

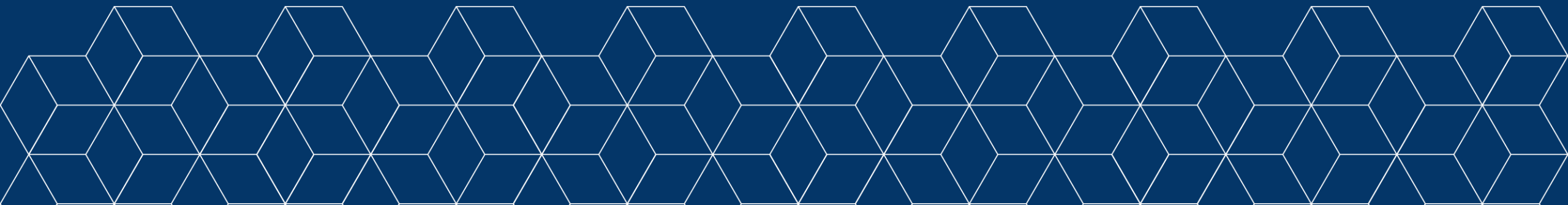


ROBERTO ANGOTTI, CONCETTA FONZO - INAPP

# **DIRECT AND INDIRECT EFFECTS OF THE DIGITALISATION OF COMPANIES ON THE CONTINUING TRAINING SYSTEM**

ReferNet Partnership Forum 2023

Virtual event, 25.05.2023



**CONTENT**

**CONTEXT**

**METHODOLOGY**

**RESULTS**

**KEY ISSUES**

**CONCLUSIONS**



## CONTEXT: GENERAL OBJECTIVES OF THE RESEARCH PROJECT

To carry out a qualitative study on Continuing Vocational Training (CVT) linked to the digital transition processes of companies and the institutionalization of new training needs at local, regional and national level

### A twofold investigation:

#### → Within companies

- To understand how the needs of **Industry 4.0 (I4.0)** profiles and skills are evolving on the basis of production changes and the organizational model (on the one hand, new professional figures and related profiles and skills, on the other the integration of clusters of skills in already traditionally consolidated profiles were explored);
- To examine in what form and extent these profiles and skills are the subject of continuing training actions.

#### → Within CVT system

- To analyze how the needs of companies are institutionalized, incorporating them into the training supply of Regions/Autonomous Provinces, Interprofessional Funds, training agencies, Competence Centers, Digital Innovation Hubs, etc.;
- To analyze strengths and weaknesses in the process of integrating I4.0 continuing training policies both at national level and within the local systems.



## METHODOLOGY: ACTIVITIES 1 AND 2 (CHARACTERISTICS AND OBJECTIVES)

### Activity 1: Desk analysis (1)

The aim was to rebuild the framework of the scientific literature on the topic of I4.0 skills and related sectorial policies, analyzing the national and international context, in order to articulate in detail the conceptual framework of the research.

### Activity 2: Interviews with privileged testimonials (25)

**Typology A)** – Company representatives: the aim was to collect information on I4.0 profiles and skills existing in companies and supply-demand of CVT I4.0 (entrepreneurs, HRM, heads and managers of I4.0 sectors, experts).

**Typology B)** - Actors of the CVT system: the aim was to collect information on the institutionalization processes of the I4.0 profiles and skills, the characteristics and incidence of the I4.0 professional figures and skills in the overall training supply of Interprofessional Funds, training agencies, Competence Centers and Digital Innovation Hubs, the forms of integration between actors at local and national level (Public Administration, Interprofessional Funds, training agencies, Digital Innovation Hubs, Competence Centers, experts).



## METHODOLOGY: ACTIVITIES 3 AND 4 (CHARACTERISTICS AND OBJECTIVES)

### Activity 3: Companies case studies (8)

The aim was to map the new professional profiles and clusters of supplementary skills required in the I4.0 field, to understand the emergence of new company training needs, to analyze training strategies and actions in the implementation phase and of any networks that companies use for I4.0 training.

#### **Types of interviewees: 3 interviews with key informants for each case study:**

- a senior profiles (entrepreneur, HRM, etc.)
- two operational profiles, of which a manager (head of corporate CVT, I4.0 managers) and a line technician (production of goods/services)

### Activity 4: Focus groups (7)

**4 territorial FGs** (at regional or provincial level) – the aim was to rebuild the state of implementation of the policies, including the hindering factors and the possible evolutions for improvement of the system, through the comparison with the institutional and private actors of the continuing vocational training system.

**3 thematic FGs** - structured around 3 specific key issues.



# METHODOLOGY: TERRITORIAL FG (4): ACTORS INVOLVED AND OBJECTIVES

| ACTORS                   |
|--------------------------|
| Regional administrations |
| Autonomous Provinces     |
| Interprofessional Funds  |
| Training agencies        |
| Digital Innovation Hub   |
| Companies                |
| Social Partners          |
| Universities             |
| Technological hubs       |
| Experts                  |

## Goals

- Rebuild the state of implementation of the I4.0 continuous training policies and their recent evolutions realized autonomously and within integrated territorial networks.
- Identify the processes of need analysis of the I4.0 profiles and skills of companies and their subsequent inclusion in training systems.
- Analyze the main strengths/weaknesses of the relationships between the policies promoted between the different actors.
- Discuss the factors hindering the transition towards an integrated territorial system of continuous training in the I4.0 field.
- Identify and discuss possible improvements to the continuous training system in the I4.0 area, as well as their interrelationship with businesses and the network of services promoted by the I4.0 Plan and subsequent additions.
- Analyze some successful cases taken from the local context in the field of network structuring of territorial actors and their connections aimed at promoting the development of adequate territorial training capital in an I4.0 logic.



METHODOLOGY: THEMATIC FG (3): ACTORS INVOLVED AND OBJECTIVES

| ACTORS                                                                |
|-----------------------------------------------------------------------|
| National Interprofessional Funds                                      |
| Competence Centre                                                     |
| Networks of Digital Innovation Hubs (Confindustria e Confartigianato) |
| National Training agencies                                            |
| Companies                                                             |
| Social Partners                                                       |
| Ministry of Economic Development                                      |
| Ministry of Labour                                                    |
| Experts                                                               |
|                                                                       |

Goals

- Thematic Focus Groups carried out at a supra-regional level.
- The thematic cores identified are the following:
  - the evolution of I4.0 training in the Mechatronics sector;
  - the long supply chain of vocational education and training for the development of I4.0 skills;
  - gender gaps in continuous training in the I4.0 field.



## METHODOLOGY: ACTIVITIES 5 (CHARACTERISTICS AND OBJECTIVES)

### Activity 5: National Workshop (1)

The aim was to analyze and compare the research outcomes with key actors at national level: Ministries, managers of leading Competence Centers and Digital Innovation Hubs (like e.g., Confindustria and Confartigianato), trade union representatives, major training agencies, experts and academics, in order to:

- present the first results of the research;
- take stock of the policies and their integration at the national level;
- collect indications and solicitations to keep on the investigation.





## RESULTS: MACRO TRENDS IN COMPANIES (1/2)

### The Italian way to I4.0

Transformation of I4.0 profiles and skills with a focus on strengthening consolidated roles, via upskilling rather than new roles and profiles.

### The specific aspects of SMEs

Digital innovation mainly generated by external causes rather than by an endogenous strategic development of business models.

Focus on a generic digital transition, rather than on the introduction of enabling technologies.

The role of the innovation manager (external profile) is effective and decisive.

### The post pandemic

Current loss of the driving effect on digitalisation, previously generated by the lack of alternatives to remote working.

Tendency towards a renewal of pre-pandemic work processes, given the limited skills/training to support the digitization of the company in the acute phase of the pandemic.



## RESULTS: MACRO TRENDS IN COMPANIES (2/2)

### Analysis of training needs

This aspect tends to be critical in SMEs, linked to the scarce use of dedicated reading systems and structured collection processes.

Widespread problem in connecting technological development and parallel organizational development (which assumes the generation of training needs exceeding the simple supervision of work processes).

### Funding sources

Prevalence of direct use of Joint Interprofessional Funds.

Minority presence of highly differentiated models, with a mix of public and private resources.

Widespread opinion about the complex procedures required by companies to use National funds, which prevent its wider dissemination.

### Planning of training supply

Limited use of complex supply planning systems to manage the skills of the entire staff and correlate them to company development plans.

Average preference for systems based on the correspondence between training needs variously identified (mainly by function managers) and path planning.

Limited presence of internal academies.



# RESULTS: MACRO TRENDS AT LOCAL LEVEL (1/2)

## Regional models

Tendency: absence of specific models for CVT I4.0.

Mostly derived from CVT programming in general (articulated, for example, by supply chain, production clusters, technological clusters, etc.).

## Consultation of the actors

Tendency: lack of specific I4.0 offices and channels.

Mainly within bodies entrusted with consultative functions on the entire spectrum of vocational training or in the field of active employment policies.

## Institutionalization processes

At the moment, the institutionalization processes appear highly heterogeneous, with an extremely variable role on the part of the administrations.

Widespread protagonism of accredited VTCs, which in fact fulfill the role of supporting companies in interpreting company needs and translating them into training interventions.

Some cases with a strong directing role on the part of the public administrations.



## RESULTS: MACRO TRENDS AT LOCAL LEVEL (2/2)

### Convergence between territorial actors

Emerging data: numerous cases of companies that promote forms of self-organization in the form of structured networks, consortia, permanent clusters (emergence of bottom-up aggregation processes), sometimes fostered by public intervention.

### Structuring ecosystems for CVT I4.0

At the moment, it is fragmented looking at the whole national picture.

New phenomena of structured collaboration between:

- Networks and consortia of companies;
- Networks and consortia of companies + Digital Innovation Hub, Competence Center.

### Presence of new actors in the local area

First of all, the European Digital Innovation Hubs.

Northern European model (only partially related to the German Fraunhofer).

With strong territorial roots, they differ from the Competence Centers, which operate by mandate on a national level of action.



## KEY ISSUE 1: MULTI-ACTOR AND MULTI-LEVEL GOVERNANCE

**The research results lead to the following conclusions related to the key issue “governance”:**

- There is no specific governance on the issue of CVT I4.0, either at national or local level;
- A tendential absence of a coordination function at territorial level, which could counteract the tendency of fragmentation or overlapping of interventions;
- Some approaches and objectives of National Plans (like e.g., the National Skills Plan) could be resumed and pursued also at local level, so as to connect the various resources, resorting to the model of integrated territorial networks;
- The current forms of synergistic programming between Regions and Funds could be multiplied in the country, generating forms of structured interlocution and mutual provision of data and knowledge tools on current phenomena and trends affecting the world of CVT I4.0.



## KEY ISSUE 2: DIGITAL TRANSITION OF HUMAN RESOURCES

**The research results lead to the following conclusions related to key issue “digital transition”:**

- There is scarcity of policies dedicated specifically to I4.0 while there is attention to the issue of digital transition in general, as evidenced by the preponderance of "generalist" tenders.
- A “blurring” border between I4.0 and digitalization confirmed by the actors involved;
- There is not a problem of resources but of coordination in their efficient and effective use;
- It appears easier to satisfy the need for technical-professional skills on enabling technologies while the skill-gap for companies concerns more basic and transversal skills;
- The lack of attention to the prerequisites for adult education has an even greater impact on the I4.0 transition due to the scarce presence of basic digital skills and knowledge, combined with the pervasiveness of the transformation on all company processes and on the entire workforce.



# CONCLUSIONS

## **The questions that remain open... ideas for the further development of the research project:**

- To broaden the focus on the digital transition, overcoming the "unstable" boundary with the I4.0 theme
- To explore the perspectives of all Italian regions
- To involve new actors: strategic the role of European Digital Innovation Hubs
- To carry out benchmark analysis at European level
- To provide an integrated approach to qualitative and quantitative analysis (data from the 4° edition of the [INDACO-Companies survey](#) will be soon available. The survey (methodologically harmonized with Eurostat CVTS) is carried out by INAPP on a sample of 20.000 companies and a section of the questionnaire is dedicated to the digital transition)
- ..... a National position paper....
- ..... **Proposals** and **suggestions** from the ReferNet Partners are welcomed (email to: [r.angotti@inapp.org](mailto:r.angotti@inapp.org) / [c.fonzo@inapp.org](mailto:c.fonzo@inapp.org) )





# THANK YOU FOR YOUR ATTENTION!

ROBERTO ANGOTTI  
[R.ANGOTTI@INAPP.ORG](mailto:R.ANGOTTI@INAPP.ORG)

CONCETTA FONZO  
[CFONZO@INAPP.ORG](mailto:CFONZO@INAPP.ORG)



[www.inapp.org](http://www.inapp.org)