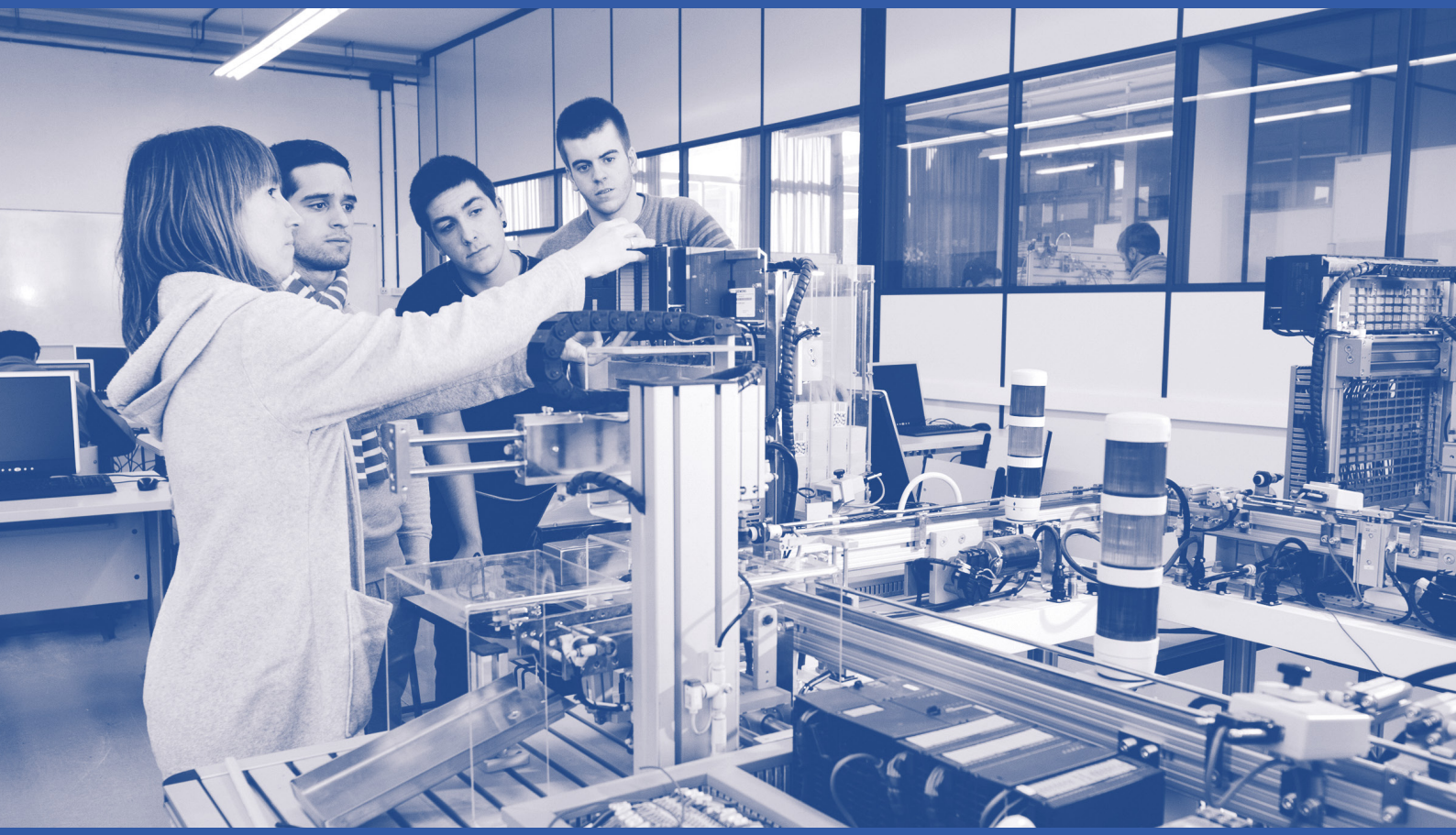
V BASQUE VOCATIONAL EDUCATION AND TRAINING PLAN

2019-2021

VOCATIONAL EDUCATION AND TRAINING IN THE CONTEXT OF THE 4TH INDUSTRIAL REVOLUTION



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HEZKUNTZA SAILA DEPARTAMENTO DE EDUCACIÓN

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Presentation of the V Basque Vocational Education and Training Plan

The Basque Government approved the IV Basque Vocational Education and Training Plan in December 2014. A Plan that established a new combined model of training, innovation, entrepreneurship and internationalisation and that also established the measures required for VET to furnish a response to the needs of our production fabric. A plan that culminated in the Basque Parliament's approval of a VET Law to provide a legal framework for its implementation.

Cristina Uriarte Toledo
Minister of Education

The continuation of the 4th Industrial Revolution, however, faces us with new challenges requiring new transformations. Transformations that will also have wide-ranging effects on VET in the Basque Country

Reality calls for adaptation to the new age, a response to the new challenges of a society undergoing transformation, increasingly based around technological progress but with a substantial need to boost social values and the human dimension. This is why it is essential to work towards sustainable human development, based on the incorporation of competences and qualifications to take on the new needs of human employability and corporate competitiveness.

Intelligence, sustainability, integration and solidarity are some of the basic components of implementation of the plan. Reality calls for training for students to enable them to move around with guarantees in wide vocational fields, rather than have them tied to a specific task. We must give our students the new tools they need to take up ownership of their own future in a new model of 4.0 society.

VET centres will also be vital components of the Plan. They will continue to adapt to the needs of this revolution: new classrooms, new spaces - interactive spaces with virtual reality - collaborative robotics, smart warehouses or workshops, among other features. All these features will give VET centres greater adaptation to any necessities that may arise.

To sum up, the V Basque VET Plan will enable VET to provide a response to the challenges of today and tomorrow; allowing it to develop not only the capacity of adaptation and reaction, but also the capacity of anticipation. I feel sure that its gradual implementation will furnish an even better understanding of the need for this firm and decisive strategy.

Cristina Uriarte Toledo
Minister of Education

Moving towards professional training 4.0, from innovation to intelligence

Jorge Arévalo Turrillas
Vice-Minister of Vocational Training

They say that sometimes the most difficult part is seeing the obvious. The changes our society are now undergoing, brought about by progress and development of the 4th Industrial Revolution, are already substantial, and they are set to acquire dimensions hitherto unknown. It is important for the general public to realise that we are now living in a new reality, and that this is what is obvious. A reality that is taking us towards the need to seek out a new way of understanding life and, whether we like it or not, to accept that transformation and technological progress are inevitable facts. We must be aware that this technology may be of great assistance in improving the welfare of people and the sustainability of the planet.

Rapid technological development, however, in a sustainable world operating with smart systems will need people with a different kind of training. This is changing our relationships with life, with the planet and with the way we work. We will be living in complex environments that require new answers. It is extremely important for us to comprehend that over the next 30 years we will not be living in a world of progressive changes, but in a world of disruptive changes. And this brings us to the need for people to gain knowledge through new ways of learning, to acquire new skills and develop advanced knowledge and capacities.

VET in the Basque Country is about to undergo a transformation. This V Basque VET Plan sets out to furnish the answers to all these challenges and to make us capable of establishing the proper instruments, to address new goals, establish new ways of working and foster new organisational models, fully aware that anticipating the future does not mean improving what is, but moving forward to what will be.

Those of us working on VET in the Basque Country know full well that we are undertaking the responsibility of future generations. The new Plan urges us to shape the VET of the future from the present. We will work to define the jobs of the future, to provide a proper definition of each of these jobs and to establish how we will train people using new learning methodologies, to enable them to take on all the changes and work in the new jobs, with a guarantee that they have the training to do so. VET centres, management teams and teachers work hard to enable us to achieve all these objectives. 4.0 environments, digitalisation, connectivity, smart systems, artificial intelligence and values 4.0 in a new system of learning and cooperation system, based on the four essential aspects of new VET in the Basque Country. VET that is intelligent, sustainable, inclusive and solidarity-conscious.

Jorge Arévalo Turrillas
Vice-Minister of Vocational Training

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BLOCK I

The social and economic development of the Basque Country in the knowledge society

A world in transformation: the knowledge society

We are going through a significant change, the change in the concept of society, moving from an industrial model to a new model based to a large extent on technology, connectivity and digitisation. This change, which has marked the beginning of the 4th Industrial Revolution and its application to everyday life, compels us to transform the information and communication society into a new knowledge society, a highly-educated society, with a critical eye, with an ability to learn how to live together, to interact, to know and to do things, with the right kind of preparation to live in a world that is going to be different.

Information and communication technologies have become the technological basis of this new kind of society that is based on a revolution in knowledge, that has led to a conceptual change, which does not only involve a revolution in technology. Learning and knowledge are the parameters that govern and determine the structure and composition of contemporary society and are also the assets and tools that are decisive for the well-being and progress of regions.

The future is going to provide significant transformations that are going to force us to change many of the things that exist nowadays and to develop, to a large extent, our current social, economic and productive model. We can glimpse a future in which sustained value creation is going to be an essential feature with which we will be able to open up new opportunities for growth, skilled jobs and social well-being. We are going to face constant transformation in a wide variety of fields. Changes that are going to create a different model of society, that will lead to profound structural changes, with a new kind of balance, a great deal of complexity and possibly too much uncertainty.

On the other hand, these changes are going to affect men and women differently. Taking employment prospects as an example, according to the report on “The Industry Gender gap: Women and Work in the 4th Industrial Revolution” by the World Economic Forum, for men there will be a new STEM job for every four that are lost, however, for women there will only be one for every twenty that are lost. These data suggest that, if the gender gap persists and the rate at which women are obtaining STEM Jobs does not grow at the same pace as demand, then women are in danger of missing out on the best employment opportunities. This fact will also affect companies as in selection processes there will be fewer applicants, and as a result, less talent.

All that we have just said means that we need to analyse the consequences that result from this for the education system in general and for VET in particular, as there is going to be a pressing need for Basque VET to expand and spread its activities into different areas to its current ones. However, awareness of this requires citizens in general to raise and improve their skill levels and also requires society to considerably increase its intellectual capital, capital that involves significantly developing research, giving a powerful boost to innovation, and providing a significant advance in the services sector and a clear improvement in people’s skill levels, making a special impact at intermediate levels.

The social changes that are taking place, access to quality jobs, the restructuring of the job market, the progress being made in technological innovations, the increasingly greater automation of productive processes, the new types of organisation and management, the emergence of new professional fields and the rapid transformation in techniques and equipment, have meant that productive sectors are demanding profound changes in VET.Various studies carried out by the European Commission have shown that by 2020 it is calculated that only 15 per cent of the European workforce will be able to be unskilled. If we transfer this detail to the Basque Country and analyse our current productive fabric and its future development, we can estimate that in our case, this figure for the unskilled workforce cannot be any greater than 10 per cent in any circumstances. This means that 90 per cent of the jobs in the Basque Country are going to need skilled or highly skilled people.

We must be very aware of just how important people are going to be in the development of all these changes. Because, among other things, it is people that have and develop knowledge, creativity and talent. And these people that make up our society are the ones that are going to open up, to a greater or lesser extent, the new innovative paths that we will need in the future. There is no better source of creativity and innovation than someone who thinks.

All this once again highlights the importance of training. And it is here that a general education system that works efficiently on the cultural, scientific and technological spheres takes on a leading role, because our professionals need to improve their level of preparation by achieving a balance in their training among these elements. VET also plays a leading role, because our competitiveness in the near future is going to be at stake, to a large extent, with middle management and skilled technicians; that is, with the people with technical qualifications and advanced technical qualifications in our VET, because VET is becoming strategically important for the competitiveness and progress of our productive fabric and for people's employability.

In this respect VET, instead of continuing to display a reactive attitude to the consequences that occur in a rather complex situation, must display a proactive attitude, anticipating and focusing its efforts on the additional need to work differently, with other aims and goals, with a different type of organisation, with a modern forward-looking vision and the need to try and find a different way of doing things, that is based on collaborative and cooperative work among people and among organisations, but especially between VET centres and companies. At the present time it is vital for this collaborative work to increase, so that in this way we can make the most of the sum of forces and efforts that guarantee us the possibility of creating dynamic systems that prosper in changing environments, and reasonably ensure us that, training, qualifications, productive sectors and job market are progressing in coordination along the right path.

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The 4th Industrial Revolution, technology and changes in a societya

Both technology and economy develop in a specific society and culture. The technological paradigm forms the active principle or driving force for changes (Bericat, 1996) in contemporary society. This paradigm makes use of different technological developments both intensively and extensively, and the Internet forms an essential part of personal, social and economic interaction. In this context, the technology vector radically modifies the cultural vector in its two basic cognitive and expressive aspects. Digital technologies have become a structural dimension of societies and play a leading role not only in the new productive paradigm, but also in the transformation in culture, society and training.

In the economic sphere, technology has been altering the nature and the future course of the economy, by increasing the flow of products and services, and creating new ones, altering the way in which a company meets a demand, and launching an information superhighway that leads us to the globalization of financial services and products. The innovations provided by technology activate new demands for strategies in productive processes.

It is estimated that a technological revolution has an impact on the global economy every 50 years by altering the patterns of integration and trade. At the present time, innovations such as artificial intelligence, robotics, drones, 3D printers, the Internet of Things, virtual reality and digital networks are merely some of the phenomena that are challenging the classical rules governing the exchange of goods and services, which represents a challenge not only for the business sector but also for the political and regulatory context of regions.

It is important to also point out that disruptive technologies have a transformative capacity that is present in all aspects of society, and pose, at the same time, unexpected challenges for employment, production, trade, environmental protection, and of course, training processes. As a result, our contemporary society faces the challenge of bringing humanistic culture and scientific-technological culture closer together, in order to achieve a comprehensive development of human beings as the basic element of values, perspectives and viewpoints regarding rational and objective decision-taking, especially as far as the uses of advances in technology are concerned.

Faced with this reality, if we analyse how things are developing in the present and how we foresee the future, one of the most important things that we may need to focus on is how to understand and define the 4th Industrial Revolution. This is a revolution that is going to be so wide-ranging and complex that it is going to change our relationship with life, the planet and work.

We need to envisage what the future will be like and reflect on the type of society that we want, so that we can face up to the various disruptive changes that this 4th Industrial Revolution pose for

us. It is a revolution that is going to mean, among other things, a transformation of humanity into a different society, because with the advance in technology, robotics, artificial intelligence, connectivity and digitalization, we are going to gradually define what it will mean to be human in a future that is perceived to be very different.

The 4th Industrial Revolution is going to make everything change. It is going to involve a transformation of the world as we know it. It is going to change the world through technology, connectivity and digitisation. It means a convergence in physical, digital and biological technologies, which are going to transform the way we live, work and interact with each other. Profound changes are going to occur in the way we think and act that will affect all society as a whole, the economy, businesses, work, leisure and our daily lives.

This industrial revolution is going to open up huge opportunities but is also going to force us to face great dangers. Many jobs are going to disappear and many are going to be created. We are going to experience a complex future that may cause a great deal of uncertainty. This gives us an idea of the urgent need to have people with the right preparation to come to terms with these changes; flexible in how they adapt to each situation, people who are innovative, creative and collaborative in their personal and professional lives. Faced with these opportunities and dangers everyone must further their talent, their work, their effort, their passion, their commitment and their ability to better themselves. All this will enable them to obtain the preparation they need that will make it possible for them to constantly progress, within certain well-defined parameters towards what in the future will represent sustainable human development.

The main aim is not to try and achieve economic growth in itself, but to optimise human well-being as well as we possibly can, to enable a fairer kind of growth which is what we need. We must adapt to meet all these challenges and technological changes that are going to redefine what it means to be human. Because history shows us that values change when we reassess how we want to live, and it is time to clearly define some new values that provide a response to this new world that we are building.

All this brings us up against another two basic challenges. On the one hand, the challenge of commitment. This is the commitment made by the Administration to promote and encourage the measures and support that are going to be necessary. The mutual commitment by companies and their human capital that are working on common project and achieving shared successes. The commitment made by social players to consolidate social well-being through quality jobs, professional promotion and safety at work. On the other hand, there is the challenge of talent. We need qualified people in sufficient numbers, who meet the needs for qualifications in the job market at all times. A suitable demographic and skill policy becomes essential to meet this challenge.

In the next few years we are going to go through a great many very profound, very rapid changes. These changes are going to open up huge opportunities and are going to be so far-reaching that they are going to affect our relationship with life, the planet and work. This forces us to make the changes required to ensure that VET in the Basque Country is ready to meet the new challenges that it faces and can make the most of the huge world of opportunities that will be opening up in the future.

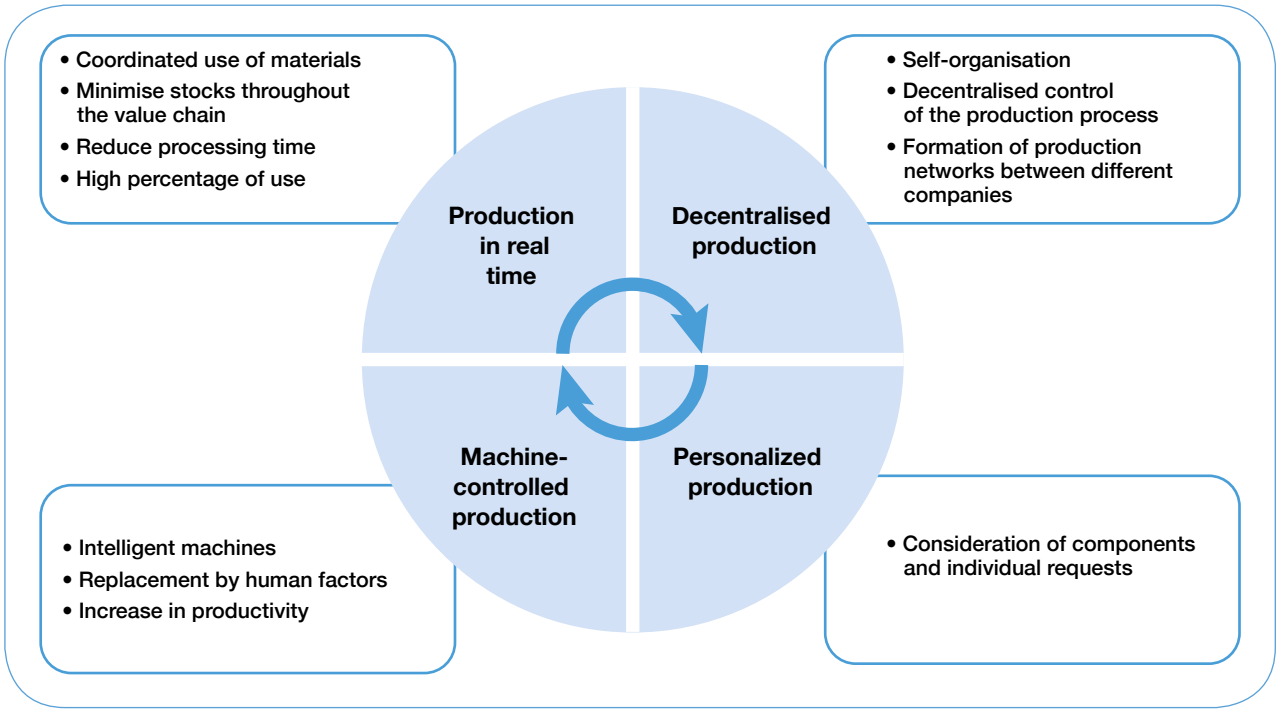
Industry 4.0. A digital connected factory

Industry 4.0 is a transformation from current factories towards factories connected by the Internet of Things (IoT) and the Internet of services. It does this by digitising industrial processes and systems to achieve a greater degree of flexibility and individualisation in products and productive processes.

Industry 4.0 transforms these factories into intelligent factories, by integrating cyber-physical manufacturing systems through connected intelligent systems. These systems combine automated machines with digitisation processes, enable interaction between machines, systems and objects and can take autonomous decisions, and manage to develop collaborative work among them, the robots and human beings in a coordinated way.

What is known as Industry 4.0 began little more than a decade ago; the term was first coined in 2011 by the German Research Alliance for Industry and Science (Forschungsunion).

Figure 1. Characteristics of the digital connected factory



Source: Prepared by the author based on IAB Forschungsbericht, 2015.

The concept of Industry 4.0 represents a fundamental change in the way that we live, work and interact. The speed at which new digital platforms are progressing creates huge challenges.

Just to start, in the context of the 4th Industrial Revolution we must think about systems, and not in isolated technologies. According to Klaus Schwab, the founder of the World Economic Forum, the fourth revolution is not defined by a set of emerging technologies in themselves, but by the transition towards new systems that are built on the infrastructure of the digital revolution. It is based on cyber-physical systems that combine physical infrastructure with software, sensors, nanotechnology and digital communications technology.

Technologies for the digitisation of industry

Various technologies converge in Industry 4.0 that complement each other, such as: Industrial Internet, Big Data, Connectivity, Cloud Computing, Cyber-physical systems, Augmented reality and virtual reality, Additive manufacturing, Artificial intelligence, Collaborative robotics, Cyber-security. Below are highlighted some of the technologies that have burst onto the scene in the sphere of industry 4.0:

- Industrial internet: the Internet applied to businesses, which allows for the creation of local management data networks with data from analogue sensors that produce information on-line about the state of machines, processes, life and maintenance of products, deviations, predictions.

- Big Data, this is a technology that tries to establish patterns in a huge amount of data that is often unstructured; it is being widely used to establish consumption habits by interlinking the product and its marketing characteristics with the buyer's purchasing power, the population segment by age, address, time and day of the week, among other aspects. It involves disciplines such as sociology, cultural anthropology, religion, weather forecasting.

- Connectivity, the possibility of accessing information from anywhere at any time is now a reality; the limits are in the speed and transmission volume, they are already trying out 5G with a speed of 10 gigabits/sec. They start out from the fact that in 2020 there will be 20.8 billion devices connected to the Internet.

- Cloud computing, this is a matter of information not being located in a fixed place but on computers in the cloud accessible 24 hours a day all year round.

- Cyber-physical systems refer to the integration of information from physical sensors and digital networks (it is predicted that in 2030 there will be 30 billion interconnected sensors), it means the monitoring of products or objects from the physical world by storing and processing information.

- Augmented reality and Virtual reality, simulation or virtual reality facilitates the creation of 3D models of products, processes and machines. This is about recreating the physical world virtually in different settings.

- Additive manufacturing refers to 3D printers that produce an object from a 3D digital model without any need for moulds, by adding layers of material. This leads to reduced times and a lowering of costs in launching models and even in repairing pieces.

- Artificial intelligence, this involves providing machines with cognitive processes and logical reasoning, by means of automatic learning by making use of databases through sciences like logic, computing and linguistics.

- Collaborative robotics is the logical step of applying artificial intelligence to robots that can imitate the movements of a worker, safely interacting with him/her and integrating information from different sensors, for example, drones.

- Unified or fused reality covers a new way of experiencing physical and virtual interactions and our surroundings, through a package of next-generation detection and digitization technologies. It aims to connect the real world to the virtual one, increasing the possibilities of interacting with the world in its entirety

In short, these technologies, in which different disciplines interact, are causing disruptive changes in the world of production and in products and services themselves. In this way, they lead to a new kind of digital, connected industry, in which digitisation is a key factor in improving the competitiveness of the industrial model.

This is a productive model in which innovation is collaborative, the means of production are connected, supply chains are integrated and distribution and attention channels are digital. All this is done by managing an intelligent personalized product (HADA, 2017).

As well as implementing traditional digital infrastructures like the Internet high-speed line, businesses must invest in other digital manufacturing technologies. The digital transformation model for industry will require cutting-edge enabling technologies and intelligent systems.

In this respect, the World Economic Forum (2017) highlights the main disruptive technologies

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Table 1. Main technological trends 2017

CATEGORY	DESCRIPTION
3D printers	Advances in manufacturing techniques, gaining in precision and the use of new materials. They include the development of organic tissues for medical use.
New materials	New materials and nano-structures for the development of new properties (greater thermoelectric efficiency, greater resistance to produce new forms).
Artificial intelligence and robotics	Development of machines that can replace human beings, more and more in tasks associated with thinking, physical tasks and multi-tasking.
Biotechnologies	Innovations in genetic engineering, knowledge of sequencing and therapeutic and preventive applications to improve health.
Capture and transmission of energy	Greater efficiency in batteries and fuel cells, new technologies to take advantage of renewable energies, energy distribution through intelligent network systems or the transfer of wireless energy.
Blockchain	Cryptographic systems that manage and check public registry transaction data. This technology is the basis of new kinds of virtual money.
Geo-engineering	New technologies aimed at capturing and removing carbon dioxide and the use of sunlight.
Internet of things	Sensors and integrated connected systems to facilitate the emergence and management of products, services and applications in numerous fields.
Neuro-technologies	Innovations like the so-called intelligent drugs aimed at improving brain activity.
Computation technologies	New computing architectures that include quantum and biological computing or neural network processing, and the expansion of current computing technologies.
Space technology	Developments that allow for better access to and exploration of space, including micro-satellites, advanced telescopes, reusable rockets.
Augmented virtual reality	Improvements in interfaces between humans and computers, that involve immersive environments, holographic readings and overlays digitally produced by augmented reality experiences.

Source: World Economic Forum, 2017.

Changes in the world of work

With regard to the transformations that are approaching in the world of work resulting from the incursion made by digital connected industry, the Davos Forum itself (2016) announced that, in 2020, systematization, robotics and advanced computing will make many jobs disappear, and will create other new ones, which forecasts a great change in the world of work and industries all over the planet.

Furthermore, Ginni Rometty, CEO of IBM, at the World Economic Forum in Davos in January 2017, argued that artificial intelligence and systematization might make some occupations obsolete, but Jobs will be created that will require greater training and professional qualifications.

According to the International Federation of Robotics (IFR), the million industrial robots that are currently up and running have been the source of the creation of 3 million new jobs. This Federation claims that in the next 5 years robotics will be responsible for creating 1 million top-quality jobs in industries like food, electronic products and solar and wind energy.

In fact, according to Business Insider in the next 5 years companies will spend nearly 5 trillion dollars in the Internet of Things (IoT) and due to the development of the IoT, the IFR estimates that by 2019 there will be 31 million robots for personal and domestic use. Similarly, it is estimated that this fourth revolution will make it possible to add 14.2 billion US$ to the world economy in the next 15 years and multiply businesses' productivity, by shortening the innovation cycles and favouring enterprising people (Mason, 2016).

Within this framework, new productive models will emerge that will impose new challenges to train and empower communities and individuals in the mastery of technologies with productive aims. The integration of transformative technologies in social and economic systems will require close collaboration among all interested parties, between the government, industry and civil society.

People-centred servitization

As part of Industry 4.0, the latest trends like the servitization of manufacturing are gathering momentum.

At the present time there is an increasing trend towards the creation of value proposals for the user population, which include products (tangibles) and a series of associated services (intangibles). According to Kamp (2015), what are emerging are “new ways of conceiving relations between users and businesses, based more on providing services rather than delivering physical goods; in a spirit of cooperation among the parties involved, and of sharing risks and benefits of the use of the services supplied”.

The concept of servitization is not synonymous with deindustrialisation, but is a way of revitalising the productive model. Although it is true that the dominant logic of the tangible product is deeply rooted in the minds of many industrial actors, a new trend is taking shape more and more.

The challenge is not so much a technological one, but lies more in non-technological aspects, so that structuring it allows us to open up new channels for adding value to users (Navarro et al., 2016).

In servitization service-focused activities increase and these provide an opportunity for people to enhance abilities and skills that cannot easily be replaced by technology.

Servitization processes entail developing the design of services as a people-centred discipline; it is people who make it possible to empathise with the users of a service and to quickly and reliably grasp their needs. Adopting a service-based mentality helps to acquire an integrated broad vision needed to take into account the entire delivery context of servitized value proposals including all the interactions that take place among people, spaces and technologies (Blomkvist et al., 2010).

In this respect, the policies for training and developing human capital require new people with a more humanist profile who make it possible to start working along different lines with users; in more of a fluid relationship rather than a transactional one. So that these individuals can display their talent and develop a more servitized kind of relationship with users, it is vital to break with traditional structures and the way in which an industrial company carries out its productive process (Visnjic & Van Looy, 2013).

Values 4.0

The future of countries is also being shaped by trends like demographic changes, globalisation, a shortage of resources, climate change, dynamic technologies, and innovations and personalisation in different fields.

In general terms, the productive fabric is moving from an economy based on organisations to a different people-centred economy. The role played by human beings in global processes is changing, new working areas are being created in which people and robots work hand in hand a form a single team.

In this new production process, the human dimension is a key factor, as the collaboration among people, machines and products focuses on human capital and its creation of value, which poses a challenge in how to intelligently combine human and technology in the workplace in order to ensure optimal value creation.

These scenarios involving digital connected companies that place people at the heart of their operations represent a qualitative improvement, as things are evolving towards networked production processes. Similarly, innovative ICT-based support systems encourage creativity and learning and favor a work flow that supports the acceptance, performance, development, health and welfare of people.

However, the development and progress of the 4th Industrial Revolution requires profound ethical reflection about what this is going to mean for human beings. Technological progress and human progress must go hand in hand. We must address the possible inequalities produced by technology and digitisation as well as the jobs that are threatened or that might disappear, and reflect on the values that are being promoted.

The emergence of this new kind of industry has a major impact on values; an impact caused by the structural changes that can be glimpsed behind the introduction of these new processes, which lead to a reassessment in the tasks, skills and competences required by the work force.

The demand for new basic, personal, technical, cross-cutting, non-routine and creative competences increases with the progress and development of the 4th Industrial Revolution. As a result of this, as robots automate more and more routine tasks, human work will depend on the abilities and skills needed to apply knowledge in new contexts in order to perform new non-routine functions in collaboration with others (communications, team work, etc.).

In this new age, the younger generations will need to acquire a broad range of digital, innovative and creative competences, attitudes and experiences. The challenge for society lies in stimulating the development of these competences in training systems and not just focusing training processes on technical skills.

People's personal and professional fulfilment requires certain very specific conditions. These include highly advanced preparation and training; preparation that must not only take into account wide-ranging technological knowledge but also scientific and human knowledge. We need to combine technology and the humanities really well.

In this respect, it is really important that we introduce critical and constructive thinking into learning. Now more than ever, people need to wonder about the reason for things and be able to ask themselves questions. We need knowledge that allows us to improve skills and abilities concerning empathy, resilience, adaptability, commitment and solidarity.

What also plays an important role is getting to know ourselves, obtaining answers and transforming the way that we conceive the world, by accepting the principle of responsibility, through training in values, as a vital concept on an individual and collective level for a society that prioritises sustainable human development.

The search for this kind of sustainable human development in digital connected industry therefore appears as a new milestone in the development of countries, regions and territories, as its foundations must be laid not only on technology, but also on the organization and role played by the people who ought to be involved in the development and implementation of this strategy.

Creative and socially sustainable professions

Industry 4.0 is not a mere technological change, it is a change in philosophy and economic structure that makes it difficult to foresee to what extent the productive and social dynamics of our society will change. Nevertheless, the 4th Industrial Revolution not only affects Industry 4.0. It is going to affect the entire productive fabric and all sectors, not only the primary sector but also industry and the services sector. We need our productive sectors to become 4.0 sectors that use digitisation and connectivity, and intelligent systems and advanced technologies in which people, robot and automated machines work in collaboration.

In this respect, we must not forget that VET in the Basque Country includes more than 140 qualifications that have been highly successful in the job market, so that the challenge lies in structuring supply with demand and being proactive with market trends.

In this way, the time has come to highlight the variables that it will not be possible to systematise. Professions that involve interpersonal relations also require a competent social performance that may be decisive for professional success and the economic development of our society.

Interpersonal relations, the basis of life in society, have been and continue to be extremely important. Currently, these skills are highly valued in our productive fabric as well as because of the requirements of the job market itself as far as professional requirements are concerned, and it is here that the role played by VET can mark the difference.

This is a paradigm that emerges from the need to link personal excellence to professional excellence in a changing society such as the contemporary one, which requires constant adaptation.

It is quite clear that we are witnessing a development that is going to require developers, programmers, scientists and experts in technology to implement, develop and make sense of these changes. In parallel to this, this digital disruption requires the knowledge and creativity of managers, suppliers of services, social workers and other professional areas that can interpret how services, commerce and society in general should adapt to these changes. At the present time, people are already responding to this new outlook for employment by accepting adapted occupations.

The persistence of creative and leadership roles are also necessary in this prospective situation, there will be more opportunities for people who are creative, and for those who have a greater capacity for reflection and reasoning, which allows them to sense, see and develop things differently.

On the other hand, the sustainable development of our society needs to take into account environmental and global social aspects. The training of current and future professionals must have the potential to improve the quality of life in society and increase efficiency in the provision of services.

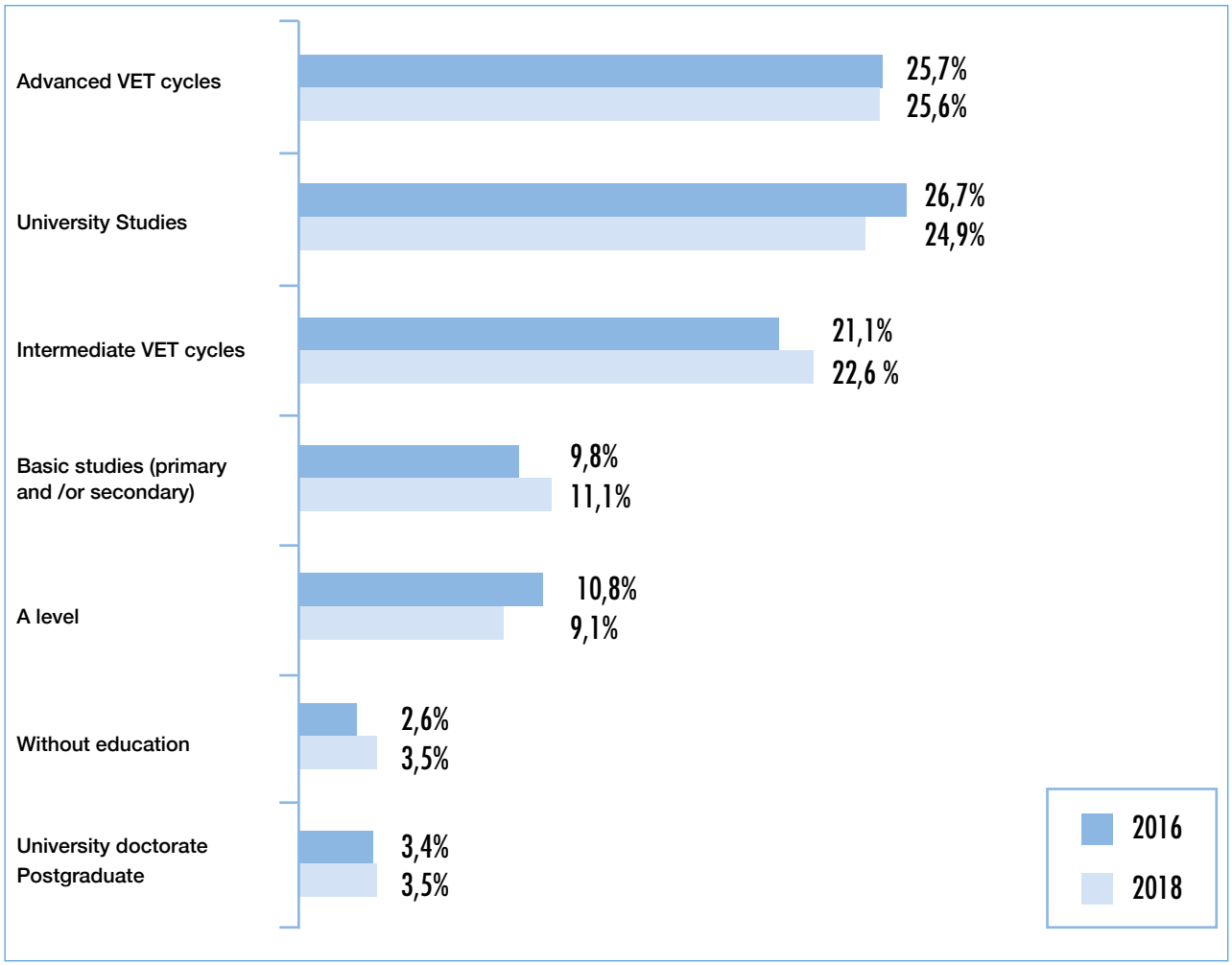
This is why training and innovation processes must be designed by taking into account people's needs, aiming at and for people, and trying to achieve greater and better welfare and satisfaction for them.

We must insist on the idea that technological and non-technological solutions must emerge through a common development of different areas of knowledge, as technical innovations often only develop their true potential in combination with social innovation and this is what se traduce into genuine benefits for society.

Jobs of the future and talent 4.0

The 4th Industrial Revolution is interacting with other socioeconomic and demographic factors to create a perfect storm of change in the productive model in all companies, who causes radical modifications in labour markets (World Economic Forum, 2016). Nowadays, the capacity of economies to continue to be innovative and competitive depends on the availability of skilled people in step with market trends that rapidly evolve.

Graph 1. The most commonly requested training profiles. Distribution of hiring envisaged in 2018 and 2016 by required educational level, Basque Country



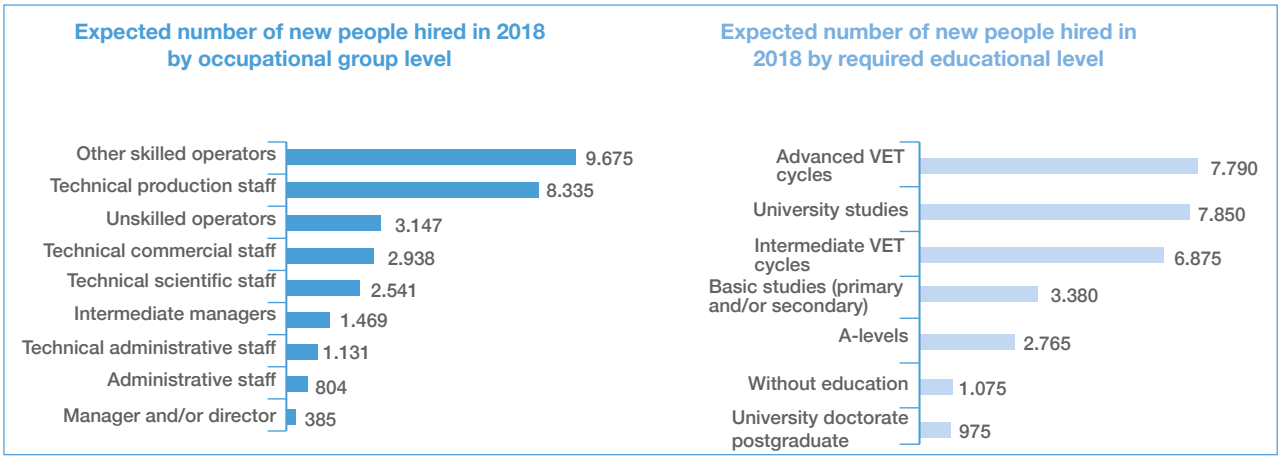
Source: Produced by the author based on data from Confebask.

In this new technological era, the increase in person-machine collaboration in the work place has increasingly eliminated the performance of routine tasks with low added value. As a result, it is estimated

that the technological evolution in business and industrial processes will displace and/or transform in the medium and long term certain jobs and will give rise to the emergence of new professions.

These professions will probably require more creativity and flexibility. In this respect, the skill sets required in both new and traditional occupations will change in most companies and will transform where and how people work.

Graph 2. Applications for jobs according to professional profile and qualifications, Basque Country

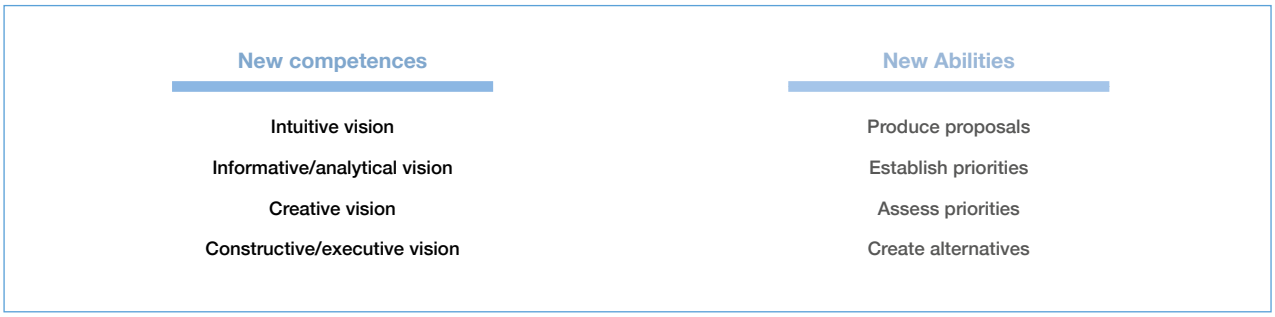


Source: produced by the author based on data from Confebask.

The crucial challenge that we face as a society is not the creation of new jobs. The crucial challenge is the creation of new jobs that human beings can perform better than algorithms.

Because of this, to successfully obtain new jobs, people will need to have abilities that allow them to be continually adapting. The abilities to adapt, to build self-management skills and to continually acquire new knowledge in a very short period of time will be essential when it comes to applying for a job.

Figure 2. Competences and capacities for new jobs



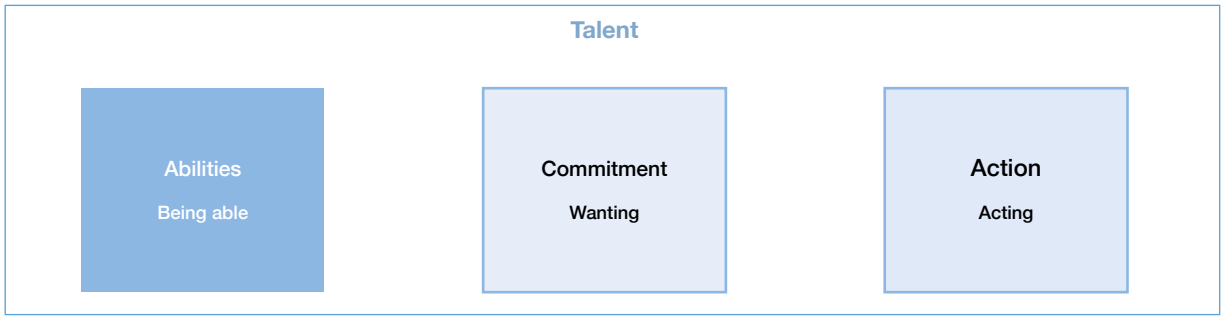
Source: prepared by the author.

In this context, VET faces a huge challenge to develop new abilities and guarantee and encourage people to update their competences on a permanent basis.

On average, by 2020, more than a third of most occupations will require competences that are still not considered to be crucial for work today. In general, social skills like intuition, persuasion, creative thinking, emotional intelligence, executive intelligence and wide-ranging training and specialisation will be required in many of our companies, mainly in the industrial sector. Basically, technical competences will be supplemented by acquiring a wide range of social skills.

These technical competences and social skills that produce a successful job performance complement the talent boosted by learning and training that help to further a creative attitude.

However, talent also requires abilities so it can be shaped, a commitment to want to put them into practice and action as a basis for applying knowledge.



In the future outlook for economic and productive development, people play the leading role and their employability is going to depend on the level of competences and training that can finally be reflected in these.

Developing and reinforcing talent as the main characteristic for improving the social and economic environment will be a key factor for this.

Table 2. Types of talent

CONCEPTUAL TALENT	ENTERPRISING TALENT	ORGANISATIONAL TALENT	FUNCTIONAL TALENT
• Provides results. • Provides new ways of understanding and doing things.	• Ability to enjoy creating things, carrying out projects and developing initiatives. • Passion at each stage of the path that needs to be followed until you attain what you aim to achieve.	• Management of material and immaterial resources to launch and promote projects.	• Specific technical talent. • Operational activities.

Source: prepared by the author.

On the other hand, as far as the digital connected company is concerned, digitisation and the adoption of new learning methodologies fostered by technology, undoubtedly open up new training and learning possibilities to successfully face up to the new processes of change.

We are therefore witnessing a scenario in which the transformation of the competences that are required will be intensive and extensive. In this scenario, the key question will be identifying those competences that human capital will precisely have to acquire in the future to develop new solutions. The fact is that these competences not only depend on the development of the individual and of values; but also on technical learning, adaptation and preparation in skills for the future that allow for sustainable human development, in a world that is increasingly more technically sophisticated, connected and multicultural.

In all of this VET is going to be essential. An integrated VET that effectively meets the needs of both the people who are in the Educational System, and of the people that are working or are unemployed. Initial and continuing VET must guarantee people's employability. Employability aimed at obtaining and maintaining a job under any circumstances, making it possible to work in different companies in a single sector or in various jobs in a single company. This requires the need to encourage and develop professional guidance that matches the real needs of a society 4.0.

The combination of competences

As well as sound technical training it will also be necessary to address other abilities that are essential for people's training. Constructing training ecosystems that structure technological aspects together with the development of creative, open and proactive thinking that creates fewer gaps and closer cooperation between certain professional fields. In this respect, we are going to set out some basic abilities below.

Creativity

In the modern world, innovation has become an essential feature of economic and social development and takes on a fundamental role in facilitating and triggering the transformation of society into a knowledge economy and society. Innovation is an added value based on creativity, which may be exchangeable, like money, or something useful for society (for an institution, for an organisation, for an individual or for a group of individuals) (Castells, 2002).

The implications of these new productive scenarios will make creativity a fundamental aspect of new jobs. Creativity is for the moment the great human ability that does not seem to be in danger of being snatched away or imitated.

In this respect, the training that allows each individual to develop their own abilities, especially creativity, appears to be the key factor for future professional development (Telefónica Foundation, 2015), as by using creativity and imagination, products and services can be designed and manufactured that solve real problems in a variety of contexts.

Digital skills

The digital transformation of industry means applying a series of technologies throughout its entire value chain. According to the Observatory for Employment in the Digital Age, eight of every ten young people between 20 and 30 years of age will find a work linked to the digital sphere in jobs that still do not exist. Among the ten most frequently requested professions are in Smart Factory engineering, experts in digital innovation, data scientist, in Big Data, in usability, or digital risk managers and experts.

In manufacturing industry, systematisation and robotics have transformed the processes and ways of making things. They have not only brought efficiency, but have also reduced risks, human errors, risks for health, and have increased people's safety and productivity. Nowadays, skills like guiding a robot or running a simulated assembly line are essential for the jobs in most manufacturing sectors.

What we have just mentioned requires various production line skills in operations, monitoring, coordination, quality control, time management as well as knowledge of raw materials, processes, and production techniques, etc.

Table 3. Developing and Understanding Digital Competence in Europe

CATEGORY	DESCRIPTION
Information	Identifying, locating, retrieving, storing, organising and analysing digital information, judging its relevance and purpose.
Communication	Communicating in digital environments, sharing resources through the Internet, links with others and collaborating using digital tools, interacting and taking part in communities and networks, intercultural awareness.
Creation of content	Creating and editing new content, integrating and improving previous knowledge and content; producing creative expressions, dealing with and applying intellectual property, copyright and licences.
Safety and sustainability	Personal protection, data protection, digital identity protection, safety measures.
Problem solving	Technologies creatively.

Source: DIGCOMP: A Framework for Developing and Understanding Digital Competence in Europe, 2013.

In this area of digitisation it is vital to understand that the introduction of digital technologies in industry allows for hybridisation between the physical and digital worlds and makes possible to link the physical world (devices, materials, products, machinery and installations) to the digital world (systems). This link enables devices and systems to collaborate with each other and with other systems to create a smart productive fabric (Galech, R. 2015).

Analytical and productive skills

Analytical skills describe the use of information to search for patterns, identify new possibilities, create Analytical skills describe the use of information to search for patterns, identify new possibilities, create scenarios, make predictions and prescribe actions. Manufacturing industry is going through radical changes with the digitisation of several essential functions. The huge amount of data generated by computerised production systems and most products in B2B (industrial machinery and digital gadgets) or B2C (aimed at the final consumer) are sold on the market with a service component added by the digital element.

Skills like attention to detail, analytical thinking, problem solving, working with digital interfaces, or managing information and knowledge are fundamental for the future in 4.0 environments.

Table 4. Competences for digital connected industry

SET OF COMPETENCES FOR DIGITAL CONNECTED INDUSTRY		
TECHNOLOGICAL COMPETENCES		
Necessary	**Required**	
Knowledge and ICT skills	Knowledge management	Computer programming/ coding skills
Processing information and data analysis	Interdisciplinary/generic knowledge about technologies and organisations	Specialised knowledge about technologies
Knowledge of statistics	Specialised knowledge about manufacturing processes and activities	Ergonomic awareness
Organisational and procedural understanding	Awareness of data protection and safety in ICT	Understanding of legal matters
Ability to interact with modern interfaces (human-machine, human-robot)		
PROFESSIONAL PERFORMANCE COMPETENCES		
Necessary	**Required**	
Time self-management	Focus on results	
Adaptability and capacity for change	Personal efficiency	
Ability to work in a team	Mentality for continuous improvement and life-long learning	
Social skills	Interpersonal competences	
Communication skills	Focus on socio-cultural and psycho-social fields	
	Empathy, Conflict resolution and negotiation	

Source: Adaptation from "Approach to professional qualifications in Industry 4.0", 1st of May Foundation, 2016.

If as expected the process of digitisation becomes widespread, people will require specific competences, that is, “e-skills” in order to become competent operators in these technologies. All this means that VET programmes need to be brought up to date accordingly and the relevant training measures carried out.

Proactive combination of aptitudes and talent

The functions of human capital in many manufacturing units are finding innovative ways to advance towards other ways of doing things and acting. Employment is being redefined as a process beyond concepts of skills and competences.

Digital technologies are changing the way that talent is hired and managed, people’s aptitude to do a job, and the strategies for retaining talent. However, digitisation cannot be compared to the loss of jobs. It must be considered as being the incorporation of new advanced skills and competences that enhance the value of jobs. This is why it is so important for digital skills to become a compulsory component in any training project that is thinking about the needs for future employment, and in many cases current employment

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BLOCK II

Background and frame of reference of VET in the Basque Country

The design of the V Basque VET Plan is directly linked to the context and determinants of economic and productive development in the Basque Country, not only from a historical perspective but also looking towards the future in coordination with the evolution of the key or strategic sectors that can ensure the long-term social and economic sustainability of the Basque Country.

As a result of this, the training proposals suggested as a future forecast must be adapted to the intensive transformation and technological and social modernisation of the modern world. In this context, an important starting point in preparing this document is to consider the tools that define the roadmap to reach the aims established by the Basque Country for 2020, as well as the trends and current and future challenges basically linked to factors involving innovation and competitiveness.

First of all, the V Basque Vocational Training Plan is yet another milestone on a pathway which begun in 1997 with the approval of the I Basque VET Plan.

Secondly, the V Basque VET Plan takes as a basic reference the Science, Technology and Innovation Plan - PCTI EUSKADI 2020, the Industrialisation Plan 2017-2020 “Basque Industry 4.0”, the Basque Inter-institutional Entrepreneurship Plan 2020, the Strategic Employment Plan 2017- 2020, the Framework Programme for Employment and Economic Recovery in the Basque Country 2020, and the Seventh Plan for the Equality of Women and Men (2018-2021).

Furthermore, to prepare the V Basque VET Plan it is essential to consider the aims contained in the European Strategy 2020 and those in the 2030 Agenda for Sustainable Development.

On the one hand, the 2020 European Strategy, with a view to achieving smart, sustainable and inclusive growth, proposes the “Youth on the move” initiative aimed at improving the results of the education systems and facilitating young people’s access to the job market. Along the same lines is the “New qualifications and jobs agenda” initiative that focuses on the development of skills throughout life, a question that is considered to be key among other things in better adapting supply to meet the demand for work.

The Europe 2020 Strategy also insists on the dual aim of lowering the percentage of school dropouts to below 10% and on at least 40% of the younger generation having completed higher education. The fact that the Basque Country shows good results as far as both indicators are concerned (dropout rate below 7% and more than 55% of the younger generation having completed higher studies) should not ease the aim of continuous improvement.

On the other hand, the 2030 Agenda for Sustainable Development contains several goals that should be considered to be priorities:

- Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. (Goal 4)

- Ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university (Target 4.3.)

- Substantially increase the number of youth and adults who have relevant skills, including technical and vocational skills, for employment, decent jobs and entrepreneurship. (Target 4.4.)

- Eliminate gender disparities in education and ensure equal access to all levels of education and vocational training for the vulnerable, including persons with disabilities, indigenous peoples and children in vulnerable situations. (Target 4.5.)

- Ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development (Target 4.7.)

Thirdly, the V Basque VET Plan has been set up and aligned with the Research and Innovation Smart Specialisation Strategy (RIS3). The RIS3 Euskadi Strategy identifies the priorities in public policies by taking economic development based on innovation and research as a goal. The defined priorities are:

- Advanced manufacturing

- Energy

- Bio-Health

Fourthly, the V Basque VET Plan has inherited and incorporated the principles that guide the Law on Lifelong Learning, Law 1/2013 approved by the Basque Parliament on the 10th of October, and above all, most especially all the innovations contained in the Law on VET in the Basque Country, Law 4/2018 approved by the Basque Parliament on the 28th of June. Some of the innovations that need to be stressed are:

- The future creation by the Basque Government of the Highest Coordinating Body for VET, the management body of the Integrated VET System, which foreseeably will have the responsibility for implementing the actions contained in what is the V Basque VET Plan, as well as for coordinating the innovation, sustainable development and entrepreneurship policies carried out together with the Basque Government Departments that are competent in these fields.

The strengthening of the functions of the Basque VET Board that will also be set up statutorily by the Basque Government and that as well as being "the participatory body for public authorities, the most representative business and trade-union organisations and centres that specialize in the combined VET model", the Law also envisages that "it will be the body in charge of assessing the VET system".

To go into this subject in greater depth and in order to put things into context, the most important regulatory and strategic aspects that have established the current VET system are described below.

Regulatory scope and range of competence

Vocational Training laws

The Basque VET system has produced a significant body of regulatory activity which has made it possible to provide the planning, organisation and administration of VET with a rational, efficient framework in the Basque Country, within the framework established in the Autonomy Statute (article 12.2. & 16)

The approval by the Basque Parliament of Law 1/2013, of the 10th of October, on Life-long Learning, is the first significant regulatory benchmark. This law contains some important provisions with regard to life-long learning, bearing in mind the new circumstances that prevail in European societies, with high life expectancy and new life-long needs for training, that radically alter the traditional paradigm of learning basically focusing on a specific period in life, that is, during youth.

The importance of this law is quite clear for the VET sector; it contains some important provisions concerning job-orientated training, on a continuous basis, allowing people to gradually acquire knowledge and training that enables them to progressively adapt to professional changes, a basic requirement in a world in permanent transformation.

In 2018 Law 4/2018 of the 28th of June, on VET in the Basque Country was approved by the Basque Parliament. The law introduces, as a new approach, a combined VET model, which includes not just VET in the education system and training for Jobs, but also learning about applied innovation and entrepreneurship. These are two types of learning that ought to improve the results of VET in the economic sphere, and especially in the productive sphere, insofar as they will aim to train active people, for whom innovation in their profession and the spirit of entrepreneurship in their economic sector, form part and parcel of their skills, and especially of their professional and personal goals.

Another fundamental strategic goal is to boost and develop dual training; what in the Basque Country we call dual training alternating with work experience. The option for the Basque Country to continue to be an economy in which industry has an extremely significant relative importance in our economic system and the success of this goal is directly linked to the ability to develop a solid, wide- ranging system of dual training in the sphere of VET.

The Law also regulates the certifications of certain specialisation programmes which provide customised responses for companies that need professionals with specific preparation,

the internationalisation of the Basque VET system, the network of VET centres, and in a strategic manner as well, a single body is also set up, aimed at ensuring a coherent development of all VET, which is indispensable for the development of an efficient policy in this field.

These legislative efforts aim for VET in the Basque Country to be able to ideally find a place in the new economic model that Europe has as a goal, to make possible smart, sustainable, inclusive growth.

Strategic scope

Basque VET Plans

The VET system in the Basque Country has gradually been shaped and strengthened over the years through each of the general VET Plans, which have been drawn up and launched to meet the demands and changes in the job market in each of the periods that have gone by.

It was in 1997 when the first Basque VET Plan was prepared by the Basque VET Board set up by the Decree 100/1994, of the 22nd of February. This I Plan emerged from the need for closer coordination among the various training activities in order to avoid overlapping between different competent institutions and to create synergy that could integrate all the actions launched in the field of VET in a single programme. It was therefore in this I Plan where the basic elements of the integrated training system mainly based on professional qualifications and the reforms needed to establish this system were set out. In short, drawing up the I Plan meant that VET was established around three cornerstones: quality, the launching of an Integrated System of Professional Qualifications and a network of VET centres. In this I Basque VET Plan the Basque Institute of VET Qualifications was also set up. This was the first Qualifications Institute to be created in all of Spain.

A few years later, in 2004, the I Basque VET Plan was updated by preparing a second Plan that was valid for the period from 2004-2007. This updated Plan defined 4 strategic lines: 1. Updating and improving the integrated system of qualifications and VET; 2. Quality in VET in the Basque Country; 3. Encouraging innovation in VET in the Basque Country; and 4. Introducing new technologies in VET. This Plan was conceived as a strategic undertaking to adapt structures and activities to new changes detected at that time, by adjusting plans and processes to meet the transformation of technologies, markets, competitors and values, while also attempting to enter other emerging fields by using new instruments and tools. Basque Centre of Research and Applied Innovation in VET (Tknika) was set up in this II Basque VET Plan.

Later on, in October 2009, the presidency of the Basque VET Board announced in a plenary session the decision by the Basque Government to launch the III Basque VET Plan. This III Plan adopted the four strategic aims or lines proposed by the European Strategy ET 2020 for education and VET as a reference, and in this way focused on 4 strategic aims or lines: 1. Making life-long learning and mobility in VET a reality; 2. Improving the quality and efficiency of VET; 3. Encouraging equity, social cohesion and active citizens through VET; and finally, 4. Increasing creativity and innovation, including

entrepreneurship in VET. The III Plan was in force for a three-year period (2011-2013) and focused on setting up and consolidating an integrated system of VET.

Finally, as part of its strategic plan calendar the Basque Government resolved to launch the preparation of the IV Basque VET Plan in 2014.

The framework of goals set out in this IV Plan laid the foundations for the 2014-2017 period to give shape to a new Combined Model of VET that included three basic features: Integrated training, applied innovation and active entrepreneurship. It also included a new aspect, the internationalisation of Basque VET and the role played by VET centres was reinforced in this.

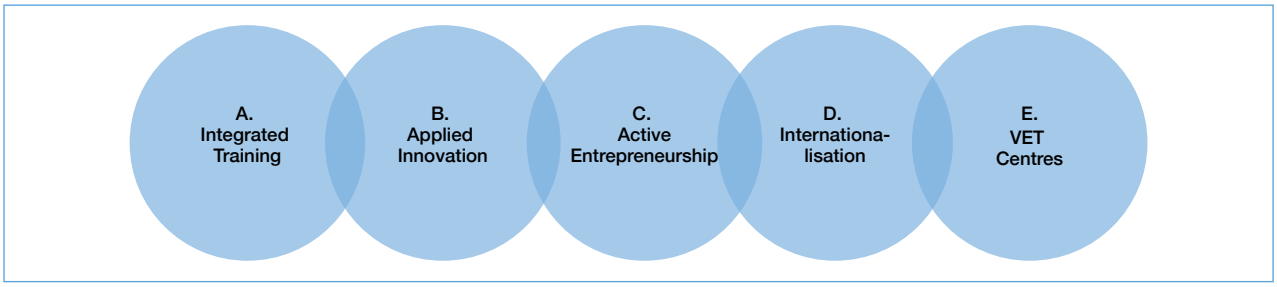
The main aim of this IV Plan was to further the employability of everyone, both men and women, in the Basque Country, to reinforce the competitiveness of the Basque productive fabric in the global market, and social cohesion, by transforming the Basque VET system to provide a more appropriate, flexible response to companies' short and long term needs and to the new requirements regarding people's employability.

As well as reflecting on the geopolitical, social and economic changes, this 4th version also considered the phase of profound transformation that had begun in the way that companies compete and in the needs for training to adapt rapidly to future challenges caused by a complex, uncertain environment.

The IV Plan was drawn up considering a series of principles under which its actions are structured. These principles were defined by 9 areas that take into account in this way an integrated approach to VET, the individual as a fundamental target, a commitment to knowledge and innovation, long-term sustainability and short-term impact, proximity to companies, social responsibility and a commitment to the local environment, experimentation, targeting efforts, and finally, inter-institutional and public-private collaboration.

Furthermore, the application of specific measures to adapt and guide vocational training, set out in the IV Basque VET Plan are grouped together in 5 strategic lines.

Figure 3. Strategic guidelines, IV Basque VET Plan



Source: prepared by the author.

At the time, the IV Basque VET Plan defined the commitment made by the Basque Government to boost people's employability and the competitiveness of the productive fabric, through the prioritized deployment of resources in coordination with the other strategic plans of the government.

The IV Plan was drawn up in 2014 at the same time as the start of the updating of the Science, Technology and Innovation Plan (PCTI) and the formulation of the RIS3 Basque Smart Specialization Strategy, two basic pillars that currently address competitiveness, education and scientific policy in the Basque Country.

The IV Basque VET Plan established the need to set up an Institute of Applied Creativity in VET in the Basque Country and to transform the Basque Institute of Professional Qualifications into a Basque Institute of Knowledge. It also established the need for VET to provide support for SMEs in applied innovation, by creating strategic environments for them that companies and VET centres can take part in, working on improving products, productive processes and services. The Network Hubs were also launched in different sectors.

The IV Basque VET Plan continues to be valid and all of the courses of action it marks out are still being implemented in order to successfully fulfil the goals that were set. The approval in June 2018 of the Law on VET in the Basque Country will reinforce the deployment, progress and full development of this Plan. This is why the V Basque VET Plan will boost and develop the measures established in this Law.

Science, Technology and Innovation Plan - PCTI EUSKADI 2020 & 2017-2020 "Basque Industry 4.0" Industrialisation Plan

The future perspectives and new conceptions of the territories in the world of tomorrow become more and more important at all levels. Socioeconomic analyses of the most advanced countries and regions all agree on the decisive role that science, technology and innovation play in well-being and economic growth. In this way, economies based on traditional productive factors (capital and low-skilled labour), can be differentiated from those based on knowledge and innovation which, with a medium- and long-term vision, aim to lay the foundations for sustainable growth over time (PCTI Euskadi 2020, 2015.

In this context, the PCTI Euskadi 2020 aims to apply more innovation in the field of research and to increase cooperation between the world of science and the world of business in order to gear R+D+i activity towards results. These results may satisfy business demands and help to resolve the great challenges that the Basque Country must face, and help in this way to create jobs and economic and social wealth.

Mission of the PCTI Euskadi 2020

Improving well-being, sustainable economic growth and employment in Basque society through a policy of research and innovation based on Smart specialisation and improving the efficiency of the Science, Technology and Innovation System.

Source: PCTI Euskadi 2020, 2015.

The preparation of the PCTI Euskadi 2020, takes as a reference the RIS3 Smart Specialisation Strategy approved by the European Union and one of the guidelines for the V Plan. This stresses the need to achieve greater effectiveness by using the resources intended for growth and warns of the importance of designing national and regional research and innovation strategies for smart specialisation (RIS3 strategies).

In this new approach based on specialisation adopted by the PCTI Euskadi 2020, the emphasis is placed on aiming research and development towards industrial sectors. This is a commitment to research centred on adding intelligence to means and systems of production, making the most of emerging technologies and skills in new products and processes, and integrating advanced materials in solutions with higher added value.

The “Basque Industry 4.0” Industrialisation Plan 2017-2020 makes a firm commitment to the Basque Industry 4.0, strategy with the basic aim of reinforcing the industrial leadership of the Basque Country by creating synergies in the Basque industrial fabric itself and the introducing processes linked to the 4th Industrial Revolution. Its mission is to reinforce the position of the Basque Country as an economy with an industrial base, by boosting intensive manufacturing in knowledge with a vision of a country with ideal conditions for manufacturing, thanks to the existence of an industrial fabric that knows how to make things, well-trained scientific-technological agents and highly-skilled human capital (Basque Agency of Business Development-SPRI).

Adding intelligence to means and systems of production, making the most of emerging technologies and skills in new products and processes, and integrating advanced materials in solutions with higher added value or improved processes, the efficiency and sustainability of the resources used and the integration of services with high added value are the foundations on which we aim to develop the Basque Industry 4.0. strategy.

RIS 3: Smart intelligence strategic priorities in the Basque Country

One of the most important trends that are marking current competitiveness policies in Europe is the emergence and rapid adoption of the concept of the Smart Specialisation Strategy. Now known as “research and innovation strategies for smart specialisation” (RIS3), the concept is rooted in a group of experts formed by the Commission in 2005 to advise on the contribution of knowledge to growth and sustainable prosperity in Europe (Orkestra, 2015).

The Research and Innovation Smart Specialisation Strategies (RIS3) - form part of the various global strategies launched by the European Union: European Strategy 2020, Horizon 2020, Union for Innovation, European Strategy on Key Enabling Technologies and the Common Strategic Framework developed for the application of Structural Funds.

The RIS3 aim to define regional R+D+i strategies that are “smart” in the sense that they concentrate their resources and investments in areas where there are clear synergies with the existing and potential productive capacities in the region.

Smart specialisation therefore involves identifying the exclusive characteristics and assets in each region, stress their competitive advantages and bring the participants together around a shared view of the future. The basic aim of the entire RIS3 process is to support the productive transformation in order to create jobs and wellbeing in the medium and long term.

RIS3 Euskadi, which is included in the Science, Technology and Innovation Plan 2020, establishes a deliberate, explicit strategy to diversify the Basque economy by defining priorities that distinguish between those that are strategic and areas of opportunity:

Basque RIS3 Strategic Priorities	Areas of opportunity
1. Advanced manufacturing 2. Energy 3. Biosciences / Health	• **Agro-food industry most closely linked to sustainability and the human environment.** • **Territorial planning and urban renewal.** • **Certain niches related to leisure, entertainment and culture.** • **Specific activities related to ecosystems.**

Defining these strategic specialisation priorities therefore provides a guide for the development of the competences and qualifications required to obtain work and make professional progress in the new scenario based on competitiveness.

Institutional commitments

The establishment of institutional commitments in the current legislature (XI) forms an indispensable process for providing assurance about meeting the aims set by the government.

The agreement signed on the 21st of November 2016 between the PNV and the PSE on which the foundations were established to build a Basque Country with more and better jobs, more social equilibrium, more social harmony and more and better self-government, included the commitment to draw up the V Basque VET Plan that would consider the aims and measures needed to meet the challenges that are going to be raised by the advance and development of the 4th Industrial Revolution. The Plan establishes the goal of boosting integrated VET centres, deepening relations with business and dual training, and providing support for applied technological innovation and for entrepreneurship in VET centres. It also aims to establish a more flexible range of training and to reinforce part-time classroom and distance learning through e-learning. As part of this agreement, they also aim to develop new specialisation programmes in accordance with the new needs of companies and emerging activities. The introduction of more integrated learning pathways, aimed at covering specific vacancies, or jobs that are going to be created in the future will especially have an impact on the areas of opportunity defined in the Basque Smart Specialisation Strategy (RIS3).

As far as institutional commitments are concerned, the programme for government for 2016-2020 bases its strategy on four pillars: I. Employment, Reactivation and Sustainability; II. Human Development, Social Integration, Equality and Quality Public Services; III. Social Harmony and Human Rights; IV. More and Better Self-government.

In general, the XI legislature aims for the industrial sector to account for 25% of overall GDP, to reduce unemployment to below 10% and ensure that around 20,000 youngsters acquire their first working experience. It is also a priority goal to bring the school dropout rate down below 8%. To achieve this, the current legislature has launched the formulation and implementation of the "Basque Industry 4.0" Industrialisation Plan for 2017-2020, a basic plan for guiding the Government's industrial policy activities. Similarly, in order to meet the aims set for employment and to establish the roadmap for strengthening and reactivating its economy, the Basque Government has approved the Strategic Employment Plan for 2017-2020.

Furthermore, one of the fifteen goals included in the Programme for Government for the XI Legislature is to place the Basque Country among the most advanced European countries in gender equality, so this is a challenge that this Plan will attempt to achieve.

As for the commitments defined in the programme for government, particularly those established regarding VET, among other aspects, these aim to maintain the Basque Country's leading position in providing top-quality VET through a Basque VET Law. Similarly, it has been decided to support applied innovation and entrepreneurship in VET centres, to continue to encourage the internationalisation of the Basque VET model, and to make progress in introducing training cycles in Basque with a firm commitment to multilingualism in training. Finally, the programme has taken on the commitment to draw up the V Basque VET Plan during the present legislature, something that is more important for the purposes of this document.

The implementation of the V Basque VET Plan is therefore included in the commitment to formulate the 15 strategic plans established for the XI legislature, known as the Basque VET Plan 2018- 2021.

BLOCK III

V Basque VET Plan

Mission and Scope of the Plan

The V Basque VET Plan has emerged as a response to the new challenges faced by a society in transformation, based more and more on technological advances but with a profound need to highlight the social values and essence of humanity. An example of this is the need to encourage both men and women in the field of VET.

All these new challenges condition us and force us to reflect on our training model, a model that for years has managed to achieve a positive ranking both regionally and internationally but which with regard to the future scenario needs to consider some new challenges.

Access to quality training determines to a large extent successful access to the job market, which in turn leads to more and better perspectives for social equity. To achieve this, we need to develop a comprehensive training process that links learning academic and practical knowledge, that is fundamental in our contemporary society, to essential values to face up to the future transformation in the professional, family, demographic and cultural spheres.

As a result, the V Basque VET Plan outlines the following mission as the basis of its formulation:

Mission of the V Basque Vocational Training Plan

To advance towards sustainable human development, by boosting human talent through the incorporation of competences and qualifications that meet the challenges resulting from a new productive environment, ensuring the consolidation of VET based on the 4th Industrial Revolution, digitisation, connectivity, sustainable development, the management of knowledge and values 4.0, in order to successfully respond to the professional, economic, scientific and cultural changes in our society.

To meet this mission, the V Basque VET Plan has set out a medium-term time frame from 2018 – 2021 to launch all its aims and courses of action, in order to positively contribute to people's training and competitiveness in the Basque Country. The complete implementation of this Plan is planned for 2023.

Principles of the Plan

The new challenges to adapt the Basque VET system require a series of principles to be established on which the actions resulting from this V Plan can be based, by prioritising the needs for future Jobs and improvements in employability, and taking the importance of people for the transformation and future of society as a focal point.

In this respect, this Plan defines the following principles:

PRINCIPLE 1 **Learning about the future**	We are convinced that it is not enough to learn from the past, Smart Organisations must also be able to learn about the future. VET centres must acquire abilities to imagine the future and develop a profound understanding of the trends that will take up the competitive space of the future.
PRINCIPLE 2 **Facing the challenges of the 4th Industrial Revolution**	The need to manage the future efficiently means that is it vital to develop new training models that integrate knowledge, abilities and skills in new areas concerning advanced technologies, digitisation, connectivity, virtual environments, 3D printing, the Internet of Things, sustainable development and smart ovalues 4.0 among others.
PRINCIPLE 3 **Facing up to new contexts of uncertainty and complexity**	The greatest challenge that Basque society faces is to create effective abilities in people so they can face up to the changing, uncertain and complex reality of the digital age. We want to lead people towards the opening up of new paths, the formulation of new alternative solutions that manage the complexity of our surroundings by responding to the evolving conditions in society.
PRINCIPLE 4 **Boosting collaborative learning**	We think that cooperative efforts ensure long-term success. Learning dynamics must make it possible for the exchange of ideas, the development of social skills, interaction with others, and as a result, the fulfillment of goals through participation and shared responsibility..
PRINCIPLE 5 **Transforming VET centres: High Performance Centres**	We consider the evolution of VET centres as forward- looking organisations: Smart Organisations that launch collaborative projects and include multipurpose teams, encouraging innovation and people's knowhow as their main value.
PRINCIPLE 6 **Encouraging equality between men and women in VET**	*Equal opportunities between men and women* must infuse the development of the aims and the courses of action that the Plan has designed, to remove any existing obstacles that prevent men and women from developing their training and professional careers in equal conditions and ranges of options.

Strategic Lines of the V Basque VET Plan

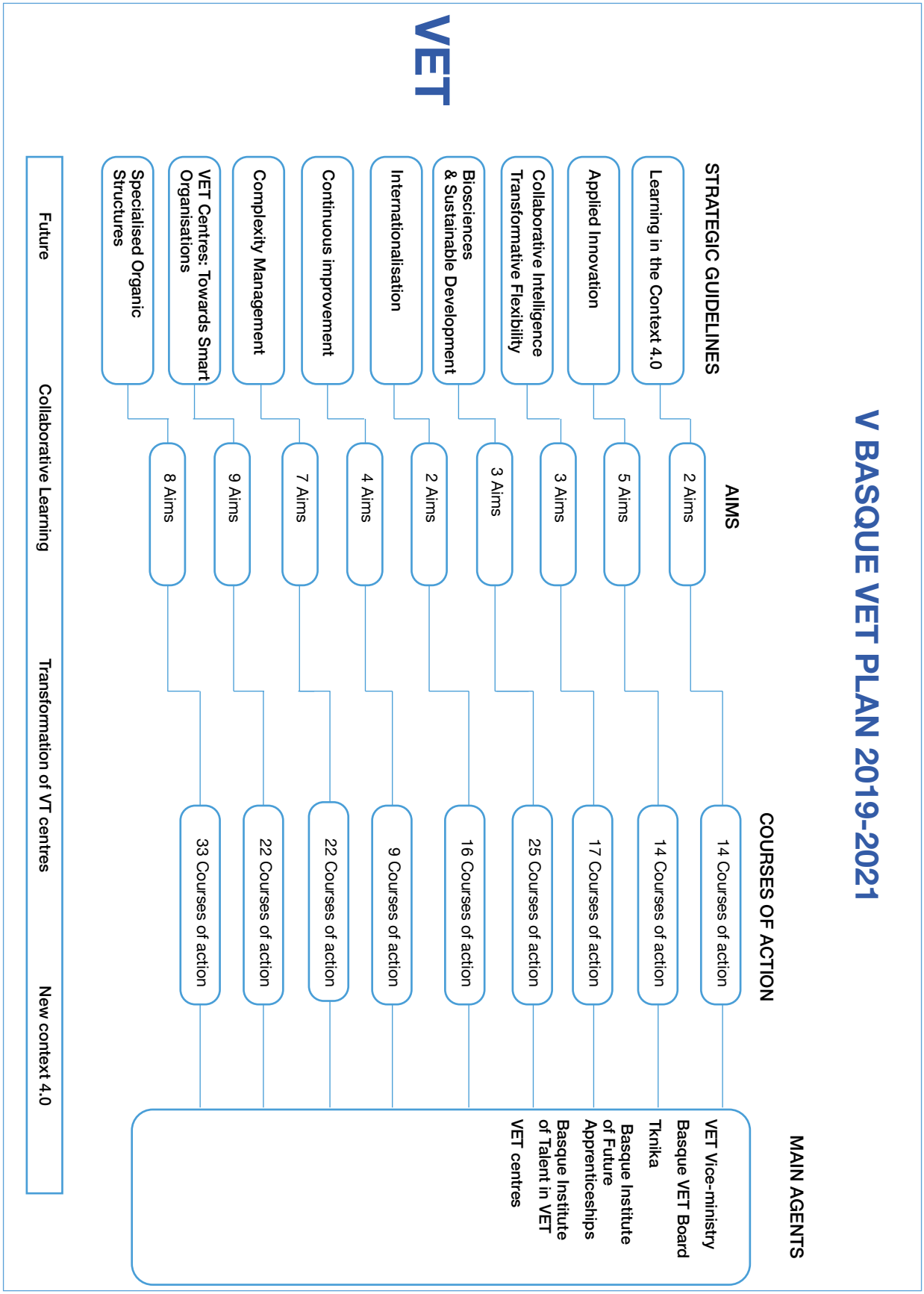
The V Basque VET Plan takes the guidelines established in the IV Plan as a starting point. As a result, it aims to continue each of the established courses of action and the goals are reinforced by a direction marked by the most important aspects of the current context, that is, the V Plan advances and evolves in order to meet the huge future challenges that we face as a society.

The strategic guidelines set out in this V VET Plan take into account the current complex social systems that require clarity in the aims, orientation and direction followed in its training strategy. We understand that the best way to face up to the complex nature of the context will only be possible by creating what we call advantage through people.

The V Basque VET Plan 2018-2021 basically has nine strategic guidelines that define specific aims and courses of action to be achieved in the medium term. These lines determine the framework that will govern the actions that in the field of VET are carried out in the established time frame.

Below, a diagram is shown that provides us with a general overview of the guidelines to be developed.

Figure 4. Diagram of the V Basque Vocational Training Plan 2018-2021



Strategic guideline 1. Learning in the 4.0. Context

The exponential emergence of technology in all areas, particularly in the field of work, along with questions such as aging and the extension of people's average life spans, the increase in competition for labour worldwide, and the need to encourage a "green economy", require attractive rekindled knowledge for young people, which, by allowing the acquisition and development of specific and cross-cutting competences for different branches of activity, enables them to not only find work but also to obtain higher qualifications, with a clear orientation towards life-long learning.

The UNESCO-UNEVOC Strategy for Technical and Vocational Education and Training (TVET) (2016-2021) stresses the need to provide young people and adults with the skills they need for employment, quality jobs, entrepreneurship and lifelong learning, at the same time as it attempts to help to implement the 2030 Agenda for Sustainable Development. It is based on three pillars to achieve this: creating jobs and fostering entrepreneurship among young people; promoting equity and equality between men and women; facilitating the transition towards ecological economies and sustainable societies.

As has already been said throughout this plan, the progression towards a society that will be -in many aspects- very different from the one that we have known, and automation and artificial intelligence will play a role that is difficult to quantify and assess at the present time, but which nonetheless must be considered and taken into account.

As has already been shown, the various (bio, nano, info, neuro, and eco) technologies–and especially, the integrated use of these- is going to have a significant impact on society, and from the perspective that concerns us here, particularly in the workplace; however, the development, management, and decisions regarding the use of these technologies, are the responsibility of people.

Faced with these huge changes, although the technical-technological dimension is very important in the dynamic involving the destruction and creation of employment, the experts point out that this is going to differ considerably from one country to another depending on the social capital in each one of them, mainly based on the qualifications and values that people in these societies have and share, as these determine and restrict the productive capacity and the kind of jobs that can be created.

In this context, VET-both initial and continuing- plays a key role, as: a) it trains the human talent needed to face up to the changes in technical knowledge, facilities, and the purpose and organisation of work; b) it enables the active and reflexive participation of workers in branches of activity that are more and more complex, that include on-line and off- line activities; c) it allows for, from new perspectives and approaches, the development of cross-cutting competences (21st-Century Competences), such as multi-disciplinary team work, rapid adaptation to change, and complex problem-solving; d) it encourages creativity to face up to new situations in uncertain contexts; e) it boosts entrepreneurship, not only inside organizations but also to create new jobs and/or activities that have an impact on the social framework.

However, the characterisation of the emerging society (Volatile, Uncertain, Complex, Ambiguous), requires certain strong ethical foundations in which responsibility, cooperation, integrity, equity, equality

between men and women, sustainability, the democratisation of knowledge, the culture of learning, innovation, privacy and personal respect become the hallmarks of those people who in the context of Industry 4.0 develop Values 4.0 in parallel to this.

As a result of this, along with a new vision of learning, the idea is gradually emerging that the traditional classroom is no longer the only place to carry out learning processes, and as well as remodelling and adapting this, it is urgent to reinforce learning in real working contexts, as the separation between learning and work will be increasingly vaguer. In this respect, the High Performance Training Cycles model emerges in VET in the Basque Country as a synthesis of all that we have said, and although methodological change is the focal point that it is organised around, the model as a whole includes other interrelated elements in the ecosystem formed by Education Centre – Companies – Society. On account of this, bearing in mind the progress made in the last few years, the following aims and courses of action are set out below for this V Basque Plan as part of Strategic Guideline I.

Aims and courses of action

AIM 1	**Consolidating and extending the "High Performance Training Cycles" model in VET in the Basque Country.**

This goal is aimed at consolidating and enriching the "High Performance Training Cycles" in VET in the Basque Country, and to achieve this it mainly revolves around some of the courses of action formulated in the IV VET Plan to produce a disruptive methodological model. The central theme on which this model is structured is Collaborative Learning based on challenges, leading to a learning process that favours the development of not only specific technical competences in each cycle, but also personal, digital, communication, creativity, teamwork and entrepreneurship competences.

This working proposal is developed through an inter-modular programme, designed by self-managed teaching teams, and is carried out in flexible environments and assessed regarding developments in learning.

COURSES OF ACTION

1.1. Integrating the different elements that make up the high performance cycles model for better development of people's competences.

1.1.1. Incorporating activities that create habits that influence the personal development of creative thinking.

1.1.2. Reinforcing digital competences by integrating activities in the collaborative challenges aimed at the context 4.0 Context.

1.1.3. Intensifying entrepreneurial culture among people as one of the pillars of methodological change.

1.1.4. Establishing the proposal for collaborative learning in challenges, as the basic methodology in VET in the Basque Country.

1.2. Reinforcing teacher training, by aiming to develop new abilities and attitudes, that are needed to consolidate the change and transformation in vocational training.

1.2.1. Reinforcing the range of training to try and meet the demand emerging from centres in this field.

1.2.2. Incorporating new training formats in line with current trends.

1.2.3. Promoting the concept of training trainers in the change in methodology.

1.3. Bring management teams into line with the needs arising from the change in methodology.

1.3.1. Boost and reinforce the function of the learning coordinator in leadership teams in Basque VET centres.

1.3.2. Developing specific training plans for management teams (awareness, leadership, etc.).

1.4. Encouraging interaction between different agents in the system that influence the implementation of the change in methodology.

1.4.1. Establishing synergies among agents that depend on the Vice-Ministry that have an impact on the change in methodology (IVAC, Education Inspectors, DUAL, etc.).

1.5. Guiding the process for introducing high performance cycles based on successful experiences and aiming to optimize and consolidate this change in methodology.

1.5.1. Facilitating the process of introducing the change in cycles by using tools to diagnose and detect areas of improvement.

1.5.2. Certifying progress in the change in methodology.

1.5.3. Adapting the proposal for intervention to the different levels of VET in the Basque Country.

1.6. Encouraging a variety of networks for collaboration between centres and agents in the system that speed up and facilitate the spreading of the model.

1.6.1. Creating collaborative learning communities for teachers and centres.

1.6.2. Strengthen networks of learning coordinators, digital teachers, ikasenpresa.

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1.7. Boosting the "assessment for evolution" model, advancing towards models that prioritise training assessment rather than graded assessment, to better develop people's potential.

1.7.1. Reinforcing the assessment for evolution approach (SET) in the system.

1.7.2. Stressing the importance of tutoring and feedback for the learning process.

1.8. Adapting training spaces so they support and facilitate collaborative learning.

1.8.1. Encouraging the adaptation of spaces that support the change in methodology.

1.8.2. Promoting the inclusive and equitable use of training spaces.

1.9. Encouraging a culture of entrepreneurship to change attitudes in order to favor the development of competences that are more in line with the reality of modern and future society.

1.9.1. Developing initiatives aimed at reinforcing the culture of entrepreneurship in people.

1.9.2. Generating resources to boost entrepreneurship from a gender perspective.

AIM 2	**Researching and experimenting in those areas that add value to learning processes.**

With the increasing adoption of advanced technologies our productive environment is going to need more and more people prepared to live and work in complex environments, as well as people that are aware of the importance of the ethical and human side of things; we need to pass on sound values to our students.

In this context technology is vital but sciences and the humanities are also essential. The "High Performance Cycles" model that is being introduced into our VET provides a sound proposal for methodological change to help us adapt to this new reality, but the complexity of these changes and the speed at which they are taking place, forces us to redouble efforts by exploring and try out solutions that add value and include the human dimension in the VET model in the Basque Country.

The courses of action formulated to meet this goal aim to try out and design proposals and models in aspects like values, the development of talent and the participation of businesses in learning processes. All this, in cooperation with people and institutions who are national and international reference points in these fields.

COURSES OF ACTION

2.1. Incorporating values into the learning process.

2.1.1. Researching and trying out methodologies and tools to develop values in VET.

2.1.2. Defining a plan to incorporate values to the learning process.

2.1.3. Collaborating with national and international institutions and individuals who are reference points in developing and passing on values for the future of work.

2.2. Encouraging the participation of businesses in learning processes.

2.2.1. Encouraging meetings between people and businesses that allow them to get to know the job market and the talent and potential of the people undergoing training.

2.2.2. Promoting experiences with shared challenges between centres and businesses that allow them to work with different alternatives in real business situations.

2.2.3. Designing and developing training programmes for company tutors (Dual, FCT).

2.3. Stimulating individual and collective talent in VET in the Basque Country.

2.3.1. Designing and developing activities in this field.

2.3.2. Developing executive intelligence by integrating emotional management processes in the learning model.

2.3.3. Collaborating with individuals or institutions who are national and international reference points in this field.

2.4. Incorporating and improving the STEAM philosophy for VET in the Basque Country.

2.4.1. Enriching the methodological approach followed in VET in the Basque Country by incorporating relevant methodological innovation approaches (STEAM, Visual Thinking, among others).

2.4.2. Reinforcing the STEAM approach by comparing it with the VET model in the Basque Country.

2.4.3. Inspiring professional vocations and aims in the field of STEM, paying special attention to female students.

2.5. Incorporating new enabling tools in the learning process that enrich and favour personal development and people's links to the reality of their surroundings.

2.5.1. Analysing and proposing digital solutions that facilitate the learning process.

2.5.2. Considering and including simulators in the learning process that facilitate the development of abilities and skills.

2.5.3. Testing tools and techniques for self-assessment and personal development (Portfolio, Thinking routines, among others.

Strategic guideline 2. Technological innovation and smart systems

As has been shown, at the present time we can clearly see that communications technologies have As has been shown, at the present time we can clearly see that communication technologies have burst into productive processes, products and services. Its emergence poses other challenges such as the sensorification and collecting of data, their storage and management, and their mining (Smart data and Big data); in turn, these models and processes demand safety requirements that must be exhaustive, which is why Cyber-security becomes essential in industrial environments.

Along the same lines, the development of virtual environments can be observed as a communication tool and even as a training tool.

In this context, in an economy like the one in the Basque Country based on production, the emergence of technologies and materials that modify traditional productive processes becomes especially important.

At the same time, by trying to achieve efficiency in processes, the energy factor becomes crucially important. As well as analysing processes in terms of salary costs, raw materials, investment and profitability, processes must also be analysed in terms of the cost of energy.

This aspect becomes extremely important, mainly in sectors like the car industry and aviation, where a reduction in weight is one of the keys to reducing energy consumption and emissions. As a result, this aspect becomes very important in the productivity of our companies, which requires a specific development that goes beyond the domestic approach that has been followed in the last few years.

This approach towards an applied innovation system has been developed since the IV Basque VET Plan, in which the foundations have been laid by the following programmes: Network Hubs in Vocational Training, Strategic environments, Specialization areas and Centre Projects.These programmes have been carried out satisfactorily and on the whole provide VET centres with the capacity to respond to society's needs (students and businesses, with special emphasis on SMEs).

Based on the foregoing, the V Basque VET Plan aims to continue this trend and reinforce it by guiding it towards industry and its productive processes. To do this, through applied innovation, the V Plan will direct resources towards training people in the differential competences required in the new productive scenario and guiding training centres to help SMEs.

In this respect, the aims and courses of action drawn up for this strategic guideline are set out below.

Aims and courses of action

AIM 1	**Researching and innovating in Industry 4.0 environments, passing on the knowledge acquired to the Basque VET value chain.**

This goal aims to encourage the acquisition of new differential skills that enable us to provide a response to the aforementioned trends, by creating specialization areas linked to emerging growth sectors.

With this aim, we need to move towards incorporating new materials aimed at the car industry, aeronautics and healthcare, basically addressing manufacturing processes for items with high added value, and calculating and simulating these, as well as manufacturing processes in short cycles.

Similarly, it will be vital to optimise the design of new products and manufacturing processes, by using simulation tools. Adopting new manufacturing processes like additive manufacturing and rapid prototyping will be key to this.

Finally, as we have already stressed, optimizing energy with an industrial approach, by focusing on optimising the energy consumed in manufacturing processes and the recovery and storage of energy, and on incorporating intelligence in productive processes to try to make them more efficient and versatile.

COURSES OF ACTION
1.1. Promoting and introducing the use of advanced technologies in VET Centres, aimed at improving the competences of teachers and students in complex environments.
1.1.1. Encouraging training actions aimed at improving teachers' competences, which will enable them to respond to technologically highly-advanced contexts.
1.2. Developing innovation projects in Centres that cover current and future productive processes and allow the development of the necessary abilities in these.
1.2.1. Generating and transferring knowledge on collaborative networks.
1.3. Encouraging an increase in the number of women in advanced industrial environments.
1.3.1. Organising campaigns to raise awareness in society in general.
1.3.2. Reinforcing the professional trend towards women stressing the importance of their work in the industrial sector and in industry 4.0.

AIM 2	**Developing High Performance 4.0 VET Centres.**

To advance towards this goal, we want to incorporate the use of technologies associated with the 4th Industrial Revolution into training methods and processes; increasing the competitiveness and quality of our training Centres.

COURSES OF ACTION
2.1. Turning the workshops and laboratories in VET Centres into smart 4.0 spaces, by incorporating sensorisation, communications and managing different equipment.
2.2. Appropriately managing information in Centres, by making use of this in a secure automated format for taking decisions.
2.2.1. Applying Big Data and Cyber-security management models in the network of Centres.
2.3. Working using augmented reality and virtual reality.
2.4. Incorporating the Internet of Things (IoT) environment in its various applications.
2.5. Experimenting with 3D printing in four priority areas: industry, healthcare, food, textiles.

AIM 3	**Knowledge transfer in VET.**

Reinforcing the network of VET centres makes sense when this is made available to society. For the V Basque VET Plan, training is considered to be the way to ensure the incorporation of knowledge acquired and produced in the range of services offered at VET centres.

COURSES OF ACTION
3.1. Sharing the resources of Centres with businesses, especially SMEs, through strategic environments.
3.1.1. Extending the coverage offered to businesses.
3.2. Ensuring the incorporation of the skills and knowledge acquired in the different services provided by Centres in the training that they give.

AIM 4	**Providing a systematic response to technological needs through VET.**

This aims to develop a network of centres that, on the whole, provide solutions geared towards a wide variety of technological needs, so that the acquired knowledge and skills, regardless of where they are put into practice, are passed on to the entire network of centres, and through these, to society.

This aim cuts across all the initiatives and programmes that are to be launched and will lead to progress in the network of VET Centres.

COURSES OF ACTION
4.1. Guaranteeing that the knowledge produced in the various initiatives is passed on to the network of VET Centres.
4.2. Promoting specialisation in Centres, so that they offer broad coverage in accordance with the needs of the productive environment.
4.3. Encouraging collaboration between Centres, as a means of developing complex solutions that require intervening in different areas of technological knowledge.

AIM 5	**Updating and aligning technological priorities with the innovation strategy in the Basque Country.**

Although this plan sets out technological priorities, the constant progress taking place in this context needs to be constantly reviewed and updated. In this regard, the V Basque VET Plan envisages the establishment of systematic tools that enable us to update technological priorities and align them with the territorial strategy.

COURSES OF ACTION
5.1. Taking part, through the NODES, in those work groups that define innovation policies in the Basque Country. Incorporating the view point of VET and gathering the information required to anticipate needs in this context.
5.2. Collaborating with key agents (trailblazing companies, international models, technology centres, clusters, universities, among others), on projects that allow them to innovate, develop, train and transfer.

Strategic guideline 3. Collaborative intelligence and transformative flexibility

The current and future scenario imposes like never before the need to develop an excellent level in the competence of collaborating with others, the ability to design Smart flexible organisational structures and as a necessary complement, the competence of turning information into results, that is, of innovating and managing change. This proves to be decisive in both the personal and professional sphere, and is especially critical in education.

The new era that we are heading towards means substantial changes in the very nature of our society and raises challenges that we have not seen before. We are facing a disruptive transition from a value-creation model essentially based on mass production to an age of collaboration, where the fundamental model is collective collaboration.

People and not technology are the most important aspect in the transformation that is needed in our centres. It is people, and their constantly developing abilities, who will be able to adapt to changes, manage this increasingly complex situation and connect up with collective talent.

Taking this scenario as a starting point, we ask ourselves the following questions: how can our Centres maintain their ability to add value in an unstable context? How can they contend with increasing complexity? How can centres become organisations that are better able to develop people's talent and to achieve greater commitment from businesses and society? How can they connect with collective intelligence? How can they establish a new balance between the needs to organise the efficiency and day-to-day management of the centres and the needs of people to find a purpose and meaning in what they do?

To tackle these questions we must create Dual centres, that have the dual ability to make the most of the old certainties and explore new realities, and are able to obtain results and at the same time interact with the inherent complexity of a hyper-connected world.

There are three steps that open up the path for us to dual organisations. (1) First of all, we need new mental models to build up and lead organizations able to connect with collective intelligence and encourage everyone to work towards leadership and innovation. (2) Secondly, we need new organisational structures that can interact with this new reality. (3) Finally, we need new systematic models for change, a roadmap that enables us to switch from the current departmentalised and rigid organisations to new dual organizational models able to learn, adapt and address complexity.

VET centres must be examples of flexibility and agility in designing significant learning contents and experiences, that are always people-based, and take into account the emerging needs of the productive sector and society in general.

As far as the organisational aspects needed to meet the new challenges in VET are concerned, we must try and find a new balance between departmentalisation, to guarantee predictability

and control, and netarchy (network organisation / flexible organisation), as a driving force for innovation and development. We must meet the need to redesign training centres with organisational structures that focus on the development of the ability to: collect and interpret relevant information about the local environment; disseminate knowledge internally; design innovative responses in a flexible way; focus actions around people; develop teaching talent and management teams as “pieces” with a huge impact on the quality of knowledge; continuously innovate and transform how things are organised.

The sphere of activity that we call Collaborative Intelligence and Transformative Flexibility covers all the initiatives aimed at reinforcing, in some cases, and creating and developing, in others, the dynamic capacity for innovation and transformation at all the organizational levels that form what is known as the “Basque Smart VET System”.

We understand the term “system” to mean the series of interactions among all the different kinds of organic structures that currently exist in VET in the Basque Country (VET Centres, Tknika, Ideatk, Ivac, Vice-Ministry, Ikaslanes, Hetel, Aice, the Basque VET Board, etc.); as well as the relational capital accumulated among all of them, the new flexible structures that can be included (netarchy) and various coordination and shared strategy mechanisms.

The courses of action that have been developed are mainly aimed at having an impact on the following levels of the VET System:

- VET Centres.
- Specialised organic structures (Tknika – Ideatk – Ivac).
- Vice-ministry.
- Associations of Centres.

In short, the core concept that lies behind this strategic guideline is the idea of supporting ambitiously integrative strategies, which are based on all agents and organizational levels. Each of the agents and organizational structures need to become leading players, if this is still not the case, and international reference points in their field, and display a capacity for leadership and innovation..

Aims and courses of action

AIM 1	**Developing Collective and Collaborative Intelligence processes.**

This aim focuses on taking advantage, as far as possible, collective and collaborative intelligence, to carry out processes which manage to obtain results with added value through the combined interventions by all the agents involved in consolidating VET in the Basque Country. To achieve this aim, the following courses of action are planned.

COURSES OF ACTION
1.1. Designing and developing a project to generate knowledge to favor the VET system in the Basque Country, through the management of information and data using Big Data.
1.2. Establishing an advanced system to manage the range of quality VET programmes offered in the Basque Country, by integrating all services, initiatives and positions.
1.3. Developing the capacity for scientific research in VET in the Basque.
1.3.1. .Guiding and participating in relevant lines of research for VET.
1.3.2. Developing a commitment to research among VET teaching.
1.3.3. Gaining access to funding programmes for applied research.

AIM 2	**Generating shared knowledge in VET Centres.**

The aim of this goal is to provide the structures that make up VET in the Basque Country with mayor flexibility, agility and learning, by developing Communities of Practice (CoP), as a tool to generate shared knowledge.

In this context, the following actions have been drawn up:

COURSES OF ACTION
2.1. Developing a VET Community of Practice by increasing the number of participants and structuring it with training and business spheres.
2.2. Designing a Community of Practice especially aimed at the people responsible for innovation in VET Centres.
2.3. Introducing Communities of Practice that aim to provide an overview of the Capacity for Observation, Capacity for Initiative and the Capacity to pass on and make use of the value that is generated.

AIM 3	**Developing the capacity for innovation and transformation.**

With this aim, we are setting ourselves the challenge of developing the capacity for innovation and transformation in the VET System, that is, reinforcing the capacity to turn ideas into action and action into results with a greater transformative impact on the system.

The development of the capacity for innovation has to do with the organisational "re-design" that is needed, with the creation of a context (innovative culture) that favours innovative behaviour, and with the development of competences linked to the flow of innovation (capacity for observation, capacity for analysis and interpretation, capacity for designing initiatives/projects and their flexible management, and with the capacity to create and make good use of the value that is generated).

COURSES OF ACTION
3.1. Developing a model to manage change for VET in the Basque Country, that also defines the role of the person who provides leadership in this model.
3.2. Performing a diagnosis on innovative culture in VET Centres, by creating development plans depending on the results that are obtained.
3.3. Designing and implementing knowledge transfer projects, that focus on managing innovation (Routines and Competitive Intelligence) aimed at individuals and SMEs.
3.4. Taking advantage of the potential of Gamification to support the introduction of the management of innovation at all levels.
3.5. Encouraging the advanced management of innovation projects based on agile methodologies (Scrum), aimed towards team development, active monitoring and value creation.
3.6. Boosting the creation of Innovative Startups in the field of Vocational Training by setting up the Basque VET Startups Laboratory.
3.7. Developing the Balanced Scorecard for VET in the Basque Country.
3.8. Designing and implementing the Applied Innovation Research Unit aimed at VET Services Cycles.
3.9. Developing an Advanced Training and Development Programme for management teams in VT Centres.
3.10. Creating a Programme for Transformation and Organisational Development, aimed at bodies dependent on the Vice-Ministry, and the Associations of VET Centres.
3.11. Creating a Programme for Transformation and Organisational Development, aimed at bodies dependent on the Vice-Ministry, and the Associations of VET Centres.

Strategic guideline 4. Biosciences and sustainable development

IIn the last few years, the European Union has gone to great lengths to orientate the economies of its member states towards a model of sustainable development based on the efficient use of resources. The most significant commitments in this field revolve around the Circular Economy concept, whose aim is for the value of materials, products and resources se maintained in the economy for as long as possible, to reduce the production of waste to a minimum.

On the 25th of September 2015, world leaders adopted a series of global aims with a new Sustainable Development Agenda based on 17 Goals to be met. In this regard, VET plays a fundamental role in achieving these aims and sustainable human growth.

In this context, the Basque Country is committed to sustainable human growth in which society, the environment, culture and the economy are interconnected. This interconnection and its equilibrium are vital in the search for a better quality of life.

At the present time, the Basque VET curriculum provides opportunities to develop training for sustainability. These opportunities are present in training centres through an approach based on the development of students' competences, which allows for the critical analysis of problems and the creation of creative solutions and alternatives.

The incorporation of new knowledge that focuses on achieving Sustainable Development Goals is essential for boosting training that has the possibility of transforming and accepting future challenges.

With regard to the future, VET centres must adopt the design and implementation of a model of their own by creating tools that help to introduce sustainability in the training of future professionals. This model must be extended to the various economic sectors and vocational training programmes, to guarantee the acquisition of cross-cutting competences as the basis for a sustainable social and economic environment.

At the same time, sustainable growth will have to be accompanied by inclusive growth and smart growth. To achieve this, there will be collaboration from this strategic area with other government departments to try and establish effective cooperation and coordination with the so-called Smart specialisation strategy, which is currently being implemented in the Basque Country. Some of these departments are: Department of Economic Development and infrastructures; especially with the Vice-Ministry of Agriculture, Fishing and Food Policy that is competent in informal agriculture and food issues; Department of Employment and Social Policies, especially with the Vice-Ministry of Employment and Youth Affairs and with Lanbide, Department of the Environment, Territorial Planning and Housing; Department of Health and finally the Department of Commerce, Tourism and Consumer Affairs.

To achieve the proposed goals, those objectives aimed at research and applied innovation in areas like sustainable agro-food, the natural and marine environment; smart building and sustainable construction; health and the bio-sciences, will become particularly important as described below.

Aims and courses of action

AIM 1	**Developing scientific research and innovation applied to VET, in Sustainable Agro-food, and the Natural and Marine Environment.**

This goal aims to promote sustainable human growth through VET in the education system, by taking on the technological challenges posed for companies as regards food and the natural and marine environment. All this is done in collaboration with the Vice-Ministry of Agriculture, Fishing and Food Policy within the scope of its competences in the aforementioned sectors, to ensure the employability of skilled human capital. The importance of strengthening these sectors is based on the opportunities that exist for the development of more new economic activities in the Basque Country.

COURSES OF ACTION
1.1. Establishing strategic contexts and specialisation areas in the Bio-economy and associated sectors, improving the efficiency and sustainability of sectors based on the use of biological resources.
1.2. Revitalising actions between VET centres and companies, to enhance the environmental sustainability of the primary sector by improving the complete cycle of the value chain.
1.3. Developing projects to increase the creation of businesses and expand markets related to the Bio-economy.
1.4. Increasing the potential of the Bio-economy and the Circular Economy in VET in the Basque Country, by encouraging their presence and demand in new markets.
1.5. Encouraging the creation of employment and entrepreneurship, based on green jobs and sustainable economic growth.
1.6. Boosting the increase in the number of women employed in the primary sector and in bio-technology services.
1.7. Promoting applied innovation projects led by VET Centres.
1.8. Launching Bio-economy projects through collaboration between VET Centres and businesses.
1.9. Creating the first Applied Bio-economy Network in VET.

AIM 2	**Developing scientific research and innovation applied to VET in Smart Buildings and Sustainable Construction.**

Sustainable construction has become one of the key elements in balanced urban development. More and more countries and international organisations are promoting actions to encourage smart buildings, which is the reason why the adoption of ecological elements and technological development in construction are gaining momentum.

By drawing up this goal in VET we aim to boost the development of talent and synergies, improve productivity and encourage knowledge creation in order to adopt smart processes and/or solutions in construction. The following actions will help to achieve this:

COURSES OF ACTION
2.1. Developing the range of specialised knowledge adapted to meet the new requirements for employability in Sustainable Construction and Smart Building.
2.2. Constructing a collaborative space between VET centres and research/ innovation companies in Smart Building and Sustainable Construction.
2.3. Disseminating and boosting knowledge about subjects related to the construction of Smart and Sustainable Buildings.
2.4. Boosting the study of the design and construction of Smart Buildings and cities.
2.5. Generating collaborative networks between VET Centres, the University and the construction cluster in order to define new professional profiles.
2.6. Promoting urban regeneration and restoration by addressing criteria based on sustainability, Smart Building and the improvement in people's health.
2.7. Reinforcing training aimed at developing new abilities and methods for learning in design, construction and the use of sustainable smart materials.
2.8. Introducing training actions aimed at learning about and developing industrialised building systems and assessing and taking advantage of waste in Sustainable Construction.
2.9. Developed applied innovation projects in VET centres that promote the use of more sustainable processes and materials, to the benefit of people and the environment.
2.10. Creating the first Smart-Green Buildings-Sustainability Platform applied in VET, for sharing and exchanging knowledge and experiences, among all the professional families linked to Smart Sustainable Buildings.

AIM 3	**Developing scientific research and innovation applied to VET in Health and Bio- sciences.**

Biosciences has managed to become a sector that is able to add value and have a positive impact on the economy in the area. In turn the Basque Country currently has more than 80 organisations carrying out research in Bio-technology and the sector employs about 1,183 people.

In this respect, the purpose of this aim is for VET to help to develop and reinforce the priority area of Biosciences and Health, defined in the Basque RIS3 specialisation strategy..

COURSES OF ACTION
3.1. Encouraging the development of Basque industry based on Bio-technology, through VET centres, by offering competences adapted to meet the needs detected in the field of Biosciences and Health.
3.2. 3.2. Establishing specialisation areas in emerging sectors in Health, Environmental Sustainability and the Biosciences.
3.3. Adapting the VET Innovation system strategy and aligning it with the trinomial of Health, Environmental Sustainability and Biosciences, gearing it towards solving business challenges in this area.
3.4. Setting up a multidisciplinary forum to exchange knowledge and experiences, among all professional families, in collaboration with businesses, technology centres, universities and the agents in the Basque Network of Science, Technology and Innovation.
3.5. Providing VET centres with professional families linked to the healthcare sphere with capacities for innovation and technologies in the Biosciences and Health ecosystem.
3.6. Encouraging and boosting through VET centres, the creation of Bio-companies and the development of new markets through entrepreneurship programmes.

Strategic guideline 5. Internationalisation

The strategy developed with regard to Internationalisation since 2014, based on displaying excellence on an international level has meant that VET in the Basque Country is an international benchmark.

The aims set in the IV Basque VET Plan have been met to a large extent. For this reason, the V VET Plan sets out a new strategy that represents a step forward in terms of consolidating and extending opportunities for international collaboration.

The future outlook that is opening up in the field of training and the need to attract talent to our system lead us to draw up a series of proposals based on shaping a new infrastructure to strengthen our system.

As a result, the creation of the Basque International Campus for Smart Specialisation in VET is based on cooperation between training centres, companies and institutions in the Basque Country, with the aim of helping to favour employment, competitiveness, social cohesion and economic development. Similarly, as has already been mentioned, this approach aims to help to attract talent to the Basque Country, by offering advanced training.

The search for international excellence links up with the strategic areas defined by the Basque Government and social agents, following the guidelines in the Smart Specialisation Strategy (RIS3), defined by the European Commission .

Aims and courses of action

AIM 1	Promoting the Internationalisation System for the combined VET model.

This goal, which falls within the internationalisation of VET, aims to introduce an internationalisation strategy in all the centres that form part of the system, to shape an Internationalisation System for the combined model of VET.

COURSES OF ACTION
1.1. Developing general training in internationalisation and awareness aimed at VET Centres.
1.2. Developing advice, collaboration and consultancy services for Centres with no experience in this field.
1.3. Transfering the results of strategic projects.
1.4. Leading the management of international networks.
1.5. Establishing mobility projects for teachers.
1.6. Establishing mobility projects for people undergoing training.
1.7. Designing and carrying out projects financed by the EU.
1.8. Attending courses, conferences and congresses.
1.9. Formalising agreements with different institutions.

AIM 2	**International Campus for VET in the Basque Country.**

Providing support for Basque companies abroad by training young people from the countries where they are established forms a highly important aim to ensure the sustainability of the internationalized productive fabric.

Prioritising sectors for all kinds of training must start out from those areas in which we are and can be points of reference, to guarantee a specialized benchmark range of knowledge. Enhancing the Basque model of VET must achieve a quality range of training aimed at everyone in different international contexts.

COURSES OF ACTION
2.1. Designing the International Campus and its structure.
2.2. Formulating and designing the training to be given on the Campus.
2.3. Analysing the resources of Centres to provide training.
2.4. Explaining the International Campus Project to institutions.
2.5. Explaining the Project to businesses.
2.6. Taking part in international conferences, congresses and meetings.
2.7. Carrying out research about different existing sources of funding.

Strategic guideline 6. Continuous improvement

The European Commission includes the desirability of countries developing quality guarantee frameworks for training of their own among the recommendations in the Horizon 2020 report.

The successive documents that have been published as a result of the monitoring process carried out reinforce this idea. So, the overall intermediate assessment of the ET 2020 strategic framework carried out in 2014, confirms the relevancy of the four strategic aims established by the Council in 2009, including “Improving the quality and efficiency of education and training”.

In the same vein, the Riga Communiqué (2015) points out the need to “Fully develop quality guarantee mechanisms for VET with continuous feedback for VET systems”.

The joint report in 2015 by the Council and the Commission on the application of the strategic framework for European cooperation in the field of education and training (ET 2020) analyses the new priorities for European cooperation in education and training and establishes new priority policy areas. One of these is the “Sustainable investment, quality and efficiency of education and training systems” and “Continuing to develop quality guarantee mechanisms in VT”. In this report approaches are recommended such as disseminating positive practices and providing strong support not only for teachers but also for management in centres and other staff that play a vital role in guaranteeing the success of students and the application of education policies.

On the other hand, one of the aims in the RIS3 report is “Improving governance and getting participants more involved”. With regard to corporate governance it seems to be vital to have a series of processes, policies and ways of doing things that favour successful centres.

To ensure the deployment of this Culture of Excellence, Basque Vocational training now has a simple, agile and shared process-based Management System, that allows for greater flexibility in its centres in view of the current volatile, uncertain complex and ambiguous context that they face.

The present challenge is to ensure that these management models evolve in a way that guarantees the comprehensive sustainable management of VET centres that incorporates new support methodologies. One of the key aspects is the management of the people and teams in VET centres and how, in this regard, their needs, the changing trends in their surroundings, and their knowledge and current and future abilities, and as a result, of the centre itself, as well as the mechanisms required to fulfill these, can be addressed.

The basic idea is always to add value to people, centres and local businesses, by meeting their needs, expectations and opportunities. Results must be guaranteed in the medium and long term, so that at the same time this makes a positive impact on the local area, which as a result favours not only economic but also environmental and social sustainability. To achieve this, it is essential to encourage the preparation and responsibility of centres in all fields, by promoting autonomous centres that define and manage their strategy and resources, develop all their capacities and efficiently and flexibly manage changes by involving everyone who forms part of them in the assumption of responsibilities. Centres

must be innovative, flexible organisations with the ability to provide flexible responses, and form part of networks with both other centres and with businesses to develop joint national and international projects.

It is necessary to support sustainable management in the economic, social and environmental spheres in centres, with systems that not only meet international requirements, but also provide a benchmark as far as their commitment to social responsibility is concerned.

By maintaining periodic relations with international benchmark organisations, opportunities can be detected for new spheres of action for continuous improvement, such as:

- Identifying best practices in selecting and training leaders and aspects of cultural leadership or analysing new trends to develop the culture and values of organizations (EFQM);

- Complying with the standards of legal responsibility of organisations and individuals and managing social responsibility as far as the environment (environmental management, management of energy efficiency), and the management of people are concerned, by guaranteeing ethical behaviour and the management of results to ensure a high sustained level of performance (ISO);

- •Spreading Lean culture and of continuous improvement tools in organisations (Lean Community);

- The transfer of best practices through the deployment of international alliances and joint projects.

Aims and courses of action

AIM 1	Research and applied innovation for the development of Social Responsibility and values.

Developing an innovation Project to boost inspirational leadership in vocational training centres, based on encouraging a culture and values associated with Social Responsibility.

COURSES OF ACTION
1.1. Identifying the impact of including social responsibility requirements in VET Centre management systems and their link with requirements involving the environment, job security and the quality of services.
1.2. Developing advanced management methods to facilitate compliance with social responsibility requirements.
1.3. Including social responsibility requirements in VET Centre management processes.
1.4. Carrying out actions to favor the spread of the practice of social responsibility.
1.5. Boosting networks of virtual and on-site Centres in order to transfer knowledge and share best social responsibility practices.
1.6. Designing a new advisory service about social responsibility for businesses.

AIM 2	Research and applied innovation to optimise the impact of the transition from one generation to the next.

Facilitating the generational transition among management teams in VET Centres, by ensuring the commitment shown by individuals and encouraging not only making the most of their talent but also the contribution they make to achieving the aims of the Centre and their own goals.

COURSES OF ACTION
2.1. Leading the plan to optimise the generational transition in management teams in VET Centres.
2.2. Designing appropriate action plans to meet specific needs in Centres, that ensure that the necessary transfer of knowledge takes place in Centres.
2.3. Training the new management teams so they can acquire the key competences associated with their new posts and functions.

AIM 3	**Research and applied innovation for assessing the VET system in the Basque Country.**

Developing a model to assess the VET system in the Basque Country, which favours the achievement of excellent sustainable results over time due to governance based on ongoing learning and evaluation.

COURSES OF ACTION
3.1. Defining the elements in the assessment model for the system including advanced methods to improve it.
3.2. Assessing VET services in the Basque Country.
3.3. Using advanced methods to improve the system.
3.4. Managing and sharing best national and international practices.

AIM 4	**Research and applied innovation to improve the effectiveness and efficiency of processes in VET Centres in the Basque Country, particularly of the process of training.**

Introducing Lean Culture in VET Centres, by using its concepts, routines and tools to improve their results.

COURSES OF ACTION
4.1. Collaborating with the teams implementing high performance cycles in the use of the improvement tools required in each case, to solve specific problems that appear during their implementation.
4.2. Designing new more efficient methods to meet the needs of centres.
4.3. Developing monographic workshops to facilitate the introduction of different Lean tools.
4.4. Taking part in international projects to introduce Lean culture.

Strategic guideline 7. Complexity management

There is a certain lack of knowledge when it comes to interpreting what the management of knowledge means and understanding its scope. However, knowledge is one of the basic foundations for being able to accept processes of change and transformation.

Beyond any procedure or technology, there is a process of building up personal, technological and professional knowledge that determines the success of any innovation to a large extent. The basis of any innovation is shared knowledge and the management of this knowledge defines a change in the way of understanding the organization of training.

The V Basque VET Plan establishes the need to transform the current Centres into ones that are suitable for the 21st century. This raises the need for us to define this new type of Centre, to study the creation of value in these, to specify the role played by the people who form part of the Centre, to encourage the creation of knowledge throughout the entire organisation, as well as the use of technologies, internal and external collaboration networks, the role of management teams in this new type of Centre and the preparation that they require to pursue their work.

And what is most important is to make the most of the intellectual ability and knowledge of all the people who form part of VET Centres, and equip them with flexibility and adaptation to offer people a vital project that provides them with personal and professional development and encourages them to contribute all their knowledge to reinforce the organisation in a new concept of innovative Centres. These are Centres conceived as being living, complex and dynamic organisations in which shared projects are created, and where the possibility is provided to think, choose and act in an environment with considerable autonomy for individuals and working teams, which helps to mark the essence and activities of these Centres.

The kinds of projects that they are going to carry out, the challenges that must be taken on and the contexts in which they are going to collaborate require the establishment of a different management mode for complexity that includes five different types of management:

- Information management.
- Knowledge management.
- Innovation management.
- Change management.
- Trust management.

There are some organisations in which diversity is a source of wealth, and the results of this approach cannot be separated from communication and dialogue. This is a question of encouraging people to change their standpoint regarding how they observe the dynamism of the Centre and to get them to see the different challenges in their entirety and provide their highest possible level of knowledge.

Knowledge management in all of this is a good opportunity to develop a different way of doing things and of being.

In order to move forward in the aim of turning VET Centres into knowledge-based organisations, we will be developing the following aims and courses of action.

Aims and courses of action

AIM 1	Establishing an information and knowledge management system in VET Centres, based on VET Big Data.

COURSES OF ACTION
1.1. Establishing an information and knowledge management model adapted to VET, based on three aspects: collecting data, exchanging information and knowledge creation, and developing forward planning and collaborative monitoring for this.
1.2. Providing support through management of the work with the competitive intelligence platform, in order to collect relevant information and send it to people interested in a specific subject.
1.3. Encouraging the design and launch of a Big Data set for VET.

AIM 2	Implementing a change management model adapted to VET Centres.

COURSES OF ACTION
2.1. Implementing a Change Management model that allows centres to develop the capacity for adaptation, reaction and anticipation required to meet the different needs that emerge in their local area.
2.2. Encouraging the concept of the change strategist in centres as the person in charge of passing on the aims and needs envisaged in the future to the management team.
2.3. Setting up collaborative teams that work in coordination on the different variables that form the needs and strategy for change in the centre.

AIM 3	Setting up an innovation management model adapted to VET centres.

COURSES OF ACTION
3.1. Managing the field of applied innovation, providing the coverage required for incremental and disruptive innovation in VET centres. 3.2. Providing support to manage the promotion of innovation culture, and work with the different innovation routines established in centres.

AIM 4	Establishing a trust management model in VET centres.

COURSES OF ACTION
4.1. Encouraging through management the idea that centres are people-based projects, and are a common project for all the people that form part of them, understanding that any advance and progress made by the centre is a success shared by everyone. 4.2. Setting up teams to assess satisfaction in centres, who gather information from teachers about their degree of wellbeing and motivation and promote the measures required to address the improvements that emerge in accordance with teachers' perceptions.

AIM 5	Developing the training required for management teams and teachers.

COURSES OF ACTION
5.1. Training management teams and teachers in a Complexity management model so that they can adapt and work with the required motivation on this without any problems and adapt this the general model for this to the peculiarities and needs of each centre.

AIM 6	Creating collaborative networks to develop complexity management in VET centres.

COURSES OF ACTION
6.1. Creating collaborative networks among centres to support the development of the different management fields that have been established.
6.2. Identifying and registering the best practices in each centre in change management and knowledge management.
6.3. Detecting the expert individuals and/or groups that are behind the best practices.
6.4. Creating a directory of best practices and of experts and making this available to the network.
6.5. Establishing support and advisory programmes for VET centres, and where appropriate, support by centres for businesses, mainly SMEs.
6.6. Sharing the knowledge acquired among the centres that make up the VET centre network, and where appropriate, between centres and businesses, mainly SMEs.
6.7. Establishing alliances and joint projects with external agents regarding change management and knowledge management.

AIM 7	Promoting equality between men and women in VET Centres.

COURSES OF ACTION
7.1. Preparing materials to implement equality policies in VET centres.
7.2. Promoting the preparation of diagnoses and plans for equality between men and women.
7.3. Setting up a network to exchange experiences among VET centres to develop equality policies between men and women.
7.4. Developing alliances between VET centres and businesses to increase the hiring of women in strategic sectors.

Strategic guideline 8. VET Centres: towards Smart organisations

The processes of change and transformation that we are currently going through as a society not only lead us to draw up new methods, tools and knowledge to train people; they also lead us to reconsider the organizational model in our centres, as a guideline for the conception of new principles in vocational training.

Faced with this new scenario, we need to transform our organisational model. For this reason, adopting organisational practices that ensure collective learning and the development of skills to understand complexity emerges as an alternative to introduce transformation processes that guarantee the sustainability of our centres in the long term and in the future, which is still unknown.

In this context, the adaptation process towards a smart organisational model aims to ensure that all centres form part of an open connected organisational dynamic in search of continuous self-growth. In smart organisation, it is not enough to adapt and survive but above all to develop the ability to create, that is, to construct an organisation with a genuine capacity for learning and creativity.

We need centres that become Smart organisations and are organized on the basis of the diverse nature of their composition and development. Centres must be organisations geared towards the future, based on the people that form part of them, who have ideas that they develop and take risks, using different tools, methods and structures.

They must be forward-looking organisations that become shared common projects, with spaces that are different to the ones they currently occupy, with teachers organised in multi-faceted teams, with flexible adapted working hours; aiming to improve VET through shared knowledge, pooling their efforts in a common project.

The fundamental components in this organizational structure are based on developing: self-discipline, team work, shared vision, mental models and creative thinking. With this idea, we must switch towards a vision that leads to significant and long-lasting improvements.

So that vocational training centres in the Basque Country can become Smart organisations, develop their capacity for learning and manage knowledge, there is in turn a key factor in the transformation process: people.

The people who make up the centres, and as a result, transfer knowledge and develop abilities in others, play an important role in managing this transformation. The transition towards a smart organisational model not only has to do with modifying the characteristics of the organisation, but also concerns the abilities of its members.

The creation of new knowledge and abilities in people therefore becomes a priority factor as a vehicle for transforming VET centres, and in turn, in transforming the professionals of the future: people who are technologically highly-skilled, versatile, communicative, emphatic, analytical, highly competitive and constantly learning.

We require a new kind of centre in which innovation and the knowhow of people is perceived as being their most important value, with a large degree of autonomy in an environment based on freedom and trust, in order to meet the needs of their local environment by acquiring four main abilities:

- Adaptability
- Reaction capacity
- Foresight
- Capacity for disruption

Centres with a new working culture with different spheres of responsibility and different spaces; Centres that are provided with the preparation, flexibility, technology and connectivity that they need to become Smart Organisations, ready to become the centres that the 21st century needs.

This scenario requires that the training of people who attend VET Centres must be carried out through advanced, modern, disruptive, precise and personalised training, that guarantees that their technical competences and their pedagogical skills are kept at the very highest levels. It also has the ineludible task of being able to provide rapid, flexible responses to meet the needs that emerge in the world of Industry 4.0 and new technological developments.

In turn, this new reality not only requires a profound transformation in the way of doing things and the way that we are, but also requires a modification of those spaces where training processes occur. We switch from working in familiar physical environments to working in virtual, digital, global, totally connected and extremely complex environments. However, not only physical aspects become important, we are also referring here to the space as a tool to boost innovation and learning through disruptive formats and contents that provide spaces for debate. In the words of María Acaso, Coordinator at the Telefónica Foundation Disruptive Education School, “the spaces of the future need to adapt to meet the needs of today’s students and must be flexible and changing spaces”.

This concept of space therefore involves a change in the learning environment – Centres that are provided with preparation, flexibility, technology and connectivity, with flexible adapted working hours. These are aspects that are needed to become Smart Organisations, ready to be the Centres that the 21st century needs.

However, this change must not only be addressed from a technological approach but also a methodological one, by radically changing what takes place in the classroom.

Aims and courses of action

AIM 1	A new organisation of VET centres: towards Smart organisations.

Advancing towards organisational models that make creativity and innovation an established practice by directing resources to ensure that training is better run and apprenticeships are created that make a great impact.

COURSES OF ACTION
1.1. Designing a structure for VETCentres that enables them to have a dynamic capacity for innovation and transformation, at all organisational levels.
1.2. Using new management methods that facilitate constant interaction among all the people that from part of VET centres and therefore encourage collective learning.
1.3. Developing the processes and procedures required to facilitate the transition in VET Centres towards the concept of Smart Organisations.
1.4. Making organisational processes more flexible by facilitating the adoption of new spaces and new areas that meet the needs and challenges of the future.
1.5. Working on new structures and tools that guarantee the sustainability of the training of professionals in the future.

AIM 2	**Training for management teams VET Centres.**

Providing management teams with the competences required to lead Smart Organisations in complex environments.

COURSES OF ACTION

2.1. Reinforcing management leadership by encouraging Centres and their teams to develop all their abilities.

2.1.1. Initial course (for new managers in the post):

- Developing collaboration and collective intelligence.
- Generating significance, commitment and shared meaning.
- Sharpening the ability to explore and exploit opportunities.
- Building trust in people in the organisation.
- Learning to manage change.
- Joining the digital transformation.
- Obtaining results and creating value
- Assessing and learning from experience.

2.1.2. Advanced course (for management teams):

- Role of the leader in a Smart Organisation.
- Key competences for being a “facilitator”.
- New competences for managing complexity
- 360º responsibility management.
- Managing positive thinking in a Smart Organisation.

2.2. Encouraging the smart, systematic and appropriate use of information and knowledge, which allows us to recognise, understand and quantify the current and potential abilities of individuals and groups at VET Centres.

AIM 3	**Internships for teachers in workplaces.**

Encouraging the updating of knowledge of technology in a real working environment, and of the working procedures, tools and organisational methods used in production processes in their professional sphere.

This goal aims to encourage and facilitate internships in companies that are benchmarks in different technological fields, in their organizational conception and procedures used in their productive processes.

COURSES OF ACTION
3.1. Carrying out micro-internships of between 5 and 20 hours in workplaces.
3.2. Facilitating internships in workplaces lasting from 20 to 150 hours.
3.3. Making possible internships for teachers in foreign workplaces lasting from between 3 days to a fortnight.
3.4. Giving training to new management teams to acquire the key competences associated with their new posts and functions.

AIM 4	**Training aimed at teachers in charge of boosting change management in VET centres.**

Providing people who perform roles that drive change in a Centre with knowledge and tools to create a Smart Organisation culture in order to make a prompt impact on students

Regarding this aim 4 groups or collectives to be trained have been identified:

- People that have the role of innovation management, strategic management and operational management.
- People that perform professional information and guidance functions.
- People linked to entrepreneurship projects as part of Ikasempresa & Urrats bat programmes
- People linked to applied innovation programmes.

COURSES OF ACTION
4.1. Creating training processes in: - Emotional management – emotional, generative and executive intelligence. - Problem solving. - Management of critical, constructive and creative thinking. - Capacity for leadership. - Collaborative work. - Verbal communication skills. - Training teachers to be apprenticeship facilitators, advisors and promoters. - Knowledge transfer.

AIM 5	**Training to improve competences in developing new learning methodologies in the classroom.**

This is about providing the people who make up our Centres with the knowledge and tools to work on cross-disciplinary abilities with students to achieve comprehensive personal development: as well as developing the training processes drawn up in Aim 4, this goal will also expand its course of action.

COURSES OF ACTION
5.1. Creating training processes in: - Strategies for an efficient technology watch process. - STEAM + challenge-based learning methodologies. - Development of values 4.0.

AIM 6	**Training in the use of current and future advanced technologies aimed at improving competences for working in complex environments.**

Training people with knowledge that enables them to respond to future environments that are technologically highly advanced.

COURSES OF ACTION
6.1. Developing training processes in: - Visual Thinking. - Flipped classroom. - 4.0 web tools - Artificial intelligence. - Augmented reality. - Big data. - Integration of EICTs (Electronics, Information and Communications Technologies). - Automation and Working on the Cloud.

AIM 7	**Training in language reinforcement.**

Developing the language knowledge needed to provide training in different languages, to produce multi-lingual students, to meet the current and future international demand in the business fabric.

AIM 8	**Training in Cyber-security and Digital Imaging for a digital connected VET Centre.**

Generating knowledge in Cyber-security, so that people can carry out their work in totally digitised, connected and Smart classrooms and Centres.

COURSES OF ACTION
8.1. Training ULHI/IVED (Basque Distance learning Institute) facilitators.
8.2. Training facilitators who are computer maintenance technicians.
8.3. Training other facilitators.

AIM 9	Smart use of the learning space to stimulate creative capacity, constructive thinking and executive intelligence.

Adopting architectural characteristics to serve training and learning models in VET Centres.

COURSES OF ACTION
9.1. Designing and transforming learning spaces into stimulating, flexible and functional environments, adapted to new active learning methodologies.
9.2. Setting up workshops-laboratories-classrooms with practical experiences.
9.3. Making a break with the use of traditional furniture by introducing sensory technology and experiences that encourage creativity and team work.
9.4. Creating spaces that stimulate the imagination and reflexive and creative thinking.
9.5. Encouraging flexible adapted hours.

Strategic guideline 9. Specialised organic structures

To continue developing and bring the launch of the V Basque VET Plan, and ultimately the consolidation of Basque VET, to a satisfactory conclusion, innovation and transformation must also be adopted in our organisational system to provide an appropriate response to the social, economic and technological challenges posed by the present and the future.

Within the framework of this new Plan, there is therefore a need to set up and reconfigure the specialised structures that guide VET, as tools that can be used to achieve the proposed aims.

As a result, below we address three of the structures that will undoubtedly play a leading role in this new action framework.

Basque Institute of Future Learning

The Basque Institute of Future Apprenticeships must identify and analyse the trends that are going to have an influence on the future competitiveness of our companies and on employability, and establish the needs and types of training that meet these trends. The “Smart Specialisation Strategy” launched in the Basque Country will provide a point of reference for this.

The aim is to have people prepared to meet the real needs of our productive fabric at all times. This means working proactively on designing the training required to achieve this goal.

The institute will create a well-established basis for taking decisions in the present about something that is going to happen in the future. It will explore the prospects for training needs through an observatory that will review and assess the future of professions in the Basque productive fabric.

It will transform the curriculum for VET qualifications in order to include new learning methodologies in them. The following is vital to achieve this:

- Stimulating talent to boost training in the context of smart, digital and connected systems, based on continuous innovation and knowledge.

- The information, abilities and attitudes that will be needed in the future.

- The development of a curriculum based on future needs, which arouses interest among learners and provides them with the preparation needed to successfully tackle this.

- Designing and publishing guides and manuals for teachers, that consolidate new learning methodologies and are adapted to meet needs detected in the future..

It will establish a procedure that will allow us to get to know and introduce the training required to ensure that people can obtain the qualifications that they need at all times, based on future strategic priorities.

The Basque Institute of Future Apprenticeships will research and design new competences that cover the rate of change that will be faster and faster, and that will be needed for a complex world in the future. It will research into the use of new tutoring systems based on smart systems that favour the progress and preparation of students both individually and collectively, through advanced technologies such as big data, augmented reality and artificial intelligence.

As part of its functions it must continuously create new future apprenticeship profiles based on the needs in emerging sectors and in sectors that are unknown at this stage, by working and collaborating to achieve this with the most advanced companies in the Basque productive fabric.

AIM 1	**Developing an Observatory for Future Apprenticeships.**

COURSES OF ACTION
1.1. Identifying and analysing trends through an observatory for future apprenticeships.
1.2. Defining new professional profiles linked to future jobs, in collaboration with companies, VET centres and other organisations and institutions.
1.3. Identifying new professional competences that will form part of new profiles linked to future jobs.

AIM 2	**Designing the training required to allow the acquisition of foresight to anticipate the needs of new professionals.**

COURSES OF ACTION
2.1. Establishing the future training needs to acquire these competences, by designing the curriculums required for this.
2.2. Preparing guides and manuals for teachers.

AIM 3	**Integrating and taking on the functions of the Basque Knowledge Institute.**

COURSES OF ACTION
3.1. Developing the work that the Basque Knowledge Institute has been carrying out on VET Qualifications and Specialisation Programmes.
3.2. Extending and keeping the VET Integrated Modular Catalogue up to date.

Basque Institute of Talent in VET

One of the priority aims of VET is to advance towards sustainable human development. This means making progress by transforming and improving the preparation of those who are carrying out this training to ensure that they can adapt to meet the more complex requirements regarding employability and the new jobs that will be created over the next few years. Professional success is going to depend on the type of profile that people have and its possible adaptation at any time.

To do this, it will be necessary to make changes in learning concepts, by transforming preparation based on competence into another kind based on talent. The concept of talent is one that leads us into a different field of learning; a field that includes contexts that refer to constructive and creative thinking, generative and executive intelligence or to the values of the individual, among others.

In this context, the Basque Institute of Talent must establish the learning methodologies needed to enable people to be able to face up to the changes that are going to occur in technical knowledge, facilities, the purpose and organization of work. It must also enable the active and reflexive participation of workers in branches of activity that are more and more complex, that include on-line and off-line activities; and allow, from new perspectives and approaches, the development of cross-cutting competences (21st century Competences), such as multi-disciplinary teamwork, rapid adaptation to change and complex problem-solving. It will also encourage creativity to face up to new situations in uncertain contexts and will boost entrepreneurship.

AIM 1	Establishing a map of talent in VET

COURSES OF ACTION
1.1. Structuring the theory of talent in VET
1.2. Defining the new context of talent in VET
1.3. Supporting the progress and projection from the concept of competence to the concept of talent.
1.4. Generating talent in VET centres.
1.5. Encouraging the task of implementing generative and executive intelligence.

AIM 2	Developing collaborative learning projects, with new methodological models that anticipate the emerging needs that the future raises.

COURSES OF ACTION
2.1. Working on a new context regarding the acquisition of talent. New knowledge, new abilities and new competences.
2.2. Boosting individual talent by encouraging the development of critical, constructive and creative thinking, and the development of emotional, generative and executive intelligence.
2.3. Researching and developing new collaborative learning methodologies and designing new learning spaces.
2.4. Developing collaborative learning projects between different VET centres.
2.5. Encouraging creativity as a vital factor for the development of talent.

AIM 3	Boosting individual talent by encouraging the development of critical, constructive and creative thinking, and the development of emotional, generative and executive intelligence.

COURSES OF ACTION
3.1. Working on different techniques that develop creative and constructive thinking.
3.2. Working on different techniques that develop emotional, generative and executive intelligence.

AIM 4	Fostering creativity as a fundamental aspect for the development of talent.

COURSES OF ACTION
4.1. Boosting different actions aimed at acquiring and developing creative competences.
4.2. Establishing specific actions regarding creativity in different learning environments.

Basque Centre of Research and Applied Innovation in VET, TKNIKA

The new needs to prepare people as a result of the 4th Industrial Revolution and as a necessary response to maintain and improve the competiveness of the Basque productive fabric mean that VET in the Education system must provide a flexible efficient response to this. To achieve this, the tools and organisations that develop innovation, changes, updates and improvements in the Basque system of VET must be refreshed and optimised.

These changes and transformations require updating the areas, running, organisation and functions of the Basque Centre of Research and Applied Innovation in VET, TKNIKA; and also require a profile that is more in line with the new needs of professionals who work in this field.

For this reason, in order to be able to respond to the aforementioned changes the structure, names and functions of the areas that form part of the Basque Centre of Research and Applied Innovation in VET, TKNIKA, are being modified.

This transformation will guide the Centre as technical body responsible for research and applied innovation and the transfer of the results of R+D+i projects to all the Centres that provide VET in the Basque Autonomous Community.

Its purpose will be to attend to services involving research, innovation and teaching support, as well as different organisations and companies.

The organisational structure will be aimed at developing the following areas:

- Technological Innovation and Smart Systems.
- Applied Innovation in strategic environments.
- Management of Complexity.
- Bio-sciences.
- Bio-economy and Sustainability
- Entrepreneurship.
- Internationalisation.
- Big Data and Technologies Applied to Information.

In this respect, the goals pursued by the Basque Centre of Research and Applied Innovation in VET, TKNIKA will be basically aimed at carrying out research in the field of VET and applied innovation, by encouraging relations between Centres that give VET and companies, with technology centres and with different university and non-university research departments.

It will also aim to train teachers in VET centres in the various technologies that are emerging in various productive sectors, by making progress in new environments that improve different learning processes, encouraging the internationalisation of VET and developing continuous improvement.

Finally, it will encourage entrepreneurship among students in VET Centres.

In order to achieve these goals, the Basque Centre of Research and Applied Innovation in VET, TKNIKA, proposes to comply with the aim and courses of action pointed out below.

AIM 1	Transforming the Basque Centre of Research and Applied Innovation in VET, TKNIKA.

COURSES OF ACTION	
1.1.	Encouraging new technological innovation processes in VET in the Basque Country, collaborating with VET Centres.
1.2.	Collaborating with training Centres in developing digitisation, connectivity and the use of advanced technologies that enable them to make progress as far as the 4th Industrial Revolution is concerned, setting up collaborative networks through the different areas that make up Tknika to achieve this.
1.3.	Developing applied innovation projects in strategic environments, prioritising collaborating with SMEs in manufacturing products and in production processes.
1.4.	Managing training in subjects related to innovations in technology, methodology and management.
1.5.	Promoting innovation processes in managing VET Centres in the Basque Autonomous Community, to create more flexible, dynamic and participative structures, based on collaboration, trust in people, autonomy and on the capacity for team management.
1.6.	Setting up and coordinating applied innovation projects between VET Centres and SMEs to improve products, production processes and services.
1.7.	Encouraging learning environments in VET, through virtual reality and augmented reality.
1.8.	Continuing to encourage projects to create businesses in VET Centres and to collaborate with other organisations involved in this.
1.9.	Offering and giving training in technological innovation and in new technologies applied to production and services to VET teachers in VET Centres in the Basque Autonomous Community, in Spain and abroad.
1.10.	Working on sustainable development, bio-sciences and biotechnology in the field of VET, by making progress and collaborating in new areas of the green economy, the circular economy, sustainable agro-food, health, and healthy aging, among others.
1.11.	Collaborating with the European Commission in developing different international projects, which take the Combined Model of VET established in the Law on VET in the Basque Country as a reference point.

Management, Assessment and Monitoring of the Plan

The V Basque VET Plan logically needs a management, assessment and monitoring strategy to guide development processes, decision-taking and internal and external communication during the period that it is in force.

Management

The Plan has nine strategic guidelines and each of them establishes a series of aims and courses of action for the four-year period from 2018 – 2021. Proper management of the Plan requires coordinating the various bodies that take part in this and directing the implementation process.

Coordinating body

The coordination of the Plan, once it has been drawn up by the Basque Government, is the responsibility of the Senior Coordinating Body for VET, within the specific framework of the Basque VET Board which is not only the body that various social institutions and organisations form part of but is also the one that is responsible for assessing the Basque VET system.

The tasks involved in coordinating the plan are specified as follows:

- Taking strategic decisions.
- Coordinating the activities envisaged during the development of the Plan with other government departments
- Making recommendations to ensure envisaged activities are carried out correctly.
- Validating monitoring reports with partial and final results.
- Management body.

Management organ

TThe management of the Plan, once it has been drawn up by the Basque Government, is the responsibility of the Management Body of the integrated VET system, within the specific framework of the Basque VET Board.

The tasks involved in managing the plan are as follows:

- Running the implementation of the Plan.
- Establishing the strategy and monitoring of the activities related to the Specialised Organic Structures: Basque Institute of Future Apprenticeships; Basque Centre of Research and Applied Innovation in VET (Tknika); Basque Institute of Talent in VET.
- Monitoring the activities associated with the Plan
- Providing strategic guidance for the coordinating body of the Plan.
- Preparing the Monitoring Reports.
- Designing a strategic communication model for the Plan to inform citizens and the different agents involved about the process and the results.

Assessment

The assessment of the V Basque VET Plan is the responsibility of the Basque VET Board set up on the 22nd of February 1994 through the Decree 100/94.

The assessment process sets out a methodological strategy that incorporates different viewpoints into the process and results in accordance with different types of agents and different types of tools.

In this way, the planned information sources include typical qualitative analysis tools, especially interviews and focus groups. As for quantitative methods, it is planned to use public data sources. To measure the degree of implementation of the aims that are set, a series of indicators linked to strategic guidelines and their associated courses of action, which are monitoring indicators, are defined.

In addition, a set of impact indicators have been established. The latter are general indicators and affect all the strategic guidelines contained in the Plan, so that they facilitate the assessment of the Plan itself as a whole.

In accordance with the aforementioned, three types of assessment are planned:

- Technical assessment with quantitative indicators.

  This refers to a task that is basically quantitative that takes monitoring indicators (established by the different strategic guidelines) and impact indicators (established by the Plan as a whole) as a reference, and which, in turn, are separated into structural, sectorial, and deployment indicators.

- Internal assessment with qualitative indicators.

  The assessment model (written and dialogued) will incorporate sections referring to group atmosphere (SATISFACTION) a dynamics, methodologies, collective developments (QUALITY OF WORK) and

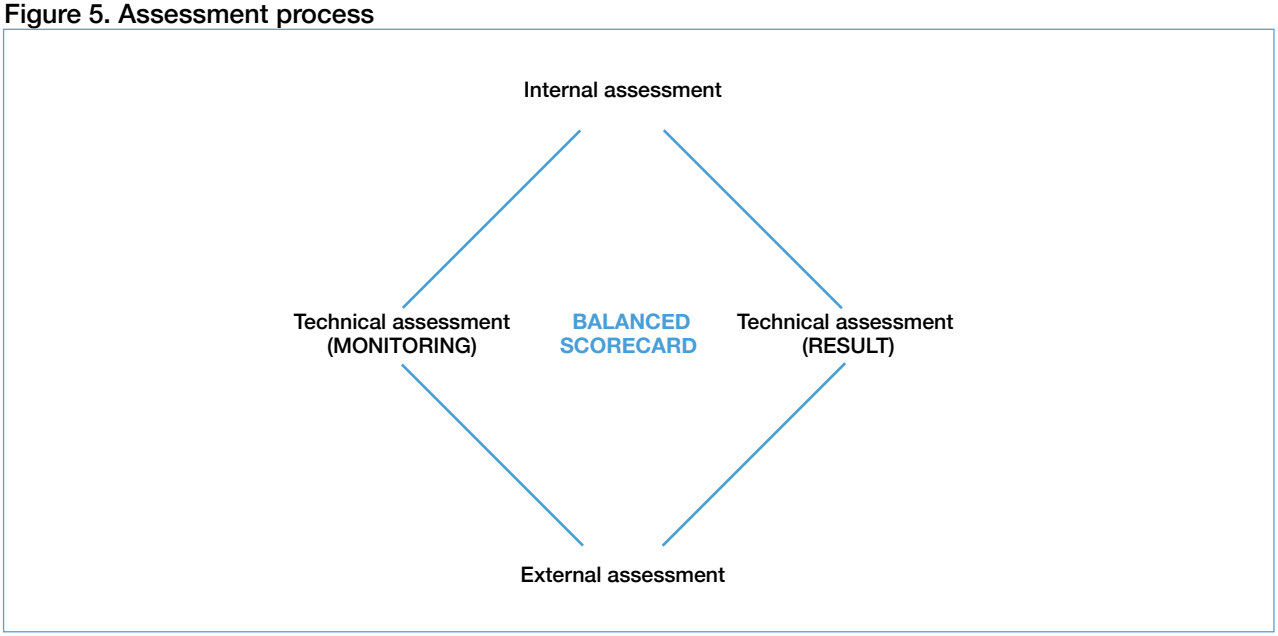
the result (ABILITY ACHIEVED). Questionnaires will be used and the deliberation procedure in focus groups will be applied.

The Basque VET Board is responsible for determining the participants in these processes..

- Eternal assessment with quantitative and qualitative indicators.

  This is about assessing the assessment and will be carried out by an international (mirror group) that aims to assess and make recommendations about the assessment strategy and its tools, about the panel of indicators, and about the partial and final results obtained.

Figure 5. Assessment process



Monitoring

The monitoring of the V Basque VET Plan is the responsibility of the Basque VET Board. The V Basque VETPlan must be understood as a framework for interaction, collaboration and learning that aims to develop the abilities of the people and organisations that form part of the Vocational Training ecosystem in the Basque Country and also to favor the dissemination and exchange of experiences that make it possible to transfer knowledge inwards and outwards. All this is aligned with the Europe 2020 Strategy that is based on boosting smart, sustainable and inclusive growth.

As a result, the monitoring of the V Basque VET Plan needs to consider various levels of activity::

- As far as management is concerned, the aim is to fulfil the planned aims by means of the effective management of human and material resources within the established deadline and budgeted costs.

- With regard to assessment it is vital to prepare periodic reports that make assessment a statistical and analytical tool that makes it possible to identify obstacles and opportunities during the implementation of the Plan.

- As for monitoring, it is necessary to design a follow-up monitor that ensures continuity in the production of data and its permanent updating, the monitoring and analysis of the information that is gathered, and transfer activity.

The systematisation of the management and assessment activities in the Plan through a follow-up monitor must give rise, at the very least, to the following deliverables:

- Annual Monitoring Reports on the degree of compliance with the Plan.

- Final report on the development and degree of compliance with the Plan.

- Intermediate Assessment Report.

- Final Assessment Report.

Monitoring indicators

V BASQUE VET PLAN		
STRATEGIC GUIDELINE 1 LEARNING IN THE CONTEXT 4.0		
Aim	**Course of action**	**Indicator 2019-2021**
Aim 1. Consolidating and extending the “High Performance Training Cycles” model VET in the Basque Country.	1.1. Integrating the different elements that make up the high performance cycles model for better development of students’ competences.	Nº of training cycles in the experimentation phase of the model.
	1.2. Reinforcing teacher training in Centres, by aiming to develop new abilities and attitudes needed to consolidate the change and transformation in VET.	Nº of teachers in experimentation phase of the model.
	1.3. Bringing management teams into line with the needs arising from the change in methodology.	Nº of training plans developed for management teams.
	1.4. Encouraging interaction between different agents in the system that influence the implementation of the change in methodology.	Nº of agents in the system that interact with each other to
	1.5. Guiding the process for introducing high performance cycles based on successful experiences and aiming to optimise and consolidate this change in methodology.	encourage the implementation of the change in methodology.
	1.6. Encouraging a variety of networks for collaboration between Centres and agents in the system that speed up and facilitate the spreading of the model.	Nº of diagnoses performed and detection of areas of improvement.
	1.7. Boosting the "assessment for evolution" model, advancing towards models that prioritise training assessment rather than graded assessment,	Nº of collaborative networks formed.

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Aim	Course of action	Indicator 2019-2021
	1.8. Adapting training spaces so they support and facilitate collaborative learning.	Nº of training cycles that have incorporated the development of values in the learning process.
	1.9. Encouraging a culture of entrepreneurship among teachers and students to change attitudes in order to favor the development of competences that are more in line with the reality of modern and future society.	Nº of Training Cycles that develop challenges in collaboration with companies.
Aim 2. Researching and experimenting in those areas that add value to learning processes.	**2.1. Incorporating values into the learning process.**	Nº of Training Cycles that have developed experiences to detect and develop talent.
	2.2. Encouraging the participation of businesses in learning processes	Nº of STEAM competences incorporated in training programmes.
	2.3. Stimulating individual and collective talent among VET students in the Basque Country.	Nº of new enabling tools for learning incorporated in the learning process.
	2.4. Incorporating and improving the STEAM philosophy for VET in the Basque Country.	Nº of STEAM competences incorporated in training.
	2.5. Incorporating new enabling tools in the learning process that enrich and favour students' personal development and their links to the reality of their surroundings.	Nº of new enabling tools for learning incorporated in the learning process.

STRATEGIC GUIDELINE 2 APPLIED INNOVATION		
Aim	**Course of action**	**Indicator 2019-2021**
Aim1. Researching and innovating in Industry 4.0 environments, passing on the knowledge acquired to the Basque VET value chain.	1.1. Developing areas of specialisation that cover the new productive scenario.	Nº of areas of specialisation.
	1.2. Developing innovation projects in Centres that cover current and future productive processes and allow the development of the necessary abilities in these	Nº of projects in Centres.
Aim 2. Developing High Performance 4.0 VET Centres.	2.1. Turning the workshops and laboratories in VET Centres into 4.0 workshops, by incorporating sensorisation, communications and managing different equipment.	Amount of investment or Nº of implementations.
	2.2. Appropriately managing information in Centres, by making use of this in a secure automated format for taking decisions.	Nº of Centres that incorporate an automated data management system and security systems for these.
Aim 3. Knowledge Transfer in VET.	3.1. 3.1. Sharing the capacities of Centres with businesses, especially SMEs, through strategic environments.	Nº of centres taking part, Nº of services provided for companies and hours devoted to these or billing.
	3.2. Ensuring the incorporation of the skills and knowledge acquired in the different services provided by Centres (formal training, training for workers and occupational training)	Impact of Centres as far as the Nº of training hours and Nº of people are concerned.
Aim 4. Providing a systematic response to technological needs through VET.	4.1. Guaranteeing that the knowledge produced in the various initiatives is passed on to the network of VET Centres.	Nº of transfer conferences held, materials produced.
	4.2. Promoting specialisation in Centres, so that they offer broad coverage	Nº of new areas of specialisation and technologies adopted.

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Aim	Course of action	Indicator 2019-2021
Aim 5. Updating and aligning technological priorities with the innovation strategy in the Basque Country.	5.1. Taking part, through the NODES, in those work groups that define innovation policies in the Basque Country. Incorporating the view point of VET and gathering the information required to anticipate needs in this context	Nº of active Hubs.
	5.2. Collaborating with key agents (trailblazing companies, international models, technology Centres, clusters, universities, among others), on projects that allow them to innovate, develop, train and transfer.	Percentage of the total Nº of projects in collaboration with other agents.

STRATEGIC GUIDELINE 3 COLLABORATIVE INTELLIGENCE AND TRANSFORMATIVE FLEXIBILITY		
Aim	**Course of action**	**Indicator 2019-2021**
Aim 1. Developing Collective and Collaborative Intelligence processes.	1.1. Designing and developing a project to generate knowledge to favor the VET system in the Basque Country, through the management of information and data using Big Data	Scope of the data typology used (students/ teachers/companies). Volume of data incorporated. Nº of "actionable" responses (decisions guided by Big Data analysis).
	1.2. Establishing an advanced system to manage the range of quality VET programmes offered in the Basque Country, by integrating all services, initiatives and positions.	Percentage of actions implemented in the Basque VET Marketing Plan. Percentage of aims achieved associated with the Basque VET Marketing Plan.
	1.3. Developing the capacity for scientific research in VET in the Basque Country	Nº of research projects in which VET forms part. Nº of teachers taking PhDs. Funds raised from funding programmes for research.
Aim 2. Generating shared knowledge in VET Centres.	2.1. Developing a VET Community of Practice by increasing	Nº of people taking part in the RRdI CoP. Degree of implementation of the Plan to boost the CoP RRdI. Nº of dissemination/popularisation actions carried out by the RRdI CoP.
	2.2. the number of teachers taking part and structuring it with training and business spheres.	Nº of people taking part in the IC CoP. Degree of implementation of the Plan to boost the IC CoP. Nº of dissemination/ popularisation actions carried out by the IC CoP.
	2.3. Designing a Community of Practice especially aimed at the people responsible for innovation in VET Centres	Nº of Centres represented in the Basque VET/TVET Observation Cop Degree of implementation of the plan to boost the Basque VET Observation CoP. Nº of dissemination/ popularisation actions carried out by the Basque VET Observation CoP.

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Aim	Course of action	Indicator 2019-2021
Aim 3. Developing the capacity for innovation and transformation.	3.1. Extending the implementation of Innovation and Competitive Intelligence Routines throughout the entire Network of VET Centres, guaranteeing the development of their capacity for.	Nº of Centres that have introduced Innovation Routines. Nº of Teacher directly involved in Routines.
	3.2. Developing a model to manage change for VET in the Basque Country, that also defines the role of the person who provides leadership in this model.	Nº of Centres that have introduced the role of Manager of Change. Nº of people trained in the Change Management Model.
	3.3. Performing an innovative culture diagnosis in VET Centres, by creating development plans depending on the results that are obtained	Nº of Centres where an Innovative Culture diagnosis has been performed. Nº of Centres with Innovative Culture Plans underway.
	3.4. Designing and implementing knowledge transfer projects, that focus on managing innovation (Routines and Competitive Intelligence) aimed at students and SMEs.	Nº of Centres that have implemented Competitive intelligence. Nº of Teachers who take part in the Competitive intelligence process.
	3.5. Taking advantage of the potential of Gamification to support the introduction of the management of innovation at all levels	Nº of Centres taking part in Gamification “campaigns”. Nº of teachers taking part in campaigns.
	3.6. Encouraging the advanced management of innovation projects based on agile methodologies (Scrum), aimed towards team development, active monitoring and value creation	Nº of training actions about Advanced Project Management. Nº of Centres that have incorporated “Agile” methodologies in their innovation projects management.
	3.7. Boosting the creation of Innovative Startups in the field ofVET, by setting up the Basque VET Startups Laboratory.	Nº of projects given advice in the Lab. Nº de startups set up in the Lab.
	3.8. Developing the Balanced Scorecard for VET in the Basque Country.	Nº of Centres that have and manage the Innovation Scorecard.

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Aim	Course of action	Indicator 2019-2021
	3.9. Designing and implementing the Applied Innovation Research Unit aimed at VET Services Cycles.	Nº of Centres taking part in training about “innovation in services”. Nº of pre-projects prepared on “innovation in services”. Nº of projects carried out on “innovation in services”.
	3.10. Developing an Advanced Training and Development Programme for management teams in VET Centres.	Nº of Directors and members of EEDD taking part in the Management Development Programme. Nº de hours of training given. Nº of hours of personalised support provided.
	3.11. Creating a Programme for Transformation 3.12. and Organisational Development, aimed at bodies dependent on the Vice-Ministry, and the Associations of VET Centres.	Nº of people from the bodies taking part in the transformation and organisational development programme. Nº of transformation and organisational development plans implemented.

STRATEGIC GUIDELINE 4 BIOSCIENCES AND SUSTAINABLE DEVELOPMENT		
Aim	**Course of action**	**Indicator 2019-2021**
Aim 1. Developing scientific research and innovation applied to vocational training in Sustainable Agro- food, & natural and marine environment.	1.1. Establishing strategic contexts and specialisation areas in the Bioeconomy and associated sectors, improving the efficiency and sustainability of sectors based on the use of biological resources.	Nº of centres that include the bio-economy as a discipline in the professional Families linked to sustainable agro-food, and the natural and marine environment.
	1.2. Revitalising actions between VET Centres and companies, to enhance the environmental sustainability of the primary sector by improving the complete cycle of the value chain.	Nº of centres that work in network nodes that specialise in the Bio-sciences, Health and Environmental Sustainability.
	1.3. Developing projects to increase the creation of businesses and expand markets related to the Bioeconomy.	Nº of businesses created related to the sphere of Sustainable Development and the Bio-sciences.
	1.4. Increasing the potential of the Bioeconomy and the Circular Economy in VET in the Basque Country, by encouraging their presence and demand in new markets.	Nº of teachers and students qualified in subjects related to Sustainable development and the Bio-sciences.
	1.5. Encouraging the creation of employment and entrepreneurship, based on green jobs and sustainable economic growth.	Nº of Jobs and business ventures created by the Green economy.
	1.6. Boosting the increase in the number of women employed in the primary sector and in biotechnology services.	Nº of female employees.
	1.7. Promoting applied innovation projects led by VET Centres.	Nº applied innovation projects in Vocational Training centres linked to the Bio-economy and the Circular Economy.
	1.8. Launching Bio-economy projects through collaboration between VET Centres and businesses.	Nº of vocational training centres that develop Bio-economy projects.
	1.9. Creating the first Applied Bioeconomy network in VET.	Nº of centres that take part in collaborative networks together with SMEs in spheres of the Bio-economy.

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Aim	Course of action	Indicator 2019-2021
Aim 2. Developing scientific research and applied innovation in VET in Smart Buildings and Sustainable Construction.	2.1. Developing the range of specialised training adapted to meet the new employability requirements in Sustainable Construction and Smart Buildings.	Nº of Centres that work in Sustainable Construction and Smart Building networks.
	2.2. Constructing a collaborative space between VET Centres and research/innovation companies in Smart Buildings and Sustainable Construction.	Nº of Centres that take part in collaborative networks together with SMEs in the field of Sustainable Construction and Smart Buildings.
	2.3. Disseminating and boosting knowledge about subjects related to the construction of Smart, sustainable buildings.	Nº of training cycles that incorporate innovative methodologies related to the construction of Smart Sustainable Buildings.
	2.4. Boosting the study of the design and construction of smart buildings and cities.	Nº of research lines devoted to the construction of Smart buildings and cities.
	2.5. Generating collaborative networks between VET Centres, the University and the construction cluster in order to define new professional profiles.	Nº of professional profiles defined in the field of Sustainable Construction.
	2.6. Promoting urban regeneration and restoration by addressing criteria based on sustainability, smart buildings and the improvement in people's health.	Sustainability criteria adopted in VET with regard to sustainable construction.
	2.7. Reinforcing teacher training aimed at developing new abilities and methods	Nº of teachers qualified in subjects related to sustainable construction.
	2.8. for learning in design, construction and the use of sustainable smart materials.	Nº of training cycles.
	2.9. Developing applied innovation projects in VET Centres that promote the use of more sustainable processes and materials, to the	Nº of applied innovation projects in VET Centres related to sustainable construction.
	2.10. benefit of people and the environment.	Smart-Green Buildings-Sustainability Platform set up.

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Aim	Course of action	Indicator 2019-2021
Aim 3. Developing scientific research and innovation applied to VET in Health and Biosciences.	3.1. Encouraging the development of Basque industry based on Biotechnology, through VET Centres, by offering competences adapted to meet the needs detected in the field of Biosciences and Health.	Nº of Centres that include Biotechnology as a discipline in the Professional Families linked to the Bio-sciences and Health.
	3.2. Establishing specialisation areas in emerging sectors in Health, Environmental Sustainability and the Biosciences.	Nº of training cycles that specialise in Health, Environmental Sustainability and the Bio-sciences.
	3.3. 3.3. Adapting the VET Innovation system strategy and aligning it with the trinomial of Health, Environmental Sustainability and Biosciences, gearing it towards solving business challenges in this area.	VET strategy defined for Health, Environmental Sustainability and Bio-sciences.
	3.4. Setting up a multidisciplinary forum to exchange knowledge and experiences, among all professional families, in collaboration with businesses, technology centres, universities and the agents in the Basque Network of Science, Technology and Innovation.	1 multi-disciplinary forum set up.
	3.5. Placing VET Centres with professional families linked to the healthcare sphere with capacities for innovation and technologies in the Biosciences and Health ecosystem.	Nº of Centres that integrate Professional Families linked to the Bio-sciences and Health.
	3.6. Encouraging and boosting through VET Centres, the creation of Bio-companies and the development of new markets through entrepreneurship programmes.	Nº of bio-companies set up.

STRATEGIC GUIDELINE 5 INTERNATIONALISATION		
Aim	**Course of action**	**Indicator 2019-2021**
Aim 1. Boosting the Internationalisation System for the Combined Model of Vocational Training.	1.1. Developing general training in internationalisation and awareness aimed at VET centres	4 annual training programmes. Reaching 100% of centres.
	1.2. Providing advice, collaboration and support services for centres with no experience in this field	Nº of centres identified, preparing the programme and carrying out tasks.
	1.3. Transfering the results of strategic projects.	Setting up 1 company that makes use of results.
	1.4. Leading the management of international networks.	Being the European benchmark for UNESCO-UNEVOC. Entering two international networks: EURASHE higher education network and 1 international entrepreneurship network.
	1.5. Establishing mobility projects for teachers.	Mobility project for 100 teachers/ year that work in innovation projects with TKNIKA.
	1.6. Establishing mobility projects for students.	Mobility projects for 300 Erasmus+ students/year and 60 global Training students/year.
	1.7. Designing and carrying out projects financed by the EU.	At least 6 projects/year.
	1.8. Attending courses, conferences and congresses.	Acting as a speaker at 3 conferences/year at least.
	1.9. Formalising agreements with different institutions.	80% of the agreements signed result in a line of work.
Aim 2. International Vocational Training Campus in the Basque Country.	2.1. Designing the International Campus and its legal structure.	Campus design carried out.
	2.2. Formulating and designing the training to be given on the Campus in collaboration with TKNIKA.	Campus Training Portfolio.
	2.3. Analysing the resources of centres to provide training.	Map of centres with resources and possibilities.
	2.4. Explaining the International Campus Project to institutions.	Nº of meetings with agents.
	2.5. Explaining the Project to businesses.	Nº of meetings with agents.
	2.6. Taking part in conferences, congresses and meetings.	Taking part as speakers at two conferences/year at least.
	2.7. Carrying out research about different existing sources of funding.	Creating 1 map of possible means of funding.

STRATEGIC GUIDELINE 6 CONTINUOUS IMPROVEMENT		
Aim	**Course of action**	**Indicator 2019-2021**
Aim 1. Research and applied innovation for the development of Social Responsibility and values.	1.1. Identifying the impact of including social responsibility requirements in VET centre management systems.	Nº of centres that have integrated the requirements in their management system.
	1.2. Developing advanced management methods to facilitate compliance with social responsibility requirements.	Nº of centres that have integrated the requirements in their management system.
	1.3. Including social responsibility requirements in VET centre management processes	Nº of centres that have integrated the requirements in their management system.
	1.4. Carrying out actions to favor the spread of social responsibility methodology.	Nº of centres that have taken part in training actions.
	1.5. Boosting networks of virtual and on-site centres in order to transfer knowledge and share best social responsibility practices.	Nº of centres that have taken part in transfer networks.
	1.6. Designing an advisory service about social responsibility for businesses.	Nº of companies that have been provided with the new service.
Aim 2. Research and applied innovation to optimise the impact of the transition from one generation to the next	2.1. Leading the plan to optimise the generational transition in management teams in VET centres.	Nº of centres in which they have facilitated the introduction of the generational transition plan.
	2.2. Designing appropriate action plans to meet specific needs in centres, that ensure that the necessary transfer of knowledge takes place	Nº of centres in which they have facilitated the introduction of the generational transition plan.
	2.3. Training the new management teams so they can acquire the key competences associated with their new posts and functions.	Nº of centres that have taken part in training actions.
Aim 3. Research and applied innovation for assessing the Vocational Training system in the Basque Country.	3.1. Defining the elements in the assessment model for the system. Assessing Vocational training services in the Basque Country	Nº of assessed services.
	3.2. Using advanced methods to improve the system.	Nº of assessed services.

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Aim	Course of action	Indicator 2019-2021
	3.3. Managing and sharing best national and international practices.	Nº of shared best practices.
	3.4. Management and dissemination of good practices nationally and abroad.	Nº of good practices shared.
Aim 4. Research and applied innovation to improve the effectiveness and efficiency of processes in vocational training centres in the Basque Country, particularly of the process of training.	4.1. Collaborating with the teams implementing high performance cycles in the use of the improvement tools required to solve problems that appear during the implementation process.	Nº of centres that have introduced Lean tools.
	4.2. Designing efficient methods to meet the needs of centres.	Nº of centres that have introduced Lean tools
	4.3. Organising monographic workshops to facilitate the introduction of different Lean tools.	Nº of centres that have introduced Lean tools
	4.4. Taking part in international projects to introduce Lean culture in education..	Nº of projects that centres have taken part in.

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STRATEGIC GUIDELINE 7 COMPLEXITY MANAGEMENT		
Aim	**Course of action**	**Indicator 2019-2021**
Aim 1. Establishing an information and knowledge management model in VET Centres, based on VET Big Data.	1.1. Establishing an information and knowledge management model adapted to VET, based on three aspects: collecting data, exchanging information and knowledge creation, and developing forward planning and collaborative monitoring for this .	A management model for information and knowledge established.
	1.2. Providing support through management for the competitive intelligence platform, in order to collect relevant information and send it to people interested in a specific subject.	Competitive intelligence Platform implemented.
	1.3. Encouraging the design and launch of a Big Data set for vocational training.	Set of Big Data for vocational training developed.
Aim 2. Introducing a change management model adapted to VET Centres.	2.1. Implementing a Change Management model that allows Centres to develop the capacity for adaptation, reaction and anticipation required to meet the different needs that emerge in their local area.	Change Management Model introduced.
	2.2. Encouraging the concept of the change strategist in Centres as the person in	Concept of the change strategist created.
	2.3. charge of passing on the aims and needs envisaged in the future to the management team.	Nº of collaborative teams created.

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Aim	Course of action	Indicator 2019-2021
Aim 3. Setting up an innovation management model adapted to VET Centres.	3.1. Managing the field of applied innovation, providing the coverage required for incremental and disruptive innovation in VET Centres.	Coverage for incremental and disruptive innovation through applied innovation.
	3.2. Providing support to manage the promotion of innovation culture, and work with the different innovation routines established in Centres.	Nº of activities that boost innovation culture.
Aim 4. Establishing a trust management model in VETCentres.	4.1. Encouraging through management the idea that Centres are people-based projects, and are a common project for all the people that form part of them, understanding that any advance and progress made by the Centre is a success shared by everyone.	Nº of people-based projects developed.
	4.2. Setting up teams to assess satisfaction in Centres, who gather information from teachers about their degree of wellbeing and motivation and promote the measures required to address the improvements that emerge in accordance with teachers' perceptions.	Nº of teams to assess satisfaction created.
Aim 5. Developing the training required for management teams and teachers.	5.1. Training management teams and teachers in a Complexity management model so that they can adapt and work in this with the required motivation without any problems, and adapt the general model to the peculiarities and needs in each Centre to achieve this.	Nº of training courses given.

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Aim	Course of action	Indicator 2019-2021
Aim 6. Setting up collaborative networks to develop complexity management in VET Centres.	6.1. Creating collaborative networks among Centres to support the development of the different management fields that have been established.	Nº of collaborative networks created.
	6.2. Identifying and noting the best practices in each Centre in change management and knowledge management.	Nº of best practices identified.
	6.3. Detecting the expert individuals and/or groups that are behind the best practices.	Nº de experts and/or groups of experts detected.
	6.4. Creating a directory of best practices and of experts and making this available to the network.	A directory of best practices and experts created.
	6.5. Establishing support and advisory programmes for VET Centres, and where appropriate, support by Centres for businesses, mainly SMEs.	Nº of guidance programmes established.
	6.6. Sharing the knowledge acquired among the centres that make up the VET Centre network, and where appropriate, between Centres and businesses, mainly SMEs.	Nº of activities or methods developed to share knowledge between centres.
	6.7. Establishing alliances and joint projects with external agents regarding change management and knowledge management.	Nº of alliances and joint projects with external agents.
Aim 7. Promoting equality between women and men in VET Centres.	7.1. Preparing materials to implement equality policies in VET Centres.	Nº of materials prepared.
	7.2. Promoting the preparation of diagnoses and plans for equality between men and women.	Nº of diagnoses and plans carried out.
	7.3. Setting up a network to exchange experiences among VET Centres to develop equality policies between men and women.	Network set up to exchange experiences among VET centres.
	7.4. Developing alliances between VET Centres and businesses to increase the hiring of women in strategic sectors.	Nº of alliances developed between VET centres and companies.

STRATEGIC GUIDELINE 8 VET CENTRES: TOWARDS SMART ORGANISATIONS		
Aim	**Course of action**	**Indicator 2019-2021**
Aim 1. A new way of organising VET Centres: towards Smart Organisations.	1.1. Designing a structure for VET Centres set out for life-long learning and for solving complex challenges.	New Centre structure designed.
	1.2. Using new management methods that facilitate constant interaction among all the people that form part of VET Centres and therefore encourage collective learning.	Nº of new management methods used.
	1.3. Developing a support programme for VET Centres to facilitate the transition in these towards the concept of Smart Organisations.	1 Support programme developed.
	1.4. Making organisational processes more flexible by facilitating the adoption of new procedures and responses to meet the latest current challenges.	Nº of new procedure adopted.
	1.5. Introducing new aims that lead Centres to ensure that their actions are more efficient in terms of better learning results.	Nº of aims set out.
Aim 2. Training for management teams in VET Centres.	**2.1. 2.1. Reinforcing management leadership by encouraging Centres and their teams to develop all their abilities.**	Nº of Centres in which management leadership has been reinforced.
	2.2. Training in Talentship.	Nº of Talentship training sessions.
	2.3. Create collaborative teams to work in a coordinated fashion on variables comprising the Centre's needs and change strategy.	Nº of collaborative teams created.
Aim 3. Internships for teachers in workplaces.	3.1. Carrying out micro-internships of between 1 and 20 hours in workplaces.	Nº of internships carried out.
	3.2. Facilitating internships in workplaces lasting from 20 to 150 hours.	Nº of internships carried out.

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Aim	Course of action	Indicator 2019-2021
	3.3. Carrying out internships in foreign workplaces lasting from 2 days to up to 3 months.	Nº of internships carried out.
	3.4. Giving training to new management teams to acquire the key competences associated with their new posts and functions.	Nº of training sessions for new management teams.
Aim 4. Training aimed at teachers in charge of boosting change management in VET Centres.	4.1. Creating training processes in soft skills.	Nº of training courses in soft skills.
Aim 5. Training to improve competences in developing new learning methodologies in the classroom.	5.1. Creating processes that make it possible to progress, by using active learning methodologies, in acquiring new capacities, abilities and skills, needed for the present and the future.	Nº of training courses in hard skills.
Aim 6. Training in the use of current and future advanced technologies aimed at improving competences for working in complex environments.	6.1. Developing training processes in advanced technologies.	Nº of training courses in advanced technologies.
Aim 7. Training in language reinforcement.		Nº of training courses in language skills.
Aim 8. Training in Cyber-security and Digital Imaging for digital, connected VET Centres.	8.1. Training facilitators at the ULHI/IVED. (Basque Distance Learning Institute).	Nº of training days for ULHI/IVED facilitators
	8.2. Training facilitators and computer maintenance technicians.	Nº of training days for people in charge of computer maintenance.
	8.3. Training other facilitators.	Nº of training days for facilitators in general.
Aim 9. Smart use of learning spaces to stimulate critical thinking, creativity and independence.	9.1. Designing and transforming learning spaces into stimulating, flexible and functional environments.	Nº of learning spaces transformed.
	9.2. Setting up workshops-laboratories-classrooms with practical experiences.	Nº of classrooms-laboratories developed.

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Aim	Course of action	Indicator 2019-2021
	9.3. Making a break with the use of traditional furniture by introducing sensory technology and experiences that encourage creativity and team work.	Nº of classrooms with furniture changed.
	9.4. Creating spaces that stimulate the imagination and reflexive thinking.	Nº of spaces created to develop the imagination and reflective thinking.
	9.5. Encouraging flexible adapted working hours	Nº of Centres that implement flexible hours.

STRATEGIC GUIDELINE 9 SPECIALISED ORGANIC STRUCTURES		
Aim	**Course of action**	**Indicator 2019-2021**
Basque Institute of Future Apprenticeships **Aim 1. Developing an Observatory for Future Apprenticeships.**	1.1. Identifying and analysing trends through an observatory for future apprenticeships.	Number of trends identified by the observatory.
	1.2. Defining new professional profiles linked to future jobs, in collaboration with companies, VET Centres and other organisations and institutions.	Nº of new professional profiles defined.
	1.3. Identifying the new professional competences that will form part of new profiles linked to future jobs.	Nº of new professional competences identified.
Aim 2. Designing the training required to allow the acquisition of foresight to anticipate the needs of new professionals.	2.1. Establishing the future training needs to acquire these competences, by designing the curriculums required for this.	Nº of curriculums adapted.
	2.2. Preparing guides and manuals for teachers.	Nº of guides and manuals developed for teachers.
Aim 3. Integrating and taking on the functions of the Basque Knowledge Institute.	3.1. Developing the work that the Basque Knowledge Institute has been carrying out on VET Qualifications and Specialisation Programmes.	Nº of actions continued and implemented.
	3.2. Expanding and keeping the VET Integrated Modular Catalogue up to date.	VET Integrated Modular Catalogue expanded and updated.
Basque Institute of Talent in VET **Aim 1. Establishing a map of talent in VET.**	1.1. Structuring the theory of talent in vocational training.	Talent theory structured.
	1.2. Defining the new context of talent in VET.	New context of talent in vocational training defined.
	1.3. Supporting the progress and impact from the concept of competence to the concept of talent.	Nº of activities developed to support the concept of talent.
	1.4. Generating talent in VET Centres.	Nº of actions aimed at producing talent in VET Centres.
	1.5. Encouraging the task of implementing generative and executive intelligence.	Nº of actions encouraged.

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Aim	Course of action	Indicator 2019-2021
Aim 2. Developing collaborative learning projects, with new methodological models that anticipate the emerging needs that the future raises.	2.1. Investigating new learning methodologies that meet the new needs that the progress of the fourth industrial revolution requires.	Nº of activities carried out.
Aim 3. Boosting individual talent by encouraging the development of critical, constructive and creative thinking, and the development of emotional, generative and executive intelligence.	3.1. Working on different techniques that develop creative and constructive thinking.	Nº of activities carried out.
	3.2. Working on different techniques that develop emotional, generative and executive intelligence.	Nº of activities carried out.
Aim 4. Fostering creativity as a fundamental aspect for the development of talent.	4.1. Boosting different actions aimed at acquiring and developing creative competences.	Nº of actions carried out.
	4.2. Establishing specific actions regarding creativity in different learning environments.	Nº of actions carried out.
Basque Centre of Research and Applied Innovation in VET, TKNIKA **Aim 1. Transforming the Basque Centre of Research and Applied Innovation in VET, TKNIKA.**	1.1. Encouraging technological innovation processes in vocational training in the Basque Autonomous Community.	Nº of technological innovation processes boosted.
	1.2. Collaborating with centres that provide VET in the Basque Autonomous Community, to develop the information society and ICTs, and sharing cooperative learning relationships with the most advanced countries.	Nº of centres that it collaborates with.

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	1.3. Developing applied innovation projects in strategic environments, prioritising collaborating with SMEs in manufacturing products and in production processes.	Nº of projects developed.
	1.4. Managing training in subjects related to innovations in technology, methodology and management.	Nº of management actions.
	1.5. Promoting innovation processes in managing VET Centres in the Basque Autonomous Community.	Nº of management innovation processes promoted.
	1.6. Setting up and coordinating applied innovation projects between VET Centres and SMEs.	Nº of projects set up and coordinated.
	1.7. Encouraging 3D virtual VET learning environments.	Nº of 3D virtual VET environments.
	1.8. Coordinating projects to create businesses by VET Centres and collaborating with other organisations involved in this.	Nº of projects coordinated.
	1.9. Offering and giving training in technological innovation and in new technologies applied to production and services to vocational training teachers.	Nº of training activities for teachers.
	1.10. Tackling different projects in the Autonomous Basque Country, in Spain and abroad.	Nº of projects developed in the Basque Autonomous Community, in Spain and abroad.

Impact indicators

These are general and affect all the strategic guidelines contained in this Plan.

V Basque Vocational Training Plan	
Type	**Course of action 2018-2021**
T1.Structural	School drop-out rate. Percentage of the population (30-34) that has completed tertiary education. Percentage of women that have completed vocatio0nal training studies. Percentage of adults taking part in the life-long learning process. Youth unemployment rate (15-29 years of age) (PRA) Youth unemployment rate (15-29 years of age) (EUROSTAT)
T2. Sectorial	Gross graduation rate in advanced VET. Percentage of population between 25-65 years of age that has completed tertiary education. Percentage of people working within 3 years of completing their advanced VET studies. Youth employment rate (15-29 years of age). (PRA) Youth employment rate (15-29 years of age).(EUROSTAT) Nº of young people who have their first experience of work in the 2017-2020 period. Nº of people that receive official vocational training in VET Centres. Percentage de absorption in the labour market of women trained in VET.
T3. Deployment	Percentage of students that repeat a year in intermediate VET. Percentage of students that repeat a year in Advanced VET. Drop-out rate in the first year of VET in intermediate training cycles. Drop-out rate in the first year of VET in advanced training cycles. Nº of SMEs that work in applied innovation in collaboration with VET Centres. Nº of students that are trained in entrepreneurial culture. Nº of companies that have been set up through VET Centres. Nº of people that are recycled and have gained new qualifications through VET in VET Centres. Nº of people receiving VET on courses aimed at the unemployed. Nº of applied innovation projects developed in VET Centres. Nº of promotional events aimed at society to improve its awareness of VET. Nº of promotional events aimed at professionals to improve their awareness of VET. Nº of promotional events aimed at companies to improve their awareness of VET. Percentage of VET students who study in Basque. Nº of actions aimed at encouraging access for women to VET studies.

BUDGET FOR THE PLAN

ECONOMIC AND BUDGETARY ASPECTS			
	TOTALS 2019	TOTALS 2020	TOTALS 2021
1 – LEARNING IN THE 4.0 CONTEXT	4.813.288,33 €	4.957.686,98 €	5.106.417,59 €
2 – INNOVATION, TECHNOLOGY AND SMART SYSTEMS	10.031.527,63 €	10.332.473,46 €	10.642.447,66 €
3 – COLLABORATIVE INTELLIGENCE AND TRANSFORMATIVE FLEXIBILITY	1.093.454,29 €	1.126.257,92 €	1.160.045,66 €
4 – BIO-SCIENCE AND SUSTAINABLE DEVELOPMENT	1.375.923,32 €	1.417.201,02 €	1.459.717,05 €
5 – INTERNATIONALISATION OF VET IN THE BASQUE COUNTRY	2.849.208,50 €	2.934.684,76 €	3.022.725,30 €
6 – CONTINUOUS IMPROVEMENT IN THE VET SYSTEM IN THE BASQUE COUNTRY	6.187.544,99 €	6.373.171,34 €	6.564.366,48 €
7 – COMPLEXITY MANAGEMENT	1.180.793,26 €	1.216.217,06 €	1.252.703,57 €
8 – VET CENTRES: TOWARDS SMART ORGANISATION	18.447.590,68 €	18.701.018,40 €	18.962.048,95 €
9 – SPECIALISED ORGANIC STRUCTURES	3.166.869,33 €	4.110.525,41	4.233.841,17 €
TOTALS	49.146.200,33 €	51.169.236,34 €	52.404.313,43 €

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