

Next Stop The Future of Work

Written by imec and Flanders Make

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Introduction

Flemish industry today

Not everyone is able to keep up with the current pace of progress in our industry. Technology is changing faster than ever. At the same time, experienced professionals are also leaving their jobs. This means that companies are looking for new talent, capable of adapting flexibly to the wave of automation, data, and artificial intelligence (AI).

At the same time, sustainability, geopolitical pressures, and the war for talent call for a fundamentally different approach to work, training, and innovation.

Researching the future

How can we, as an industry, as people, and as workers, evolve in step with these changes? This is a question we are increasingly asking ourselves. And, above all, how do we ensure that humans and machines continue to enhance each other's strengths?

To this end, imec and Flanders Make, with the support of Edtech Station, took the initiative to look into the future.

Along with more than fifty experts from our industry, policy-makers, and researchers, we explored what machine and production-supporting work might look like in 2035. Rather than a theoretical exercise, our goal was to develop a strategic compass for Flanders. Because this is the only way that our region can help bring about the necessary change and prepare our people for the future.



Clarity about what the future might bring

This white paper brings together insights from our comprehensive research into the future. In it, we present:

- » four plausible future scenarios for work in 2035;
- » the recurring challenges and opportunities in each of these scenarios; and
- » some examples of future-proof and people-centered technological research.

The future of Flemish industry relies on smart machines, but also on the companies that support their workers in their efforts to get to grips with these machines.

The time is ... now!

For whom is this white paper intended?

This white paper is aimed at Flemish companies specialising in manufacturing and machine-supporting work (industry partners, SMEs, large enterprises), service and technology providers, policy-makers, and academics/researchers working towards a future-proof and people-centered industry.

This document serves as a strategic and forward-looking compass for organisations interested in preparing for the impact of AI, robotics, automation, and demographic changes in their workplace.

Research

A good idea of the future of work

From January until October 2025, the imec and Flanders Make research centres mapped the future of machine and production-supporting work. This mapping uses scenarios to explore several plausible futures and make better informed choices for Flemish industry. This research was moderated by the imec/UGent MICT research group.

Exploring the future: phased research

Trend analysis

We started from extensive desk research¹ and interviews with 10 Flemish experts² to obtain a validated overview of dozens of trends that influence the future of work. All these trends can be categorised under five key drivers that are shaping the world of work looking forward to 2035: technological progress, an ageing population, geopolitical instability, a rapidly evolving labour market, and climate change.

Scenario generation

Based on this broader exploration, we investigated which trends and uncertainties can shape our industry as we look towards 2035. By comparing various areas of tension such as investments in employee training, regulatory frameworks for AI, advances in AI and automation, and, lastly, labour shortages, various pathways for the future emerged. These contrasts were used as building blocks for four plausible scenarios. Each of these scenarios illustrate how the collaboration between humans, machines, and organisations can evolve in different ways. Instead of one single prediction, these scenarios provide a framework that helps companies make informed choices today for a resilient future.

Remark

These scenarios should not be interpreted in a static manner, but must always be considered in the light of a changing context shaped by driving forces.

¹ Desk research drawing on leading trend reports by international organisations, such as the ILO, OECD, WEF, European Commission, Visier, ESPAS, CSIRO, JSR, PwC.

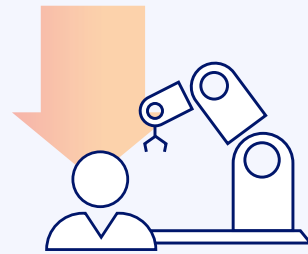
² Experts from Barco, KU Leuven, Volvo Group, Flux50, CNH, imec-MICT-UGent, Etex Group, VLAIO, the Flemish Department of Work & Social Economy, Lichtwerk, Workitects and B-U-T.

Four scenarios



Human-machine synergy

AI and automation seamlessly supplement human expertise, making work more efficient and sustainable. Companies are investing heavily in lifelong learning and AI skills. Technological progress enhances human potential to the full, provided people can cope with the associated pressure. This scenario thus calls for support in the form of clear ethical frameworks, transparency, and international regulations.



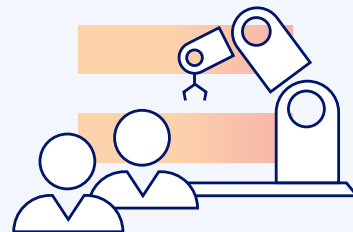
Human-machine inefficiency

While AI is a factor in this scenario, it operates without a strategy. Companies implement technology without a clear vision, resulting in systems that work in parallel, processes that grind to a halt, and increased workloads. Training is out of step with practice and the digital divide widens. Organisations are at risk of reversing their digitalisation decisions and efforts due to the decline in quality.



Machines take over

In this scenario, AI takes over the entire organisation, pushing humans to the margins. Production and planning are fully automated, craftsmanship disappears, and employees only intervene exceptionally. Training is all about system interaction; human knowledge is lost. Inequality and unemployment rise. The emergence of an elite that holds a technical monopoly is another risk.



Status-quo

In this scenario, AI works in the background and the workplace remains largely unchanged. Technology solely supports repetitive tasks, and manual labour and traditional craftsmanship continue to take centre stage. The pressure to automate is low, causing digitalisation, training, and innovation to fall behind. However, appreciation for human collaboration and craftsmanship increases in this scenario. In short, technology is present but does not play a defining role.

Scenario application

We reviewed these four scenarios for the future with ten Flemish organisations³. During this exercise, we examined each scenario starting from different personas representing typical roles in the workplace. These perspectives helped to identify the recurring needs, requirements, and challenges in each scenario.

The joint exercise led to the definition of five overarching future needs or clusters, namely:

- » lifelong learning
- » structural knowledge sharing
- » wellbeing at work
- » AI-powered support
- » responsible human-system interaction.

These clusters were used to draw up further recommendations and illustrations in this report.



³ Volvo Group, Groep Maatwerk, Azumuta, Serv, Mariasteen, KU Leuven, CNH, imec-MICT-UGent, SupportSquare, EdTech Station

Lifelong learning as a strategic advantage

The most important of the five future needs. With technology evolving faster than the average educational programme, ongoing learning in AI, systems, and digital tools is crucial. Without systematic support for learning, there is a risk of reluctance, inefficiency, and loss of expertise.

Structural knowledge sharing

Vital knowledge is all too often lost when people leave a company. That is why organisations need robust systems to capture, share, and combine professional expertise with digital know-how. Coaching, interdisciplinary collaboration, and reliable communication channels are crucial in this respect.

Wellbeing at work and meaningful work

A wellbeing policy is vital. Increased automation can lead to social isolation, more stress, less autonomy, and even burnout. With technology, fewer people are needed to achieve the same result, placing a greater burden on a smaller group of employees. A healthy balance between human contact, employee participation, and job satisfaction is essential in this respect.

AI that truly supports your workforce

AI is often presented as a driver of efficiency. However, it only works effectively when it adapts to people, rather than vice versa. Hence the need for transparent, adaptive systems that learn from users and take the human context and feedback into account.

Responsible human-system interaction

Who decides when AI and humans make decisions together? Employees want clear guidelines, traceable decisions, and trust in technology and their colleagues. Human autonomy and responsibility are part and parcel of any digital workplace.

Insights for Flemish companies

What have we learned from this research?

The scenario analysis we conducted suggests that the following three challenges will continue to shape the future of work in industry:

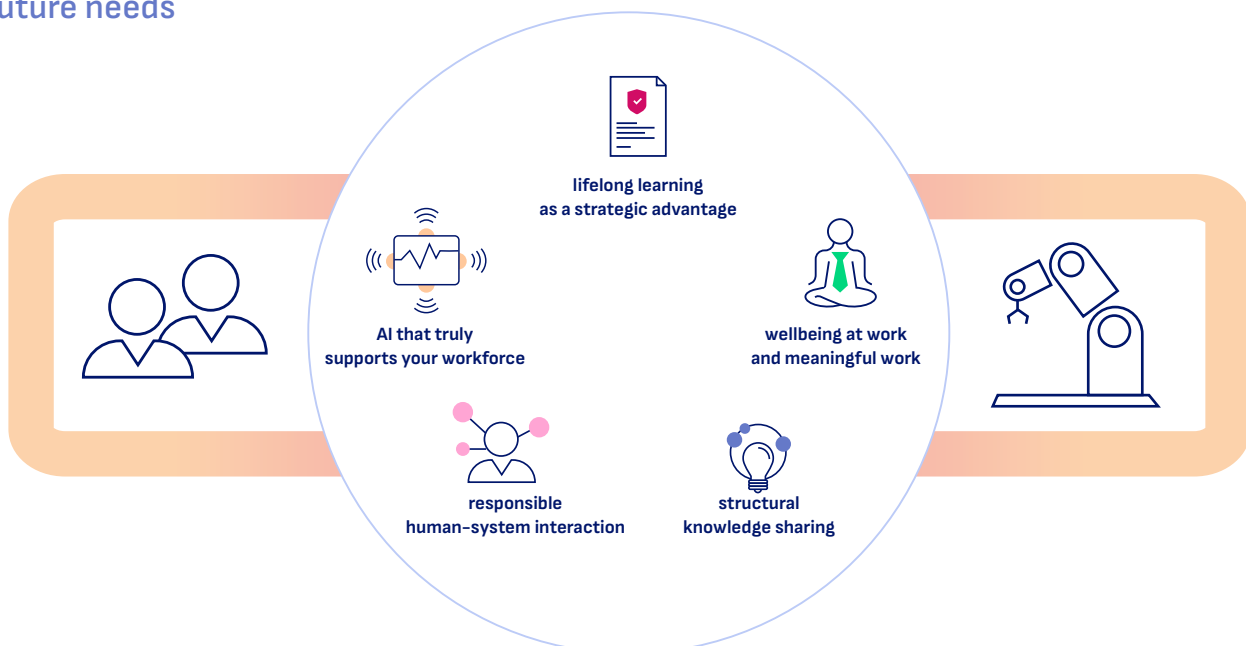
- » **Labour shortages** are not likely to end soon, making training increasingly important.
- » **Automation is set to increase even further in the future**, requiring better knowledge transfer.
- » **Learning to work with AI** and managing the (mental) wellbeing associated with it will determine workplace performance.

Besides a people-centred policy, the future of work in Flanders needs **people-centred technological innovation**. Human-machine interaction (AI system, robot, etc.) plays a key role in a high-performing, resilient industry.

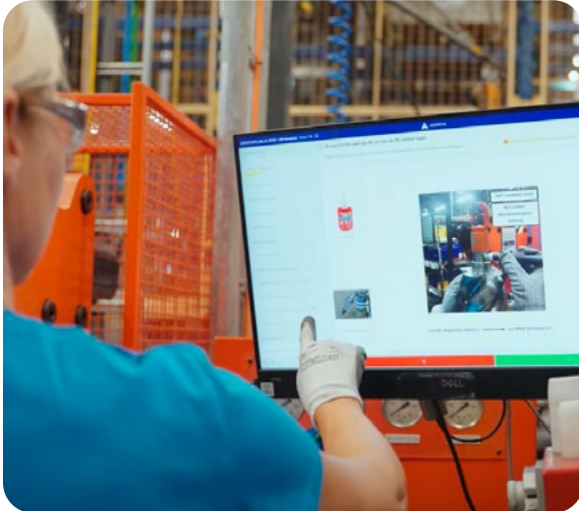
How do Flanders Make and imec support progress in Flemish companies?

For years, imec and Flanders Make have been focusing on technologies that enable humans and machines to work together synergetically in their research roadmaps. Their research ties in closely with the five future needs or clusters that are crucial for our industry's competitiveness. Below, we discuss cases for each cluster that demonstrate how these research efforts contribute to a future-proof and people-centred workplace.

Future needs



Real-life examples



Lifelong learning

Towards a smart factory

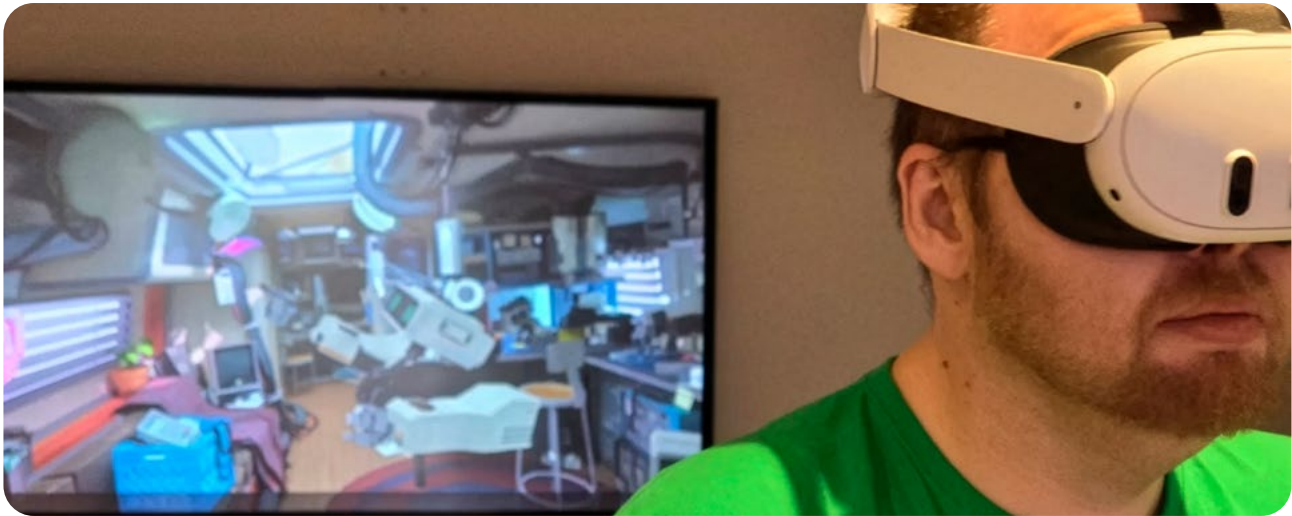
The workplace is rapidly transforming into a smart factory in which operators must continually adapt and develop new skills. In the Flanders Make Accelerator project, Flanders Make researchers partnered with software developer Azumuta to see how personalised digital work instructions can accelerate the learning curve of operators, contributing to higher output, better quality, and competence-oriented planning. We concomitantly develop tools for the efficient creation of these instructions and their flexible adaptation to new product and process variants.

Structural knowledge sharing

Faster development of immersive operator training

Extended Reality (XR) is used increasingly frequent for operator training because it improves learning effectiveness and reduces workload in a production environment. Currently, such training is often reliant on expert knowledge and complex 3D models, making adjustments in the case of new procedures or changes to machinery time-consuming. By the time XR training is operational, it is often already partly outdated.

For the WWW project, imec researchers have partnered with SupportSquare and WIKOMIQ to understand how real-time camera footage can replace complex 3D models. We are working on creating realistic 3D visualisations of devices and working environments. Immersive training can thus be developed more quickly, rolled out at scale, and easily updated in line with changing processes, safety procedures, or machines.



Wellbeing at work

Smart monitoring and support for operators

In many training and working environments, it is very difficult to see where operators need additional support or may make errors on the job. For the PADRE project, imec has partnered with Orsi, Spatial Dynamics, and Chenext for the development of smart, wearable technology for real-time monitoring of actions and performance. Sensors in smart gloves and earplugs measure movements and physiological signals. Anomalies and errors are detected immediately thanks to the combination with AI models, increasing safety and accelerating learning processes.

Tailored support for all employees

Social enterprises are increasingly moving towards Manufacturing-as-a-Service, using assistive production technologies, such as collaborative robots, work instructions in augmented reality, and digital planning tools. A tailored approach is essential because their employees require different levels of support. For this project, Flanders Make researchers worked with Mariasteen to see how they could systematically map individual needs. Based on these insights, work units are dynamically configured making optimal use of cognitive and physical support.

AI-powered support

Instant support and feedback for operators

Many companies still rely on manual inspections for quality assurance, even though AI solutions can significantly enhance quality standards. Flanders Make partnered with an industrial consortium on the Qualma project, developing a mobile computer vision system concept for ZF Wind Power that monitors quality in combination with digital work instructions.

Inspectors thus receive targeted support and immediate feedback when they are at risk of skipping a step. The outcome is an AI-powered operator support system that boosts efficiency in addition to enhancing competitiveness in the production environment.



Responsible human–system interaction

Improving safety at work with smart workwear

Skills training is complex and increasingly challenging in a rapidly changing industrial environment. While one-on-one training is effective, it is often not scalable due to the limited availability of experts and machines. Imec has partnered with Alsico, Altheria, and SupportSquare on the SITSENS project, developing smart, comfortable workwear that temporarily records movements when the operator chooses to do this.

The integration of sensors in workwear creates new possibilities for safety monitoring and the recording of expert behaviour, which supports the creation of scalable and up-to-date training materials.



Conclusion

This white paper demonstrates that the future of work is not something that simply happens to us. Instead, we can actively shape it by enabling people and technology to work together purposefully. Anyone who invests in learning, wellbeing, knowledge sharing, and the responsible use of AI today creates a resilient, inclusive industry in the future. We therefore invite Flemish companies and partners to share their challenges and research needs with us so we can achieve new solutions and breakthroughs together.

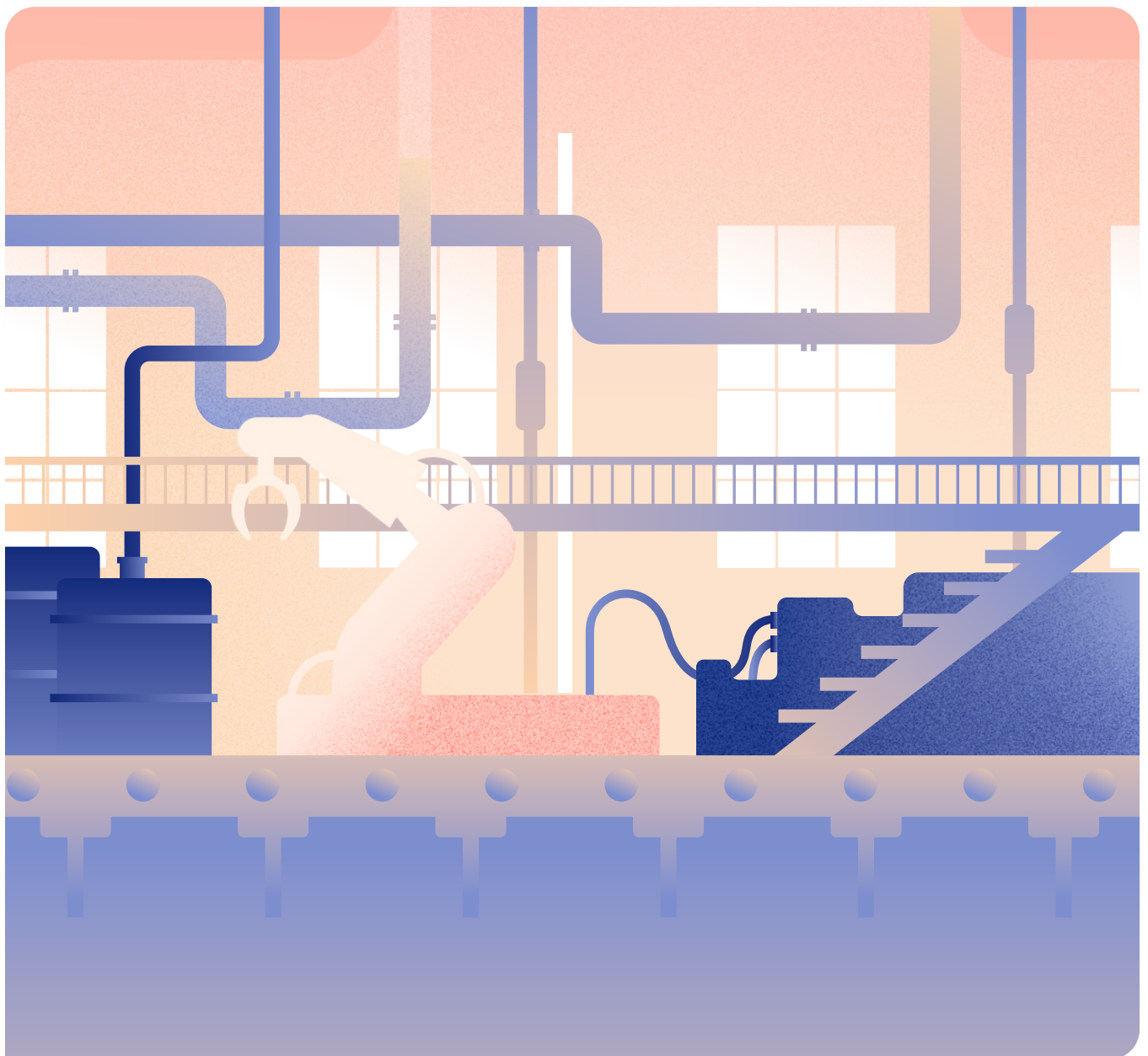
Want to receive the full vision report, or additional information?

Want to collaborate on pilot projects, living labs, or research initiatives?

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