



European
Commission

CORDIS Results Pack on the European Year of Skills

A thematic collection of innovative EU-funded research results

August 2023

Fostering
skills
development
in the EU
for more
sustainable,
resilient, and
fair societies



Research and
Innovation

Contents

3

Inclusive growth: 'recipes for success' beyond Industry 4.0

5

Introducing a new model for PhD training

7

Transferable skills training improves doctoral programmes

9

Digital hubs support mobility and career development

10

Enhancing protection against poverty and social exclusion

12

Digital platform to connect the right jobs to the right people

14

Drawing inspiration from nature to build the human habitat of the future

15

Empowering approaches to vulnerable migrant youth integration

17

Twinning migration project achieves new level of excellence

19

Premium nanotechnology against cancer

21

Equipping Europeans with the skills needed for tomorrow's labour market

23

Bringing entrepreneurship education to PhD programmes

25

Better digital skills can reduce online harm for children

Editorial

In her 2022 State of the Union address, President of the European Commission Ursula von der Leyen proclaimed 2023 the European Year of Skills. This thematic year is set to give a fresh impetus to fostering skills that match people's aspirations but also match with the changing needs of the labour market in the EU by promoting professional training, reskilling, and upskilling.

An adequate skill offer is a precondition for well-functioning and inclusive European societies and economies. Demographic and technological changes, changing global trade patterns, and the green transition are rapidly altering the needs of our labour market. Moreover, the past few years have been challenging for Europe: the coronavirus pandemic, the war in Ukraine, the energy crisis, and persistent political upheavals have highlighted the need for improved strategies and measures to respond to the new reality. Against this background, the skills gap in the workforce is becoming more evident: 77 % of EU companies are now [reporting difficulties](#) in finding workers that possess the skills they require.

All these challenges bring skills development to the fore, introducing a new parameter to the approach Europe needs to take. The European Year of Skills officially began on 9 May 2023 and will run for 12 months, supporting skills-related actions and initiatives across Europe, and bringing together workers and businesses with the common goal of creating fairer and more resilient societies.

In line with initiatives such as the [European Skills Agenda](#) and the [European Pillar of Social Rights](#), the European Year of Skills aims to promote education in and for the labour market, including skills relevant to ensuring a fair green and digital transition, while encouraging an inclusive approach to education and lifelong learning. European Year of Skills initiatives include the EU [Digital Skills and Jobs Coalition](#), the [EU Talent Pool](#) and the [European Strategy for Universities](#), which offer resources in targeted fields and help connect skills to current market needs.

Boosting the EU skills strategy

This results pack showcases the work of 13 research projects funded under Horizon 2020 working within the context of the European Year of Skills. The aim of the pack is to contribute to an evidence-based debate on the challenges associated with skills development, such as ensuring that skills are relevant to societal needs, matching the aspirations and skill sets of job seekers to opportunities in the labour market, assessing the impact of new technologies and increasing the attractiveness of the EU market to workers from abroad.

The thematic collection provides succinct summaries of the main insights from the projects and is aimed at a varied audience of academics, policy makers, civil society organisations, and interested citizens. Project results so far attest to the importance of investing in the workforce as a vehicle for reinforcing Europe's position in the world. The aim is to deliver on the Commission's priorities, in particular the [European Green Deal](#) and [A Europe Fit for the Digital Age](#), ensure alignment with principles outlined under the [European Pillar of Social Rights](#), and create an economy that works for the benefit of all citizens.

Inclusive growth: ‘recipes for success’ beyond Industry 4.0

An analysis of technology’s impact on companies and the labour market has led to rapidly accelerating policy reform on EU, national and company levels.

Industry 4.0 is the current ‘revolution’ in manufacturing. It relies on increasing digitisation, automation and data exchange through technologies including sensors, robotics, machine learning and AI. In line with the Internet of Things paradigm, Industry 4.0 focuses heavily on interconnectivity. The question of whether this ‘connected’ technology landscape inevitably leads to massive job losses is the subject of heated debate.

The historically low unemployment and high employment in Europe and beyond would suggest the answer is no. The EU-funded [BEYOND4.0](#) project set out to investigate the Industry 4.0 landscape. However, far more ambitious, the ultimate goal was to use insight to positively shape the social policy changes ahead, beyond 4.0.

Industry 4.0 for profit or inclusive growth: a tale of two companies

BEYOND4.0 investigated how companies deploy new technology in a way that creates jobs and inclusive growth. “We distinguished two types of companies: ‘learning organisations’ and organisations mainly out for quick profits. The former focus on creating learning workplaces – empowering employees with new knowledge – that foster product innovation and professional growth. The latter ensure profits – but mainly at the expense of employees and society. Research pointing to the risk of technology destroying workplaces concerns mainly the latter type of companies,” explains Steven Dhondt of the [Netherlands](#)

[Organisation for Applied Scientific Research \(TNO\)](#), scientific project coordinator.



If we want the digital revolution to lead to more and better work, companies must design work such that employees are learning from it.

“If we want the digital revolution to lead to more and better work, companies must design work such that employees are learning from it,” he adds. Proactive skills provision to staff is a success factor for industry’s contribution to building a sustainable and resilient society.

‘Interacting skills’ essential to digital transformation

Perhaps the most important finding was the gap in current policy thinking that underestimates non-digital skills in digital transformation. “Workers need not only technical skills but other skills such as methodological, social and problem-solving skills. These skills are not new but now they must be integrated with digital skills to address individual tasks. These ‘interacting skills’ are what is important,” notes Dhondt. Analysis of both skills and tasks and their interactions is necessary to identify emerging skills gaps – which skill categories are needed in combination to do individual tasks.

Social policies for a flourishing digital future

More than 40 policy publications and 5 books – see [Results/Publications](#) for some examples – are already generating impact. Among highlights, “our proposal on ‘workplace innovation’ has



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been included in two opinion papers of the European Economic and Social Committee, and the European Commission has asked us to help shape its [Industry 5.0](#) policy,” explains project manager Peter Oeij, also of TNO. The consortium was invited by national governments and myriad organisations, many of whom are building on BEYOND4.0’s outcomes, to help shape innovation policy.

A proposed new framework for workers’ benefits, ‘participation income’, is now at the heart of Finland’s social security system reforms, an example closely followed by Italy and the Netherlands. It will tie financial benefits to work and other activities ‘civil society’ deems of interest. This contrasts with current ‘work-focused benefits’ including universal basic income that are related to work generally rather than doing work that benefits society.

“Technology is not a threat to jobs but rather an opportunity for inclusive growth. Our future can and will be positive if companies and governments adjust their social policies to take advantage of these tremendous opportunities,” Dhondt concludes.

PROJECT

**BEYOND4.0 - Inclusive Futures for Europe
BEYOND the impacts of Industrie 4.0 and
Digital Disruption**

COORDINATED BY

Netherlands Organisation for Applied Scientific
Research, Netherlands

FUNDED UNDER

H2020-EU.3.6., H2020-EU.3.6.1.1., H2020-EU.3.6.2.

CORDIS FACTSHEET

cordis.europa.eu/project/id/822296

PROJECT WEBSITE

beyond4-0.eu/



Introducing a new model for PhD training

Newly developed interdisciplinary, intersectoral and international modules will help PhD graduates improve their employability in academic and non-academic environments.



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Knowledge- and skills-intensive roles such as data analytics and human computer interaction design are on the rise thanks to technological advancements and globalisation, among other factors. This is driving changes in the sectoral structure and increasing demand for new types of **skills** in society. Yet, higher education is not evolving at the same pace, resulting in a lack of new skill sets needed to meet societal and professional needs.

Addressing this is the EU-funded **CHAMELEONS** project. “We aimed to develop new and innovative educational interventions to improve the learning experience offered by higher education with the intention of shaping more adaptable, entrepreneurial and employable doctoral graduates in the area of connected health, ready to meet the challenges of the future,” explains Tara Cusack, project coordinator.

Developing the State-of-the-Art Tool Kit

The project conducted a systematic review and two surveys, one of doctoral students and the other of faculty who develop

doctoral programmes. This was done to determine the gap in what is currently available to doctoral graduates in terms of interdisciplinary, intersectoral and international doctoral education and what is actually needed.

“The systematic review identified two clear needs at the student level including the development of transferable skills such as communication, leadership, teamwork, planning, organisation, management, and problem solving, and the creation of formal and informal networking opportunities,” outlines Cusack.

Results of the review and survey informed the development of the **State of the Art Tool Kit** that offers a multitude of useful resources for doctoral/postdoctoral students. “It is freely available via the CHAMELEONS website (when you sign in using a Gmail account) and provides valuable resources readily available to students,” notes Cusack.



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Broadening the skills of PhD graduates

The results of the systematic review and surveys also informed a series of World Café co-design workshops – a participatory method for collecting qualitative data. “Through the workshops, three interdisciplinary, intersectoral and international modules were designed with the collaboration of various stakeholders,” reports Cusack.

The three modules are: **Module one:** Forging relationships - Building and Sustaining your Doctoral Network; **Module two:** Managing the Project - Keeping on Track with an Eye to the future; and **Module three:** Starting your Career - Future Proofing your Career and Getting a Job. The modules are five European credit transfer and accumulation system credits each.

The modules were delivered to 15 students recruited from each of the five universities in the project. The students were all undertaking doctoral studies loosely linked to connected health.

“Feedback on the modules showed that there is clearly a need for modules and courses that focus specifically on the development of transferable skills and networking opportunities,” reports Cusack.

Analysis of the workshop results also revealed four learning outcomes. “On successful completion of the modules, the students would be able to develop networking and communication skills, understand ethical user-centred research design, market their research capacity and research skills, and lastly build an understanding of themselves and others,” highlights Cusack.

Serving society in productive ways

Project work has led to a new model for PhD training. This can help increase employment possibilities for PhD graduates who pursue careers in academia or outside academia, where they can serve the needs of society.

CHAMELEONS also provides a model that can be transferred to other European training programmes. “As part of the third module the students designed board games which illustrated the ‘highs’ and ‘lows’ of navigating the PhD journey. The games have since been prototyped,” concludes Cusack.

PROJECT

CHAMELEONS - Championing A Multi-Sectoral Education and Learning Experience to Open New Pathways for Doctoral Students

COORDINATED BY

University College Dublin, National University of Ireland, Dublin, Ireland

FUNDED UNDER

H2020-EU.5.a.

CORDIS FACTSHEET

cordis.europa.eu/project/id/873105

PROJECT WEBSITE

chameleonsproject.eu/



Transferable skills training improves doctoral programmes

Fewer positions in academia and more jobs in other sectors means new training for PhDs. Open-source, online modules improve employment readiness for graduates.

Times are changing, and graduates of today's doctoral programmes have different employment options than in generations past. Employees with PhDs have increased opportunity for mobility, and

transferable skills such as critical thinking and time management are essential. The EU-funded **DocEnhance** project developed a range of materials to help higher educational institutions (HEIs) address the needs of students with advanced degrees to succeed in non-academic careers.



The DocEnhance concept for transferable skills training is a flexible and innovative module-based organisational framework for the design and implementation of courses.

Modular course design

According to Hanne Johnsen, project coordinator: "The DocEnhance concept for transferable skills training is a flexible and innovative module-based organisational framework for the design and implementation

of courses." Courses designed by DocEnhance have three modules, each targeting an important educational component.

The first module, a **MOOC** – for massive open online course – targets open education and comprises online lectures. The second module focuses on interdisciplinarity and consists of local group work. Intended to enhance the employment mobility of PhD candidates, the third module contains regional assignments in non-academic sectors.

DocEnhance has developed three courses, all with the same modular structure. The courses are flexible and allow students to select modules that address their needs and interests. The courses cover data stewardship, supervision, and career management and entrepreneurship.



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The modules are designed to foster open education, interdisciplinarity and mobility, key features of career preparedness in academia. Both the design and the content of the courses are integral to delivering quality learning with respect to transferable skills. Project work helps to ensure PhD candidates are well positioned for successful careers beyond academia.

Industry and academic collaboration

The project consortium consisted of 19 partners in 15 countries. Major stakeholders and end users made up an external advisory board and an industry reference group composed of universities and businesses. Both academic and non-academic consortium members provided significant input into course content.

Non-academic partners included key players in recruitment and career transition. They played an important role in putting forward the views of future employers as courses were developed. Four of the partner universities hosted online and face-to-face workshops to better assess the needs of PhD employers. An online questionnaire complemented this work, further exploring the needs of non-academic PhD employers.

Career-tracking survey

The online questionnaire distributed to non-academic potential employers complemented the career-tracking survey the project developed for PhD candidates. This survey, along with the courses designed for dissemination on the DocEnhance platform, is a major outcome of the project.

Launched in 2021, the survey collected 2 217 valid responses, 23 % of the target population. The survey allows universities to assess and adjust their programmes with respect to student needs as they prepare for their careers. Being open source, the survey can be taken up by European and non-European universities alike.

Next steps for DocEnhance include building on achievements through a related project, [DocTalent4EU](#), which will design an additional three courses to be hosted on the DocEnhance platform. The career-tracking survey will be repeated in 2024, thereby providing a critical comparison to the results of the first survey.

DocEnhance has effectively changed the landscape for higher education in Europe. The courses developed by the project and their easy accessibility meet the changing needs of doctoral candidates. Further, regular implementation of the career tracking survey will ensure that doctoral programmes can continue to evolve in the future.

PROJECT

DocEnhance - Enhancing skills intelligence and integration into existing PhD programmes by providing transferable skills training through an open online platform

COORDINATED BY

UiT The Arctic University of Norway, Norway

FUNDED UNDER

H2020-EU.5.a.

CORDIS FACTSHEET

cordis.europa.eu/project/id/872483

PROJECT WEBSITE

docenhance.eu/



Digital hubs support mobility and career development

A joint initiative involving 43 countries provides online access and support for academics, entrepreneurs, and other research professionals seeking career advancement.



The modern workplace is more fluid than ever. Relocating internationally is a common practice, particularly within the European Union. The EU-funded [EURAXESS Hubs](#) project builds on existing digital infrastructure to help young talent plan major moves with respect to career direction and residence. Despite the time constraints of a 12-month timeframe and the difficulties of communications and networking during the latter half of the pandemic, EURAXESS Hubs chalked up many achievements.

According to project coordinator Ádám Molnár: “The EURAXESS network is facing changes as it is evolving to cover an ever broader service area spanning the career pathways of researchers within Europe and ultimately becoming the [ERA Talent Platform](#). Following this course, new partners and collaborators need to be engaged to be able to deliver high-level assistance.”

The EURAXESS network is facing changes as it is evolving to cover an ever broader service area spanning the career pathways of researchers within Europe and ultimately becoming the ERA Talent Platform.

The project team designed and launched three pilot hubs that integrate digital platforms in order to enhance cross-border collaboration. These hubs, which are competence-specific and target researchers, research organisations, and EURAXESS network members, offer information, direction, and personalised assistance. The hubs incorporate a number of partners, some of whom are new to the EURAXESS network and others more experienced, and each contributed to the project in tailored, complementary ways.

Digital toolkits for EURAXESS users

The project designed toolkits that could be deployed through the hubs in order to support clients in three specific areas: talent in academia, scientific entrepreneurship, and careers beyond academia. According to Molnár: “These topics are in high demand by mobile researchers as well as young talents throughout Europe who are interested in physical, virtual or intersectoral mobility options to enter in their career.”

Hubs improve the EURAXESS network

EURAXESS, which has a digital presence in countries around the world, includes dozens of European countries, with over 40 national portals where country-specific information is available. There are over 600 EURAXESS centres in Europe with dedicated staff to support mobility and career advancement, with an additional network of representatives worldwide in key partner countries. The project invited the contributions of these resources to create hubs that will help streamline the services available.

The toolkit for supporting [academic talent](#) focuses on gender, recruitment, and career stories. Learning and mastering novel skills that support networking and professional development are also key components. To support individuals interested in [science start-ups](#), the related toolkit offers highly specific information related to this niche area. The toolkit to support [careers beyond academia](#) provides mentoring, matching with employers, and a LinkedIn showcase to assist networking.



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Awareness informs access to digital resources

Easy access to resources is key to ensuring they will be used. The toolkits designed by EURAXESS Hubs can be adopted by any EURAXESS centre and are effective models for developing service architecture. The science entrepreneurship toolkit is available in an e-book format, increasing its accessibility.

Targeted communication about EURAXESS will increase visibility of digital resources and traffic to the hubs. In order to raise interest

in what the hubs have to offer, the project developed a podcast called [EURAXESS Small Talks](#), consisting of six episodes. The series highlights topics developed in the toolkits using personal stories that are of interest to the global research community.

As career mobility in science continues to impact the movement of people across borders, the need for easy access, streamlined support is critical. EURAXESS Hubs is doing much to build the information highway that will meet this growing need.

PROJECT

EURAXESS Hubs - Piloting EURAXESS talent hubs to support researchers' careers

COORDINATED BY

Bay Zoltán Nonprofit Ltd., Hungary

FUNDED UNDER

H2020-EU.5.a.

CORDIS FACTSHEET

cordis.europa.eu/project/id/101035541

PROJECT WEBSITE

euraxess.ec.europa.eu/

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Enhancing protection against poverty and social exclusion

A systematic look at poverty in Europe has yielded models, concepts, indicators and policy recommendations supporting more effective governance of EU social citizenship.

More than 20 % of people living in the EU – nearly 100 million people – were at risk of poverty or social exclusion in 2021. Social protection policies exist, and new skills acquisition is a part of them. The question is how well they are addressing the problem and whether they have undesired consequences.

The EU-funded [EUROSHIP](#) project set out to answer these questions and develop policy recommendations to strengthen social citizenship. The umbrella conclusion is that policymakers and citizens must collaborate to identify real needs and meet them. A 'participatory democracy' fosters engagement, initiative and success.

A human-centred, supportive and collaborative approach

According to Rune Halvorsen of [Oslo Metropolitan University](#), scientific coordinator of EUROSHIP: “Our ‘[life course approach](#)’ systematically studied the experiences and lived consequences of economic hardship among individuals at increased risk of poverty and social exclusion with a focus on age group, gender, ethnicity, long-term care needs, digital technology access and different institutional arrangements.”

For young adults engaged in the transition from school to work, there was a growing push towards the ‘work first’ approach, activation and conditionality – ‘activating’ or motivating unemployed individuals to become employed with a ‘stick’, making social benefits including training opportunities conditional on certain behaviours. However, it was evident that young adults benefit most from policies that increase their opportunities to gain work experience, find permanent employment or learn new skills without the threat of failure or stigma.

The project found that if persons at risk of poverty are provided real opportunities to exercise influence on the services they receive through greater collaboration with public authorities, they are more likely to be committed and to show initiative. This is seen in the private sector as well. EUROSHIP found that, in many countries, non-governmental organisations played a key enabling role in helping persons with severe socioeconomic disadvantage improve their skills. This occurred through informal practical experiences that suited individual circumstances and abilities and without fear of failure or stigma. For highly marginalised individuals, outcomes suggest that formal training needs to be accompanied by or even preceded by considerable support in other domains, including healthcare, housing and different forms of counselling.

One young man who moved from southern Europe to England after losing his parents and grandparents volunteered on committees and worked to help improve policies for the homeless, developed his skills and saved money to transition to living independently. In his own words, his experiences at the charity gave him a sense of purpose and self-worth and made him feel that meaningful work was not only important but possible.

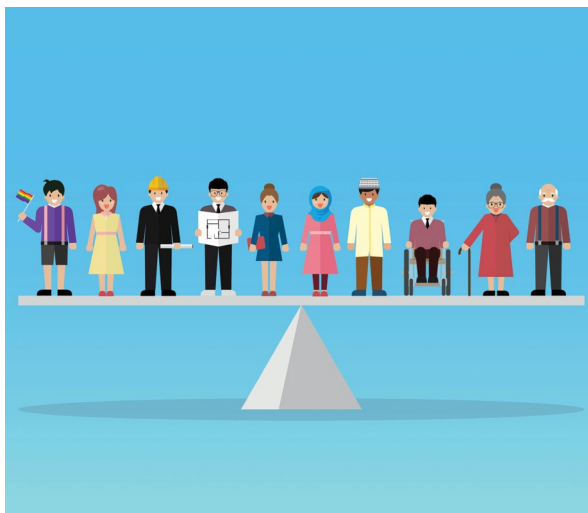
A stronger social contract between individuals and governments

“Fostering a stronger Social Europe is not only about making the welfare state services more effective in an instrumental sense but equally about democratic rights and fostering an avenue for more power balance between providers and recipients, helping representatives of these agencies to achieve better collaboration with the target groups, stimulating self-organisation and initiatives from these groups that are considered valuable to the individual and society,” Halvorsen explains.

EUROSHIP developed new tools for monitoring and improving EU social citizenship, including the ‘European Social Rights Indicator’, a multidimensional composite. “The models, concepts and indicators we have developed will support the monitoring and implementation of the [European Pillar of Social Rights](#) with benefits for all,” Halvorsen concludes. EUROSHIP has set sail, creating a compass to guide the EU towards a future without poverty.



Fostering a stronger Social Europe is not only about making the welfare state services more effective in an instrumental sense but equally about democratic rights.



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PROJECT

EUROSHIP - Closing gaps in social citizenship. New tools to foster social resilience in Europe

COORDINATED BY

Oslo Metropolitan University, Norway

FUNDED UNDER

H2020-EU.3.6., H2020-EU.3.6.1.1., H2020-EU.3.6.1.2.

CORDIS FACTSHEET

cordis.europa.eu/project/id/870698

PROJECT WEBSITE

euroship-research.eu/

Digital platform to connect the right jobs to the right people

Online platform provides valuable information about the labour market and helps EU citizens make more informed career and job search choices.



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Advances in European labour market data mean that it is now possible to return data to citizens in useful ways. Using such data enables jobseekers to better reflect on career prospects based on their skills. This will build stronger relationships between them and [public employment services](#) (PES).

“At one stage or another, almost half of all EU citizens will rely on PES, so they are a key touchpoint of present-day Member States and influence citizens’ thinking about social cohesion, care and existential well-being,” explains Ray Griffin, the project’s

principal investigator and senior lecturer in Management and Organisation at South East Technological University in Ireland.

Disruptive technology in public services

The EU-funded [HECAT](#) project has developed a digital [tool](#) offering helpful labour market data analytics to the front

line of PES and to all citizens so that they can make more knowledgeable decisions about quality and sustainable career choices, as well as job search, training and education.

The labour market analytics allow individuals to observe, for their own region, the demand and supply of labour, average incomes, and the stability, liquidity and volatility of occupations. The tool also has two novel job and career search tools. One links skills to occupations so that individuals can broaden their job search, and the other links the job qualities people value to opportunities. As a result, people can balance their desire for work, with realistic and feasible opportunities that best align with their location, skills, occupation and personal goals.

The online tool encourages citizens to interact with job quality data and their skills profile, thus expanding their personal job search outlook. “We aspire to move beyond job-first approaches to high quality, sustainable work for unemployed people,” states Griffin.

Strengthening labour market transparency throughout Europe

HECAT has been working with the Employment Service of Slovenia and its clients. The tool was first built on Slovenian labour market data and tested in two pilot sessions with key Slovenian market stakeholders, unemployed people, caseworkers and PES leadership. Engaging with other regions, including Denmark, Ireland and France, revealed the tool’s potential for a more extensive roll-out.

The consortium also set out to improve profiling and job matching algorithms currently used by PES, incorporating the probability of existing unemployment using both AI and modelled analysis.



We are working with unemployed people, rather than on them, which has often been the case for many algorithms.

All users, with particular emphasis on the jobless, were then part of multiple co-development and piloting cycles.

“Unlike many expert algorithms that do not do this type of co development and fieldwork, ours was built with the unemployed in mind,” comments Griffin. “We are working with unemployed people, rather than on them, which has often been the case for many algorithms.”

The project team developed an approach to using algorithms embedded in casework dialogues around feasible work, skills, as well as job qualities, expectations and desires. It worked on methods of presenting complex labour market data to citizens, particularly insight into their probability for unemployment. Traditionally, this form of data, if utilised by PES, was used in the back office to make decisions about unemployed people. These citizens were then subject to the outcome with little understanding of how such decisions were formed.

Project partners are busy disseminating and showcasing the tool and its concept to PES and the broader labour market ecosystem. They identified a way to develop the innovation for all 27 EU Member States.

Helping EU citizens get the right skills for quality jobs

The tool directly responds to EU policy ambitions in tackling unemployment, underemployment and skills gaps.

“HECAT is playing a major role in two important initiatives that will make access to the European labour market fairer, more inclusive, and a place where opportunities are more visible,” concludes Griffin. “It contributes to realising the [European Pillar of Social Rights Action Plan](#) goals of supporting labour market participation, training participation and reducing poverty and social exclusion, as well as to the [European Year of Skills](#) ambitions of addressing skills mismatches and gaps through better labour market signalling.”

PROJECT

HECAT - Disruptive Technologies Supporting Labour Market Decision Making

COORDINATED BY

South East Technological University, Ireland

FUNDED UNDER

H2020-EU.3.6., H2020-EU.3.6.2.2.

CORDIS FACTSHEET

cordis.europa.eu/project/id/870702

PROJECT WEBSITE

hecat.eu/



Drawing inspiration from nature to build the human habitat of the future

An EU-funded project brings interdisciplinary, international and inclusiveness-oriented scientific excellence to the field of green architecture.



© Miran Kambič

Sustainable built environments are regenerative and inclusive spaces that minimise environmental impacts through decarbonisation and lead to positive societal and economic impacts. The EU-funded [InnoRenew CoE](#) project was launched with the aim to develop and operate a new research institute focused on conducting cutting-edge scientific research regarding renewable materials utilisation and creating the next generation of experts and technologies.

“In only 6 years the research institute InnoRenew CoE has become a fully operational institute, with its own facility and state-of-the-art research laboratories and equipment, clearly stated research and business objectives, an excellent team pursuing ambitious goals, and strategies in place to sustain its operations in the future,” explains project coordinator Andreja Kutnar.

Restoring, engineering and regenerating to design environments

The InnoRenew CoE international team of 65 experts from 21 countries is dedicated to the innovative and interdisciplinary studies of wood and its applications. The key research areas are restorative environmental and ergonomic design (REED), engineered living materials and healthy living space.

InnoRenew CoE ‘s interdisciplinarity allows knowledge to be transferred between different disciplines and challenges to be tackled holistically by top scientists who are pursuing the common goal of a more sustainable society.

The researchers work in six research groups: health, materials, buildings, advanced manufacturing, information processing, and creativity & society. Currently, there are 32 running research projects from various fields, including the European Research Council project [ARCHI-SKIN](#) aiming to develop a protective bio-coat made from engineered living materials.

A legacy for the innovators of the future

In the short time since the InnoRenew CoE building’s opening, in February 2022, more than 2 300 people – primary and secondary

schools, students, researchers, business stakeholders, policy and political decision-makers, educators, NGO representatives and elderly people's groups – have been taken on an expert tour.

The institute's employees were involved in teaching at various faculties of Slovenian and foreign universities in the fields of wood engineering, computer science, renewable materials, sustainability, research and scientific writing, kinesiology, ergonomics and data science.

Additionally, they organised more than 20 workshops to promote wood and wood-related professions in various primary schools across Slovenia.

The workshops within the context of the annual Researchers' Night were attended by many people of all ages and levels of education, with 140 participants from 22 different countries in 2022 alone.

The project team aims to establish a central hub for societal engagement in science through education, co-creation and [open science](#), making science available to the public 24/7.

Featuring 120 members from 31 countries, the [Living Lab InnoRenew](#) acts as an international interface between science, industry, policy and civil society. It also serves as an innovation platform to discuss, test and implement creative and innovative ideas, concepts and policies related to the forest-wood chain and its role in the circular economy.

InnoRenew CoE's future steps include supporting the University of Primorska to establish and operate the [New European Bauhaus Academy Pioneer Hub for Sustainable Built Environments with Renewable Materials](#) – a centre offering offline and online training for the construction ecosystem in bio-based materials, digital technologies and increased circularity.

"Dissemination and communication are our primary path of exploitation of our results. Open science was, is and will be driving us in these activities," concludes Kutnar.



Dissemination and communication are our primary path of exploitation of our results. Open Science was, is and will be driving us in these activities.

PROJECT

InnoRenew CoE - Renewable materials and healthy environments research and innovation centre of excellence (InnoRenew CoE)

COORDINATED BY

University of Primorska, Slovenia

FUNDED UNDER

H2020-EU.4.a.

CORDIS FACTSHEET

cordis.europa.eu/project/id/664331

PROJECT WEBSITE

innorenew.eu/



Empowering approaches to vulnerable migrant youth integration

Actively listening to young migrants, considering differences and providing more educational support could aid integration and create a more inclusive society.

The transition into adulthood can be a tough time. Learning to live on your own, start a career or pursue further education can be

stressful, especially without support networks. For young non-EU migrants in Europe, this period of life can be particularly challenging.

Twinning migration project achieves new level of excellence

MIRNet research centre at Tallinn University fostered collaboration with partner universities and elevated standards of research on migration, integration and citizenship.

With the increasing influx of transnational mobility, European countries are faced with integration challenges. One such country is Estonia, notably with a history of labour-related commuting movement to and from Finland.

research centre at Tallinn University, which focuses on migration, integration and citizenship issues in comparative perspective.” The centre is called MIRNET Research Centre (MIRC).

From September 2019 until February 2023, Estonia's Tallinn University (TLU) embarked on the EU-funded [MIRNet](#) project. This project focused on East-West migration, understudied with respect to its counterpart, North-South migration.

Migration studies as a research institution

Principal coordinator of MIRNet and professor at TLU, Raivo Vetik, describes an important result of the project: “We have established the MIRNet



We have established the MIRNet research centre at Tallinn University, which focuses on migration, integration and citizenship issues in comparative perspective.

A key aim of MIRC was to institutionalise migration research. It also ensured a solid start to a research journey full of innovation. For example, a MIRNet researcher co authored [the paper](#) ‘When migrants become “the people”: unpacking homeland populism’, challenging the idea that migrants and populist politics do not mix. Researchers examined Estonian migration to Finland, Ecuadorian migration to Spain, and Turkish migration to Germany and pointed out how populist discourses have been effective in engaging these groups politically.

Vetik comments on MIRC's contribution to migration research: “The centre builds on our



previous work on migration, integration and citizenship, but brings in new approaches and ideas gained during implementation of MIRNet.”

Twinning and advancing research networks

Crucial to MIRNet’s excellence is [twinning](#), or collaboration with internationally leading research institutions in one of the 27 other Member States.

For example, partner University of Sussex organised a research seminar on urban diversity in February 2021, with talks by partner Roskilde University. Topics included diversity tourists and gentrification in Copenhagen.

MIRNet also organised one online conference and one in-person conference at Sussex University, both in 2021.

Other output includes an edited volume in the *IMISCOE Research Series*, ‘Anxieties of migration and integration in turbulent times’, published by Springer, and a journal special issue in the *Central and Eastern European Migration Review*.

In addition to building vital partnerships between research institutions, MIRNet attracted and supported early career researchers. More concretely, MIRNet fostered the growth of new voices by organising two training workshops in 2021, as well as a summer school in August 2022.

Migration research and the public sector

Migration studies are vital to informing policy development and implementation at various levels. By examining migrants’ experiences, researchers can provide insights into the effectiveness of existing policies and propose innovative solutions.

Since October 2021, MIRNet researcher Mari-Liis Jakobson has been on the supervisory board of [the Estonian Integration Foundation](#), an important agency for immigration policy. Jakobson was also involved in creating materials for a publicly-available online course, including this [infographic](#).

MIRNet also met with public-sector stakeholders in June 2022. The main focus was integrating Ukrainian refugees, and they addressed how to both coordinate refugee education and strengthen local officials’ capacity and reception of the migrants.

Although the EU funding has ended, MIRNet has big plans for the future. In cooperation with the MIRNet partners, TLU researchers are working on a proposal to investigate migration and integration policies concerning Ukrainian refugees in Denmark and Estonia.

PROJECT

MIRNet - Twinning for excellence in migration and integration research and networking

COORDINATED BY

Tallinn University, Estonia

FUNDED UNDER

H2020-EU.4.b.

CORDIS FACTSHEET

cordis.europa.eu/project/id/857366

PROJECT WEBSITE

mirnet.eu/



Premium nanotechnology against cancer

Nanotechnology in drug delivery is a powerful and promising medical approach. EU researchers collaborate to bring anticancer treatment to the next level with its aid.

The unique properties of nanostructured materials make them valuable allies in the fight against cancer. Their employment facilitates highly efficient drug delivery and enables molecular sensing in diagnosis, multiplex imaging, and construction of point-of-care therapeutic devices. The EU-funded [NANO4TARMED](#) project established an interdisciplinary scientific cluster to deal with the fundamental issue of nanotechnology-driven anticancer drug delivery.

The consortium developed nanoplatoms which will contain, alongside the newly developed platinum-based drug, optical or plasmonic labels for tracking these nanoplatoms in vivo, as well as for diagnostic purposes and monitoring of the disease progression and its treatment.

New directions of the nanoplatom anticancer potential

NANO4TARMED is the fruit of collaboration among the Regional Centre of Advanced Technologies and Materials of the Palacký University Olomouc in the Czech Republic, the laboratory of the Maynooth University in Ireland and the Institute of Science and Technology for Ceramics, part of the National Research Council of Italy.



We have successfully established a working scientific consortium, where we exchange students, knowledge and best practices.

“We have successfully established a working scientific consortium, where we exchange students, knowledge and best practices,” explains project coordinator Václav Ranc. The early-stage researchers (ESRs) involved in the project were selected based on the selection criteria document, produced and

agreed by the steering board, through a transparent evaluation of experience, CVs, motivation letters and skills.

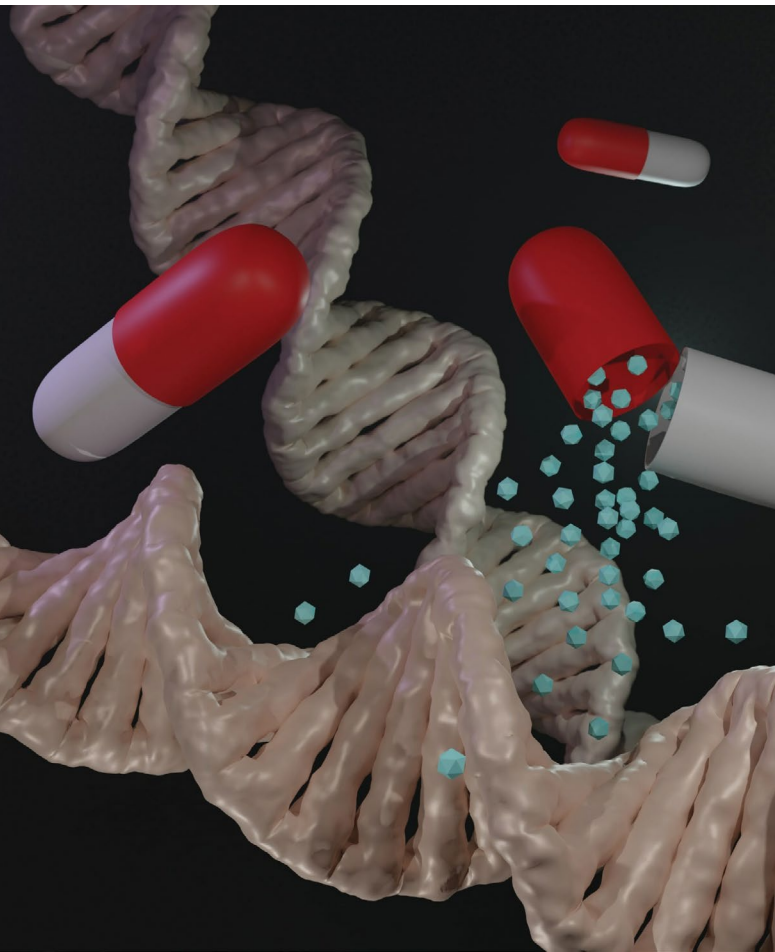
“The main goal was to establish a working scientific consortium, where ESRs and research and management staff (RMAs) would obtain substantial training on the writing of scientific papers and project proposals but, most crucially, also on technology transfer and how to work with cell-lines and to synthesise Pt-based drugs,” explains Ranc. “However, the consortium achieved also remarkable results regarding its scientific work in the field of drug delivery systems in the treatment of [osteosarcoma](#), which is also important as this is the main reason why we established it.”

Osteosarcoma is one of the most common malignant tumours in children and young adults in the EU. The focus was given to developing a targeted drug delivery system to increase the success rate of the treatment and minimise its side effects.

The novel nanoplatom was based on the utilisation of [graphene oxide nanoparticles](#) able to deliver platinum-based anticancer drugs, which were also developed in the framework of NANO4TARMED. The team successfully tested its performance on 2D and 3D cancer cell models, while the 2D nanomaterial was further functionalised using biocompatible polymers, platinum-based complexes and more anticancer compounds.

Advanced scientific research for the sake of efficient pharmaceutical practice

“The approaches and protocols developed in the NANO4TARMED project will be in ideal case implemented in a drug development on the level of pharmaceutical companies, resulting in novel drugs with enhanced therapeutic efficiency and minimised side



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effects,” stresses Ranc. To achieve that, the researchers are currently focused on disseminating the NANO4TARMED results via social media, newspapers, seminars, scientific publications and conferences related to drug delivery.

The team’s next steps focus on the development of **theranostic** platforms for the delivery of platinum-based drugs combined with **doxorubicin** with the potential of tracking via fluorescent or plasmonic labels. “We are also organising a round table with pharmaceutical companies, where we will further disseminate our results, and we will also discuss a potential future implementation of some of our strategies in commercial drug development,” concludes Ranc.

PROJECT

NANO4TARMED - Advanced hybrid theranostic nanoplatfoms for an active drug delivery in the cancer treatment

COORDINATED BY

Palacký University Olomouc, Czech Republic

FUNDED UNDER

H2020-EU.4.b.

CORDIS FACTSHEET

cordis.europa.eu/project/id/952063

PROJECT WEBSITE

nano4tarmed.com/



Equipping Europeans with the skills needed for tomorrow's labour market

New research is providing insight into the ways technology, industry and trade directly and indirectly affect European labour markets through skills.



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The way we work is constantly changing. Technological change, international trade and industrial transformation are three major factors that have shaped the labour market across Europe in the past and will continue to do so in the future.

What will the future of work look like?

There is a need to forecast change and to develop a skilled workforce that is aligned with and can adapt to this transformation. To prepare for change, people must also be given the right access to training and education. In addition, policies are needed to help the European workforce mitigate the changes.

To address these issues, the EU-funded [PILLARS](#) project is providing policymakers and the public with information about what kind of (new) skills will be in demand and how to revamp education and training systems in creating the opportunities to acquire them.

Skills and their labour market potential

Researchers analysed Germany's apprenticeship system that is both praised and modelled after worldwide. They identified over 13 000 cognitive, social, digital, manual, management and administrative skills acquired during apprenticeships. Using

the results together with data spanning nearly 30 years, the research team examined the economic value of peoples' early career skills throughout their working life.

It has long been clear that the skills acquired early in someone's career no longer will see them through to the end of their career life. They have to reinvent themselves several times along the way just to stay current. However, the skills learned early in a career will boost earnings throughout an entire working life, as shown in a [working paper](#). Vocational education, which typically imparts skills early in a person's career, can have a long-lasting positive impact.

Further analysis in a [journal article](#) found that training later in a career path is effective in producing the skills that are in demand in the labour market. This can also ensure the participation of the elderly in the labour force.

To identify which technologies will be relevant in the future, PILLARS is conducting a global survey involving about 200 000 experts. Having such knowledge enables to design training curricula at an early stage for all professions that employ new technologies, irrespective of the sector. Doing so will give the labour force the complementary skills needed for new technologies.

Harnessing new data for future skills needs

Project partners are using unconventional data, such as online job vacancies, and combining it with sound economic understanding. "This allows us to better understand global and structural changes in labour markets," explains project coordinator Oliver Falck, director of the ifo Institute's Center for Industrial Organization and New Technologies in Germany.

A [workshop](#) in March 2023 further explored this type of data. It was agreed that the quality of new and often unstructured data must be carefully scrutinised and critically reviewed. This is because it is not subject to previous quality control and processing by bodies such as statistical offices. As a result, much effort is required to grasp the data and to determine which analyses and conclusions are possible based on this kind of data.

"Studying adaption processes to new technologies and structural change in the past, together with understanding technological progress, offers several insights," concludes Falck. "Primarily, they shed light on how future adaption processes in the labour markets function, and how they influence and guide education policymakers and regional policymakers, as technologies are often clustered in a region."



Studying adaption processes to new technologies and structural change in the past, together with understanding technological progress, offers several insights.

PROJECT

PILLARS - PATHWAYS TO INCLUSIVE LABOUR MARKETS

COORDINATED BY

ifo Institute, Germany

FUNDED UNDER

H2020-EU.3.6., H2020-EU.3.6.2.4.,
H2020-EU.3.6.1.1., H2020-EU.3.6.1.2.

CORDIS FACTSHEET

cordis.europa.eu/project/id/101004703

PROJECT WEBSITE

h2020-pillars.eu/



According to the needs and interests of the PhD students, gathered through surveys and interviews in the project, the training module [Entrepreneurship for Digital Economy](#) was implemented in the online training environment. It provides students with key concepts about the digital economy. The module is comprised of four chapters that include theoretical contents presented through videos, documents and references, quizzes and practical activities to strengthen knowledge.



Entrepreneurship is a competence demanded by today's labour market of modern innovating-driven economies, and therefore, a competence that all young people should acquire and develop.

Pushing forward entrepreneurship education

Project work will help provide PhD students with the knowledge, skills and motivation to engage in entrepreneurial activities. "Entrepreneurship is a competence demanded by today's labour market of modern innovating-driven economies, and therefore, a competence that all young people should acquire and develop," concludes Soriano.

As for next steps, the prodPhD partnership aims to share project outcomes with other higher education institutions involved in PhD training and that are willing to promote entrepreneurship. "We will also maintain dialogue with accreditation bodies, policymakers and other key stakeholders to lay the ground for mainstreaming the prodPhD products and align it with key EU initiatives, amongst other activities," confirms Soriano. prodPhD will also continue to host the ProdPhD Online Training Environment at Scipedia.com.

PROJECT

prodPhD - Social network tools and procedures for developing entrepreneurial skills in PhD programmes

COORDINATED BY

International Centre for Numerical Methods in Engineering, Spain

FUNDED UNDER

H2020-EU.5.a.

CORDIS FACTSHEET

cordis.europa.eu/project/id/10100598

PROJECT WEBSITE

scipedia.com/institution/prodphd/



Better digital skills can reduce online harm for children

New research explores and measures children's and young people's digital skills to enable them to thrive in the digital age.

With the world becoming increasingly digital, children and young people should develop critical and functional digital skills that allow them to fully participate in society and create opportunities for their future.

Perceiving a lack of comprehensive academic research on children's and adolescents' digital use in Europe, the ySKILLS (Youth Skills) project started a longitudinal three-wave survey in six countries – Germany, Estonia, Italy, Poland, Portugal and Finland.



Children with higher levels of digital skills seem to be better able to protect their privacy online.

Through mixed methods, the KU Leuven led the research to understand more about the digital skills young people should develop to use ICT for their educational, informational and social inclusion and well-being.

“Children with higher levels of digital skills seem to be better able to protect their privacy online. Despite existing evidence showing that better digital skills are linked to more online risk-taking, they are linked to better coping with online risks,” explains Leen d’Haenens, ySKILLS project coordinator.



Risks and vulnerabilities associated with digital skills

ySKILLS examined the risks related to children's and adolescents' use of ICT and, in line with the [European strategy for a better internet for kids](#) (BIK+), studied vulnerability factors that affect the development of digital skills.

"It has become clear that specific groups of young people, for example, the psychologically vulnerable and traditionally marginalised, may be less likely to be able to take advantage of online opportunities," states d'Haenens.

The project shows that an unequal distribution of digital skills leads to an unequal distribution of outcomes. What concerns d'Haenens is that vulnerable and marginalised young people, such as ones with a low socioeconomic background, are also less able to avoid negative outcomes.

The data of the survey shows, for instance, that children who feel discriminated against tend to engage in more risk behaviour. Meanwhile, low family support is associated with an increased exposure to harmful content and sexting.

New digital skills indicator

ySKILLS developed a new [youth Digital Skills Indicator](#) (yDSI) to measure the digital skills of young people aged 12 to 17. It is a child centric and cross-national validated measurement tool with 31 items distributed over perceived digital skills and digital knowledge.

According to d'Haenens, the yDSI is highly valuable: "It can be used to identify gaps in digital skills, to track progress over time, and to develop targeted interventions to improve digital skills. It considers the different ways children use digital technologies and learn."

The project reveals, for example, that from 2021 to 2022, the same group of children surveyed presented a limitation in advancing information and navigation skills, content creation and production skills, even with an increase in internet usage.

Steps for better development of digital skills

The findings of ySKILLS will be used to develop new strategies and policy recommendations to help young people benefit from the opportunities of digital skills, while minimising the risks.

For instance, the project points out that governments should develop customised digital skills initiatives to strengthen vulnerable or underrepresented young people. It also suggests that more attention should be given to regulation to limit the risks posed to young people's safety by commercial providers of digital products and services.

The results of ySKILLS have also been useful to other related research, such as the [CO:RE project](#) that is creating a knowledge base on the impact of technological transformations on children and youth.

PROJECT

ySKILLS - Youth Skills

COORDINATED BY

KU Leuven, Belgium

FUNDED UNDER

H2020-EU.3.6., H2020-EU.3.6.1.1

CORDIS FACTSHEET

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THE EUROPEAN YEAR OF SKILLS

Skills mean more and better jobs because a skilled workforce is a key driver of growth, enhancing the innovation power and competitiveness of all companies, and in particular small and medium-sized enterprises (SMEs). Equipping the EU workforce with the skills needed will also help companies navigate the green and digital transitions and ensure that the European economy grows in a sustainable and competitive manner.

This is why 2023 was announced as the European Year of Skills by the Commission President Ursula von der Leyen in her State of the Union speech in September 2022. The President stressed that job vacancies in Europe have reached a record high, and that more investment in professional education and upskilling is needed. The President also placed the cooperation with companies, the need to match people's aspirations and the need to facilitate the recognition of qualifications also of third country nationals at the centre of her speech.

Against this background, the European Year of Skills aims to address skills gaps in the European Union and boost the EU skills strategy, empowering people and companies to contribute to the green and digital transitions, supporting innovation and competitiveness. It will contribute to the upskilling of people by highlighting national efforts as well as existing and new EU initiatives and EU funding possibilities. Furthermore, it will support skills-related activities and events across Europe.

Throughout the year, various stakeholders, including the European Commission, the European Parliament, Member States, social partners, public and private employment services, chambers of commerce and industry, education and training providers as well as workers and businesses, will work together to promote skills development.

The Year started on 9 May 2023 and will run for 12 months, with many actions and initiatives to be launched and promoted. For more information, please visit the [European Year of Skills \(europa.eu\)](https://europeanyearofskills.europa.eu) page.

RESULTS PACK ON CITIZEN SCIENCE

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