EXCITE

Report on Cooperation Opportunities

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1. Publishable Summary

*This task is included in **WP4: Capacity building: Joint services.***

To carry it out, we started from the review of the training itinerary designed in WP2 and after the development of WP3 (Capacity building: Services of individual clusters) and tasks 1 and 2 of WP4 (Capacity building: Joint Services) we have been analysing the services that have been identified.

In addition, throughout the development of this task, we also previously provided a shared definition of what we mean by capacity enhancement and recycling. It is necessary to assume that all clusters have the same understanding in these areas.

We also carried out an analysis of studies and reports to analyse good practices on upskilling and re-skilling cases.

In addition, we have also been working and reflecting on the value of making an analysis from the Soft and Hard point of view. As a result, we have produced this report on the opportunities for improvement and requalification in the field of partnership.

The conclusion of the document is the training received by the professionals of the clusters involved in the project and which is understood to be necessary to establish the roadmap and the implementation of the joint services of task 4.4, which will function as the sustainability plan of the project.

2. Table of Figures

3. Introduction

EXCITE aims to strengthen cluster management and facilitate exchange and strategic partnership between cluster staff and cluster members through the use of the ClusterXchange mobility scheme. The project focuses on skills, processes and services related to digital transformation, both in terms of the cluster organization itself and its members, in order to support them in successfully accessing global markets.

A better understanding of the areas of specialization of each EXCITE group is key to the development of a successful medium and long-term strategy for collaboration beyond the useful life of the project and to know what type of competencies, both soft and strong. are necessary in which their employees are trained.

Therefore, the main objectives of this report are to review the growth and innovation potential of EXCITE clusters based on the services they wish to improve considering their regional smart specialization strategies, also consider the value chain to which they belong and to which the partners belong to identify their key competencies and see where they need to be reinforced or acquired new ones to respond to the identified areas and improve the services and products provided in them.

This is what this deliverable will consist of and for this the reskilling and upskilling of its employees will be analyzed.

4. Analysis of upskilling and reskilling opportunities

4.1 Context

The core of this activity is the improvement of educational activities within but also between the participating institutions, through the joint analysis of opportunities for skills upgrading and retraining, based on the sectoral approach of the respective ecosystems and taking into account the respective RIS3 of the territories participating in the project. The task has also taken into account the results of Task 4.1 (Strategic Analysis of Opportunities), which have been incorporated into the links identified with the European Skills Pact (see also Task 2.3 (Learning tandems)).

Analysis of upskilling and reskilling opportunities, we aim to improve the educational activities and competences of the participating clusters and/or our Ecosystems by analysing the opportunities and reorienting professionals towards the three European-driven transformations and considering the RIS3 of each of the regions participating in the project. To this end, input from Task 4.1 and output from Task 2.3 have been used to feed into Task 4.3. For this purpose, it is foreseen that these actions will be developed.

4.2 Actions will be developed

After the completion of a survey by the clusters which showed the structure of their ecosystem in relation to the strategy, objectives, needs, business model, communication... the training itinerary of WP2 was reviewed and after the analysis of the capacities of the construction of the services of each cluster, the training plan is being redesigned considering the training aspects and the part linked to the enabling technologies.

To this end, GAIA, together with the rest of the consortium partners, organised a workshop to identify the most relevant lines of action to reinforce cluster services in these areas and where training should be reinforced, which are the same:
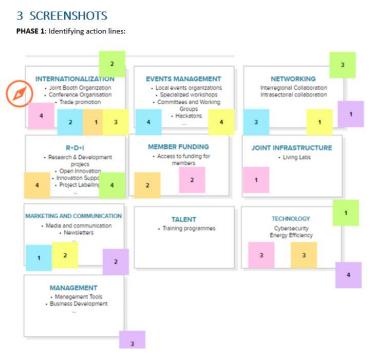

Figure 1: List of actions lines

In this sense, part of the training that has been identified is that shown in the following tables, some of which is already being given in Task 2.3 through the different Learning tandems that are being carried out throughout the project.

The project has also sought to consider both technical competences and soft competences, in both cases we highlight the following list of competences:

4.2.1 List of competences per action lines of a Cluster

List of Competence	Dimension								
	Internacionalizacion	Events Management	Networking	R+D+I	Member Funding	Infraestructure	MK y Comunication	Talent	Techn
I. Transversal competences	X	X	X	X	X	X	X	X	X
II. Disruptive technologies competencies				X		X		X	X
III. Cluster projects domains competencies	X	X	X	X	X	X	X	X	X
IV. Cluster challenges knowledge	X			X	X			X	X

Figure 2: List of competences by actor lines

- **Transversal competences**: within the transversal competences, sixteen training courses have been identified and are being worked on. In this case, all of them respond to the ten dimensions that have been critical and of interest to be addressed in order to receive training in them, as shown in figure 2.

I. Transversal competences
1. Creative thinking
2. Familiarity with new technologies & ICT
3. Innovative thinking
4. City/urban planning policies
5. Legal familiarity
6. Critical thinking
7. Working in teams
8. Intercultural competences
9. Learn by experience
10. Emotional intelligence / empathy
11. Mobilise others
12. Task/time management
13. Decision-making
14. Leadership and conflict-management
15. Finance management
16. Public communication

- **Disruptive technologies competences**: In the area of disruptive technologies, eleven of them have been identified and considered necessary to address, as can be seen in the following list. All of them are included in the so-called enabling technologies.

II. Disruptive technologies competencies
1. Artificial Intelligence
2. Data analytics
3. Cloud Computing
4. Internet of Things
5. Cyber physical systems
6. Smart sensors
7. Collaborative robotics
8. Cybersecurity
9. Blockchain
10. Augmented reality
11. Virtual reality

- **Cluster projects domains competences:** In this section and given the activity of each of the clusters participating in the proposal, five specific areas are included where the clusters have different projects and programmes around them. Also, a more generic area has been included given that, for example, there are clusters that are working in the health sector or others.

III. Cluster projects domains competencies
1. Economy, trade and industry
2. Government and Education
3. Public sector
4. Environment and sustanability
5. Energy, water, utilities
6. Others

- **Cluster challenges Knowledge:** lastly, and in relation to the knowledge challenges that the clusters have been communicating during the project meetings, five areas of action have been identified in the different webinars carried out, where the need for competences to address technological challenges, financial knowledge, collaborations, organisational challenges and social challenges has become evident.

IV. Cluster challenges knowledge
1. Technological challenges

2. Financial constraints
3. Collaboration among stakeholders and governmental restraints
4. Organizational challenges
5. Social challenges

4.3 Provide in advance a shared definition of what we mean by capacity enhancement and retraining.

Within this deliverable we have seen the need, as we developed the learning tandems in task 2.3, to reach consensus across all clusters on what we mean by upskilling and reskilling.

4.3.1   Reskilling

The English term reskilling could be translated into English as "retraining" or re-training, i.e. re-skilling means learning new skills in order to be able to do a different job. It means reorienting one's career towards other sectors or professions.

In this sense, the consortium has considered using this term together with re-skilling with the aim of improving qualifications, in the sense that it is necessary to update existing professional skills in order not to be left behind by the new demands of a job or professional profile.

GAIA has been working on how to adapt to new requirements

GAIA has been working on how to adapt to new requirements

Through various forums, GAIA has shown how companies are evolving, especially technology-based companies, and how they are adapting to the new reality, and how they want their employees to do the same.

Apart from the forums where the concept of requalification and upskilling has been worked on, reports have been analysed, such as the one by the

World Economic Forum, which gives us an idea of the new competences and skills demanded by companies.These are the 15 skills that will be most in demand in 2025:- Analytical thinking and innovation

- Analytical thinking and innovation
- Active learning and learning strategy
- Complex problem solving
- Critical thinking and analysis
- Creativity
- Leadership skills
- Use, monitoring and control of technology
- Problem solving
- Emotional intelligence
- User experience
- Service orientation
- Systems analysis and evaluation
- Persuasion and negotiation

Many of these skills have already been considered by the project team and are being addressed through different channels (learning tandems).

4.3.2 Upskilling

Upskilling is a term used to describe the training of employees in order to provide them with the necessary skills that they may not possess, giving them the opportunity to grow professionally. The consortium sees upskilling as a way to increase skills and make employees more competent in their current and future roles.

Again, through forums, GAIA has seen the need to improve the competencies of its employees and its partner companies to benefit both the employees and the organisation itself. One issue that has become evident after the development of this project is that Upskilling should be part of the general training plan of any organisation and in particular of the clusters, especially if they want to keep up with the current competitive and changing market.

How is Upskilling being applied in this project?

Clear objectives were established beforehand and the type of training to be received was clearly defined according to the needs identified. On the other hand, the consortium understood that Upskilling had to be at all times:

- Affordable: the proposed training had to be able to be carried out by cluster employees and even by the employees of their partner companies. We must all be part of the change and evolve with the organisations in the scope of the three transitions we are in (digital, green and health).

- We must have a methodology for this: systems that facilitate knowledge and know how to give each person the training itinerary that best suits their way of learning. We are not all the same, so we have to adapt the material in the best way for learning to be efficient.

- Personalised learning: the training itinerary must be adapted to the way you learn. We are not all the same, so adapt the material in the best way for efficient learning.

- Advancing knowledge acquisition: Once the upskilling process has begun, it should be possible to measure the progress of employees and see how they are acquiring and applying the new knowledge that is being acquired. As employees train and reach benchmarks, there should be positive feedback and encouragement.

Under point 4.5 and in a meeting with companies, we worked on the need to acquire skills in the field of artificial intelligence, which we attach to this deliverable.

4.4 Check Analyse studies and reports to identify good practices in upskilling and reskilling cases

Reskilling and upskilling are the new paradigms in the face of automation. In this sense, in the opinion of all the experts, two of the tasks pending for any HR manager to face the business challenges of the next decade are reskilling and upskilling. That is, increasing the capabilities of people within organisations, taking advantage of existing talent to re-educate it and reconvert it to other areas. From the CEO to the last employee who wants to survive the impact of labour robotisation. As well as encouraging the development of different teams to carry out activities in which it is still difficult to find trained human capital, but which are key to any future technological challenge.

A well-known PwC study talks about the theoretical "theft" of jobs by robots. It is estimated that over the next three years, more than 120 million workers worldwide will need specific training due to the impact of artificial intelligence on the world of work. And around 120,000 jobs may go unfilled due to a lack of qualified people to fill them.

In this context of transformation, it is necessary to adapt people's skills to new work models; to the use of technologies and requirements. "This involves the development or reskilling of skills, knowledge and aptitudes that are complementary to those they already have", explains Francisco Giménez Plano, founder of the consultancy specialised in coaching Augere. "At the same time, companies need to develop their workforces for tasks for which it is currently difficult to find qualified people. And they are essential to meet the new digital challenges. We are talking about upskilling, and good examples of this are the programme launched by Telefónica to train more than 6,000 employees, or platforms such as Growpath, which were created to support companies' strategies in the development of transversal skills in organisations.

Throughout this process of adapting to change, there are figures, analyses and studies that show that this is an unstoppable trend, and that it is no longer just a matter for large companies. In this century, the impact of technology, together with the globalisation of the economy, has led to an exponential evolution of labour markets. Thus, companies less than three decades old - Google, Apple, Amazon, Netflix, Airb&b... - have created new jobs in which digital skills are critical.

"And the capacity for constant learning has become the most demanded competence in the last five years," recalls Pilar Llácer. "But Covid-19 has also had a major impact on our competences, and we are going to need on-fast-skilling, which implies: "switching on" new competences that we did not have and that are necessary in a scenario of uncertainty and fragility. And "fast-skilling" the competencies to their degree. We need not only adaptation to change, but adaptation to constant, visionary and permanent change in a perpetual state of alarm.

Among the studies consulted, we highlight the following:

- The Word Economic Forum's The Future of Jobs Report 2018 already predicted that by 2022 at least 54% of employees will require significant reskilling and upskilling.
- PwC's 23rd Annual Global CEO Survey found that only 18% of CEOs surveyed worldwide acknowledged that they had made significant progress in implementing upskilling programmes.
- Spanish companies in the face of the reskilling revolution / https://www.futurefor-work.com/assets/uploads/2020/10/Las-empresas-espanolas-frente-a-la-revolucion-del-re-skilling-INFORME-1.pdf
- Ebook: Upskilling and Reskilling; Driving Growth and Productivity in Atypical Times / https://distritotalentocv.es/upskilling-y-reskilling-distrito-talento-y-michael-page/
- How to prepare an Upskilling and Reskilling programme / https://factorialhr.es/blog/up-skilling-y-reskilling/
- 15 tips for an effective training and reskilling plan / https://www.altami-rahrm.com/es/blog/formacion-y-reskilling-consejos

4.5 Alignment Reflection to assess the value of doing an analysis from the point of view of Soft and Hard Skills

In addition to the skills that we could classify as soft skills, the market is requiring other hard skills, mainly related to new technologies. Data analysis, programming, cloud computing and artificial

intelligence are some of the most in demand. In order to have opportunities, reskilling must therefore also be digital, and this aspect is also being worked on in the EXCITE project.

Both soft and hard skills, both types of skills are important. Certain professions require very specific and well-developed hard skills. Without them, one would fail instantly. But even then, soft skills help to develop and use the hard skills successfully.

How are the professionals of these clusters as well as the professionals of their partner companies adapting to these new competence and skills needs? Through training. In general, the company does not look for these profiles outside the company, through a new recruitment process, but prefers to train its employees so that they can recycle and update their skills. For example, the employers surveyed for the study "The Future of Work" indicated that their companies facilitate reskilling and upskilling processes for 62% of their workforces, although they acknowledged that only 42% of employees take advantage of these opportunities for retraining and upgrading.

In this sense, GAIA has a tool that allows the employees of their organisations to be trained and provides them with these types of skills.

The following is a description of the digital self-assessment tool for soft and hard skills and competences available to GAIA and the information it reports after having been tested on 50 users.

GAIA is working to adapt to the project and the partners the needs of the self-assessment tool that will be used in the future with the aim of being able to measure the hard and soft skills of the employees who will be able to participate in the trainings that the EXCITE project partners might require for the upskilling and reskilling.

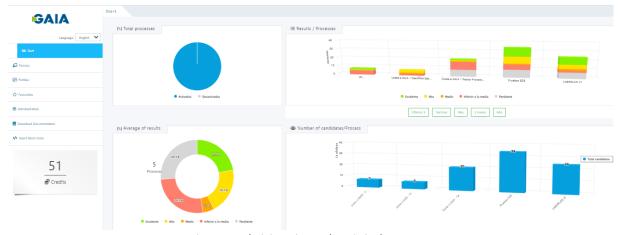The description of the tool consists of:

- Detail of the administration and statistics reporting page
- List and processes to be followed with the training to be received
- Real time status of the training that is being carried out.
- Data sheet with the trainee's data according to their progress and advancement
- Modules with technical competences
- Modules with soft skills
- Results of the training

The Digital Self Evaluation Tool is an online platform be available for employees who need some up

4.5.1 Administration and Statistics reporting page

This is the administration and statistics page where the administration users that access to the platform will be able to see. Here, it is visible a summary with general statistics of all processes performed under all trainings, upskilling or reskilling and all kind of filters can be used in order to be able to see in once all the results and the needs of companies, members, employees…

Also different kind of profiles can be found where any kind of adaptation of trainings and skill measuring can be changed.
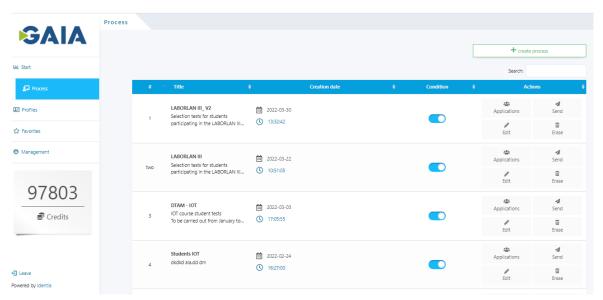
Picture 1: administration and statistics homepage

4.5.2 List and processes to be followed with the training to be received

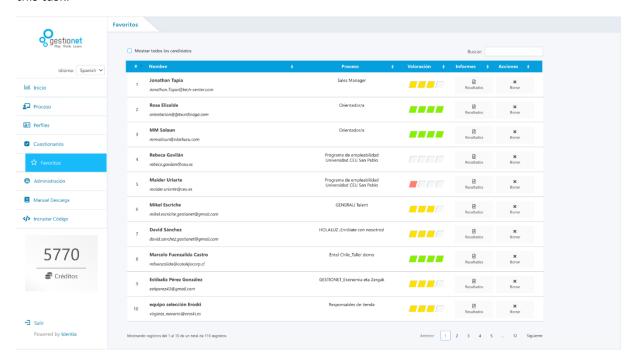Once logged in the portal, the administrator can:

- Create an open or closed processes (one process is any specific test that an user aims to perform with a target audience)

- Access to all the processes created in real time to check results

- Access to the reports of each of the processes or individual application of employees

- Edit processes in case any of them require some adaptation

- Forward a created process to more candidates if there are new ones that were not considered at the beginning.

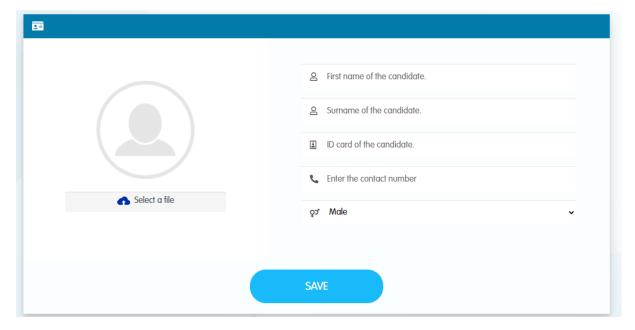Picture 2: administration and statistics homepage

4.5.3 Real time status of the training that is being carried out

In the next screenshot, the administration is able to check which are the results of each of the employees in real time and check who did tried the test, who did not and which was the time dedicated to this task.

4.5.4 Data Sheet with the trainee´s data according to their progress and advancement

In this module, anyone can access all the information obtained from the candidate in each module where they can see and receive any required input for the later follow-up. All this information is collected with the consent of the employee:
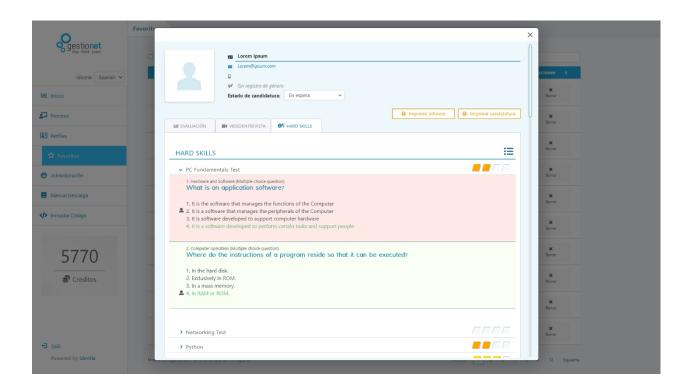

4.5.5 Modules with technical competences or hard skills

A module for creating questionnaires to measure the hard skills is available. It can be evaluated by classifying the questions in the categories that the administrator requires. In this one, the user just

needs to create the questions in the platform and adds the different multiple choice options which will appear to the user.

In the testing of the platform, we have used 33 questions about technical skills that has been prepared by project team in order to measure the knowledge of employees in the different modules of the training:

- Big Data
- Machine Learning
- Advanced Sensorica
- Cybersecurity

4.5.6 Modules with soft skills

In the soft skills modules, there are basically two games which in one hour will help to measure which are the main soft skills that have been identified as relevant for the upskilling and reskilling of employees:

1. **Basketball game:** In this first game the user will play and the objective is to score as many times as possible. The game begins with an easy level but becomes more difficult. It measures Flexibility - Critical Thinking

2.Island: Second game is a longer one (about one hour) which consists of an island that the user will need to manage. The candidate is placed as the manager of an island, where he/she will have to make multiple decisions to improve the conditions of its inhabitants. inhabitants.They will have certain resources and processes and will need to understand and apply the logic. The soft skills to be measured are: Self learning , Problem Solving, Communication and Cooperation, Leadership, Information and Data Analysis, Project Management. Before starting, there is a tutorial explaining the game.

The game consists of 5 turns where the user needs to make decisions about the management of the island and will get results after each of those turns. Then they will need to take new decisions to adapt/improve island management

It is an experience composed of cases of varying complexity and with weighting of each of the competencies so that the assessment is fully aligned with the priorities of the client (company and selected position).

4.5.7 Results of the training

The report of results is visual and user-friendly, easily interpretable. It combines qualitative and quantitative information. Each of the students that has participated in the process, will have its own evaluation which includes qualitative and quantitative information for the hard skills and soft skills measuring.

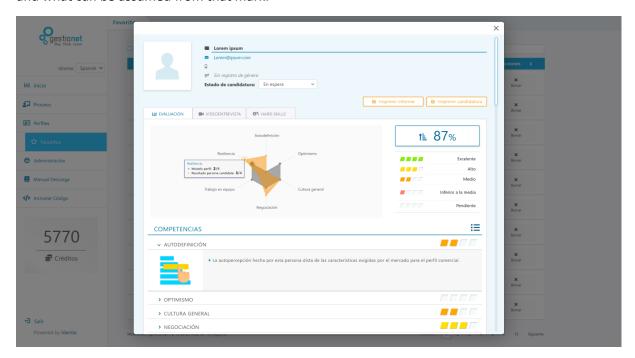In the hard skills module, the user can view the results and evaluate by classifying in different categories. The result combines qualitative and quantitative information.

It specifies and discriminates both by assessment of each skill and by % of suitability of that participant to the contrasted group.The platform allows for two types of reports: one for the talent team and the other for the participant, both with a different focus. The employees will get the results and the interpretation of them.

In the case of the results of the soft skills the view the results obtained by the candidate in each soft skill and there is an interpretation of each of them which describes why the employee got that mark and what can be assumed from that mark.
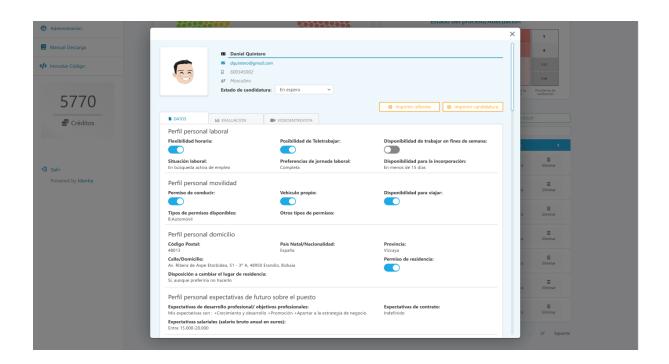
5. Conclusions

After the elaboration and analysis of the document on the opportunity of joint collaborations and after having worked on the competences, processes and services related to the digital transformation of the clusters' own organisations and their own members, the analysis of the areas of specialisation of each cluster, in order to be able to develop a successful collaboration strategy in the medium and long term, the growth and innovation potential of the EXCITE clusters based on the regional smart specialisation strategies and by analysing the value chain to which they belong and to which the partners belong in order to identify the specific role of each partner, their competences in the EXCITE partnership, a number of necessary competences that should be acquired are identified. Moreover, these competences cover both the part linked to soft competences and the part linked to technical competences.

In conclusion, we can say that the clusters that are working in EXCITE present an important development both within their regions specialised in different areas and in the deployment of their competences as can be seen throughout the document. On the other hand, and after analysing the results of the trainings carried out, we see that in order to strengthen the joint collaborative partnership between clusters we have:

- Soft skills, it is necessary to:
    - Creative thinking
    - Critical thinking
    - Emotional intelligence
    - Leadership and conflict-management
    - Working in teams
    - Public communication

- Technical skills, it is necessary to:
    - Artificial intelligence
    - Cybersecurity
    - Internet of Things
    - Virtual reality
    - Augmented reality

Annex I: Screenshots of the trainings carried out

- Candidates profile

- Whole process

- Module with hard skills measuring

1.- What is an application software?

It is the software that manages the functions of the Computer

It is a software that manages the peripherals of the Computer

It is software developed to support computer hardware

It is a software developed to perform certain tasks and support people

- IA Example: the AI deployment cycle comprises three phases:

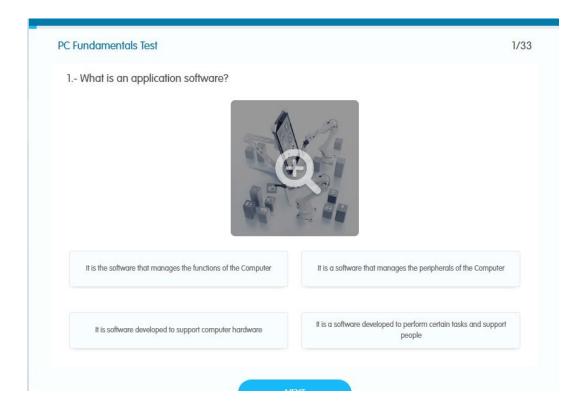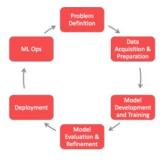These are the three phases:

- PHASE 1- Design and creation of AI solutions. This process, according to the experts participating in the workshop, is already closed. That is, AI technologies have already been created over the last 20 years. "AI technologies have already been developed, they are mature. Now it is time to start using them.
- PHASE 2 - Ownership and implementation. In a second phase, AI provider companies (e.g. those that have participated in the workshop) "appropriate" and use this parent/base technology to turn it into concrete products and translate it into fields of activity. "This is the stage we are in now, the tuning companies are becoming more and more important".
- PHASE 3 - Incorporation and implementation. At this stage, companies have been incorporating AI solutions that need to be monitored and improved over time.

Likewise, the life of an AI project is visualised as follows:

Against this background, the focus has been put on the second phase. Likewise, in this second phase, 3 areas of work were defined for technology-based companies:

- **Data Science**: Design of AI solutions with complex algorithms
- **Data Engineering**: Generation of the Cloud architecture / Infrastructure where you host an algorithm.
- **Development/visualisation**: How that solution is deployed on a platform in a user-friendly way so that it can be used.

Based on this we worked with the companies we highlight:

1. Re-qualification programmes can be carried out for people with a low to medium level of qualification in the field of AI.
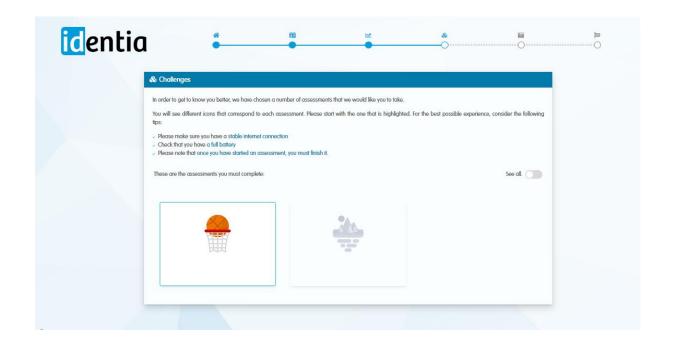
- There are experiences such as the one carried out by F5 that do train vulnerable groups including people with medium qualifications. For example, immigrants with problems of qualification homologation.
- They are intensive, with a special focus on mathematics, and work on socio-emotional aspects in addition to those strictly related to work.
- Much importance is given to the selection process - importance of talent detection (Computational Intelligence).

In terms of the conclusions drawn from the tests measuring the level of reskilling and upskilling linked to AI, we highlight the following:
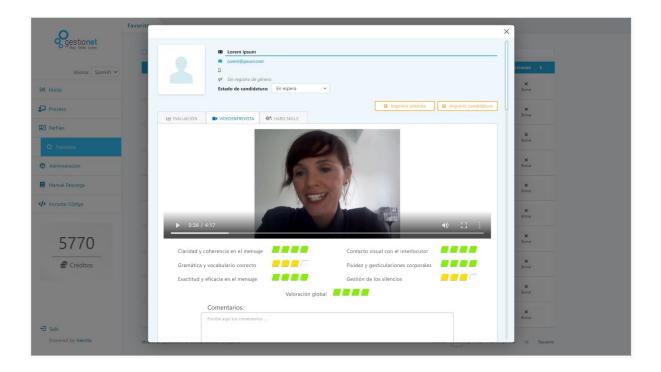
- There are areas of work that are more suitable for low-skilled profiles than AI.
- Medium-skilled profiles, a priori, at least need to have, as a general rule, a Baccalaureate.
- The main field for medium profiles is maintenance. This area is not a minor one, as it is foreseeable that in the coming years a large number of people will be needed to develop this.
- It would be necessary to establish what could be a curriculum for this profile and from there see what is the best fit (VET degree, Bootcamp...).
- Importance of the domain.
- Other types of approaches can be explored.
- In this analysis we have focused on a type of company related to AI. AI has other deployment spaces. This is where the "driver" concept would come in. Training needs to be developed for all the people who are going to incorporate AI into their work process.
- Another important element related to the above is that as AI has evolved and diversified, specialists from other areas are sought after, although a priori this does not directly affect medium and low-skilled profiles.
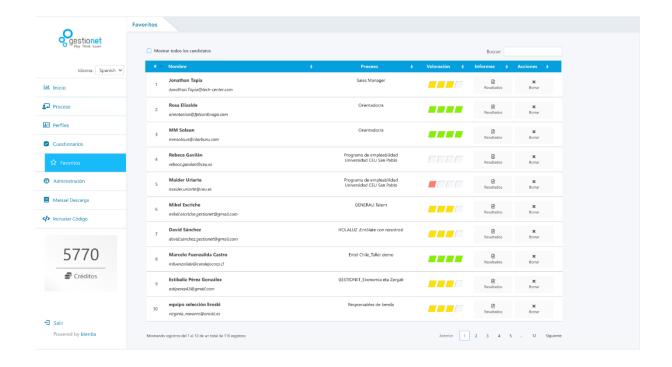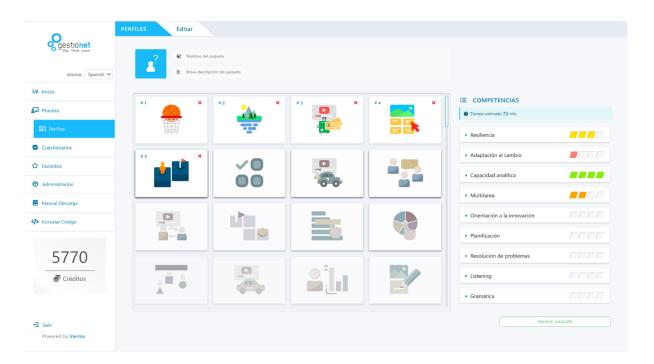
Soft Skills tests:

- Flexibility soft skills test

Online interviews available

- Favourites module

- Adaptation of profiles and selection of different games to measure different soft skills

- Creation of different profiles of workers

Perfiles

gestionet
Play Think Learn

Idioma: Spanish

- 📊 Inicio
- 🔛 Proceso
  - 🆔 Perfiles
- ☑️ Cuestionarios
- ⭐ Favoritos
- 🔒 Administración
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1	**Gestionet** Perfil personalizado.		👁 Ver	➕ Personalizar
2	**Directiva** Perfil con capacidades para prever, organizar, decidir y controlar las actividades principales de la empresa y de las personas.		👁 Ver	
3	**Responsable** Perfil con capacidades para velar por el funcionamiento de las actividades de un ámbito concreto, habilitado para la toma de decisiones y la comunicación con el equipo que gestiona.		👁 Ver	
4	**Comercial** Perfil con capacidades para comunicar, interaccionar e identificar las necesidades de terceros, con un talante positivo orientado a negocio.		👁 Ver	
5	**Técnico** Perfil con capacidades para la operativa, habituado a seguir las tareas preestablecidas y a reportar sistemáticamente dentro de una estructura organizativa.		👁 Ver	
6	**Auxiliar** Perfil con capacidades para completar tareas con detalle o procesos habituales, con menor impacto estratégico.		👁 Ver	