

SCOPE

Year

31
Number

I

March 2024

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

Global Enterprises *Multinationals dominating the business world*



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Colophon

SCOPE is a quarterly publication of Industria, Technisch Bedrijfskundige Studievereniging and Alumnia, Alumnivereniging of Industrial Engineering at the University of Technology Eindhoven.

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Cover foto Pexels

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Print Meesterdrukkers BV

ISSN 13806920

Annual subscription € 59,60

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PHOTO Tom Ruis Media

Keeping the world spinning around and around

Dear reader,

More and more students take a gap year to travel all around the world. Backpacking through Thailand, Vietnam and Malaysia or touring through Colombia, Argentina and Brasil are gaining popularity incredibly fast. Although you might not think about it directly, but without Industrial Engineering, this would not even be possible. Industrial Engineering helps us getting all around the world and you can find Industrial Engineering always and everywhere. Even in the furthest outskirts of the world, Industrial Engineering plays a pivotal role in keeping the world spinning around and around. Many worldwide operating companies rely on the basic fundamentals of IE and without them, the companies would not even be a small part of what they are now. In this SCOPE, it will be discussed how these huge companies work around the globe and how they utilize Industrial Engineering to the fullest.

Bjorn Bouwman dives into the logistics behind the Formula 1 faces and shows how this results in huge challenges. Later, he also writes about the recent developments of the business climate in The Netherlands and how this might evolve in the future. In between, Lars Geerlings talked to Ronald Groen, Advantech's Operations Director Europe, about the journey of operational excellence and global growth.

Furthermore, Bauke Wijnands shares his experiences about his exchange in Colombia and Ruben Suijkerbuijk tells about the ESTIEM exchange to the Portuguese region Minho. Harm van Duijnhoven provides an update about Alumnia, while Kinga Droog and Rosemarie van Alst tell about their career in Alumni Speaking. Special attention goes to Joost van der Haar, who helped ASML improve the logistic operations of their spare parts with his master thesis and improved the process with 5%. To close off, Sjuul Geurts, Didier van Lieshout and Bjorn Bouwman wrote interesting columns.

As always, the preface will be ended with a poem:

‘Just like businesses operating worldwide,
find yourself a mission.
Something that motivates you from the inside,
and there you are, bursting of ambition.’

Enjoy reading this edition of the SCOPE,

Bjorn Bouwman

Chief editor SCOPE

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The Magnificent Multinational Quiz

Q1: Which company had to lowest revenue in 2023?

- A: Apple
- B: Amazon
- C: Walmart

Q2: How many of the biggest 500 companies worldwide are Dutch?

- A: 1
- B: 10
- C: 33

Q3: Arrange these companies based on their revenue, highest first.

- A: Heineken
- B: Philips
- C: ASML

Q4: Who is the founder of Microsoft?

- A: Steve Jobs
- B: Bill Gates
- C: Warren Buffett

Q5: Which multinational has the slogan 'Impossible is Nothing'?

- A: Adidas
- B: BMW
- C: Red Bull

Q6: The name of which multinational means 'play well' in English?

- A: Clementoni
- B: Hasbro
- C: LEGO

Q7: Of which companies can Elon Musk say he is (one of) the founder(s)?

- A: Tesla, X and SpaceX
- B: SpaceX, OpenAI and Tesla
- C: PayPal, Tesla and X

Answers: 1: A, 2: B, 3: C-A-B, 4: B, 5: A, 6: C, 7: B

The F1-calendar changed drastically over the last two decades. While the total number of races increased by fifty percent, less Grands Prix are organized in Europe. Yearly having between 20 and 24 races all over the world causes incredible logistic challenges for the competing teams. Getting all equipment, varying from the racing car and mechanical tools to the favorite coffee of the team principle, from circuit to circuit under immense time pressure is anything but simple. In this article, SCOPE dives into the logistics that enables billions of fans around the world to see their heroes race every weekend again.

TEXT & DESIGN Bjorn Bouwman



Logistics in Formula 1: a race against the clock

Back in 2003, over twenty years ago, the Formula one season consisted of sixteen races, of which ten in Europe. The logistics were relatively easy to manage, since there was enough time in between races to ship all equipment to the next circuit. However, two decades later, a total of 22 Grands Prix all over the world in only 37 weeks shape the F1 calendar.

All continents, except for Africa, are visited, which results in a total travel distance of over 125.000 kilometers. That is more than three full circles around the world.

Nowadays, the F1 grid consists of ten teams with two cars per team. Each of those teams brings around 100 team members and over 40.000 kilograms

of cargo to the Grands Prix. The Williams F1 team brings about 60 computer screens with over 650 kilometers of wiring and cables to run the infrastructure around the track. The available time teams have to move from circuit to circuit obviously depends on the period between two races. If there are two weeks in between, the teams have a



Where other teams try to keep their factory under one roof or at least in the same area, Haas has three bases spread across two continents. As home to a sister racing team, Kannapolis was chosen as location for the official base, but running an F1 team entirely out of the United States is not practical in the Europe-heavy calendar. Therefore, there is a workshop in the UK where the cars are sent between races. As Haas uses Ferrari engines and has close links with the Italians, the team has a design and development base in Maranello, where the cars and spare parts are built and upgraded during the season.

To coordinate the logistics in a timely and well thought-out manner, good collaboration and communication between those three bases is essential. The cars have to come from the base in the United Kingdom and spare parts from Maranello, while the coordination is done from the United States base. When working on the edge of what is possible, the risk of issues arising is high. Haas experienced this in the beginning of 2022, when they missed the first round of pre-season testing in Bahrain after the cargo plane they used to transport their vehicle was stalled in Istanbul due to technical difficulties and the shipment arrived two days later than scheduled.

window of then days to reach the next destination. However, if there is a back-to-back race weekend, the available time to get everything operational at the next circuit is only three days.

To ensure all logistic processes are running smoothly, the organization behind the Formula 1, Formula One Group, collaborates closely with DHL. The F1's official logistics partner, has a dedicated staff of 35 specialists, divided over inbound, on-site customer service and pack-up teams, who travel to each race to manage the transportation, setup, breakdown and packing of all teams and their equipment. The cooperation between is vital for the sport. Without it, the show simply would not exist. The work done to make this logistically possible can be compared to the work carried out by an F1 team during a pit-stop; a mass of people collaborating to ensure their job gets done as efficiently and safely as possible. To do so, staff is already busy dismantling and storing equipment before the checkered flag is waved. Depending on the distance that has to be covered, transportation is carried out by trucks, ship or plane. In the last scenario, typically between five and seven of the biggest cargo planes are used.

However, also manage cargo outside the normal routine has to be managed, such as spare parts or even a full replacement car coming from the team's factory to the next race. Furthermore, parts have to be

flown out for testing in special laboratories around the world and back in before a race. Paul Fowler, global head of motorsports for DHL Global Forwarding, says that they must always be prepared for last-minute demands, as those can have an huge impact on the race. The importance of the logistics within Formula 1 is also recognized by F1 sporting director Steve Nielson: "you are working right on the edge of what is possible logistically, and any hiccup has a knock-on effect on the teams". Sometimes, the time pressure is at such a level that customs checks are carried out at the circuits themselves rather than at the airports, in order to speed things up. For all teams, this is already stressful, but Haas F1 team is an extreme case.



“In Formula One, we plan everything to death because when you plan you have got a better chance for success. There is no room for failure.”

The most complex logistic challenge faced by the Formula 1 was a tri-continent triple-header consisting of back-to-back races in Mexico, Brazil and Qatar during the COVID-19 period. As the pack up was completed as usual at the Mexico City Grand Prix, fog caused six hours of delay in transporting three cargo planes from Mexico City's airport to Rio de Janeiro, putting DHL in a race against time to get everything in place. “In Formula One, we plan everything to death because when you plan you have got a better chance for success. So we plan every detail months and months in advance. With shorter timespans, experience and trust in partners becomes hugely important because you do not have time to go through all the details that you would in a normal environment. We do not take risks that we do not think are worth taking.” Hitting the delivery targets during double- and triple-headers is never easy, but DHL improvised to make it happen. “There is no room for failure”, says Fowler.

Another example of the extreme circumstances under which the transportation is arranged, dates from 2018. The teams had to travel 1600 kilometers from the Red Bull Ring in Austria to Silverstone in the United Kingdom and all trucks had three drivers to ensure the cargo never stopped moving, aside from fuel stops.

This all together clearly shows the logistic challenges following from the current F1 calendar. But, due to the increasing popularity of the sport, which is caused by the more personal and insightful strategy the new F1 owners are deploying since 2016, more and more circuits are burning of the ambition to host an F1 race. Amongst others, Colombia, South Africa and Thailand are in the race of being the next destination hosting the F1 circus. However, the current maximum number of races in a season is fixed to 24 and the teams are not eager to expand that number due to the increased strain put on all

employees working in the paddock. When adding new destinations, F1 would therefore have to sacrifice some established circuits or find other, more creative solutions to keep the sport vitalized. Rumors about having certain Grands Prix biannually or even having Grands Prix only once as a ‘wildcard event’ are going around. Although the local promoters might not be satisfied with that solution, it might be the only feasible opportunity to add more destinations to the F1 calendar without the teams facing unsolvable logistic challenges.

So, next time you are watching these cars chasing each other round after round at the circuits, do not forget to appreciate all the hard-working employees enabling you to enjoy your Sunday afternoons. Without them working on the edge of what is realizable, F1 would be a simple European race competition instead of the immense race class with incredible fans all around the world.





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In the rapidly evolving landscape of global business, the key to success often lies in a company's ability to adapt and optimize its operations. In the Brainport region, we see our fair share of companies growing by double digits every year. Advantech is no outsider. But to keep doing that successfully, the processes, people and the company have to grow all together. Advantech's Operations Director Europe, Ronald Groen, with years of experience in transforming and optimizing organizations, shared his insights into the journey of operational excellence and the pivotal role of talent and technology in driving global business and growth.

TEXT Lars Geerlings **DESIGN** Bjorn Bouwman



Empowering people: Advantech's global operations

Ronald Groen has been active in any section you could think of – from the Rotterdam port and deep-sea logistics to multimedia and healthcare. Would you expect someone in High Tech to have worked for a company like

Disney? Well, Ronald did it. With a foundation in supply chain management and a passion for operational transformation, his journey through different industries has been marked by a consistent

theme: leveraging talent and the latest technologies to optimize operations.

Ronald is not afraid to take the leap. When he started to work in

healthcare, he had zero experience nor specific knowledge of that sector. According to him, the processes are 80% the same in each business and that's how he's been able to succeed in so many different sectors. In Healthcare, he has been given the chance to do it all: marketing, sales, but also the traditional supply chain management aspects such as logistics and procurement. He enjoyed seeing all sides of the business and it opened his eyes, he tells us. Maybe this is why he puts so much effort into putting other people in their power by giving them the responsibility they deserve and need.

But if his job at Ecolab in Healthcare was so enjoyable, why did he leave? Ronald is not someone to “keep the ship steady”, as he says himself. Once he has achieved his goals set for his job, he wants something new. Eventually, that meant going to another company. After a short stay at Neways, he ended up at Advantech. This rapidly growing company faced challenges in scaling its processes and systems to match its expanding footprint. Exactly that is what Ronald came to improve and standardize.

Journey for operational excellence

Advantech's ambitious plan to double its revenue by 2030 emphasizes the importance of a solid foundation to support such growth. Ronald faces this challenge by developing a journey for Operational Excellence. Herewith, he has a focus on three



principles: Lean Six Sigma, safety and Project Management. He showed us some slides during the interview that he also uses to explain these concepts to his people because they are the key to success according to Ronald. The first slide shows a video of Basketball Legend Michael Jordan “I’ve failed over and over and over again, and that is why I succeed”. That motto is what Ronald wants to advise his employees.

Failure is needed to improve. People inside any company need to be allowed to make mistakes, he says. That is why safety encompasses not only physical safety but also the feeling of being able to make failures, and to feel safe to ask questions. Hence, that is the foundation of the journey he created towards operational excellence. Operational excellence, he says,

means to enhance business performance through day-to-day improvements. It's about problem-solving, leadership and teamwork.

At the start of his adventure at Advantech, the company had a very flat managing structure. Although this may sound nice, it also meant that people came to Ronald to ask for approval on the smallest of things. Hence, he added one extra layer without adding people, empowering through promotion. For example, he appointed a warehouse manager, giving him the responsibility to lead the warehouse completely and to make mistakes in the meantime. First try, then ask, is the motto. Furthermore, all departments have to manage their own budget, which leads to more feeling of responsibility at all levels and ends of the company.

Ronald Groen

Ronald Groen is like a Swiss army knife that cuts like a real Chef's knife; he has worked in every industry you could think of, yet has positively transformed all of the companies that he came across. With a master's in Supply Chain Management, he kickstarted his career in the port of Rotterdam and has since seen many sectors, from healthcare to high-tech. He focuses on empowering people to transform the business and sticks to it everywhere he goes.





This also creates the opportunity for the directors to focus more on the strategy and less on the day-to-day operations. Hence, the COO in Taiwan is now also interested in applying this strategy at the headquarters. The CEO is a fan of the book: Good to Great. Exactly this book Ronald read in preparation for his new job and those lessons he is applying in Advantech. Hopefully, this will allow the company to grow through its employees. Since his journey to operational excellence, the churn rate has been

minimised. Hence, the first results are already there after 1,5 years.

As said, the directors, including Ronald, can now focus more on strategy. Project management ensures standardisation for projects within the business and lean strategy optimises processes. The next challenges are worldwide. Their global presence has many advantages, but they also hop on the trend of producing their products more within their reach. To reduce their manufacturing footprint and to suffer less from (geopolitical) global

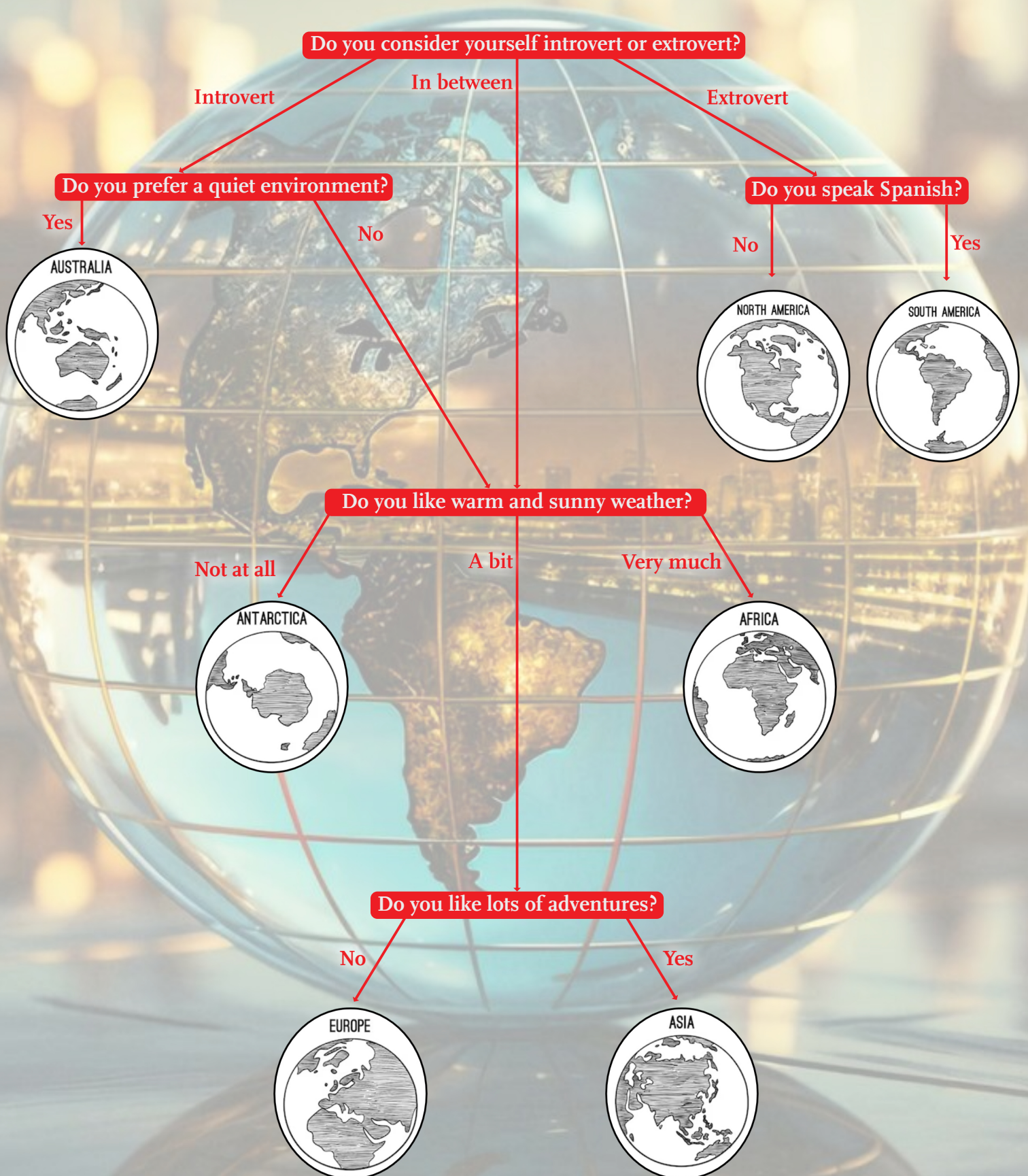
disturbances, they are now aiming to produce more within the regions.

The empowering of people finds its foundation in the skills and competences they possess and the ability to take the initiative in their role in the transformation of the organization. Hence, he has already had to make some tough decisions, however by doing so, he is convinced to transform Advantech Europe into a resilient company that is ready to double its turnover before 2030!

Advantech

Advantech is the world's market leader in industrial computers with a market share of over 40%. It has offices all over the world, including one in Eindhoven where it hosts 150 employees. Their business is to provide the industry with highly customisable computers, hardware solutions for the Internet of Things such as routers and sensors and the software to integrate it all. Therewith they enable processes such as predictive maintenance and quality assurance, all designed to streamline operations and accelerate innovation of their partners. With a clear focus on connectivity and real-time data utilization, Advantech's offerings are key in enabling manufacturers to leap into the future of industrial operations where smart, connected, and highly efficient production lines are the new standard.

What continent suits you best to live in?



For a long time, The Netherlands was a good location for multinationals to settle. The business environment is getting worse and worse. Political affairs, such as the shortage of labor, the problematic state of the housing market and the possible reduction of flights at Schiphol airport, are influencing the decisions of worldwide operating businesses make about the location of their home base. Although having a great, international network of service providers and the good logistic system, The Netherlands dropped two places on the World Competitiveness Ranking. It is no urgent problem, but if this trend continues, drastic measures are not ruled out.

TEXT & DESIGN Bjorn Bouwman



Navigating Netherlands' Corporate Culture

The business climate defines the economic and professional environment surrounding the industries represented in a country. This includes, amongst others, the governmental and political attitude

towards the businesses, their support for labor organizations and their financial stability. As technology keeps developing and the desires and preferences of consumers keep shifting, the business environments

within countries change rapidly as well. Having a favorable business climate has numerous advantages for companies, such as lower risks, reduced costs and uncomplicated connections with customers and



amount of shares. The Dutch government will implement new laws due to this process could increase the costs for companies with up to a sixth of the previous costs. Jan van de Streek, professor taxation laws at the University of Leiden, calls it “heavy taxation measurements” and even claims it includes some degree of “overkill”. The Dutch government is still looking for alternatives, but for now, implementing these laws remains a realistic scenario. And that is exactly core issue: companies are much more bothered by the forever changing rules instead of the small increase of taxes. Consistency is key for these huge businesses and their management.

Despite these negative aspects, the demand still exceeds the maximum capacities of The Netherlands, which barely increased over the past decade. “We are a small country. Ten years ago, we could offer much more labor, space and energy”, Van der Meer explains. The high demands can be explained by several factors. First of all, the geographic location is very beneficial for companies and the infrastructure is fast, reliable and almost based on logistics. Furthermore, the Dutch population is very well-educated and the

quality workers. Furthermore, a welcoming investment climate can help attract high quality, durable investments and support sustainable and inclusive growth.

Lately, there have been some problems regarding the Dutch business environment, says Hilde van der Meer from the NFIA, the Netherlands Foreign Investment Agency, which tries to convince companies from all around the world to settle in The Netherlands. Due to the sustainable transition, the electricity network is more than packed and companies relying on a good connection to that network often experience difficulties finding a suitable location in The Netherlands. According to Van der Meer, she often even has to warn these companies about the expected added value of settling in The Netherlands. Furthermore, finding technically educated employees is harder in The Netherlands, compared to other countries, says Thijmen van Bree from knowledge institute TNO. However, there are many opportunities to attract that personnel from abroad. The open borders within Europe and the special regulations for people from outside of Europe play a vital role there, says Van der Meer. However, she adds, the shortage of houses, international education and healthcare is a huge obstacle in this very complicated case: “that are the consequences a small country with substantial growth has to deal with.”

In the past, The Netherlands always had an advantage over the competitors on the fiscal aspect. Low tax rates and custom regulations were often tempting for multinationals. However, several newly implemented taxation measures resulted in a more competitive environment. For example, the special taxation rate meant to stimulate innovation was increased and buying back shares from investors will possibly be made less appealing, if it was up to the Dutch House of Representatives. Normally, that would be a considerable alternative for paying dividends. It makes the shares more attractive, as a big buyer enters the market and future profit will be divided over a lower



“I often even have to warn companies relying on a good connection to the electricity network about the expected added value of settling in The Netherlands.”

research often pioneering; the Dutch knowledge belongs to the top of the world. The accessible, efficient and independent jurisdiction align with the needs of companies when making investments and transactions. The strong agreements The Netherlands has with many other countries boost these values even more. It helps international-oriented companies with their taxes and legal certainty in many cases.


Obviously, the business environment of a country is always relative to others. Measurements taken by other countries to attract more multinationals can always

harm the competitive position of The Netherlands. Therefore, it is important to track the progress of other countries and to keep investing in aspects that are hard to copy or imitate by other countries, such as the well-educated population, the reliable and futureproof infrastructure and the strategic position within the well-functioning European market. Although the recent negative developments, The Netherlands does not have to worry too much about their business environment yet. There is still more than enough demand and the investments on the aforementioned aspects are made.



However, if the current trend continues, it might be harmful for the Dutch economy in the long run. Companies might no longer decide to settle in The Netherlands or, even worse, to move away from the country. However, as long as the demand does not drop below the supply, everything will be alright.





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The country that has been known for its Salsa and its biodiversity, but also for her fight against drugs and the Guerrillas, is growing popularity as one of the most interesting countries in South-America to discover; Colombia! Let me give you an impression of the Colombian lifestyle!

TEXT Bauke Wijnands **DESIGN** Bjorn Bouwman



Studying in one of the highest capitals in the world!

The first week

Buenas días, bienvenidos a Colombia! On the 3rd of July, I arrive in Bogotá, together with Iona Beerling. We speak with the driver about the weather and the traffic, for a deeper conversation our Spanish lacks too much. We are welcomed in our student house by a Colombian roommate and we get to know some students that lived here the past semester. We arrive as the first ones of our semester, besides the various Colombian roommates that are permanently living here. After us, arrive Dutch, American, Mexican, British and French exchange students.

The first week is one of getting to know the neighborhood, we lived in the old historic city center, La Candelaria. Every morning I went out for breakfast in the local 'Paneria'. It's a place with 8 tables, having place for 28 people. Most of the people come individually and all seats are always occupied. So when entering, you order a coffee and empanadas, take the first free spot at a table and start speaking with the Colombian teachers and advocates that are starting their working day. Since Bogotá is not that touristic, people are very curious in what you are doing here

and because of hospitality sometimes they invite you just after one coffee to their houses! This was for me one of the most interesting ways to get to know the locals.

The university

Before the semester started, during 3 weeks we had an intensive Spanish course in order to make sure we would understand enough of the courses during the semester. Every morning from 8am to 12.30am, from Monday until Friday we talked Spanish with the 4 of us, exchange students and our teacher.



Then, having a little bit of a Spanish basis level, the semester started. I chose to follow the courses in Spanish, so in a lot of classes I was the only non-Colombian student. The first class of the course 'Production Control', we were asked to give an example of the influence of COVID on production lines, in Spanish of course. That appeared to be still very difficult but fortunately the professors are very helpful for exchange students.

I experienced the courses as quite different as they are in Eindhoven. Sometimes we had to do a lot of small assignments during the week and received notes for them. At the TU/e I was more used to have to pass one or a few bigger exams and assignments and get freedom and responsibility for how you like to organize the preparation for these exams. On the other hand, along with the smaller assignments and smaller classes in Bogotá, the teaching was more personal and leaves more room for

informal contact with professors.

Campus

The beauty of the campus is one of the big selling points of the University. Because of the high amount of security officers the campus is very safe, it's green and when you are in the sports center which you can find more uphill, you have a great view all over the city! The sports center offers all kinds of sports classes and teams. For example, every Friday afternoon you can join the free Salsa lesson to learn the basics, after which you know the basics in order to survive in the salsa dance bars. Walking from our house to the campus took 15 minutes, while a lot of fellow-students living in the North of Bogotá had to travel 1 or 1.5 hours to the University. The ones starting classes at 6.30am, have quite a different schedule than we do in Eindhoven as you can imagine.

Around the campus you can find a lot of small restaurants or street food places where you can buy the local empanada, arepa or a complete menu of the day. The menu of the day

consists of a soup, a fresh juice and a big plate of typical Colombian food; meat alongside with rice, salad, avocado, eggs, potatoes, beans, platano (fried banana) and 'Aji', a hot spicy sauce that you can always ask for. For a small snack you visit the local market and ask for a 'Jugo', a fruit juice consisting of fruits you never heard of before; Lulo, Guanabana, Maracuyá.

Nightlife

Talking about fresh drinks; the Thursday drink that we have in The Villa, doesn't really exist in Bogotá. In general, for Colombian students it's not that normal to go out on a Tuesday or Thursday or join that many activities that Industria organizes. They save their resources for the weekend, which is by the way not a bad alternative. In the weekend one of the best places to go out is 'Calle 85', a popular neighborhood with a lot of discotheques but of course incomparable to our Stratumseind... However, the crème de la crème is Theatron; said to be the biggest nightclub of South-America. It has 18 rooms, all with their own music type; Salsa, Merengue, Bachata, Reggaeton, Cumbia, Vallenato, Champeta, Hip-hop and Techno. Still at the end of the semester it feels like a big labyrinth. Fun fact; Colombians don't use shot glasses to drink their favorite strong drink Aguardiente, drinking directly from the bottle is way easier right?

Outside of Bogotá

Like the variety in music styles, Colombia offers an incredible variety of places to travel to. From the steep mountains in the Sierra Nevada in the North, to the Caribbean and Pacific coasts, to the desert in the Northernmost point of Colombia, to the capital of salsa Cali, to Medellin which is awarded for social, urban and cultural transformation, to the jungle in the Amazon rainforest in the south. It's not possible to give one single description of the Colombian culture, every part is so different. Around the Caribbean coast and in the Amazon you will find a lot of Indigenous groups,

living a very authentic and traditional life. And the hotter the climate, the warmer the culture, the more relaxed the people and the more festive the atmosphere. In order to discover the places around Bogotá, buses serve very well. However, since Colombia is a great cycling country and Bogotá a great cycling city, the bike serves perfectly as well. For this reason I bought a mountain bike. A mountain bike fits better here than the Dutch bike, by the way. Namely, Bogotá already has an altitude of 2600 meters! On Sunday some roads are made car free in Bogotá and also around Bogotá the nature makes a daytrip really attractive.

Things you won't see that easily in the Netherlands

One of the most memorable moments will be a class of System Dynamics on the fifth floor at 1pm when everything started shaking and trembling and the schoolboard started moving one meter up and down. An earthquake of magnitude 6.3 hit the region around Bogotá. Following the Rolos (people from Bogotá), their buildings are well constructed to prevent possible damage, so after the earthquake you could barely notice that it had happened. Another thing that you will not see that easily in the



Netherlands is a bus being stuck in a river... Together with our 30 roommates we were heading to a 'Finca', a villa somewhere in the rural areas. During the ride the bus driver underestimated the water level a little bit what forced us to leave the bus and push it towards the street side again. After 3 hours we finally

helped it out of the water. Further, the atmosphere of the football games of local club Millonarios are of a different level. And lastly, if you want to play chess, you don't have to play at home; head towards the chaotic large shopping street in the historic center, pay 50 cents and play a game!

The things I will miss the most

The hammock in my bedroom served as the best way of relaxing after a day of classes in the University. Not having a planning and leaving the house for having breakfast, lunch or dinner I enjoyed a lot here, knowing that in the Netherlands this is not possible every day. Unfortunately, the parties in the Netherlands cannot compete with the ones in Colombia. And finally, the kids having a difficult home situation that I visited once every week in the local childcare place was on the most valuable experiences I had here.

Living in Bogotá for more than half a year has been an incredible experience, I would recommend it to anyone. Let's bring the Salsa to Stratumseind! Hasta luego!



What happens when two universities from two completely different countries collide? That could only be an amazing week, of course! In February, Portuguese students from ESTIEM Local Group Minho organized a week full of activities and experiences for us to truly get to know Minho. 14 Industria students went to Portugal, to meet Industrial Engineering students in Minho. The ESTIEM network is like a melting pot where cultures, people, and experiences blend together in the most fascinating way.

TEXT Ruben Suijkerbuijk **DESIGN** Bjorn Bouwman



Sunshine and Sea Breezes: LG Eindhoven's Portuguese Adventure

The week started with us arriving at the hostel, where we met the first students from LG Minho. They were super friendly and arranged a beautiful hostel in a monastery. After we got settled in the hostel we had a typical Portuguese student meal consisting of fish with fries and a great sauce mixed together. When we

were ready to go we went to play some get-to-know games in the city center and had some drinks in the student bar.

The second day we had a tour around the university campus in Minho and we met the dean of the IE faculty. He talked about how being a university

student was not only learning from books but also experiencing, trying, failing and meeting new people; basically all this trip was about. Then we went on to the ESTIEM session, where the new ESTIEMers learned about the structure and goals of the organization, and the language session, where we learnt Portuguese

words and sentences that we could use later in the exchange and the pronunciation of some tricky tongue twisters. Later during the trip, several 'cervejas' were ordered in Portuguese, of course. Another fun fact about the Portuguese language is that 'cão', is pronounced as 'cow', but means 'dog'. With learning that, a running joke for the remainder of the exchange was born.

After lunch, we went exploring the city center of Guimarães. The Portuguese students prepared a very creative city tour in treasure hunt style. We got a map with interesting points to visit and we had to find them all ourselves. It was not as easy as expected, but with a little help from the local students we found all the beautiful buildings, streets and fountains Guimarães has to offer. The unique part of the treasure hunt was that we paid more attention to the streets we were on, which gave a different view of the city and made exploring it even more fun.

That evening, there was the well-known International Night, in which local food and drinks are presented and tasted by both Local Groups. All sorts of tasty food were shared: from stroopwafels to pastel de nata and from bokkenpootjes to Queijo da Serra da Estrela. Next to the food, Local Groups also bring along their local alcoholic beverages. As expected,



there were many types of Port wine, quite some Goldstrike and many more delicious drinks. The International Night was a great place to have interesting conversations about the differences and similarities in our cultures and to get to know each other even better.

On Thursday, we went to Braga, where we started by climbing the Bom Jesus do Monte. That is a church surrounded by chapels on the top of a mountain. We relay raced the 19 massive flights of stairs and enjoyed the beautiful chapels and view. On top of the mountain, we battled to make pictures with various things and people, such as a child, pets and inside a cave. After descending, we took the bus to the city center and visited the second location of the university Minho. We had a beautiful day exploring the city, with Dêrcio learning us a traditional dance in the middle of the main square as one of the highlights. During the lesson we were cheered on by bystanders, which created a truly unique atmosphere. Afterwards, we tried the famous Licor de Ginja, a traditional liquor made of sour cherries served in chocolate cups. After having dinner in the student canteen, we had a (drunk) culture exchange wherein we sang classic Portuguese and Dutch songs and played local drinking games.





The next morning, we got up early to take the train to Porto. We started off exploring the city with its beautiful buildings and bustling city center. We followed our hosts to a secondhand clothing store where we were given a challenge: ‘put together

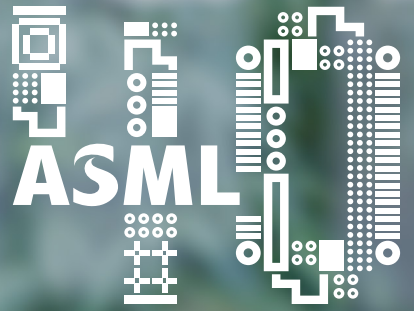
the best outfit for one of your group members’. That was a fun break from sightseeing and bonded us further with the students and the store owner who laughed at our funny outfits. After eating the typical Portuguese dish ‘Francesinha’, a sandwich with various types of meat, covered with cheese in the classically distinctive sauce, we went on with exploring the second biggest city from Portugal. Missing the train back to Guimarães gave us some more time to enjoy Porto. We went to a terrace, where we played some games and shared stories well into the night.

Saturday was the day we had all been waiting for; the day of the Lustrum extreme activities. As you all know, Industria has its Lustrum year this year, with ‘Fearless’ as theme. To stay in line with that, we went down a 150-meter-high mountain suspended from a cable, reaching an eyewatering 130 km/h. After that we went head-to-head in a paintball

match and finished the morning with a picnic in the sun. After this adrenalin-filled morning we went to Penha, a mountaintop with big boulders and a chapel. It was the perfect place for a reflection session while looking at the beautiful sunset. We expressed our gratitude towards the organization for the awesome week we all got to experience and shared some little points for improvement. After this beautiful moment we went to the castle of Guimarães to practice the traditional dance one more time, play some games and say goodbye. That night at four o’clock, we unfortunately had to take the bus to the airport to catch the plane back home.

This was my very first ESTIEM exchange and it has been one of the best trips I have ever been on. The Portuguese student will come to Eindhoven in a few weeks already and I’m looking forward to meeting them again already!





Wanted: Future tech leaders!

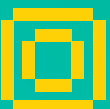
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Do you want to leave your mark on this world?**

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and extreme engineering innovation.



“ Working on state-of-the-art technology comes with massive challenges.
As an engineer, doing an internship with an industry leader is an opportunity
to grow and learn rapidly. ”

Rick Jansen, Engineering intern



Alumnia Board Update

The challenges you face in your day-to-day job as an Industrial Engineering Alumni are incredibly diverse, reflecting the broad scope of our studies. These challenges vary depending on the sector, department, function, but also the size of the company. In this SCOPE, the focus is on complexities of global enterprises, including working with diverse cultures and navigating complex global logistics. If you're eager to explore these challenges further, don't miss our upcoming event: TBKx!

This year, TBKx is themed "Leaders of Tomorrow: Keeping Perspectives in Challenging Times." Join us to hear inspiring personal stories from Alumni who have embarked on lifelong careers in global enterprises. But there's more! Our Alumni members span all types of companies, from giants like ASML and PHILIPS to small family businesses and startups. Each faces its unique set of challenges, and we'll be diving deep into those as well. This event, organized in collaboration with the Industria TBKx committee, welcomes master students too. We'd love to see you at the High Tech Campus on March 27th!

In addition to TBKx, we have another exciting event in March open to both students and



Alumni members. Join us on March 7th for our annual Thursday drink at The Villa. It's a great opportunity for Alumni members to reminisce about their time at The (old) Villa and for students to connect with Alumni. We hope to see you there!

Looking back, we kicked off the year with a Social Drink and Cocktail Workshop at the Twist in Eindhoven. It was a delightful evening where attendees made and enjoyed the most delicious cocktails. Next to that, we held our yearly ALV to discuss plans for the year ahead.

Upcoming activities

7th of March - Industria x Alumnia Drink

27th of March - TBKx

15th of June - Outdoor Activity

27th of September - Social Drink

We're looking forward to seeing you at one of our events in March!

Harm van Duijnhoven

Chairman Alumnia



Alumni Speaking

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

TEXT Kinga Droog & Rosemarie van Alst DESIGN Bjorn Bouwman

Kinga Droog

What has your career been like so far?

I started my career just when COVID hit, leading to a vacancy freeze in the fields I was interested to work in. Thanks to the Alumnia network, I got the opportunity to work as a project manager at ASML until the market would normalize. After seven months at ASML, I took a position as program manager at Vanderlande where I was responsible for all strategic and tactical initiatives for supplying the largest customer. I had great colleagues and got very nice opportunities, but after two years I realized that although it looked great on paper, it did not fulfil me. Therefore I decided to quit and start as a freelancer. Now I help board members of small and mid-size companies to grow their companies, by defining a strategy and optimizing performance in terms of revenue and operations. Besides that, I am working as a day chair, presenter and wedding photographer.

Which course would you add to the IE curriculum to setup students for success?

I have done a masters in Econometrics where we had an

operations research course in 'consultancy' format, including a sales pitch, project proposal and slide deck delivery. I think such course would add value to the IE curriculum, since it teaches students to translate mathematical and technical models to business practices, and to approach problems and solutions from the perspective of board members and shareholders.

What would be your dream job and how do you plan to get there?

I am currently in it! My work as a freelancer offers me intellectual challenges, variety and interesting colleagues. How did I get here? Above all, by taking my feelings seriously and taking the courage to put aside the expectations I believed others had. I started by allowing myself to do what I liked for 12 months - and see if I would be able to earn enough to continue to do so. Within five months I was already earning more than I did in my previous job..

How did a specific project or experience during your career showcase the practical added value of your theoretical knowledge in a

real-world business context?

The added value of my theoretical background lies especially in my analytical way of thinking and the understanding of business concepts – from service level optimizations to balance sheets and ERP systems. This has enabled me to understand problems rapidly and to be able to add value in discussions with board members from day one.

What advice would you give current students?

Make your decisions based on your interest and passion instead of what might be wise in terms of your career. I have learnt the hard way that when prioritizing the latter, chances are that you've put in a lot of hard work to arrive at a career that won't fulfil you anyway.

New question:

What was your greatest professional setback and how did you deal with it?

Why:

I think that younger generations could use more honest and vulnerable role models, especially in the technical environments where many of us are working.



Kinga Droog

Age: 28

Graduation year: 2020

Role: Strategic advisor and chairman of the day



Monique Verdier SCOPE 2, 2024

Vice-chairman at Dutch
Data Protection Authority



Nikki Kerkhoff SCOPE 4, 2023

Production Process Engineer at
Eleo Technologies

Rosemarie van Alst

What has your career been like so far?

After my studies I started at KPMG in Eindhoven as an advisor. I kept on studying on Fridays at TIAS and got my degree in IT audit which felt after learning a little about a lot at University to finally get somewhat of a speciality. Within KPMG I was able to develop both personally as well as professionally and every few years changed my role as well as the clients I was working with. I have had amazing opportunities to work with the smallest and biggest companies in the world as well as with amazing teams. Last year (after 16 years) I left for a new adventure within Accelerant Insurance. A scary and exciting step, a new role in a very different organisation which brings a lot of new energy.

What makes you happy in your work?

I love making sense of complex problems. Translating legislation, risks, ambitions into practical process steps and working in teams to guide and implement those steps. Having a set of projects to work on with a variety of persons to work with brings out the energy and fun in the day.

What was the most important moment in your career and why?

I don't think that I had specific

moments in my career that made the biggest difference, but specific persons. I had incredible mentors, sponsors and team members that inspired me, pushed me and sometimes told me (painfully) the truth. I can easily make a list of persons and what they did or said that changed the way I do my job or look at my career. Being able to work with so many different persons helped me in my personal and professional development.

Generation 'Z' is joining the workforce. They are digital natives and it is said they approach work differently and strive for meaningful work and push for sustainability. How do you think will Gen Z change your work?

Working with Gen Z can be very inspiring. Meaningful work is something that drives all generations, but now more than ever we communicate about it to each other. It triggers you to think about what drives you and to be able to explain it to others. Make sure you know how your efforts contribute to the joy you experience in your career.

What is your vision on society and what are you doing to create a better future?

This is a questions people wrote complete books on, so I am not sure I am the best to answer this question in this

limited space, but in an attempt to make a start:

I believe that everybody contributes to creating a better future and that all small steps are important. If you believe in the contribution you bring to the table (how small it sometimes might seem) you will be able to make a difference.

"Optimism is a strategy for making a better future. Because unless you believe that the future can be better, you are unlikely to step up and take responsibility for making it so."
~Noam Chomsky

New question:

How did being an alumni make a difference in your career?

Why:

Having studied in Eindhoven brought me work ethic and a structured way of thinking. Being able to put thoughts and ideas into models that with a simple overview can explain more than 10000 words helps me to this day in my career.



Rosemarie van Alst

Age: 41

Graduation year: 2006

Role: Technology process and controls director at Accelerant Insurance Europe



Quenton Martes SCOPE 2, 2024

Senior Manager IT Assurance at KPMG



Ineke Noordhuizen SCOPE 4, 2023

Programme director, trainer/coach, theatre maker and presenter

Spotlight



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Joost van der Haar

In this edition of the Spotlight, we spoke to Joost van der Haar. Joost's master's thesis project showed that a remarkable 5 percent increase in efficiency for ASML's supply chain operations of spare parts can be achieved, which would save the company millions of euros each year. We sat down with Joost to learn more about his experience and the strategies that led to this impressive achievement.

Presumably, most readers of this article are familiar with ASML, but for those who have been living under a rock, ASML, short for "Advanced Semiconductor Materials Lithography," is a global leader in the semiconductor industry. Headquartered in Veldhoven, ASML develops and manufactures machines that produce chips.

When a company invests in an ASML machine, they pay for continuous operation, as any downtime in the chip industry translates to significant missed profit. Therefore, in addition to providing the equipment, ASML offers comprehensive maintenance services to ensure continuous operation of their clients' manufacturing processes. As the chip-machines are highly complex, there are numerous different spare parts, namely over 10 thousand, all with their own characteristics. To ensure availability and timely delivery around the globe, there are over 60 distribution points. As can be imagined, this poses an enormous operational planning challenge.

This latter part is exactly what Joost focused on for this master thesis. The thesis explored the optimization of maintenance processes for machines sold by ASML through efficient management of spare parts inventory. Currently, ASML handles

this task with the aid of an algorithm called NORA. However, NORA's decision rules, although effective, do not always lead to optimal results. Joost proposed the use of deep reinforcement learning (DRL), a more sophisticated approach, to enhance decision-making in service logistics. While DRL shows promise, previous research has struggled to apply it to realistic industrial-size problems.

Joost's methodology involved scaling DRL to handle large-scale, complex scenarios typical in service logistics. Central to this approach is the development and utilization of a comprehensive simulation model, serving as the testing ground for training and evaluating the DRL algorithm. The simulation model is designed to replicate real-world scenarios, allowing for the assessment of DRL's performance under diverse conditions. Experiments demonstrate that the proposed DRL model by Joost outperforms NORA, particularly in scenarios involving time-bound demand and large-scale operations. Through testing, it's shown that DRL can lead to a 5.14% cost savings and improvements in service efficiency.

What is particularly special about Joost's thesis is the integration of an extensive inventory comprising 10 thousand diverse spare parts across 60 locations, which is highly challenging. Next to that, the combination between scientific relevance and positive business impact for ASML is also outstanding.

The big question now is of course if ASML will use the findings of Joost and implement the DRL model into their spare parts operations. ASML is intrigued by the potential of the DRL model; however, their immediate focus is on enhancing their current heuristic, for example

through the utilization of the simulation model developed by Joost. Should the DRL model demonstrate superior performance even after this enhancement, ASML will explore the possibility of integrating the DRL model into their systems. Implementing DRL poses challenges due to its novelty and the need for greater understanding among stakeholders. Furthermore, it's essential to note that while Joost's model has high potential, it's a work in progress, developed by a single individual during their master's thesis. Because of that, the model may lack full coverage of all edge cases.

Overall, Joost enjoyed his thesis at ASML. There were moments of significant challenge, yet Joost persevered. Notably, his most significant breakthrough occurred close to the thesis's completion, necessitating a rapid push to the finish line. In his experience, ASML has an open and constructive culture in which people are always willing to help, even if they are not your direct colleagues. Many of the employees working at the department Joost worked for had studied OML at TU/e, so it was a working atmosphere that already felt familiar.

After his master thesis, Joost van der Haar started a PhD at the university of Leuven on the use of artificial intelligence in operations management. Post-PhD, he is planning to return to the industry. Joost envisions a position where he can continue to push boundaries of what is possible, much like his experience during his master's thesis. Speaking with Joost was very interesting, and it's evident that the high-tech industry hasn't heard the last of him.

”

Industria: Strengthened by Global Impact

I asked myself what would be global about Industria. Does the world influence us, or do we influence the world?

Industria has come a long way, striving for success, professionalism, and continuous improvement. We began as a Dutch association for students in industrial engineering, deeply rooted in our local community. Our activities were in Dutch, reflecting the language of our education system.

But as our vision grew, so did our reach. When our study programs started going international, it opened doors to the world. Think of the international research project! A project for students and by students traveling to far parts of the world. And we didn't just go global; In the past decade, the global community came to us. Suddenly Industria became a mix of cultures and ideas from all over.

Switching from Dutch to English was a big step for us. It wasn't just about changing languages;

it was about sharing our cultures and making everyone feel like they belonged. We had to learn to understand each other better, even with our different backgrounds.

Of course, this journey had its challenges. We had to figure out how to work together despite our differences. But these challenges also pushed us to grow and learn from each other.

Today, Industria is proof of the strength that comes from diversity. We're like a small version of the whole world, where students from different places come together to make things happen while also taking into account Industria's past.

Looking ahead, we're committed to keeping our doors open to everyone. We know that our power comes from all the different voices in our group. So let's keep working together to make sure we strive for success, professionalism, and continuous improvement.



PHOTO Tom Ruis Media

Sjuul Geurts
Chairman

Global Opportunities for an Industrial Engineer



PHOTO Tom Ruis Media

Didier van Lieshout
Officer of External Relations

We, as Industrial Engineers play an important role in the global employment market. With more than 3,400,000,000 worldwide employees, companies are still looking for more manpower. Especially manpower that can help their firm be as efficient as it could be. In this column, I want to highlight the opportunities for you as an Industrial Engineer, both within the Netherlands and also across international borders.

Within the Netherlands, there are plenty of opportunities for you. You can be an independent consultant giving expertise on tools such as SAP or Mendix. You can join small- and medium-sized firms where the processes are far from optimized, or join an international firm where you will see the same. For the dutchies under us that will mean we can live close to our family and friends. However, "wouldn't it be very cool to live abroad?"

You have visited many beautiful places on your vacation or during your exchange, but

why not work there? The opportunities are endless for you as an Industrial Engineer. Processes can continuously be improved; think about the endless opportunities for them to be more sustainable or more cost-efficient. Whether you perform this job in Eindhoven, Buenos Aires, or Tokyo, it is possible everywhere! Furthermore, you can develop yourself a lot outside of your home country. You are exposed to a new culture, explore new places, and gain a broader perspective on global trends and issues.

On a personal note, I am excited about discovering the mysteries and opportunities that this world has in front of it. In my opinion, all options have to be considered; also those on the other side of the world. That is why I wrote this column about the global opportunities for you as an Industrial Engineer. Make sure to remember that the opportunities for you are not limited to the Dutch borders; they are endless all around the globe!

Mobile Phones: Today's Gateway to the World

"The current generation looks way too much at their screens. Back in the days, when we were young, we played outside and did not need a phone or tablet to have some fun..." is what older generations often say about the increased time younger generations spend on mobile devices. "Indeed, we met our friends in real life and talked to each other, instead of texting" is a common reply. "Today's youth barely knows what social interaction is about" or "kids these days do not even know how to connect with people in real life" are often conclusions drawn by the so-called 'boomers', and they all seem to agree.

I will not say that they are entirely wrong, on the contrary. Indeed, younger people are spending too much time playing videogames on their phones and tablets nowadays. Them coming home from school or university, staring at screens, having dinner and start staring again is an alarming image. Even more when accounting for the potential health risks the extensive usage of mobile devices can cause and the possible mental issues caused by the lack of social contact.

At the same time, that same phone creates endless opportunities. Instead of hours and hours travelling by plane, the other side of the world is now only a phone call away. While you might think I am playing Clash of Clans, I am actually chatting with students in Spain, Canada or Australia. While you might think I am playing Fortnite, I am actually learning about how to kickstart my entrepreneurship. And while you might think I am playing Call of Duty, I am actually reading the latest news about the court case against Donald Trump. A phone is nowadays way more than just a phone, it has become a pocket-size encyclopedia, dictionary, and newspaper in one. With all the latest developments, it has even grown to today's gateway to the world.



FOTO Tom Ruis Media

"Do teenagers really need their phone as a bridge to the world", you think? Well, I bet you do as well. How would you stay in contact with your family without a phone? How would you navigate without your phone? And how would you stay up-to-date with the news without a phone? Indeed, that would be much more difficult. However, there is a difference between functional usage of a phone and playing videogames.

And indeed, younger generations use their phone more to relax than older generations. And yes, that is something to worry about, whether they do so at home or at school. But, in an era of teacher shortage, banning mobile phones from schools is stupendous. When a teacher does not have time to answer a question, a

student could search for the answer on the internet. The student could take the responsibility and freedom to learn from the world wide web, which probably learns them even more than just the answer to their question. By banning phones from secondary schools, which the Dutch government did from the beginning of this year like a mother forbidding her children to use any mobile device, takes that opportunity away. Do not forbid them, teach them instead. Teach them about the opportunities, possible pitfalls and the right way to deal with them. Teach them how to profit from their mobile phones and the gateway to the world will open for them.

Bjorn Bouwman
Project Manager

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 Master Thesis

 Industrial Engineering

Student Consultant (thesis)




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 Student Job

 Industrial Engineering

Student Consultant (job) – Flexible 0-hours



 November 14, 2023

 Internship

 All studies

Internship in Supply Chain Efficiency