

Versie 2022.01

Smart Industry (AI solutions) meet our community

*We invite you to meet our
community and discover
our success story!*

Brabant already has a well-developed HTSM industry and a world-class high-tech one, including a strong data science community. The high-tech market leaders and suppliers have a proven capacity to jointly develop, manufacture, and market high-tech systems. The region is home to a unique combination of high-quality technical expertise, traditional systems thinking, and software development for industrial solutions. This combination plays a key role for AI solutions and applications in the field of Smart Industry.

BRABANT
IS BRIGHT

**BRABANT
IS BRIGHT**

**100 years
of HTSM
innovation**

HISTORY

More than 100 years in the making. In Brabant a number of key ingredients have been fruitfully mixed together, creating one of the strongest high tech systems regions in the world. In 1891, the brothers Gerard and Anton Philips founded their light bulb factory in the city center of Eindhoven. Already in 1919, Philips started producing X-ray tubes for medical applications. Other groundbreaking innovations followed, both in medical systems and consumer electronics. In the late 1970s Philips invented the Compact Disc and its successors (DVD – Blu-Ray). Research and Development were always the core of Philips' existence.

TODAY

Brabant is home to the entire High-tech Systems & Materials value chain, which not only means the presence of OEMs, research institutes, universities, and vocational schools, but also the whole spectrum of HTSM suppliers in the region. The region is globally renowned for the unique ability to develop and manufacture products and components at low volume and of high-complexity.

The province is dedicated to using AI in these systems to advance the industry and increase production through solutions that add value. To enable innovation, an open approach to research and innovation is used, combined with an excellent infrastructure and a highly-skilled workforce. Companies can find all of these elements on the innovative campuses in the region, such as the High Tech Campus, Brainport Industries Campus, and the TU/e Campus.

1891



TU/e EINDHOVEN
UNIVERSITY OF
TECHNOLOGY



ASML

NXP

Atos

ADVANTECH



HIGH TECH CAMPUS
EINDHOVEN

ThermoFisher
SCIENTIFIC

Cognizant



DIMENCO

SIEMENS

Why Brabant excels in Smart Industry & AI?

TALENT IT



Eindhoven is known as the city of Design with famous institutes like the Eindhoven Artificial Intelligence Institute and the JADS and offers the biggest pool of IT talent in the Netherlands.

HIGHLY-DEVELOPED CLUSTERS AND CAMPUSES



What sets Brabant apart are the various **innovation clusters and field labs** around specific themes. These public-private testing grounds are hotspots for co-creation and speed up innovation.

INDUSTRY BASED ECOSYSTEM



The **Brabant HTSM cluster** can invent, design, engineer, assemble, manufacture, commercialize, install, and maintain any machine, integrated and/or cyber-physical system and also programme the software for it.

LEADING COMPANIES AND A FULL HIGH TECH SUPPLY CHAIN



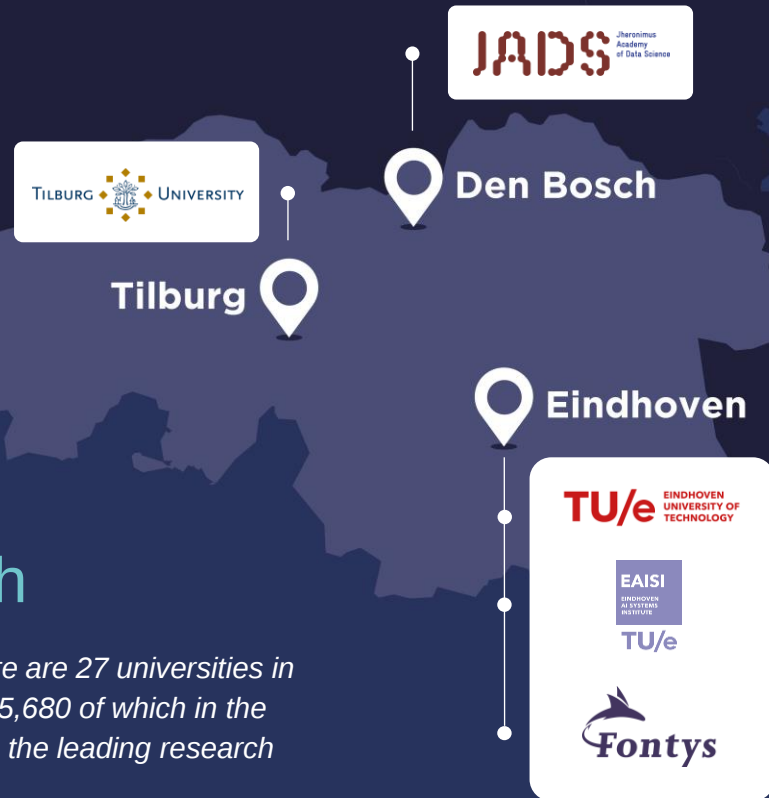
Eindhoven is the home of **Royal Philips, AMSL and NXP**, and, over the space of 125 years, a perfectly woven network of knowledge institutes (TU/e, Holst Centre), specialized high tech suppliers and partners has evolved in the region.

**BRABANT
IS BRIGHT**

Our Ecosystem

World Class Research

Within a radius of 150 km around Brabant, there are 27 universities in three countries: a total of 605,340 students, 255,680 of which in the field of nature, health or technology. These are the leading research institutes for IT & Data Science technologies.



WORLD CLASS RESEARCH

1. **JADS (Den Bosch)** offers data science bachelor and master programs, PDEng education, professional education and help organizations shape their data driven future. The Industrial sector is a Priority Industry to JADS.
2. **University of Technology (Eindhoven)** is a research university specializing in engineering science & technology. The university has a Department wholly focused on industrial engineering & innovation sciences
3. **EAISI (Eindhoven Artificial Intelligence Systems Institute)** is an AI research institute with a dedicated unit focusing on "AI for High Tech Systems and Robotics".
4. **Tilburg University** is a research university specializing in the social and behavioral sciences, economics, law, business sciences, theology and humanities. The university has an AI Special Interest Group focusing on Smart industries ("Industry 4.0").
5. **Fontys University of applied sciences** is a university of applied sciences that actively contributes to AI and Smart Manufacturing

**BRABANT
IS BRIGHT**

Our Ecosystem

Leading companies

Brabant accounts for almost 10,500 IT & Data Science companies and 12.1% of all jobs of the total sector in the Netherlands. These are the leading companies in the field of Smart Health and Artificial Intelligence.



Den Bosch

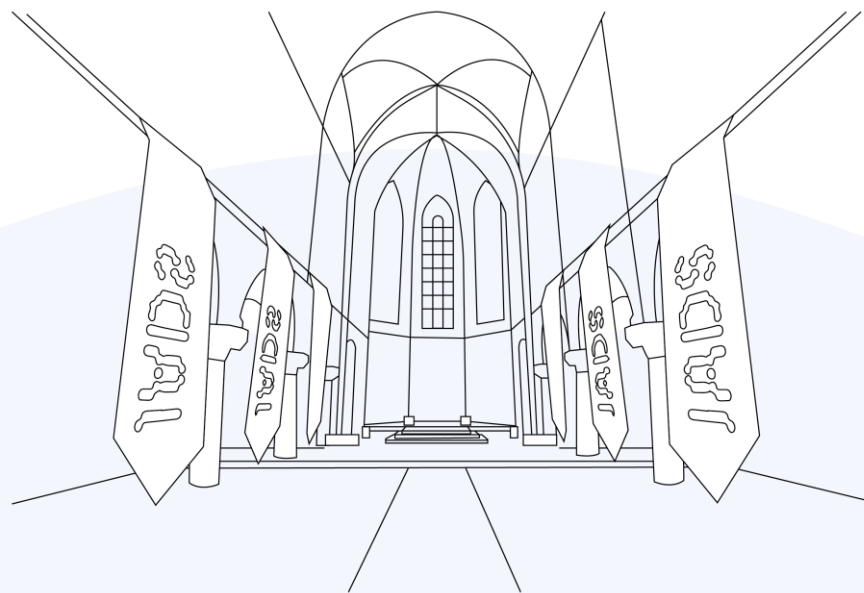


Eindhoven



LEADING COMPANIES

1. **Sioux Technology** has all the expertise in-house to contribute to the success of high-tech products and production systems. Sioux's strength lies in its unique combination of high-quality competences in software, mathware, mechatronics, electronics and assembly.
2. **Advantech** is a global leader in the fields of IoT intelligent systems and embedded platforms. Advantech offers comprehensive system integration, hardware, software, customer-centric design services, embedded systems, automation products, and global logistics support.
3. **Prodrive** designs and manufactures electronics, software and mechanics, developing and delivering a wide range of high tech products, systems and solutions
4. **Thermo Fisher Scientific** is exploring augmented and virtual reality (AR & VR) applications for electron microscopy, simulating real-world equipment.
5. **Siemens Digital Industries Software** is a computer software company specializing in 3D & 2D Product Lifecycle Management software.
6. **Omron** manufactures industrial automation products and applications, providing factory automation, sensors and safety, mechatronics and drives, industrial components.
7. **Philips Engineering Solutions** works with High Tech companies to bring innovations to the market. Philips Engineering Solutions is specialized in Smart industry solutions.



Jheronimus Academy of Data Science (JADS)

At JADS, researchers and students work closely with the business community. In addition to education and research, JADS also offers space for innovative, data-driven entrepreneurship and public-private partnerships.

Key University

Jheronimus Academy of Data Science (JADS)

JADS offers data science bachelor and master programs, PDEng education, professional education and help organizations shape their data driven future.



OBJECTIVES

The mission of JADS is to understand and use the value of data for solving complex societal and business challenges. JADS has been focusing its activities on data science in combination with intelligent algorithms for the **Fourth Industrial Revolution or Industry 4.0**.



SMART INDUSTRY PROGRAM

The Smart Industry program aims at supporting companies in their transition to Smart Industry by the use of Data Science and gaining a competitive advantage by bridging the gaps between Engineering, Business and Data Science.



THE JADS DISCIPLINES

- Data Analytics
- Data Governance
- Data Entrepreneurship

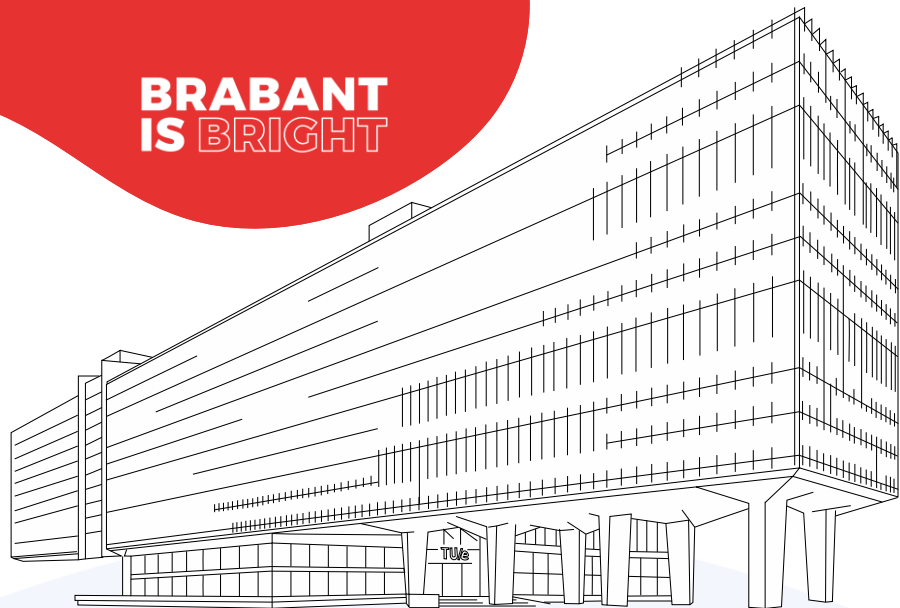


THE JADS COMMUNITY

JADS is a hotspot where researchers, data science students, start-ups, scale-ups and experts of the industry collaborate in developing cutting-edge, real-world solutions.

Collaborations with corporates, SMEs, NGOs **300+ partnerships**.

**BRABANT
IS BRIGHT**



Eindhoven University of Technology in numbers

SCIENTIFIC PUBLICATIONS

3,000

PHD-AWARDS

140

PATENTS EVERY YEAR

40

IT GRADUATES 2020

499

NEW IT STUDENTS 2020

840

BACHELOR COLLEGE WITH
15 DIFFERENT MAJORS

MASTER PROGRAMS IN THE FIELDS OF:

- ARTIFICIAL INTELLIGENCE
- ENGINEERING & HEALTH
- HUMANS & TECHNOLOGY
- SMART CITIES
- SMART MOBILITY
- SUSTAINABLE ENERGY
- DATA SCIENCE
- ROBOTICS
- HIGH TECH SYSTEMS
- INTEGRATED PHOTONICS

Key University

Technical University of Eindhoven

One of the focus areas of the University is Embedded Systems / Embedded Software.



KEY OPINION LEADER

Carlo van der Weijer

Carlo van der Weijer advises ministries and industries around the world on the future of mobility/AI and is member of the supervisory board of several high-tech companies and start-ups. He is an international speaker on exponential technology and the future of high-tech, amongst others as faculty member of Silicon Valley based Singularity University. Furthermore, he is a weekly columnist in the leading Dutch financial newspaper.



MAIN AI RESEARCH FOCUS AREAS

- High Tech systems and Robotics
- Smart Mobility
- Health Applications



OBJECTIVES

The TU/e has been active in the field of artificial intelligence for decades. Using its traditional strengths in systems engineering and close ties with industry, the TU/e aims to leverage the huge potential of AI to real-world applications in industrial engineering systems.



EASI

The Eindhoven AI Systems Institute brings together all TU/e artificial intelligence activities. Top researchers from the various research groups work together to create new and exciting AI methodologies and applications with a direct impact on the real world.

"AI for the real world".

Key Research Institute for AI

EAISI Institute

World class Research: The Eindhoven Artificial Intelligence Systems Institute (EAISI) is the new institute of Eindhoven University of Technology in the field of artificial intelligence (AI).



OBJECTIVES

The Eindhoven AI Systems Institute combines all TU/e Artificial Intelligence activities. Top researchers from various research groups work together to create new and exciting AI methodologies and applications with a direct impact on the real world.



HIGH TECH SYSTEMS AND ROBOTICS FOCUS

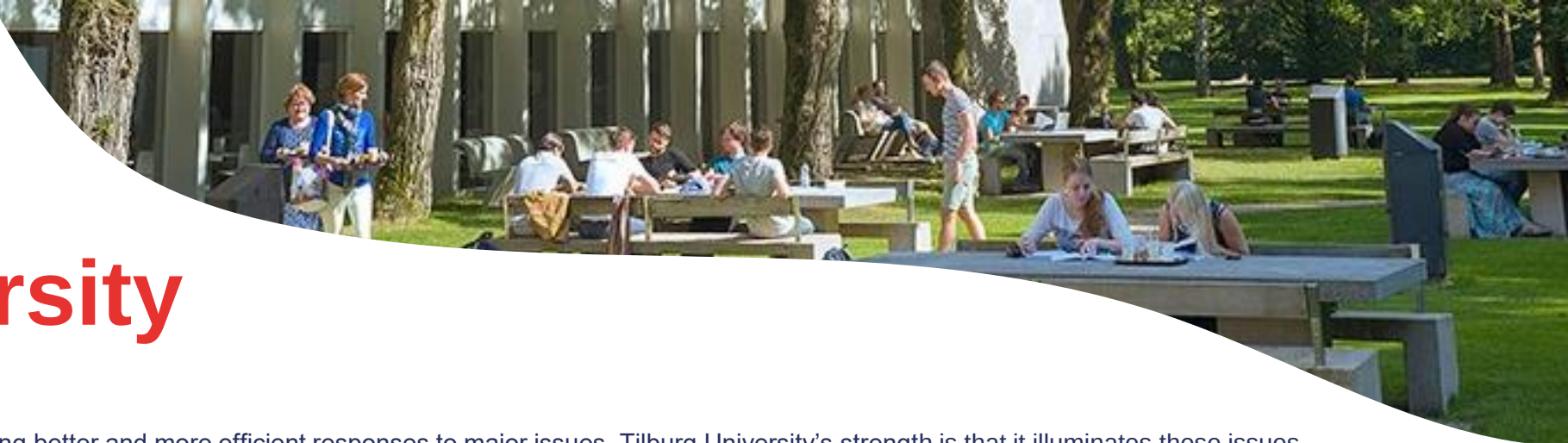
- Guaranteed machine performance
- Autonomous machine operation and smart
- Human-operator support
- Multi-agent robotics
- Predictive maintenance



AI-ENABLED MANUFACTURING AND MAINTENANCE (AIMM) LAB

The labs goal is to develop better data science techniques that make improvements in both manufacturing and maintenance. The areas of research are:

- Autonomous Agents & Robotics,
- Computer Vision,
- Decision Making,
- Information Retrieval,
- Knowledge Representation & Reasoning,
- Neuro-linguistic Programming,
- Machine Learning.



Key University

Tilburg University

AI & Data Science plays a role in providing better and more efficient responses to major issues. Tilburg University's strength is that it illuminates these issues from various angles. The university combines expertise in AI & Data Science with expertise in people and society.



DATA SCIENCE CENTER TILBURG

The Data Science Center Tilburg (DSC/t) brings together Tilburg University's scientific expertise in economics, management, law, social sciences, behavioral sciences, and the humanities to develop and apply data science.



TILBURG UNIVERSITY ARTIFICIAL INTELLIGENCE SPECIAL INTEREST GROUP

A wide variety of scientists are involved in AI at Tilburg University. The TAISIG pools and strengthens AI activities and accelerates the development of new research proposals and grant applications. The TAISIG is active in regional and national networks.



DATA SCIENCE RESEARCH FOCUS - SMART INDUSTRY

- enhancing manufacturing network visibility,
- information sharing,
- manufacturing process integration
- insights for making informed decisions



AI FOCUS - INDUSTRY

- preventive maintenance,
- logistics,
- regulations

Bsc.	Master
Data Science (Joint Degree)	Data Science and Society
Cognitive Science and Artificial Intelligence	Cognitive Science and Artificial Intelligence
	Economics: Data Science
	Data Science and Entrepreneurship (Joint Degree)
	Data and Digital Society

Key University

Fontys ICT Innovation Lab

In the Fontys ICT InnovationLab, students, lecturers, researchers and business professionals work together on applied research and the development of tomorrow's ICT solutions.

Specialization ICT & Smart Industry

Within the specialization Students learn how to build professional Smart Industry solutions in a methodical and structured way. Students will use techniques from IoT, Data analysis and Machine Learning, Industrial Automation, Intelligent management, Software algorithms, Human machine interaction, Infrastructure to transform current systems into smart industry systems or design smart industry systems.



FOCUS TECHNOLOGIES

- AI & Big Data,
- Interaction Design,
- Embedded Software,
- Virtual & Augmented Reality,
- Game Design,
- Cyber Security,
- Blockchain etc.



ICT & SMART INDUSTRY

[Youtube video](#)

Co-creation and cooperation

Fontys: Sharing Platform for Applied Research Cooperation (SPARC)

SPARC is a network of leading organizations from various branches, who put broad knowledge creation and sharing within the ICT domain high on their respective agendas.

They've been working with Fontys School of ICT for a while as investors and partners. This takes place within the Fontys ICT Innovationlab, where education and research come together to learn, research and work on ICT-innovations. In this hybrid learning environment, SPARC members, as Partners in Innovation, play a big part by bringing practical research questions from their business into an educational setting.



SPARC MEMBERS AND 'SHIRT SPONSORS' OF ICT RESEARCH IN 2021

- Ministerie van Defensie
- Pharma partners
- Here
- Vion
- Atos
- PSV
- Simac
- Ctouch
- Additive Industries

State-of-the-art facilities

Brainport Industries Campus

The most innovative and successful companies and institutions in the Brainport region come together as one on the **Brainport Industries Campus**.



HIGH TECH MANUFACTURING

Brainport Industries Campus is the place to be for far-reaching partnerships between suppliers, specialist companies and innovative education and knowledge institutes. This is where the next generation of professionals in the hightech manufacturing industry is trained in a state-of-the-art working and learning environment.



COOPERATION

Brainport Industries Campus is the very first location where high tech suppliers innovate and manufacture together, where the most successful companies share high-quality facilities, such as cleanrooms, flexible production areas, warehouses, and other advanced facilities, and where they present themselves as a unified force that they can showcase to their national and international customers.



KEY FIGURES

- Over 35 companies
- 2,000 high level staff
- 1,500 students
- Surface 105,000 m²
- 6,000 m² of shared facilities
- 6,000 m² of shared warehousing

“AI for the high-tech manufacturing industry.”



Brainport Industries
Campus

Key incubator & accelerator at HTC

AI innovation center

AI Innovation Center has the mission to industrialize AI in the Brainport Eindhoven region.

1.100m² facility which brings together all relevant partners in the ecosystem. Pushing companies on the wave of Data Science and AI. Within the center, companies work on projects and share their knowledge and experience. The Center also acts as an incubator for AI projects & startups.

The focus of the center is on:



ENABLERS

- Bring together service providers, venture capitalists, governmental partners, research institutes and launching customers
- Build a dedicated AI ecosystem infrastructure to support and motivate companies to adopt AI



ACCELERATION

- Drive adoption and accelerate the application of AI technologies by companies in the region
- We organize workshops that support AI adoption and acceleration
- We offer a soft landing (eg workspace, network) to early stage startups



KNOWLEDGE & CAPABILITIES

- Organize events, workshops and training programs
- Support research, publish white papers, blogs and vlogs
- Bring in industry specialists to share the latest AI insights



PARTNERS

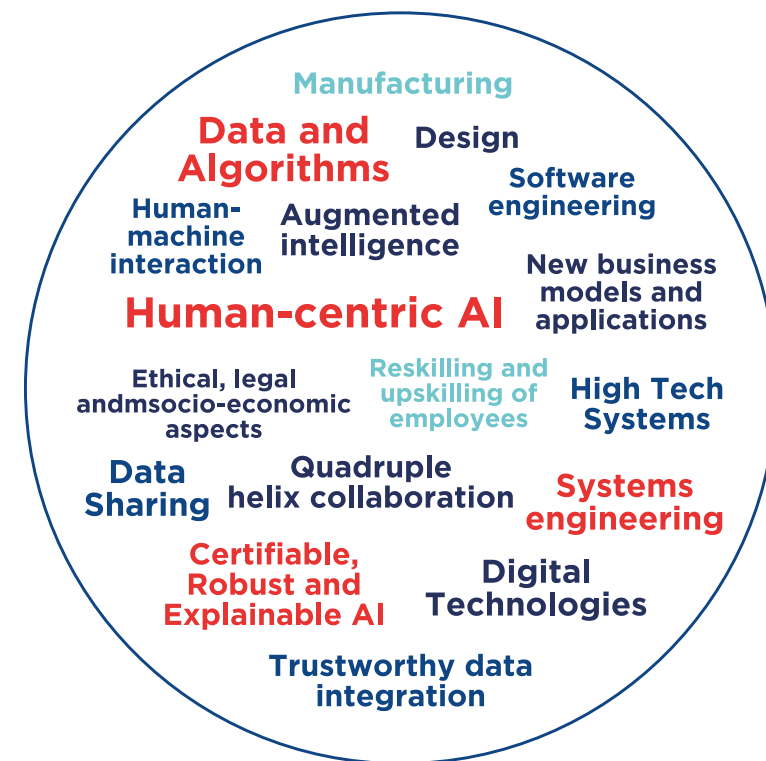
- ASML
- NXP
- Philips
- Signify

One network for AI in the industry

Regional network for AI in the whole region to strengthen and connect activities around Artificial Intelligence (AI):

The AI-hub encompasses the AI ecosystem in Brabant. The AI-hub brings companies, education and knowledge institutes, and public organizations in the province of Brabant together to strengthen and connect activities revolving around artificial intelligence (AI).

The goal is to extend the existing partnerships in the field of AI and the cross-over with (professional) education, societal challenges and joint support for start-ups, scale-ups and SMEs. The AI-hub Brainport is part of the national AI program developed by the Dutch AI Coalition (NL AIC).



PARTNERS

Part of the hub are industry, educational and governmental partners and campuses:



Showcase

Fieldlab Advanced Manufacturing Logistics

Fieldlab Advanced Manufacturing Logistics (AML) develops knowledge in the field of production logistics and optimal production planning with associated stock optimisation, not only for on the production floor, but also for the entire supply chain of the high-tech, small-series manufacturing industry.

The field lab is focused on the development of a state-of-the-art logistics system for shared storage and movement, smart automation and smart robotics in a collaborative supply chain.



WHAT YOU CAN DO

Fieldlab AML offers both a digital simulation environment and a physical environment where partial solutions can be integrated and industrialised quickly.



HOTSPOT FOR SMART LOGISTICS IN THE MANUFACTURING INDUSTRY

- Smart logistics
- Mobile robots, mobile cobots, AGVs, SGVs
- Simulation (business and technical)
- Smart automation (IT connectivity and integration at plant and multi-plant level)
- Supply chain orchestration



Showcase

FEI

ASIMOV

AI training using simulated instruments for machine optimization and verification.



LARGE SCALE RESEARCH ON USING MACHINE LEARNING AND AI FOR ADAPTIVE MATCHING

With the rise of high-tech cyber-physical systems (CPSs) in all areas of industry and society, the user-friendliness and up-times of these systems has become increasingly important. Keeping the control parameters of CPSs in their correct operating window is a particularly major challenge, such as in electron microscopy, unmanned utility vehicles, and pulp and paper process control.

ASIMOV will increase the autonomy and self-optimization of CPSs by creating physically realistic digital twins of these systems and train innovative AI algorithms for CPS control using these digital twins.

