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# Advanced Medical Technology meet our community

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

**BRABANT**  
**IS BRIGHT**

Based on a history of over 100 years of Medtech innovation initiated by Philips, Brabant is an increasingly popular location for Medtech companies, especially imaging, diagnostics and monitoring. In Brabant you will find an 'Industry Based Ecosystem', where people know what it takes to get a product into the market. As proof Philips has recently been awarded as the most innovative health technology company according to Boston Consulting Group. Additionally, Brabant also has a flourishing ecosystem with the High Tech Campus Eindhoven, which is the smartest square kilometer of Europe.

**BRABANT  
IS BRIGHT**

# 100 years of Advanced Medtech innovation *initiated by* Philips

## HISTORY

Over the past 25 years, Philips laid the foundations for the Brainport Eindhoven region, a top technology region that is renowned for its open innovation, co-creation, and unique collaboration between companies, knowledge institutes, and government.

## TODAY

And today, healthcare is Philips' core business. In Brabant, the company runs a large Imaging Campus in Best and multiple labs and research departments on the High Tech Campus in Eindhoven (HTCE), the center for technology-enabled innovation in the Netherlands. In Best, Philips employs some 3,500 people, and in Eindhoven close to 2,000 Philips specialists work on healthcare technologies and treatments.

## TOMORROW

With this great foundation of Philips, Brabant is arguably one of the smartest high tech regions in all of Europe. World-beating OEM companies such as Philips, ASML and FEI (now part of Thermo Fisher Scientific) have gathered their suppliers and knowledge institutes (such as TU/e, Eindhoven University of Technology and the Holst Centre) around them to create a tightknit and highly flexible industry cluster which makes Brabant one of the most advanced Medtech clusters of the world.

2000



# Why Brabant excels in Advanced Medical Technology?

## INDUSTRY BASED ECOSYSTEM



All the elements for a strong cluster of Medical Imaging companies in Brainport Eindhoven are present. Because of our **Industry Based Ecosystem**, we know what it takes to get a product into the market.

## HIGHLY SPECIALIZED CAMPUS



**Highly innovative campuses** such as High Tech Campus Eindhoven, TU/e campus, BIC, Maxima MC contribute to a unique ecosystem. They are home to innovators, researchers, and engineers that create the technologies and businesses of tomorrow.

## ADAPTIVE COLLABORATIVE CULTURE



**The people** in Brabant have an adaptive and collaborative culture. People are used to change and are working in an international environment.

## PHILIPS MEDTECH CLUSTER AND FULL LS&H SUPPLY CHAIN



Eindhoven is the home of **Philips Healthcare** and, over the space of 125 years, a perfectly woven network of knowledge institutes (TU/e, Holst Centre), 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 Advanced Medical Technology.*



Nijmegen



Veldhoven

Eindhoven



### WORLD CLASS RESEARCH

1. **Eindhoven University of Technology (TU/e)** is a research university specializing in engineering science & technology.
2. **EIASI Institute - TU/e (Eindhoven)** is an AI community at TU/e. EIASI 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 Medical Imaging and Radiation Therapy programs. Fontys also has a Platform to Innovate, Test & Connect in Health (PITCH), where students and teachers work together to improve the technologies of Medtech companies collaborating with the platform.
4. **Holst Centre (Eindhoven)** is an independent R&D centre at the forefront of developments in personal health and biomedical sensing technologies.
5. **High Tech Systems Center (HTSC)** conducts fundamental research and design around new concepts and prototypes in the field of High-tech and mechatronic systems, while focusing on the needs of the industry. Several MedTech companies are part of this cluster.
6. **Maxima Medical Center (Veldhoven)** is the largest healthcare provider in the Eindhoven region, serving the local and international community through two campuses. MMC collaborates with startups focused on high tech and innovation.
7. **Radboud University (Nijmegen)** is active in almost all scientific fields and has a Department of Radiology and Nuclear Medicine.



**BRABANT  
IS BRIGHT**

# Our Ecosystem

## Leading companies

*Brabant accounts for 920 LS&H companies and 23.5% of all jobs of the total LS&H sector in the Netherlands. These are the leading companies in the field of Advanced Medical Technology.*

 **DEMCON**

Best

Eindhoven

**PHILIPS**

**ThermoFisher**  
SCIENTIFIC

 **PRECEYES**

**microsure**   
robot assisted microsurgery

**VDL** 



### LEADING COMPANIES

1. **Philips**, originated in Eindhoven and headquartered in The Netherlands, is a world leader in diagnostic imaging, image-guided therapy, patient monitoring and health informatics, with its healthcare/medical systems division located in Brabant.
2. **Thermo Fisher Scientific**, formerly **FEI** located in Eindhoven, is a worldwide operating group that develops a large number of types of electron microscopes.
3. **Preceyes** is a medical robotics company with a CE-marked product for the treatment of patients requiring vitreoretinal surgery.
4. **Microsure**, located in Eindhoven focusses on improving their patient's lives through developing robot systems for microsurgery.
5. **VDL**, headquartered in Eindhoven is a partner for the well-known suppliers of medical equipment. They supply high quality components and complete mechatronic modules and systems.
6. **Demcon** in Best develops solutions for improved and more efficient healthcare with innovative systems and products.

# 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**.



### KEY FIGURES

- Over 35 companies
- 2,000 high level staff
- 1,500 students
- Surface 105,000 m<sup>2</sup>
- 6,000 m<sup>2</sup> of shared facilities
- 6,000 m<sup>2</sup> of shared warehousing



### 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.

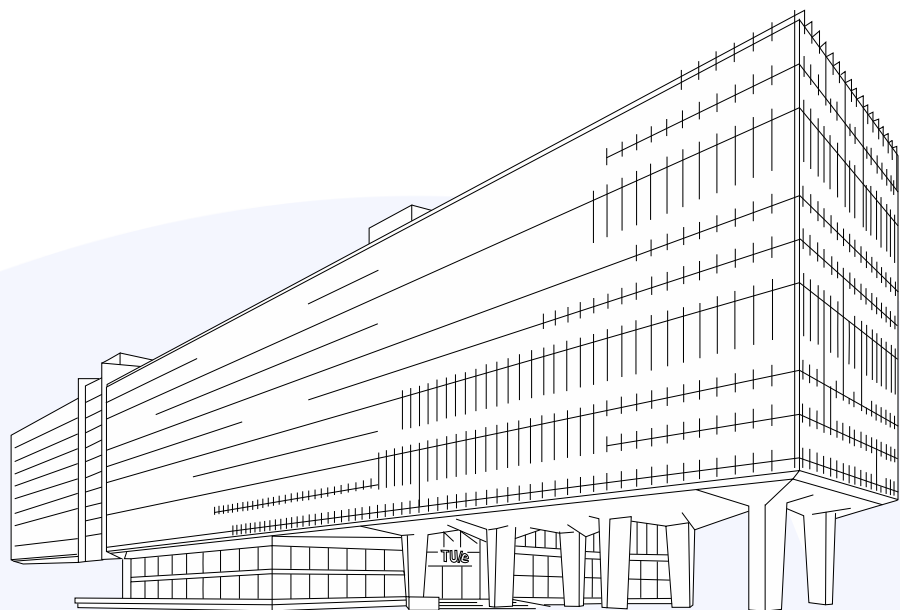


### COOPERATION

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.



**Brainport Industries  
Campus**



### 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.”

# Key Research Institute at TU/e

## EASI 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. 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.



### HEALTH APPLICATIONS

- Improved and explainable diagnostics capabilities,
- Personalized and wearable health systems with monitoring, health risk detection, and adaptation capabilities,
- Causal and systemic understanding of individual states of health,
- Preventive health management,
- Process optimization in health care systems.



### COLLABORATION WITH INDUSTRY

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

# Showcase: Philips set to treat lung cancer

Philips in Eindhoven has designed a new way to treat lung cancer. Using advanced X-ray equipment, the Dutch company believes that doctors can detect smaller tumors in the lungs at a relatively early stage. Moreover, treatment can immediately take place during the diagnosis.



New X-ray equipment  
can detect smaller  
cancer tumors in the  
lungs at an earlier  
stage.



Tumors can be frozen  
or burned as they are  
diagnosed.



Philips is experimenting  
with new technology in  
20 different hospitals.



**PHILIPS**



# 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.



### HEALTH APPLICATIONS

Medical imaging in radio diagnostics, radiotherapy, ultrasound and nuclear medicine. At Fontys students learn how to use the equipment, communicate medical and technical results and findings and to plan treatments.



### KEY CHARACTERISTICS

The MIRT programme at Fontys University of Applied Sciences will prepare students for the profession of medical imaging and radiotherapy expert (diagnostic and therapeutic radiographer). The (English) bachelor programme Medical Imaging and Radiation Therapy (MIRT HBO applied science) is a four-year (full time study) programme. In these four years students will use medical equipment to prepare, execute and process visual imaging research and treatment. Students will be trained to be the professional link between technology, safety and patient care.



# Key Research Institutes

## University of Technology Eindhoven



### OBJECTIVES

Health has been a key focus at TU/e for many years. In fact, TU/e was the first Dutch university to offer a bachelor's degree in Biomedical Engineering. Health is now one of TU/e's three strategic areas, positioning the university as a leader in this field. Technology with a human face.



### FOCUS AREAS

Two of TU/e health department's focus areas are in advanced medical technologies, including:

#### **Engineering health robotics**

The robotics research group, part of the faculty of Mechanical Engineering, focuses on both healthcare and surgical robotics. In surgery, robotics technology is related to creating assistive devices that enable new surgical procedures. Healthcare technology is aimed towards enabling sustained

independent living for elderly people or people with physical impairments at home.

#### **Medical imaging and monitoring**

Imaging plays a crucial role in current healthcare practice. It is used in screening to detect diseases early, in making accurate diagnoses, in monitoring patients, and in planning and guiding treatments. Screening of large populations benefits enormously from computer-aided image analysis, providing automatic triage of patients and second opinions. Imaging is also essential in diagnosis and prognosis; in determining the specific type of disease, its causes, progress and the outlook for the patient. Based on these outcomes, the most appropriate treatment can be selected for an individual patient.





### Holst Centre in numbers

EMPLOYEES

**180**

NATIONALITIES

**28**

PROJECTS SERVING  
INDUSTRIAL PARTNERS

**40**

“A KEY FEATURE OF THE HOLST CENTRE IS ITS PARTNERSHIP MODEL WITH INDUSTRY AND ACADEMIA, BASED ON ROADMAPS AND PROGRAMMES. IT IS THIS KIND OF CROSS-FERTILIZATION THAT ENABLES THE HOLST CENTRE TO BALANCE ITS SCIENTIFIC STRATEGY WITH INDUSTRIAL NEEDS.”

# Key Research Institutes

## Holst Centre

The **Holst Centre** is an independent R&D centre that develops technologies for wireless autonomous sensor technologies and flexible electronics, in an open innovation setting and in dedicated research processes.



### OBJECTIVES

Holst Centre wants to transform healthcare. We want to make health management a natural and unobtrusive part of life. A focus for us is innovative patient monitoring solutions that fit into everyday life. We develop technologies and applications that unobtrusively deliver medical-grade data in any setting.



### KEY CHARACTERISTICS

High-quality medical imaging is the cornerstone of diagnostics and an increasing suit of image-guided therapies. Using thin-film technologies, we are opening up new possibilities for various medical imaging modalities by offering detection over larger areas. For example, our flexible X-ray detectors are lighter and more robust than traditional glass-based detectors, making X-ray systems more portable. The detectors can also be curved, enabling more compact systems.



### HEALTH APPLICATIONS

- Medical imaging
- Health patches
- Non-contact sensing
- Smart Clothing

# Showcase

## Medical Robotics



### VALUE

Surgical robots, exoskeletons, care robots and medicine robots can lend a hand in healthcare. Universities, MedTech companies and startups are all working on the further development of these machines. The market value of robotics in Brabant is rapidly increasing.



### CLOSE COOPERATION

The region is perfectly capable of giving promising startups their first push. BOM can play an important role in assisting these businesses. For example, when technology needs to be validated and a first prototype is built, BOM can reach out to their partners at the High Tech Campus Eindhoven for further business development and creating a collaborative environment.



### BRABANT BUSINESS

Four notable robotic healthcare businesses, all of whom are on the brink of a market breakthrough: SARA Robotics, Preceyes, ReMediZ and Microsure.



*“Within 10 years there should be at least 1,000 new jobs in surgical robot technology in and around Brabant.”*

**MAARTEN STEINBUCH**

Distinguished University Professor  
in Systems and Control



# Showcase

## Additive Manufacturing Cluster



### VALUE

The world is changing from 2D to 3D. Researchers expect the additive manufacturing market to grow exponentially to \$36.61 billion by 2027. At Brainport Eindhoven, 75 companies collaborate with a budget of €175 million on new AM projects.



### CLOSE COOPERATION

In Brainport Eindhoven, High tech OEMs, manufacturers of additive manufacturing equipment and suppliers form a rich ecosystem. The region is well known for working together on small series in a multidisciplinary open supply chain. Additionally, in technology and networks are clustered on campuses in order to create economic value and facilitate business development.



### BRABANT BUSINESS

For AM equipment manufacturers, it is important to react quickly to market and technology developments. In Brabant, specific knowledge is shared to both AM equipment makers and manufacturers to build a collaborative ecosystem. Companies such as: ASML, Fujifilm and Frenken Europe & Sioux.



*“In Brainport Eindhoven  
high tech OEM, manufacturers of  
additive manufacturing equipment  
and suppliers form  
a rich ecosystem”*

**RUBBEN FOKKEMA**  
Brainport Eindhoven

# Showcase

## e/Mtic



### VALUE

The Eindhoven MedTech Innovation Center (e/Mtic) enables a fast track to high-tech health innovations and counts for over 40 success stories.



### CLOSE COOPERATION

Bringing technical innovations all the way from an early research to commercialization can often take a long time. In healthcare innovation, in particular, this lost time can equate to lost lives. e/Mtic creates and expands an ecosystem that significantly increases the speed of high-tech health innovation together with the Brainport region.



### BRABANT BUSINESS

e/Mtic is a large-scale research collaboration in the domains of cardiovascular medicine, perinatal medicine and sleep medicine. The partnership has evolved over several decades, and has created a strong scientific and valorization track record, with parties such as: Royal Philips Eindhoven, Maxima Medical Center and 3D Needle.



*“The region offers excellent testing opportunities. The entire ‘health continuum’ – the spectrum from prevention and vitality, to treatment and care – is covered by living labs.”*

**CARMEN VAN VILSTEREN**  
Managing Director of research institute TU/e