Smart qualification.
Smart jobs.
Smart buildings.

SHVET

The S-HVET project

www.smart-hvet.eu

The joint qualification of the Expert in Building Automation

Venice, 18 February 2020

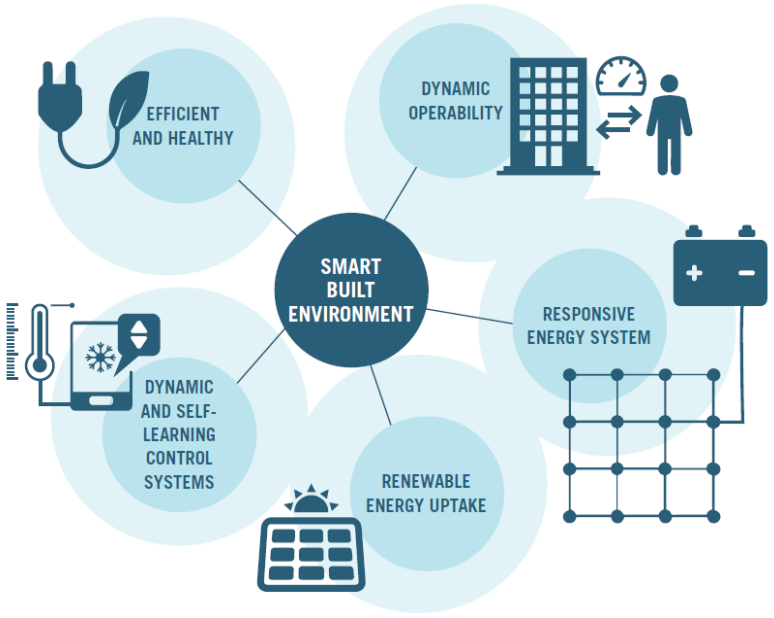
Ecipa s.c.a.r.l. formazione professionale ed imprenditoriale

Co-funded by the Erasmus+ Programme of the European Union

Goals of the project

- Contribute to the development of a high qualified professional free to move in Croatia, Slovenia and Italy
- Enhance employment opportunities
- Mind the competences GAP in SMEs active in the building sector
- Design a JOINT QUALIFICATION of Expert in Building Automation as an answer to the market needs, adopting a work based learning (WBL) approach and mobilities of students and professionals

Domains



ELECTRICAL INSTALLATIONS (design, wiring/installations, testing, maintenance) on household/building level, meaning low voltage electricity and/or domestic/building lightning.

COOLING AND HEATING (design, wiring/installations, testing, and maintenance) for either households or buildings (in case small work halls).

The focus was not limited to electric heating/cooling only (in the context of building automation and future trends this is a preferred option), but includes highly efficient and/or renewable energy installations (solar, biomass, high efficient gas boilers...). To capture different needs and competences the interest is on both central HVAC systems (building level) and decentralized, local HVAC systems (zone/floor level).

DEVICE/EQUIPMENT AUTOMATION AND SIGNALLING (installation and maintenance of meters, sensors, calorimeters, alarms, actuators, cameras/security etc.),

RENEWABLE ENERGY SOURCES such as integrated PV, solar heating, heating storage, batteries (design, wiring/installations, testing, maintenance), especially in the context of future market needs.

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Why EQF level 5

The new qualification profile will provide TECHNICAL ADVANCED COMPETENCES in building automation and management skills

The LEVEL 5 of the EQF (European Qualification Framework) is a BRIDGE BETWEEN EDUCATION AND WORK

The level 5 of the EQF is considered relevant by the entrepreneurs since IT FORESEES WORK BASED LEARNING (WBL) AND SPECIALISATION also to whom holding same qualifications or superior

Partnership of the project

CROATIA
Obrtničko učilište – ustanova za obrazovanje odraslih- Zagreb

CROATIA
Sveučilište u Zagrebu, Fakultet elektrotehnike i računalstva Zagreb

ITALY
Ecipa, training agency of CNA
Venezia Marghera (VE)

ITALY
Centoform, member of ITS TEC Foundation
Cento (FE)

SLOVENIA
Regionalna obrtničko-poduzetnička komora Krško - Krško

SLOVENIA
Školski centar Novo Mesto Novo mesto

SLOVENIA
Institut Republike Slovenije za strukovno obrazovanje Ljubljana

ASSOCIATED PARTNERS

- CROATIA
  Agency for Vocational Education and Training and Adult Education
- ITALY
  Regione Emilia – Romagna
  Istituto Tecnico Superiore - Territorio Energia Costruire

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Main steps of the project

- Needs assessment questionnaires for entrepreneurs

QUANTITATIVE ANALYSIS

MARKET STAKEHOLDER INVOLVEMENT

- Involvement of entrepreneurs in Focus groups

- Analysis of the Building automation and qualification context

QUALITATIVE ANALYSIS

VET STAKEHOLDER INVOLVEMENT

- Expert group meetings

- The Expert in Building Automation

THE JOINT CURRICULUM

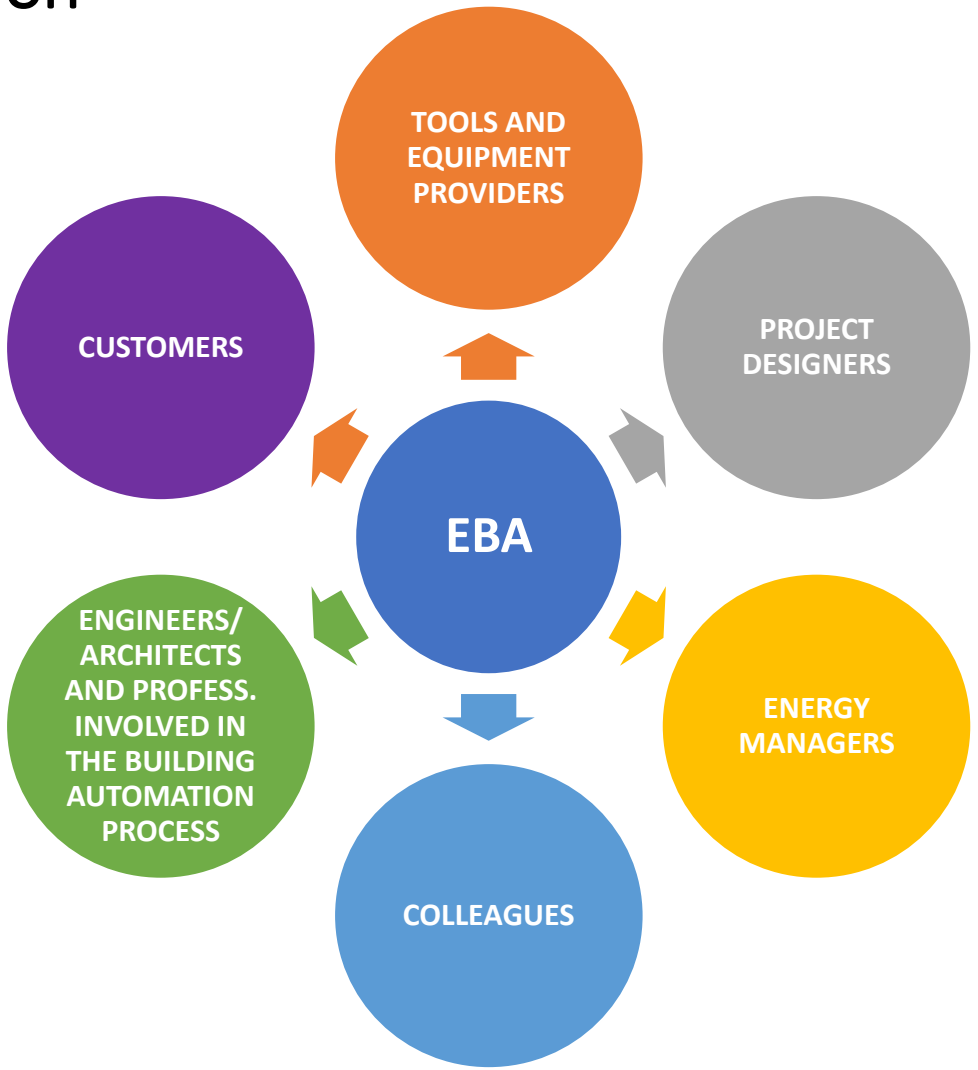
SHVET SMARTAPP NETWORK

- An apprenticeship network for training and mobility issues

The Expert in Building Automation

AN EBA CONNECTS DIFFERENT KIND OF ELECTRICAL, ELECTRONIC AND MACHINERY EQUIPMENT INTO A COORDINATED SYSTEM, WHICH SAVES ENERGY AND INCREASES USER COMFORT LEVEL.

He/she identifies/determines customer needs and communicates them to a project-planning designer. He/she suggests and selects the necessary equipment and organizes work of installers by giving precise instructions, how the wiring and components should be installed. The expert needs to be capable of interpreting the system alone, if necessary. He/she supervises final testing and commissions the system. He/she communicates to the end user and manages product lifecycle by providing end user support and system maintenance.



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The Learning units of the EBA curriculum – Unit 1

UNIT 1: FUNDAMENTAL KNOWLEDGE	
TASKS	COMPETENCES
Using tools for digital marketing	• Differentiating the characteristics of marketing channels • Using the existing digital tools for the implementation of digital marketing activities • Developing and maintaining digital marketing channels • Using social networks for digital marketing
Conducting market research and creating business offers	• Conducting a basic market analysis on customer's demand • Using data from the equipment manufacturer catalogue • Creating a cost estimation based on the technical documentation • Creating a product or service query • Making an offer according to the client's request
Applying procedures of health protection	• Providing protection measures against dangerous substances and hazardous working environment • Implementing procedures for protecting health and health of associates end users • Practicing safe working procedures by using protective equipment and tools
Applying procedures of environment protection	• Using protective equipment and tools properly in order to protect the environment • Applying the environmental protection regulation • Managing waste
Planning and coordinating project activities	• Interpreting the fundamentals of the project life cycle • Participating in the design of a project plan • Creating specifications according to identified needs • Coordinating project activities and reporting on their realization
Managing teamwork of professionals	• Estimating the duration of tasks assigned to the team • Performing operational tasks to accomplish goals and schedules • Reporting on the implementation of assigned tasks • Effectively communicating with project team members and designers • Reporting on identified problems/difficulties/risks in the implementation of assigned tasks • Encouraging interaction, open communication and innovation in the team • Providing support to the team • Using digital coordination and collaboration solutions • Communicating in English at B1 level of the Common European Framework of Reference for Languages
Communicating with customers and providing customer support	• Recording the current state • Collecting and documenting customer needs by direct communication with customers • Informing users about the status / level of problem • Educating the end user
Planning and coordinating project activities	• Interpreting the fundamentals of the project life cycle • Participating in the design of a project plan • Creating specifications according to identified needs • Coordinating project activities and reporting on their realization
Applying procedures of quality management	• Perform security and reliability control of BA devices/system according to the technical documentation • Perform service testing of BA circuits and / or systems • Follow and apply standards and legal regulation • Confirm the functionality of the in-built BA equipment • Monitor technological development in the field of business and related activities

The Learning units of the EBA curriculum – Unit 2

UNIT 2: HARDWARE AND INSTALLATION	
TASKS	COMPETENCES
2. A **Hardware design procedures**: Selecting equipment and proposing solutions according to the inputs and designs	• Classifying technical characteristics of selected equipment • Suggesting corrections in designs made by certified engineer • Identifying main relevant aspects of different technical systems in buildings • Interpreting the schemes, designs and plans in new and renovated buildings and equipment replacement
2.B **Hardware installation procedures**: Providing guidelines and instructions on equipment installation and wiring;	• Giving precise instructions for installation and wiring of the BA system • Supporting and supervising the procedures of installation processes for BA
2.C **Hardware post-installation procedures**: Providing support and feedback concerning identification of technical solutions	• Planning and supervising maintenance • Upgrading services for system of building automation

The Learning units of the EBA curriculum – Unit 3

UNIT 3: SOFTWARE – DESIGN OF INSTALLATION PROCEDURES	
TASKS	COMPETENCES
3.A **Software design procedures**: **Installing and testing** building automation software	• Identifying software/technologies and technical devices suitable for implementing functionality of selected BA systems • Explaining basic communication model and network topology for several most frequently used (1 or 2) Standards in building automation.
3.A Software design procedures: **Designing of building management system**	• Designing and testing logic and functionality of Central monitoring and control system for basic building automation system.
3.B Software installation procedures: **Performing diagnostics and troubleshooting**	• Planning and supervising periodic checking, diagnostics and troubleshooting
3.B Software installation procedures: **Commissioning of the system**	• Planning and supervising final testing and commissioning for building automation • Applying problem solving strategies in testing and commissioning phases
3.C **Software post-installation** procedures: Analysing system performance and cooperating in maintenance phases	• Planning and supervising maintenance service for building automation • Apply problem solving strategies in maintenance phase

The ITS TECH Foundation in Ferrara

The ITS TEC Foundation
The Foundation, established in 2010, among its MEMBERS counts: high schools, research Centres, by the Region recognized VET Centres, public local bodies (i.e. Municipalities), all active in promotion, dissemination and directly engaged in design and implementation of educational activities.

It is aimed at valorizing the TECHNICAL, PROFESSIONAL, SCIENTIFIC CULTURE, in order to offer concrete answers to the needs of the economic systems, supporting local development and competitiveness.

FOR DESIGN AND DEVELOPMENT OF EDUCATIONAL PATHS AND OTHER INITIATIVES, THE FOUNDATION CAN COUNTS ON THE HIGH PROFESSIONAL LEVEL OF THE ASSOCIATED VET CENTRES AND EXPERT PROFESSIONALS.

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Professional profile: superior technician for sustainability and energy efficiency of buildings - executive bim design

He/She operates in the phases of analysis, design and construction of buildings by applying the methods and technologies of BIO-BUILDING and SUSTAINABLE ARCHITECTURE

Manages activities related to:
Energy saving and evaluation
High efficiency building envelopes
Thermo-technical systems powered by alternative energies
Acoustics
Home Automation

He/She takes care of the integration of the different technologies in the construction on site, optimizing the construction process with criteria of efficiency, quality, safety, reduction of environmental impact

EXPERT IN BUILDING AUTOMATION
JOINT CURRICULUM

We are trying to align the existing ITS curriculum to the new joint curriculum by splitting the training modules in 3 different categories:

1. Mandatory modules established by the Italian national qualification;
2. Domotics/Building automation module that should be extended;
3. Elective modules from which we should transfer some hours to Domotics/Building Automation module

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The EBA curriculum – the joint part of ITS TECH Ferrara

Mark	Classes	Mandatory/ elective	Number of class hours				No. of independent work time	Total hours	ECTS/ ECVET
			Lectures	Exercises	Laboratory	Total			
M1	Process Management	Mandatory							
P1	WORK MANAGEMENT		20	20		40	50	90	3
P2	ELECTRICAL AND MECHANICAL INSTALLATIONS		20		20	40	50	90	3
D1	Practical work – work management							60	2
M2	Performing smart installations	Mandatory							
P3	SMART SYSTEM INSTALLATIONS		20		25	45	75	120	4
D2	Practical education – Performing smart installations							60	2
M3	Tuning/setting smart installations	Mandatory							
P4	PROGRAMMING AND TESTING OF SMART INSTALLATIONS		25		30	55	95	150	5
D3	Practical education – tuning/setting of smart installations							80	3
	Total		85	20	75	180	270	650	22
	Total hours of practical education							200	7

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