SCOPE

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Magazine of Study Association Industria & Alumnia, Alumni association of Industrial Engineering

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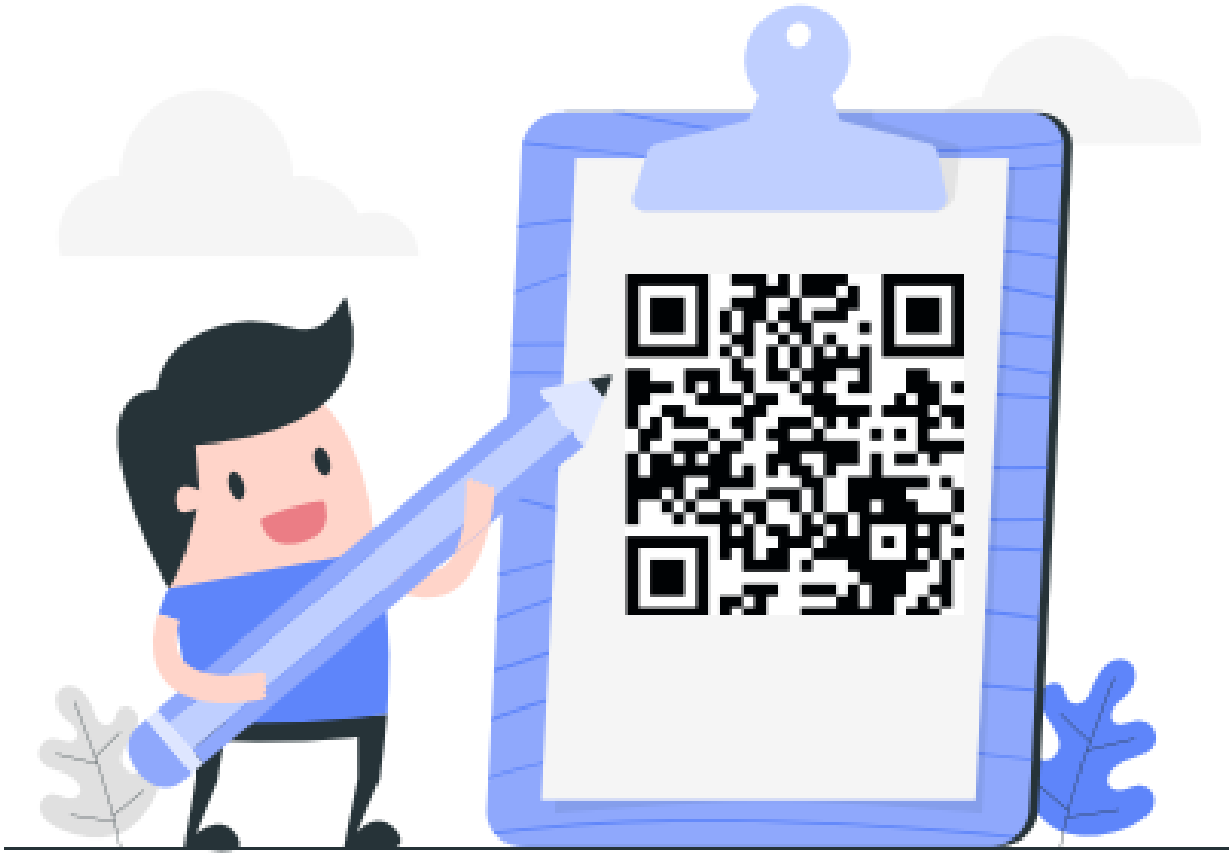

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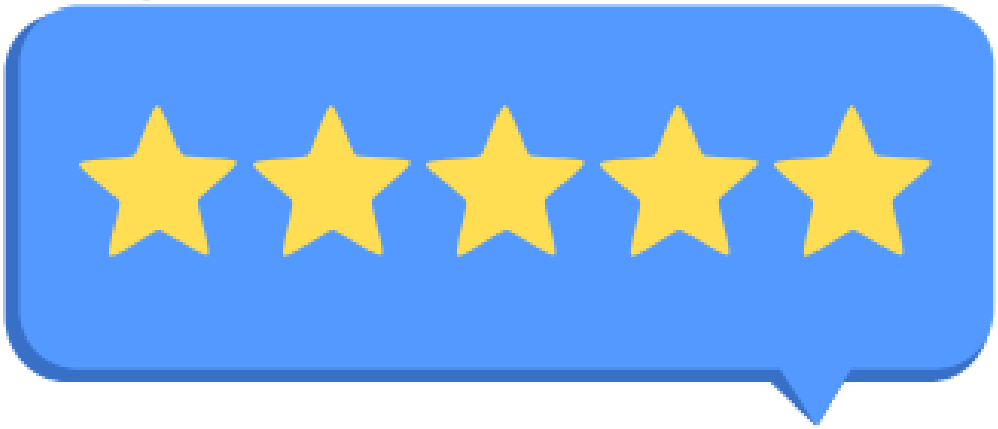

Colophon

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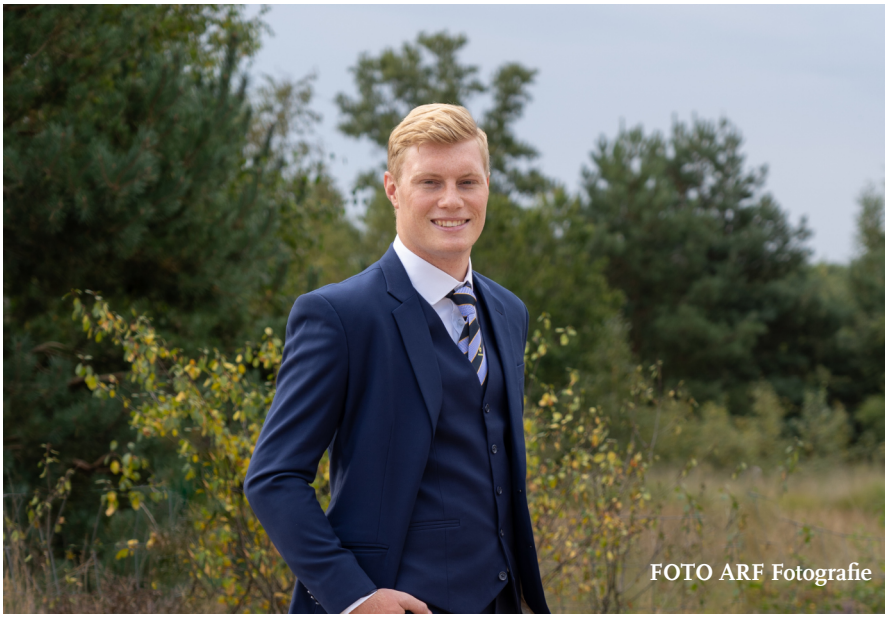


FOTO ARF Fotografie

Find your thriving future

Dear reader,

After Industrial Engineering, we have close to an infinite amount of job opportunities in a wide field of interest (as you will read later in this edition). Companies offer many traineeships, starter jobs and other opportunities for you to find the right fit for your future. However, how do you find that perfect job? This edition of SCOPE will tell you what various companies offer you as an Industrial Engineer, and what your thriving future might potentially look like.

This edition contains various articles about the future as an Industrial Engineer. Sara Casado Rodriguez interviewed Bas Gielen from Foot Locker about the opportunities in various positions at their company. Bauke Wijnands interviewed the CEO Lorenzo Engelen of Nimbus, where he found his first job as an Industrial Engineer. Fleur Machielsen talked to Frank Kuitems of Atos about their digital future, while Marijn spoke with Michael de Graaf to discuss their standpoints on sustainability and what working at the company would look like. Nynke Theunissen finally investigates the widest possibilities for an Industrial Engineer to start in.

Furthermore, Eva Henckens and Rebecca Soons respectively talk about their time studying abroad in Berlin and Taipei. C.I.T.I. gives a recap on their most recent travel to Romanian capital Bucharest. To show the entrepeneurial side of Industrial Engineers, Maiky Geerman spoke to Job van Beek about his start-up Piplab, while spotlight highlights Jeroen Sassen and his start-up Heimdall Sensor Intelligence. Farah Schepens, Rosan Kolff and chairman of Alumnia Tom Koks end this edition with columns and the alumnia board update.

To get you ready for this edition, a poem full of inspiration:

'Celebrate the heroes of change,
And the difference they make every day.
For without their efforts, we would have stayed,
In the past, without progress, without a way'

Enjoy reading this edition of the SCOPE,

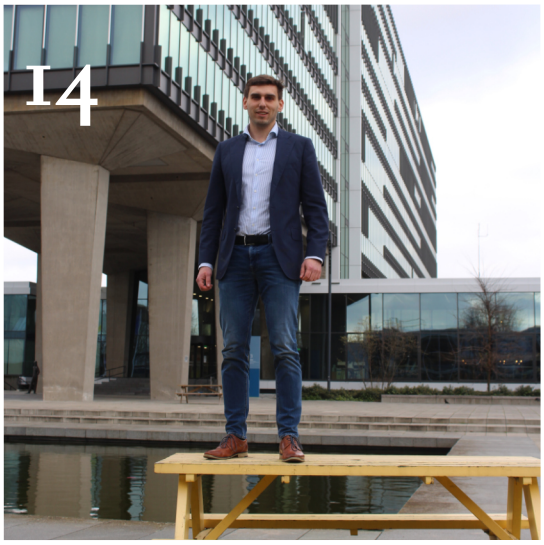
Marijn Konings
Chief editor SCOPE

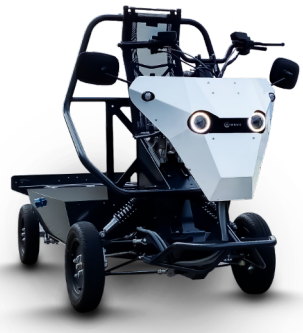
Preface

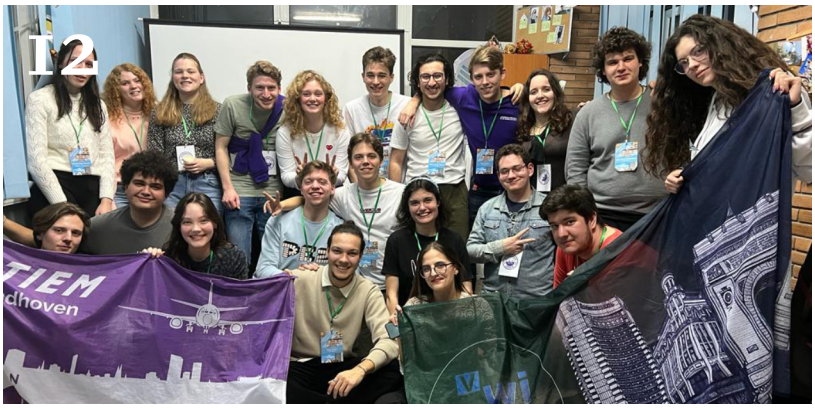
A Thriving Future

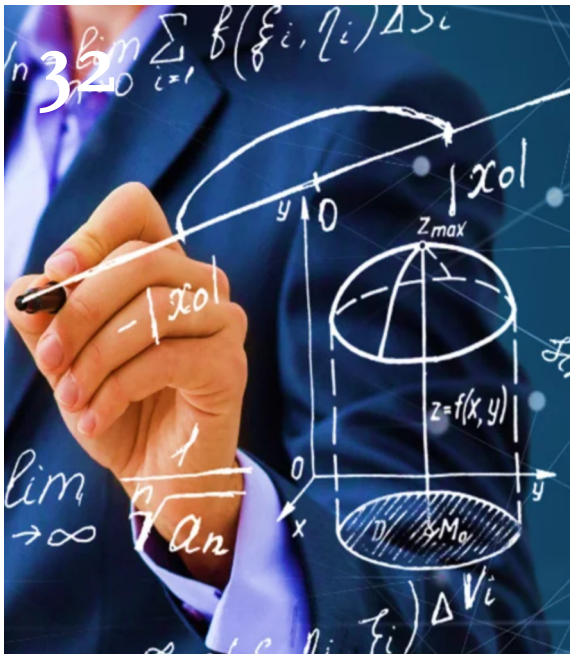
International

Other









As addressed in the last edition of SCOPE, sustainability is the newest addition to optimization. The world needs to become more sustainable, and business has the upper hand in making sure this happens. One company that tries to do this is Dow Inc. Marijn spoke with Michael de Graaf, Jens Witlox and Sophie Thijssen about their company, their efforts for sustainability and your opportunities as an Industrial Engineer at Dow.

TEXT Marijn Konings **DESIGN** Marijn Konings

Industrial Engineering at Dow

Dow started off as a small chemical company founded in 1897 by Herbert Henry Dow. The business has since then grown to be the third-largest material-sciences company in the world, thriving in material sciences. Dow is a business-to-business company, meaning that most of the products produced end up in the products produced by other companies. Dow produces for various different markets, such as food packaging, materials for paint and coatings, car batteries, cleaning products, with a total of over 10.000 different products. The manufacturer wants to make the world a better place with the products it creates, not only through innovation, but also through a sustainable mindset.

Dow as a sustainable company

Dow operates its company through 4 'pillars'; Innovativeness, customer centricity, inclusivity and sustainability. Jens Witlox mentions the importance of these pillars. 'First of all, we have various segments with our customers, and we always want to get the highest customer experience possible. It is one of our main KPIs.' This mindset sets the tone for production and fill rates, and in these challenging environments the innovativeness of Dow comes to the surface. 'We are a business that works in challenging environment, and as a cyclical company, adjustments to production rates and other factors have to be made. The cyclicity of Dow is one way in which they show their focus on sustainability, as well as through the use of the 4 R's. Michael: 'We make sure that our products are not single use products using the 4 R's; Reduce, Reuse, Recycle and Recover'. Reduce is all about reducing the amount of material used in a single products, such as reducing the number of layers a bag of crisps required from 12 to ultimately 1. Reusing is what the word says; reuse the stuff that we use in other products. Recycling has two components; mechanical recycling as well as advanced recycling. According to Michael, 'the latter adds a third stream of material to the production line which is recycled waste being put back into the front of the chain'. If there is really nothing else that can be done, at least make sure we get something out of it, which could be heat.

Dow is also focusing greatly on reducing the amount of CO_2 they emit. One example Michael mentions is light-weighting. 'Light-weighting means that the amount of fuel required for transport is reduced. Take a bottle of Coca Cola in glass, and one in plastic, same volume. Since the glass one is heavier, the truck required for transport, requiring more fuel and thus more emission of CO_2 into the air.' Not only

their products, but also the means of transport are light-weighted. ‘If metal parts in any vehicle can be replaced by alternatives’, mentions Michael, ‘the lighter-weight vehicle consumes less fuel too and is therefore greener’. Other impressive projects around minimizing emissions are the plans to build the first net-neutral-CO_2 plant in Canada, as well as the plans to eliminate all the CO_2 emissions at their second-largest production plant in Terneuzen. Michael: ‘this will never happen overnight, there is a lot of research to be done, but we feel it is achievable to, by 2050, reduce the emissions to a maximum of 5%, while the ultimate goal is 0%.

Why is Dow so passionate about sustainability? Michael mentions the importance of it to the business, as companies will die if sustainability is not an issue, but also mentions the awareness of it within the entire company. Michael: ‘Especially with our new CEO, there is a true passion to work on sustainability. In the end, we never want to leave the world as a worse place for ours kids than it is today, and it is therefore really driven top-down for everyone to have sustainability as their main driver’.

Dow as an Industrial Engineer

Industrial Engineers are required everywhere, but what will you do when you start at Dow? First of all, we have our function in involving sustainability. ‘With all the knowledge your faculty has, we can really apply sustainability in a beneficial way. Taking it into account efficiently will be very good for business, and that is where we need deterministic models to come into play’, Jens mentions. Dow invests a lot into students, having projects as a good

example. Jens has been working on a project with students and colleagues involving waste collection. ‘We are busy doing full life-cycle assessments of projects and operations, to really see our products over the full timeline. That is where Industrial Engineers come in, who are all-round players, can take a step back, look at the full projects and take the bigger picture into account’. Operations at Dow are innovative, complete and complex, and thus require thorough operations analyses. ‘We need those bright minds to come up with new solutions’ says Jens. Since they are so complex, a large team of bright minds is required, with different competences. Therefore, a team at DOW is always a combination of different people, all with a different background, such as a mathematician, combined with a data scientist and an industrial engineer.

Despite the fact that Dow is a material scienced company, which is not exactly in the field of Industrial Engineering, every company has functions that industrial engineers can fulfil. As Sophie mentions: ‘You are not alone. We work in teams with complementary skills, and everyone is willing to help you’. An example of this is Sophie’s first project in plastics. ‘Someone from the team was in a meeting with me for an hour and a half and low-level explained all the processes. Managers and leaders were there to help me and connect me with people’. Also, Dow does a lot in the field of research and development. Jens: ‘Annually, we spend 2% of our revenue on research and development, which is double the industry standard’.

DesignYourDay

Dow is a very large company, but that does not mean that the atmosphere throughout a regular day feels like this. Michael: ‘The main driver for me is the people. In English you do not hear it, but around the office you would say ‘jij’ or

Michael de Graaf

Michael de Graaf started 18 years ago in the Research and Development department of Dow, after completing his master in chemical engineering and PhD in the field of polymer engineering. Working in the same department for all this time does not mean it was the same job for those years; Michael had 6 different roles, some of them in a leading role, and is currently a team lead in an investigation team.

"There is a true passion for sustainability. We never want to leave the world in a worse place"

'je', which is different from other companies'. Sophie mentions the fact that Dow is a rather flat company: 'You expect a little more hierarchy and a lot of people with busy schedules, but that was completely different. The environment and openness is so nice.'. Even though a lot of teams are global, with people from different parts of the planet working together, the atmosphere is very collegial and there is no difficulty in asking those people to help.

Dow is doing a lot of efforts to help employees develop themselves and work in their best state possible. DesignYourDay is an example of that. Dow introduced the program, which allows people to work from home, for example from Eindhoven, while the majority of people work in Terneuzen. Michael: 'you do not have to come into the office everyday if you can do your job equally well from home, while we can also shift our work-hours so that it might be possible to have one day off'. Another effort by Dow is the smart watches provided by the company for all employees. Michael: 'Dow invested in a well-being app. You exercise, stay healthy and feel better, and then even collect points. With these points you can, for example, buy a real apple watch for free. Dow really focuses on its people's well-being.'

Dow is internationally oriented, but that does not mean that travelling is required. Michael: 'Meetings in the US or Shanghai used to always be physical, but after COVID we moved to Teams meetings, which felt just like the physical meetings.' Still, there are plenty of opportunities to travel if a new client needs to be met, the relationship with a client can be strengthened or expert judgment is required on a certain matter, but Dow makes sure to balance its resources and sustainability.

Concluding

Dow has opportunities for you to get started at the company in the form of traineeships, or rotational programs. An example of this is the supply chain rotational program, where you have 2 roles throughout 2 years; one improvement role and an operational role, while you also have traineeships in other directions like production. As a worldwide company with high innovativeness, large opportunities to grow and a focus on sustainability; Dow seems to have a good focus for the future and can use the bright minds of IE-students to grow further as an organization. As Sophie mentioned: 'The collegial environment was my main reason to stay at Dow, as everybody wanted to help me and support me where they could, as well as the opportunity to do this all from Eindhoven', showing that working at Dow is a good fit for anyone with the ambition to work in this field.

Jens Witlox

Jens Witlox joined Dow over 5 years ago, after studying Industrial Engineering at the TU/e and finishing the master Innovation Management. He is currently a supply chain planning leader and has a large team reporting to him on a daily basis

Sophie Thijssen

Sophie Thijssen is a recent graduate of Operations Management and Logstistics, after finishing her thesis at Dow. She currently works in the digital fulfilment center, which is busy with innovation and investigating how current systems can be automated and improved. Next to that, she does consulting within Dow on projects concerning minimizing costs and improving efficiency

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GRADUATE OR WORK AT ADVANTECH

For most students or employees in any sector, Atos is a familiar name, but what do they actually do? In short, Atos is a leader in cloud and digital workplace, leveraging digital transformation to solve today's business challenges and create new opportunities. How did Atos achieve this leading position and how can Atos preserve it?

Most importantly — and most relevant to the theme of this edition — how can industrial engineering be applied to enhance digital transformation?

TEXT Fleur Machielsen **DESIGN** Marijn Konings

Atos: Where students can drive digital transformation

SCOPE visited Atos where they spoke to Frank Kuitems, cluster lead for Digital Process Excellence and Automation, and Doeke Dorhout, Industry 4.0 consultant and former student at the University of Technology Eindhoven (TUE). Later, we will discuss how to transition from a TUE student to an Atos consultant. First, some more insights about Atos as a company.

The digital transformation work that Atos does all has one common goal: improving current business operations. However, the more precise goal can vary from company to company. This can include cost savings, quality improvement or shifting towards servitization. As a consulting company, Atos focuses on problem analysis and offers improvement possibilities which are implemented then maintained and optimized. These last parts are not done by the consulting compartment, but by other entities within Atos. This allows Atos to offer end-to-end services and guide its clients throughout the entire digital transformation journey.

Atos provides consulting services to companies in many sectors — ranging from the manufacturing industry to the service industry. However, this does not mean that Atos serves all companies within each sector.

According to Dorhout, "In my experience, the focus is on larger companies. There are exceptions, for example start-ups, but usually larger companies are targeted."

Three action pillars

To be able to design the future of digital space, Atos has defined three concrete actions. These pillars

include building a trusted digital space, tackling climate change and contributing to scientific and technological excellence.

Regarding the second pillar, Kuitems states that "sustainability is twofold in our organization. First, how sustainable is our own company? We have many traditional data centers that consume energy, which we are currently trying to reduce."
By way of example, he points out that all cars leased by Atos are 100% electric, showing that Atos focuses on improving its own sustainability, as well as for its clients.
"For our customers, we calculate their existing carbon footprint and look for opportunities to reduce it," says Kuitems.
Dorhout adds, "Within our industry, we have one of the highest ranks in the Dow Jones Sustainability Index. In Europe, Atos was ranked number one out of all companies in our industry in 2021."

In the third pillar, collaborations between scientific institutions and universities play a large role. The Atos Scientific Community focuses on how the industry will change in coming decade and beyond.
"We have a good relationship with the University of Technology Eindhoven," says Kuitems. "We have one professor that works one day a week in our team, but we also give lectures to Master's students, so this collaboration goes in both directions," he adds.

From student to Atos consultant

As many industrial engineering students experience, their education is broad. Dorhout had the same experience, after finishing his Master's in Innovation Management in Eindhoven.
"Honestly, I was struggling because I have knowledge in many subjects, making it difficult to choose a direction or position myself within any industry," said Dorhout. "I did not want to lose my broad perspective, which is why I shifted my focus towards consultancy. In any consulting function, you get the opportunity to experience multiple companies within a short period, which gives your learning curve a boost."

How did Dorhout finally end up at Atos? By speaking to different companies and finding the best connection at his current employer. In Dorhout's experience, Atos is a "no nonsense" company, where direct contact with your manager is the norm and an open atmosphere is created.

Kuitems agrees on this open atmosphere. "What makes Atos different?" he asks. "In our culture, we don't work according to predetermined steps, and we are not tied up in hierarchy. There are endless possibilities within Atos, but they will only present themselves if you take the initiative."

These endless possibilities allow employees to start additional projects based on their own interests, or opportunities they discovered outside of their assignments for customers. "This is how we stand out from the crowd," says Kuitems.

A day in the life of a consultant

According to Dorhout, there is no such thing as a "typical" day for a consultant. "However, I can give you a general idea of what a day at Atos looks like," he says.

"My first customer assignment was to improve the company's security, which I luckily did not have to solve on my own, because every new consultant at Atos is paired with a senior consultant that has more experience."

"My day started with preparing sessions for the rest of the day with my senior consultant, and also ended together with the senior consultant, to discuss how the day went," Dorhout explained. "This is one of the main reasons I really enjoy working at Atos, that you get the opportunity to be mentored by more experienced colleagues."

As mentioned before, in addition to client assignments, there is space for individual projects. For Dorhout, it meant that during that time, he was busy creating an internal start-up focused on smart agriculture. "My customer assignment had a e goal, but I had the freedom to start my own project internally, making my days more dynamic — even more dynamic than an average consultant," he recalled.

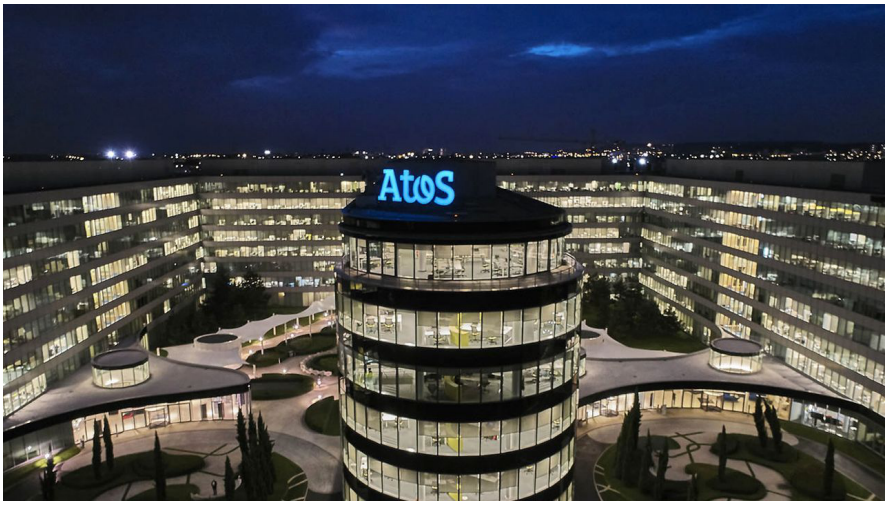
Kuitems adds: "In general, a consultant must be a jack-of-all-trades. It's a positive trait to have as a person, but you will always run short of time."

Frank Kuitems

Frank Kuitems works at Atos as the cluster lead for Digital Process Excellence and Automation. He studied Applied Mathematics and Logistics in Delft and first worked in logistics for eight years. He later changed to the consulting industry, where he joined one of the predecessors of Atos as a consultant. In 2005 he became a partner at Atos, a role he still holds today — with responsibility over a team focusing on the digital industry.

A Thriving Future

"Besides finishing tasks from customers and all your personal tasks, it includes supporting new employees and other team members," said Kuitems. "Because of this variety and dynamic structure, whenever someone asks me if I'm done with my work, I always answer: 'I am never finished, but it's time to quit for today.'"



Industrial Engineering in practice

So, are there specific industrial engineering courses that help Atos consultants perform their jobs, or is it more of a general viewpoint? In practice, Dorhout uses some aspects of the courses he took during his innovation management studies, but also concludes that your interests and intended focus will determine which subjects are most useful in practice.

Kuitems points out that the most interesting project teams arise when employees with diverse backgrounds work together and combine their knowledge. "It allows everyone to further develop themselves in any direction they are interested in," he says. "Industrial Engineering students have broad expertise and broad interests, enabling them to see the big picture and consider all aspects."

"I mostly focus on the innovation management perspective," says Dorhout, "but we also have many employees who studied operations management and logistics, who have a very different focus area than me."

The future at Atos

Improvements in digital transformation have never moved as quickly as they do today. Years ago, systems would need to run for an entire night to complete, and it was never certain that they would finish before the next working day began. This is no longer relevant, due to new and ever improving technologies. This shifts the focus from programming or systems implementation, to an increased importance of the consulting capabilities that Atos provides.

Implementing modern technologies will become easier, and the job of a consultant is to ensure that clients can adopt modern technology as quickly as that technology is changing. Industrial engineering students can help by keeping an overview and taking the customer's perspective into account when the understanding of recent technologies is limited.

Kuitems concludes by pointing out that industrial engineering students bring a lot to the table. "They can offer us a lot, and Atos can offer a great atmosphere to work in, an open culture, and a great deal of freedom to create your own path and put your broad knowledge to work."

Doeke Dorhout

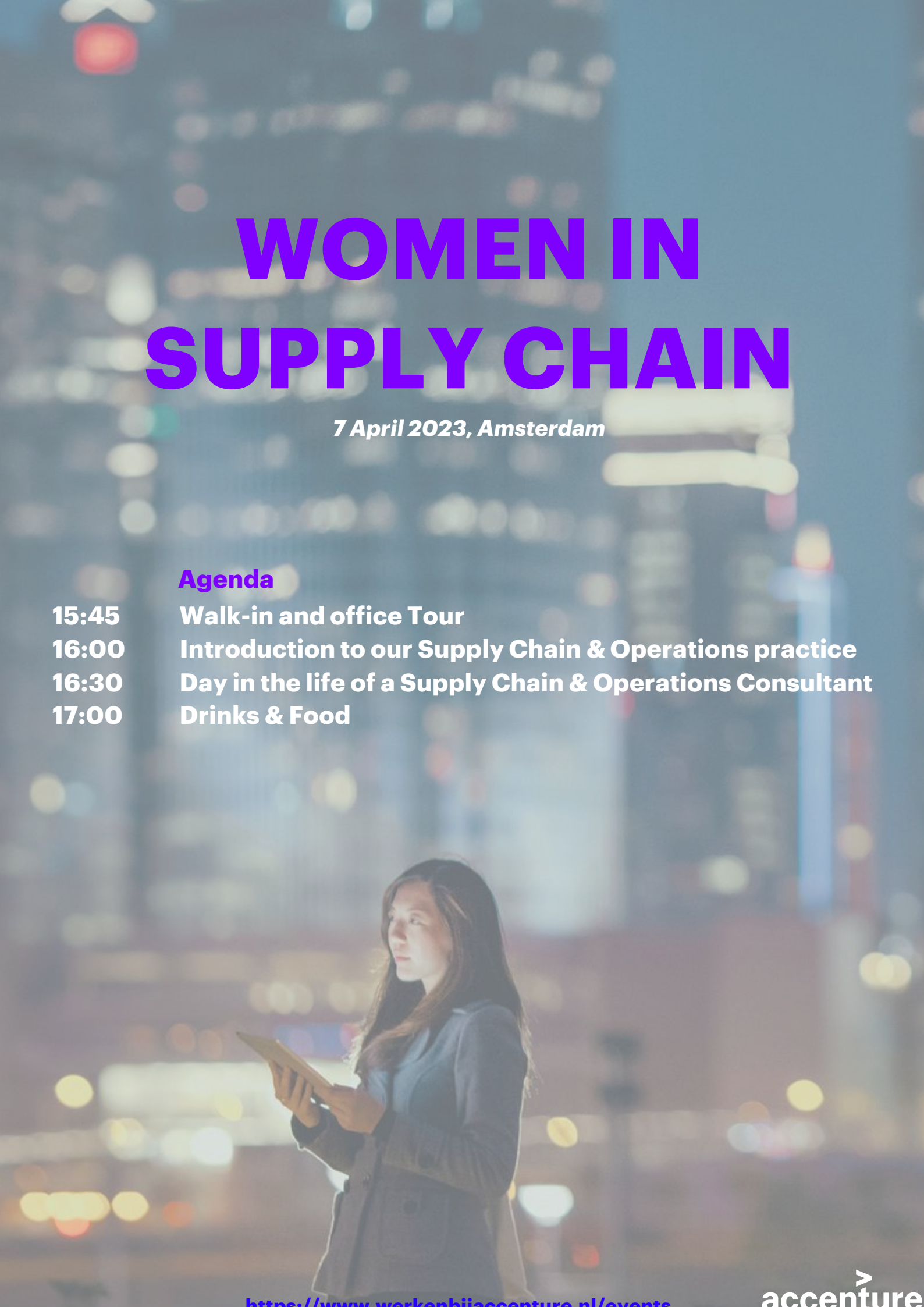
Doeke Dorhout has been working as an Industry 4.0 consultant for three years at Atos Digital Transformation Consulting. Before starting at Atos, he received a Bachelor's of science and innovation management from Utrecht University. He then continued his studies at the University of Technology in Eindhoven, where he received a Master's in Innovation Management. During his master's degree, he discovered that most of the innovation is in the digital world, leading him to pursue a job in digital advisory to kickstart his career.

WOMEN IN SUPPLY CHAIN

7 April 2023, Amsterdam

Agenda

15:45	Walk-in and office Tour
16:00	Introduction to our Supply Chain & Operations practice
16:30	Day in the life of a Supply Chain & Operations Consultant
17:00	Drinks & Food



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accenture

What makes a good industrial engineer? How important and what kind of skills does an industrial engineer have? How do industrial engineers make processes more efficient and effective? Bas Gielen, Director Continuous Improvement of Foot Locker gives SCOPE an insight into the role of an industrial engineer at Foot Locker's company. Industrial engineers (IE) play a major role in the growth of businesses and factories.

TEXT Sara Casado Rodriguez **DESIGN** Marijn Konings

The role of the Industrial Engineer at Foot Locker

Industrial Engineering at Foot Locker includes the timely distribution of goods and services, improved product quality, and worker safety, which are just a few of the many benefits of an industrial engineer. Elon Musk, Henry Ford and Tim Cook are only some of the many great minds with industrial engineering backgrounds.

At Foot Locker's EMEA DC in the Netherlands, the Industrial Engineer's main duty is to lead operational process opportunities and problems. This vital role creates process improvements, offers technical know-how and spots chances for cost savings and enhancements by analyzing data and running time studies. They can then collaborate with other departments to successfully implement those changes.
Following his PhD, in order to further grow the application of his knowledge, the interest in spare parts management was recognized, and Tan started to work on spare parts management problems, which was very much driven by real-life industry cases. A unique feature that the TU/e offers, since other universities across the world did not focus on this. 'At my prior university, the Middle East Technical University of Ankara, none of the students had industrial projects. The mindset was about coming up with a thesis that would be hopefully published in a journal. We took a theoretical problem and extended it a little, with is great if you only have academic ambitions, but there are big advantages of having actual implementation impact' mentions Tan. An ambition to help the society for the better, and the growing importance and interest for sustainability caused Tan to switch his focus on sustainability in his field of interest.

Qualtities of a 'perfect' Industrial Engineer

Bas Gielen: 'A good industrial engineer has a positive mindset and is open to discuss ideas and suggestions for improvements and start the analysis'. Industrial engineers are known to be

Bas Gielen

Bas Gielen, Director Continuous Improvement and Supply Chain Systems studied Industrial Engineering and subsequently the Master of Industrial Engineering and Management Science from 2001 until 2007 at the TU/e. After his education, two potential job opportunities were there: ASML and Foot Locker. As a travel lover, Foot Locker was chosen, which provided him with a broader mind, travelling across the Atlantic Ocean and achieving backgrounds from a variety of areas. Bas describes that his study was in the field of 'quality/reliability engineering', in order to ensure that a business's equipment lives up to standards of quality and reliability to prevent any failures, profit loss, or work stoppages. Nevertheless, in his work life, the focus is more on operations, workflow and capacity where quality and reliability are of course important factors to guarantee a good flow and reach the maximum capacity. Bas Gielen: 'Working at Foot Locker, I had the possibility to grow. I started as an Industrial engineer, and now I find myself as Director Continuous Improvement, leading a team of three people, of which two are industrial engineers. You just need to be open for new opportunities.

capable of analyzing data, taking inferences from findings, and then applying their analytical skills to a hands-on approach to launch improvement projects from concept to development and execution while bringing cross-functional teams together to maximize the outcomes.

To get the required results, industrial engineers must have the proper aptitude and expertise. An IE should be able to effectively coordinate efforts with other departments and work as part of a team. Bas states that: 'An IE should have strong analytical and conceptual skills and have the ability to perform complex data analysis and draw conclusions from the results in order to drive process improvements'. Bas listed a series of requirements that an industrial engineer should have: Firstly, thinking beyond the box and creative problem-solving abilities are necessary to maximize production and efficiency. Then, project management abilities and a proactive outlook are also required. Furthermore, strong presentation and communication abilities with a range of audiences, from high management to the operations of a distribution centre. Strong interpersonal, time management, and organizational abilities are not the least important.

Bas Gielen: 'An industrial engineer should have an academic level in Industrial Engineering or a related discipline. We prefer one to three years of industrial engineering experience, but if you just graduated and have the right attitude you may qualify as well'. Bas describes the ideal industrial engineer who should have an educational background, preferably a Master's title, and one to three years of industrial engineering and Lean Six Sigma experience. Aside from these requirements, Bas underlines the importance of the right attitude: 'A good industrial engineer should be proactive and be able to build connections throughout the different teams'. Hence, knowing how and having the skills to work in groups is a must. Bas Gielen: 'Teams make work more efficient, leading to better productivity, reduced costs, encouraging personal growth and many other benefits'. To describe this better, Bas, makes use of the term: 'draagvlak', which means creating support when major changes are in the pipeline, in order to be successful. In other words, having everyone on the same page and making people feel heard is necessary to achieve the goal.

Industrial Engineering at Foot Locker

The first area of focus for IE's is really to lead and support the continuous improvement program. Bas gives the example of the 5s program which is part of the continuous improvement program and has been re-introduced after it got a bit neglected during the Covid pandemic.

At the beginning of 2022, the program for continuous improvement was set up in order to get an improvement mindset into the culture of the operation. Bas Gielen and his team, together with Operations Management and some supporting functions, followed the Lean Green Belt course with Masters in Lean which provided them with tools and a framework to help them analyze processes and further finetune improvement cycles.

The 5s program entails evaluating everything in a workplace, getting rid of unneeded items, organizing items rationally, doing housekeeping responsibilities, and repeating this cycle (Clean, organize, then repeat). The term 5s comes from five Japanese words: seiri, seiton, seiso, seiketsu and shitsuke; translated to sort, set in order, shine, standardize and sustain. The 5s program ensures higher equipment availability, greater employee satisfaction, reduced costs, better asset utilization, enhanced enterprise image, lower defect rates and a safer work environment. The origin of this concept began as part of the Toyota Production System (TPS). Nowadays it is considered a fundamental part of its process, the workplace is orderly and tidy, which will lead to producing consistently excellent results. A cluttered, disorganized

environment can cause errors, production delays, and even accidents, all of which disrupt operations and have a negative effect on a business.

The second area of focus for IEers is strategy, which means evaluating the corporate strategy and defining what is required from Supply Chain in order to support that strategy. Thus, defining what an IE should be capable of and what type of fulfilment processes are best suited to support the projected growth, both in-store and online.

Industrial Engineering across the world

Bas makes a difference between the industrial engineers of America and Europe. On the one hand, he states that American engineers are hardcore industrial Engineers. They deeply analyze all processes with motion and time studies to determine labour standards for every activity in the DC, which are ultimately used as the basis for the pay-for-performance structure for their employees. On the other hand, in Europe, due to regulations, it is a bit more difficult for an individual to be paid for their performance. Bas Gielen: 'At our European DC, we analyze our current situation, measuring team productivity, finding where the bottlenecks are, coming up with suggestions to improve, trying to quantify as much as possible and coming up with alternatives through thorough analysis and innovation. Flexibility across stores and e-commerce is key to maximizing what we can do with our current set up'.

Bas highlights the importance of the involvement of industrial engineers in designing future fulfilment processes and making sure they have the flexibility to support sudden changes in e-commerce demand. 'The past few years we have seen demand shift rapidly from in-store to online and back to store again, so it is crucial that our fulfilment processes have the flexibility to support this so we can make our customers happy, whichever way they would like to shop with us.' Bas Gielen: 'We have industrial engineers in all our distribution centres across the globe. They usually focus mostly on the internal logistical processes from receiving to storage, and from picking to packing and shipping of both retail (B2B) as well as e-commerce (B2C)'.

Bas Gielen: 'At Foot Locker, a very diverse and cultural environment can be found. As a company, we have a very dynamic occupancy, with lots of nationalities in the business'. Once an individual starts working at Foot Locker, a learning opportunity arises, Bas emphasizes: 'but also hands on the job, of course'. Continuous alternatives and improvements are being looked for by industrial engineers. Future strategies, new technologies. Bas Gielen remarks: 'There is a whole world outside ready to explore, you just need to be open to opportunities in order to grow'. Bas and his team visit different companies to get ideas, to then be able to develop their own and find the next Foot Locker's purposes. That is why industrial engineers are important, Bas accentuates: 'Industrial engineers bring power to solve problems. They make sure that the issue gets resolved, and are always looking for the next steps'.

Conclusion

So what is the added value of industrial engineers? Industrial engineers identify bottlenecks and capacity restrictions in the current warehouse processes, thoroughly study these bottlenecks, and then develop ways to get around these constraints. This enables Foot Locker to support the company's growth and goals while promptly and fully completing all orders for customers who shop online and in stores. This ultimately results in satisfied customers and increased growth. An industrial engineer analyzes the data, handles growth, makes sure what next steps need to be taken, builds a road map and searches for alternatives in order to improve. Bas Gielen: 'it is a continuous cycle to keep improving our processes in order to support the growth of the company'. In addition, Bas is clear: 'industrial engineers should pay for themselves. through the process improvements they realize. Thus it has to be a win-win, same for the individual and the company: the industrial engineer has the opportunity to work on exciting projects, and build on their skills and experience, while the company becomes more efficient in its day-to-day logistical operations'.

"There is a whole world outside ready to explore, you just need to be open to opportunities in order to grow"

ASML

Questions?

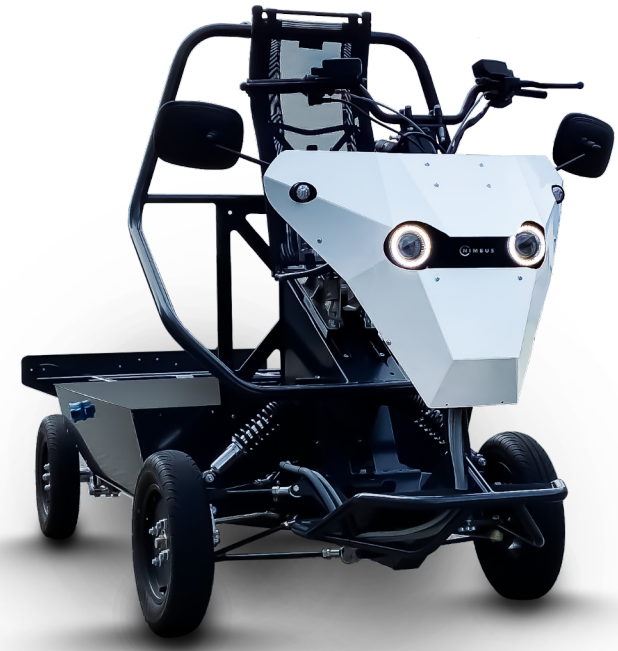
I'm here to help

Cas Dijkstra

cas@workingatasml.com
Fellow student of the TU/e

Experiencing the rise of the on-demand economy from the start, Lorenzo recognized the huge potential market of on-demand delivery. When Thuisbezorgd didn't even exist in the Netherlands, plans were made to enter this market. Why not build a light electric vehicle yourself?

TEXT Bauke Wijnands **DESIGN** Marijn Konings



Nimbus: Next LEVel

In 2011, when Paviljoen was still IE's headquarter, Lorenzo Engelen started his Bachelor Industrial Engineering at the TU/e. In the meantime many things changed. Where IE's headquarter moved to the Atlas building, Lorenzo's headquarter moved to the Automotive Campus in Helmond, where he started his own company; Nimbus. It's not the first time he moved for studying or working purposes. After finishing his Bachelor IE, including a minor in entrepreneurship in Maastricht, he started his Master OML and at the same time IRP. Indeed, the International Research Project at Industria. After a trip visiting Washington, Boston, New York, Toronto and Chicago, Lorenzo returned very shortly to the United States in order to learn more about tech-entrepreneurship. On his 14th he already built his own website and in San Francisco he wanted to learn more about web-development. After a coding boot camp, a lot of entrepreneurship network events and several nights of couch surfing at friends' houses, he returned to Eindhoven. After unsuccessful attempts to get a working visa in the United States and having learned a lot about the upcoming on-demand economy, he finally did research at the TU/e. The subject was on-demand delivery meeting time windows and delivery deadlines. The insights gained during this thesis and in San Francisco about on-demand economy, together with a huge passion for cars let to a new idea. Why not build my own

Advice for entrepreneurial students

"Just start; search for people around you that are already active in the entrepreneurial world. Ask them about how they started and whether they can help you out. I'm convinced that it really requires a lot of hard work and a lot of discipline. Yet, find people that are, in your opinion, just a single step further than you are and ask what they do. That's step 1!".

vehicle that serves this market?

Entrepeneurship in practice

The next question is; where do you start? It all starts with the customer. An entrepreneur should identify the problem, get in contact with the customer and think about a possible solution. A perfect technical solution is not required yet. Lorenzo: "then, a market analysis should be performed which tells you whether your solution is scalable or whether you are just selling a project."

Nimbus serves the delivery market (parcel, food and grocery) and the utility market, representing facility, green and garbage services. Market analysis suggests that the delivery market will become three times as big as it is right now in let's say five years. So that gives reason to hop in. Now, the Nimbus vehicle can be identified as a combination of a cargo bike and a delivery van. A van is reliable but not manoeuvrable, whereas a cargo bike is exactly the opposite. Nimbus combines best of both worlds in its LEV (light electric vehicle), plus compared to the van only a moped driver's license is required. So that provides context to the market gap that Nimbus bridges.

So we know the outcomes of this market analysis. Now, learning about the problem and the possible technical solution that should address the problem becomes important. Lorenzo says that an entrepreneur should talk to as many people having the right knowledge as possible. It's not always necessary to hire people having that required knowledge. Let people with a certain passion talk about their experiences where you want to learn from. That is the trick. Lorenzo: "when such a person wants to have a coffee with you, talk for three hours about his passion and after that says 'thank you for listening', that's fantastic!"

Next to investigating the actual problem and designing a conceptual solution, an entrepreneur should be able to set a goal on the horizon, share that vision, know the way how to achieve that goal and know where you are now. It is important to be able to cut that goal in pieces, and again, and again, as small as possible. Lorenzo's answer on the question how he does do that in practice: 'I have the end goal and the steps in between clear in mind. Of course, sometimes I put things on paper, but overall everything is in my mind'.

Start of the start-up

So, following Lorenzo's words 'you have to know where you are now'. Where is Nimbus now and where has it been? Lorenzo: "the past four years passed in full speed. It's weird, because these years feel like four weeks, while the last week in the office felt like a whole month." Yet, the whole journey starts with searching for the ideal location for an office. This turned out to be the Automotive Campus in Helmond.

After having a location, the next important resource is money. He started putting all his savings into the company in order to make a head start, which was really struggling. You need people to design vehicle concepts such that these concepts can be presented towards others. Lorenzo: "however, human resources are expensive, so I started working two days a week besides running the company until I received the first funding. Within one year I received a loan of 150.000 euros of a Dutch bank in 2019. That enabled me to build the first prototype."

Friends become investors

Of that second prototype, already three were sold, including BPost (Belgium Post Delivery Service). These orders

'My friends, with whom I went to the drinks in The Villa on Thursdays, are actually the investors'.

'When such a person wants to have a coffee with you, talk for three hours about his passion and says 'thank you for listening', that's fantastic'

convinced Nimbus to develop the next series of which again a few were ordered, which was the starting signal for a first serious funding round.

Lorenzo: "I think that investors do not typically invest because of the product, but because of the owner and the team behind the product. After two and a half years of developing the product, the first sales are made. The vehicle starts actually driving and at once people around you start believing in our solution, instead of only you. At that moment one of my friends asked whether he could invest in the company. Then, a lot of friends wanted to join which convinced me of setting up that first serious funding round. So, actually it all started with my friends; my friends with whom I went to the drinks in The Villa on Thursday are actually the investors".

From that first funding round, the pre-production series was built which was primarily built for pilots since that provides a lot of information about the product. Hereafter, a second serious funding round was done and ended last December. Now it's time for the first serial production round.

After a question about the toughest moments of these past four years Lorenzo answers: "one of the tough experiences is to say goodbye to people that helped your business. Although you really like someone as a person, the business is always number one. Another important issue is that the company is dependent on external funding in order to continue with the business. You also need some luck to find new investors that are a right fit and can bring your company one step further!"

Hands-on Industrial Engineering

So, currently Nimbus is setting up the first small series production round, around 100 vehicles. Hereafter, Nimbus will head towards the phase of complete serial production. For serial production the company requires a different kind of organization; more focus on operations, organizing production, procurement and the after sales network. Outbound logistics, marketing, finance, HR etc. all become relevant. So firstly setting up a small factory in which processes operate well is important. Hereafter, the small factory can be scaled up towards a large company by increasing production capacity and focusing on the supply chain network.

Until now, primarily product development engineers of different disciplines were required. In the upcoming months, operations processes should be defined and organized. This requires among others people having a background in Industrial Engineering. Lorenzo: "for the small factory case, we need people having a diverse skill set and people

Working at Nimbus

We have a lot of Industrial Engineering related challenges in our company. Moreover, we are always searching for talented students for working on these challenges. If you want to reach out to us, contact us via our website, email or by phone:

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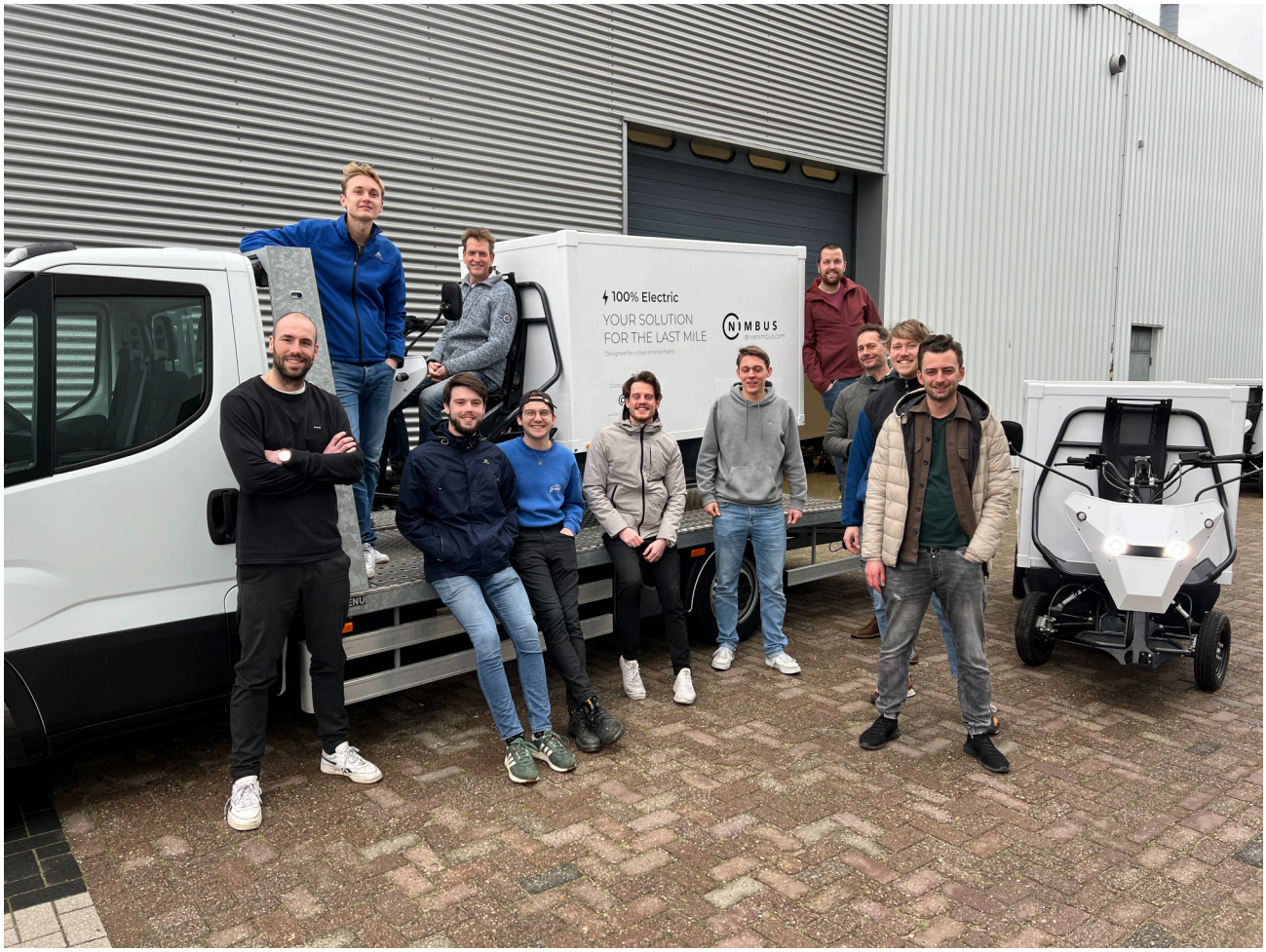

who are really hands-on; people that dare to make decisions and are able to do that. They should be able to set up processes very rapidly. After that, we need more specialists. For example, we start with an operations manager responsible for procurement, assembly and quality. After that we will have one person responsible for procurement and one for assembly etc."

Typically, relevant projects in the upcoming months at Nimbus are setting up an ERP system and connecting it with the accounting system. Also, designing the assembly process, creating a quality management system and an incoming goods system will become really important in the near future. Designing all of these processes requires cooperation with production and automotive engineers. On the question how our study Industrial Engineering can be applied when working on these projects, Lorenzo answers: "during our studies, we learn the basics about a lot of subjects and primarily about processes that are already existing. However, in order to implement an ERP system, you should really dive deep yourself on that subject in order to learn about it and learn how to apply it in practice. You have to be autodidact and really hands-on. That's also the power of working for a start-up, namely; what if there are no processes yet? How will you set up the ERP system? Finding out how to address those challenges, that's what you really learn when working for a start-up. For everyone who would like to challenge him- or herself, a start-up where most of the processes should still be built is the perfect place to learn. It's just a playground!"

All in all, Nimbus is just at the beginning of a very interesting journey. Having a unique position in a rising market, the future seems bright for this LEV developer and producer. Still, a lot of challenges have to be overcome, starting with setting up the serial production process. Also want to build your own vehicle? Have a cup of coffee with the passionate!

As many of you reading this are Industrial Engineers, you know that Industrial Engineering is a vast and versatile field. It provides many opportunities for those who are interested in making a positive impact on the world. From improving manufacturing processes to optimizing supply chains, the possibilities are endless for industrial engineers. Industrial engineers use their knowledge of engineering, mathematics, and technology to find solutions to complex problems and improve the efficiency of systems and processes. They can work in a variety of industries, from manufacturing to healthcare, and use their skills to tackle a wide range of challenges.

TEXT Nynke Theunissen **DESIGN** Marijn Konings

All that an Industrial Engineer can do

While the traditional roles of an industrial engineer, such as improving manufacturing processes or optimizing supply chains, are well-known, there are also many out-of-the-ordinary jobs that an industrial engineer could pursue. These jobs offer a unique combination of creativity, problem-solving, and technical expertise, making them ideal for those who are looking for a challenge and a chance to make a real difference.

Here, we'll take a look at some of the most extraordinary jobs an industrial engineer could pursue.

Healthcare Systems Engineer

One of the things that an industrial Engineer could become is a Healthcare specialist. Healthcare is an industry that is constantly evolving, and industrial engineers have a unique skill set that is well-suited to help improve it. Supply chains aren't the only things that need to be optimized, hospitals and care facilities need to run efficiently and smoothly as well. Healthcare systems engineers work to improve the delivery of medical services and to make the healthcare system more efficient, safe, and cost-effective. This could involve anything from designing and improving hospital facilities to streamlining patient flow, reducing wait times, and improving the overall patient experience.

Sustainability Engineer

Sustainability is becoming an increasingly important issue in today's world, and industrial engineers are well-positioned to help companies reduce their environmental impact. Sustainability engineers work to improve the sustainability of industrial processes and products, from designing more energy-efficient factories to developing more environmentally friendly products. They also help companies to reduce their carbon footprint and minimize waste, making a positive impact on the environment. By optimizing all processes that companies and organizations use, waste is minimized, and a more sustainable environment is created.

Taking a deeper dive into sustainability Industrial Engineers can also become environmental consultants. The environment is one of the biggest challenges facing the world today, and industrial engineers are well-equipped to help tackle these problems. As an environmental consultant, you would use your skills to develop and implement sustainable solutions that reduce the environmental impact of industries and businesses. This could involve anything from improving energy efficiency to developing more environmentally friendly products. You would also use your knowledge of engineering, technology, and environmental science to help companies comply with environmental regulations and standards.

Human Factors Engineer

Industrial engineers can also contribute to creating a more pleasant world for humans by improving comfort and ease of use of products and processes. Human factors engineering is an area of industrial engineering that focuses on the interactions between people and technology. Human factors engineers work to make products and systems more user-friendly and accessible, improving the overall user experience. In short, they make the lives of consumers easier by designing new products that improve comfort and help to optimize daily activities. They use a combination of ergonomic principles, behavioral science, and engineering techniques to design products and systems that are safe, efficient, and easy to use.

Disaster Response Coordinator

Disasters, whether they are natural or man-made, can have a devastating impact on communities and cause widespread destruction. Industrial engineers can play a crucial role in disaster response efforts by using their skills to coordinate and optimize the deployment of resources and personnel. As a disaster response coordinator, you would be responsible for overseeing the distribution of supplies, food, and medical aid, and ensuring that the response is well-coordinated and efficient. You would also use your expertise to develop evacuation plans, manage transportation logistics, and monitor the status of the disaster in real-time.

Humanitarian aid organizations play a crucial role in helping to alleviate poverty, provide medical care, and support disaster recovery efforts around the world. As a humanitarian aid logistics specialist, you would use your skills to help these organizations to deliver aid more effectively and efficiently. This could involve anything from developing and implementing transportation and logistics plans, to improving supply chain management, to optimizing the distribution of aid resources. You would also use your expertise to help ensure that aid is delivered to those who need it most, and that resources are used in the most effective and sustainable way possible.

Cybersecurity Engineer

Cybersecurity is becoming an increasingly important issue in today's world, and industrial engineers are well-equipped to help companies protect their digital assets and infrastructure. As a cybersecurity engineer, you would use your skills to develop and implement security systems that protect against cyber-attacks, theft, and other forms of digital crime. You would also use your expertise to help companies respond to security incidents and recover from data breaches. With your knowledge of engineering, technology, and cybersecurity, you would play a critical role in protecting businesses and communities from the potentially devastating consequences of cyber threats.

As an industrial engineer, you have a unique perspective on how to approach cybersecurity challenges. You are trained to optimize systems and processes, identify vulnerabilities, and design solutions that are both effective and efficient. You can apply this expertise to the field of cybersecurity by analyzing systems to identify weaknesses, developing security protocols to mitigate risks, and implementing new technologies to protect against cyber-attacks.

These are just a few of the many extraordinary jobs that an industrial engineer could pursue. With its broad range of applications, industrial engineering offers a wealth of opportunities to make a real difference in the world. Whether you're interested in improving the environment, making healthcare more accessible, or optimizing supply chains, there's always a role in industrial engineering that's right for you.

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An unexpected semester in Berlin: A series of fortunate events

TEXT Eva Henckens **DESIGN** Marijn Konings

Small events can have large and unpredicatable influences on the future. Tiny decisions we make or things we do can result in big things, which me way not see beforehand, but which make perfect sense in hindsight. My random semester in Berlin is a perfect example of this.

I went to an ESTIEM event in a remote cabin close to Budapest in February 2022. I went there alone and came back with new people to visit in Europe. The event was about personal development and setting goals for the future. We weren't allowed to have our phones or drink alcohol, so we had to talk to each other for real. As we were discussing our dreams, I told some people that I would like to live abroad for a while. After living in Eindhoven for as long as I can remember, I felt the desire to go somewhere new. Maybe after my bachelor's in a gap year, and otherwise in my master's degree. I wasn't thinking about it anytime soon, because I thought it would be impossible.

Studio in Berlin

Then a few days after the event, I got a message from a girl I met at the event. She was going abroad and she was looking for someone to take over her relatively cheap studio in Berlin for a semester. She thought of me because I told her during the event that I wanted to go abroad. It sounded perfect and I was immediately interested, but I didn't know how to arrange it with my studies. After some thinking, I decided that I could just go and study from Berlin. I chose courses that mostly consisted of self-study and I only had to come to Eindhoven to take exams once in November. After convincing my parents of this amazing, well-thought-out plan, I said yes to the studio.

First Friend

A month before my planned departure to Berlin, I went to a festival. I was on the train back when my phone died and I didn't know where to go. I asked a girl on the train how to get back to Eindhoven, and she happened to go there as well. We sat together and started talking. I told her about my random semester in Berlin and to my surprise, one of her best friends just moved to Berlin 2 weeks ago. She gave me her friend's number who later became my best Berlin friend.

My time in Berlin

Then in September, it was time to go to Berlin. Moving to a city of almost 4 million people of which I knew only one, without a job and a university is the most random thing I have ever done. It sounds like a terrible plan, which is exactly why it interested me. I found a job on short notice at a start-up where I got to know many people. With young and international coworkers, and drinks and parties at the company every now and then, it was a very nice company to work for.

To meet other students, I went to Erasmus drinks (no one seemed to care that I was indeed not an Erasmus student). There, I met people who later on also introduced me to other people. With the small friend group I made, I did many different things. We walked through the city and went to parks when the weather was still good. Later, we mostly went to bars and restaurants, and ofcourse to many of the techno clubs and parties Berlin has to offer!

All in all, my time in Berlin was very fun and interesting, and taught me to be more independent. Of course, I missed my friends from home every now and then, and Berlin in winter isn't the most thrilling place to be, but I am very happy that I did it.

What I learned

I was surprised about how easy things went. When you want something in life, tell people about it. People know people that can help you. People know things that can help you. It is all about connections. A lot of things aren't as impossible as they seem at first. Like moving abroad with a few months' notice. Finding a new friend or a job. Going to Erasmus drinks without being an Erasmus student. People tend to be helpful, even if they don't know you well.

Sometimes people ask me why I chose Berlin for a semester abroad, and then I joke that it's more the other way around. Berlin kind of chose me. Sometimes you just have to go with the flow and see what life brings.

Small decisions can change big things. Joining an ESTIEM event made me live in Berlin, and going to a festival gave me my first friend there. A few weeks back in Eindhoven, and I am curious about what living in Berlin has put into action. Things I can not see yet, but will be unveiled soon. Looking back it will all make sense.

Bucharest Exchange (22nd - 26th February)

TEXT Sarp Deger **DESIGN** Marijn Konings

Do you know what's better than hanging out with your fellow Industria friends in Eindhoven? Hanging out with them in Bucharest! As part of ESTIEM Network, Industria is considered as Local Group (LG) Eindhoven and we can arrange several days long exchanges to another city, meet the Industrial Engineers of that city, learn their culture, history and of course their famous drinks. Much like how we went to Krakow during the Christmas break (Ask our dear Industria Board for the details as they sure enjoyed it), this time we decided to arrange an exchange with the students from Politehnica University of Bucharest and had the chance to visit the country of Romania. Since unfortunately the capacity of the trip is limited, we picked the 15 students that were the quickest to reach out to us and we also tried to make the group as diverse as possible. From several "sjaars" first-years to master students, from "tappers" our Villa's own bartenders to not active fellow members, our group was as unique as we could get. However, it only took a single evening for people to get to know each other and become friends.

Right after we landed, people from our exchange were already waiting for us and took us to our place of stay. After settling in we all walked together along the Dâmbovița river and found a cozy bar where we can both get to know our group more and also our tour guides from Bucharest! They gave us a quick overview of the schedule once more (we had received it also beforehand). To give you my fellow readers a bit overview, the main events were the Therme Bucharest, City Tour, Language Session, International Night and of coruse night life which I will explain all below.

Starting with Therme Bucharest, it was love at first sight. Not only for me but the whole group was competing with each other to be the first to even enter. To give my readers a bit of context, Therme Bucharest is world's most advanced and biggest wellbeing resort combining nature, technology and culture. From waterslides to thermal pools to several saunas and massage places, it was a gigantic resort of relaxation and fun. If you think that I'm overexaggerating, they actually put a large cinema inside a sauna which allowed us to watch a nature documentary WHILE STILL INSIDE THE SAUNA! I don't know but that was quite crazy for me.

After the day at Therme we had the chance to visit Politehnica University of Bucharest and had some language sesssions where they taught us the basics of Romanian language and some common phrases to flex our language skills. As an international learning Dutch and considering it "heel moeilijk" quite hard, speaking Romanian was even harder. However, grammatically and written wise it had a lot of similarity to Italian and latin which made it easier for me to understand. Maybe I'm used to be surrounded by Dutchies which makes the language easier for me so take my opinion with a pinch of salt..

Of course, we ended our day at the uni with the famous International Night! Every ESTIEM events cornerstone, International Night is the evening where all the Local Groups that are there bring their own national drinks and snacks while also having the chance to taste other Local Group's offerings. You can consider it as a marketplace with all sorts of snacks and booze around Europe being exchanged. Since this was an exchange between two local groups, we only had two tables but it was more than enough for us to enjoy the night and learn more about each other's culture. As usual, their favorite snack from our table was the stroopwafel while the favorite drink was the Gold Strike, a famous Dutch drink that is surprisingly more famous outside Netherlands. After the night we head out to the city center where our Romanian friends showed us their own favorite bars and clubs for us to also enjoy as well. Our favorite of the night was El Comandante for people considering a trip to Bucharest in the near future.

Our last day was a massive city tour in which our Romanian friend Edi, who we shall call as "Edipedia" from now on made the best city tour ever. No matter which historical building we pointed out, he had enough knowledge to give a short lecture on the spot. That and the fact that Bucharest has a very deep history, resulted in one of the most fun and deep city tours I had ever had. Special thanks to Edipedia once more for such opportunity. I would love to write more about each buildings and the rich history but first of all, I'm not Edipedia and secondly I think the rich history and amazing architecture can not really be described in mere words from me.

With that, our trip was over and the next day early in the morning we said our goodbyes to our lovely IE students from Bucharest and head out to airport, promising that we will all see them somewhere else in Europe, the motto of ESTIEM. Speaking of which, if you, dear reader also want to travel around Europe with your fellow Industria members then don't hesitate to contact us! There are tons of events happening and I'm sure we can find the right one for you no matter what. That was all from me and see you all at the next SCOPE!

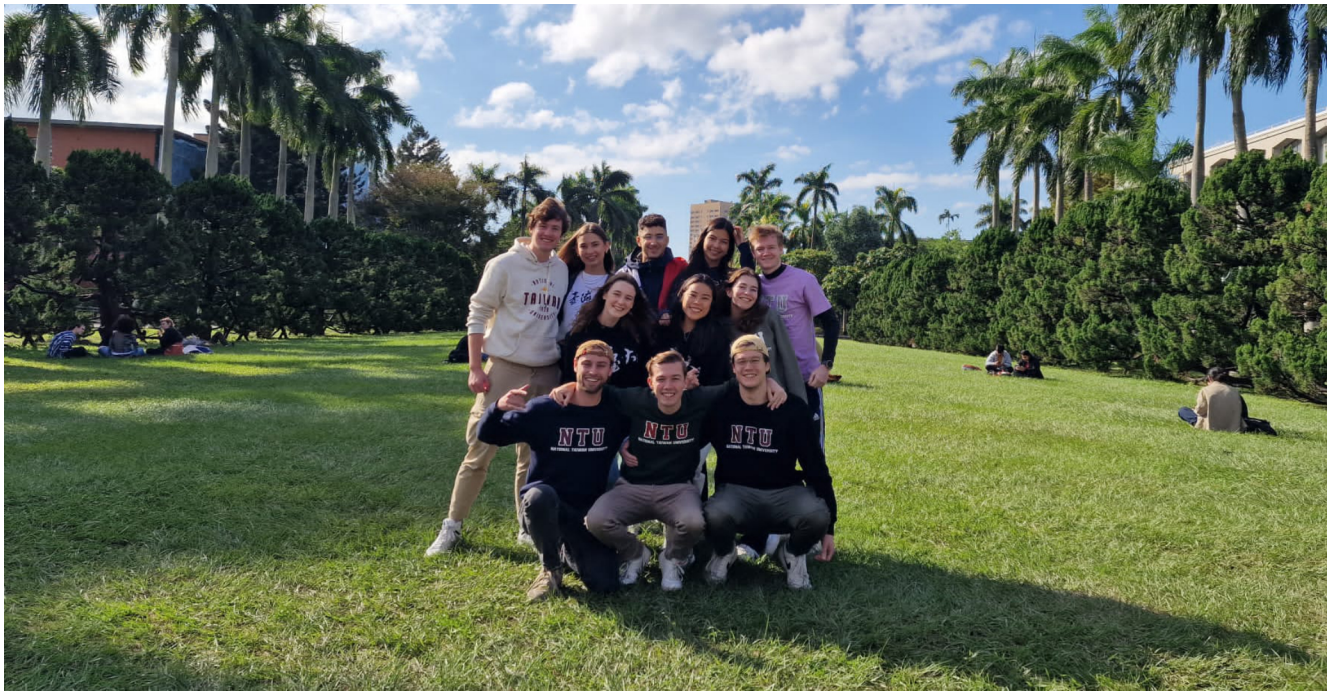
Taiwan has been often been the topic of discussion in the Dutch media over the past year. Many were wondering if the situation was safe enough to go there as pressure from the People's Republic of China seemed to be increasing. Moreover, the boarders had already been closed for over two years due to covid when I needed to decide on the location for my exchange. Nevertheless, the idea of living there had been in my head for several years already, so I was determined and decided to apply anyway to go there for my exchange. I can already tell you that it was the best decision ever.

TEXT Rebecca Soonss **DESIGN** Marijn Konings

Stepping outside my comfort zone & into Taiwan

Although I signed up in March to go the National Taiwan University (NTU) in Taiwan's capital city Taipei, I only knew mid-August that it was actually possible. The uncertainty during the months in between definitely wasn't fun, but I prepared myself as much as I could to be able to pack my suitcase and leave last-minute. Fortunately it paid off. Taiwan's borders were still closed, but during summer they decided to add exchange students to the list of exceptions. On August 17th I got my visa and on September 1st I boarded the plane to leave for the unknown. I arrived late during the evening at TPE airport. What followed was a whole process of pre-covid measures. It was a bizarre experience including me and my suitcases being sprayed in alcohol disinfectant from top to bottom. A special quarantine taxi transported me to Taipei and dropped me off at my quarantine hotel where I needed to stay for 8 days. Quarantine really meant to stay in your room and not put even one foot out the door. A crazy experience but also a really boring one, so let's hope this literally was a "once in a lifetime" thing.

Once I was allowed to leave the hotel I hopped in a taxi and went to straight to my home for the semester. Unfortunately I didn't get assigned a room in the student dorm at NTU, but I was able to find a room in a shared apartment through Facebook before I left. The location turned out to be excellent, in between Guting and Dongmen MRT station. (MRT meaning Mass Rapid Transit, aka the Taipei Metro, and it's amazing). Moreover, two of my flat mates were Taiwanese, so they could help me understand their culture and habits which was very helpful in the



first few weeks. Just like most apartments in Taipei mine didn't have a kitchen, but you also don't really need one. I can proudly say that I have not cooked a single meal myself during the entire semester. Something that is really weird to say for a Dutchie who loves the Appie, but the options to get food in Taipei are endless so one semester is not even enough to try it all.

Apart from the food there is more to love about Taipei (and Taiwan in general). I have never felt as safe as I did in Taiwan, even when walking on the street late at night by myself. Moreover, everything is very well-organized. As an example, Google Maps even tracks the buses, trains and MRTs, so wherever I wanted to go I just needed to plug it in in the app and I would be there exactly at the expected time. Moreover, there's a 7-Eleven or FamilyMart (aka convenience store) on every corner of the street, and they provide you with really any necessity or service that you can think of. Furthermore, Taiwan has a subtropical climate, so I feel like I skipped winter and it's dark, cold, short days this year. Even mid-December I laid on the beach and swam in the sea in the southern part of Taiwan. This certainly was one of the reasons why I decided to go there. Due to its climate the flora and fauna to be found in Taiwan is very diverse and definitely something different from the Dutch landscapes. Just outside of Taipei you'll find loads of waterfalls and natural hot springs. There are also multiple National Parks in Taiwan, of which Taroko and Kenting are the favorite ones that I've visited. I also loved Green Island and Lambai Island, two small islands located just off the coast of Taiwan. Moreover, apart from Taipei there are a lot of other fun villages and vibrant cities to visit, of which Kaohsiung was one of my favorites as the vibe actually reminded me of Eindhoven. In short, there is just so much to explore in Taiwan that I did even not leave the country until the semester ended as I never ran out of places to discover.

Of course the initial reason for going to Taipei was to study and obtain credits for my master's program. The stories you always hear about courses being easier abroad definitely holds for NTU as well. However, what is special about NTU is the kind of courses they offer for credits. I could choose any course from any department, so I decided to do three courses that were somewhat related to business and industrial engineering, and two courses just for fun. The first of these two was ICL (International Companions for Learning) where you get paired up with a local Taiwanese student to do a Skype call once a week with a group of kids from a primary school somewhere in Taiwan. My kids were called Mason, Wilson and Xavier, and they were super adorable. We talked about our own life, culture, interests, played some online games, and just had a laugh. The second 'fun course' was called the Science of Joyful Living, where we did three hours of yoga, meditation and other mindfulness practices every Thursday. Something completely out of my comfort zone, but that's also what going abroad is for, right? It's still crazy to think that I got 12 ECTS for basically playing Pictionary with kids, and doing yoga and meditation, but this is part of why the whole exchange experience was so great.

Concluding, I'd like to say that I can definitely recommend anyone to go to Taiwan on exchange, or just visit it during your travels. The borders are open again, and recently I read that they are even going to hand out cash to tourists who come to visit to get tourism back to its pre-covid levels again. To finish off I'd like to share my tips for setting foot on Taiwanese grounds: download Google Translate on your phone, and you'll be fine being surrounded by Chinese characters only. Whenever you get something handed over, take it with both hands. You'll get a smile back for sure. Know how to eat with chopsticks and a spoon only, because forks and especially knives hardly exist in Taiwan. Get a sim card and an EasyCard when you get there, and you'll be able to go anywhere. Thank you for reading, or as we would say in Taiwan: xièxiè byebye!

As an Industrial Engineer, there are endless possibilities in terms of career paths and industries that you can pursue. While many people choose to work for high-tech or manufacturing companies, some will also choose to found one.

In this article, we speak with Job van Beek, former IE and Master IM student and founder of Piplab. We will briefly discuss the background of the company, what it is like to be an entrepreneur, and what it takes to become one.

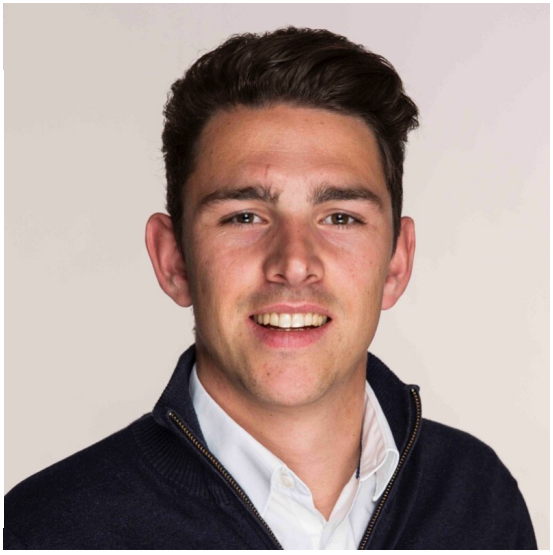
TEXT Maiky Geerman **DESIGN** Marijn Konings

Surrounding yourself with the right people

Piplab was founded in 2020, right before the start of the pandemic. During this time, the laboratory supply chain market has been heavily affected, causing delays and increasing demand for products. Job: ''The market for these products is saturated with large multinational companies that often have their production and warehouses located outside of the Netherlands, resulting in long supply chains.'' Therefore, Piplab tried to streamline the supply chain by eliminating several intermediaries, allowing for faster and more reliable delivery of laboratory supplies directly to customers. This positioning allowed the company to promise even a 100% delivery guarantee while having shorter delivery times.

But now the pandemic is over, the key is to keep running the business. Job: ''Usually, laboratories order their materials on webshop-like places. Due to this, the supply chain can be pressured easily during busier times.'' In today's dynamic and fast-paced world, Piplab recognized an opportunity to address a gap in the market by offering delivery contracts and ensuring fast delivery, which is essential for laboratories that demand reliability.

Starting Piplab, however, did not mark the beginning of Job's entrepreneurial journey. At the age of about 16, Job started his first business with a few guys. Like many great entrepreneurial stories, they started working in the basement, after being lured into the world of business by the father of one of these guys. Therefore, from an early age, they began to engage in creating businesses. ''For example, we've had a business for animation videos, connecting entrepreneurs to scale-ups, and an editing company'', told Job.



So how important is it to have the right people around? Job: ''It is always very important to have the right people around you, who make you better, or who are smarter or better in things than you.'' In Piplab for example, Job has roles in business development and sales. However, he is happy to have skilled people that are better in or enjoy doing other things, such as inventory control or finances. Tony Fadell, a famous silicon-valley engineer wrote a book that states that managers are often afraid of working with people who are smarter or better than them. For Job, it is a motivation to take an extra step, when you are working with better people. Job: ''Now you're young, you should try a lot and learn a lot from people who are ahead of you. Otherwise, you would have to drag along all the people around you. This will eventually cost you a lot more energy.''

''Often, people read books that inspire them for a while, but the useful information that's inside of it is quickly forgotten.'' Therefore, Job tries to read something in the morning because then it sticks with him for the rest of the day, and he can immediately apply it in the afternoon. Then, the book will really be of great value. Some of Job's favourite books include:

- 100 Million Dollar Offers – Alex Hormozi: This books takes you on a journey to all important facets of entrepreneurship. It contains very specific examples which you can directly apply throughout your day.

- The Mom-Test – Rob Fitzpatrick: The Mom Test talks about ways to tell if your business idea is great or terrible by assessing the opinions of your friends, family, and investors accordingly, and not believing everything they say just to make you feel good

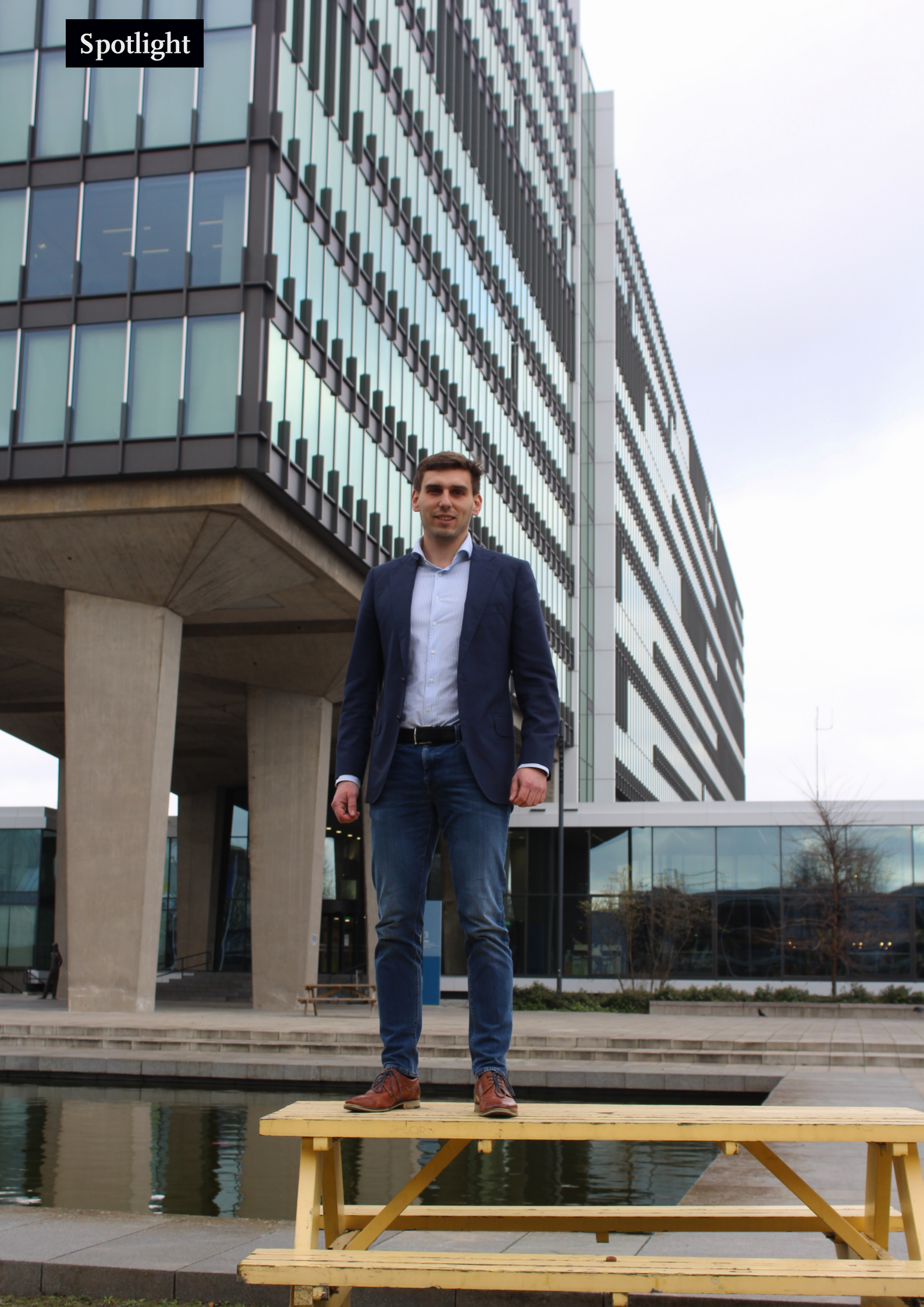
- Never Split The Difference – Chris Voss: This book is one of the best negotiation manuals written by a former FBI-agent. It teaches you how to negotiate like a pro in your everyday life as well as in high-stakes situations.

But you can read as many books as you want, still the road towards being a successful entrepreneur is not without bumps. According to Job, one of the hardest things about being an entrepreneur is being resilient against business uncertainty. Some days you might think you have everything in place, while on other days it might seem like there's nothing left to work for. ''There's this cliché about discipline, but it is actually one of the most important things as an entrepreneur. You've got to stay consistent, whether you have a good or a bad day'', says Job. However, this uncertain aspect should not keep you away from becoming an entrepreneur. Companies like Lightyear or even Google can face bankruptcy or opt for a large-scale layoff of employees, tells Job.

Job also shared that he didn't always appreciate the way things were taught during his bachelor's and master's degrees. He felt that a more practical approach could have been better. However, he was happy to have made many valuable connections during his time here. ''We have an amazing high-tech environment and many start-ups around us here within the Brainport,'' he said. ''I feel like it's a shame that nothing more is done with that.''

In conclusion, Job's story teaches us that having the right people around you is crucial for entrepreneurial success. As he explained, surrounding yourself with individuals who are smarter or better than you in certain areas can inspire personal growth and development. During your studies, you should take advantage of opportunities to network with intelligent and skilled individuals, and work hard to learn and try new things. Remember the well-known saying: ''Chance favors the prepared mind.'' Successful entrepreneurs must be ready to capitalize on opportunities when they arise. While the path to success may be uncertain and difficult, staying consistent and having the right people around you can make all the difference in achieving your goals.

Spotlight



Industrial Engineers are driven and not afraid of a challenge, often resulting in them looking for opportunities to grow in their career before even finishing their study. Jeroen Sassen is currently mastering in Operations Management and Logistics with his final thesis at Heineken, but that does not mean that he is not busy with his career yet. With his very own start-up, Heimdall Sensor Intelligence, he is currently exploring life as an entrepreneur with 2 co-founder and soon their first product, the HSI-box will be installed on multiple buildings within the Netherlands.. SCOPE asked Jeroen about his reasons to start the company, and how far the company can come.

Jeroen has always been the venturous type, explaining why he chose to do the EUST-committee at Industria, and be a part in the Congress board as day commissioner. Especially in the Congress board, he really enjoyed the role of coordinating such a big project and the group dynamic that came along with that.

From there, Jeroen found a job through innovation lab, where they were looking for a project leader in a project concerning the development of multiple sensors for measuring the condition for building materials on the facade of buildings. In a team of 10, he was the lead and had a true IE-role; coordinating the 9 others and connecting all sides of the project with each other. When the university decided to not continue with this project it was where Jeroen and his two co-founders, Joris and Gijs, decided to continue with the project and start their company Heimdall Sensor Intelligence.

Heimdall

Heimdall, officially originating from the Norwegian mythology, is the god who oversees all processes happening at the same time. This is exactly what Heimdall Sensor Intelligence is producing. Their revenue model is based on SaaS (Software as a Service). As Jeroen explains, the sensor is just a tool, the real value is created from the data it generates. By continuously monitoring the state of the exterior of a building and providing companies with insights to reduce costs and be more sustainable Heimdall is slowly placing itself within the value chain. As Jeroen states himself, Heimdall wants to 'make the transition to data-driven maintenance possible'.

HSI-Box

The hardware component that Jeroen and his team have created is the HSI-box. The first focus of the HSI-box is the measurement of dust particles on windows. Institutions, such as the TU/e, might at the moment do periodic cleaning of all their windows, while some might not even be dirty at all, and some way too dirty. The HSI-box sends a laser beam to the window, and by the amount of light that reflects from the window the dirtiness can be determined. In the live dashboard, customers can see how dirty their windows are and even decide when to be notified. You might imagine that the windows on the side of the building where a train drives by every 5 minutes are much dirtier than those on the other side, or that companies decide that the reception must be as clean as possible, but the 12th floor can be moderately clean. Using the live dashboard, companies can really act on their needs and therefore profit from the unique solutions of HSI

HSI provides 3 unique selling points; quality assurance, cost reduction and sustainability. With quality assurance, HSI wants to provide its customers with real-time and accurate data on the status of a building. Cost reduction will result from this quality assurance, as accurate results will mean that operations can be done on logical moments and only on areas that require service, and thus give reduced costs. Both these points will lead to less unnecessary use of water, chemicals and manpower, making the operation more sustainable.

The future of Heimdall

Heimdall has a large market potential, as no company in the world provides the same technology as HSI does. Currently, their patent application is pending which will legally protect the start-up. Next to this, HSI is looking for investments to further continue their research into the technology. Their strategy will be to first enroll on the Dutch market with a potential of 40.000 boxes, followed by California and NYC which hold the opportunity for placing up to one million boxes. In order to realize their growth estimations the start-up is seeking for funding which is something Jeroen is currently busy with. In order to run the company, Heimdall is renting office space in building Alpha at the TU/e campus which is the ideal space for preparing meetings and discussing the strategic decisions the company has to take.

Still looking to create more connections, learn more and grow even further, Jeroen joined many start-up events all over Europe, with Slush in Finland being one of those, providing him with more relations and information. While it may seem as everything is going smoothly, Jeroen stressed the fact that lots of operations go wrong. Pilots that fail, shipments that are being delayed or data losses due to connectivity issues, but every fault or step back that comes their way is seen as a new lesson for improvement.

HSI is hiring new business developers to further grow their company, so if you are interested, or interested to connect with Jeroen for any other purpose or questions, be sure to contact him via jeroen.sassen@heimdallsensors.com

Alumnia Board Update

In relation to the theme of this edition of the scope Alumnia is continuously working towards a thriving future. Fresh insights of new members and new boards members help tremendously in reaching that goal. Therefore, we intensified the collaboration with Industria and set as a goal that being an Alumnia member is a logical next step after Industria membership and graduation. Aiming for that goal we jointly organize several diverse events like the Alumnia x Industria drinks, TBKx & the Alumnia Thesis awards. Please join here and be sure to become a free trial member if you are not graduated yet, but already want to enjoy these activities.
?
As stated new board members also help in pursuing a thriving future. Therefore I'm glad to announce that as of the last general assembly on February 1st this year, the following board has been chosen:

Sadly, Robbert van Genuchten announced to leave our board after having contributed greatly to the Alumnia board for nearly 2.5 years. The time has come to further pursue his career at ING, but luckily Robbert didn't leave us emptyhanded. I have the honor to introduce you to two new board members; Jochem Kamst & Koen van Wershoven.

Both might be familiar faces for (former) Industria members as Jochem used to be Secretary of Industria in the 51st Board and Koen is the former Chairman of the 55th Board of Industria.
Currently Jochem is working at Friesland Campina, which he was already doing during his Master Thesis. Koen is working as Forecaster for Jumbo Supermarkten, since he graduated in May 2022. Please join me in thanking Robbert for his service at Alumnia and welcome the two fresh board members!

Next to the joiners and leavers, I can announce that I'm writing this Alumnia update for the last time, as Harm van Duijnhoven will be my successor as Chairman of Alumnia. Harm joined the board of Alumnia already a year ago, so he knows the drill already. Since the 1st of February he ensures that Alumnia will prosper and guide Alumnia to a thriving future.

On behalf of the board of Alumnia,

Tom Koks
Chairman Alumnia

What activities can you expect?

9th of March - Alumnia x Industria drink

29th of March - TBKx

10th of June - Outdoor Activity

TEAM 2023

Isabelle Algemeen bestuurslid
Daphne Penningmeester
Harm Voorzitter
Nadine Secretaris
Jochem Algemeen Bestuurslid
Tom Algemeen Bestuurslid
Koen Algemeen Bestuurslid

Alumni Speaking

In 'Alumni speaking', each SCOPE two members of alumnia association Alumnia are interviewed. They talk about their careers, current activities and the relationship with their studies.

TEXT Peter Schram & Maarten van Asseldonk **DESIGN** Marijn Konings

Peter Schram

What has your career been like so far?
I have had a quite diverse career so far. I worked in big corporate organisations like Philips, Signify and DAF Trucks, primarily in project management roles. I also worked quite some years as supply chain consultant at Accenture and IG&H consulting.
After that I made a transition to Gartner, where I worked as senior research director. Currently I work as an independent advisor in supply chain planning. I am also active as a coach and board member for supply chain startups. From time to time I write and present about trends in supply chain planning and business transformation.
The great thing about my career until now, is that I have worked in almost all parts of the end-to-end supply chain, gained experience in many different industries, and got to work all over the world and had the opportunity to meet many interesting people.

What makes you happy in your work?
By nature I am curious and always like to learn. That is why it makes me happy when I can work on innovative topics, gather new insights and work in different environments. That is also why regularly, my assignments start with a content driven questions.
However, very often the question comes to the table on how to drive change and how people should behave in that. It is great if I can build the relationship and trust to help with these questions as well. It is really rewarding to hear from people on how you have helped them by asking questions, providing them with honest feedback or reflecting on their challenges.

What was the most important moment in your career and why?
The most important moment in my career was to start my own company. It was scary (and sometimes still is) to give up the certainty of a fixed income and contract, and not to know what I will be doing in 3 months from now. But it also challenges me to get outside of my comfort zone and that is really rewarding. I can experiment much more that I was used to in previous jobs, for example developing new propositions on how I can work with different companies. The success of what I do is for large extend depending on my own effort. It also helps me to balance my professional and personal life in a better way. And the maybe the best thing of being more entrepreneurial is to get in contact with inspiring people that often provide me with new insights.

Which function/job did you dream of while being a student, and how and why did that change over time?
I always thought I was going to have a career in a big corporate of consultancy firm. And that is also how is started off my career. However, the further my career was advancing, the more I realized I was doing things I didn't get energy from anymore and felt comfortable with. Sometimes also I felt constrained by the boundaries of the roles I was doing.
I came to the realization that my strength are in challenging the status quo and help to develop innovating ways of working in the supply chain. I found that for me it works much better to do that external sparring partner being fully independent, more objective and bringing external insights that I gathered throughout my career and from other customers I work with. Coming to that conclusion has brought me a lot of peace of mind.

New question:
What career advice would you give your younger self with the knowledge you have now?

Why:
Understanding better what people have learnt from their career and how others can benefit from that.

Peter Schram

Age: 44
Graduation year: 2003
Role: Found and advisor of breakthrough advisory

Bram Bongaerts
SCOPE 2, 2023
Practice Lead Life Sciences at EyeOn

Maarten Vermeulen
SCOPE 4, 2022
Supply Chain and Network Manager

Maarten van Asseldonk

What has your career been like so far?
I came across this data analysis technique on the cutting edge between processes and data science: process mining. I was immediately intrigued and up until now I have never lost that.

During my master's I started a company with fellow students, and we've managed to set it up in such a way that we were able to continue working in it after graduating. The first couple of years we have been doing consultancy but kept running into the same problem. The data preparation. We're building a no-code platform to tackle that now.

Which course would you add to the IE curriculum to setup students for success?
I think this would be something related to data wrangling. Data is an increasingly big component of any kind of work an industrial engineer will do. But it is (unfortunately) rarely in a format that can be analyzed straight away. Having some basic understanding of which techniques to apply is valuable.

Where do you get the most energy from during and after your work?
During work I have a lot of meetings with possible customers. I get most energy from having good conversations with them, in which they recognize the problem we're trying to solve. It helps realizing that we're solving a relevant problem. Outside of that I think it's the usual, having fun with friends and family.

What is the key thing that you have learned during your studies that you use a lot and appreciate?
That would be a methodical problem-solving approach. We've learned to not just rush into a problem head-first but take a step back and analyze. From there map everything out and devise a plan. What I've learned outside of the curriculum is mainly
related to working in teams. During lots of committees, and of course my year on the Industria board, I've learned to work in teams on wildly varying topics.

What advice would you give current students?
First of all, enjoy your time in university!
Secondly, don't hesitate to follow up on a technique or insight that you gain during university. You can start your company at the KvK in one afternoon and go and try to apply your knowledge in the real world. What you learn in university is often so far ahead of what people are doing in business, that you've got plenty of time to figure out how to run a company in the meantime.

Old question: What is the key thing that you have learned during your studies that you use a lot and appreciate?

New question: What aspect of business life were you most surprised by after starting your first job?

Why: I think this has a similar kind of answer that you could give but leads to more fun anecdotes. For me, for example, it was a big surprise that most people in business also do not know exactly what they are doing either. Everyone is giving it their best, but don't expect that just because someone is more experienced or because someone pretends to know, that they actually do know.

Maarten van Asseldonk

Age: 27
Graduation year: 2020
Role: Co-founder at Konekti

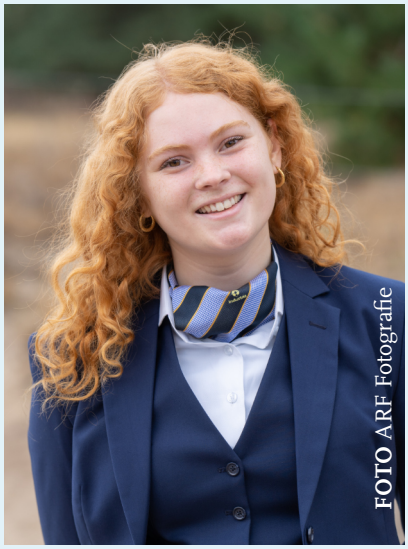
Maurits Akkerman
SCOPE 2, 2023
Senior Process Mining Consultant at Bright Cape

Cas van Elderen
SCOPE 4, 2022
Team Lead business engineerin at ASML Wilton Factory

Thrive early

As Industrial Engineering student, I am looking forward to my future. As board of Industria, I have regularly contact with Alumnia, and see that Industrial Engineering is everywhere. There is a large variety job opportunities in this field. Personally, I have no idea yet where I would like to be in several years: a large company as ASML, becoming a consultant or maybe working for a non-profit organization? What I do know is that I hope to be in a challenging position, where I can develop myself. Thinking about how the future will look like can be intimidating. Where will I live, how will my life look like at that time? At this moment, I am also focusing on the present. Enjoy every moment and try to make every day memorable. Create beautiful memories and learn who you are and what you find important in your life. And later on, in our hopefully thriving future, look back on this fascinating time as an Industrial Engineering student.

Farah Schepens
Educational Officer



A Brighter Future Ahead

Looking ahead to the future, it's easy to feel a sense of trepidation about what lies ahead. However, despite the challenges we face, there are also many reasons to be optimistic about the future. One reason for hope is the rapid pace of technological innovation. With each passing year, new breakthroughs are made in fields such as artificial intelligence, renewable energy, and biotechnology, offering exciting new possibilities for improving our lives and tackling pressing global issues.
Another cause for optimism is the growing awareness and action around important social and environmental issues. From the #MeToo movement to the rise of sustainable business practices, there are many signs that people are waking up to the urgent need for change, and taking steps to create a more just and sustainable world.

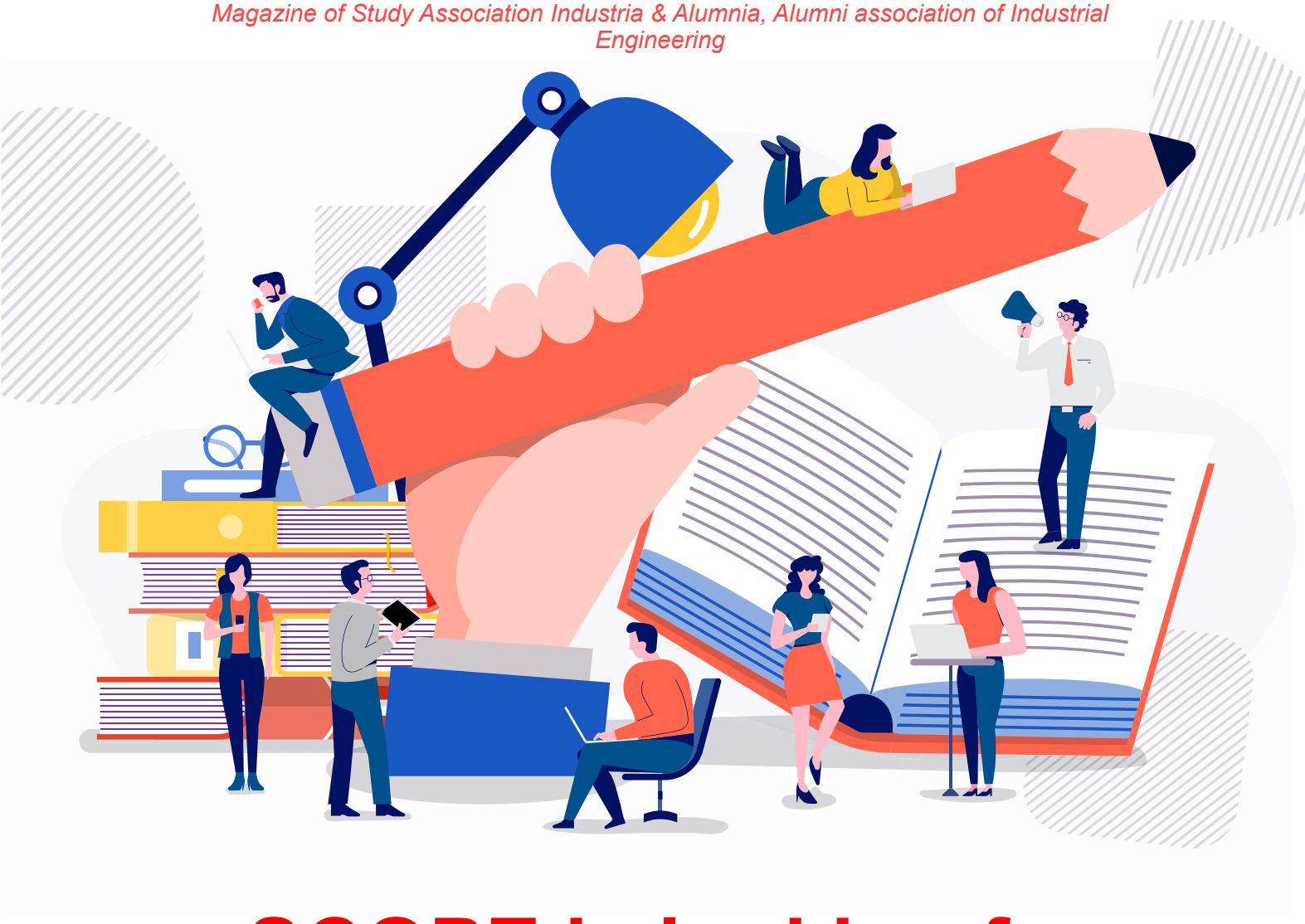
Of course, there are still many challenges that we must confront as a society, from economic inequality to climate change. Industrial engineering is a field that can play a vital role in shaping that future, particularly in terms of optimizing and improving complex systems and processes, and thus contributing to conquering the challenges. It offers a powerful toolkit for solving some of the most pressing challenges of our time, and will play a key role in shaping a thriving future for us all.

Rosan Kolff
Chairman

1000 prints at Industria, Alumnia & companies

WE ARE SCOPE

Magazine of Study Association Industria & Alumnia, Alumni association of Industrial Engineering



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