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## Erasmus+ KA2 BEACON Project

2021-1-RO01-KA220-VET-000034746

**Be A Competence Now. Beacons for Incidental Learning**

### The General Context & the Vision of BEACON Project

The pace of technological & digital change is having a deep impact on the job market, therefore it is no longer enough for secondary VET systems to equip learners with technical and professional skills&knowledge. The digital transformation of workplaces requires new generations to develop interdisciplinary skills related to:

- new digital technologies
- transversal skills, such as: research, analysis & interpretation of data; teamwork & communication; problem solving &critical thinking.

A further factor of complexity emerges from the increasing urge that EU industry receives from the sustainable production policies, as described by the UN Agenda 2030 Goals and by the European Green Deal. As the VET sector is the main source for the recruitment of the future workforce, there's an urgent need to train green skills in VET as well, so that VET providers can support & pair the transition towards a greener industrial & manufacturing process.

BEACON project addresses such challenges by promoting work-based, digital & green innovation in the curricula of VET systems, which more than other education systems train professionals to be immediately integrated into the labour market.

### The BEACON Project Methodology

The project envisages the experimentation of new training programs that enhance:

- work-based learning, exploiting learning environments that reproduce the work processes
- Incidental Learning, according to the informal learning model (Marsick-Watkins,1990) as well as to the problem-based & context-based learning approaches, which address the dynamic and everyday problems of the workplace
- new digital technologies, using Beacon BLE technology as low-cost, low power & low maintenance HW devices integrated with a digital platform, a content management system (CMS) hosted on a server, and a smartphone/or tablet app to be downloaded for free by students & teachers, triggering Incidental Learning Paths.
- simulation of green production & manufacturing processes in the learning environment, helping VET learners prepare for that sustainability mindset that's needed for the EU economic growth & a smooth transition to the job market

WBL is a powerful and flexible learning methodology that attains quite well to the VET system:

- WBL means acquisition of knowledge & skills through action in a vocational or business context
- WBL can take place in a company, or within a school classroom, targeting vocational or job-related learning meeting the needs of EU industry
- WBL involves a variety of actors, from schools & training centres to managers and technicians in the workplace.



## General Objectives of BEACON Project

The project aims at supporting VET systems in the development of innovative Incidental Learning programs thanks to Beacon technology.

According to the WBL approach, the learning environment will be the work context, i.e. an area of activity with processes, technologies, products & organizational methods, which can be simulated (e.g. laboratories in VET schools), or real workplaces (companies).

The training programs envisage that the students, inside a workplace specifically equipped with Beacon hardware, face the solution of critical incidents, suitably prepared, occurring to them unexpectedly. Incidental Learning requires students to tackle problematic situations demanding the activation of critical thinking skills to find a solution.

The project envisages the experimentation of innovative training programs based on Incidental Learning in VET supported by the BEACON (Bluetooth Low Energy) technology, able to combine digital technologies & work-based learning methodology, aimed at achieving the following objectives:

- 1) promoting WBL in VET through the implementation of situated learning environments simulating the actual workplace of industrial sectors relevant for the national economy of each country involved
- 2) developing in EQF3-EQF4 secondary VET learners (digital natives), crucial skills in high demand by the current labour market, characterized by Digital Transformation and by recruitment policies looking for both digital and transversal skills, which relate to higher order skills in the digital age (research, analysis and interpretation of information) and to skills enhancing the entry into the job market (teamwork, communication, problem solving) – as the need for transversal skills, critical thinking & creative problem solving is also highlighted by the 2020 EU Skills Agenda, 2.5 “Skills to accompany the green & digital transitions in jobs”.
- 3) enabling the VET sector to align to the Green Driver of Innovation, supporting EU business & manufacturing companies in their transition towards carbon neutrality by 2050, through low-energy & emission-free production models & circular economy, thanks to workplace Beacon-based simulation of sustainable production models – as promoted by the 2020 EU Green Deal, setting sustainability goals for all manufacturing sectors, with particular stress onto the energy-intensive ones (textile, electronics, building, mechanics & plastics), in line with the Sustainable Development Goals of UN Agenda 2030.

## Results

The Project will develop:

-Result 1. Development of the full Beacon Digital Integrated System, consisting of:

- a. Beacon HW (around five Beacons to be physically installed in school labs or in the training workplace)
- b. a digital platform for storage & transmission of sector-specific learning contents (CMS – Content Management System)
- c. an application for mobile devices (smartphones/tablets/pads) able to receive push notifications from nearby Beacons, downloading multimedia information related to the work-based, context-based Incidental Learning Path

PR1 will also design the Incidental Learning Cycle, meant as a training program triggered by an unpredictable event/problem (artificially caused for learning purposes) requiring learners to face different Beacon-guided phases: 1) troubleshooting 2) analysis of the possible causes and search for clues 2) problem solving & testing of possible solutions; 3) validating or looking for alternative solutions 4) discussing the outcomes

-Results 2-3-4-5



Beacon-triggered, context-based & location-based Incidental Learning Programs. Each one will focus on sector & country specific Industrial Sectors, taking place in the school labs, training facilities or company's workplace. Training activities of each PR will start from the Beacon signals triggering the Incidental Learning Cycle, and will focus on how make more GREEN & DIGITAL any aspect related to PRODUCT / PROCESS / ORGANIZATION.

## The Partnership

The BEACON partnership is led by [LIIS – Liceul Teoretic de Informatica “Grigore Moisil”](#) from IASI, Romania, a secondary school highly specialized in Information Technology & Computing.

From the methodological point of view, the partnership is assisted by [Cisita Parma scarl](#), Italy, a clerical and managerial training centre equipped with learning specialists and strong connections with the job market, who will take care to design and evaluate the learning process.

From the technological side, [New Tie](#) company from Porto, Portugal, specialized in technological transfer to education, will take care of designing and implementing the Beacon Digital Integrated System, consisting of the learning platform and the students' app.

Schools and company will work in pair, according to the following scheme:

IT Sector, Romania: Coordinator LIIS + IT company [LUDOR](#) Engineering from IASI

FOOD Sector, Italy: Agroindustrial School [Galilei-Bocchialini](#) and [Food Farm](#) Company, from Parma

Clothing & Fashion Sector, Portugal: textile school [Árvore](#) and [CITEVE](#) Textile 4.0 technology centre, from Porto

Mechanical Sector, Spain: mechanical school [CPIFP](#) and [AITIIP](#) research& prototyping centre, from Zaragoza

BEACON project will boost the capacity of the whole partnership, especially of VET and sector-specific industrial sector, to attain goals set by EU Development Plan 2021-2027 with particular reference to:

- WBL training approach, requiring learners to get familiar with the workplace processes, organizational logic & everyday problem solving.
- Digital Skills integrated with the work-based learning environment
- Green Skills integrated with the work-based learning environment

The main **target groups** impacted and benefitting from the project's results will be:

- Learners, being able to gain high-demand skills relevant for the job market;
- VET Trainers & Teachers, being able to upgrade their professional skills gaining up-to-date skills & teaching/learning methodologies;
- VET systems, which will be able to better match the job market demand offering more up-to-date training programs;
- Business & Manufacturing companies from key EU industrial sectors, who will hire well-prepared workforce able to drive the transition to a more digital & sustainable production model.