



# Excellence in Cyber-Physical Resilience



Owner: City of Light (City of Jyväskylä) | Photographer: Juhana Konttinen

## Collaborating for enhanced cyber-physical competitiveness

Based on its ecosystem agreement with the Finnish Ministry of Economic Affairs and Employment, Jyväskylä will establish, develop, and coordinate an ecosystem for industrial renewal. Jyväskylä's known strength is cyber security, and the next phase of development will focus on deepening the capabilities for cyber-physical resilience in the Jyväskylä region together with Synocus.

Jyväskylä has an impressive heritage of manufacturing using technological expertise to innovatively solve customers' problems. The green transition and digitalization offer opportunities for Jyväskylä to accelerate its efforts to support the Finnish manufacturing sector with leading expertise in cyber-physical resilience. The City of Jyväskylä aims to be the catalyst for a new form of collaboration that engages leading companies, universities, research institutions, and policy makers to support industrial renewal with critical competences in cyber-physical resilience.

Resilience is both technology and a mindset, both about the physical world and the digital world. However, as we have learned from the changing global security landscape, resilience is first and foremost about adaptability, being able to continually respond to changes in the external environment. This calls for collective capability building

around mission critical functions in the society. Information and energy networks are key issues to be considered and critical for our daily lives.

The normal business logic assumes that the operating environment will be secured by society and the company can purely focus on making the best possible financial result with the resources available. However, taking resilience as the starting point in developing businesses means adopting a different perspective. We must take note of the risk posed by global warming and force majeure events such as wars and pandemics that can disrupt, for example, supply chains. Therefore, cyber-physical resilience offers a more open perspective on how to integrate resilience into the operations of companies and public organizations.

## Resilient collaboration

Value creation in industry increasingly takes place in ecosystems. The City of Jyväskylä will, through action learning with its industrial partners, develop new collaboration models for how such integration of resilience into the way of working should be done in practice. This will

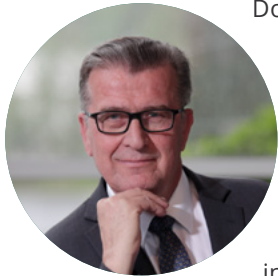
take place in the context of a strong academic foundation in Jyväskylä based on the long-standing efforts of University of Jyväskylä and JAMK University of Applied Sciences to build expertise in this area.

# Building on strengths to accelerate innovation

## Jyväskylä as a Center of Expertise

The faculty of Information Technology at the University of Jyväskylä has a good track record in data systems, scientific computing and data analysis, cyber-security, wellbeing, games, and learning. With 2,800 degree students, the faculty has a significant knowledge pool that can actively support industrial renewal particularly in cyber-physical resilience. The JAMK University of Applied Sciences is conducting working life-oriented RDI in this field through their Cyber Security Research, Development, and Training Centre JYVSECTEC (Jyväskylä Security Technology) as well as maintaining the FINCSC cyber security certificate system.

In the private sector, the leading mechanical engineering companies in the Jyväskylä area have world-class capabilities in complex process control technologies and related analytics, which provides the real-world anchoring for the cyber-physical research conducted in Jyväskylä.



Doctor **Martti Lehto**, Research Director at the Faculty of Information Technology of the University of Jyväskylä, began developing a national cyber security knowledge network with strong international engagement in 2012. The cyber-physical resilience initiative will further strengthen the existing public-private collaboration between industry and research on digitalization and cybersecurity. This will support manufacturers in their efforts to be innovation leaders with ever more competitive products, services, and solutions addressing the evolving demand due to the green and digital transformation of the manufacturing sector.

*“Cyber is everywhere. Each of us has a role to take care of cyber security in our own operating environment. There is a need to strengthen organization’s know-how and cyber security solutions to strengthen society’s resilience.”*

Martti Lehto

In 2023, JAMK University of Applied Sciences and the University of Jyväskylä established the Finnish Center of Expertise for Cybersecurity (FICEC). The purpose of the Centre of Expertise is to strengthen Finland’s cutting-edge

research and expertise in cybersecurity. **Tero Kokkonen**, Director of the Institute of Information Technology at Jyväskylä University of Applied Sciences, sees the Centre of Expertise has an important role in various European cybersecurity forums. The center aims to evolve into a state-of-the-art international hub for cybersecurity research and education, enhancing Finland’s overall cybersecurity brand. The center of expertise also combines strong cooperation with the business community and the ability to apply the latest technology. The goal is to expand the cooperation beyond higher education institutions and involve actors from the business world and public administration while also attracting more expertise into the collaboration.



*“With modern digitalization, cybersecurity affects us all. By advancing research, development, and education in cybersecurity, we are strengthening expertise and fostering cooperation among various stakeholders.”*

Tero Kokkonen

## Engaging innovation partners

The cyber-physical resilience initiative will complement the Finnish Center of Expertise for Cybersecurity by establishing a learning platform and innovation community driven by the industry to enable even stronger collaboration between companies and universities when bringing the Finnish cyber-physical capabilities to the next level. Synocus and MEX Finland will support this work, and if you are interested in participating in the collaboration and receiving continuous updates on how our work proceeds, please contact:



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