

Company Brochure



INTERNATIONAL RESEARCH PROJECT 2025



INTRODUCTION

The foundation Stichting Study Tour Industria (SSTI) annually organizes the International Research Project (IRP). The International Research Project consists of two parts: the research projects and the study tour. The research projects will be conducted prior to the study tour at companies in the Netherlands. After finishing these projects, the study tour takes place. The study tour is organized around a predetermined theme. During the tour, companies and universities in the countries of destination will be visited.

The International Research Project is an initiative of students of the department of Industrial Engineering & Innovation Sciences at Eindhoven University of Technology. Students of the Master programs Operations Management and Logistics, Innovation Management, Data Science and Entrepreneurship, and Data Science and Artificial Intelligence are allowed to participate. The participants will conduct the mentioned research projects. For the participants, the International Research Project is a great opportunity to apply their academic knowledge within an international business setting. Furthermore, IRP provides students with the opportunity to gain in-depth knowledge about a subject of research that suits their interests and education.

This brochure provides information for companies that are interested in the International Research Project. The participation options are elaborated, and the capabilities of the students involved are described. Contact details are listed at the end of this brochure.

In this brochure, we aim to provide a clear overview of the setup and scope of the International Research Project. Together with all the students involved, we are looking forward to welcoming your company as a participant in the International Research Project 2025, and we hope for a pleasant and educational cooperation.

On behalf of the SSTI,

Bertus de Liefde
Coordinator Contract Research
International Research Project 2025

A WORD BY RECTOR MAGNIFICUS



“This innovative SSTI study tour is a perfect example of how our students expand their technical, geographical and cultural horizons, and work on concrete solutions in a business environment”

Just before his death in 2023, Nobel laureate Henry Kissinger published a book on Artificial Intelligence and what it means for humans. He wrote: 'In our time, new technology has been developed, but a guiding philosophy is still needed.'

AI is a fantastic tool, but people will always be needed, not only for guidance but also for the human factor. Our students bring that human factor. They fit perfectly into the era where automation and humanity meet.

These students got something I feel is characteristic for their generation. These young people actually want change by fighting for a better world, with or without AI. Our students don't want to put their energy in the issues of the day but focus on the value of the day. And that's how we at TU Eindhoven create value for the future.

I am convinced that our students can play an important role in the changing times ahead of us. Not only that, our students can also bring fresh ideas into your organisation because most of our students are strong individuals and good team players. We educate them with excellent in-depth knowledge and challenge based learning.

This year again I fully endorse this International Research Project of Industria, the Study Association for Industrial Engineers. Their Challenge Based approach is perfectly aligned with our own approach, and will greatly benefit participating and sponsoring industries.

I wish all the participants good fortune and many new insights in their study tour through Japan and Taiwan.

Prof. dr. Silvia Lenaerts
Rector Magnificus
Eindhoven University of Technology

THEME

The Impact of Automation on Strategic Decision Making



In today's rapidly evolving business environment, the automation of strategic decision-making has emerged as a crucial driver of success. Companies across industries are increasingly relying on technologies like artificial intelligence, machine learning, and big data analytics to enhance the quality and speed of their decisions. This transformation is not just a technological upgrade but a strategic necessity for staying competitive in the global market.

▶ **Enhanced Decision Accuracy**

Automation provides the ability to process vast amounts of data with precision, leading to decisions that are both faster and more accurate. This data-driven approach minimizes human error and allows companies to make decisions based on real-time insights, aligning closely with market demands.

▶ **Proactive Risk Management**

In a world where uncertainty is the only constant, automated decision-making tools help businesses anticipate potential risks and develop strategies to mitigate them. This proactive approach reduces the chances of unforeseen disruptions and ensures long-term stability.

▶ **Operational Efficiency and Agility**

The integration of automation in strategic processes enables companies to reduce costs and respond swiftly to market changes. This agility is essential in today's competitive landscape, where the ability to adapt quickly can determine success or failure.

▶ **Relevance in the Current Professional Climate**

The relevance of automation in strategic decision-making cannot be overstated. In a business world where speed, accuracy, and foresight are paramount, companies that leverage these technologies gain a significant edge over their competitors. Automation not only enhances decision-making capabilities but also frees up valuable human resources to focus on innovation and growth.

As industries continue to embrace digital transformation, the automation of strategic decisions will play an even more critical role in shaping the future of business. Companies that recognize and invest in this trend will be better positioned to navigate the complexities of the modern market and achieve sustained success.

“In the era of digital transformation, automated strategic decision-making is the essential for a company's ability to thrive in a fast-paced world”

Automation in the industry

Automation in the industry is transforming the landscape of manufacturing in Japan and Taiwan. Both nations lead the way in adopting advanced technologies, enhancing efficiency and precision. Robotics, AI, and smart systems streamline production processes, reduce costs, and improve product quality. Japan, renowned for its cutting-edge robotics, and Taiwan, a powerhouse in semiconductor manufacturing, are setting benchmarks for automation integration. As these industries evolve, companies are seeking innovative solutions to stay competitive. Embracing automation not only boosts productivity but also creates new opportunities for skilled talent to contribute to a dynamic and technologically advanced workforce.



DESTINATION

TOKYO - KYOTO - OSAKA - TAIPEI

INTERNATIONAL RESEARCH PROJECT 2024

This year, the International Research Project will head to Japan and Taiwan. The journey will commence in the capital of Japan, Tokyo. Thereafter, the trip will head to the cultural and historical hotspot Kyoto. After visiting Kyoto, we will take a beautiful trip to our next stop, Osaka. Lastly, after staying in Japan for two weeks, we will be flying to our final destination: Taipei.

During this study tour, we will visit several companies that have a connection to the theme 'The impact of automation of strategic decision making'. Furthermore, to get a more diverse impression of the local culture, we also intend to visit a number of universities and consulates.

The goal of the study tour is to observe and explore how the 'Impact of automation of strategic decision making' evolves in these destinations. Each city is chosen based on its fascinating culture and interesting economy, companies, and universities. The diverse nature of its activities (economy and culture) is what makes this study tour an enjoyable and educative journey.



PARTICIPATION

▶ The research projects are work assignments that will be executed by our participating students. The assignments will have a business-related framework and are carried out at companies in the Netherlands. It is not a requirement for the projects to be acquainted with the theme. With the help of these research projects, the International Research Project 2025 will be financed.

▶ Research projects can be carried out between December 2024 and June 2025. The students will work several hours a week on the project (the exact amount of time will be agreed upon later). When the project is too large for one student, it is possible to have more students working on one project. Each student is available for 100 hours per project, and the costs are €3,500,- per student.



ADVANTAGES OF RESEARCH BY THE IRP

The top 5 reasons why your company should participate with a research assignment for the International Research Project 2025 are as follows:

- ▶ 100 Hours of research conducted by IE students and supervised by experienced researchers of the department of Industrial Engineering & Innovation Sciences at Eindhoven University of Technology.
- ▶ A research project with one (or more) of our students is a good opportunity to gather fresh perspectives on a challenging business topic and offers useful practical implications.
- ▶ An invitation for a networking event about several topics related to the theme. All participating companies and students will be invited (note: all participating students are selected based on study results and motivation, and belong to the best Industrial Engineering students).
- ▶ IRP can enhance your company's reputation as a socially responsible and innovative organization and offers a good opportunity for identification of talent that can strengthen your company in the future.
- ▶ Excellent company exposure opportunities on the website of Industria and social media.

RESEARCH EXAMPLES



Some research examples students can do within a timeframe of 100 hours:

Business network analysis

- ▶ The complexity of the network of relationships in which the firm is embedded can be brought to the surface.

Benchmark analysis

- ▶ Comparison of the application of the intelligent automation concept to other companies.

Market research

- ▶ Investigation regarding the value of customer needs for your company.

Process improvement

- ▶ Identification of process improvement opportunities by conducting a scan of the process (e.g. identification of non-value adding activities).

Riskmanagement

- ▶ Identification of the risks in your business environment.

Of course any other ideas for research projects within the Industrial Engineering landscape are welcome as well. Companies that recently have been involved in the IRP include for example Philips, Maastricht UMC, NS, Vanderlande and VodafoneZiggo. On the next page, some research examples are given.

In the past years, students who participated in the International Research Project did various research projects. Some research examples are shown below. Company names have not been listed due to privacy concerns.

▶ One company in the high-tech industry experienced troubles with their sales and operations tool, as employees have to write a report every month. The assignment was to design a tool that automatically checked and processed files. The monthly report can then be generated automatically.

▶ A chemical company had a need for a consistent sourcing model for plant maintenance stops ('turnarounds'). Their production plants are divers, as well as their requirements for outsourced services during, after, and in preparation for these stops. The assignment was to define the substantially different maintenance stop types. Secondly, the student developed a purchasing price model per maintenance stop type.

▶ A transportation company observed the information demand from its customers is increasing rapidly. At this moment the company is automating its information supply, in order to supply information to its clients more accurately and rapidly, like locations of trucks and expected delivery.

times. The assignment started with a literature study to examine how other transportation companies inform their clients and how this information is useful internally. Furthermore, the company liked to develop a unique selling point in a few years and work more efficiently using their own data.

▶ A medical institute uses SAP system to store all kinds of parameters, like number of surgeries and average waiting times of clients. However, doctors find it difficult to extract these parameters from the system. The assignment was to discuss with different stakeholders and built a dashboard in Excel, which indicates the required parameters and is easy to use for all stakeholders.

▶ A logistics company offers its on site managers different kinds of (informative) tools such as performance dialogue boards, software, and reports. The company wanted to gain insights into how the managers experienced these tools: are the tools easily accesible and do they know how to use them? Do they think the tools are useful? Are certain services missing? The assignment was to identify all available tools, create a survey and conduct interviews with the managers and report on the findings in an organized document.

CAPABILITIES

The students involved in this project are students of the Master's programs 'Operations Management and Logistics', 'Innovation Management', 'Data Science and AI' or last year students of the Bachelor Industrial Engineering. All students have knowledge in Industrial Engineering but also capabilities specific to their Master's program and/or graduation projects. These capabilities will be discussed on the next page.

The majority of the selected students have completed or are completing their Bachelor in Industrial Engineering at Eindhoven University of Technology. Topics that the students covered during their Bachelor's program include: accounting, goods flow management, human performance management, stock control, organization science, and information systems. The students of Industrial Engineering are focused on making improvements in companies and are ready to apply the methods and tools they have learned during their courses. The study program at Eindhoven University of Technology regularly involves group assignments. These group assignments enable students to train their analytical, social, presentation and cooperation skills.



INDUSTRIAL ENGINEERING

The Technical University of Eindhoven offers a cutting-edge study program in Industrial Engineering, designed to shape the future of manufacturing and business operations. This program combines technical and managerial skills, equipping students to optimize processes, reduce costs, and enhance overall efficiency within various industries. With a strong emphasis on innovation and sustainability, students learn to integrate advanced technologies and data-driven decision-making into their problem-solving approaches. Eindhoven's program fosters a collaborative learning environment, and its strong ties to industry ensure real-world relevance. Graduates are well-prepared to lead in a world increasingly shaped by automation, digitalization, and the pursuit of operational excellence.

OPERATIONS MANAGEMENT AND LOGISTICS

Operations Management & Logistics is a multidisciplinary field that covers disciplines such as supply chain management, manufacturing systems, information systems, business process management, human performance management, health care engineering, transportation, reliability engineering, maintenance, and operational finance. The program trains students in quantitative analyses. In all courses, the theory is related to existing research, and students are shown how to apply theory in practice. For example, an alternative design of a control concept for a supply chain or a workflow process in an insurance company are investigated. They also learn how efficiency improvement or cost reduction can be obtained by advanced concepts.

INNOVATION MANAGEMENT

Innovation Management studies the management of innovation processes and develops theories, tools, and techniques to make businesses more innovative. Key aspects of this discipline are knowledge management, strategic alliances, entrepreneurship, new product development, supplier partnerships, marketing management, quality management, and technology management. Students learn how to use the knowledge that they gain in carrying out research into innovation management and in industrial applications. They also learn how to analyze the current innovative performance of a company, explain it in terms of quality, cost, and time, and improve this performance by re-engineering innovation processes.

DATA SCIENCE AND ARTIFICIAL INTELLIGENCE

DS&AI is the only engineering program in the Netherlands in which advanced techniques and methods from the fields of data science and artificial intelligence are combined. Students find unique specializations in process mining (the fastest growing analytics field led by our world-leading research group), visualization and visual analytics, and knowledge management and data integration. This degree is completed in the heart of the fast-growing, high-tech Brainport region. DS&AI students develop end-to-end technical abilities, combining and developing data-driven approaches and learning methods in a rapidly evolving field.

BOARD OF RECOMMENDATION

The IRP is supported by the following people:



Prof. dr. Silvia Lenaerts
Rector Magnificus
Eindhoven University of Technology



Dr. IseI Grau Garcia
Assistant professor at Information Systems Group
Eindhoven University of Technology



Prof. dr. Ton de Kok
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Paul van Nunen
Director of Brainport Eindhoven
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Erik van Wunnik
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ORGANIZATION

The following executive committee is responsible for the organization of the IRP 2025:



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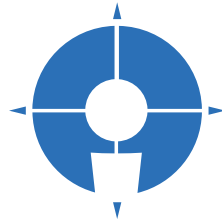


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