Versie 2022.01

Electronics, microtech and nanotech meet our community

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

Over a 100 years of history in electronics, starting with Philips, and growing into the development of micro and nanotechnology (ASML, NXP, FEI and many others), culminating in the new photonics paradigm (including smart photonics), makes Brabant and Brainport Eindhoven in particular a hotspot. In Brabant you will find an ‘Industry Based Ecosystem’, where people know what it takes to get a product into the market.

Royal Philips' electronics’ expertise and skills are still second-to-none, however the expertise is currently widely spread throughout the entire eco-system.

BRABANT IS BRIGHT

BRABANT IS BRIGHT

100 years of **HTSM innovation**

HISTORY

1891

The existence of a very strong electronics industry in Brabant is inextricably linked to the growth of Royal Philips (Philips Healthcare), which started out in Eindhoven in 1891 as a small lightbulb factory. Next to lighting, Philips has primarily focused on electronics, and it has played a role in products of any type, shape or size, including household appliances, TVs, video players, audio cassette tapes, computers and many others. Over time, the company divested from many activities. Some of these disappeared abroad (most of the consumer electronics activities) and some of them became independent entities in Eindhoven, such as ASML, NXP and FEI (now Thermo Fisher).

TODAY

2021

The full electronics supply chain that co-developed with Philips adapted its core activities and is still in Eindhoven, supplying companies both in the Netherlands and abroad. The definitions of the technology (and the sequence in which they are mentioned) already perfectly clarify why the Brabant region still leads in electronics and related fields and the technology domains that evolved from electronics. They mirror Brabant's historical growth and present strengths in High tech Systems & Materials from an electronics perspective: Electronics, Embedded Systems, Nanotechnology, Integrated Photonics. The Brabant HTSM ecosystem is well-represented in all of these fields.

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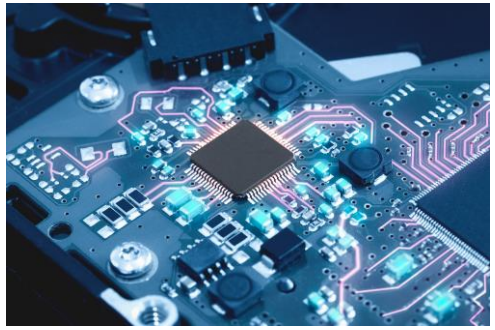
Why Brabant excels
in electronics, microtech and nanotech?

INDUSTRY BASED ECOSYSTEM



Over a hundred years of history in electronics, and the development of micro and nanotechnology, culminating in the new photonics paradigm (including smart photonics), makes Brabant and **Brainport Eindhoven** in particular a hotspot.

DEVELOPED KNOWLEDGE INFRASTRUCTURE

Highly innovative **universities and research institutes,** such as High Tech Campus Eindhoven, University of Technology Eindhoven, TNO contribute to a unique ecosystem, home to innovators, researchers, engineers that create business of tomorrow.

ADAPTIVE COLLABORATIVE CULTURE

The people in Brabant have an adaptive and collaborative culture. People are used to change and are working in a highly international environment for innovative OEM's, SME's, startups, scale-ups and knowledge and educational institutes.

LEADING COMPANIES AND A FULL HIGH TECH SUPPLY CHAIN

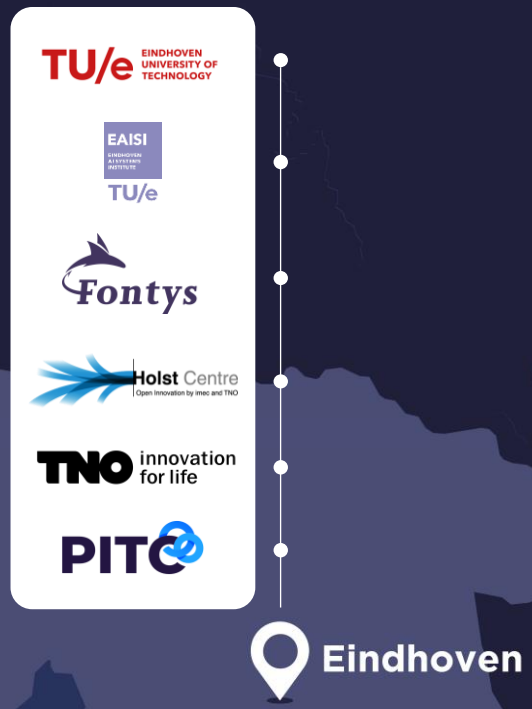
Brabant is home to **Philips** and a perfectly woven network of knowledge institutes (University of Technology, TNO, IMEC, JADS), specialized high tech suppliers such as ASML, NXP, FEI), and other partners has evolved in the region.

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 HTSM.



WORLD CLASS RESEARCH

1. **Eindhoven University of Technology (TU/e)** is a research university specializing in engineering science & technology.
2. **EAISI Institute - TU/e (Eindhoven)** is an AI community at TU/e. EASI has various research labs in cooperation with partners in the fields of mobility, robotics and high tech systems.
3. **Fontys University of Applied Sciences (Eindhoven)** offers High Tech Systems & Materials programs. In addition, they offer a study program for electrical & electronic engineering.
4. **Holst Centre (Eindhoven)** is an independent R&D centre supporting its partners to transform their innovative technologies into new products and new manufacturing processses. Holst is jointly set-up and operated by IMEC and TNO.
5. **TNO**, the Netherlands Organisation for applied scientific research, connects people and knowledge to create innovations that boost the competitive strength of industry and the well-being of society in a sustainable way.
6. **Photonic Integration Technology Center (PITC)** supports companies that want to make the step towards high-quality production or want to enter the photonics supply chain.

BRABANT IS BRIGHT

Our **Ecosystem**

Leading companies

Brabant accounts for 15,560 companies in its HTSM-cluster, that represent more than 40% of the total Dutch production volume. These are the leading companies in the field of Electronics.

LEADING COMPANIES

1. **Philips**, originated in Eindhoven and headquartered in The Netherlands, has co-developed a full electronics supply chain in Brabant.
2. **VDL**, headquartered in Eindhoven, is a supplier of high quality components and complete mechatronic modules and systems.
3. **NXP** is a global semiconductor company creating solutions that enable secure connections for a smarter world.
4. **Thermo Fisher**, Thermo Fisher Scientific is the world leader in serving science. The mission is to enable customers to make the world healthier, cleaner and safer.
5. **BOSCH**, the Bosch Group is a leading global supplier of technology and services. Bosch offers innovative solutions for smart homes, Industry 4.0, and connected mobility.
6. **Neways** offer is clients custom-made solutions for the complete product life cycle of electronic components and control systems.
7. **Anteryon designs** and manufactures key optical components and assembles high tech modules and systems.
8. **Signify** (former Philips Lighting), global market leader in lighting, can be seen as one of the founders of the high-tech ecosystem in the Netherlands.

BRABANT IS BRIGHT

State-of-the-art facilities

High Tech Campus Eindhoven

Often recognized as the smartest square km in Europe, the **HTCE campus** is built around an ecosystem of 235 companies with a range of application fields. Home to over 12,000 innovators, researchers, engineers that create the technologies and business of tomorrow.

OBJECTIVES

High Tech Campus is Eindhoven, the smartest km^2 in Europe is an ecosystem of 235 high tech companies. It's home to more than 12,000 innovators, researchers and engineers. Each company at High Tech Campus Eindhoven shares a common goal: developing new technologies and applications that help solve social problems and challenges, and successfully bringing these to the market.

LEADING COMPANIES

- Multinationals such as Philips Healthcare, Teleledyne Dalsa, NXP and Intel
- Research institutes like the Holst Centre, Philips Research and Innovation lab
- Scale ups and startups like Usono, Lifesense Group, Bambibelt, GTX medical and Sirius Medical

KEY CHARACTERISTICS

- 42% of all patent applications in the NL come from the Campus
- >85 nationalities
- AI innovation Centre
- 12,500 Smart People
- Total 350,000 m^2
- 25,000 sqm R&D facilities
- 1 billion private R&D
- Top 7 incubator for start-ups

APPLICATION AREAS

HTCE is a global hotspot in the areas of Health & Vitality, Sustainability, Applied Intelligence, Smart Environments & Connectivity and Software & Platforms.

HIGH TECH CAMPUS EINDHOVEN

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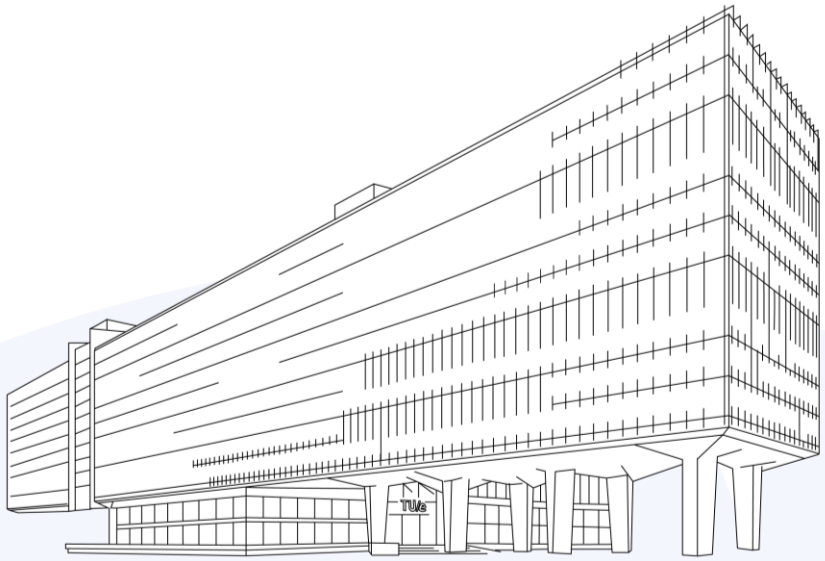
Key Research Institutes

Eindhoven University of Technology



Eindhoven University of Technology in numbers

SCIENTIFIC PUBLICATIONS
3,000

PHD-AWARDS
140

PATENTS EVERY YEAR
40

BACHELOR COLLEGE WITH
15 DIFFERENT MAJORS

MASTER PROGRAMS IN THE FIELDS OF:
- ARTIFICIAL INTELLIGENCE
- ENGINEERING & HEALTH
- HUMANS AND TECHNOLOGY
- SMART CITIES
- SMART MOBILITY
- SUSTAINABLE ENERGY

COLLABORATION

A spirit of collaboration is at the heart of the university community. Globally, the university stands out when it comes to collaborating with advanced industries, as it has done with Royal Philips since its inception. Academic education is driven by both fundamental and applied research. The TU/e Campus is in the centre of one of the most powerful technology hubs in the world, Brainport Eindhoven.

Its research institutes, the Eindhoven Artificial Intelligence Systems Institute (EAISI), the Eindhoven Institute for Renewable Energy Systems (EIRES), the Institute for Complex Molecular Systems (ICMS), and the Institute for Photonic Integration (IPI), combine the strengths of the university with industry needs and government strategy.

DEPARTMENT OF MECHANICAL ENGINEERING

Research Groep
- Control systems technology
- Dynamics and control
- Energy technology
- Polymer technology
- Power & flow

DEPARTMENT OF ELECTRICAL ENGINEERING

Research Groep
- Center for wireless technology Eindhoven (CWTE)
- Advanced network management and control
- Control systems
- Electromagnetics
- Electronic systems
- Photonic integration

TU/e EINDHOVEN UNIVERSITY OF TECHNOLOGY

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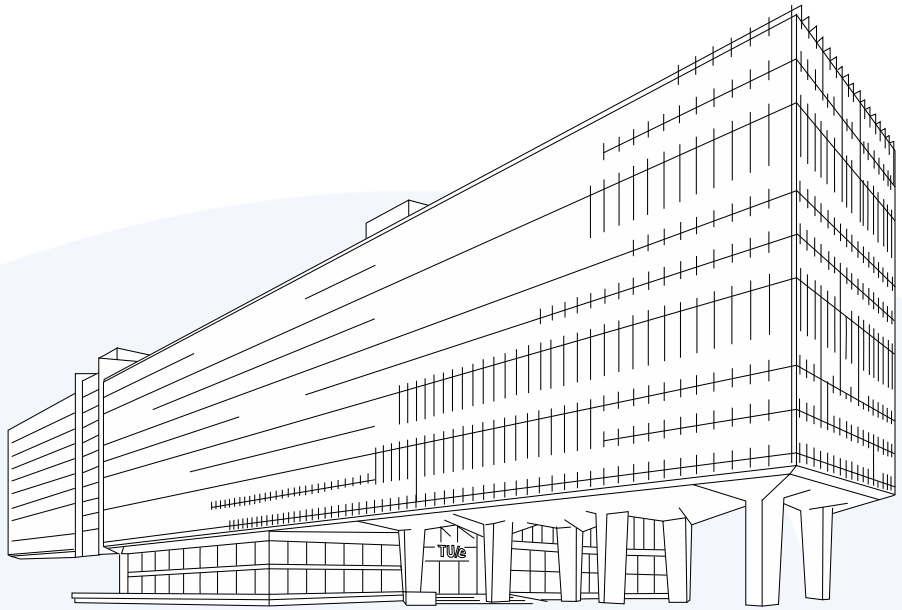
Key Research Institutes

Center of wireless technology

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).



EASI Institute

“EASI IS WORKING ON THE MOONSHOT PROJECT “HEALTHCARE ANYWHERE.” WITH GROUND-BREAKING PROJECTS LIKE ARTIFICIAL INTELLIGENCE FOR MEDICAL IMAGE REGISTRATION OR ASSISTING MEDICAL DECISION WITH EXPLAINABLE AI.”

OBJECTIVES

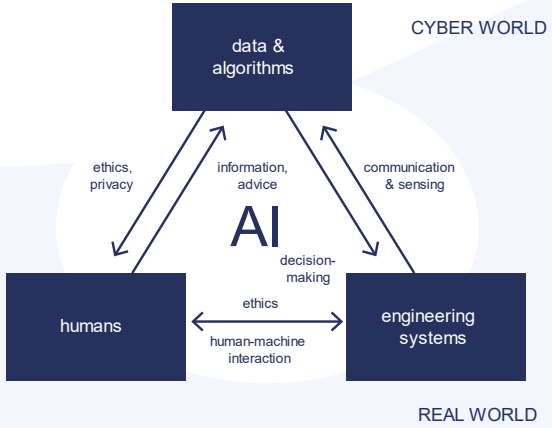
The Eindhoven AI Systems Institute combines all TU/e Artificial Intelligence activities. Top researchers from various research groups work together to create new and exciting AI methodologies and applications with a direct impact on the real world. TU/e has been active in the field of AI for many years, which gives the new institute an excellent starting position to build upon.

COLLABORATION WITH INDUSTRY

Building on the traditionally close ties of TU/e with industry, EAISI is partnering with several leading companies and organizations, both at a regional, national and European level. These include: ASML Philips Healthcare, NXP Brainport Eindhoven AI NL Coalition 4TU.Federation EuroTech.

KEY DOMAINS

An integrated system view of AI will be developed in this multidisciplinary institute, with key contributions from three key domains:



EAISI
EINDHOVEN AI SYSTEMS INSTITUTE

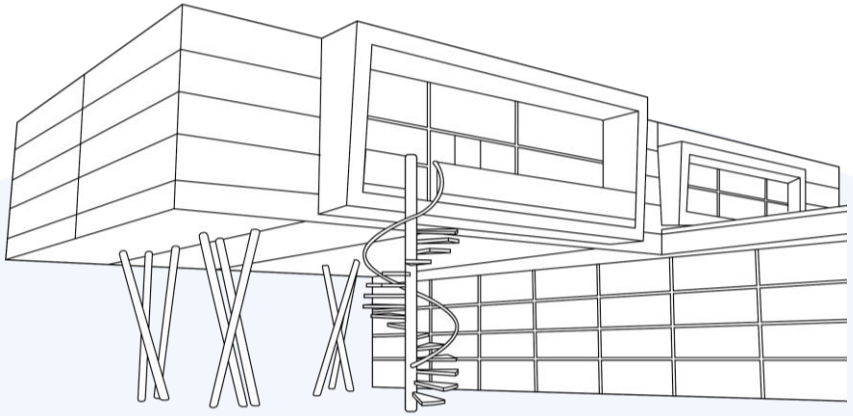
TU/e

BRABANT IS BRIGHT

Key Research Institutes

High Tech Systems Center

HTSC of Eindhoven University of Technology groups its research activities in the domain of complex high tech mechatronic systems into a one top level research center.



FUNDAMENTAL RESEARCH

At the TU/e High Tech Systems Center (HTSC), fundamental research and design around new concepts and prototypes takes place while focusing on the needs of the industry. Using systems design paradigms forms a central part of the program and challenges within HTSC.

FOUR DEPARTMENTS

By combining the expertise from four departments: Mechanical Engineering, Electrical Engineering, Mathematics and Computer Sciences and Applied Physics, the HTSC addresses the complexity problem of future high tech systems design in a multi-disciplinary way, with strong emphasis on System Engineering. The High Tech Systems Center performs fundamental research and design of new concepts and prototypes, and understands the needs of the industry.

FOCUS AREAS

The seven focus areas of HTSC are innovative and will continue to develop complex engineering: Robotics, Digital Engineering, Industrial Internet of Things, Scientific Instrumentation and Metrology, Optomechatronics, Artificial Intelligence and Contamination Control.

Currently HTCS had more than:

T-shaped engineers

150

Working on projects related to our center's focus

Of which PhD students

80%

And PFEng trainees

20%

HTSC HIGH TECH SYSTEMS CENTER TU/e

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Key Research Institutes

Fontys

OBJECTIVES

Fontys is one of the largest universities of applied sciences in the Netherlands and located in the most innovative region of our country and perhaps the whole of Europe. It is the most exciting possible place to be for anyone with an interest in technology, entrepreneurship and creativity. Students of more than 100 nationalities study at one of our campuses.

FOCUS AREAS

Fontys Centre of Expertise High Tech Systems and Materials (HTSM) connects higher education and the business community. Fontys carries out research and develops innovative technologies that improve both education and the business community. In addition, Fontys offers lifelong learning solutions to promote the mobility and flexibility of technical professionals.

DOMAINS

- Additive Manufacturing
- AI and Big Data
- Industrial Engineering and Entrepreneurship
- Distributed Sensor Systems
- Future Powertrain
- Health, Innovation and Technology
- High Tech Embedded Software
- Mechatronics and Robotics
- Serious Game Design
- Smart Manufacturing
- Virtual Reality

Fontys

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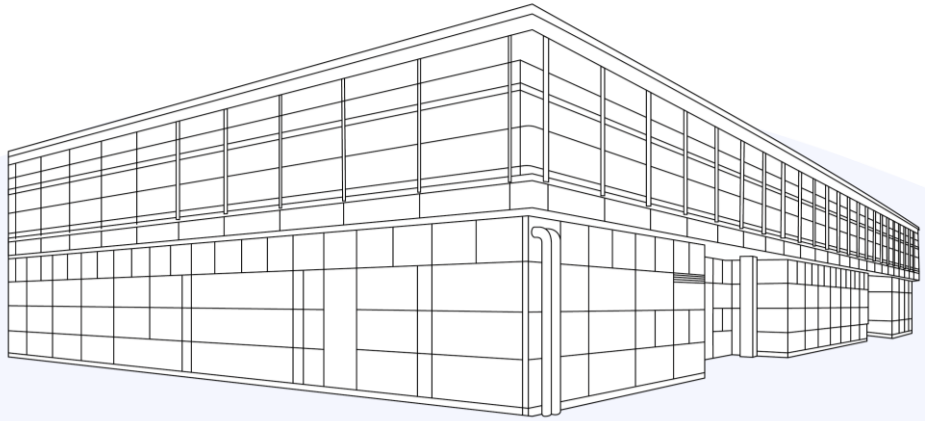
State-of-the-art facilities

PhotonDelta

PhotonDelta is an independent growth accelerator for the integrated photonics industry.



COLLABORATION

PhotonDelta has established a collaborative ecosystem of organisations that is able to design, develop and manufacture the next generation chip technology. It was created as a public private partnership to accelerate the emerging Dutch integrated photonics industry and was granted € 240 million to execute the national plan for photonics.

SUPPORT ACTIVITIES

PhotonDelta actively supports the ecosystem through a wide range of activities, including funding, coaching, and connecting them to industry. This is providing an environment that stimulates the creation of companies, products and applications that contribute to a better world.

PITC

PhotonDelta, TNO, Eindhoven University of Technology and University of Twente signed a cooperation agreement in 2021 for the new Photonic Integration Technology Center (PITC) in the Netherlands. This centre will speed up the commercialization of Integrated Photonics for applications such as autonomous mobility, healthcare, data & communications.

Ecosystem

COMPANIES
17

FTES
550

MILLION TURNOVER
60

MLN TOTAL INVESTMENTS
110

PhotonDelta
Gateway to Integrated Photonics

BRABANT IS BRIGHT

Showcase

Bambi Medical

WIRELESS MONITORING

Bambi Belt is a skin-friendly, wireless neonatal vital sign monitoring system. It accomplishes the same functions as wired adhesive electrode systems currently implemented in NICUs. A disposable belt functions by being wrapped around baby's chest. Sensors integrated inside Bambi Belt measure critical data in a nonintrusive way, while Bambi Bridge sends the captured data to Bambi Monitor.

BUSINESS IN BRABANT

Bambi Medical is located at the High Tech Campus in Eindhoven. The development of Bambi Medical took place in a collaborative model with important stakeholders like Holst Centre, the Province of Brabant and the Ministry of Economic Affairs and Climate.

"Our solution works either stand-alone or in combination with existing patent monitors within the hospital infrastructure. As a result, non sticky texture of the belt eliminates pain and stress of babies."

Bambi Medical