INDUSTRIAL REVOLUTION 4.0 COMING TO OUR LIVES

Project
Strengthening SMEs capacity to engage in Industry 4.0

40Ready - Strengthening SME capacity to engage in Industry 4.0

ACTION PLAN

General Information

Project	Strengthening SME capacity to engage in Industry 4.0
Partner organisation	Regional Intermediate Body for Sectoral Operational Program Human Resources Development - Bucharest - Ilfov Region (RO)
Country	Romania
NUTS2 region	Bucharest - Ilfov Region
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Policy Context

Name of the Policy Instrument(s) addressed:
Policy Instrument "Digital competencies for SMEs' employees; Operational Programme Human Capital 2014-2020

Type of policy instrument	
Investment for Growth and Jobs programme	YES
European Territorial Cooperation programme	NO
Other regional development policy instrument	NO

Details on the regional context

The concepts of digitalisation and Industry 4.0 are becoming a reality for Romanian SMEs. Automation, Artificial Intelligence (AI), the Internet of Things (IoT), Blockchain and other advanced technologies quickly capture and analyse a multitude of data that provide many types of information becoming vital for SMEs' business transformation.

The background for our Plan is anchored on information provided by: Small Business Act Factsheet 2019 for Romania; DESI 2019 report for Romania; SME Needs Analysis survey *"Industrial revolution 4.0 coming to our lives"*.

According to these, in recent years:

- Overall SME value added in Romania grew by 43.1%, with micro firms generating the highest increase, at 63.1%, while SME employment increased by 7.0%.

- The average productivity of Romanian SMEs is significantly lower than the EU average, SME value added continued its growth, increasing by 14.6%.

- SME employment rose by 2.6%. In 2018-2020, SME employment was likely to maintain growth around the same figure of 2.6%.This rise in SME employment was projected to create about 70,000 new SME jobs by 2020.

- Romania performs above the EU average in entrepreneurship.

- The focus of SME policy priorities should continue to be on skills & innovation and single market since significant challenges persist in these areas.

- Romania continues to have the lowest level of use of internet services among EU Member States, which corresponds to the lowest level of basic digital skills in the whole country; 18% of people aged 16 to 74 years old have never used the internet (EU average: 9%). Only 3% of Romanian internet users sell products online and only 4% attend online courses.

- There has been a slight increase in the percentage of ITC specialists, but they represent a much lower proportion of the workforce than in the EU (2.2% compared to an average of 3.9% EU); the ITC specialists represent 1.2% of all employed women. There are good results in terms of ITC graduates, ranking 5th among Member States, with 5.6% of all graduates.

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- The subject of Industry 4.0 has started to be an important topic, with real interest from all stakeholders (SMSs' representatives and public administration' deciders, etc.), development needs and adapting readiness are being expressed with loud voices.

- Respondents' interest was clear expressed for the Industrial Revolution 4.0' major technologies: Social Media, Mobile Services, Cloud Technologies, Internet of Thinks, Cybersecurity Solutions, Robotics and automated machinery, Big data and data analytics, 3D Printing, Artificial intelligence, Bitcoin and Blockchain.

- Top 3 major technologies (from interest point of view) have become: social media (66%- 32% very interested, plus 34% extremely interested), Cybersecurity Solutions (59%- 35% very interested, plus 24% extremely interested) and Cloud Technologies (59%-30% very interested, plus 29% extremely interested);.

The current challenge at country level is to change the way of thinking, learning, working of SMEs, to create added value by digital technologies; in other words, to create awareness of industry specific technology areas 4.0 (social media, mobile services, cloud technologies, the Internet of Things, cybersecurity solutions, robots and automated machines, large data and data analysis, 3D printing, artificial intelligence, bitcoin and blockchain), prepare for digital transformation and implement it.

Romania has the necessary advantages (internet speed, IT sector development, state-of-the-art technology already present in large production facilities, specialized workforce) to make a leap towards digitalization and Industry 4.0.

Moreover, technological progress in the digital field has an influence on existing occupations. In this context, the need for permanent qualification among employees has become a constant variable in the Romanian business environment. Companies, SMEs too, are forced to ensure a continuous development process, especially regarding digital skills of employees.

Further details on the policy context and overview of 40 Ready Action Plan

The policy instrument addressed by the present Action Plan is the "Digital competencies for SMEs' employees; Policy: Operational Programme Human Capital 2014-2020.

This Policy instrument is part of the Main Axis "Working places for all" and main objective is to increase the level of knowledge/competencies/skills of employees from economic sectors/domains identified by the "National Strategy for competitiveness 2015-2020 (CNS)" and "National Strategy for research, development and innovation 2014-2020 (SNCDI)". The expected result is: increased number of employees whose knowledge / competences / skills have improved in the fields related to the economic sectors / areas identified according to the CNS and SNCDI

The present Action Plan's aim is to improve the governance of the addressed policy instrument supporting the development of digital skills in technological areas specific to Industry 4.0, through an update of an evaluation criterion within the Applicant's guide.

Action - New evaluation criterion supporting I4.0 domains acknowledgement

The Action is relevant to Main Axis 3 - Jobs for all/ Specific Objective 3.12: Increasing employees' level of knowledge/competencies/ abilities related to economic sectors/domains listed by SNC

(National Strategy for Competitiveness) and SNCDI (National Strategy for Research, Development and Innovation). The Policy instrument is addressed through the update of the document "The Applicant's Guide – Specific Conditions":

1. Chapter 1 ("Information on the call for projects")/A1 "General Context"

2. Annex 3 "Criteria for evaluation and technical, financial selection "

The Action Plan expects to attain the following objectives:

- Contribute to the business context of the Policy instrument with our survey results ("Industrial revolution 4.0 coming to our lives");

- Contribute to the evaluation and selection process with a new criterion, which links clearly the concept of digital competencies with the specific technological domains of I4.0.

Policy Improvement achieved during Phase 1 of the 40Ready project

In Semester 3 of 40Ready, the "Digital competencies for SMEs' employees" Programme (Operational Programme Human Capital OPHC 2014 – 2020, Priority 3, "Jobs for all", Axis 3.12 "Improving employees' level of knowledge / skills / skills related to economic sectors / areas identified according to SNC") was improved. A new criterion was included within Appendix 3 of the Applicants Guide ("Criteria for evaluation, technical and financial selection. – Digital competencies for SMEs employees".

The improvement was a result of the 40Ready exchange *(see details in Action 1 below)*. In fact, several Good Practices exchanged with 40Ready partners from December 2020 to January 2021 showed the relevance of developing digital competences to initiate thorough digital transformation paths for SMEs. The cooperation of public private sectors appeared as pivotal to this end, as also confirmed by further exchanges with project partners.

The new evaluation criterion introduced for the call "Digital competencies for SMEs' employees" Program, allowed the MA for POCU (the Ministry of Investments and European Programmes) to have a better applicants evaluation, and to help SMEs acknowledge the I4.0 domains on which to focus their digitalisation, in general and to develop employees' competencies.

The call was opened on August 2020 and closed on October 2020, with the main objective to increase the level of employees' knowledge/competencies/ skills related to economic sectors/domains identified according to the SNC (National Strategy for Competitiveness) and SNCDI (National Strategy for Research, Development, and Innovation).

The expected result is an increased number of employees, with competencies improved. Eligible activities were 4: providing professional development programs (digital competencies basic, advanced and for IT professionals); evaluation and certification of digital competencies; support to SMEs organizing on the job programs for digital literacy, IT and communication; organizing and implementing campaigns for employers' awareness. Eligible beneficiaries are employees (5.000) whose activity is related to economic sectors/domains coherent with SNC and SNCDI.

ACTION *Title*
New evaluation criterion supporting I4.0 domains acknowledgement

Policy Need	**Typology of Policy Improvement**
IT skills are essential for Romania's transition to a knowledge-based economy, to "second chance" education reforms and to lifelong learning, as well as to the successful introduction of electronic public services. SMEs need EU funds attraction as main countable source in their adapting effort to Industry 4.0. Public funds need to stimulate SMEs employers to develop the digital skills of their employees/workers, in order to increase their employability and adaptability to the dynamics of potentially competitive economic sectors identified according to the SNC (National Strategy for Competitiveness) and in areas of smart specialisation according to SNCDI (National Strategy for Research, Development and Innovation).	The Typology of policy improvement is type 2 *(change in the management of the policy instrument - improved governance).*

Description of the proposed Action
The proposed Action pursues the **overall objective** to create awareness of I4.0 specific technology areas in SMEs, prepare and implement digital transformation accordingly.   Building on the content exchanged with 40Ready partners, a number of successful experiences in addressing digital competence development and support to digital transformation processes were discussed with regional stakeholders. In order to integrate SME's needs, implementing digital learning through partnerships between public and private sectors, auditing digital performances and competences, the opportunity to improve the selected policy instrument was recognised in the update of "The Applicant's Guide – Specific Conditions" for the call "Digital competencies for SMEs' employees" Program.   The following areas are improved: 1. Chapter 1 ("Information on the call for projects")/A1 "General Context"   A statement related to our project: *"According to the study carried out within the "40Ready" project funded by the Interreg Europe program, a major interest of the respondents for the I40 field and for the development of digital skills was confirmed. Following this analysis, it turned out that most of the responding SMEs have little-moderate knowledge in the digital field (71%), are prepared to a small-moderate extent for the changes brought by the Industrial Revolution 4.0 (55%) and have initiated actions change, to a moderate extent. (60%). The overwhelming majority of respondents appreciated the Industrial Revolution 4.0 as an opportunity. The most important conclusion of the study is that, soon, SMEs need access to European funds as the main source of confidence on which to base their efforts to adapt to the Industrial Revolution 4.0."*

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2. Annex 3 "Criteria for evaluation and technical, financial selection "

A new criterion in category 2. ("Effectiveness")/subcategory 2.5 (Project represent added value): "It is taken into consideration Training/assessment and certification of digital skills is provided in the following technological areas specific to Industry 4.0: social media; mobile services; Cloud technologies; the internet of things; cyber security solutions; automated robots and machines; large data and data analysis; 3D printing; artificial intelligence; Bitcoin");

Main benefits of these improvements are that applicants' projects will be selected in a much clear way, direct connected with Industry 4.0. The Managing Authority for POCU will have a new evaluation criterion that can ensure the applicants are connected with Industry 4.0; that SMEs, as applicants, will acknowledge the main Industry 4.0.domains to focus on their digitalisation path in general and specifically for developing employees' digital competencies.

As follow-up of the improvement, the implementation of Action 1 continues with the identification of a set of indicators to monitor the results of the call and to feedback into the policy instrument for potential further enhancements in the programming period 2021 – 2027. The implementation of this improvement will be monitored with the following KPIs:

1. Total number of approved projects that received a score at point 2.5.

2. Number of employees from SMEs who will attend the digital competencies development programs.

3. A set of good practices resulting from visit reports and successful implementation, to be posted on the OIRBI website.

The improved Policy Instrument was launched on August 17th 2020 with deadline on October 30th 2020. The applications evaluation was completed, and the selection closed. On March 12th 2021, the list of non-funded proposals was published. On May 7th 2021, the list of financed projects was published.

Due to various political changes (new Governments, new ministry, changed source of financial resources) the implementation of this Policy Instrument is still delayed. 20 contracts are signed yet, but SMEs have not yet started their investment in developing employees' digital competencies. During 40Ready Phase 2, projects are expected to be implemented and the 40Ready will monitor their progress closely.

Background – regional and interregional inspiration	
Regional / National input, including input from Stakeholder Groups	National input to this action came from our stakeholders in general, in particular from the Management Authority for POCU (part of the Ministry for Investments and European Programmes), the policy maker of the Policy Instrument "Digital competencies for SMEs' employees".

Work on this Action began on January 28th, 2020, with the Stakeholders Event for 2nd Semester of 40Ready. During this workshop, we presented the point of views generated by the results of the survey "Industrial revolution 4.0 coming to our lives", carried out within 40Ready. We discussed what support SMEs needs and what public policy changes would be necessary to answer these needs. . |

	The event's participants, working in group discussions, came with answers to the following 2 questions: 1. What support do SMEs need for rapid adaptation to the 4.0 industrial revolution? 2. What are the public policies in which we can interfere immediately? Following the identification of the priorities to address, cooperation with stakeholders proceeded on finding the right policy measure to update with the findings coming from 40Ready. It was on request from the MA for POCU that the chance to amend the Applicant's Guide emerged.
Transfer of Good Practices (interregional input)	The interregional learning process in Phase 1 helped us to understand other partner countries efforts. In particular, possible ways to address the policy needs were discussed with Navarra, in the following occasions: 1. Kick Off meeting September 2019 in Florence; Navarra's presentation on "Regional Diagnosis of Industry 4.0 in Navarra (October 2018)". 2. Good Practices exchange (February- April 2020); we discovered similarities with Navarra's approach. During the 40Ready Kick Off, our partner from Navarra presented an SME survey carried out in Spain. We learned about and discussed the data sources, methodology and findings of the survey. The Spanish partner demonstrated the demands from companies for practical support to adapt to I4.0 and offered document exchange. This was a good example for the survey, in terms of methodology and typology of questions, global approach companies take to I4.0 and to training. We adapted this good practice to the specific context in which we work. Several other partner countries (Tuscany, Navarra, Silesia, Wallonia) designed a path for digital competencies development, in particular focusing on needs assessment (e.g., digital maturity index, digital competencies of employees), competence centres (different kind of development programmes where theory is enriched with practice), catalogues of providers for digital competencies development etc. Our learnings could be summarised as follows: 1. We understood it is necessary to educate SMEs related I4.0 in general (the idea of enriching the evaluation criteria of the call with specific technologies was proposed to increase SMEs awareness) 2. We acknowledged the vital connection between a digital related public policy and the need for a digital path, especially for SMEs (digital competencies assessment, blended learning, diverse providers from private/academic/public sectors, practical solutions adapted to 4.0 I and to current challenges); all these originated the proposal to detail the technological areas specific to Industry 4.0 for training/assessment and certification of digital skills (from the new criteria added in the guide). A number of partners' experiences were also deepened at the end of 2020 /

	beginning of 2021. In particular some small group meetings were held virtually to further acknowledge insights on self-auditing services (10/12/2020) and maturity index assessment tools (21/01/2021). Findings were useful to develop monitoring indicators and plan follow-up activities.
Other input from the project (interregional input)	Our Action was also inspired by general learnings from project partners, but also from the Interreg Europe Policy Learning Platform. We studied and shared with stakeholders several relevant documentations, like "Digital transformation and SMEs: what regions can do" (learnings about: facts and trends, challenges and chances for SMEs, European Union's (EU) policy in this field, the role that cities and regions can play to support SMEs in this process).

ELABORATION of the Action
Work carried out within Phase 1

Romania has established (through the National Strategy on the Digital Agenda for Romania 2020, Pillar VI) to increase the level of digital literacy, skills, and inclusion because it creates a bridge to solve the digital divide for all consumers, so that they can benefit equal and full benefits of ICT (Information and communication technologies) services. The Romanian Government has assumed through the Partnership Agreement 2014 - 2020 the horizontal application of ICT at the level of enterprises and authorities as well as the consolidation of the digital business environment.

The survey ("Industrial revolution 4.0 coming to our lives"), carried out at the start of the 40Ready Project, confirmed a major interest of respondents for I40 domain and for digital competencies development. The survey was created and carried out by end of 2019, containing a questionnaire sent by email to respondents and open between November and December 2019.

There is a clear gap in computer skills between generations and levels of education, positively correlated with age and level of education. According to this analysis, most of the SME respondents have little-moderate digital knowledge (71%), are little-moderate prepared for 4.0 Revolution's challenges (71%) and have started changing actions at a moderate level (60%). The great majority of respondents evaluate Industrial revolution 4.0 as an opportunity.

This provides the background to the activities carried out in 40Ready Phase 1, in order to achieve our policy improvement and to define Action 1.

Activity Number	Activity Description	Timing
1	40 Ready team kick off meeting Italy (Spanish survey as a good example for the SME Needs analysis).	17-18 September 2019 (Phase 1)
2	Event presentation to meet SMEs (to be engaged in survey): Romania Tech Nation, organised by the National Council of Private SMEs in Romania.	8 October 2019 (Phase 1)
3	Running time for SME Needs Analysis survey "Industrial revolution 4.0 coming to our lives".	November – December 2019 (Phase 1)

4	Event presentation to meet SMEs: Startup nation. (Opening event for launching this Programme dedicated to SMEs; OIR POSDRU Bucharest Ilfov was guest speaker and used this moment to invite SMEs to participate in the 1st survey).	9 December 2019 (Phase 1)
5	POCU 3.12 public consultation (The Managing Authority for the Human Capital Operational Programme within the Ministry of European Funds launched in public consultation the Guide "Digital skills for SME employees" – priority axis 3, specific objective 3.12. The purpose was to collect proposals and suggestions for improving the documents).	20 December 2019 - 30 January 2020 (Phase 1)
6	Stakeholder workshop from Semester 1. Participants were representatives from Public Administration (Ministry of Economy, Energy and Business Environment, Management Authority for POCU) and from SMEs sector/consultancy (Smart Cities, Digital Innovation Smart eHUB, Best Smart Consulting SRL, Consulting SRL). The workshop's main objective was to share points of view on the impact of Industrial Revolution 4.0 in Romanian society in general and, especially, in Romanian SMEs. The event focused on support for SMEs to adapt to I4.0 rapidly and related public policy options.	28 January 2020 (Phase 1)
7	Meeting with the director of Management Authority for POCU regarding the incoming call of proposals and potential to integrate 40Ready findings.	02 February 2020 (Phase 1)
8	Internal meeting to analyse documentation from "Industrial revolution 4.0 coming to our lives "study, with a view to providing input to call content.	2-4 February 2020 (Phase 1)
9	40 Ready team virtual meeting 3 (matching analysis, Good practices).	17 February 2020 (Phase 1)
10	40 Ready team Needs analysis presentations / Comparing policy contexts.	17-18 March 2020 (Phase 1)
11	40 Ready webinar on action plans.	April 2020 (Phase 1)
12	40 Ready workshops (Context analysis Navarra).	5 May 2020 (Phase 1)

IMPLEMENTATION of the Action		
Activities carried out in Phase 1 / Planned for Phase 2.		
Activity Number	Activity Description	Timing
1	First proposal sent to Management Authority for POCU (the Ministry of Investments and European Programs)	4 February 2020 (Phase 1)
2	Final proposal sent and approved by the Management Authority for POCU (Integrated the learnings in the final	May 2020 (Phase 1)

	proposal to improve the guide)	
3	Applications for the Policy "Digital competencies for SMEs' employees" Programme	August – October 2020 (Phase 1)
4	Evaluation / selection procedure for the call.	October 2020 – May 2021 (Phase 1)
5	Regular meetings with Management Authority for POCU (decision maker), to discuss follow ups to the call.	Monthly (Phase 1 & Monitoring phase)
6	Request to the Management Authority for POCU to provide the list of the approved projects.	Phase 1 & Monitoring phase
7	Extract the total number of approved grants that received a score at point 2.5. (At this moment 20 contracts are already signed)	Phase 1 & Monitoring phase (July-September 2022)
8	Extract information from beneficiaries about number of employees from SMEs who will attend the digital competencies development programmes (*contact with beneficiaries will be indirectly through POCU Management Authority and reporting methodology for the call*).	Phase 1 & Monitoring phase
Activities planned for Phase 2		
9	Monitoring Phase KPIs: • Total number of approved grants that received a score at point 2.5. (80% from approved grants) • Number of employees from SMEs who will attend the digital competencies development programmes. (80% from employees in the target group)	Monitoring Phase
10	Meetings and consultations with POCU Managing Authority on new 2021 – 2027 funding programme to discuss priorities and provide feedback from improved call.	Quarterly Monitoring Phase
11	Meetings and consultations with Ministry of Investments & European Founds on new 2021 – 2027 funding programme to discuss priorities and provide feedback for improved call.	Quarterly Monitoring Phase
12	Consolidate Stakeholders' network + meetings; Objective: to discuss feedback from beneficiaries, as a base to improve this call or to prepare future similar calls.	Monthly Monitoring Phase
13	Survey for project SMEs beneficiaries relating the status on implementing digital competencies development	Monitoring Phase (along the projects' lifespan)

		programs for their employees:	
		• Check if target group of 250 employees per project can be increased during the Implementation Phase (see the KPI "Number of employees from SMEs who will attend the digital competencies development programs") • Monitor "How much of Project financial resources were allocated by each beneficiary on training their employees on digital competencies?" • Monitor "What feedback SMEs' received from their employees after finalising the digital competencies development programs?"	
14		Feedback meetings with POCU Managing Authority relating the status of implementation of digital competencies development programs for SMEs employees.	Monitoring Phase (along the projects' lifespan)
15		Following the results of the study "Digital competencies evaluation for SMEs employees, users of IT technologies", we will schedule meetings with AM POCU, Ministry of Development and European Founds to discuss SMEs development needs to be taken into consideration for further calls.	Monitoring Phase
16		Identification of additional information to be retrieved in the Monitoring phase of the projects, e.g., visits procedure can further inquiry into SMEs' evaluation of their employees' digital development needs, benefits derived from the project, etc. (Meetings with AM POCU, Ministry of Development and European Founds)	Monitoring Phase
17		New communication initiatives related to the policy instrument after Stakeholders' meetings.	Monitoring Phase
18		At least 1 meeting with 1 beneficiary related their status on implementing digital competencies development programs for their employees.	Monitoring Phase

Stakeholders involved	
Name of Organisation	**Role in Action Plan**
Management Authority for POCU	Decision maker
The National Council of Private SMEs in	Policy context information providers and

Romania (CNIPMMR)	consultation partners for implementation
Digital Innovation Smart eHUB	
Best Smart Consulting SRL	
Omega Consulting SRL	

Risk and Contingency Plans

Description of Risk	Level of probability	Description of Contingency Plan
Political changes which can influence the leadership structure of Management Authority for POCU	High	Create a second level layer of discussion within Management Authority for POCU
Possible delays due to postponed budgetary allocation at Romanian government level.	High	Anticipate with Management Authority for POCU the monitoring details to start them when the delays will be solved

Costs and funding sources

Costs	Funding Sources
Human resources costs – 15.600 euro	OIR POSDRU BI organisation's resources.
The amount of funding influenced by the project: 100,48 million RON (20,32 million EURO); The government have allocated this amount for 22 projects, eligible after verification, evaluation, selection (first amount allocated was 96,6 million RON (19,54 million EURO); this was supplemented on February 10th, 2022, with 3,84 million RON (0,78 million Euro)	EU (ERDF) funds

Monitoring

Self-defined Performance Indicators

Indicator	Target	Means of Verification
Total number of approved grants that received a score at point 2.5.	80% from approved grants	In line with Project procedures
Number of employees from SMEs who will attend the digital competencies development programs.	80% from employees in the target group	In line with Project procedures

Output Indicators

Indicator	Target	Means of Verification
Number of stakeholders involved	> 5	Quantifiable outputs

Number of stakeholders meetings organized	Min 1/Quarter	Quantifiable outputs
Number of staff meetings with organized	Min 1/Quarter	Quantifiable outputs

Date **Name of the organisation(s)** **Signatures of the relevant organisation(s)**	