NEWSLETTER 2

Up·Skill

UP-SKILLING FOR INDUSTRY 5.0 ROLL-OUT

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UK Research and Innovation

THE RESEARCH

The Up-Skill project will address the implications of Industry 5.0 and the relationship between automation, skilled work, and organisational systems. The research will establish how the relationship between automation and human input plays out in a range of industrial settings, creating comparative case studies to capture effective implementation strategies. The project will address under-explored strategic spaces in production - where automation adds value to skilled and artisanal work - and where further automation risks undermining product value. This research will identify the shifting organisational characteristics that are needed to ensure technology advancements are implemented within companies while ensuring sustainable, added value for man, machine, and organisation.

PROJECT VIDEOS

INTRODUCTORY VIDEO

In the first Up-Skill project video, Professor Chris Ivory from Mälardalen University (MDU) talks us through the history of technological innovation and the positive and negative effects it had on businesses, workers and society, and how the Up-Skill project and the Industry 5.0 concept can help realign our perspectives of the emerging technologies from human replacement to one of human-machine inter-augmentation.

WATCH THE VIDEO

COP28 VIDEO

As part of COP28, held in Dubai in December 2023, the EU organised several side events dedicated to tackling the most pressing climate-related issues. One such event entitled “Empowering a Human-Centric Industry for the Twin Transitions” featured presentations and discussions from Up-Skill Project Coordinator Professor Chris Ivory and Bridges5.0 Project Coordinator Professor Steven Dhondt.
The session aimed to spotlight European projects committed to driving the green and digital transition, emphasising the pivotal role of skills in addressing contemporary challenges. Proposed actions within industry as part of the Horizon Europe programme tackle key elements for the transition toward human-centric industries, including skills, learning, teaching factories, customisation of manufacturing processes, artificial intelligence, and enhanced human-robot collaboration.
Watch the Up-Skill and Bridges 5.0 presentations here:

WATCH THE VIDEO 1

WATCH THE VIDEO 2

PROJECT PROGRESS

LESSONS LEARNT SO FAR FROM THE UP-SKILL CASE STUDIES: AN INTERVIEW WITH DR ALISON HIRST FROM ANGLIA RUSKIN UNIVERSITY

Dr Alison Hirst is an Associate Professor of Organization Studies at Anglia Ruskin University. Her primary areas of research centre on organizational space and materiality and the use of ethnography as a way of researching and writing about organizations.
Alison is the head researcher of the Up-Skill ethnographic case studies and leads a team of researchers who are conducting fieldwork at a variety of industrial and manufacturing environments to gain greater insight into the relationship between the human workforce, skills, the implementation of emerging technologies and managerial intent.

Mike Hepworth from Up-Skill partner KNEIA sat down with Alison to find out what have been the key lessons learnt from the case studies so far and whether there have been any commonalities identified that can help guide organizations with implementing new technologies.

Mike: The Up-Skill case studies are varied, but are there any common themes that have been identified, specifically regarding the employees' interactions and attitudes towards the integration of new technologies?
Alison: I think the common theme or the kind of learning point that comes out is that for technologies to be integrated and used effectively, the organisation needs to have a receptive and motivated workforce. So, integration will happen better if workers have been consulted and involved upstream and they've had the chance to input their expertise and their knowledge into how and what technology is implemented.
In the Up-Skill project we've got some good examples of this. One example is that there is an organisation that has an Enterprise Resource Planning system that workers were involved with as it was being introduced. As a result, they've become more like managers because they are actively using the system to plan and review what's happening at the site. They're using it to develop a competency matrix so that they know who can do what which gives them the flexibility and opportunities to change job roles when and where they need to.
Another example is that one of our

organisations is very technologically oriented and driven to implement new technologies where possible. However, whenever they're considering introducing a new co-bot or another piece of technology, it gets trialled on the ground quickly to see how people react to it and identify how well it will be accepted and highlight any potential problems. So, from what we have seen so far, I think these types of practices are very beneficial to both organisations and the workforce.

Counter to this, we have seen at a different site where a new sort of technology arrived out of the blue one day, completely unknown to the workforce and suddenly there was a new world, a new way of working, a new workflow that they didn't know anything about. So, you can imagine how surprised they felt. There had obviously been considerable planning going on behind the scenes about how to change the content of the work that the employees knew nothing about. There is a sense of a kind of deception there…, it doesn't enhance trust.

So, from our point of view, this is a lost opportunity because workers do know what they're doing, they care about their work, and can be of huge value to management when they are considering implementing new technologies and changing work processes. That's one thing that we've really been able to observe quite closely, and it surprised us. People who do manufacturing work quite often have a lot of pride in their work, they take great care in the appearance of the products they make and the cleanliness and appearance of their machines, both inside and out. No one might see the inside of that machine for years, and it may be inspected by a person that you would never meet, you would never know, but they have pride in it nonetheless. Perhaps it is a means of projecting yourself into the world in a positive way?

So, I think that's the common theme, consult with the workforce about things that affect their work because they care and take pride in it, and we have examples of this that span large and very small organisations of various kinds.

Mike: So, based upon what you've learnt, what would be the major piece of advice you would give to an executive and middle management regarding the implementation of new technologies?

Alison: Well, I think there are two. The first one is as above, to make sure you have a receptive and motivated workforce that you involve in the implementation of technology. The second is that given that there are risks of losing skills because of an ageing workforce retiring, especially in craft and artisan industries, it is vital for management to think ahead and start the process sooner rather than later and involve the workforce from the beginning of the process to utilise their skills and knowledge.

So, I think those would be the two major pieces of advice I would offer. I have another good practice, but it's not very technological, which is to move away from the kind of classic HR process, which is that you've got this vacancy, you identify the skill set that you want, and you go out into the la-

bour market to look for a match between this need and a certain skill set.

But we noticed in one organisation that they didn´t strictly follow this process, but rather, took people on with a positive orientation to work, which is more of broader concept than motivation if you will. The orientation mindset takes into account the person as a whole and understands that a person´s work requirements change through their life. So, the recruitment process focused more on flexibility, openness to training and an understanding that circumstances will change, both in the employee´s personal life and the type of work and job roles that they will have to do. It is a way of thinking a bit more broadly about the recruitment process, taking into account changes to people´s situations and needs, and also changes to the work environment, job roles and technologies. And so the HR process is grounded in the understanding that circumstances change, both personally and at work, and making hiring choices based upon this understanding.

Mike: Finally, how can qualitative and the more nuanced information gathered from ethnographic research add value to the quantitative data and inform decision making at the organisation level and policy making at EU level?

Alison: Well, I think it's because it shows how things really happen at the ground level. We can see the effects of management decisions, technology implementation, and how the interplay between skills, job roles and technology and management play out in real time on the shop floor on a day-to-day basis.

Organisations present a vision of themselves, an official version that gets presented to the world, and we look behind this and examine the countless processes that led to the version that they are presenting. A good example is when you go to a restaurant, you only see the front of house, the decor, tables setup neatly, menus, and then the food and drinks brought to your table. What you don´t see are the processes that led to all these things. Ethnographers go and look in the kitchen, we look behind the bar, in the storage rooms, we see how everything works which results in the final version that is presented to the world. And we also see how people behave, their attitudes, their job roles and position in the hierarchy, which is vital for understanding if things are working or not, and how they could be improved.

Another example of this that we are seeing in the case studies is that there is a perception that technology is displacing skilled workers, however, what we are observing is that some skills are disappearing from the workforce as the workforce ages, and quite often, the search for technological solutions by organisations is an attempt to compensate for the absence of these workers rather than a means to replace them, or to solve a specific problem that will benefit employees where there is an automated solution.

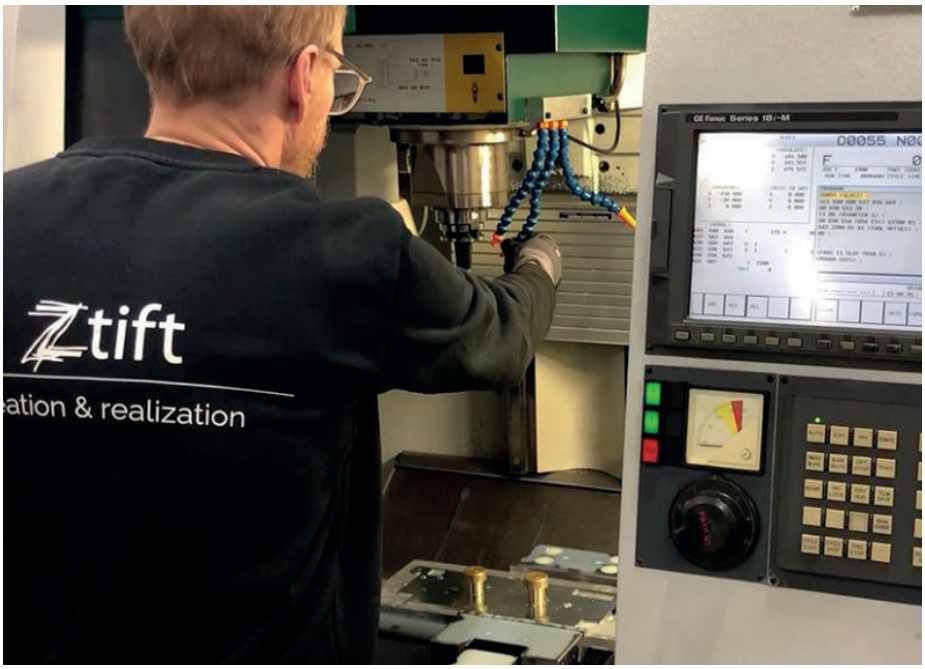
Mike: Is this specific to craft and artisanal businesses or SMEs?

Alison: No, no, you see this at major manufacturing companies also. The current principle at Ford, which is the biggest company that we're studying, is that you don't automate something unless it benefits workers. So, they will automate something if it solves a problem, excessive heavy lifting by workers or something like that, but they are not driven towards full automation,

and this is something we didn´t expect.
On the other hand, we have discovered that many of the smaller artisanal firms are looking to automate where possible, and again, this is not something we expected. The reasons behind this are complex and are not purely based upon managerial intent but are also determined by socio-economic factors. You could argue that Ford has the option or greater freedom to automate or not automate as it suits them, whilst smaller firms have less options based upon their profit margins, location, access to skilled workers, purchasing power etcetera, and have to do whatever is necessary to stay afloat.
So again, the processes behind the scenes do not always fit neatly with the image of the organisation that is presented. Ethnographers are nosey parkers poking around in the background to find out what really is going on, and this type of research is vital to the Up-Skill project when it comes to making an analysis of decision making at the organisational level further down the line, and making more broader conclusions about the impacts and relationships between technology, skills, sustainability and human-centricity at an industry and societal level.

HARDWARE INSTALLATION FOR TRIAL MANUFACTURING: EXPLORING ENABLING TECHNOLOGIES FOR INDUSTRY 5.0

The Up-Skill project aims to explore the intricate relationship between automation, skilled labour, and organisational systems within the context of Industry 5.0. This article delves into the depths of the project's objectives, methodologies, and anticipated outcomes, shedding light on the critical role of enabling technologies in shaping the future of manufacturing.



TWI recently published a report entitled "Installed Hardware for Trial Manufacture." The focal point of this report is to delve into the enabling technologies identified for each participating company, following on from the Best Practice Technology Solutions report published by Lancaster University. With a foundation based on real-world manufacturing challenges at the Up-Skill case study locations, the report provides insights into the current technological landscape, the planned solutions aimed at addressing these challenges, and the identification of specific hardware and processes crucial for implementing new technologies across various case studies.
The comprehensive case studies featured in the report employ a diverse range of methodologies, including hardware investigations, software data mining, and reviews of existing commercial hardware. Each study meticulously considers manufacturing processes and managerial intent, aiming to streamline outdated procedures, leverage improved technologies for enhanced efficiency, and explore opportunities for data-driven enhancements in product yield and performance.
For each participating company, the report systematically examines various aspects, including business area definition, identified issues, current processes, and planned solutions. Moreover, it outlines hardware, software, infrastructure, and training requirements, along with assessing environmental impacts and associated risks and opportunities.
Ztift , a company based in Eskilstuna, Sweden, manufactures a variety of products and components, particularly door locks and their related mechanisms, for household, marine and security system applications, which are typically low volume, high quality items that require a high degree of assembly by hand and a significant amount of skill and experience...

READ THE ENTIRE ARTICLE HERE

NEWS & UPDATES

UPSKILL: COLLABORATIVE AND SOCIALLY RESPONSIBLE MANUFACTURING

Industry 5.0 recognises that machines and humans have complementary strengths. Rather than fully automating manufacturing processes, it encourages collaboration between skilled workers and advanced technologies. Workers are actively involved in decision-making, problem-solving, and the creative aspects of production, while machines handle repetitive and routine tasks. This is why in 'UpSkill' we have included a wide selection of artisans to work within this transition.

READ MORE

TOWARDS INDUSTRY 5.0: PATHWAYS AND TRAINING IN A RAPIDLY EVOLVING LANDSCAPE

The concept of Industry 5.0 emphasises the importance of a human-centric approach, sustainability, and resilience in industrial transformations. This aligns with the European Commission's vision to steer Industry 4.0 towards placing workers' needs at the core of technology deployment.

In this evolving landscape, where technology integration will play a defining role in how businesses perform, the Up-Skill project delves into the integration of emerging digital and automation...

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THE RISE OF AI AND SKILLS GAPS

he speed of industrial technological development far exceeds that of the training and education that is necessary to use it. The Up-Skill project is aiming to equip organisations with information to allow them to implement the appropriate technologies and identify the skills and training requirements that will allow them to flourish in the digital age.

Despite significant workforce reductions, various industries, including high-tech, healthcare, construction, hospitality, and others, are...

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WHY UNIONISED WORKFORCES MAY HELP US SAVE THE PLANET

The European Union is concerned that industry 4.0, the digitalisation and automation of industry, may lead us away from the sorts of societies and industries that we want and need to build. Industry 5.0, where we need to get to, encapsulates the concepts of human-centricity, resilience, and sustainability.

Industry 4.0, if left unrestrained, it is feared, threatens environmentally ruinous directions in economic growth, unstable supply chains, joblessness and the...

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RELATED PROJECT

SEISMEC – PILOTING THE SHIFT TO HUMAN-CENTRIC INDUSTRY

Our understanding of the broader concepts of employment, productivity and efficiency in an industrial setting has been radically reshaped by recent technological breakthroughs, which have steadily permeated through every single operational layer at the workplace. The growing importance of digitalisation, combined with the ramifications of the Covid-19 pandemic have, in turn, made it apparent that it is time to rethink the demand for flexibilization, collaboration and the desire for fulfilment in the context of workers' expectations.

SEISMEC has arrived to usher in a brand new Industry 5.0 framework that strikes the right balance between disruptive technology and human-centricity: the SEISMEC

Shift. This paradigm shift operates on the premise that we shouldn't need to compromise between workers' empowerment and industrial competitiveness. Both are complementary forces that can only be balanced through fair and ethical digital practices and a careful exploration of key empowerment factors – what we call the CAPS framework.

At its very core, SEISMEC is a mosaic of piloting experiences that come together through the unconventional lens of social sciences and humanities. Rather than following a traditional tool-driven, purely technical perspective, SEISMEC believes in a bidirectional approach that resonates with the European values of sustainability, human-centricity, and resilience, which are all inextricably tied into the concept of Industry 5.0.

LEARN MORE

SEISMEC PROJECT PRESS RELEASE

BRIDGES 5.0 PROJECT NEWS

BRIDGES 5.0 AT THE 2024 HANNOVER MESSE

The European Commission promotes its activities during the biggest technology fair in the world, the Hannover Messe, known for the launch of the Industrie 4.0-policy at the European level in 2013. Each Messe represents the state of the art in major technologies, and...

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WORKPLACE INNOVATION: A HUMAN-CENTRIC POINT OF VIEW

The European Commission promotes its activities during the biggest technology fair in the world, the Hannover Messe, known for the launch of the Industrie 4.0-policy at the European level in 2013.

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WHICH COMPETENCES WILL BE NEEDED BY MANUFACTURING COMPANIES IN THE FUTURE?

The digital transformation in manufacturing such as integration of human-machine interfaces, collaborative robotics, IIoT, AI, big data, digital twins and much more not only entails a technological...

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UPCOMING EVENTS

EUROPEAN WORKPLACE INNOVATION NETWORK (EUWIN) FRESH THINKING LABS WEBINAR SERIES

EVENT DATE:
31st May 2024
11:00am CET

ORGANISER:
European Workplace Innovation Network-EUWIN

In this webinar, Professor Chris Land from Up-Skill partner Anglia Ruskin University will consider what it means to put the human at the heart of Industry 5.0 and why it has been so hard to move innovation beyond the 19th century paradigm of techno-centrism. Realising the strategic advantages of Industry 5.0 requires organizations to understand what makes work human, and what is distinctively human about work: skill and skilful practice. As well as making work meaningful, skilful practice can be a powerful source of innovation but too often managers misrecognise skill, undervaluing employees. Realising the benefits of Industry 5.0 will require an 'upskilling' of management to move beyond an efficiency paradigm to recognise, reward and develop the skills that matter strategically today.

REGISTER HERE

9TH CREATIVE INDUSTRIES CONFERENCE – CIC 2024

EVENT DATE:
12th – 14th June 2024
LOCATION:
Edinburgh, UK

ORGANISER:
University of Edinburgh and Academy of Management Discoveries

Up-Skill partners Università Degli Studi di Milano (UMIL) will be presenting a paper entitled "Imaginaries Around Digital Technologies in Craft Work: Perspectives from Craft Organizations in Italy" at the CIC 2024 conference. The conference will focus on empirical and multidisciplinary studies presenting a fresh perspective and new insights on the creative industries and the challenges of the emerging digital technologies, such as generative AI.

EVENT WEBSITE

R&D MANAGEMENT 2024

EVENT DATE:
17th - 19th June 2024
LOCATION:
Stockholm, Sweden

ORGANISER:
Sweden Meetx AB

Up-Skill will be running a conference track entitled "The Limits of Digital Transformation" which will tackle and critique the notion that digital technology, in the form of the automation of processes, robotics, planning, monitoring and decision-support will transform industry and is inevitable and one directional.

The R&D Management Conference brings together academics and practitioners concerned with the study of R&D, technology management and innovation. This conference will explore how technology is disrupting and transforming established industries through innovation, and examines the forces of digitalization, automation, electrification, and sustainability that are driving changes across many sectors.

EVENT WEBSITE

EUROPEAN GROUP FOR ORGANISATIONAL STUDIES – EGOS 2024

EVENT DATE:
4th – 7th July 2024
LOCATION:
Milan, Italy

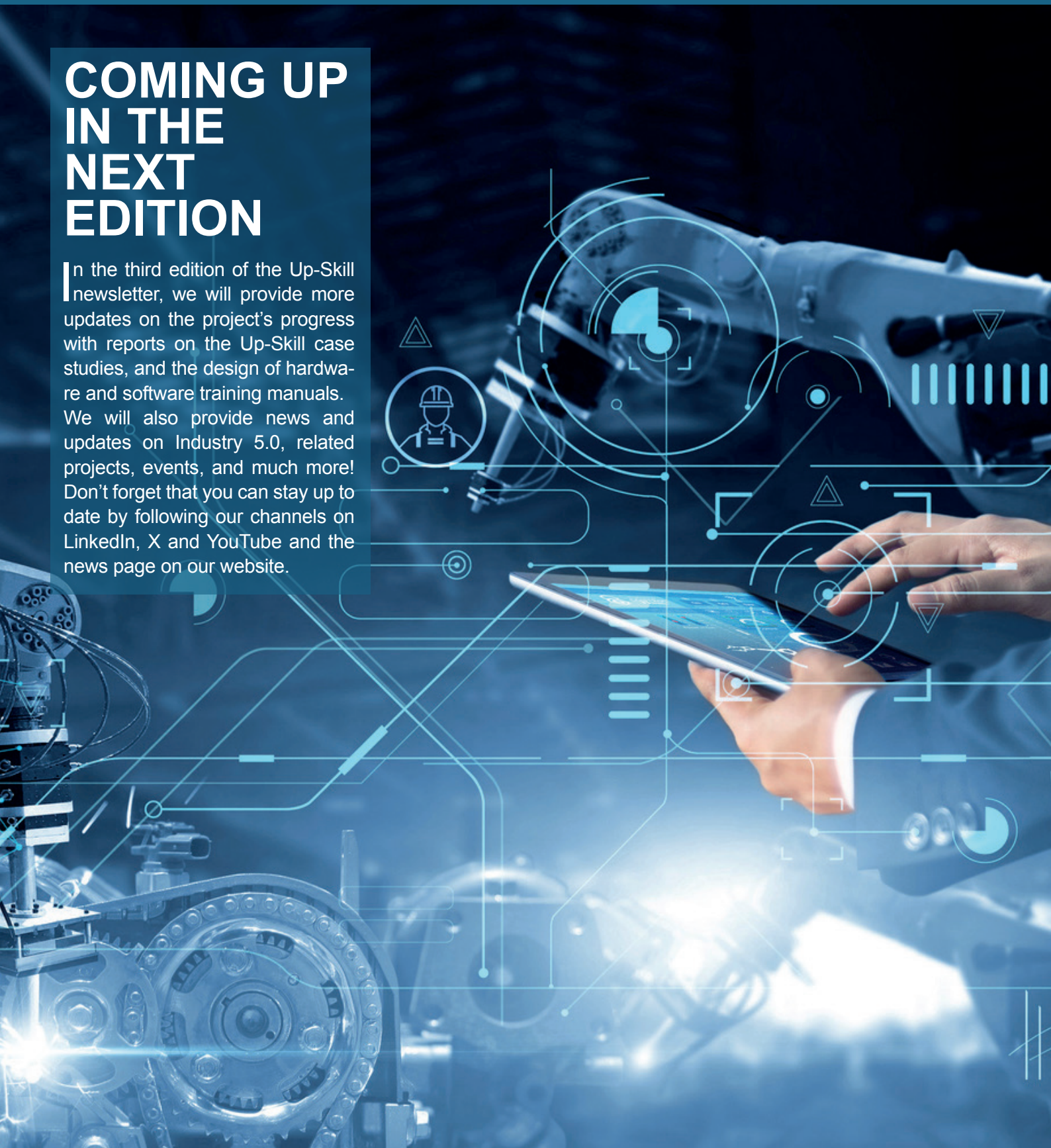
ORGANISER:
EGOS

Up-Skill partners will be presenting a number of papers at EGOS 2024 covering such topics as the ways of viewing and understanding technological work; pathways for skills acquisition in artisanal industries; and the cases of blue-collar workers in craft firms.
The purpose of the 40th EGOS Colloquium 2024 – hosted by the University of Milan-Bicocca – is to investigate what elements represent the crucial crossroads for organisations of the present and the future. Organisations are at a crossroads because the potentially pervasive transformations led by digital innovation, massive data, and artificial intelligence call for new strategies of action to be fully and sustainably exploited.

EVENT WEBSITE

COMING UP IN THE NEXT EDITION

In the third edition of the Up-Skill newsletter, we will provide more updates on the project's progress with reports on the Up-Skill case studies, and the design of hardware and software training manuals.
We will also provide news and updates on Industry 5.0, related projects, events, and much more! Don't forget that you can stay up to date by following our channels on LinkedIn, X and YouTube and the news page on our website.



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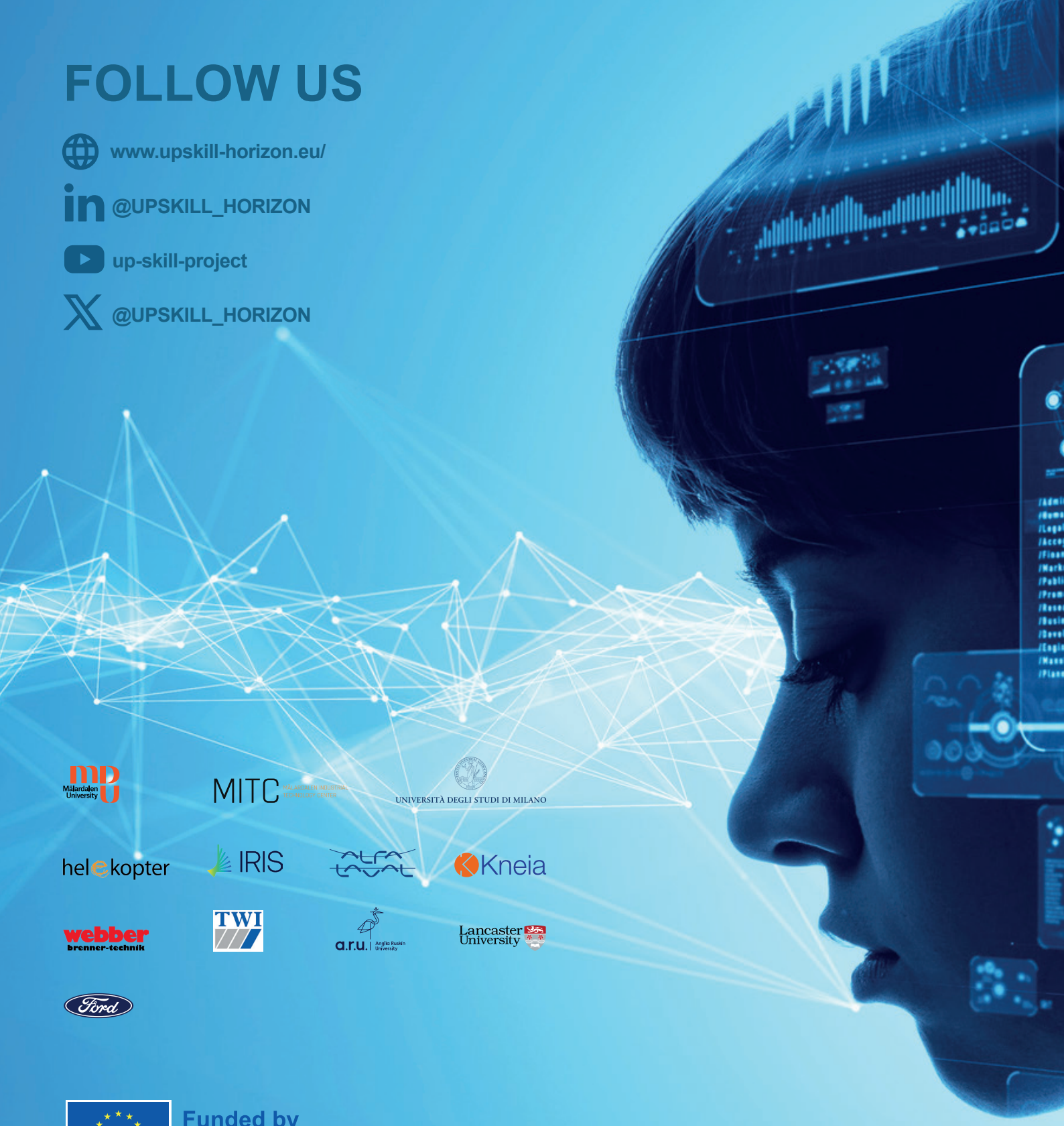

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