offers significant advantages, such as the ability to provide suggestions in various areas through inference techniques such as induction, deduction and analogy.
- **Hybrid "Weighted" Approach**
  The "Weighted" approach combines recommendations from multiple recommender systems, using a linear combination of the scores generated by each method. Each method has a specific weight, which can be adjusted to influence the contribution of each system to the final result. The main advantage of this approach is its simplicity and the flexibility to adjust the weight of the methods as needed. However, it is critical that all methods are relatively uniform, which may not always be the case with disparate or limited data.
- **Hybrid "Mixed" Approach**
  The "Mixed" approach combines suggestions from different recommendation methods, such as Collaborative and Content-Based. In this case, suggestions are provided based on both user feedback and descriptive features of objects.
- **Hybrid Approach "Feature Combination"**
  This approach combines two recommendation methods, using suggestions from one system as additional features for another system. For example, information from a Collaborative system can be used as additional features in a Content-Based system. This allows for strengthening recommendations by combining data from both methods to improve the quality and relevance of suggestions.

- **Hybrid "Cascade" Approach**
  The "Cascade" approach uses a stepwise process, where the first recommendation method generates a list of objects that is then refined by subsequent methods. This approach is computationally advantageous, as low-priority methods are applied only on objects already selected by the main method. It offers good fault tolerance, preventing the low-priority method from compromising the final result.
- **Hybrid Approach "Feature Argumentation"**
  This recommendation method generates a rating that is then used as input for a subsequent method. A well-known example is the use of Amazon® data to improve book recommendations by combining "related authors" and "related titles" information produced by a collaborative system. Unlike the "Feature Combination" method, the "Feature Argumentation" approach integrates previous results as a basis for the subsequent calculation.
- **Hybrid "Meta-Level" Approach**
  The "Meta-Level" approach combines two recommendation methods, using the model generated by the first as input for the second. An example is the system that combines the Content-Based and Collaborative methods, where the first model helps to describe the user's preferences, improving the efficiency of the second collaborative method. This approach improves the quality of recommendations compared to a purely collaborative method.

The "competence based" approach for mapping CLAIM resources

The CLAIM model is distinguished by its competence-based approach, a central element that defines the entire training process and which is reflected in the model's ability to identify, diagnose and respond in a targeted manner to the training needs of organizations, with particular reference to small and medium-sized companies.
In an increasingly competitive global context, where digitalization, sustainability and internationalization are determining factors, the model focuses on key skills, divided into digital, green, entrepreneurial and soft/hard skills, which form the foundation of business strategies and professional development.
The competence-based nature of the CLAIM model has a fundamental strategic relevance: it allows organizations, especially SMEs, to orient themselves towards personalized training, which is not limited to the simple response to generic needs, but adapts and focuses on individual competence gaps detected through the use of self- and external-assessment tools.
This approach allows you to provide learning solutions that precisely meet the specific needs of each employee, making the training process more targeted and more effective.
Each educational resource connected to the recommendation system of the "TaiLENT" platform is made available for use based on the individual level of proficiency of each skill being analyzed in order to fill the gaps identified, responding to specific deficiencies, which may be linked to digital skills (for example, technology management), green skills (such as environmental sustainability) or entrepreneurial skills necessary to face economic and business challenges.
The adopted competence-based approach allows SMEs to align with emerging trends, improving organizational resilience and competitiveness, as skills are constantly developed and adapted according to future challenges of the global market.
This approach also allows for flexibility and preparedness in addressing evolving challenges, ensuring organizations stay ahead of technological innovation and sustainability.
Thanks to its competence-based structure, the model encourages a culture of continuous learning that fuels sustainable innovation and constant improvement, thus fostering a highly skilled workforce ready to compete in a rapidly changing environment, facing technological, environmental and global challenges.
By adopting the competence-based approach, the CLAIM model allows to map and monitor skills in a precise and continuous way, supporting HR function representatives and training experts to focus

on the relevance and accuracy of training, with the aim of ensuring a targeted and aligned response to the specific needs of each employee.
By adopting this model, the process of mapping educational resources is crucial, as it allows to identify and integrate diversified educational resources, both free and paid, that respond to the identified skill gaps to offer highly personalized training, which helps not only to respond to immediate needs, but also to anticipate market evolutions, developing practical and innovative skills that will contribute to the long-term success of SMEs.

The activity carried out by the CLAIM partners for the mapping of educational resources was aimed at the online search for different types of learning materials, free and/or paid, to be connected in the recommendation system of the "TaiLENT" platform to each of the skills chosen by the partnership, in order to guaranteepersonalized training responsesin relationto the gaps identified through the administration of Self-Assessments relating to:

- **21 Digital skills**,contained in the European framework "DigComp 2.2"
- **12 Green Skills**, contained in the European framework "GreenComp",
- **15 Entrepreneurial Skills**, contained in the European framework "EntreComp",
- following 6 soft skills:
  - "Negotiation"
  - "Communication"
  - "Goal Orientation"
  - "Collaboration"
  - "Project Management"
  - "Time Management"

The process of mapping educational resources represented a crucial step in the development of the CLAIM model, a methodical and strategic approach designed to respond in a targeted manner to the training needs of organizations, with particular reference to small and medium-sized enterprises, with a particular focus on digital, green, entrepreneurial skills and on some soft and hard skills essential to support growth and competitiveness in a constantly changing global landscape.
The identification of key educational resources, have been created and/or researched by the experts of each partner in their national language, as well as in English, with the aim of supporting the acquisition, consolidation and development of the skills needed to face the challenges of the digital age, sustainability and internationalization.
The resources were also selected based on the choice made by the partnership to guarantee the project inclusive training solutions based on cultural diversification, in order to allow global and personalized learning.
The educational resources linked to the "TaiLENT" recommendation system are not limited to traditional training materials, but are characterized by a variety of interactive and multimedia formats, including e-learning (OER) modules, webinars, videos, video tutorials, case studies and other theoretical resources and/or practical tools, capable not only of facilitating learning, but also of promoting the operational application of the acquired knowledge effectively in the different organizational realities of reference.
The integration of these educational resources has allowed us to create a training system capable of responding in a targeted, personalized and scalable way to the specific needs of each employee based on the respective skill gaps to be filled in order to support the competitiveness and growth of their organization in a constantly evolving national and international market context. The ability to customize training based on individual needs, skill levels and company objectives allows us to develop highly qualified human capital, ready to face the increasingly complex challenges of the global market, where technological transformations, environmental sustainability and internationalization processes are critical success factors.

The growing demand for digital, green and entrepreneurial skills, together with the need to develop soft skills such as“Negotiation”, “Communication”, “Goal Orientation”, “Collaboration”, “Project Management” and “Time Management”is now more than ever at the centre of the SME agenda.
In this scenario, the CLAIM model is configured as a strategic facilitator, capable of supporting the specific needs of SMEs with a training offer capable of guaranteeing the continuous development of human resources, ensuring the constant alignment of skills with technological innovations, new operational and strategic methods, an essential condition for guaranteeing the competitiveness and sustainability of the organization in the long term.
The adoption of the CLAIM model and its tools allows SMEs to accurately identify, evaluate and diagnose the training needs of their employees thanks to the analysis of the related skill gaps, thus transforming the way in which human resources are managed within small and medium-sized enterprises.
By developing an approach to training that does not only respond to short-term needs, but looks at the future economic and social challenges that organizations are called to face, the application of the model guarantees a strategic and far-sighted vision that takes into account emerging trends in digitalization, eco-sustainability and business strategy, thus promoting a corporate culture oriented towards continuous learning that makes SMEs in particular not only more competitive, but also more resilient and able to innovate sustainably.

The Training Recommendation System of the “TaiLENT” Platform

TaiLENT's recommendation system is based on data collected through Self-Assessments administered to each user registered on the platform, whose analysis carried out by AI allows to define the level of possession of a skill by each employee.
Once the gaps have been identified, the recommendation system is activated and, in correlation with the detected level, returns one or more specific training solutions to the user, thus creating a personalized response aimed at covering the deficiencies found as a result of the analysis carried out. In this way, the approach is tailor-made, responding both to the professional needs of the individual and to the strategic objectives of the company.
One of the ways in which the system responds to training needs is by recommending self-learning content, available free of charge or for a fee, which has been researched, selected and linked to skills, by level of relative possession, among those available online on CONFORM platforms and/or owned by other partners and/or third parties.
The educational resources that the TaiLENT system can suggest belong to a wide range of formats, as described below:

- **Video training pills**
  Video training pills are educational videos that cover key concepts quickly and in a targeted manner. These contents, which generally last from 3 to 10 minutes, are designed to offer an immediate understanding of specific topics, such as negotiation techniques, the use of digital tools, augmented technologies (AR/VR/MR), artificial intelligence, team management, environmental sustainability and internationalization strategies, allowing users to learn in a concentrated and uninterrupted way.
  Their concise and direct structure allows to address complex topics in a simple and comprehensible way, combining theoretical content with a visual and engaging form, also thanks to the support of motion graphics.
  The visual aspect of videos facilitates the understanding of concepts and improves the assimilation and recall of information.

- **Narrative scenarios at crossroads**
  Branching narrative scenarios are interactive approaches that allow users to analyze contextualized situations, make decisions, and understand the resulting effects.

These scenarios, structured as interactive stories, thanks to the use of avatars managed through the use of artificial and neural intelligence solutions, place the user in front of the adoption of a series of choices, each of which leads to different results.
This approach allows users to understand the implications of their actions in realistic contexts, developing the ability to make informed decisions in complex work situations. Crossroads scenarios stimulate critical thinking and problem solving, promoting active learning and reflection on the short- and long-term consequences of one's choices.

- **Edu-game**
  Edu-games are educational games that make learning engaging and dynamic.
  By using game dynamics, these tools transform the learning process into a fun and stimulating activity, motivating users to continue learning.
  Edugames can be designed to simulate real-world scenarios or solve specific problems, allowing users to practice digital, logical, managerial and relational skills in an interactive way. The playful aspect facilitates the memorization and application of the concepts learned, maintaining a high level of involvement compared to other traditional learning methods.

- **Educational Podcasts**
  Educational podcasts are educational content in audio format, designed to provide information, training and insights on specific topics.
  Their main purpose and utility is to:
  - offer the possibility of listening to training content anywhere and at any time, allowing users to adapt learning to their daily routines without having to dedicate specific times to access the materials.
  - allow anyone to access educational resources without the need for complex devices or particularly fast Internet connections, making them particularly suitable for a diverse audience.
  - stimulate active listening, absorbing information in a concentrated way. Narration, interviews with experts and case studies presented in podcasts can motivate the user to listen regularly.
  - host industry experts who share practical experiences, analyze case studies or discuss emerging trends, thus helping the listener to apply the skills learned to real-world scenarios.
  - be easily updated with new information or episodes, allowing for rapid adaptation to market changes or new skills required.

- **Interactive Training Web Series**
  Interactive educational web series are video content structured into episodes, which cover educational topics in an engaging way and with an episodic format.
  Their main purpose is to:
  - use storytelling to create an engaging experience that keeps users engaged. With a continuous storyline that unfolds episode after episode, users are encouraged to watch the entire series, increasing engagement in learning.
  - often include choices that the user can make, with direct consequences on the developments of the story. This approach allows users to explore different scenarios, solve practical problems and see the implications of their choices. Interaction increases active participation and helps consolidate skills.
  - simulate real-world situations or typical work-related scenarios, allowing users to apply what they learn in a practical and controlled environment. Simulated situations strengthen the ability to make decisions under pressure, manage conflicts, or address business challenges.
  - adapt to the choices made by users, creating personalized paths that respond to individual training needs. This approach allows you to focus learning on the areas of interest or specific needs of the user, improving the effectiveness of the path.
  - facilitate the understanding of complex concepts, thanks to graphic representations or illustrative scenarios that support learning.

- promote the learning of relational and communication skills, such as conflict management, leadership, negotiation and team collaboration. These topics are often presented in realistic contexts that promote empathy and social learning.

- **Documentary film or Docufiction**
  Docufilms and docufiction are educational resources that combine documentary elements with creative storytelling, presenting real stories or stories based on real events, but with a narrative structure that may include elements of fiction. Their main educational purpose is to:
  - use a narrative form that stimulates the interest and empathy of viewers. By showing stories that intertwine real facts with creative elements, they can make content more engaging, facilitating the understanding of complex themes and increasing motivation to learn.
  - cover topics related to real business experiences, such as crisis management, leadership, innovation or sustainability, creating a bridge between theory and practice. Participants can see how skills are applied in real situations, improving their ability to transfer knowledge into their daily work.
  - stimulate critical thinking and analysis, as they encourage users to reflect on the themes covered and to discuss the narrative choices and events described. This process helps develop a deeper and more nuanced understanding of the topics covered.
  - adapt the stories to different sectors or business areas, dealing with themes that reflect the challenges or dynamics typical of specific work environments, such as SMEs, thus responding to the specific needs of organizations.

- **Short films**
  Short films are short films, usually between 5 and 20 minutes, that tell a story or explore a specific theme. In the educational context, short films are used to:
  - address targeted topics, stimulating reflection and discussion on relevant issues, such as leadership, change management or team dynamics.
  - stimulate group discussions, as they invite viewers to reflect on choices and consequences. The analysis of scenarios shown in the short film offers an opportunity for dialogue that can bring out personal experiences or opinions of participants, improving collective learning.
  - illustrate how to face a challenge, resolve a conflict or apply a technique, thus becoming very effective tools in the educational field.

- **Animated Film**
  Animated films, using unique visual and narrative techniques, are designed to simplify complex concepts through creative images and stories. This format is especially useful for:
  - explain complex or technical concepts, using visual metaphors that simplify learning. For example, business processes, marketing strategies or management techniques can be represented in a clear and easily understandable way thanks to the use of animations.
  - engage and evoke emotions in participants. The combination of stories, colors, sounds and images can make learning more enjoyable and memorable, improving the effectiveness of teaching.
  - explore creative and innovative solutions for training.
  - tell imaginary or futuristic stories, stimulating the imagination and encouraging participants to think innovatively.
  - be easily adapted to various cultural contexts and business sectors. Visual representations make content understandable even to those with limited language skills or unfamiliar with technical terminology.

The CLAIM model recommendation system also includes other educational resources, researched and selected by partners as in-depth materials from a wide range of relevant and reliable sources in terms of content. Furthermore, the system can provide useful suggestions and indications to HR function representatives and/or training experts on how to design targeted and personalized training

interventions that take into account specific types of courses to be carried out in person and/or experiential, or coaching and/or project work activities.
The integration of these additional resources allows the Model to expand its offering, responding dynamically and specifically to the skills gaps that emerged during the assessments.
In particular, the following resources and/or indications have been linked to the recommendation system:

1. **MOOCs (Massive Open Online Courses)**
   MOOCs are a key resource for providing unlimited, free access to high-quality courses offered by universities, educational institutions, and professional organizations around the world. MOOCs cover a wide range of topics, from digital and green skills to leadership, business management, and innovation. Each course is designed to provide advanced learning content, often in collaboration with industry experts. These courses are often structured into modules and allow users to learn at their own pace, with the option of receiving certificates of completion that demonstrate the achievement of the required skills.

2. **Blog**
   Blogs are an extremely useful educational resource, especially in business and professional contexts, to offer up-to-date content, insights, case studies and practical reflections on specific topics. The use of blogs as an educational resource has the purpose of:
   - provide up-to-date content on emerging trends, technological innovations and best practices in the business, digital, green and international fields. These articles help keep employees informed about the latest news and developments in their sector, helping to ensure that SMBs remain competitive and in line with market dynamics.
   - promote immediate and practical learning through reading short articles, tutorials or interviews with experts, obtaining concrete advice on how to apply new ideas or technologies in their daily business processes.
   - allow access to training content in a flexible and autonomous way, thus adapting to the timing and work commitments of employees.
   - encourage interactivity and engagement, allowing readers to participate through comments or discussions. This aspect provides an opportunity for employees to share experiences, solve common problems and enrich their knowledge base.

3. **Specialized Websites**
   Specialized websites, unlike blogs, can offer a variety of formal and highly structured resources, such as whitepapers, research reports, theoretical insights and educational content developed by industry experts. In particular, they can offer:
   - high-quality content, often curated by experts and industry leaders, that goes beyond popular articles. Such content is designed to provide detailed, theoretical and practical analysis on specific topics, making it ideal for delving into complex topics such as digitalization, environmental sustainability, internationalization techniques and human resources management.
   - advanced training materials, such as manuals, industry research, case studies or reports, which allow employees to acquire both practical and theoretical skills. For example, for an employee of a SME involved in internationalization projects, access to specific reports and guides can facilitate the acquisition of advanced techniques for business expansion.
   - modular content that allows you to select specific thematic areas to explore, thus facilitating personalized learning based on the employee's skill needs. In particular, for SMEs operating in global contexts, it is possible to find resources related to the management of international markets, local regulations and transnational business practices.
   - advanced research tools that allow employees to explore content on very specific topics, often not covered in depth by other sources. The ability to explore in detail scientific articles,

company reports and research papers allows you to enrich training with empirical data and theories applicable to the business context.

- newsletters, webinars, and ongoing updates on new developments and innovations in their respective industries. This allows SMEs to keep up with the latest developments, ensuring that their staff is always up to date with new trends, methodologies, and technologies.

4. **Virtual Tour**
   Virtual tours are an innovative learning method that allows you to explore environments, places or situations through digital simulations. Virtual tours are particularly useful for dealing with educational content related to environments that are difficult to access (e.g.: historical places, corporate work environments, industrial plants, etc.), which in a traditional training could be difficult to explore or study.
   Through a visual and interactive experience, users are able to directly explore, discover and understand what they are studying, thus promoting greater emotional and cognitive engagement, which makes learning more meaningful and memorable.
   Additionally, many virtual tours can also include gamification elements, such as quizzes, challenges, or tasks to complete while exploring the tour. This makes the experience even more engaging, turning learning into a game that stimulates curiosity, healthy competition, and goal achievement.

5. **Case Study**
   Case studies are a very powerful training tool, which allow you to explore real business situations in depth. Analyzing a case study helps participants develop critical, analytical and decision-making skills, as they are confronted with concrete problems and must apply theoretical knowledge in practical scenarios. The recommendation system suggests case studies that address key issues such as the adoption of innovative technologies, sustainability strategies and internationalization, allowing employees to draw lessons from real business experiences that are relevant to their field of work.

6. **Scientific Readings and Academic Research**
   Scientific readings and academic publications provide theoretical insights into complex and advanced topics. The recommendation system allows to recommend scientific articles, papers, sector studies and research researched and selected by partners to explore in detail the most recent developments in the areas of interest for SMEs.
   These materials provide a deeper understanding of emerging trends, advanced methodologies, and empirical evidence related to the skills required in today's global environment. Scientific readings are particularly useful for filling advanced skills gaps and helping employees develop a theoretical understanding of complex concepts that can be applied to specific business challenges.

7. **In-person courses**
   complex ones that require clear explanations, debates or real-time doubt resolution.
   In-person courses are a highly interactive form of learning that fosters direct engagement between participants and instructors. This approach facilitates immediate, two-way communication, creating an environment where questions can be asked, doubts clarified, and difficulties addressed in real time. It is particularly advantageous when dealing with complex or technical topics that require detailed explanations and ongoing support from the instructor. In addition, in-person learning fosters networking and collaboration among participants, fostering social learning and creating opportunities for the exchange of ideas and experiences. The ability to work in groups develops collective problem-solving skills, improving learning in a practical and concrete way.

8. **Experiential courses**
   Experiential learning is based on the belief that people learn more deeply and lastingly when they are directly involved in the educational process. In this context, participants learn "by doing", facing practical situations and simulations that replicate the real and daily challenges of work. This

training modality allows to develop practical and cognitive skills in contexts that reflect the professional reality, improving critical thinking and adaptability. Furthermore, it promotes autonomous learning, as participants must face and solve real problems, leveraging their own initiative and the ability to make informed decisions. Experiential learning helps to build skills that are immediately transferable to the work context, responding to challenges in a concrete and effective way.

9. **Coaching**
   Coaching is a highly personalized process that focuses on the development of individual potential, with the aim of supporting the coachee in achieving specific goals, both professional and personal. Through continuous dialogue and the support of the coach, the coachee explores his or her internal resources, recognizes areas of improvement and develops strategies to overcome obstacles and achieve high performance. Coaching is particularly effective for improving soft skills, such as leadership, time management, communication and stress management, as it offers an opportunity for reflection and personal growth. Furthermore, coaching stimulates self-awareness, intrinsic motivation and personal responsibility, supporting the coachee in the process of continuous self-improvement. This approach facilitates the achievement of measurable results and the strengthening of emotional and relational skills, which are crucial for a successful career and to face challenges in an increasingly complex professional environment.

The mapping activity was carried out by the partners taking into account not only the targeted and coherent training response to be guaranteed based on the skill gaps identified through the self-assessments administered, but also the market evolutions, technological trends and specific business challenges of each sector. In this way, the recommendation system can help ensure that each employee can acquire the necessary skills to respond effectively and promptly to the changing needs of the market and the business priorities of SMEs.

The main features of the "TaiLENT" platform Recommendation System

The recommendation system will not only provide the educational resources mapped by the partners, which each PMI employee will be able to use in self-learning, in response to their needs as identified as a result of the self-assessments carried out, but will also make data and information on each employee available to the HR function referents of the PMI and/or the experts of the Training Agencies and/or Consulting Firms, useful for evaluating the opportunity to propose:

- advanced or specialist training courses, which integrate innovative teaching methods to stimulate active learning
- individual or group coaching activities, to improve skills related to soft and hard skills
- project work, to work on real cases, promoting the practical application of skills in business contexts.

Based on an in-depth analysis of individual performance and skills data, the recommendation system allows you to pinpoint training needs before they become urgent. For example, an employee who is struggling with a key skill could be directed to a preventive training program, before the skill gap negatively impacts company performance.
Additionally, the system can suggest training content that prepares employees for future challenges or emerging skills that will be needed to compete effectively in ever-changing markets, creating a resilient, innovative and globally ready workforce.

The recommendation system of the "TaiLENT" platform, differentiating it from other similar training recommendation systems, has been designed both to make available to users, in a targeted but generalized way, educational resources created and/or researched and selected by partners based on digital, green, entrepreneurial, professional skills and those related to specific soft and hard skills, but also to allow each organization, with particular reference to SMEs, which has requested and obtained

authorization from CONFORM to access its own reserved area on the platform, to be able to use two distinct functions of the recommendation system, connected:

- to the methods provided by the platform for the creation of the hetero-evaluation questionnaires;
- to automatically generated self-assessments, with the support of artificial intelligence, in relation to a professional profile selected from the platform for the European Classification of Skills/Competences, Qualifications and Occupations (ESCO), to analyse the individual skills of each employee in relation to European standards.

With the adoption of both these functions, which will be part of the support tools for the CLAIM Model under development, the objective pursued is to enable each authorized organization to customize the application method of both the Model and the recommendation system of the "TaiLENT" platform, feeding it with specific content, educational resources, operational tools and other training solutions that best meet their strategic needs and business objectives. This allows SMEs to respond precisely and effectively to sectoral challenges, promoting continuous innovation of company products and services, but also competitive strengthening on the global market.

The CLAIM Model, thanks to the advanced tools of the CONFORM "TaiLENT" platform, stands out for its ability to support continuous training in a highly targeted and strategic way.
This model is characterised by two complementary approaches which, together, guarantee the effectiveness of the system and its adaptability to the specific needs of each organisation, with particular reference to small and medium-sized enterprises, and precisely:

a) **standardized approach**, which allows all organizations, regardless of their size or sector, to have access to a personalized training system thanks to the administration of self-assessment questionnaires, through which to determine the level of coverage of each skill by each employee. In this way, the system is able to suggest targeted educational resources, linked to the skills gap found, determined on the basis of the results of the Self-Assessments carried out, allowing the user to access the use of the various recommended resources.
   This standardization has the advantage of making the system usable by any organization that wishes to adopt the CLAIM Model and the related "TaiLENT" platform, with the certainty that each employee will receive training material aligned with their level of competence, thus creating a continuous and coherent learning path.

b) **personalized approach**, which allows each organization to independently define the ways in which to feed the system. Each organization, according to its needs, can customize the educational resources, operational tools and any other type of necessary content, which the recommendation system will suggest. This aspect allows organizations, with particular reference to SMEs, to create training paths strictly functional to the innovation processes of their products/services, but also to strengthen their competitiveness on the market, being able to count on trained personnel in possession of those digital, green, entrepreneurial, professional skills and those related to specific soft/hard skills that are considered necessary to be at the forefront, able to face future challenges.
   The CLAIM model adopts a lifelong learning-oriented approach that allows each organization, in order to remain competitive in the long term, in a rapidly evolving global context, both to customize the training response based on the identified and emerging needs, and to continuously analyze how individual progress contributes to the new needs of the business. In this context, the recommendation system represents a powerful tool to support human capital management, fueling the cycle of professional growth and the improvement of company performance, ensuring that staff continues to develop in a manner aligned with global challenges and new market trends.

The integration of sustainable business models and the adoption of technological innovations are key elements that TaiLENT's recommendation system helps to manage.
By providing suggestions for targeted and personalized training in areas such as sustainability and digital skills, the system helps strengthen the capabilities of organizations and in particular SMEs to address environmental challenges, implement green practices and innovate business processes

strategically to emerge as leaders in their respective sectors, consolidating their competitive position in the long term.
In this way, thanks to the use of advanced technologies, such as artificial intelligence, and a flexible approach, it becomes a tool of great support for the development of crucial skills to face future challenges and compete effectively in the global landscape.

The partnership's contribution to the mapping of recommender system resources

To define and develop the CLAIM Model and then customize the tools of the connected "TaiLENT" Platform, the partnership's work focused on:

a) on the sharing of different types of educational resources and any operational tools to be created and/or searched online, based on the purposes and characteristics that each in-depth teaching material must have in order to contribute to the acquisition and/or consolidation of skills, with a targeted and personalized training response based on the gap identified as a result of the self-assessments carried out by registered users;

b) on understanding the complex and diversified functioning of the recommendation system of the TaiLENT platform to be fed with the resources created and/or searched online among those available, paid or free, agreeing on the operating methods to be followed based on the indications provided by CONFORM, in agreement with the Department of Mathematics of Federico II^

c) on limiting the resource mapping activity to digital, green, entrepreneurial skills and those related to the 6 soft/hard skills chosen, taking into account the characterising aspects of each skill set defined by the model being developed and specifically:

- **"Digital Skills" (European Framework DigComp)**
  In relation to the 21 digital skills, as per the European framework "DigiComp 2.2", as a reference framework of knowledge, skills and attitudes that allow people to interact with digital technologies, including basic ICT skills and the use of devices to find, exchange and evaluate information, the creation and/or research/selection of free and/or paid educational resources to "recommend", has been focused on the following 5 areas of competence:
  1. **Information and data literacy**, with reference to the following specific skills: Navigate, search and filter data; Evaluate data, information and digital content; Manage data, information and digital content.
  2. **Communication and collaboration**, with reference to the following specific skills: Ability to interact with others through digital technologies; Sharing information; Exercising citizenship; Collaborating; Netiquette; Correct management of digital identity.
  3. **Digital Content Creation**, with reference to the following specific skills: Develop digital content; Integrate and rework digital content; Copyright and licenses; Programming.
  4. **Safety**, with reference to the following specific skills: Device protection; Protection of personal data and privacy; Protection of health and well-being; Protection of the environment.
  5. **Problem solving**, with reference to the following specific skills: Technical problem solving; Identifying technological needs and responses; Creative use of digital technologies; Identifying digital competence gaps.

- **"Green Skills" (European Framework GreenComp)**
  In relation to the 12 sustainability skills, as per the European framework "GreenComp", necessary for all sectors and at all levels of the labour market, both to promote ways of thinking, planning and acting with empathy, responsibility and attention to the planet and public health, and to foster critical thinking, systemic thinking, problem solving and innovation, the creation and/or research/selection of free and/or paid educational resources to "recommend" has been focused on the following 4 areas of competence:

1. “Embodying the values of sustainability”, with reference to the following specific skills: Valuing sustainability; Supporting equity; Promoting nature
2. “Grasping the complexity in sustainability”, with reference to the following specific skills: Systemic thinking; Critical thinking; Problem framing
3. “Imagining sustainable futures”, with reference to the following specific skills: Futures literacy; Adaptability; Exploratory thinking.
4. “Acting for sustainability”, with reference to the following specific skills: Political action; Collective action; Individual initiative.

- **"Entrepreneurial" Skills (European Framework EntreComp)**
  In relation to the 15 entrepreneurial skills, as per the European framework “EntreComp”, as the individual's ability to transform ideas and opportunities into action, through the mobilization of multiple resources, the creation and/or research/selection of free and/or paid educational resources to “recommend”, the following 3 areas of competence were focused:
  1. “Ideas and opportunities”, with reference to the following specific skills: Recognizing opportunities; Creativity; Vision; Valuable ideas; Ethical and sustainable thinking
  2. “Resources”, with reference to the following specific skills: Self-awareness and self-efficacy; Motivation and perseverance; Mobilizing resources; Economic-financial knowledge; Mobilizing others
  3. “In action”, with reference to the following specific skills: Taking initiatives; Planning and management; Coping with uncertainty, ambiguity and risk; Working with others; Learning from experience

- **"Negotiation" Skill**
  In relation to the "Negotiation" skill, the creation and/or research/selection of free and/or paid educational resources to "recommend" was focused on identifying in-depth teaching materials and any operational tools to allow the user to acquire/consolidate, based on the result of the self-assessment carried out, the skills required to be able to define objectives, use data, be flexible during a negotiation, manage tensions without aggression, communicate convincingly, listen actively, foster a collaborative environment, improve business relationships, creatively solve problems, build trust and maintain ethical behavior.

- **Competence "Goal Orientation"**
  In relation to the "Goal Orientation" skill, the creation and/or research/selection of free and/or paid educational resources to "recommend" was focused on identifying in-depth teaching materials and any operational tools to allow the user to acquire/consolidate, based on the result of the self-assessment carried out, the skills required to be able to define smart objectives, overcome obstacles, achieve objectives despite difficulties, prioritize the most relevant objectives, make decisions in line with company standards and available resources, stimulate excellence, optimize results, manage risks, adopt creative and sustainable approaches, adapt strategies to evolving market dynamics, communicate complex information clearly, involve stakeholders in defining objectives, measure progress to optimize processes, create a positive and productive work environment.

- **"Project Management" competence**
  In relation to the "Project Management" skill, the creation and/or research/selection of free and/or paid educational resources to "recommend" was focused on identifying in-depth teaching materials and any operational tools to allow the user to acquire/consolidate, based on the result of the self-assessment carried out, the skills required to master the "hard skills" (technical skills) and "soft skills" (transversal skills) specific to project management techniques, demonstrate high organizational, leadership, problem solving, communication and use of flexible and user-friendly platforms, to provide the team with information and promote interfunctional collaboration.

- **"Communication" Skill**
  In relation to the "Project Management" skill, the creation and/or research/selection of free and/or paid educational resources to "recommend" was focused on identifying in-depth teaching materials and any operational tools to allow the user to acquire/consolidate, based on the result of the self-assessment carried out, the skills required to be able to adopt a multidimensional approach that includes technical skills, kinesic, proxemic, objectemic and intercultural skills, manage adversity, be open to new ideas and approaches, be creative and lead the team in building relationship networks, manage internal interaction processes and define commercial objectives.
- **"Collaboration" Skill**
  In relation to the "Project Management" skill, the creation and/or research/selection of free and/or paid educational resources to "recommend" was focused on identifying in-depth teaching materials and any operational tools to allow the user to acquire/consolidate, based on the result of the self-assessment carried out, the skills required to be able to apply technical, communication, listening and emotional intelligence skills, conflict management and negotiation of disagreements, assertive participation in conversations, effective collaboration in teams, with recognition and respect for the roles of the members involved.
- **"Time Management" Skills**
  In relation to the "Project Management" competence, the creation and/or research/selection of free and/or paid educational resources to be "recommended" was focused on the identification of in-depth teaching materials and any operational tools to allow the user to acquire/consolidate, based on the result emerging from the self-assessment carried out, the skills required to be able to manage time to increase effectiveness, efficiency and productivity, consciously plan and control time spent on work, social and personal activities, organize tasks and goals into a structured schedule, complete tasks within deadlines, manage stress, set priorities and reduce non-essential activities.

d) on the choice to orient the mapping activity in a manner consistent with the project objectives, to guarantee a targeted and personalized “competence-based” training response for each registered user who will carry out one or more Self-Assessments of analysis in relation to one or more of the skills listed above, on which the CLAIM model has focused

e) on postponing the part dedicated to professional skills, related to the profile(s) chosen among those available in the platform dedicated to the European Classification of Skills/Competences, Qualifications and Occupations (ESCO), to a specific activity that will be carried out during the learning mobility, examining in depth with the HR function representatives of PMI and the VET experts/consultants involved, the methods of applying the Model and the related tools of the platform both for the self-assessment of such skills, measured according to European standards, and for the creation of questionnaires for the hetero-assessment of digital, green, entrepreneurial skills and those related to the 6 soft/hard skills chosen, after having contextualized them according to the specific needs of each organization in terms of process, product/service and market.

f) on using the same Excel files extracted from the self-assessment tools of the “TaiLENT” platform relating to digital skills (“DigComp. 2.2” framework), green skills (“GreenComp” framework), entrepreneurial skills (“EntreComp” framework) and skills linked to the 6 Soft/hard skills chosen by the partnership from those available on the platform (“Negotiation”, “Communication”, “Goal Orientation”, “Collaboration”, “Project Management” and “Time Management”), to insert any useful indication relating to the resources created and/or sought to be linked to the individual skills, according to the method provided to allow the recommendation system to suggest it, with the support of the ML algorithm and generative AI, on the basis of the results that emerged from the self-assessments carried out.

In particular, the partners filled out each Excel sheet by adding the required information for each of the following fields by skill and by relative level of possession (low, medium, advanced and highly specialized):

- **RESOURCE TITLE**: full name or title of the educational resource, which can be a course, video, article, podcast, webinar, or any other training material.
- **RESOURCE DESCRIPTION**: detailed and concise summary of the content of the resource, which must include the learning objectives, the target audience and the main concepts covered, so that the user can evaluate the usefulness of the resource based on his or her learning needs.
- **LINK TO RESOURCE**: direct link to the online resource, which may be present in an e-learning platform, a website or another type of online store. The link must be active and accessible.
- **CATEGORIES BY RESOURCE TYPE**: from the drop-down menu, select one of the following resource types:
  - "Websites"
  - "Blogs"
  - "Books"
  - "Publications"
  - "Face to face learning"
  - "Experiential learning"
  - "Coaching"
  - "E-Learning"
  - "Educational Videogames"
  - "Podcasts"
  - "Videos"
  - "Interactive Web Series"
  - "Docufilms/Docufictions"
  - "Virtual Tours"
- **TONGUE**: from the drop-down menu, select one of the 242 acronyms of the language in which the resource is available (for example, IT, EN, ES, EL, SI, PL, etc.)
- **PAID RESOURCE/FREE RESOURCE**: from the drop-down menu, choose one of the two available options: “YES” (paid resource) or “NO” (free resource)
- **RECOMMENDED RESOURCE**: from the drop-down menu, one of the two available options must be chosen: “YES” or “NO”. By choosing the YES option, it is specified that the resource is highly recommended as a resource capable of supporting the coverage of the identified skill gap
- **RECOMMENDED RESOURCE**: from the drop-down menu, one of the two available options must be chosen: “YES” or “NO”. By choosing the YES option, it is specified that the resource suggested to improve skills is not the main resource to guarantee the coverage of the gap, but that it may be useful to use it as in-depth teaching material

g) on the respect of intellectual property rights of educational resources searched by partners in the network, taking into due consideration the importance of carrying out a careful preventive check of the conditions provided by the authors for the use of educational materials to be connected to the recommendation system. In the event of a lack of clear and precise indications regarding the rights of use of such resources, the partners shared the need to contact the authors to obtain a release for their use, in order to prevent any problems related to possible violations.

The mapping activity of educational resources proved to be more complex than initially assumed, especially for some partners who had more difficulty in applying the competence-based approach, requiring much more time, also taking into account the relevance and importance of this activity for the correct and effective application of the “CLAIM” Model.

Furthermore, the greatest difficulties were encountered by all partners in mapping educational resources in their national language to be linked to the advanced and highly specialized levels of possession of each skill. The partners shared the need to search for in-depth teaching materials also for the “advanced” and “highly specialized” levels and opted to search for educational resources and/or operational tools only in English.