



Digital Industry & Technology

The innovation agenda of East Netherlands



Investing in knowledge and innovation is crucial for sustainable recovery of our economy

Our motivation

The digitization transition continues to rapidly transform our economy and society. Awareness of the importance of digitization in all economic sectors has been further heightened by the lessons of the past year with the corona pandemic. Addressing the challenges in healthcare, energy transition, food and security requires new knowledge and skills.

Eastern Netherlands stands ready to provide solutions to these challenges. We continue to invest in data-driven knowledge and innovation, which is essential for a sustainable economic recovery and for addressing green and digital transitions during and after the corona period.

In addition to developing new digital technologies and services, we continue to invest in applying existing digitization concepts and solutions within small and medium-sized enterprises.

This Innovation Agenda shows the opportunities that the East Netherlands has to offer. The Innovation Agenda came about through close cooperation between the provinces of Gelderland and Overijssel, development company Oost NL, the regional economic network Think East Netherlands and the Economic Boards.

In particular, we want to invest in digitalization and seek further cooperation with all partners. In this document we show where our priorities lie, and then engage with you to discuss which programs will contribute most to economic growth and a sustainable future in the coming year.

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The strength of East Netherlands

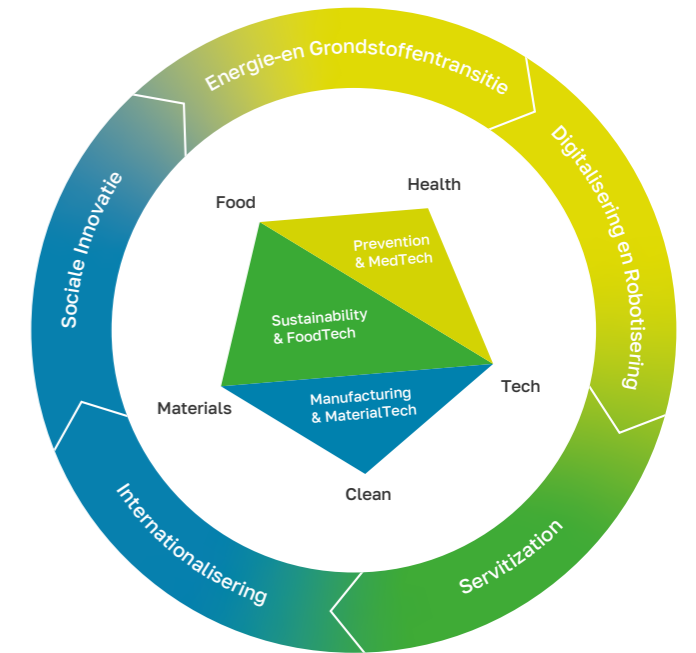
A strong and diverse business community that works closely with internationally recognised knowledge institutions in the region. That is the strength of the East. As a result, East Netherlands has a highly innovative manufacturing industry, an advanced medical sector and the global foundation for smart food production.



Our four digital focal points

East Netherlands' smart specialisation strategy (the RIS3) lists the crossovers that give the business community in this region a prime opportunity to create impact and value. The digitisation transition cuts across all kinds of application domains and provides the technological opportunities to create economic and social added value.

The region focuses on the following four crossovers. This is where we can make the greatest contribution to the missions of the national innovation policy.



The regional smart specialization strategy shows and substantiates the shared strengths of East Netherlands

Digitisation in the manufacturing industry: Smart Industry

Far-reaching digitisation, AI and robotisation offer many opportunities. Software and physical systems in the manufacturing industry are becoming more closely interlinked to form so-called cyber-physical systems, with which the industry can increase productivity. In this way, the manufacturing industry in the East Netherlands can remain globally competitive and we can even bring back production from low-wage countries. A development that, certainly in times of geopolitical uncertainty, leads to a more robust value chain with fewer vulnerabilities.

Digitisation in the energy transition

To accelerate the energy transition, we are focusing on smart energy networks or smart grids and a decentralised mix of energy resources. This will reduce the occurrence of peaks and troughs in the energy supply. To this end, we are expanding our collaboration with top centres in Germany on battery technology. At the same time, we are working on large-scale production methods for alternative energy carriers such as hydrogen. Digitalisation is also necessary for the (semi-automated) manufacture of the building kits that are needed in a sustainable housing market.

Digitisation in Smart Food Production

With smart algorithms, improved sensor technology and autonomous machines many new applications are created. Think of precision agriculture, circular agriculture and circularity, and autonomous greenhouses. The basis for the most efficient food production country in the world lies in the East Netherlands. The food machinery and equipment industry, among others, is well represented to meet these challenges.

Digitalising in medtech

Medical technology is becoming increasingly digital in terms of hardware, software and applications. In extramural and intramural care, everything is becoming connected. Think of digital visits to a GP or surgeons performing operations via a robot. We are increasingly able to make predictions about illnesses and the results of treatments on the basis of large quantities of data. We are strong in prevention.

We develop the key technologies that make this possible here in the East Netherlands. For example, the region is big on small, with a top European position in nanotechnology, integrated photonics and the semicon industry. In the coming years, the East Netherlands will remain strongly committed to artificial intelligence (AI). By optimally managing complex systems, we contribute both to the transitions in national (and East Netherlands) mission-oriented innovation policy and to the European

Sustainable Development Goals (SDGs), specifically: health (SDG3), education (SDG4), affordable and sustainable energy (SDG7), fair economic growth (SDG8), industry, innovation and infrastructure (SDG9), sustainable cities (SDG11), responsible consumption and production (SDG12) and climate (SDG13). From the East Netherlands region, we strongly focus on this social added value and only invest in projects and programmes if they lead to (parts of) solutions.



Think East Netherlands

The provinces of Gelderland and Overijssel are working together on digitisation in many areas.

The strength of our niches and our crossovers with digital technologies create new opportunities for the BV Netherlands. In East Netherlands, we are joining forces regionally and nationally. We also find the connection of our regional value chains to the larger chains in the European Union.



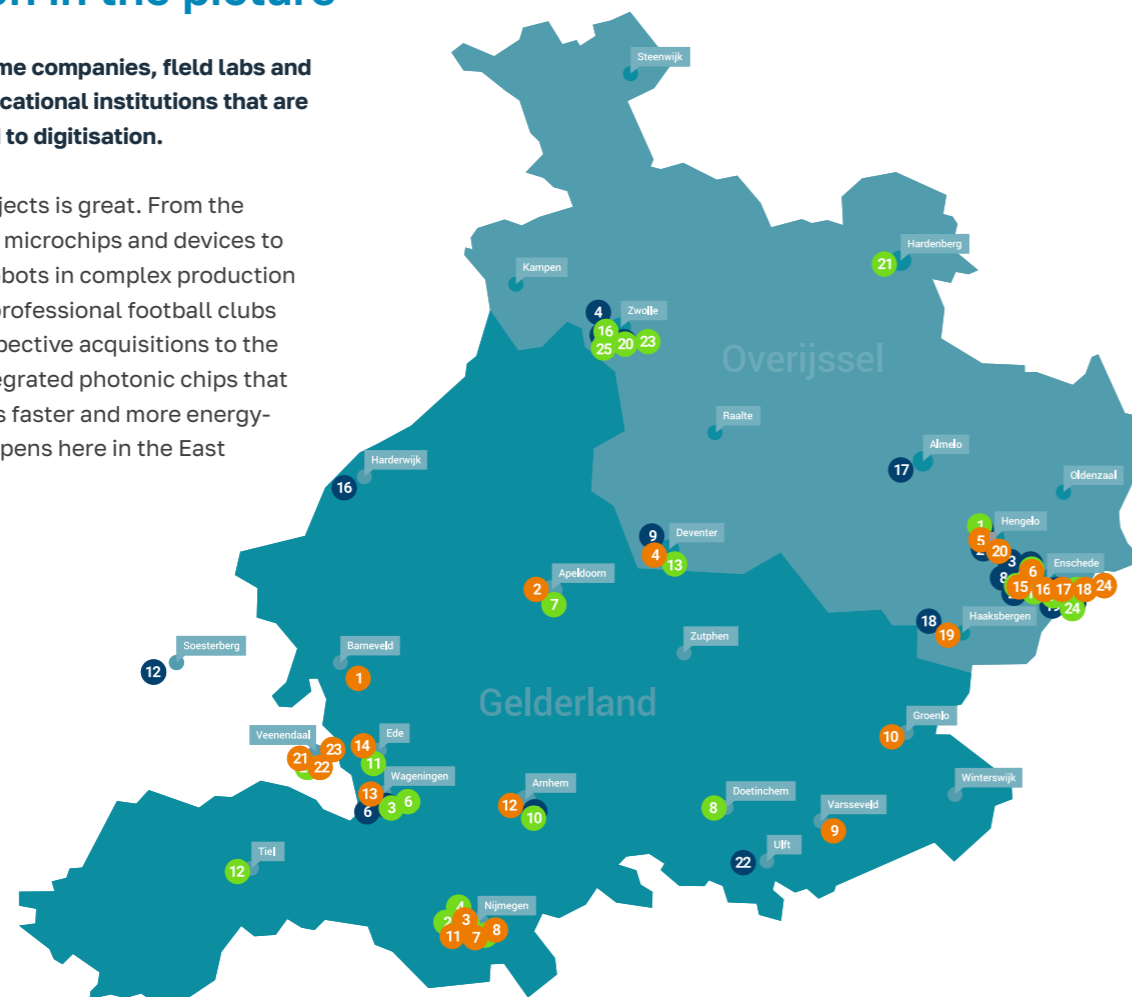
Smart and Sustainable Industries
Concepts for a Healthy Life



Digitisation in the picture

Below, we show some companies, field labs and knowledge and educational institutions that are strongly committed to digitisation.

The diversity of subjects is great. From the latest generation of microchips and devices to the integration of robots in complex production lines. From AI that professional football clubs use to analyse prospective acquisitions to the development of integrated photonic chips that function many times faster and more energy-efficiently. It all happens here in the East Netherlands.



Companies

1. Infor (Barneveld)
2. Pinkcrocade (Apeldoorn)
3. Ampleon (Nijmegen)
4. Topicus B.V. (Deventer)
5. Thales (Hengelo)
6. Xsens (Enschede)
7. Business Cluster Semiconductors Netherlands (Nijmegen)
8. Thirona B.V. (Nijmegen)
9. Naast.je Sensire (Varsseveld)
10. Nedap (Groenlo)
11. NXP (Nijmegen)
12. Siza (Arnhem)
13. Noldus Information Technology (Wageningen)
14. Philips Vital Health (Ede)
15. Demcon (Enschede)
16. Lionix (Enschede)
17. SciSports (Enschede)
18. Sigmax (Enschede)
19. TKH (Haaksbergen)
20. Heutink ICT (Hengelo)
21. Mprise (Veenendaal)
22. Detron ICT (Veenendaal)
23. Bemet ICT (Veenendaal)
24. NDIX (Enschede)

Education & Research

1. STODT (Hengelo)
2. RUMC Radboud Universitair Medisch Centrum (Nijmegen)
3. Wageningen Universiteit (Wageningen)
4. Radboud Universiteit (Nijmegen)
5. Hogeschool Arnhem Nijmegen (Nijmegen)
6. OnePlanet (Wageningen)
7. Aventus ROC Apeldoorn (Apeldoorn)
8. Graafschap College (Doetinchem)
9. Aeres MBO (Ede)
10. Rijnijssel (Arnhem)
11. ROC Nijmegen (Nijmegen)
12. ROC Rivier (Tiel)
13. Saxion Deventer (Deventer)
14. Saxion Enschede (Enschede)
15. Universiteit Twente (Enschede)
16. Hogeschool Windesheim (Zwolle)
17. MESA+ (Enschede)
18. Center for Telematics and Information Technology (CTIt) (Enschede)
19. ROC Twente (Enschede)
20. Landstede MBO (Zwolle)
21. Alfa College (Hardenberg)
22. Deltion College (Zwolle)
23. ICT Campus Veenendaal (Veenendaal)
24. CeeCee (Enschede)
25. E-commerce Center (Zwolle)

Innovation centers

1. TechforFuture (Enschede)
2. TechyourFuture (Enschede)
3. Digitale werkplaats Twente (Enschede)
4. MoveDigi - digitale werkplaats Zwolle (Zwolle)
5. Digitale werkplaats Arnhem-Nijmegen (Arnhem)
6. Digilab - Foodvalley (Wageningen)
7. Perron038 (Zwolle)
8. Fraunhofer Innovation Platform for Advanced Manufacturing (Enschede)
9. Gasfabriek (Deventer)
10. LAC - Laser Applicatie centrum (Hengelo)
11. LEO - Center for service robotics (Enschede)
12. Smart Base (Soesterberg)
13. Cybersecurity Center Maakindustrie CCM (Enschede)
14. Digital Health Center (Nijmegen)
15. Smart Farming (Wageningen)
16. Fieldlab Industrial Robotics (Harderwijk)
17. ESPS Robot Experience Center (Almelo)
18. TechMed Center (Enschede)
19. Industrial Reality hub AR/VR (Enschede)
20. T-valley (Enschede)
21. The Garden (Hengelo)
22. CIVON - Centrum voor innovatief vakmanschap Oost Nederland (Ulft)
23. Health Valley (Zwolle)

What can we do in the digitisation transition?

The provinces of Gelderland and Overijssel and development company Oost NL are facilitating, connecting and guiding parties in the regional developments. By bringing together knowledge institutions, intermediaries and the business community, they combine forces and strengthen each other. We challenge companies and knowledge institutions to look beyond the issues of the day and work on innovations that contribute to solutions for societal challenges. In doing so, we focus on cooperation; regionally, nationally and internationally. Below are four diverse examples of public-private partnerships that serve as inspiration.

Boost

Boost is the public-private partnership for the development of a smart and clean manufacturing industry in the East of the Netherlands.

Boost is the public-private partnership for the development of a smart and clean manufacturing industry in the East of the Netherlands. A leading group of leading and guiding entrepreneurs is responsible for the partnership. This leading group gives substance to the industrial strategy for the East Netherlands. Each member leads a working group that tackles specific themes. Think of social innovation, circular business models, AI or cybersecurity. From this industry-driven collaboration, we are working to accelerate the digitisation transition in the East Netherlands. One of the initiatives is the Boost Vital Industry vouchers. These vouchers support companies that have been hit hard by corona in gaining new strategic insights, including on the topic of digitisation.



Fraunhofer Innovation Platform

The Fraunhofer Innovation Platform for Advanced Manufacturing, affiliated with the University of Twente, is a joint venture of three partners: the University of Twente, Saxion University of Applied Sciences and the Fraunhofer Institute for Production Technology in Aachen, Germany.

The central task of the Fraunhofer Innovation Platform is to transfer current research on advanced manufacturing directly into industrial practice. We focus on the development of technological solutions in the areas of production processes, production equipment, digital production and the organisation of the production chain. Together with industry, knowledge institutions and provinces, we develop synergy. The aim is to excel in the fourth industrial revolution and to train tomorrow's high-tech talents.

OnePlanet Research Center

OnePlanet in Wageningen is an open innovation centre for healthy food, healthy living and healthy environment.

It is an initiative of Imec Nederland, Wageningen University & Research (WUR), Radboud University and Radboudumc and is co-financed by the Province. In this centre, they develop new solutions for the challenges of tomorrow, such as: how do we feed fifty billion mouths without exhausting the earth? How do we keep healthcare affordable? How do we live longer and healthier lives? Digitalisation is the common thread in the solutions to these issues.



- Solutions that the innovation centre is working on are:
- microchips that can predict and prevent diseases;
 - smart glasses to detect diseases such as Alzheimer's and Parkinson's;
 - smart sensors for plants that regulate conditions in greenhouses;
 - producing more food with fewer resources by growing crops stacked in buildings.

Digitalisation across borders

A spearhead of the provinces of Gelderland and Overijssel is the connection of the economic activity in the region with companies and knowledge institutions in Germany. The knowledge, skills and market potential on the other side of the border offer great opportunities for the competitiveness of the border region.

Two initiatives to stimulate this resulted in the iPro-N and Digipro projects. These two projects have together triggered more than €22 million in investments in innovation for projects in which Dutch SMEs work together with German SMEs on new prototypes. More than 250 companies from industry and various knowledge institutions have co-invested in Dutch-German innovation projects through these programmes in the past four years.



East Netherlands Innovation Agenda

Innovation Agenda on five themes

The digitalisation transition is one of East Netherlands spearheads for the coming years. Within this broad domain of Digital Industry & Technology, we focus on five more specific sub-themes. These are themes where our companies and knowledge institutions make the difference and where those same companies and institutions are also willing to co-invest. They are important topics where we aim for large-scale impact and can contribute to the missions of national innovation policy. We ask the government to explore these themes with us. Based on the current inventory of projects, there is a demand for investment of over €200 million. We list a number of sub-themes, including sample projects.



Smart Industry

The manufacturing industry is a strong sector in East Netherlands with many jobs. The digital transition of this industry is necessary to remain competitive and future-proof. This makes it one of the spearheads of the region. On the one hand, we do this by stimulating top research into the latest technological innovations and, on the other, by inspiring and stimulating the wider business community to embrace existing innovations.

Strengthening a sector and its chains requires this two-track policy. All projects within this theme focus on the development of new technology or the implementation of existing technology in processes. These different tracks reinforce each other.

We mention a number of projects for inspiration.

EDIH Boost Robotics & Sensing in East Netherlands

The region is in the midst of developing the European Digital Innovation Hub (EDIH) and is striving to make this information current. The EDIH acts as an all-in-one counter for companies within the manufacturing industry, including sectors such as healthcare and agriculture. Companies looking to test and implement new processes can come here with their questions and we offer subsequent support. The EDIH acts as a center and hub for all the services we offer in terms of testing facilities and financing issues, with the goal of bringing innovations to market faster and training employees. Our goal is to support at least five hundred companies a year in realizing their digitization issues.

Advanced Manufacturing Center Europe (AMCE)

The AMCE is an initiative of the Fraunhofer Innovation Platform. The centre will be an industry-tailored innovative environment that will help companies to accelerate their digitalisation. In this way, the AMCE wants to contribute to the creation of a new generation of market leaders. To achieve this, the centre will focus on the latest developments in several digitalisation technologies, such as AI, robotics and the Internet of Things. The centre focuses on the group of frontrunners and in particular on the test-before-invest principle. Organisations can make use of the large number of facilities here and work towards demonstrators.

Fieldlab Industrial Robotics 2.0

To further increase the number of entrepreneurs who come into contact with robotics in production processes, we are developing the Smart Industry Field lab. The Field lab itself is a collaboration between various companies and colleges and is mainly aimed at bringing together education and professionals. This way, employees of companies can learn about the latest technologies and be trained to operate them correctly. The target group is the broad business community that is aware of the opportunities that robotisation can offer, but where the staff does not yet have sufficient experience.

Legend project scope



Artificial Intelligence

AI is one of the building blocks for innovations in the coming years. It is a key technology for improving medical data analysis, precision agriculture and implementing flexible production lines, among other things. The application opportunities in East Netherlands with this technology are so great that it has been designated as a separate strategic priority for the East Netherlands. For example, more than 350 companies in East Netherlands are actively working on AI applications in the fields of Health, Smart Industry, Food and Energy. At the regional knowledge institutes, more than 500 scientists and PhD students are researching the possibilities of AI.

AI Hub East Netherlands

In the region, we are bringing the many loose links together in the AI Hub East Netherlands, creating a structure through which we create impactful applications. The AI Hub Oost-Nederland is part of the Dutch AI Coalition. AI for Life, the collaboration initiated on AI in the Arnhem - Nijmegen - Wageningen region, we are continuing throughout the East Netherlands. From the AI Hub East Netherlands, we are working on a coordinated AI strategy to develop projects and to valorize the existing knowledge position. By setting this up on an East-Netherlands scale, we create sufficient mass and yet remain concrete and flexible enough to make strides.

The AI Hub East Netherlands is an initiative of The Economic Board and Twente Board, Radboud University, University of Twente, Wageningen University & Research, Th!nk East Netherlands and Oost NL. The business community is connected including Nedap, Demcon and the broad SME in the East Netherlands as well as education (including the HAN, Saxion and Windesheim and the MBO).

AI and Energy Management

The energy transition is one of the greatest social challenges of this generation. Developments are rapid and provide more and more opportunities for generating green energy. The major challenges seem to lie in processing this energy in a balanced way across the days and seasons. In the AI and Energy Management project, we are setting up a living lab containing a local micro-grid. This will be equipped with measuring and switching devices as a learning system with AI. In this way, the software itself chooses, based on sensors, how electricity can best be used or distributed.

Digital Business

The digital transition is creating radically different business models. Technological developments form the basis for new chains, processes and propositions. Digital Business is cross-sectoral and therefore offers opportunities for companies in different sectors. Companies in, for example, retail, construction, logistics, culture and manufacturing need to explore new possibilities and share practical examples with each other in order to make the most of the opportunities that digitisation offers. From questions about the value of data to new processes for co-creation through the chain. By investing in projects that make entrepreneurs think about their own business model and inspiring them with other success stories, companies are taken by the hand in the digital transformation.

The Kien

In city campus De Kien, unconventional doers from business, education and government are taking up the challenge together. Using new digital techniques, they are working on innovative solutions for important social issues in the field of climate and living space design. The physical space around us, the station area of Deventer, is the experimental space. Thus De Kien offers space for talent and tech.

The garden of Kairos

Within this project, about twenty companies are working together towards one main goal: bringing together different perspectives and people who want to get started with the digital transformation. The goal is to increase the effectiveness and productivity of collaboration. The Garden of Kairos provides an environment where members connect and discuss in new and uncomplicated ways, driven by what matters most. By organising themselves as a community, they can be flexible and open, and adapt, grow and develop over time. From this community, a technological roadmap will be drawn up with topics that will be tackled via projects. Initially, the community will consist of about twenty companies with overlapping challenges, but new participants are welcome to contribute knowledge and share results. Moreover, the knowledge gained will be disseminated to hundreds of other companies in and outside the region for inspiration.

Legend project scope



Cybersecurity

Now that everything and everyone is becoming digitally more connected, vulnerabilities are a greater risk. Research shows that the vast majority of companies are insufficiently prepared and do not have their digital security in order. By investing in public-private partnerships, we are working to raise awareness and develop technological inventions to reduce these risks.

Centre for a Security and Digitization

Within this centre in Apeldoorn, a number of public and semi-public organisations and companies work together on information security. The project is drawn from the municipality of Apeldoorn in cooperation with Achmea, the Tax Authority and the University of Twente, among others. The Center for Security and Digitization tackles the big questions surrounding digitization and security head on. In the program, this is done along four paths: education, research, entrepreneurship and public activities. Each of the four has its own offerings and approach. But we pull together and develop our activities in coherence. This is how we form a knowledge environment with national impact.

Twente University Centre for Cybersecurity Research (TUCCR)

This is a project in which the University of Twente, together with industrial partners, conducts research into the possibilities and applications of cybersecurity. From a technical point of view, security research at the University of Twente is strongly data-driven. Data plays a crucial role in recognising forms of cyber threat. This differs from standard approaches to such research, which currently focus mainly on, for example, cryptographic research or investigating specific types of attacks.

Key Enabling Technologies

Investing in key enabling technologies (KETs) is investing in the future. KETs provide the foundation for further innovations. The developments are relevant to every sector and field of application. Relevant for Digital Industry & Technology are, among others, the projects on semiconductor industry, sensor technology and robotics, integrated photonics and nanotechnology and 5G.

Integrated Photonics in East Netherlands

Integrated photonics is the technology of small chips that accurately, quickly and reliably process light signals. In addition to conventional (electronic) chips, they offer new opportunities in growth markets such as datacom, telecom, automotive, aerospace and medtech. Examples of applications are energy-efficient processing of data in data centers, accurate targeting of signals in 5G and future 6G transmission towers, cheap and accurate LiDAR vision technology of self-driving vehicles, high-precision measurement of deformation of structures and small and affordable image processing in medical scanners and sensors. The applications are both commercially interesting and contribute to solving societal challenges. There is also the ambition to land a heterogeneous pure play foundry in the region. Here (in the future) mid-volume niche chips will be produced (consisting of a combination of photonic chips and possibly others) which will then be integrated into a heterogeneous system. Something that is as such unique in the world on a commercial level.

Laying 5G

It is very important for the Netherlands to catch up and make full use of the advantages of 5G. This is a precondition for the further digitalisation of industry. The much higher speeds of 5G bring promising revenue models and new applications for various sectors of the business community within reach. By setting up a broadband 5G fund, we want to achieve an accelerated rollout to business parks in East Netherlands.

Legend project scope



Digitalisation of society

Digitisation is one of the fundamental technological developments and affects all areas and social challenges. From Europe, we see that there is a strong focus on the conditions necessary to lead the way in the field of digitalisation. A main condition is the strengthening of the digital skills of the labour force.



Digital Europe program

The European Commission strives for one strong digital European market in order to remain globally competitive. This digital transition has led to an ambitious European regulatory framework for AI and cybersecurity, among other things.

Large-scale investments have also been made in data infrastructure and improving digital access and skills in business. The new Digital Europe programme will continue a European network of Digital Innovation Hubs. The East Netherlands is also contributing to it. SMEs from all regions of Europe will have easy access to the latest application possibilities in the field of digitalisation and cyber security to robotics and from photonics to smart industry.

Scan the QR code and watch the video 'Call for Action Digital Europe'



This digital transition has led to an ambitious European regulatory framework for AI and cybersecurity.



Human Capital: Digital Skills

The digitalisation transition demands a lot from employers and employees. Technology is moving fast and employees must continue to develop in order to be able to deal with it. If we want to implement this innovation investment agenda, it will require new competences from the current labour market.

The corona crisis showed how great the need is and at the same time provides the urgency and thus the opportunity to address this challenge now. Internationally, the Netherlands is in a relatively good position with a national workforce that ranks sixth in Europe in terms of digital skills. Yet we see, particularly in the East Netherlands, that there is a shortage of well-qualified personnel and that this is a barrier to the innovative power of regional business. Knowledge institutions, government and business within the Digital Industry & Technology must focus more on life-long development (LLD). The innovation projects will also have an LLD component.

Projects in East Netherlands that focus on narrowing the gap between the demand for labour in the region and the supply, in a quantitative and/or qualitative sense, are the aforementioned Fieldlab Industrial Robotics 2.0, the Centre for Security & Digitalisation and the five Digital Workshops (Arnhem-Nijmegen,

Food Valley, Zwolle, Twente and Stedendriehoek). The 'SME Digitalisation Voucher' scheme enables SMEs to work on the digital skills of their employees and on the transition to a digital economy. In East Netherlands, we are working towards an inclusive, flexible and future-oriented labour market.

The East Netherlands focus is on having sufficient skilled workers and an agile labour market for the longer term. Examples are Overijssel-Gelders craftsmanship, attracting and retaining talent, and cross-border cooperation with Germany. These approaches are intended for the entire labour market: for all sectors and for all target groups.

The East Netherlands focus is on having sufficient skilled workers and an agile labour market for the longer term.

Regional focus is on job security through lifelong development, agility and resilience of the entire labour force. This is for all inhabitants of the region. Approaches in East Netherlands are customised training, (re)-training via regional training funds, career advice, career guidance, training and counselling with the aim of job security. The challenge here is to optimise the triangle individual- company- knowledge parties. How do you measure and develop individual competences with knowledge from private and public education? And how do you get a good idea from companies which competencies they have in-house to be able to realise the strategy for the future? In East Netherlands, we are investing in solutions to this challenge.

If you would like to contribute, please contact info@thinkeast.nl

