



Main Office	AGEG c/o EUREGIO	Enscheder Str. 362	48599 Gronau (Germany)
Project Office	AEBR c/o WelWork	Stroßmappelsd. 123	10963 Berlin (Germany)
AEBR Antenna in the EU	Office of Extremadura in Brussels	Av. De Cortenbergh 87-89	1000 Brussels (Belgium)
AEBR Info Centre in the Balkans	Institute for International and CBC	Terazije 14/14	11000 Belgrade (Serbia)
AEBR Info Centre in Ukraine	Univ. Simon Kuznets (KNU)	pr. Lezija, 9a	61001 Cherkasy (Ukraine)



FINAL REPORT BY THE EXPERT

Advice case title:

Mapping cross-border skills involving Employers: Mechatronics

Full official name of the advised entity: Regione Autonoma Friuli Venezia Giulia

Name of the expert contracted for the advice case: Daniel Spizzo

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Table of content:

- I. Executive Summary
- II. Description of the obstacle with indication of the legal/administrative provisions causing the obstacle
- III. Description of possible solutions
- IV. A full list of all legal provisions relevant to the case with the correct citation both in original language and in English
- V. Other relevant aspects to this case
- VI. References
- VII. Contacts

I) Executive Summary

The context

In the specific economic field of mechatronics, in the crossborder labour market between the Region Friuli Venezia Giulia (FVG) and the Land Carinthia, there are many open job vacancies that apparently cannot be covered. The main obstacle that hinders the creation of a "vibrant" labour market in mechatronics between FVG and Carinthia is constituted by the fact that there is no reliable mapping methodology of frontier workers' skills. Eliminating this obstacle could contribute to the standardisation of data on specific CB skill profiles, to the definitions of new school educational programmes/vocational training offers and to the improvement of CB matching and placement procedures of Public Employment Services.

Description of obstacles

Educational programs and professional figures are defined very differently in the two national and regional contexts. Finding a shared method with companies to map key skills implies using at least a common cross-border language to identify the same outgoing professional figure. But, at the present stage, this is almost impossible. The "dual" Austrian school system is almost incomparable with the Italian one in FVG.

In Austria, the discipline "Mechatronics" has an official and autonomous recognition through federal and ministerial school regulations which entitles different recognized study paths on various educational levels: from apprenticeship (*Lehre*) via secondary technical institutes to Fachhochschulen and Universities. However all this does not happen in Italy and in FVG. Vocational training courses or high school courses with a public educational path in Mechatronics that attribute an exclusive qualification or diploma in "Mechatronician" are almost completely absent. This non-correspondence - deriving from the presence of very divergent legal provisions - strongly hinders the cooperation between Austrian and Italian PES services and VET training systems.

In sum, in order of importance, there are three main sub-obstacles that are connected with our main obstacle:

- The absence of joint administrative mechanisms;
- The lack of cooperation between competent authorities;
- The lack of knowledge of the already existing facilitative frameworks

Legal provisions

Key European legal provisions

- Directive 2005/36/EC of the European Parliament and of the Council of 7 September 2005 on the recognition of professional qualifications.
- Council recommendation, 15 March 2018 on a European Framework for Quality and Effective Apprenticeships (2018/C 153/01)

Austrian legal and administrative provisions

- Bundesgesetz vom 25. Juli 1962 über die Schulorganisation (Schulorganisationsgesetz). Bundesgesetzblatt fuer die Republik Oesterreich BGBl. Nr. 242/1962; Kundmachung 08/08/1962; Federal Law of July 25th, 1962 on School Organization (School Organization Law). Federal Law Gazette for the Republic of Austria BGBl. No. 242/1962; Official publication date 08/08/1962
- Verordnung des Bundesministers für Bildung, Wissenschaft und Forschung, mit der die Verordnung über die Lehrpläne für Berufsschulen (Lehrplan 2016) geändert wird; Bekanntmachung der Lehrpläne für den Religionsunterricht BGBl. II Nr. 349/2020 Kundmachung 31. Juli 2020; Ordinance of the Federal Minister of Education, Science and Research amending the ordinance on the curricula for vocational schools, Federal Law Gazette II No. 349/2020 Official publication date: 07/31/2020
- Verordnung des Bundesministers für Bildung, Wissenschaft und Forschung, mit der die Verordnung über die Lehrpläne der Sonderformen der Höheren technischen und gewerblichen Lehranstalten sowie den Lehrplan des Vorbereitungslehrganges für Berufstätige für technische Fachrichtungen BGBl. II Nr. 368/2022 Kundmachung 4. Oktober 2022; Ordinance of the Federal

Minister of Education, Science and Research, with which the ordinance on the curricula of the special forms of higher technical and commercial schools as well as the curriculum of the preparatory course for employed persons for technical subjects BGBl. II No. 368/2022 Official publication date: 10/04/2022

- Bundesgesetz über den Nationalen Qualifikationsrahmen (NQR-Gesetz) StF: BGBl. I Nr. 14/2016 Kundmachung: 31/03/2016; - Federal Act on the National Qualifications Framework (NQF Act) StF: Federal Law Gazette I No. 14/2016 Official publication date: 03/31/2016;

Italian legal and administrative provisions

- Legge 99 del 15 luglio 2022 Istituzione Sistema terziario di istruzione tecnologica superiore (ITS) pubblicato in GU Serie Generale n.173 del 26-07-2022; Entrata in vigore del provvedimento: 27/07/2022; Law 99 of July 15th, 2022 Establishment of the tertiary system of higher technological education, published in the GU General Series n.173 of 26-07-2022; Entry into force of the provision: 07/27/2022.

- MIUR Decreto del 7 Febbraio 2013 recante "Linee Guida di cui all'art. 52, commi 1 e 2, della legge n. 35 del 4 aprile 2012, contenente misure di semplificazione e di promozione dell'istruzione tecnico professionale e degli Istituti Tecnici Superiori" pubblicato in GU Serie Generale n.92 del 19-04-2013; Italian Ministry of Education decree of February 7th, 2013 containing the "Guidelines pursuant to art. 52, paragraphs 1 and 2, of law no. 35 of 4 April 2012, containing measures for the simplification and promotion of professional technical education and of Higher Technical Institutes" published in the GU General Series n.92 of 04/19/2013.

Outline of possible solutions

Starting from our obstacles' analysis, the following recommendations are presented here, with the ultimate goal of coordinating measures on both sides of the border in order to improve the design of vocational training courses and to optimize placement/job orienteering policies at CB level:

- in order to address the lack of knowledge concerning, first of all, the Europass NQF-EQF comparison system and to raise awareness among key stakeholder, we propose to organise a series of technical-operational workshops inviting experts of the European Qualifications Framework in order to offer us new updates on how the national qualifications frameworks between Italy and Austria relate to each other;

- as concerns the lack of cooperation between competent institutions, we suggest to create a specific joint coordination structure for mechatronics skills observation in the CB labour market. The work of this Observatory should be strategically oriented by a Skills Expert working group that brings together the most important facets of the CB mechatronic industry;

- finally, if we refer to the absence of joint administrative mechanisms, we recommend to create a cross-border working group to design protocols or bilateral conventions for the setup of joint administrative mechanisms for cross-border skill recognition especially through innovative apprenticeship courses in professional schools and/or VET training centres – using mainly Erasmus+ and PNRR funds.

What's next

Building upon the initial findings of this work, the advised entity Regione Friuli Venezia Giulia, with the support of CSIR FVG CARINTHIA, will organise several meetings with the EGTC Euregio Senza Confini/Ohne Grenzen in order to plan short & medium term deadlines for the planned workshops and the Observatories' crossborder working group meetings.

II) Description of the obstacle with indication of the legal/administrative provisions causing the obstacle

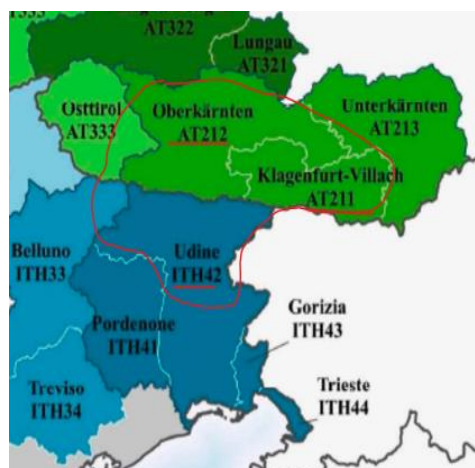
Understanding the obstacle: analysis of the general context.

The cross-border system involved in our analysis starts at NUTS II level for what concerns the Region Friuli Venezia Giulia (FVG) and the Land Carinthia. It then continues, on the Italian territory, with a deeper focus at NUTS III level for the sub-areas of the old Province of Udine (IT H42) corresponding to the mountain communities of Valcanale Canal Del Ferro, Gemonese and Carnia, the Friuli Hills Community (Comunità Friuli Collinare) and the urban area around Udine. Inside these territories we can find the industrial areas of Carnia Industrial Park and of the COSEF consortium Alto Friuli and Udinese.

On the Austrian side of our CB area, mainly the district areas AT 211 Villach/Klagenfurt and AT 212 Oberkärnten are studied at NUTS III level, with a specific attention to the industrial areas of the districts of Villach, Klagenfurt and the Karnische Region around Hermagor.

It is a cross-border space where only limited CB labour force exchanges in the mechatronics sector take place.

Map 1 the crossborder area between Friuli Venezia Giulia and Carinthia, NUTS II and NUTS III subareas relevant for the European programming period 2021-2027 (circled in red: the cross-border mountain area of main origin of the identified commuters)



In Carinthia, as confirmed by monthly reports on occupational needs prepared by the Austrian AMS Public Employment Service, the working sectors where the Carinthian economy faces specific occupational needs are those related to manufacturing metallurgy, electro-mechatronics and technical professions in general. Three domains which are closely in touch with the world of mechatronics.

On the “Alle Job” portal of the AMS¹, daily queries in March 2023 confirm that for the “Mechatroniker/Mechatronician” professional figure (which in the broadest sense includes many professions in the metalworking, electromechanical and manufacturing chain), in the radius of action of 70 km around Villach and Klagenfurt, there are, on average, more than 300 vacancies.

In FVG, the most recent research by UnionCamere Excelsior, which also analyses the manufacturing-mechatronic sector, highlights the same difficulty in finding qualified manpower. For the regional economy there are serious difficulties in finding: workers expert in automatic machines for metalworking (60%) and skilled labour in the use of electrical and electronic equipment (49%)².

There is thus a significant overlapping between Carinthia and FVG. On one hand, we immediately notice that these are highly sought-after workers on both sides of the border. On the other hand, we cannot hide the fact that there is a high competition on the labour market between

¹ <https://jobs.ams.at/public/emps/>

² Regione FVG Analisi dei fabbisogni professionali e di competenze in FVG nel 2018. Piano delle prestazioni 2019

various companies, which often transform themselves into real head-hunters in a proactive search for highly qualified figures.

The recruitment area has come to extend over a large territory of the Alpine-Adriatic space, including Carinthia, FVG, Slovenia and also the westernmost districts of Croatia. It constitutes now an European economic crossborder area with shared CB skill needs.

The specific obstacle: What is it? In what way does it hamper cross-border cooperation in this specific border region?

The main obstacle that hinders the creation of a "vibrant" labour market in Mechatronics between FVG and Carinthia is constituted by the fact that there is no reliable methodology for the mapping of CB workers skills. Eliminating this obstacle could contribute to the standardisation of data on specific CB skill profiles, to the definitions of new school educational programmes/vocational training offers and to the improvement of CB matching and placement procedures of PES.

The main problem is that educational programs and professional figures are defined very differently in the two national contexts³. Finding a shared method with companies to map key skills implies using at least a common cross-border language to identify the same outgoing professional figure. But, at the present stage, this is almost impossible. The "dual" Austrian school system, and even the "trial" one in Carinthia, is almost incomparable with the Italian one.

In Austria, the discipline "Mechatronics" has an official and autonomous recognition through federal and ministerial school regulations (cf. for all the Verordnung des BBWF, 21.7.2020 BGBl 349/2020) which entitles different recognized study paths on various educational levels: from apprenticeship (*Lehre*) via secondary technical institutes to Fachhochschulen and Universities. As a professional profile, our "Mechatronician" label includes a wide range of figures and professional qualifications that are also recognized by public and private recruitment systems.

However, all this does not happen in Italy and in FVG. Vocational training courses or high school courses with a public educational path in Mechatronics that attribute an *exclusive* qualification or diploma in "Mechatronics" are almost completely absent. At the limit we have the release of a Technical Institute Diploma in "Mechanics, Mechatronics and Energy". We also find courses from professional training institutions linked to regional QPR repertoires, also in FVG, which issue the title of "Mechatronics technician for car reparation"⁴. In the Autonomous Province of Bolzano, which adopts a dual system in some ways similar to the Austrian one, there is the figure of the "Mechatronician" at apprenticeship level⁵. But even in this case it is difficult to link this profile to the "Mechatronician" figures envisaged in Austria⁶.

This non-correspondence - deriving from the presence of very divergent legal provisions - between professional figures strongly hinders the cooperation between Austrian and Italian VET training systems. Therefore, proposing solutions to arrive to a common skills mapping methodology, could also help to improve the design of vocational and technical courses. It could optimize placement/job orienteering policies at CB level, offering in the meantime an opportunity to many young people and workers in the most disadvantaged areas of mountain territories new possibilities to stay in their places of origin.

³ For a first exploratory research cf. The SCET-NET project at the following link: <https://www.scet-net.eu/homepage-hero/sistemi-scolastici-confronto>

⁴ (Profiles PROF-AUT) All within the Atlas of work ADA.10.03.03 installation, maintenance and repair of electrical and/or electronic parts of motor vehicles

⁵ https://berufsberatung-studieninfo.provinz.bz.it/it/ricerca-professionisti/meccatronica-e-meccatronico?abi_workid=609

⁶ Provincia Autonoma di Bolzano Delibera n. 353 del 05.04.2016

Legal obstacles that originate in diverging national and subnational laws on skills and professional certification systems

As regards the national regulatory framework of qualifications, professions and certifiable skills in mechatronics, there are two official instruments that we absolutely have to consider: in Austria we find the *Berufslexikon* of the Arbeitsmarktservice (AMS) and in Italy we have the *Atlante del Lavoro* (Labour Atlas) of the Istituto Nazionale per l'Analisi delle Politiche Pubbliche (National Institute for the Analysis of Public Policies - INAPP).

Let's start immediately with the “MechatronikerIn” profession (*Beruf*) officially recognised by the Austrian *Berufslexikon*. The best description of this professional figure is the following⁷: “The range of functions performed by this technical figure is a typical example of modern developments in the field of mechanical industry. While once mechanics and electronics/electrotechnics formed two distinct professional sectors, today they are perfectly integrated in the profile described here, which summarizes notions of mechanics, electronics, electrotechnics, as well as hydraulics and pneumatics. His skills also extend to the IT field, with regard to the installation and control of hardware and software tools used on the workplace”.

Let's now see which Austrian schools allow to acquire this qualification. We have inserted here a very eloquent screenshot taken directly from the *Berufslexikon* platform:

Screenshot 1: Berufslexikon AMS, Query/Suche Beruf MechatronikerIn (03/24/2023) cf. <https://www.berufslexikon.at/>

The screenshot shows the AMS Berufslexikon website interface. At the top, there is a navigation bar with 'AMS | AMS BERUFSLEXIKON' and links for 'BERUFE', 'AUSBILDUNGSINFOS', and 'AKTUELLE THEMEN'. A search bar on the right contains the text 'Suchbegriff eingeben'. Below the navigation bar, a large blue banner reads 'Willkommen im AMS Berufslexikon'. The main content area shows a search for 'mechatroniker' with a search bar and a button for 'erweiterte Suche'. Below the search bar, there is a section titled 'Wählen Sie einen Beruf aus der Ergebnisliste' which lists various professions under three categories: 'LEHRE', 'SCHULE', and 'UNI/FH/PH'. The 'LEHRE' category lists 10 professions, including 'MechatronikerIn - Hauptmodul Alternative Antriebstechnik' and 'MechatronikerIn - Hauptmodul Automatisierungstechnik'. The 'SCHULE' category lists 4 professions, including 'MechatronikerIn' and 'KrankenhaustechnikerIn'. The 'UNI/FH/PH' category lists 3 professions, including 'MechatronikerIn' and 'WirtschaftsingenieurIn - Maschinenbau'.

LEHRE	SCHULE	UNI/FH/PH
MechatronikerIn - Hauptmodul Alternative Antriebstechnik	MechatronikerIn	MechatronikerIn
MechatronikerIn - Hauptmodul Automatisierungstechnik	KrankenhaustechnikerIn	WirtschaftsingenieurIn - Maschinenbau
MechatronikerIn - Hauptmodul Elektromaschinentechnik	AntriebstechnikerIn	MaschinenbautechnikerIn - Schwerpunkt Regenerative Energietechnik
MechatronikerIn - Hauptmodul Medizingerätetechnik	RobotiktechnikerIn	
MechatronikerIn - Hauptmodul Fertigungstechnik		
MechatronikerIn - Hauptmodul IT-, Digitalisierungs- und Netzwerktechnik		
MetalltechnikerIn - Hauptmodul Maschinenbautechnik		
MetalltechnikerIn - Hauptmodul Werkzeugbautechnik		
MetalltechnikerIn - Hauptmodul Zerspanungstechnik		
WaffenmechanikerIn		

As we can see, we find “Mechatronician” profiles both at the *Lehre* level (apprenticeship/dual system) (EQF 4), at Diploma level that are issued by Higher Technical Institutes (EQF5) and as an output of Fachhochschulen and Universities level (EQF 6-7)

The profile coming out from the apprenticeship dual system seems to be the richest and most articulated one: it includes various specializations in the following sectors: *Automatisierungstechnik*; *Elektromaschinentechnik*; *Hauptmodul Fertigungstechnik*; *Alternative Antriebstechnik*; *Medizingerätetechnik*; special module in *Robotik*; special module in *SPS-Technik*.

What happens now if we look for the “Mechatronician” profession in the Italian Labour Atlas? Please consider that the *Atlante del Lavoro* is an operational platform essentially dedicated to the sector of vocational training, apprenticeships, courses organised by Higher technical Institutes

⁷ Cf. https://berufsberatung-studieninfo.provinz.bz.it/it/ricerca-professioni/meccatronica-e-meccatronico?abi_workid=609

(Istituti Tecnici Superiori - ITS) and regional Long Life learning Courses financed by subnational and European funds that use specific regional qualification repertoires (the so called QPR⁸)

In the leFP professional courses (EQF levels 3 and 4) in the sector Mechanics, production maintenance of machines, there are various qualifications, but none of them with the official title "Mechatronician". The ones that could come closest are the following: Operatore alla Manutenzione e riparazione delle parti e dei sistemi meccanici ed elettromeccanici; Operatore meccanico - Installazione e cablaggio di componenti elettrici, elettronici e fluidici; Tecnico automazione industriale - Installazione e manutenzione impianti; Tecnico automazione industriale – Programmazione; Tecnico riparatore di veicoli a motore - Manutenzione e riparazione delle parti e dei sistemi meccanici, elettrici, elettronici⁹.

Going further, another comparable figure - as we will see later - with an Austrian profile could perhaps be identified at EQF level 5 in a specific course organised by the ITS higher technical institutes. We refer here to the following profile: "Tecnico superiore per l'automazione ed i sistemi meccatronici - Higher Technician for Automation and Mechatronic Systems".

Finally, at the regional QPR level, there is also the "Tecnico meccatronico delle autoriparazioni - Mechatronic technician of car repair" figure.

Anyway, as we can see, for the moment there are only few overlapping potentials on which we could work in order to develop a CB skills mapping methodology with companies and employers.

Assessing the obstacle in detail: legal barriers that originate in diverging national and subnational skills/professions certification systems

The matter becomes even more complex if we look at the world of skills, abilities and knowledge envisaged for study courses in the mechatronics sector. At national level, both in the Berufslexikon and in the Atlante del lavoro, we find targeted indications on what the minimum certified skills must be at the end of the specific courses/modules/didactical units.

In both Austria and Italy, at the level of vocational training, a certain (albeit limited) autonomy is left to the Laender, the Regions and the local training schools/institutions in defining, in line with the real demands of the business world, the minimum skills to be achieved. All this is essential for adapting the educational programming and the contents of the courses to the updated needs and real requests from the local business world.

The biggest challenge for our CB context consists in building a methodology which - obviously taking into account the national regulatory and administrative constraints -, is very responsive to the real skill needs and to the requests coming from employers, companies and networks of companies in the manufacturing/mechatronic sectors

We are still at an exploratory research level in a very complex sector. In order to simplify our approach, we will propose here to set up a first preliminary CB comparison between two professional profiles which (after our in deep interviews on the field), seem to converge at least on some points: the Austrian "Mechatronician" apprentice in *Automatisierungstechnik* based on the dual system *Lehre* and the Italian "Higher Technician for Automation and Mechatronic Systems" envisaged by the "dual" path of the ITS. Both seem to have at least a "dual" training model in common¹⁰.

The first professional profile in Carinthia is formed by the *Fachberufsschule Villach 1*; the second one by the ITS Malignani in FVG. A first problem arises from the fact that the

⁸ <https://portalequalificazioni.regione.fvg.it/apex/f?p=119:1:.....>

⁹ Maintenance and repair operator of mechanical and electromechanical parts and systems; Mechanical Operator - Installation and wiring of electrical, electronic and fluidic components; Industrial automation technician - Plant installation and maintenance; Industrial automation technician - Programming; Motor Vehicle Repair Technician - Maintenance and repair of mechanical, electrical, electronic parts and systems.

¹⁰ As for the dual system, some ITS in Italy, but apparently not in FVG, offer the possibility of transforming the internship period into a III level apprenticeship. For further information on the case, see the experience of Veneto cf: <https://www.itsmeccatronico.it/project/nuovo-its-per-le-aziende/>

Here the student's company activity "is structured on the German Dual-System model... It is possible to carry out... the internship envisaged by the courses through a III level Apprenticeship contract, a particular type of apprenticeship specifically envisaged for the achievement of the qualification. This type of apprenticeship has the duration of the course relating to the relative diploma or two years; at the end the company can withdraw from the contract, otherwise it becomes permanent."

Fachberufsschule (with *Lehrabschluss*) moves at EQF 4 level, the Italian ITS course instead at EQF 5 level. Furthermore, the very detailed list of skills provided by the *Mechatronik Kompetenzorientierter Lehrplan* of the Austrian Berufsschule is faced, on the Italian side, to a very very limited list of skills¹¹ indicated by the Labor Atlas at national level. The whole regional QPR/SST part, very detailed at this stage, doesn't seem to come into play here¹². Obviously, the question would need to be further explored precisely to allow a better dialogue among the two systems if we want to develop a common method for skill mapping.

At this point our key CB obstacle could be divided in 5 sub-obstacles: 1) the EQF levels for 2 outgoing profiles that seems quite similar between Austria and Italy, do not seem to coincide; 2) the sets of minimum required skills appear - at least at the current stage of the research - to be more detailed for the dual system in Austria than for the ITS courses in Italy/FVG; 3) the specific skill-based requests of the companies involved in the training path and which manage a large part of the traineeship/apprenticeship remain largely hidden; 4) in Carinthia in the mechatronic sector in recent years a "trial" system has been consolidated with three actors involved in the training process: the *Berufsschule*, the companies that host apprentices and the *Ausbildungszentrum GPS*¹³ in Villach, who comes in support, with its training services, laboratories and machinery, to the real need of companies; in FVG, instead, for the ITS course we can speak of an essentially dual system; 5) semesters and total number of hours of the two courses, divided into hours of classroom lessons and hours of apprenticeship/traineeship, to be carried out in a company, do not converge.

Then a separate discussion must then be elaborated for secondary high schools. On the *Ausbildungskompass*¹⁴, the platform presenting Austrian educational pathways at federal level, we find only two High Technical Schools in Carinthia in the sector of mechatronics. The first is the *Höhere Technische Bundeslehranstalt 1 Klagenfurt* which also offers the following three specific mechatronics courses at EQF level 5:

- *Höhere Lehranstalt für Mechatronik - Industrie 4.0*
- *Higher Lehranstalt für Mechatronik - Bionik*
- *Höhere Lehranstalt für Mechatronik – Innovation*

The second one is the *Bundeshandelsakademie und Bundeshandelsschule* in Spittal/Drau which offers the following course:

- *Höhere Lehranstalt für Mechatronik - Vertiefung Informationstechnologie* (in Cooperation mit HAK)

In the case of FVG, on the other hand, there are 9 secondary level technical institutes that also touch the mechatronic field, but at EQF 4 level:

- Udine ISIS . A. MALIGNANI "Meccanica, mecatronica ed energia: articolazione "meccanica e mecatronica"
- Udine ISTITUTO TECNICO G. BEARZI - Meccanica, mecatronica ed energia: articolazione "meccanica e mecatronica"
- Tolmezzo I.S.I.S. F. SOLARI Meccanica, mecatronica ed energia: articolazione "meccanica e mecatronica" e articolazione "energia"
- Pordenone I.T.S.T. J. F. KENNEDY Meccanica, mecatronica ed energia: articolazione "meccanica e mecatronica" opzione tecnologia delle materie plastiche
- San Vito al Tagliamento I.S.I.S. P. SARPI I.T. G. FRESCHI Meccanica, mecatronica ed energia: articolazione "meccanica e mecatronica"
- Spilimbergo I.S.I.S. IL TAGLIAMENTO I.T.I. Meccanica, mecatronica ed energia: articolazione "meccanica e mecatronica"
- Trieste I.S.I.S. J. STEFAN " Meccanica, mecatronica ed energia: articolazione "meccanica e mecatronica"
- Trieste I.T.S. A. VOLTA Meccanica, mecatronica ed energia: articolazione "meccanica e mecatronica" e articolazione "energia"

¹¹ https://atlantelavoro.inapp.org/dettaglio_profilo.php?id_profilo=12113&codice_repertorio=SF

¹² it can be expanded in the case of regional professional training using the skills provided for the regional profile of the Industrial Automation Technician https://atlantelavoro.inapp.org/dettaglio_profilo.php?id_profilo=10473&codice_repertorio=SR

¹³ <https://www.gps-kaernten.at/abzv/>

¹⁴ <https://www.ausbildungskompass.at/suche/>

- Gorizia I.S.I.S. G. GALILEI I.T. G. GALILEI Meccanica, mecatronica ed energia: articolazione "meccanica e mecatronica" e articolazione "energia"

On a comparative level between FVG and Carinthia we immediately notice a greater concentration of schools in Carinthia with more targeted specialization courses. The 2 Carinthian schools already guide through their chosen course titles towards 4 well-differentiated areas: mechatronics for Industry 4.0; mechatronics for Bionics; mechatronics for Innovation and mechatronics for the ICT sector. The titles of the Italian technical courses, on the other hand, remain very generic, always and continuously combining the trinomial "mechanics, mechatronics and energy" at least on the level of official titles.

In summary, it is really difficult to find here elements of convergence between Carinthia and FVG. The regulatory frameworks on both sides of the border are very divergent indeed¹⁵.

An obstacle caused also by lack of cooperation and by lack of knowledge

In addition we must say that two other factors complicate the whole matter. The lack of real institutional cooperation/joint practices between some key CB stakeholders and the lack of knowledge of the respective training systems and - above all - of the language spoken in the neighboring country.

Let's start with the lack of cooperation. "Mechatronics" in our CB area are in high demand. The best, the most competent are snapped up. Between Italian and Austrian companies, located on both sides of the border and operating on a large part of the Alpe Adria space, there still is a strong spirit of competition in the recruitment of mechatronics and other key technical figures.

Given higher salaries, and also considering the fact that there are much more paid apprenticeship opportunities, in Austria, we certainly cannot hide the fact that Italian companies find themselves in a less attractive situation than Austrian ones. Everything is then further complicated by the language factor: knowing German or Italian becomes a key linguistic skill for the inclusion of many workers - even "mechatronics" - in various working contexts. In many cases, a good knowledge of the local language becomes a crucial element for non-recruitment.

Now the key question we must ask ourselves is the following: to what extent are our Italian companies in the mechatronic supply chain really interested in creating a truly European labour market that could stimulate perfect CB worker mobility with Austria?

To what extent can PES, supply chain clusters, parks and industrial consortia, business start-up incubators, Chambers of Commerce and other entities and companies, both on the Austrian and Italian side and interested in the mechatronics sector, have a strong interest in creating a real cross-border skills mapping system, especially considering the weaknesses just described on the Italian side? Could there be a real win-win strategy based on reciprocity that above all could break down the language barrier that still today divides the Carinthian labour market from the Italian one?

Some first attempts to stimulate cooperation and to work towards overcoming the lack of knowledge between our two systems have been made by the INTERREG Italy Austria SCET-NET project. Its partnership was constituted by the following stakeholders: EGTC Euregio Senza Confini, the Bildungsdirektion of Land Carinthia, the Austrian Wirtschaftskammer (WKO) and the Chamber of Commerce of Venezia Giulia Trieste Gorizia.

Comparative research on the two training systems was produced initially with the support of the Chamber of Commerce of Bolzano. Subsequently, some online workshops were carried out involving high school students and apprentices of the vocational training system. They have initiated group reflections on the following soft skills¹⁶ most in demand in the cross-border labour market:

¹⁵ We will not deal here with levels higher than EQF 5. For EQF 6-8 the "Mechatronics" label in Carinthia disappears from academic pathways: the following curricula are contemplated in a broad sense: Fachhochschulstudium Maschinenbau - Leichtbau (MBLB) Masterstudium (FH); Fachhochschulstudium Integrated Systems and Circuit Design Masterstudium; Fachhochschulstudium Systems Design Masterstudium; Fachhochschulstudium Maschinenbau; Bachelor Studies (FH); Universitätsstudium Informationstechnik - Ingenieurwissenschaften Bachelorstudium (UNI); Fachhochschulstudium Wirtschaftsingenieurwesen Bachelorstudium; Universitätsstudium Robotics and Artificial Intelligence Bachelorstudium.

¹⁶ <https://www.scet-net.eu/homepage-hero/mobilita-e-competenze-transfrontaliere>

- communication: knowing foreign languages and non-verbal language in order to communicate better;
- sensitivity: towards local traditions, culture, history, politics and religion of a territory;
- adaptation: faced with new and often uncertain contexts;
- group work: collaborating with others, making the most of each other's abilities, to achieve a common result;
- problem solving: solving problems, made even more complex by cross-border context, learning from international and cross-border experiences.

SCET-NET allows us to continue above all our discourse on the linguistic question, a crucial topic also for the mechatronics sector. It is essential to allow us to develop a skills mapping methodology for the CB supply chain that first of all uses the local language as the primary tool for skills mapping. With its help we can then also enhance the other soft skills: non-verbal language, sensitivity towards local traditions and culture, the propensity for team working and problem solving.

We thus have some good possibilities to be able to start with a more constructive dialogue in the mechatronics sector. Thanks to the foundations built by SCET-NET we can optimally address the more complex discourse on hard skills mapped by the *Beruflexikon*, the *Ausbildungskompass*, the Italian *Atlante del Lavoro* and the regional qualifications repertoires (QPR). These soft skills, valorised above all in the relationships between students, apprentices and teachers, are fundamental first of all to create a more win-win starting approach, based primarily on the mutual recognition of one's differences.

Bottlenecks at European level: is an updating of the EQF platform necessary?

Before starting to think about possible more operational solutions that can help us overcome our key obstacle, we would like to highlight another weak point that exists - this time - at a European level.

A specific system has been added to the general Europass platform which allows us to compare National Qualifications Frameworks across Europe. There is a specific EU portal¹⁷ which allows, with the help of the European Qualifications Framework (EQF), to see how the national qualifications frameworks (NQF) between Italy and Austria relate to each other.

Unfortunately, as regards the bi-national comparison between Italy and Austria, we do not find information on qualifications and professions in the field of mechatronics. At EQF 3 level we only discover the three-year professional qualifications of operators trained in professional schools in Italy. It then remains to be clarified, on the Austrian side, where apprentices in mechatronics of the 3 years course are placed, especially if they do not obtain a professional diploma (Lehrabschluss).

At EQF level 4, the system indicates many Italian study courses of the upper secondary school system envisaged by professional schools, technical institutes and high schools. However, specific references to the Italian courses in "Mechanics, Mechatronics and Energy" that we have seen above - are missing; on the Austrian side, in the case of apprenticeship courses, we do not find the "Lehre in Mechatronik- apprenticeship in Mechatronics". It is obviously the one that most interests us.

Finally, at EQF 5 level, here too we would like to highlight the following facts: in Italy we do not find the figure of the "Higher Technician for automation and mechatronic systems" formed by the ITS; for Austria instead there are no outgoing Mechatronics trained by the "Höhere Lehranstalt für Mechatronik". This situation is quite surprising for us.

Having confirmation, at least, from the European EQF-NQF platform that we are moving in the sector of Mechatronics on officially recognized EQF levels on both sides of the Italian-Austrian border, would help us a lot.

Apparently the process that recently led Austria to approve the 8 NQFs in line with the European EQF system has been much debated. However, it seems that it is now in the finishing straight and that it is fully operational, as commented by the following research by Cedefop 2021 (pp.12-13):

¹⁷ <https://europa.eu/europass/en/compare-qualifications>

“The Austrian NQF aims at improved transparency of a national qualification system that has traditionally witnessed distinct separation between different segments of education and training, and at increased transparency of VET and non-government regulated qualifications. With the adoption of the NQF Act in 2016, the allocation of the first formally acquired qualifications in 2017, and the development of procedures and structures for the allocation of non-government regulated qualifications in 2019, the framework is gradually moving towards achieving its goal of being a comprehensive representation of all qualifications, regardless of learning context... NQF service point conferences with the NQF NCP take place regularly to improve communication among stakeholders and enhance common understanding. In 2020, non-government regulated qualifications for people active in youth work were mapped to the NQF for the first time. The first job adverts and work profiles with NQF levels have appeared. The indication of NQF and EQF levels on qualifications has increased the visibility of the framework and facilitated its use”.

Therefore, the Austrian system should now be tested to allow a more up-to-date matching also for the mechatronic sector. But one fact remains: our sector still appears to be completely absent on the Austrian NQF national platform¹⁸.

Perhaps all this is due to the fact that the whole package of ministerial regulations of apprenticeship courses in the mechatronic sector is still very recent. Given the novelty, perhaps it is just a problem of systems updating; as on the *Ausbildungskompass* we do not find even the *Lehre* in Mechatronics provided in Carinthia by the Fachberufsschule Villach 1¹⁹.

An explicit indication of the competent authorities

As the Euradria and SCET-NET projects have already taught, in order to try to overcome the various sub-obstacles that ultimately converge to consolidate our main obstacle, it is important to build a broad cross-border partnership. In the CB region between Italy and Austria, it should aim at uniting around a common project: Regional, National and European public authorities responsible mainly for public education, VET, Skills agenda and labour mobility; the EGTC Euregio Ohne Grenzen Senza Confini; Schools & VET centres and their networks (i.e. Effe.Pi Association in FVG); PES networks; Industrial associations; Clusters²⁰ and sectorial company consortia; Chambers of Commerce; employers' and category associations; national, european and CB trade unions networks.

At public level, a key political-administrative role obviously belongs to the *Direzione Centrale Lavoro, Formazione, Istruzione e Famiglia* (the Central Directorate for Work, Training, Education and Family) of the FVG Region and to the *Bildungsdirektion* of the Land of Carinthia. They have key responsibilities - with their respective national ministries - for the implementation of School programs, VET and other specific training courses and for the certification of the skills.

The EGTC Euregio Senza Confini, which at its top level is chaired by the three Governors of Carinthia, FVG and Veneto, for the simple fact of having already acted as Lead Partner for the SCET-NET project, could also play an important role.

The Italian and Austrian Eures advisers - who possess key data on labour mobility in the CB space between FVG and Carinthia - should also be involved. They can primarily act as intermediaries with PES, both with the Carinthian Arbeitsmarktservice (AMS) and with the Italian Employment Centers (CPI) of FVG.

Secondly, the Eures network, in support of the partnership, could also be able to activate its direct relationships with the European Commission, above all with DG Employment, Directorate E UNIT EMPL E.1 (Labour mobility) and Directorate B UNIT EMPL B2 (Skills Agenda) + UNIT EMPL B3 (Vocational education Training CEDEFOP). With this in mind, Eures advisers also assume a key role in promoting the "EU Pact For Skills" and the "2023: European Year of Skills" initiative.

¹⁸ <https://www.qualifikationsregister.at/public/vergleich/?comp1=19&comp2=35>.

¹⁹ <https://www.ausbildungskompass.at/suche/>

²⁰ <https://clustercomet.it/en/> COMET – a cluster delegated by the Friuli Venezia Giulia Region – it coordinates initiatives aimed at developing the regional engineering chain for the mechanic, thermoelectromechanical, component, plastic, machinery and metal production-related sectors. Another potential partner who coordinates some activities of FVG's Universities could be Lama FVG <https://www.lamafvg.it/en/chi-siamo/>

Thirdly, the consolidated collaboration of the Eures Network with Euradria could foster replication of the initiatives already set up on the Italian-Slovenian border also on the Italian-Austrian crossborder area.

The CB activity of CSIR FVG CARINTHIA already cooperates with Eures, and this will allow us to work also with the CB network established between the trade unions CGIL, CISL and UIL in Italy and OEGB in Austria.

Finally, for the Chambers of Commerce, in addition to those of Carinthia and Venezia Giulia already involved in SCET-Net, in our opinion the CCIAA of Udine and Pordenone must also be directly involved.

Obviously, this broad partnership will have to define specific strategical objectives for the CB Mechatronics supply chain which, involving above all schools, training institutions and the business world, will have as a minimum general objective that of creating a CB skills mapping system following part of the steps already implemented by Euradria.

III) Description of possible solutions

Based on the information gathered above, it is now possible to assess which solutions proposed by our B Solutions roadmap would be the most helpful. We have identified 4 areas of intervention that involve mainly problems related to lack of knowledge, lack of cooperation, lack of joint administrative mechanisms and lack of specific training actions. Obviously the implementation activities required to achieve our prospected short and medium-term solutions vary according to the degree of presumed difficulty for each level of governance involved.

In presenting our final proposals, therefore, we begin with those potential solutions that seem more likely to be implemented in the short and medium term. These recommendations are initially targeted to actors that directly operate on the territory of our local cross-border area (between FVG and Carinthia): After a first check they could then, gradually, be applied to address the greater complexity that arises at the regional and national level.

In sequence, I will present possible solutions in the form of work packages designed on a schedule that begins upon the official approval of this report and lasts for a maximum of two years, i.e. approximately May 2025.

Solution Workpackage proposal 1: Awareness raising actions in order to eliminate loopholes in the “europa.eu/europass/en/compare-qualifications” platform

A first and fundamental work package should address **the lack of knowledge** that we have highlighted above concerning first of all the Europass NQF-EQF comparison platform.

As we saw in part I, there is a specific EU portal²¹ which allows, with the help of the European Qualifications Framework (EQF), to see how the national qualifications frameworks (NQF) between Italy and Austria relate to each other.

Unfortunately, on this portal we do not find the qualifications we have described in the mechatronics field. There is a lack of specific indications on the EQF levels achieved for example by qualifications and diplomas from Italian professional schools, dual system apprenticeships, Technical Institutes, ITS or *Höhere Lehranstalten für Mechatronik*.

Having confirmation from the European platform that we are moving on officially recognized EQF levels on both sides of the Italian-Austrian border, would help us a lot. This is a basic precondition for being able to set up our other solution proposals as well.

As the latest research by CEDEFOP confirms, the process that has led the Austrian NQF to adapt to the EU EQF frameworks since 2016 has apparently been very difficult. Even if by now it seems to have been definitively concluded, the mechatronics sector still appears to be completely absent on the Austrian NQF national platform²².

We therefore believe that it is crucial to organize a targeted awareness raising action as soon as possible by June 2023, under the possible supervision of the CSIR FVG Carinthia. The ideal format could be that of a technical-operational CB workshop on the topic with the involvement of some EQF and NQF experts. This in order, first of all, to update us directly with the leading experts on the state of the art of the reform of the Austrian NQF and its position with respect to the mechatronic supply chain. Secondly, to understand what might be the best channel to get in direct contact with whoever, at EU Commission level, is responsible for updating the “europa.eu/europass/en/compare-qualifications” portal.

Obviously, a key player to be involved from the beginning is the Eures adviser network - with their respective contact points/national managers. Eures’ role is crucial considering its direct relationships with the European Commission, above all with DG Employment, Directorate E UNIT EMPL E.1 (Labour mobility) and Directorate B UNIT EMPL B2 (Skills Agenda) + UNIT EMPL B3 (Vocational education Training CEDEFOP). With this in mind, Eures advisers also assume a key role in promoting the “EU Pact For Skills” and the “2023: European Year of Skills” initiative.

So the key players that we believe should be involved are: on the Italian side, in addition to the Eures advisers network FVG/Italy, we should consider the Regional Directorate FVG Formazione Lavoro and ANPAL. On the Austrian side: the Eures Advisers Carinthia/Austria

²¹ <https://europa.eu/europass/en/compare-qualifications>

²² <https://www.qualifikationsregister.at/public/vergleich/?comp1=19&comp2=35>.

together with the AMS; the Bildungsdirektion of the Land; the OeAD-Agentur für Bildung und Internationalisierung Koordinierungsstelle für den NQR²³. Finally, on a more purely pro-European side: the CSIR FVG Carinthia, the EGTC Euregio Ohne Grenzen-Senza Confine and an EQF expert expert delegated officially by the European Commission - Dg Employment. The main output should be the drafting, by the experts participating in the technical-operational workshop, of a short position paper which draws the attention of the EU Commission to the importance of having, between Italy and Austria, an "europass/en/compare platform-qualifications platform EQF" that is updated for qualifications in the mechatronics sector.

Solution Workpackage proposal 2: Creation of a joint project design structure for the creation of a CB Skills Observatory

A second, fundamental work package to address the **lack of cooperation** that we have mentioned before, should facilitate the creation of a specific joint coordination structure for the skills observation in the CB labour market.

As already happened initially in the shipbuilding sector for the Euradria project on the Italy/Slovenia frontier, it is now a question of setting up an observation methodology starting on specific CB context from the mechatronic supply chain. The activation of a light joint structure - I propose here under the initial guidance of CSIR FVG CARINTHIA – should start by conceiving the creation of a Crossborder Skills Observatory for mechatronics.

Among the potential actors to be involved in the Observatory right from the start, I would consider the following: EGTC Euregio Senza Confini; Regione FVG/Land Carinthia with their respective market labour Observatories; CSIR FVG Carinthia; Networks Eures; Cluster Comet; Lama FVG; GPS Carinthia, AMS Carinthia; SGB Carinthia; Chambers of Commerce: WKO Carinthia, CCIAA Udine and Pordenone and CCIAA Trieste and Gorizia.

The first project activities conceived could flow into a charter and/or an application form to apply on an European call for tender of the EASI, INTERREG or ERASMUS+ programmes. The latter - on the Key Action KA2 Sub-Action: Sector Skills Alliances in vocational education - has already financed the Metis4Skills²⁴ project in the microelectronics sector which we consider as a best practice also for the sector of mechatronics.

Inspired by this project, a first key activity of the Observatory should focus on the definition of a skills observation strategy, capable of directly involving companies and employers²⁵ of the mechatronic sector: as in the case of Metis4Skills, it should be "driven by industry and education members, that will allow a constant exchange on a defined basis with policy makers"²⁶. Also in our case we believe that the observatory must provide for the presence of a Skills Expert Committee (constituted by experts in the management: 1) of the Austrian Berufslexikon and Ausbildungskompass and 2) of the Italian Atlante del Lavoro and QPR / SST repertoires of the Region FVG) through thematic groups that could facilitate the exchange of points of view and the optimal mapping of the most requested skills.

The Observatory and the Skills Expert Committee should bring together the most important "facets of the value chain and education/training actors"²⁷ to enhance thus the competitiveness of the CB mechatronic industry. The Observatory for the CB mechatronics sector "thanks to a multi-stakeholder collaborative approach, will develop a strategy based on assessments and projections of the skills supply and demand"²⁸ and will have a highly replicability potential.

Finally, we believe that the developed skills mapping methodology should then also focus on the following topics also envisaged by the Metis4Skill project:

- "Analysis of the demand side, with inputs from industry partners and results of the assessment of the current scenario to provide insight on employment opportunities in the short- and

²³ <https://oead.at/de/>; <https://www.qualifikationsregister.at/>

²⁴ <https://www.metis4skills.eu/skills-strategy/>; <https://www.metis4skills.eu/observatory-and-skills-council/>

²⁵ A useful method is presented in this book: EU commission Directorate General Employment social affairs and Inclusion, Feasibility study for a (self-) assessment tool on skills, management practices in SME's Kantar, Visionary Analytics and Rand Europe January 2022

²⁶ Cit. <https://www.metis4skills.eu/observatory-and-skills-council/>

²⁷ Cit. <https://www.metis4skills.eu/observatory-and-skills-council/>

²⁸ Cit. <https://www.metis4skills.eu/skills-strategy/>

medium-terms”²⁹ if possible using the tools already tested by Euradria in the CB area between Italy and Slovenia;

- “Current skills challenges for employers (skills, competences, ...)”³⁰ which also contemplates the skills envisaged by the specific regional QPR/SST repertoires of FVG, by the Atlante del lavoro, by the Austrian Beruflerikon and by the *Kompetenzorientierter Lehrplan of the Fachberufsschulen*, also at the level of internships and apprenticeships of the dual system;

- “Assessment of current supply, investigating not only the current VET provision, but also dynamics of the existing workforce, new entrants’ perspective, retention rates, provision of and higher-level skills” and “Scenario analysis of inter-regional/cross-border mobility”³¹ also enhancing the analyzes we are setting up to create a more efficient CB market labour observatory for the monitoring of commuter flows between FVG and Carinthia.

The main outputs of the first activities of our Observatory, which will operate as a joint project design structure, could therefore be the following:

- The identification of at least a dozen of professional profiles - taken over from the Beruflerikon, the Atlante del Lavoro and the QPR repertoires - that could be recognized bilaterally of high European and CB added value in the mechatronic sector;

- A collection of skills fact sheets illustrating the cross-border skills strategy for the mechatronic supply chain for those professional profiles considered more strategic (Cf. Metis4Skills interviews and skill surveys);

- A detailed report on the methodology to be followed both by companies and by the training system, also at the level of organization of internships and possible apprenticeships³²;

- An informative brochure that captivantly illustrates the main strategic axes of intervention of the Observatory.

Solution Workpackage Proposal 3: introducing new joint administrative procedures and training actions for skills recognition at EQF level 3 and EQF level 4

A third, fundamental work package addresses the lack of **joint administrative mechanisms**, functional to the organization of cross-border skill recognition, especially through apprenticeship courses as already implemented for example between Italy and Austria by the professional school of the province of Bolzano³³ for the training of mechatronic apprentices or as envisaged by the PNRR - Mission 5 - Component 1 - Investment 1.4 Dual System.

In the latter case, the National Recovery and Resilience Plan (Pnrr), approved with the Implementing Decision of the ECOFIN Council of 13 July 2021 and in particular Mission 5, Component 1, Investment 1.4 "Dual system", aims to strengthen the dual system, through the institution of apprenticeship, in order to ensure a more effective correspondence between learning and skills requested by the employers and companies involved in the dual system.

Therefore, today with this new tool we also have the possibility of expanding the training offer and the CB skill mapping also in the field of Italian 1st level apprenticeships given that the Investment program 1.4 of the PNRR «Dual system» provides that new forms of apprenticeship can be realised through transnational mobility activities between Italian Regions, Ministry of Labor and Social Policies, also through the Erasmus+ National Agency, set up at INAPP. These transnational mobility actions could be carried out in a dual mode in line with the strategies envisaged by the Erasmus+ 2021-2027 Programme. In essence, we can draw inspiration from the three-year apprenticeship course of the province of Bolzano which already trains at the CB level a “Mechatronician” to see if, with Erasmus + and/or PNRR funds, we can activate a Joint administrative mechanism for new experimental training actions typical of a dual system also between FVG and Carinthia.

²⁹ Cit: <https://www.metis4skills.eu/skills-strategy/>

³⁰ Cit: <https://www.metis4skills.eu/skills-strategy/>

³¹ Cit: <https://www.metis4skills.eu/skills-strategy/>

³² Cf. Metis 4 Skills, Deliverable D2.1 – Common methodology to assess, anticipate, monitor evolution of the Microelectronics Sector with a focus on skills and competences, 2021, pp. 33-112 for companies e pp. 113-162 for education and training organisations.

³³ https://berufsberatung-studieninfo.provinz.bz.it/it/ricerca-professionisti/meccatronica-e-meccatronico?abi_workid=609

To this end, the actors who, in our opinion, could sit around a table - if possible the one already activated by the joint project design structure of the our skills observatory - would be the following: FVG Region IeFP Training Office + Permanent structure for the administrative management of vocational education and training and those related to the training of apprentices; Bildungsdirektion Land Kaernten; Cluster COMET FVG, Industrial parks and consortia, CSIR FVG Carinthia; Professional schools accredited in the mechatronic sector by the FVG Region; Effepi Fvg; Fachberufsschulen Carinthia; BFI Kaernten; Lehrlingsakademie Karnische Region³⁴.

The key players for defining the first joint administrative procedures for the activation of cross-border apprenticeship could in the meantime be, together with the FVG Region IeFP Training Office, two public schools: the ISIS Solari Tolmezzo, which activated the course in "Mechanics, mechatronics and energy" and which is closest to the border with Austria and the Fachberufsschule Villach 1 which follows three-year apprentices in Mechatronics³⁵.

We propose to move first with public schools and then to follow the cross-border apprenticeship model already implemented between South Tyrol and North Tyrol. In essence this model is described as follows³⁶:

"Mechatronic apprenticeship

Requirements:

- age: from 15 years up to the age of 25
- passing the final state exam of the first cycle of education (Middle School Diploma)
- duration: 4 years
- apprenticeship contract and practical training in a company
- attendance of theoretical lessons in German at the Professional School in Austria³⁷, in the form of block courses, since there are no specialization courses in the province of Bolzano in the field.
- conclusion of the training with qualification exam.

School

Provincial Professional School for Industry and Crafts (in German), mechatronics specialization (3 years) with specialization in Mechatronic system maintenance and repair techniques (1 year), or a corresponding Technological Institute".

Expected medium-term output: cross-border apprenticeship course project in Mechatronics, recognized at EQF 3 or EQF 4 level, and organised jointly at CB level by Austrian/Italian companies, by a professional school in FVG and by a Fachberufsschule in Carinthia. The objective would be to use European Funds from the Erasmus+, PNRR or – if possible - also Interreg Italy Austria (also CLLD) programmes to test the joint administrative feasibility of some training activities on key CB skills in the mechatronic sector. The basic precondition is that apprentice candidates interested in CB exchange demonstrate good language skills in German, Italian or English: languages that are used in CB schools and/or companies.

Solution Workpackage Proposal 4: introducing new joint administrative procedures and training actions for skills recognition at EQF level 5

A fourth, fundamental work package addresses again the lack of **joint administrative mechanisms**, functional this time to the organization of cross-border advanced training apprenticeships in mechatronics at EQF 5 level. In this case, an Italian ITS and an Austrian *Hoehere Technische Bundeslehranstalt* would be involved.

It is an experimental project idea that looks beyond the cross-border internship or traineeship proposals (including paid ones) already followed by Eures advisers.

We want instead to delve into a sector - the Italian higher education apprenticeship contracts - which primarily offer greater salary opportunities and job stabilization for students. This could be particularly attractive towards Austrian young job seekers who could be interested in working for a period in Italy. Furthermore, compared to internship tool, they stimulate a higher loyalty engagement

³⁴ <https://www.karnische-region.com/lehrlingsakademie/>

³⁵ https://www.bfi-kaernten.at/aut_de.html-1-start.php

³⁶ https://berufsberatung-studieninfo.provinz.bz.it/it/ricerca-professionisti/meccatronica-e-meccatronico?abi_workid=609

³⁷ cf. <https://tfbs-kufstein.tsn.at/lehrberufe/mechatronik>

of our students towards companies. Finally, they involve companies and employers in a more active way in terms of financing directly the apprentice, in looking for those CB skills they need most, thus also helping us to optimize the methodologies and strategies used by our mechatronical Skills Observatory.

In developing this idea, we took inspiration from the following two projects: first of all, we refer the Euradria project and the initiatives of the Eures advisers who promoted the European to apprenticeship in the handbook: *"How To CB A&T: A brief guide for cross-border hosting organisations, sending organisations and data providers on how to publish and manage Apprenticeship and Traineeships job offers within the Cross-Border region and on the Euradria one-stop-shop portal"*³⁸

Secondly, we are referring to the courses in mechatronics organised by *ITS meccatronico del Veneto* which provide for the possibility of carrying out the internship foreseen also through a "Level III Higher Education Apprenticeship" contract. This is a particular type of apprenticeship which can lead - at least in Veneto - to the achievement of the ITS degree. The apprenticeship contract will last for the duration of the entire ITS course. At the end, the company will be able to withdraw from the contract, otherwise it will turn into a permanent contract".³⁹

Now, inspired by Euradria and by the indications contained in the Council Recommendation on a European Framework for Quality and Effective Apprenticeships (EFQEA)⁴⁰ which recommends **that transnational mobility of apprentices**, either at the workplace or education and training institutions, **should be progressively promoted as a component of apprenticeship qualifications**⁴¹, we therefore propose to study the feasibility of a CB path of apprenticeship of high level mechatronical training between an ITS of FVG and a *Hoehere Technische Bundeslehranstalt* of Carinthia.

To this end, the actors who could sit around a table to discuss the idea could be the following: FVG Region Training, Employment Directorate - Higher education and research training and apprenticeship service; an INAPP expert in ITS courses and in the Atlante del Lavoro platform; Eures network advisers involved in Euradria; Bildungsdirektion Land Kaernten; AMS Berufslexikon and Ausbildungskompass expert; CSIR FVG Carinthia; ITS Malignani and Höhere Technische Bundeslehranstalt 1 Klagenfurt. In this case, the Eures advisers of Euradria could support their Austrian colleagues in analyzing the joint administrative procedures required for the activation of a cross-border higher education apprenticeship.

Expected medium-term output: cross-border high-level apprenticeship course project in Mechatronics, recognized at level EQF 5 and organised jointly at crossborder level by Austrian/Italian companies, by an ITS school in FVG and by a *Hoehere Technische Bundeslehranstalt* in Carinthia. The objective would be to use European Funds from the Erasmus+ or – if possible - also from the Interreg Italy Austria (also CLLD) programmes to test the joint administrative feasibility of some training activities on key CB skills in the mechatronic sector. The basic precondition is that apprentice candidates interested in CB exchange demonstrate good language skills in German, Italian or English: languages that are used in CB schools and/or companies.

IV) A full list of all legal provisions relevant to the case with the correct citation both in original language and in English

Austrian legal and administrative acts concerning the federal School System

- Bundesgesetz vom 25. Juli 1962 über die Schulorganisation (Schulorganisationsgesetz). Bundesgesetzblatt fuer die Republik Oesterreich BGBl. Nr. 242/1962; Kundmachung 08/08/1962
- - Federal Law of 25 July 1962 on School Organization (School Organization Law). Federal Law Gazette for the Republic of Austria BGBl. No. 242/1962; Official publication date 08/08/1962
- Bundesgesetz über die Ordnung von Unterricht und Erziehung in den im Schulorganisationsgesetz geregelten Schulen (Schulunterrichtsgesetz – SchUG) StF: BGBl. Nr.

³⁸ https://euradria.eu/wp-content/uploads/2022/01/CHECKLIST-AT_EURADRIA_final.pdf

³⁹ <https://www.itsmeccatronico.it/project/nuovo-its-per-le-aziende/>

⁴⁰ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32018H0502%2801%29>

⁴¹ Euradria "How To CB A&T", p.4

472/1986 (WV) Kundmachung: 05/09/1986; Federal law on the organization of teaching and education in the schools regulated in the School Organization Act (School Instruction Act - SchUG) StF: Federal Law Gazette No. 472/1986 (WV) Official publication date 05/09/1986

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- Recommendation of the European Parliament and of the Council of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning (Text with EEA relevance)

- Council recommendation of 22 May 2017 on the European Qualifications Framework for lifelong learning and repealing the recommendation of the European Parliament and of the Council of 23 April 2008 on the establishment of the European Qualifications Framework for lifelong learning

V) Other relevant aspects to this case if relevant

In order to create a "vibrant" labour market in the mechatronics sector between FVG and Carinthia, we must not forget another main obstacle: currently there is no reliable track-keeping system to monitor crossborder commuters.

The collection of reliable data on cross-border labour force mobility is a preliminary step to identify obstacles, bottlenecks and disfunctions and, consequently, to implement policies, measures and solutions to overcome them also for companies that are part of the mechatronic economical sector.

We invite thus to consider also for this study the key results and the solution proposals that we have listed in the B-Solutions Advice case titled: *Mapping CB workers/LM between FVG (IT) & Carinthia (AT)*

For our purposes having a „reliable“ commuter track-keeping system means that we could also have verifiable data on CB commuting that involves the mechanical and mechatronic labour market. We have presented provisional data also in our report for CSIR FVG Carinthia intitled: *Cross-border working mobility between Friuli Venezia Giulia (IT) and Carinthia (AT)*. If we

deepen the analysis of the manufacturing/meccatronic chain at NACE 2 level, we can immediately imagine which companies to contact in the Carinthian area that are more relevant for our outgoing Italian commuters: 19 commuters (women and men together) are indicated for 2021 in the sector: manufacture of articles in rubber and plastic products; 16 commuters (women and men combined) in the sector: manufacture of computers and electronic products.

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VII Contacts

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