SMARTY
Interreg Europe

European Union
European Regional
Development Fund

SMARTY INTERREG
GOOD PRACTICE GUIDE

Contents

Introduction

From the European Commission's Smart Specialisation Platform for Industrial Modernisation comes the SMARTY project. Seven European regions have joined forces to address common challenges in supporting Small and Medium Sized Enterprises in their awareness and adoption of Industry 4.0 solutions.

The SMARTY project contributes to improving the implementation of regional development policies and programmes. In particular, programmes for the Investment for Growth and Jobs and, where relevant, European Territorial Cooperation programmes that support regional innovation chains in areas of smart specialisation and innovation opportunity. The project also aims to improve the capacity of the fourteen partners to design and deliver policies that support SME innovation projects, with emphasis on investments in services for technological, organisational and commercial innovation.
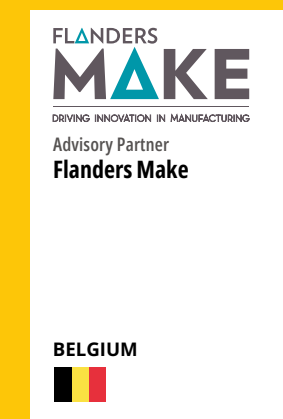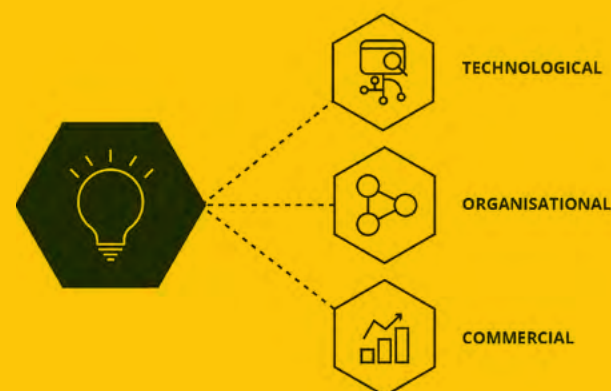
To achieve these goals, the SMARTY project developed and delivered an engaging approach to exchange experiences between regions:

1. In each cycle, Interregional Thematic Seminars provided the venue for regions to exchange and learn from shared Good Practices.
2. After each seminar, the consortium then selected the most promising Practices for a further deep dive, based on a rating system of 3 factors:
   » the achieved impact and track record of the presented good practice
   » the transferability of the good practice from one region to another
   » the relevance of the good practice to the region that would potentially adopt it

3. That further study of the selected practices took place at the project's Interregional Policy Brokerage events, providing stakeholders of multiple regions access to those that designed and implemented such practices.
4. Regions then developed Action Plans that will deliver policy change based on the inspiration of this exchange.

Over the course of the project, this methodology delivered 26 good practices across the 4 thematic cycles included in this collection:

» Theme 1: Regional platforms and clusters supporting SMEs to adopt Industry 4.0 related technologies and increase their competitiveness
» Theme 2: Digital Innovation Hubs for supporting digital transformation in SMEs
» Theme 3: Digitalisation for Green Transition and Sustainability
» Theme 4: Digital Innovation and Skills in Industry 4.0

TECHNOLOGICAL

ORGANISATIONAL

COMMERCIAL

Lead Partner
Municipality of Prato

ITALY

Partner
Textile Center of Excellence

UNITED KINGDOM

Partner
International center of advanced materials and raw materials of Castilla y León

SPAIN

Partner
TECOS - Slovenian Tool and Die Development Center

SLOVENIA

Partner
Łukasiewicz Research Network - Institute for Sustainable Technologies

POLAND

Partner
Regional Council of Lapland

FINLAND

Advisory Partner
Flanders Make

BELGIUM

Partner
i2CAT Private Foundation, Digital Innovation Center in Catalonia

SPAIN

Partner
Next Technology Tecnotessile

ITALY

Partner
Regional Government of Catalunya

SPAIN

Partner
Mazowieckie Voivodeship in Warsaw

POLAND

Partner
Government Office of the Republic of Slovenia for Development and European Cohesion Policy

SLOVENIA

Partner
West Yorkshire Combined Authority on behalf of Leeds City Region Enterprise Partnership

UNITED KINGDOM

Partner
Institute for Business Competitiveness of Castilla y Leon

SPAIN

Partners

Regional platforms and clusters

supporting SMEs to adopt I4.0 related technologies and increase their competitiveness

SMARTY aims to facilitate policy learning among its members to deal with the main challenges hampering the adoption of Industry 4.0 solutions and their potential in the European SME ecosystem.

The growth of SMEs is dependent on their ability to increase the capacity to modernise their business and production practices. Access to regional collaboration and network mechanisms provide the breeding ground for this prerequisite transformation to successfully adopt I4.0 solutions.

The SMARTY project focuses on best practices of how regional ecosystems can support this digital transformation, their pivotal role in leveraging SMEs' growth and competitiveness, and the needed innovation support mechanisms tailored to region-specific circumstances.

The theme for this exchange of experiences was "Regional platforms and clusters supporting SMEs to adopt I4.0-related technologies and increase their competitiveness". Two areas of focus were explored:

» What supporting practices are each of the SMARTY regions implementing to help SMEs adopt I4.0-related technologies and increase their competitiveness? Particular attention was paid to the critical importance of long-term planning on digital transformation, why the collaboration of innovation networks should be highlighted, and how essential the sharing of knowledge is for success.

» How can clusters and platforms help to increase I4.0-related collaboration in the regions? The focus was on the experiences of developing the regional ecosystems, clusters, alliances, partnerships and support provided by ERDF and regional funds.
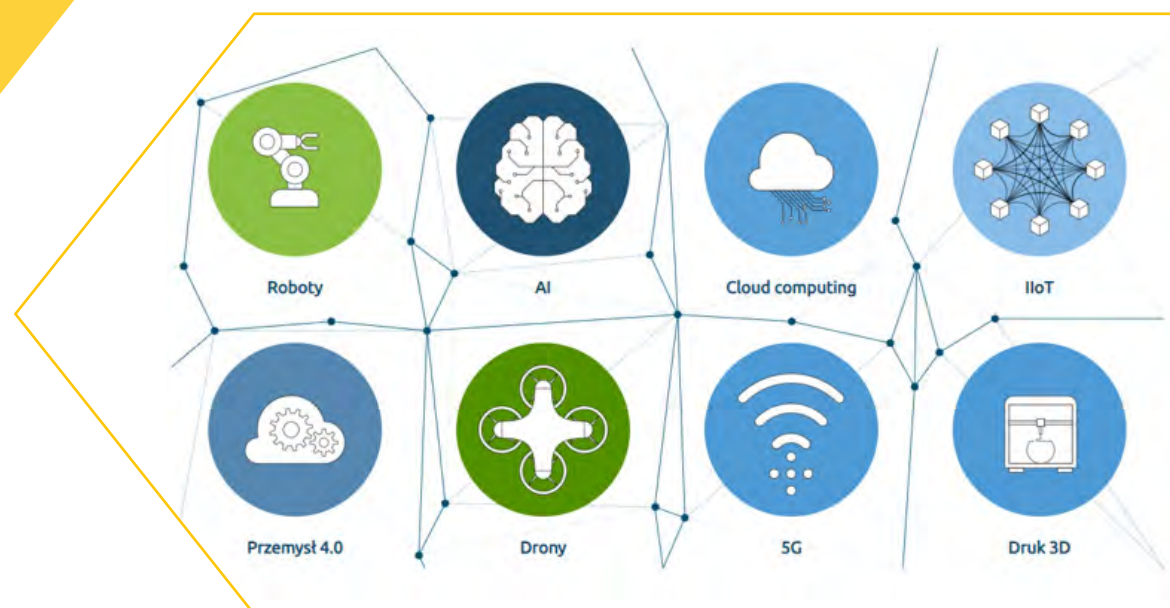
Future Industry Platform

The Future Industry Platform was created to strengthen the competences and competitiveness of enterprises operating in Poland by supporting their transformation towards Industry 4.0.

About this good practice

Future Industry Platform is a State Treasury Foundation established by the Polish Ministry of Entrepreneurship and Technology as the answer to the low level of knowledge and awareness of the SMEs regarding the potential of digital transformation, especially in production processes and business models based on them.

The Foundation supports:

» digital transformation processes
» implementation of digital products and services
» introducing business models based on the latest solutions in the area of, among others, intelligent data analysis, automation and communication of machines and people with machines, process virtualization, as well as cybersecurity.

One of the main goals of the initiative is also to strengthen the competences of human resources for the industry of the future by training programs and innovative ways to demonstrate technological solutions. The Foundation strengthens the business ecosystem created by Polish manufacturing companies. It pursues this goal by creating mechanisms for cooperation between different stakeholders like RTOs, technology providers, educational institutions and local governments, by sharing knowledge and building trust in relations between market entities involved in the digital transformation process. The actions taken are to engage companies in network cooperation and co-creating new values.

The Foundation supports entrepreneurs, entities managing innovative clusters, entities operating for the benefit of an innovative economy.

Resources needed

The Foundation employs about 30-40 people under full or part-time contracts and cooperates with external experts, especially in the area of advanced technologies. The Foundation financing is based on the annual subsidy established by the ministry for the implementation of the assumed goals.

Evidence of success

The Foundation creates a nationwide platform for the exchange of knowledge and experience in the field of digital transformation, taking into account the latest technological achievements, also ensuring contacts with the international community.

Thus, it achieves its goals, both by building a network of partner organizations to scale its activities (e.g. RTOs, clusters, chambers of commerce, DIHs), and by offering direct support for SMEs (e.g. trainings, consultancy, webinars, expert studies).

Potential for learning or transfer

The Platform offers an on-line self-assessment digital maturity tool that investigates key aspects of enterprise development towards Industry 4.0 through 12 questions based on three pillars: Organization, Processes and Technologies.

Particularly interesting in terms of transfer may be the use of research / evaluation methodologies for company audits. It may also be interesting to compare enterprises digital maturity models functioning in regions from the perspective of Industry 4.0.

The other example are the thematic workshops for managers and business owners that provide access to basic knowledge in the field of application of I4.0 solutions to production and business models to initiate and manage change in companies at the strategic level. The free of charge workshops are organized in all voivodeships in Poland.

The practice may be of interest to other regions because of its transferability potential to different levels of application (national, regional, organizational).

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Future Industry Platform State Treasury Foundation

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Poland

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Start-end date:
February 2019 - ongoing

Leeds City Region Enterprise Partnership

Access Innovation

Access Innovation is a package of support to help businesses access specialist expertise needed to develop new products and processes to realise industry 4.0.

About this good practice

The Leeds City Region (LCR) has an internationally significant concentration of higher education institutions (HEIs). These help the area perform well on higher education research and development (R&D) and innovation.
However, this does not seem to translate into similar performance among the area's business base. Therefore, there is potential to increase both the number of businesses innovating, and the level/intensity of innovation within businesses which are innovation active.
The programme addresses the challenge of stimulating the demand for innovation support across the small and medium enterprises (SME) base in each of the Local Enterprise Partnership (LEP) priority sectors.

Key features:

» Innovation diagnostic: support the beneficiary SME to undertake a detailed innovation diagnostic to determine the nature, scope and scale of the innovation in question, the capacity required to deliver it, and anticipated commercial benefits/impact.
» Innovation planning: the findings of the diagnostic are used to inform a detailed action plan.
» Innovation provider-selection: access to a framework of innovation support providers.
» Collaboration projects: up to 30% of the cost of accessing specialist expertise, equipment or facilities.
» Equipment purchases: up to 20% of the cost of purchasing equipment.

Stakeholders include LCR LEP, European Regional Development Fund, HEIs, Research and trade bodies, Intermediaries and experts.

Resources needed

The funding for Access Innovation (£7,057,734.00) comprised of EU European Structural and Investment Funds, along with an allocation from West Yorkshire Combined Authority's access to Capital Grants and Private Sector match funding in the form of grants and advice.

Evidence of success

228 SMEs received 12hrs of support. There were also 62 projects approved from 87 applications.

Early evaluation outcomes include:
» There is a demand for a product of this nature, as evidenced with the number of businesses supported
» Accessible to a wide section of business sectors. The biggest demand was from manufacturing businesses.
» Has supported interesting product developments.
» Successor programme "Connecting Innovation" – currently in development for delivery.

Potential for learning or transfer

We consider this practice of potential interest to others for the following reasons:

(1) It provides a multiple stage journey to supporting an Industry 4.0 project – including the importance of diagnostic and planning before engaging with technology solutions, using workshops, 1-2-1 support and financial grants.
(2) The programme looks to bridge the gap between public funded business support and Higher Education Institutions / Research bodies – supporting SMEs to find the right support for their innovation / industry 4.0 requirements
(3) Fully costed and completed ERDF delivered project – providing a full business case and evidence evaluation of a project in this area, and the difficulties encountered.
Business case studies are available of those SMEs who were supported through the programme.

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Leeds City Region LEP

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West Yorkshire

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https://www.the-lep.com/business-support/growth-support/connecting-innovation/

Start - end date:
January 2017 – March 2020

Centr@tec Programme
2nd edition

Centr@tec is a programme providing Training in New Technologies, Knowledge Transfer and Business Innovation Support.

About this good practice

The aim of the Centr@tec Programme is to support an action plan based on the adoption of New Technologies for self-employers and SMEs through a continuous and complete process to be more competitive. Centr@tec includes actions in different areas: Industry 4.0, Digitalisation, Innovation in Processes and Design of Products/Services, Internationalisation of R&D and Innovation, and Support for Technology – Based Entrepreneurs.

The program is structured in:
1. Internationalisation of R&D&I: bilateral meetings, agreements for collaborations and participation in international R&D&I programs.
2. Demonstrations, meetings, expert workshops and training in new technologies (2/4/8 hours)

3. Diagnostics and Implementation Plans: personalised analysis of the company, action plan and evaluation of the necessary costs and financial options, mainly through *Regional Financial Calls (*which means the possibility of receiving grants for different improvements in their digitalisation process and/or Industry 4.0 projects).
4. Innovative Projects Bank: analysis of innovative projects, business plan and evaluation of financing opportunities mainly through Regional Financial Calls.

The program is designed to accompany the SMEs throughout the process, from the beginning to the end with the aforementioned Regional Calls that supports Industry 4.0 projects.
Main Stakeholders: Tech. Centres, clusters, associations, experts, leading companies and other innovation agents. Main Beneficiaries: SMEs and self-employers.

Resources needed

The budget was increased from 1,3M€ in the 1st Edition, to 2M€ in the 2nd Edition. The 3rd Edition will have a budget of 5M€.
This is expected to increase the number of participants. The funding and the staff in charge come from the Regional Government of Castilla y León.

Evidence of success

The success of the 1st edition is reflected by the outputs (Digitalisation and Industry 4.0 areas):
69 training actions, 75 diagnostics / action plans and 2.231 participants with an assessment of 3,4/4).
In the 2nd edition the following actions have been developed in Digitalisation and Industry 4.0:
125 training actions, 140 diagnostics / action plans and 5.132 participants with an assessment of 8,4/10)

Difficulties encountered

We still find a lack of impact on our P. Instrument. This is an important issue to be improved in the next edition. We are ambitious and we expect to increase the number of companies asking for Regional Financial

Calls for digitalisation and adoption of Industry 4.0, as the final step of the process

Potential for learning or transfer

The work network created with the regional Tech. Centres allows us to get closer to SMEs. This network is a very important tool to know the real needs of the companies in order to plan the training actions, the diagnostics and the SMEs guiding in the best way to improve their capacities and technologies to be more competitive, also throughout the collaboration with the regional working groups involved in the topics related with the program (Industry 4.0 working group).
One of our main goals is to create an Industry 4.0 ecosystem that involves SMEs.
By being structured in four different types of actions, Centr@tec allows companies to participate in the program in many ways and gives them (especially SMEs) the opportunity to be involved in a circuit of support and training that helps them to develop their potential of innovation and competitiveness. This practice was shared in the RDAs national Forum (June 2018 Santander, Spain) and aroused great interest for many Regional Agencies.

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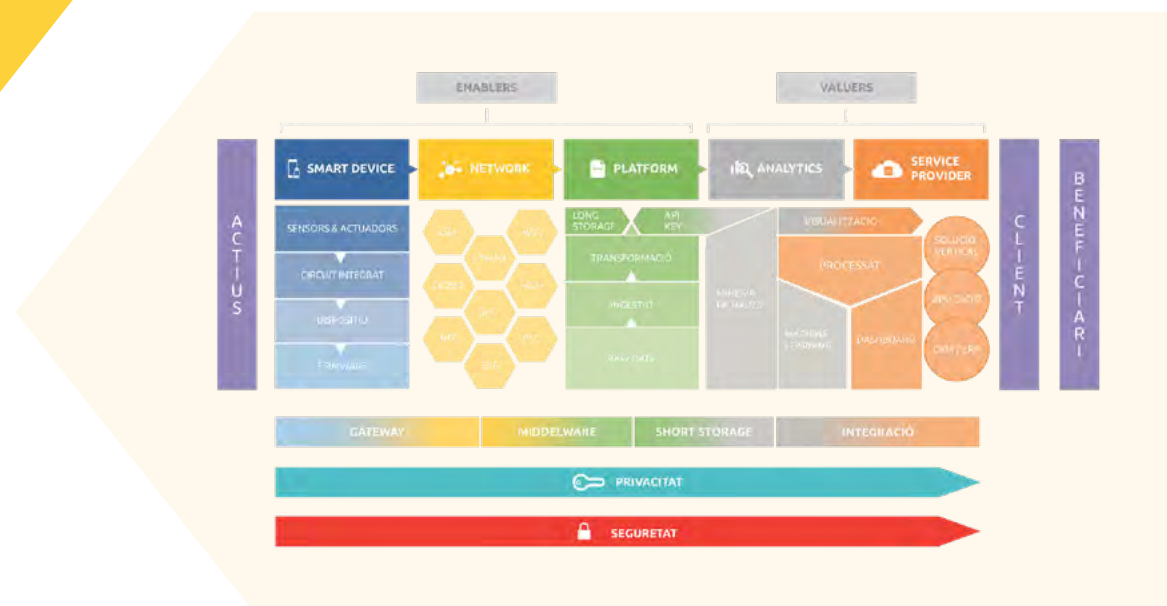https://empresas.jcyl.es/web/es/idi/programa-centrtec.html

Start - end date:
January 2018 - September 2019

Resources needed

The IoT Catalan Alliance and its activities operate each year for approximately 60K €, funded by the Catalan government through the regional ERDF program.

Evidence of success

Some key results, based on 2020 activity:

» 38 business opportunities generated between companies
» Brokerage events for Utilities, Agriculture, Health and Industry
» >20% annual growth in ecosystem membership (currently over 160)

Potential for learning or transfer

The IoT Catalan Alliance addresses common challenges that any European region faces when trying to spur technology uptake and lower barriers to entry for its smaller businesses and start-ups.Some specific areas of transferable good practices:

» Public-private collaboration for tech ecosystem incubation
» Brokerage event and open innovation methodologies
» IoT uptake practices for strategic regional sectors, e.g. Industry, Agriculture, Health, Utilities
» International engagement practices for providing outreach for local tech ecosystems

IoT Catalan Alliance

The IoT Catalan Alliance accelerates the adoption of IoT technologies across the region, with participation of over 160 organisations across the value chain.

About this good practice

The IoT Catalan Alliance is promoted by the Catalan Government as part of its SmartCatalonia strategy to accelerate IoT technology adoption in the region. The i2CAT Foundation coordinates a growing community of over 160 organisations across the IoT value chain. The initiative was designed to address common pain points in the field, such as lowering the barrier to entry for SMEs and start-ups to engage larger companies and public administration. It also serves a strategic purpose by supporting a more cohesive ecosystem to spur IoT tech adoption across key regional industries.The core objectives of the IoT Catalan Alliance:

» Encourage knowledge exchange, collaboration and synergies amongst its members.
» Offer a greater presence and business opportunities to all actors in the value chain.

» Liaise between the community and administrators, regulators, policy makers and - standardisation bodies.

Key activities include:

» Matchmaking, brokerage events and open innovation challenges to facilitate business opportunities and IoT adoption.
» Individual sector roadmap exercises for IoT adoption (Agriculture, Utilities, Health, Industry, etc.), and synergy workshops between sectors to assess common pain points and solutions.
» Host technical meetings to address challenges and promote interoperability.
» Address member companies' staff needs by facilitating access to the talent pool of local universities and training centres.

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i2CAT Foundation

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Catalonia, Spain

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https://www.cataloniaiot.com/?lang=en

Start-end date:
June 2015 to September 2021

GOSTOP
Gradniki, orodja in sistemi za
TOVARNE PRIHODNOSTI

GOSTOP - Building Blocks, Tools and Systems for the Factories of the Future

GOSTOP Programme was created to bring together the research sector and companies to boost development of four priority areas of the Factories of the Future.

About this good practice

The GOSTOP programme accelerated the development of the Factories of the Future (FoF) concept in Slovenia and provided solutions to the current needs of the industry. In GOSTOP, a total of 13 companies and 6 research organisations with compatible R&D programmes in the FoF concept joined forces to push forward its development.

Taking into account the Smart Specialisation Strategy of Slovenia and the priorities of the FoF roadmap under Horizon 2020 prepared by the European Factories of the Future Research Association (EFFRA), four areas were identified in which decisive breakthroughs could be achieved: control technologies, tooling, robotics and photonics.

GOSTOP combined the majority of the horizontal fields pinpointed by the S3 for the Factories of the Future. In all these fields, the most promising research topics of interest to the Slovenian industry were determined, and synergies were identified where the knowledge required existed within Slovenian research organisations. On one hand, GOSTOP includes the development of new products and breakthrough technologies from agile SMEs. On the other hand, however, the overall FoF concept was already developed, thereby leading to integrated systems to be used by large Slovenian companies in order to optimise their production and develop new products with high added value.

The success of GOSTOP contributed to raising the added value and export volume of the participating companies and Slovenian industry as a whole.

Resources needed

19 organisations (including SMEs) together employed over 1200 people. GOSTOP was financed with 9.397.732,50 EUR through different financing rates depending on the type of the institutions.

Evidence of Success

The main results are:

» 38 technological achievements, which fully reflect the framework of the set goals.
» The success of the transfer of new knowledge from the research environment to industrial practice
» Going past the demonstration of prototypes to the acceleration of the commercialisation phase according to market needs.
» Joint participation of several partners in each achievement.
» In a nutshell: 17 patents, 48 commercialisation activities, 96 various events

Challenges Encountered

The continuity of funding for such programmes is a major challenge for future programmes and deliveries, as well as the instruments for commercialisation. Bringing together partners that are sometimes competitors is another challenge that was successfully overcome.

Potential for learning or transfer

The good practice of the GOSTOP programme joined forces between 19 institutions (initially in the consortia SRIP Factories of the Future) and together developed a cooperation programme based on the capacities and knowledge of their operational fields. GOSTOP aimed to develop new technologies and approaches through partner cooperation in an interdisciplinary approach, ranging from SMEs to the research sector.

It also continued cooperation even after the project completion in order to commercialise and market developed prototypes and solutions.

GOSTOP is a good practice, as the approach of building large, technology-oriented consortia with shared responsibilities is applicable to all EU regions.

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Jožef Stefan Institute

Location:
Western and Eastern Slovenia

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Start - end date:
November 2016 - April 2020

Support to acquire I4.0 audit services

A call for SMEs, in single or associated form, for the acquisition of audit and assessment services for I4.0

About this good practice

The initiator is the Tuscany Region, which aims to encourage (through vouchers) the acquisition of "Audit and assessment services of the I4.0 potential" by SMEs. The core objective of the call is to support the implementation of the Regional Strategy on Industry 4.0.

The call contributes to:

» promote the technological, organisational and socio-economic contents of the new Industry 4.0 paradigm, also through the granting of subsidies in the form of capital contribution, normally paid in the form of a voucher;

» introduce digital technologies in enterprises, with particular reference to SMEs, to the relationship between the buyer / supply chain and regional specialised production chains;

» identify the specialised skills, technical training and professional, higher education needed by Industry 4.0;

» examine the impact of Industry 4.0 on the organisation of work.

These are capital grants and disbursed, as a rule, in the form of a voucher, with specific parameters relating to the eligible expenditure, the intensity of the subsidy and the maximum duration of the projects. The GP is implemented through the constitution of a Regional Business Support Platform. The main beneficiaries are SMEs in single or associated forms, networks of companies with legal personality, consortia of companies.

Resources needed

The call for tenders has a 2018-2020 financial budget of 1,5 M EUR and is co-financed by the ERDF ROP 2014-2020, Axis A action 1.1.2 A.
SMEs are funded through capital grants in the form of vouchers to acquire I4.0 audit services from a certified catalogue of services of the Tuscany Region.

Evidence of Success

This good practice provides an in-depth knowledge to analyse and diagnose the status of I4.0 in the region and provides the basis to draft the necessary support policies and actions for its development. The analysis of I4.0 Audits shows that companies, although trying to adapt to the new scenario, tend to maintain traditional working methods. They are investing in management software and new professional profiles, but need to work more on culture, organisation and training.

Potential for learning or transfer

The practice can be of interest for many regions as it provides a practical roadmap to assess the level of technological readiness, absorption capacity and innovative potential of the productive actors (particularly SMEs). It also provides diagnostic tools to gauge the effectiveness of the functioning of the regional innovation ecosystem.

To mobilise different kinds of stakeholders (knowledge and service providers, academic experts and innovation practitioners, public and private institutions, etc) to favour the adoption of the Industry 4.0 paradigm, approach and solutions by regional SMEs, it helps to promote technological, organisational and socio-economic aspects of I4.0; introduce digital technologies to enterprises; identify I4.0-related specialised skills; and examine the impact that I4.0 has on work organisation.

Main institution:
Tuscany Regional Government

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Digital Innovation Hubs

for supporting digital transformation in SMEs

SMARTY regions are active in developing solutions to support SMEs in their I4.0 transition. Regional collaboration plays a critical role in this process, as the exchanged experiences of the previous theme on regional platforms and clusters demonstrated.

Regional digital innovation hubs (DIH), as well as the interregional collaboration needed to become part of the European digital innovation hubs (eDIH) network has been an effective approach for SMARTY partners. The DIH model of choice provides a regional "one-stop-shop" that helps companies increase their competitiveness on production processes, products or services using digital technologies, and supported by local R&D expertise, capacity and infrastructure. The aim is to ensure that each company of regional industries can take advantage of digital opportunities.

The SMARTY project's second theme for exchange of experiences was "Digital Innovation Hubs for supporting digital transformation in SMEs". Partners were invited to identify good practices in the development of their local DIHs. The novelty of their DIH models is to foster regional multi-partner and cross-sectorial cooperation, including RTOs, universities, industry development agencies and associations, incubators and accelerators, and public authorities. The exchange explored the operational models of SMARTY regions' DIHs:

» How do the regions develop DIH business models, structures, services and cooperation activities to support SMEs and public services? What structures and services are appropriate to support SMEs' adoption of digital and I4.0 technologies?

» What are the primary instruments to support DIH economic sustainability and successfully achieve I4.0 technology adoption by SMEs? How does, in practice, a region evolve the model from isolated nodes to an integrated service approach to provide better accessibility to its SMEs?

Advanced Manufacturing Research Centre

The University of Sheffield Advanced Manufacturing and Research Centre (AMRC) is a world class sector-agnostic leader for advanced manufacturing and digital technologies.

About this good practice

The AMRC is a network of world-leading research and innovation centres working with advanced manufacturing companies of all sizes from around the globe. It seeks to transform industrial and economic performance by making step-changes in productivity, helping manufacturers sharpen their competitive edge; develop new products and processes and train new talent and skills.

Companies come for independent, agnostic advice to de-risk their adoption of advanced manufacturing and digital technologies.

The organisation aims to:

» Inform businesses about opportunities.
» Educate businesses about opportunities for their specific use.
» Convene actors (end users and providers).
» Explore solutions.
» Accelerate uptake of solutions by de-risking by allowing businesses to understand the return on investment with that intervention.

The AMRC is also part of the High Value Manufacturing (HVM) Catapult network of research centres, playing a core role in bridging the gap and accelerating the activity between technology concept and commercialisation.

Resources needed

» By 2015, the AMRC had received £70 million of funding from the UK Government, the former Regional Development Agency and the University of Sheffield.
» An additional £70 million was also secured from the European Regional Development Fund (ERDF).

Evidence of success

» The AMRC has more than 120-fee paying members, including global names such as Boeing, Airbus, Rolls-Royce, Siemens and BAE Systems to smaller companies crucial to supply chains.
» Each year about 500 non-member engagements take place – 400 of which are with small-to-medium-sized enterprises (SMEs).
» In 2020/21 we worked with over 500 companies and supported 360 SMEs.
» It has trained more than 1,700 apprentices since opening in 2013, working with more than 300 companies in the UK.

Potential for learning or transfer

» Focus on the challenge to be addressed and not on the technology.
» Educate about the digital architecture required for adoption and for further development.
» Enable access to skills.
» Articulate the financial, social and environmental value.
» Ensure leaders are bought in.

Main institution:
Advanced Manufacturing Research Centre
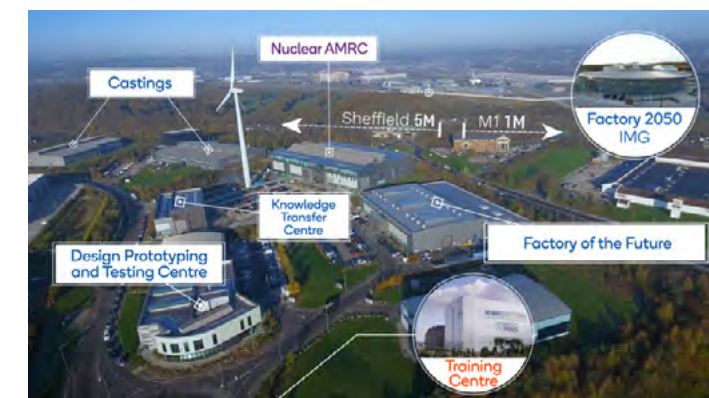
Location:
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Start - end date:
2001 - ongoing

3M BUCKLEY
INNOVATION
CENTRE

3M Buckley Innovation Centre

Potential for learning or transfer

» The establishment of 3M BIC has drawn on learnings from several reviews into technology, innovation, and productivity growth and implemented these alongside known differences and specific needs of SME and Micro businesses compared to large established organisations.
» The creation of an arms-length business facing centre has addressed traditional deficits in understanding between business and academia, providing a collaborative environment that manages the different aims and objectives of both parties.
» The centre provides a model for supporting SMEs in initial trial and prototype testing through to research, intellectual property, patent development, and potentially market expansion.

» Fully completed ERDF supported capital investment project – providing a full business case and evidence evaluation of how ERDF can be used to support the set-up of such centres or hubs, and the difficulties encountered.
» Business case studies available of SMEs have been supported by 3M BIC.

3M Buckley Innovation Centre was opened in 2013 with a specific focus on support and engagement to SMEs and micro businesses.

About this good practice

The aim of 3M BIC is to encourage collaborative research and development relationships between SME / Micro businesses and the University's consultants, graduates, and students.
The facility provides access to prototyping, verification, and inspection facilities to explore innovative developments to products and business models.
A more recent grant from the Leeds City Region Enterprise Partnership has allowed the centre to invest in additional equipment for SMEs to use which they would be unable to invest in themselves.
The 3M BIC operates under a collaborative model between business and academia enabling learning and growth for all parties – and has already demonstrated results. The focus of the centre is particularly to understand the needs of SMEs, micro-businesses and their supply chains – rather than the needs of larger businesses.

Resources needed

Funding of £6,130,000 was secured through the European Regional Development Fund – this was match funded from the University of Huddersfield and Kirklees Metropolitan Council.

Evidence of success

» In the first five years, the centre has accommodated over 55 tenants and provided 20 placements for students at the University of Huddersfield.
» The centre has won a national technology award in recognition of its investment in technology in response to the needs of innovative and ambitious SMEs across the region.
» Manufacturing Advisory Team located in the centre have worked with other 300 companies - offering companies grants to help improve business products.

Main institution:
3M Buckley Innovation Centre

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Start - end date:
2012 - ongoing

Incentives for the creation of highly specialised Competence Centres on I4.0

A measure to promote the establishment of highly specialised competence centres of Industry 4.0 issues, in the form of public-private partnerships.

About this good practice

This measure promotes the establishment of highly specialized competence centres on Industry 4.0 issues, in the form of public-private partnerships. This measure promotes the establishment of highly specialized competence centres on I4.0 issues in the form of public-private partnerships with the aim to support the introduction of digital technologies into the supply chain management and logistics process of Italian industries. The competence centres will have to carry out business guidance and training activities as well as support in the implementation of innovation and R&D projects. The project aims at the realization, by the beneficiary companies, of new products, processes or services using advanced technologies aligned with I4.0 technologies.

Core objectives are:
» Guidance to enterprises, especially SMEs, through the preparation of a series of tools aimed at supporting companies in assessing their level of technological maturity.
» Training for companies, to promote and disseminate skills in I4.0 through class-training, on-the-job training on the production line or on real applications.
» Industrial research and development projects in I4.0, aiming to foster the demand for innovation by companies.
» Enhance existing realities and actions at local level to reinforce and consolidate the structures responsible of technology transfer, trying to avoid the fragmentation/dispersion of resources.

These Competence Centers will be entitled to publish specific calls with goals linked to I4.0 technologies and will have to make available competences, specific know-how and services for the implementation of the projects

Resources needed

Resources available: 73,46 million euro: 65% (47,5 million) for the creation of the centers; 35% (25,5 million) for innovative I4.0 projects for a maximum amount per project of 200k Euro.

Evidence of success

Evidence of success can be seen by the effective constitution of 8 high competence centres:

» Artes 4.0 (Scuola superiore Sant'anna),
» Competence Industry Manufacturing 4.0 – CIM 4.0 (Politecnico di Torino),
» Made in Italy 4.0 - MADE (Politecnico di Milano),
» BI-REX (Università di Bologna).
» Smact (Università di Padova),
» Industry 4.0 - medITech (Università di Napoli Federico II)
» Start 4.0 (Consiglio nazionale delle ricerche, Cnr),
» Cyber 4.0 (Università La Sapienza di Roma)

Challenges encountered

Due to some formal requirements stated in the call for proposal, it was difficult for some stakeholders to become a founding member of the competence centres. The solution adopted by some interested parties (research centres and actors with competences in I4.0) was to become "supporting" members.

Potential for learning or transfer

The practice can be of interest for many other countries that want to improve the cooperation between enterprises and research centres. The dialogue between the two parts is extremely important for increasing the competitiveness of the industry on the global market. The practice also represents an example of an instrument able to facilitate the technological improvement of companies with a financial support with few bureaucratic constraints, in particular for SMEs. It can easily boost the industry economic development process that, nowadays, needs to be encouraged, in particular for I4.0 issues.

Digital Innovation Hub (DIH) Slovenia

DIH Slovenia enables digital transformation on the principle of a one-stop-shop.

About this good practice

The Digital Innovation Hub (DIH) Slovenia:

» enables digital transformation on the principle of a one-stop-shop, in Slovenia and beyond;
» raises awareness and provides services for the growth of digital competences,
» exchange of digital experiences and examples of good practices at a local, regional and international level;
» provides to the government access to data to promote entrepreneurship.

The DIH Slovenia is a central point for providing, connecting and supporting business and technological knowledge, technologies, experimental & pilot environments, best practices, methodologies and other activities necessary to enable the Slovenian industry to build digital competencies, model innovations and processes, support their digital transformation and raise their competitive advantages based on digitalisation.

DIE-DIHSLOVENIA-2019-2023 is co-financed by the Republic of Slovenia and the European Union from the European Regional Development Fund.

The purpose is to finance the implementation of free services for SMEs in the field of digitalisation and Industry 4.0, implemented by DIH Slovenia with the aim of increasing the added value of SMEs. By carrying out activities, we create balanced software support for raising digital competencies and digital transformation of SMEs, and thus contribute to:

» overcoming barriers to digital transformation;
» raising the digital economy index in Slovenia;
» increasing the number of companies involved in global value chains;
» raising the competitiveness of the Slovenian economy.

Resources needed

2,5 million EUR co-financing and up to nine employees, as well as nine strategic partners coming from education, research, service provider sector, and chambers and associations.

Evidence of Success

The main results are:

» Analysis of companies' digitisation needs
» Setup of a pool of mentors and service providers
» Prediction of digital competencies in future HR profiles
» Setup of platform for exchange of information
» Provision of the ecosystem for all relevant stakeholders
» Connecting platforms for prototyping and provision of experimenting services
» Educational and capacity building activities
» Forming of proposals for curricula
» Supporting SMEs in obtaining subsidies for digital transformation

Challenges Encountered

The continuity of funding for such programmes is a major challenge to continue future programmes. The setup of the programme and reimbursement of funds can be challenging in terms of cashflow.

Potential for learning or transfer

The Slovenian government recognised the need to support digitalisation, especially for SMEs. Thus, they designed a simplified scheme with supporting the DIH Slovenia with a 100% financing for the period of 4 years to establish the ecosystem that supports digitalisation of companies on one hand, and on the other hand, using the Slovene enterprise fund to assign the vouchers. The two institutions work hand in hand in evaluation of digitalisation proposals and assigning experts. The DIH Slovenia is a good practice also in view of being established as a focal point for digitalisation with institutions and experts bringing in their knowledge and expertise. In this way, the expertise does not have to be built anew and the organisation is lean, flexible and adjustable to the needs of companies.
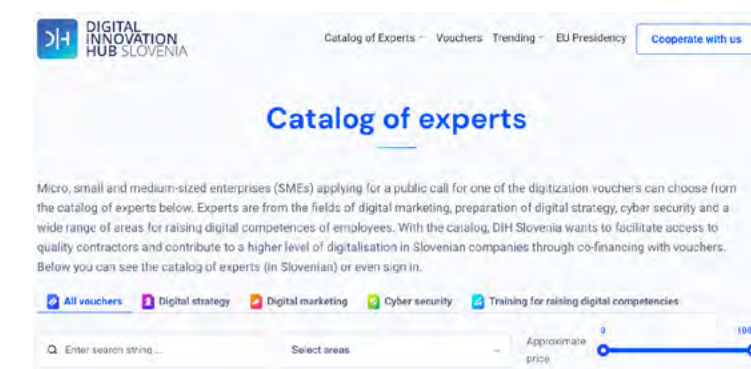
Main institution:
DIH Slovenia

Location:
Western Slovenia

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Website:
https://dihslovenia.si/en

Start - end date:
2019 - ongoing

DIGITAL SELF-ORIENTATION DIH4CAT

Interconnecting Catalonia's innovation hubs for an integrated service approach (DIH4CAT)

DIH4CAT interconnects Catalonia's R&D ecosystem to provide services, infrastructure and knowledge to accelerate the digital transformation of local industry.

About this good practice

The Catalonia Digital Innovation Hub (DIH4CAT) is a regional non-profit innovation ecosystem, based on the Digital Innovation Hub (DIH) model of the European Commission.
DIH4CAT is a centralised "one-stop-shop" where industry can be supported in their digital transformation by the region's R&D community through a consolidated set of services, infrastructure and knowledge.
This consolidated model was made possible by the Catalonia regional government interconnecting local innovation nodes of advanced technologies, each one led by a corresponding regional R&D centre.
The technological areas that are interconnected by DIH4CAT are those that are key to enabling I4.0 and digital transformation, including:

» AI
» Supercomputing & HPC
» Cybersecurity
» Smart Connectivity
» Photonics
» 3D printing & additive manufacturing
» Advanced manufacturing & robotics

The services provided by DIH4CAT address the various stages and needs of an organisation's transformation: awareness, diagnosis, consultation, training, validation, and access to testing infrastructure and equipment. Behind these services are the region's benchmark competence centres across Catalonia, including Barcelona Supercomputing Centre (BSC), Computer Vision Centre (CVC), Eurecat, i2CAT, Leitat, Institute of Photonic Sciences (ICFO) and the Polytechnic University of Catalonia (UPC).

Resources needed

Total budget of the Catalonian regional government's coordination and 7 interconnected digital innovation nodes is 6 M € over 3 years. It is funded by the EC, Spanish government and Catalonian regional government.

Evidence of Success

The good practice presented is the formation of DIH4CAT through the coordination and collaboration between the regional government, 7 existing innovation hubs, 2 employers associations and 1 business school for an integrated service portfolio to support local industry, SMEs, startups and public entities. This integration was successful, and financing secured for the next 3 years by the EC, regional government, national government, and partner investment. In 2022, DIH4CAT is fully operational.

Potential for learning or transfer

The practice is of integrating a region's existing R&D assets, infrastructure and knowledge to develop and deploy a holistic set of services for the I4.0 and digital transformation of local industry (in particular, SMEs). It also carries out activities to better connect supply and demand for such transformation goals, and to develop and scale-up innovative business models.

Of potential interregional learning:

» Coordination between regional R&D centres and innovation nodes of complimentary technology areas, with a centralised technical office for a "one stop shop" interface.
» Development of an integrated service portfolio from the region's R&D ecosystem to support the I4.0 and digital transformation of a wide range of industry, SMEs and public entity profiles.
» Connection of supply (startup technology providers) with demand (industry, SMEs and public entities).

Main institution:
Regional Government of Catalonia

Location:
Catalonia, Spain

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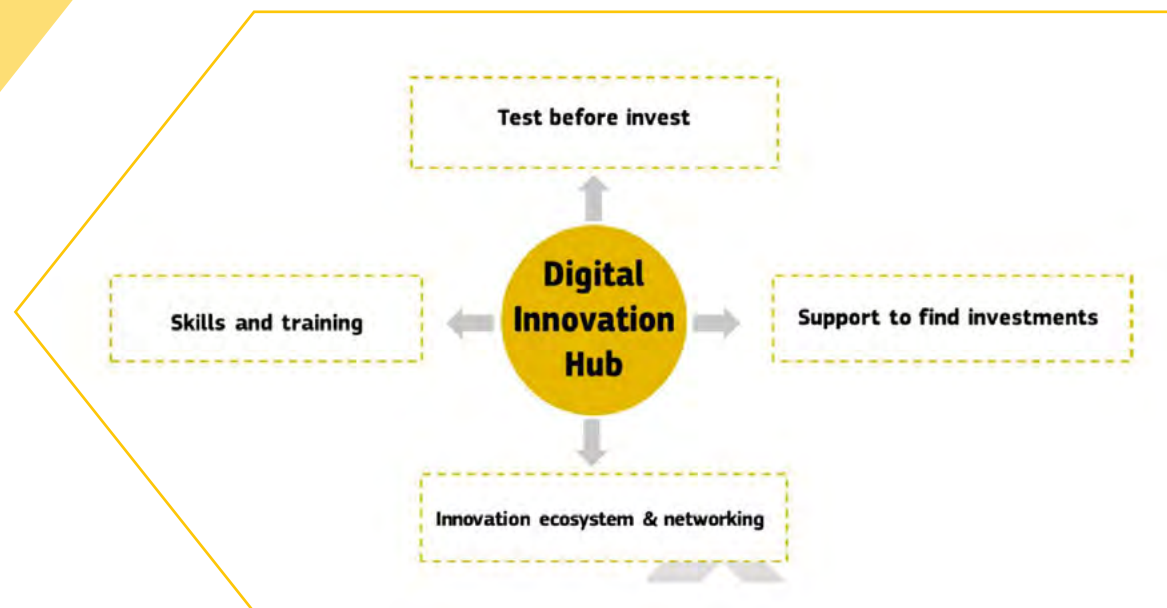
Website:
https://dih4cat.cat/en/

Start-end date:
May 2022 - ongoing

Artificial intelligence | Supercomputing | Cybersecurity | Smart connectivity
Additive manufacturing and 3D printing | Advanced manufacturing and robotics | Photonics

The DIH and Competence Centre in Tuscany: a network for deploying I4.0 innovation in the region

The Tuscan DIH and ARTES 4.0 Competence Centre offer a set of complementary measures to encourage investments in innovation and competitiveness by SMEs.

About this good practice

The GP is a combination of two types of infrastructures in the Tuscany region:

» The Tuscan Digital Innovation Hub, run by the regional Industrial Association
» The ARTES 4.0 Competence Centre, run by the Scuola Superiore Sant'Anna in Pisa

Both originate from the National Industry 4.0 Plan, drafted by the Italian Ministry for Economic Development (MISE). Together, the mission of the DIH and CC is to jointly deliver a set of complementary measures to encourage investments in innovation and competitiveness by SMEs.

The challenge they address is to enable companies to seize the opportunities related to the fourth industrial revolution by:

» raising SMEs' awareness and training them about opportunities provided by the application of 4.0 technologies, through the organisation of seminars, workshops and study visits;
» assessing SMEs' digital maturity: supporting SMEs in the use of digital maturity assessment tools, and the definition of a roadmap for the digital transformation of business processes and the development of I4.0 projects;
» orienting SMEs' towards the innovation ecosystem: national and European competence centres, smart factories and demo centres, flagship factories, universities, technology parks, technology clusters, public and private research centres, technology transfer centres, incubators and fab labs.

The context of the policy framework is the one provided by the Italian Industry 4.0 Plan and the Digital Europe Programme.

Evidence of Succes

The Tuscan DIH's results in the first year of activity (2018) have been:

» 736 SMEs involved
» 102 Digital Assessments
» 29 Seminars & Training Sessions
» 50 Technical Analysis
» 46 in-depth consultations

The ARTES 4.0 CC results as of Sept 2020 are some 120 Innovative Projects (case studies) using a variety of applied I4.0 technology.

Potential for learning or transfer

The joint participation of DIHs and CCs in the Digital Europe Program can be applicable to other regions. Each DIH and Competence Centre have an interest to become European Digital Innovation Hubs, but do not always individually own the required competencies. The GP's agreement encourages DIHs and CCs to aggregate in order to be prospected by the Ministry as European Digital Innovation Hubs, so as to participate in the tenders that will be opened by the Digital Europe Program. Such strategic aggregations are key for the future European DIHs as "the value (competence assets) of the network and its ability to have an impact on both territorial companies and Public Administration constitutes a priority for the European Commission".

Challenges Encountered

The main difficulty in delivering policies to help SMEs adopt digital solutions and I4.0 technologies is to capitalise and coordinate the different actors.
The solution has been to draw an agreement (April 2020) that defines the roles of all parties in the different areas of competence.

Main institution:
Confindustria Toscana
and Scuola Superiore Sant'Anna

Location:
Tuscany Region, Italy

Contact:
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Website:
https://www.confindustria.toscana.it
digital-innovation-hub-toscana/
and   https://www.artes4.it/

Start-end date:
 January 2018 – ongoing

SRIPTOP

Challenges Encountered

The continuity of funding for such programmes is a major challenge to continue future programmes. The services developed need to be tailored to SMEs needs and in the lean approach.

Potential for learning or transfer

The SRIP approach in S4 (Slovenian smart specialisation strategy) is a unique approach in Europe and considered a best practice at the international level. It is also the first time in Slovenia where all stakeholders (companies, research centres and universities) have joined in one consortium for a specific theme and technological priority.

Through participation in SRIP, companies that have known each other previously have put aside the notion of competition in favour of common goals. Companies started loaning each other equipment and advice, as well as positioning themselves in international markets, as larger providers are much stronger than individual small companies.

In most EU countries, that is the case, which is why the SRIP FoF is relevant for learning and transfer.

Also, by putting together public and private research centres with companies, the understanding of needs and potential for cooperation on both sides is being recognised.

Strategic Research and Innovation Partnership for Factories of the Future (STRIP FoF)

The objective of the SRIP FoF is to create an open environment for the development of breakthrough innovations that will go beyond the national framework.

About this good practice

Within Slovenian Smart Specialisation Strategy, the establishment of 9 Strategic Research and Innovation Partnerships (STRIP) was envisioned in order to facilitate development of value chains in specific sectors. One of the sectors foreseen was Factories of the Future. In 2015-2016, actors in the sector entered discussions on the establishment of the SRIP and its activities. The established partnership currently has 70+ members functioning in a form of a cluster.

The core objectives are:

- » Development of the FoF ecosystem
- » Connection of all relevant players and stakeholders
- » Support in connecting research with market
- » Easier access to facilities
- » Raising competences.

Resources needed

1,9 million EUR of financing since 2017, 50% cofinancing, 4 partners of the consortia, 70+ members.

Evidence of Success

Since 2016, the SRIP FoF already shows significant results through:

- » International recognition of Slovenian companies and research
- » Obtained funds and implemented projects
- » Promotional results
- » Increases in competencies
- » Created new value chains and improved existing
- » Better cooperation between research and companies, as well as between companies
- » Connected ecosystem showing results in digitalisation of companies.

Main institution:
Jožef Stefan Institute

Location:
Western Slovenia

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Start - end date:
2017 - ongoing

Digitalisation for Green Transition and Sustainability

The green transition is the critical path for Europe's reliant future: clean energy and energy independence, decarbonisation of the economy and the climate-based goals brought forth in the Green Deal and supporting initiatives are just a few fronts where sustainability and digitisation are intersecting.

Such a vision is transformative for industry and its supply chains in a pan-European scope, as well as more locally on a regional level. For its third theme, SMARTY partners exchanged good practices that examined how digitisation is key, enabling components of the green transition.

Evidence of success

The Shared Agendas have created an engagement between Education Centres and the local Business network towards a sustainable digitalisation.

Potential for learning or transfer

The approach of involving Education Centres in Shared Agendas can be scaled to any other regions.

Territorial Shared Agendas

Catalonia has developed Territorial Shared Agendas to accelerate Green and Digital Transitions with a focus on the role of Education Centres.

About this good practice

It is an initiative promoted by the Catalan Government, in the Framework of the Catalan Research and Innovation Strategy for Smart Specialisation, in order to engage 4-helix stakeholders with the Digital and Green Transitions.

An important challenge of SMEs is their digitalisation process and their difficulty to access to tailored solutions. Education Centres such as Vocational Education Centres or Universities have the talent, infrastructures and technological equipments to support SMEs digitalisation, while through a Shared Agendas approach, Education Centres can engage with their local environment and common challenges.

The strategy of the Education centres will focus on:

a) Identify the challenges of the territory to work on.
b) Work on the challenges defined, focusing on one phase of the solution: understand the global challenge, identify problems and opportunities the challenge offers, in-depth work of the problems to be faced, develop solutions for the challenge such as prototypes.

The main stakeholders and beneficiaries of the practice are SMEs but also public administration and civil society since solutions delivered by Education Centres can improve circularity and reduce waste.

Main institution:
Regional Government of Catalonia

Location:
Catalonia, Spain

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Start - end date:
January 2020 - ongoing

Waste Management
and Recycling Cluster for I4.0

The Cluster providing a full range of services for waste management throughout Poland, in most EU countries and outside EU.

About this good practice

The Cluster is an ecosystem of entities related to waste management and recycling undertaking the long-term cooperation to create a competitive offer of recycled products and raw materials. It supports companies in the transformation towards closed circuits, proper management and change in the perception of waste and by-products.

The core of the Cluster are Polish SMEs, involved in the collection, removal, processing, recovery, recycling and transport of waste, manufacturers of machinery, equipment and technological lines for processing, recycling and disposal of waste, producers using recycled materials. The Cluster specialises in the domains of plastics recycling, non-ferrous metals recycling, tires recycling and energy from waste.

Support is provided by scientific institutions, R&D centers as well as companies and institutions dealing with business support. The Cluster provides the following services:

» grant, investment, product and marketing consultancy,
» economic, environmental and market analyses,
» project documents (applications, business plans, feasibility studies),
» cross-industry cooperation and technology transfer.
» building project consortia, joint projects and action strategies,
» purchasing and sales processes,
» Recycling Academy - a proprietary program dedicated to the professional development of the industry.

Activities are designed by the Cluster Industry Working Groups based on the Cluster Development Strategy for 2019-2024

Resources needed

The organization includes departments led by representatives of associated organizations: Development and Recycling of Plastics, Development of the Cluster's Commercial Offer, Tire Development and Recycling, Waste Energy, Ecological Education. The Council of Experts is the advisory body.

Evidence of success

Cluster supports a number of initiatives, including internationalization, new value chains by the development of specific industries (MINE THE GAP and GreenofShore-Tech/INNOSUP/H2020) and short supply chains in agri-food (GO Pro), pro-innovative services in circular economy (ClusterLab), Digitalization of the Cluster (KlasterBOX).

Challenges encountered

The main challenge was to gain the trust of SMEs and show them the benefits of using cluster services and collaborating with other actors (KET providers, joining other value chains, etc.). The approach was focused on presenting best practices and future benefits.

Potential for learning or transfer

Cluster cooperates with other clusters, business organisations and R&D institutions from different value chains. It creates pro-innovative environment. SMEs gain access to good solutions from partners, are able to transfer good practices form different business fields, to find new opportunity for improvement their activity and development products and service and use new technology.

The main lesson is that it is important to create open environment for different actors from many institutions and representing a number of different competences. In this environment SMEs can develop their businesses using the cluster support.

Main institution:
Waste Management and Recycling Cluster - Key National Cluster

Location:
Mazowieckie, Poland

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Start - end date:
May 2012 - Ongoing

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Lapland's Green Deal – Fostering the Adoption of the Green Transition and Digitalisation

Lapland Green Deal project set a common framework to support the region to shift towards a more sustainable and smarter low-carbon economy.

About this good practice

The aim was to use co-creation in building a roadmap that engages and empowers different industries, sectors, and actors to support the Green Transition in Lapland. Sets of common goals for future measures to support Green Transition and jointly agreed actions will be included in the regional strategic programs. The roadmap will also set the ground for implementing the structural programs in the region. The roadmap was developed based on the shared interest and commitment of key sectors, industries, and their actors and by making use of existing networks, clusters, and projects.

Regional Council of Lapland invited regional stakeholders to act to support the goal of Green Transition and voluntary agreements on Green Transition. Focus was on the sectors such as the energy transition and transport systems and to utilise the opportunities related to digitalisation and circular economy.

Digitalisation is promoting and enabling the solutions fostering Green Transition–twin transition.

Lapland Green Deal development areas are focusing to support and develop

» carbon neutral economy
» energy transition
» low-emission transport and accessibility
» the nature protection and sustaining the nature biodiversity
» climate wise and responsible forest utilisation
» sustainable tourism a competitive force
» circular economy solutions
» local agrifood encouraging sustainability

Resources needed

Resources needed are not yet planned in detail. Regional Council of Lapland has recruited one person, expert of sustainable development, as a result of the action. Also, regional cooperation group that works on legal grounds, has established a section of Green Transition that is supporting the work.

Evidence of success

The project increased the regional capacity to develop and put into action concrete measures to gain an impactful green and digital transition.

The implementation and monitoring of the roadmap into the practise are supported by nominated Green deal ambassadors and regional Green deal working group involving regional ecosystem actors such as regional and local authorities, policymakers, clusters, companies, education and RDI organisations.

Potential for learning or transfer

Lapland Green Deal is an example about:

» good inclusive governance practise engaging and empowering the regional stake-holders
» a well implemented co-creation process evolving different kind of stakeholders joining to common dialog and challenge solving
» interpretation of the green and digital transition in order to create common understanding

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Evidence of success

Evidence of success of the GIOTTO project can be visible in the identification of the main bottlenecks of the productive sectors analysed through the LCA assessment. The results highlighted the areas to be addressed with different urgency priorities in terms of environmental impact. Key principles have been recognised: redesign of the product through LCA analysis, rethinking of business models, promotion of reverse logistics and industrial symbiosis, regeneration of products and materials.

Potential for learning or transfer

The practice can be of interest for many other countries that want to guide companies and their production processes towards a greener approach with the aim of reducing the environmental impacts of products across the entire life cycle. Given the increasing importance of the thematic related to the recycling of waste materials, to circular economy, to low impact of the productive process, to the waste management, this project is able to address all these aspects. The cooperation and the dialogue between enterprises, universities and research centres is crucial to reach important results and to multiply the effects of the different measures applied. This practice represents an important instrument for SMEs willing to increase their competitiveness in the market in a green perspective.

Circular Economy for the competitiveness of sectors of Made in Italy - GIOTTO

The aim of the project is the diffusion of new models (studies, guidelines, procedures) in order to foster a circular economy within sectors of Made in Italy.

About this good practice

The problem faced by this project is linked to the spread of instruments for implementation of circular economy in the "Made in Italy" sector, which is characterized by the prevalence of SMEs, through research and experimentation between complementary and multidisciplinary subjects (Universities, Technology transfer centres) belonging to wood-furniture, fashion, agriculture and food chains. The purpose is to guide companies and their production processes towards an approach that aimed at reducing the environmental impacts of products across the entire life cycle, from raw materials extraction to production, distribution, waste management, measuring the circularity of the products. This process is more achievable if it provides companies with a competitive advantage in the market (with consequent positive impact in terms of turnover and employment) giving evidence of efforts and actions carried out to reduce the environmental impact.

The partnership has been built considering the need for an holistic and multidisciplinary approach to the theme of circular economy, involving the economic and scientific actors of the main Italian industrial districts of the wood-furniture system, fashion system, and food sector.

Resources needed

Total budget of the project: €770.000
Total grant requested: €350.000

Main institution:
Città studi - POINTEX

Location:
Piemonte, Italy

Contact:
Leonardo Marchetti
Next Technology Tecnotessile
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Potential for learning or transfer

The GP is of interest for learning by other regions via the follow perspectives:

» Creation of a "neutral" blockchain, equidistant between the interests of large groups and SMEs.
» Inclusive and participatory bottom-up approach which enabled the identification of priorities, thanks to the direct experience of companies. Focus on defining suitable paths and training credits for all professions and competencies which may contribute towards project development.
» Stimulation of a progressive digitalisation with the supply chain vision.

Challenges Encountered

» More must be done to compensate for the lack of homogeneous perception and knowledge of blockchain
» The creation of a "minimum viable ecosystem" (MVE), built on actors and contiguous supply chain segments, on which the evolutionary path towards the target ecosystem can be built.

Blockchain for traceability in textiles and clothing sectors

A feasibility study commissioned by the Italian government on the application of blockchain in the textile and clothing sectors.

About this good practice

The GP is a feasibility study (pilot project) pertaining to the application of blockchain technology to one of the most significant sectors of Made in Italy, the Textile sector. The study was commissioned by the Ministry of Economic Development, developed in collaboration with IBM, associations and companies, to assess the applicability of blockchain in support of traceability, sustainability and promotion of the textile sector in Italy, much of which is made up of SMEs.

The idea underpinning the study is that technology in distributed registers can play a key role in improving transparency when offering Italian products to consumers. The objective was to explore the potential of this technological paradigm by analysing the features of the textile sector as regards traceability in the following dimensions: quality, origin, environmental and ethical sustainability.

Blockchain technology can be a highly useful instrument for companies, because it enables them to leverage the quality and excellence of their own production, so that they take on a more prominent role and therefore boost their negotiating power in different value chains.

Evidence of Success

The analysis and experimentation highlight how blockchain technology appears to be particularly suitable for supporting the promotion of textile and clothing (T&C), insofar as it enables the resolution of issues which typically arise in traceability processes currently in use. The project also identified scenario elements which could be addressed with a series of accompaniment actions to favour the progressive participation of interested players and the model's long-term sustainability.

Main institution:
Ministry of Economic Development, Italian government

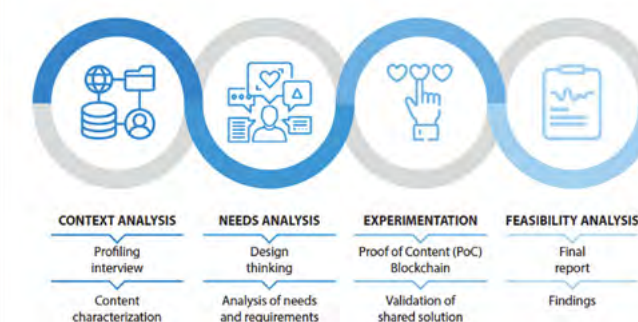**Location:**
Italy

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https://www.mise.gov.it/index.php/it/normativa/notifiche-e-avvisi/blockchain-per-la-tracciabilita-del-made-in-italy

Start-end date:
February 2019 - November 2019

Potential for learning or transfer

» Promoting the cross- sectoral and cross-regional innovation, offering direct financial support to SMEs for developing new technologies, products and services and at the same time,
» Foster the participation of cluster organisations as facilitators to exploit the innovation potential of SMEs
» Establish close-links and suitable complementarities with the regional policies and related schemes thought thematic platforms (RIS3, S3P)
» Offer the SMEs in a single platform a variety of support innovation tools, including mentoring/coaching services, skills development, access to investment, participation in matchmaking events, acceleration support, etc.

Challenges Encountered

» More must be done to compensate for the lack of homogeneous perception and knowledge of block-chain
» The creation of a "minimum viable ecosystem" (MVE), built on actors and contiguous supply chain segments, on which the evolutionary path towards the target ecosystem can be built.

Industry 4.0 in the contest of Interregional ecosystems and SMEs promotion applied to boost Europe's economy in the raw materials industry

About this good practice

The main objective of this practice is to provide a networking and support platform to SMEs in the raw materials & mining sector, in order to enhance their productivity , competitiveness and innovation capacity, promoting new technologies and boosting the access of new products and services to the market.

This platform will integrate different innovation actors, resources, tools and instruments for building new industrial value chains through a cross-border, cross-sectorial approach involving industrial clusters as the ideal ecosystem vehicle to exploit the innovation potential of SMEs through a wide range of support services involving ICT, circular economy, resource efficiency and advanced manufacturing sectors.

Evidence of Success

More than 130 SMEs across Europe have benefited from this platform and over 45 new products/services/technologies have been brought to the market.

Main institution:
ICAMCyL Foundation

Location:
Castilla y León, Spain (and other collaborating European regions)

Contact:
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ICAMCYL Financial Coordinator
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Start - end date:
Timescale: September 2020 – November 2023

Digital Innovation and Skills in Industry 4.0

National and regional governments and ecosystems play key roles in growing the skills most needed for tomorrow's European industry. I4.0's digitisation provides new opportunities and a need to adapt and prepare for the skills needed to fulfil their potential. Such focus on workers' interaction and impact with these transforming technologies also highlights a pillar of the foreseen Industry 5.0.

From fostering and assessing such skills in existing businesses, to better bridging supply and demand, to supporting a new generation of digital apprenticeships, the SMARTY partners focused the fourth theme of its good practice exchange on how to prepare their workforces for the future.

Potential for learning or transfer

» The team are not 'selling' a programme but a service. The business needs are at the centre of the programme approach – diagnostic and planning tools ensure the right options are presented to business.
» The programme gives specialist skills support to other teams and partners to navigate the complex skill support eco system.
» There is a single point for businesses to get skills support, with simplified referral routes to the right support.
» Fully costed ESF programme ensures SME's can engage with support to grow their business.

Skills for Growth

About this good practice

The Skills for Growth's main focus is to:

» Respond to and engage with businesses to identify issues, concerns, gaps, future needs in relation to key sectors, skills gaps and recruitment issues.
» Link businesses and a range of learning providers including further and higher education institutions to facilitate understanding by both parties of each other's work, priorities and barriers to engagement and then to facilitate collaborative working.
» Research, plan and implement a range of projects which bring education and businesses together which might include company visits, work experience, industrial placements, paid internships, undergraduate/graduate placements.

The main beneficiaries of this programme will be SMEs and individuals. Through this programme, businesses will develop greater awareness of the offer available to them from educational institutions including schools, colleges and universities. They will develop greater influence over these institutions to ensure that skills provision better meets their current and future skills needs.

Resources needed

Funding for Skills for Growth (£1,980,000) comprised of EU European Social Funds. It will run for three years. A Team Leader, 8 FT Business Partnership Advisers and a part time Contract Officer are employed to run the programme. The programme also funds a marketing campaign and resources/events.

Evidence of success

There has been an increase in engagement of SMEs for Employment and Skills Support (436 businesses engaged with the programme in the first 9 months)

» Skills support has been a top priority for businesses (32% looking to upskill staff)
» High demand for education engagement (55% of businesses wanted an introduction to a school, college or university)
» Sector with largest demand is manufacturing (24% of businesses engaged)
» Young people's digital skills has created a demand for internships.

Main institution:
Leeds City Region LEP

Location:
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https://www.the-lep.com/business-support/
skills-and-training/skills-for-growth/

ProACCIÓ 4.0: Catalonia's innovation ecosystem accelerating Industry 4.0 transformation for SMEs

ProACCIÓ 4.0 is the main programme in Catalonia to accelerate the transformation of SMEs and the adoption of Industry 4.0 technologies.

About this good practice

ProACCIÓ 4.0 is a public programme that provides services, grants and activities to the Catalonian business ecosystem to increase their Industry 4.0 technology education, accessibility and implementation.
Launched and managed by the Catalonian regional government in 2019 with stakeholders such as the Catalan School of Industrial Engineers and the Chamber of Commerce, the creation of ProACCIÓ was in response to a low adoption rate of I4.0 technology by local industrial companies, despite Catalonia being the 5th most digitised region in Europe (DESI index, EC 2019).

A portfolio formed around three programme areas to lower SMEs' barriers of adoption of I4.0 technology:
1. Awareness and training services: such as technology reports, demonstration of use cases, I4.0 technology courses for managers, and aiding company missions at international trade fairs for best-fit solution providers.
2. Provision of a supply-demand ecosystem: including brokerage activities (per sector or challenge) and an online database of over 1100 accredited suppliers that maps technology themes and geographic location for easy access by companies on the demand side.
3. Funding for diagnosis and implementation projects: providing vouchers for companies to use with over 350 accredited consultants to help develop their digital and I4.0 transformation roadmaps and carry out their implementation (e.g. development, testing, pilots and access to infrastructures and facilities).

Resources needed

The programme has directly provided to 1000 SMEs a public investment of over 12.5 M€ by the Catalonian regional government via Industry 4.0 vouchers for the Implementation of Industry 4.0 projects by technology adoption and for the diagnosis and elaboration of Digital Transformation Plans.

Evidence of success

Metrics in ProACCIÓ's first two years (2019-2021):
» Digital and I4.0 transformation of more than 980 SMEs through funded diagnosis and technology implementation projects via vouchers.
» Growing ecosystem of more than 350 accredited advisors and 1100 I4.0 tech suppliers.
» Training, dissemination and marketplace sessions impacting over 4600 business professionals.

Challenges encountered

» Crucial for Industrial SMEs to initiate their digital transformation with a diagnosis and roadmap, clearly identifying the priorities for implementation.
» Ecosystem involvement has been a key success factor (tech suppliers, advisors, stakeholders, European networks), acting as multipliers.

Potential for learning or transfer

I4.0 adoption barriers continue to manifest in regions across Europe, preventing SMEs from harnessing the business benefits of tecnologies such as IoT, AI, big data, 3D printing, robotics and VR/AR. ProACCIÓ has funded 1000 projects in 2 years, overcoming common I4.0 transformation challenges through transferable approaches:
» Public funding via vouchers that allow SMEs to access accredited consultants and suppliers, focusing not just on implementation but also the initial step of diagnosing a company's specific needs and potential.
» Brokerage events and a supplier database that facilitate access to the region's supply of commercial I4.0 products and services, as well as bridging the tech know-how and capacities found at universities and technology centres to aid SMEs' digital and I4.0 transformation.
» A holistic portfolio of services and funding that address each stage of an SME's readiness for I4.0 adoption: e.g. awareness, training, diagnosis, implementation.

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Start - end date:
November 2019 - Ongoing

Resources needed

Varies per the number of enterprises audited.

Evidence of Success

Our methodology has generated positive results:

1. A first call for start-ups was successful, given the high number of proposed projects.
2. The first step of our analysis activity has allowed us to point out at least fifteen innovative design lines that pursue the introduction of highly innovative technologies, concerning either single companies or networks of them.

Interactions between companies and researchers are generating a significant set of innovative projects.

Potential for learning or transfer

The practice is able to identify key problems that concern both single companies and the local production lines.

At the same time, the survey allowed entrepreneurs and managers to self-analyse their context and immediately exchange information and knowledge with the research team. In short, bidirectional knowledge transfer is realised, enriching firms and researchers, while also jointly identifying potential innovative lines.

Skills for the digital transition in the textile sector: PRISMA's training programme

The PRISMA project addresses techno-scientific and economic challenges of Prato's Textile Industrial District in networks of firms and laboratories.

About this good practice

The Prato Textile Industrial District faces techno-scientific and techno-economic challenges:

» SMEs of the textile industry must learn about the shifting techno-productive frontier that require a new entrepreneurial mind-set and rethinking processes and products on new cognitive bases.
» New strategic horizons and innovative designs are required, which should be implemented through new and evolving interaction structures between firms and research laboratories.
» New self-organised supply-chains are essential, since the logistic system has become a kind of "nervous system" of economic activities via IT.

The Municipality of Prato, University of Florence and business associations have teamed with the PRISMA project. A series of seminars focused on cross-sectorial analysis of logistics companies. This collaboration included companies, the local production system and stakeholders of global supply chains.

At the core of this approach is a techno-economic audit of companies via interviews, during which entrepreneurs and managers are stimulated to think about the aforementioned challenges. Reviewers elaborate a specific report for each analysed company, which is then debated in follow-up meetings.

In this way, innovative directions are highlighted, so that companies can subsequently develop innovative projects that fit for calls from different institutional levels. The analysis is also focused on production-chains, where topics involving systemic questions emerge.

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Start-end date:
July 2022 - ongoing

Evidence of Success

Apprenticeship Standards have been adopted across England as the primary method of evolving occupational competencies developed by and recognised by each industry sector. They are the only training route that is funded to 95% by the UK government. Achievement rates of 65%+ are required from all training providers.

Challenges Encountered

Initially the availability of End Point Testing was limited which delayed many of the early participants from 'graduating' from their programmes. Many training providers also criticised the process for the approval of Standards that had been developed by industry groups, with some approval taking up to two years.
Some funding levels have been criticised as inadequate.

Potential for learning or transfer

Transfer of the Apprenticeship Standards programme would be an issue for national/regional governments and their education ministries. However, the actual occupation standards in terms of the description of the specific Knowledge, Skills and Behaviours that are considered necessary to produce a competent member of staff can be utilised by any organisation, as can the methodologies that have been developed to assess competence.

Digital Apprenticeships in England

A new approach for an industry-developed standard to teach digital skills leading to qualifications that will be relevant to and recognised by employers across the country.

About this good practice

Apprenticeship Standards were introduced across sectors of the English economy following a comprehensive review of vocational training in 2016. These new occupational standards have been based on individual job roles where groups of employers have collaborated to create standards in their own sectors. These groups have outlined the knowledge, skills and behaviours (KSB) needed to be competent in a specific job role.

All of these KSBs are learned, assessed and graded with a new system of End Point Testing. All apprentices are employed and receive a minimum of 20% tuition off the job. There are no age restrictions for apprentices. The Standards take between 1 and 4 years to achieve. They are available at different levels between 1 and 7 depending on the job complexity. The government operates and assures the quality of the training through the Education & Skills Funding Agency (ESFA).

Businesses with a salary bill of more than £3 million a year pay an 'Apprenticeship Levy' Tax which they can only claim back to spend on apprentices participating in approved programmes. Businesses with a salary bill less than £3 million a year receive a 95% contribution from the ESFA to meet the costs of training delivery. Apprenticeship training providers must be registered with and approved by the ESFA. Digital apprenticeships are available for Data Technicians, Development Operations Engineers, Network Engineers, Software Engineers, Cyber Security Specialists, Digital Support Technicians and Digital Marketers.

Resources needed

Government/Company funding of between £11,000 and £18,000 is available to fund Digital Standards. Training providers are assessed for the competence and capacity of their staff and operations. End Point Assessment organisations need to demonstrate their knowledge and industry competence.

Main institution:
Textile Centre of Excellence

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Start - end date:
2016 - Ongoing

Future Key Skills and Competences for I4.0

About this good practice

Slovenia is known for being an industry-oriented country. The manufacturing sector employs around 200.000 workers across about 20.000 companies. Over 95% of Slovenian industrial companies are also classified as micro or SME companies. It is also worth noting that the industrial segment brings in about a third of sales revenue and about two-thirds of total exports in Slovenia. Even though the Slovenian industrial sector is relatively successful and the population of Slovenia is relatively well educated with a high level of skills and knowledge (especially among young people) the challenge lies in the demographic change, and the transition towards a highly competitive, digital and green economy.

With that in mind, the Strategic Research and Innovation Partnerships (SRIP) have incorporated human resources development in their action plans. The HR development in SRIP Factories of the Future has been implemented through the following methodology:

1. Definition of a set of competence elements and profiles for SRIP focus areas
2. Checking the relevance of competency needs with companies
3. Preparing forecasts of competency needs of selected profiles and descriptions of competency development levels
4. Assessing the importance of predicted competency needs
5. Analysing data and its interpretation for a final report

Resources needed

EUR 560.000 euro, with 4 staff, a working group of 20+ stakeholders

Evidence of Success

The main results is a list (constantly updated) of 12 future profiles with the addition of special and general competences. The ranking of competencies included: professional/domain-specific competencies; power competencies, interpersonal competencies (EQ, communications skills, diversity and cultural intelligence); management and leadership competencies; and personal competencies (creativity, critical thinking, judgment and decision making, embracing change, active learning, growth mindset).

Challenges Encountered

» To develop the HR skills capacities and competencies needed, relevant working groups had to be established with relevant stakeholders and motivated to share their experiences and challenges. Field work and a lot of communication with companies was needed.
» To ensure sustainability of such an approach for the whole SRIP FoF was challenging, as well as ensuring the funds for further implementation and cross-sectoral connections.

» To develop and certify new training modules in the existing educational system has proven to be quite difficult due to the rigidity of the Slovenian educational system and the lack of knowledge and training of the educational staff.

Potential for learning or transfer

The approach of identifying future key skills and competencies can be replicated through the proven methodology to any other centre or region developing skills within the I4.0 premise and its related sectors (materials, productions, circular economy), as it is based on the interdisciplinary participative approach. The results of the approach can also be replicated to relevant European manufacturing businesses and regions in the premise of I4.0 due to highly similar educational attainment levels. In this sense, both the approach and its results are replicable.

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Start - end date:
January 2018 - December 2020

GATE 4.0

Evidence of Success

Project success is demonstrated by the size of the network created and the quality of the services offered. More than 140 companies, over 20 RTOs and the 3 universities in Tuscany are part of the GATE 4.0 network.

Numerous case studies and projects are carried out in cooperation with companies of different sectors, enabling them to interface effectively with I4.0 tech (e.g. optimisation of production processes, use of cobots and high-definition vision systems, increased worker safety).

Potential for learning or transfer

The practice can be of interest to many other regions that want to improve the cooperation between enterprises and RTOs in the field of Industry 4.0 technologies.

The collaboration methods and the type of services provided by GATE 4.0 make the district attractive to companies. In this context, close cooperation is stimulated, enabling companies, especially SMEs, to gain a broader view of the opportunities offered by modern digital and electronic technologies.

GATE 4.0 can be also considered as an instrument to boost the economic development process, in particular for I4.0 issues.

GATE 4.0 - the technological district of Tuscany for Advanced Manufacturing

GATE 4.0 of Tuscany provides matchmaking initiatives between diverse stakeholders, encouraging joint development of new technologies, products and services.

About this good practice

GATE 4.0 is the Technological District for Advanced Manufacturing of the Region of Tuscany. It is in charge of bringing together enterprises, research centres and financial operators to stimulate the adoption of new technologies by Tuscan manufacturing companies and to foster the growth of people and companies.

Thanks to a network of highly specialised companies, GATE 4.0 supports the definition and development of projects through enabling technologies of Industry 4.0 and the related financing opportunities and facilities for I4.0 training of personnel.

The enabling technologies for Industry 4.0 made available to SMEs by GATE 4.0 are:

» Robotics and Artificial Intelligence
» Big data & Analytics
» Internet of Things
» Vertical and horizontal integration
» Additive and advanced manufacturing
» Augmented and virtual reality
» Simulation
» Cloud computing
» Cyber security
» Supporting tools and methodologies

Resources needed

The total public funding for this initiative is 324.000 €, covering 50% of GATE 4.0's budget, including personnel.

Main institution:
Rete Imprese GATE 4.0 – Distretto regionale toscano "Advanced manufacturing 4.0"

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Start - end date:
2019 - 2022

Resources needed

FrostBit Software Lab has 10-12 permanent staff members complimented with about the same amount of project personnel. Trainees and students provided an essential resource. The lab has several tasks, which will also mean several financial resources. EU projects have a crucial role in capacity building, developing and testing new approaches. Role as a learning environment for students and trainees is a task of Lapland UAS. Yearly basis, the FrosBit budget is about 2M€ in total.

Evidence of Success

Over the years, the FrostBit Software Lab has grown into one of Finland's most advanced learning environments. With over 20 ongoing hands-on joint projects, FrosBit has become a significant breeding ground to improve I4.0 know-how among the industries and other regional actors. In addition to that, FrostBit is a partner in several international collaboration projects.

Potential for learning or transfer:

FrostBit Software Lab is a good case of the

» real-life learning environment enabling quadruple helix stakeholders' participation
» systematic and strategic approach to operate as a frontrunner in digitalisation
» TRL evaluation to support customers' technological maturity development

FrostBit Software Lab: Learning and innovation environment foreseeing the SMEs I4.0 skills and capacity building needs

FrostBit Software Lab operates under the Digital Solutions competence group and the ICT engineering education at the Lapland University of Applied Sciences (Lapland UAS).

About this good practice

The FrostBit lab was established in 1999 as the first Finnish virtual reality programming laboratory funded by the European Regional Development Fund (ERDF). The systematic development has led to a modern and advanced learning environment with up-to-date technological know-how. The FrostBit plays a pivotal role in ICT engineering education as an R&D and learning environment where students can collaborate with the staff, study, and have hands-on experience in ICT engineering. The primary R&D focus of FrostBit is on entertaining & educational games, simulations, extended reality, web & mobile computing, and complex data systems.

FrostBit is leading and co-running different EU-funded projects with regional industries and local authorities. Key application areas and sectors are Rural Industries & Forestry, Mining Industry, Built Environment, Tourism,

Healthcare and Mobility & Transport. In addition, FrosBit provides services for companies and organisations looking for a partner in R&D in product development and testing.

The FrostBit is one of the core labs in the Arctic Development Environment Cluster https://ardico.fi/portal#/. Through the cluster, the services of Lapland's RDI organisations are available to companies and researchers on a one-stop-shop basis. That enables access to in-house expertise from other fields and teams in the cluster. For example, in quick prototyping of intelligent systems and a smart built environment, TEQU talk concept "from problem to prototype in 1 month" https://www.tequ.fi/en/ supports the process.

Lapland UAS has established partnerships with many companies and organisations, and the FrosBit is cooperating with digitalisation with many regional, national and international partners.

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Start - end date:
1999 - Ongoing

SMARTY Interreg Good Practice Guide

Digital Innovation and Skills in Industry 4.0

SMARTY – An interregional cooperation project for improving innovation infrastructure policies

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SMARTY - Smart SMEs for Industry 4.0

Project Partners

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