

STAY CONNECTED

CORPORATE MAGAZINE ICT GROUP



IN THIS ISSUE

THE RIGHT CARE FOR PREGNANT WOMEN

SMART WATER

TOWARDS A SELF-REGULATING SUPPLY
NETWORK WITH A DIGITAL TWIN

MINUTE PARTICLES AND HUGE OBJECTS

SYSTEM UPGRADE AT NANOLAB

OUR PEOPLE

WORKING IN A TEAM
DURING COVID-19

MAKING THE WORLD A LITTLE SMARTER EVERY DAY

ICT Group N.V. is a leading European industrial technology solutions provider. Our dedicated technical professionals offer our clients services in the field of consultancy, software development, project-based solutions and IT system maintenance. It is our mission to make the world a little smarter every day.

Our specialist knowledge in a variety of industries enables us to realise innovative solutions by linking people, technologies and ideas. With around 1,500 dedicated technical specialists in the field, we are capable of building and integrating new and innovative technologies into relevant business solutions for our customers.

With our Smarter Industries solutions we serve the automotive, manufacturing, high-tech, food,

chemical & pharma, oil & gas and logistics industries. Our solutions in Smarter Cities are focused on water, rail and road infrastructure as well as public transport and mobility. Within Smarter Healthcare we provide solutions in the domains of medical data exchange, radiotherapy and obstetrics. Furthermore, ICT Group delivers its own cloud-based software for IoT, digital transformation and artificial intelligence.

ICT is globally active and operates from several locations in the Netherlands, Belgium, Germany, Sweden and Bulgaria. The following companies are part of ICT Group: ICT Netherlands, ICT Belgium, CIS Solutions, Strypes, Additude, Raster Industriële Automatisering, InTraffic, NedMobiel, Proficium, Healthcare Technology Solutions, OrangeNXT and Improve.



INDEX

	P.
Staying connected in challenging times	4
Each automated parking garage is different	6
Dare to challenge the status quo	8
From a single database to an IoT implementation with a datalake for storage	10
Working in a team during COVID-19	12
Reduction of the average number of obstacles per hour	16
The system upgrade at nanolab involves minute particles as well as huge objects	18
Nij Smellinghe monitors pregnant women at home with Sense4Baby	20
Oasen and OrangeNXT: working together on a self-regulating drinking water infrastructure	22

STAYING CONNECTED IN CHALLENGING TIMES

JOS BLEJIE, CEO ICT GROUP

It has been an extraordinary couple of months for all of us. What initially seemed far away and unimaginable suddenly became a reality. The radical measures implemented to contain the spread of COVID-19 required considerable flexibility. Anyone who could work from home was told to do so, often combined with caring for children who were home from school or day care. I would like to take this opportunity to thank all our colleagues and business associates for their flexibility over the past few months. We would also like to thank you for the positive spirit you displayed, which makes us confident we're going to discover many more exciting opportunities together.

STAY CONNECTED

More than ever in the past few months, ICT Group has highlighted the importance of connection: remaining connected to each other and our clients. We explain in this issue just how we did this. We also invite you to read about how our software developers worked online with their DevOps teams - and even found time to have fun. Other highlights included the virtual Friday afternoon drinks sessions and the T-shirt charity campaign, where all employees could order a 'STAY SAFE' T-shirt and the company

matched every order with a donation to the Red Cross. As well as raising a substantial amount, we also received some fabulous photographs from many of our employees.

VITAL SITUATIONS

Of course, we also continued to work as hard as ever in recent months, as our solutions are used for numerous vital situations. For one, the Nij Smellinghe hospital in the Frisian town of Drachten is using our Sense4Baby product to remotely monitor pregnant women who require additional medical care and

check-ups. This reduces the number of hospital visits while maintaining the same quality of care. Other critical products in the age of COVID-19 include the compressed air and gas solutions created by Atlas Copco, which are used in hospitals worldwide. The company created a more data-driven maintenance platform that provides users with more insight into the status of the compressed air solutions. Witnessing demand for this new platform double over a period of just three weeks, Atlas Copco was nevertheless able to continue

ensuring reliable services to hospitals.

COLLABORATION

It goes without saying that we would never be able to take on these types of ambitious projects without the support of our enthusiastic, forward-looking employees and clients. We believe innovation is all about discovering opportunities together, taking risks together and sharing the highs and lows that are part of any innovation process. Let's continue working together to make the world a little smarter every day.

VERBONDEN BLIJVEN IN UITDAGENDE TIJDEN

Door COVID-19 hebben we bijzondere maanden achter de rug. Er werd veel flexibiliteit gevraagd van onze medewerkers, maar ook van onze klanten. Ik wil alle collega's en relaties bedanken voor deze flexibiliteit, positieve spirit en het vertrouwen. ICT Group heeft in de afgelopen maanden vooral de focus gelegd op verbinding. Verbinding met elkaar en onze relaties. In dit nummer vertellen we je hoe we dit hebben gedaan. Zo konden onze medewerkers een STAY SAFE t-shirt bestellen. Voor iedere bestelling werd een bedrag gedoneerd aan het Rode Kruis. Naast een heleboel leuke foto's heeft dit een mooi bedrag opgeleverd. Verder vertellen we over onze oplossingen welke vaak worden ingezet in vitale situaties. Innoveren is samen kansen ontdekken, samen risico's nemen en samen door de ups en downs gaan die horen bij een innovatietraject. Laten we met elkaar de wereld iedere dag een beetje slimmer maken.



“We would never be able to take on ambitious projects without the support of our enthusiastic, forward-looking employees and clients.”
Stay Safe, Stay Connected.

Jos Blejje, CEO ICT Group

EACH AUTOMATED PARKING GARAGE *IS DIFFERENT*

Raster, one of ICT Group's subsidiaries, has been involved in a large number of 5by2 automated parking garages. As a software developer, each new project entails interesting new challenges. "No parking garage is the same", says Jeffrey Breugelmans, one of Raster's Software Engineers.

Jeffrey is a member of the team that was involved in designing and implementing the software for an automated parking garage during a large part of 2019. The garage offers 42 parking spaces and is built by Lödige Industries in an apartment building in New York. Each garage is different in terms of its size, but also in terms of the number of parking layers and the number of entrances. In addition, there are often specific requirements to take into account, for instance the turning mechanism used to get the car in the right position.

NOSE FORWARD

"The mechanism used in this garage in New York differs from that used in other projects", says Jeffrey. "In this project, there is a rotary table in the entrance cabin which ensures that when the user picks up his car, the car's nose is pointed forward, enabling him to drive out straight away. In this case there's an entire floor around the rotary table that can be lowered. The table turns over the top of it and can be lifted later on."

TECHNOLOGY BASED ON A SLIDING PUZZLE

Sliding puzzle parking systems, this is how Lödige Industries describes the 5by2 solution offered by the company. This technology for automated parking garages is based on the principle of the sliding puzzle. Users drive their car onto a pallet, a solid base plate, and then get out of their car. The way in which the pallets move can be compared to the movements in a sliding puzzle. As a result,

the available parking space can be used very efficiently. Cars can be parked safely in close proximity, distributed over various parking layers.

For the garage in New York, Raster was responsible for the PLC as well as for the application software, the overarching layer. "The application software acts as a type of brain and determines where the car needs to be positioned as well as the smartest routes to and from

the parking position. "It is essential that the applications software and PLC communicate properly in order to ensure that the automated parking garage functions correctly. "The application determines the route and the PLC controls the actual movements."

INTERNATIONAL COOPERATION

Jeffrey joyfully looks back on the project, especially due to its international nature. The project team's composition in New York was very diverse, both in terms

of nationality and competences. "For me it was a fantastic experience to work together with others in a different manner. In part that is because of the technology, but it was primarily due to the people. The way of working in New York is very different from here. And that makes you think about the various ways in which you can combine different approaches. It certainly wasn't 'business as usual'. You learn a tremendous amount from participating in a project like this."



Copyright Lödige Industries GmbH.

ELKE AUTOMATISCHE PARKEERGARAGE IS WEER ANDERS

Raster, een van dochterbedrijven van ICT Group, was als software-ontwikkelaar al bij een flink aantal geautomatiseerde parkeergarages van 5by2 betrokken. De technologie

is gebaseerd op het principe van de schuifpuzzel, waardoor de beschikbare parkeerruimte op een heel efficiënte manier kan worden benut. Hoewel de garages natuurlijk overeenkomsten vertonen, is elk project toch net weer even anders. Dat zit onder

meer in het aantal parkeerlagen, het aantal ingangen en het draaimechanisme om de auto in de juiste positie te krijgen. Die variatie maakt een project voor software engineer Jeffrey Breugelmans dan ook iedere keer weer uitdagend. Als lid van een Raster-team

werkte hij een groot deel van 2019 mee aan het ontwerp en de implementatie van de software voor een automatische parkeergarage met 42 parkeerplekken die Lödige Industries bouwde onder een appartementengebouw in New York. Technisch een mooi project,

maar zeker ook in sociaal opzicht vanwege het internationale projectteam waarmee Jeffrey op locatie samenwerkte in New York. "De manier van werken daar is weer heel anders dan hier. Dat zet je aan het denken over hoe je die werkwijzes kunt combineren."



Photography:
Kennet Ruona.

DARE TO CHALLENGE THE STATUS QUO

ICT Group is operating in fast changing markets and with fast changing technology. That acceleration will increase even more during the coming years. Companies that are unable to reinvent themselves regularly will lose their relevance sooner or later. This is why the Board has appointed a Technology Council that continuously challenges them. “Not only do you have to know what concerns your clients have today and in the next twelve months, but you also have to have a clear idea of what the market will look like in three to five years from now.” A conversation with Linus Wiebe, chairman of ICT Technology Advisory Council (TAC).

In his daily life Wiebe is Director of Innovation at Lund University in Sweden. “Our Innovation Centre supports students and professors by commercialising technology. Universities conduct a tremendous amount

of research, but traditionally there has been an introverted attitude which has stopped them from analysing which companies would be interested in that technology. Although naturally this technology is aimed at

“Our ambition is to work across businesses, utilizing the full access to Group information.”

Linus Wiebe, Director of Innovation at Lund University and member of the ICT Group Technology Advisory Council

applying it for useful purposes”, says Wiebe.

Wiebe became acquainted with ICT Group through Additude Sweden, which has been part of ICT Group since January 2019. At that time Additude wanted to start with innovation management: a new branch that helps companies in embedding innovation processes on a strategic level. Wiebe is doing something similar now with the Technology Council of ICT Group. “We advise ICT Group’s executive management and business units on what they should be starting now in order to become market leader in three to five years. This is relevant both for the traditional secondment and project business, as well as ICT’s ambition to focus more strongly on developing its own products”, he states.

CHANGING CARS AND BUSINESS MODELS

The TAC consists of external and internal generalists. Depending on the market, they involve particular domain expertise. “For instance, when analysing the automotive market, we made use of the experience of an advisor with relevant global automotive business knowledge and the expertise of the Technical University of Eindhoven,” says Wiebe. “In addition to investigating technological developments such as electrification, connectivity and autonomous driving, the team also took social developments into consideration. Cars are basically becoming increasingly complex software, encased in less complex bodywork. The impact of these developments is enormous. Automotive manufacturers that aren’t already assembling large software teams are going to

lose this race. Software becomes a core competency. Setting up these teams is no easy task in the current tight job market, but this is exactly the expertise of ICT Group. Even the business model will change, especially in large cities where a lot of people do not want to own a car anymore. Instead, they want to be able to make use of mobility. A car is evolving into a service you use when you need it. Mobility-as-a-Service (MaaS) platforms will be required that will easily make a car or other means of transportation available when you need it. There is a demand for a new personalised and sustainable way of travelling. This is one of the reasons why ICT Group invests heavily in the MaaS-platform TURNN.”

EMBEDDING INNOVATION INTO THE DAILY WORK

The TAC develops tailored advice that is geared to each specific

market. But of course there are also overlapping subdomains. “Take software security for instance. This is a theme that really matters in every sector” he says. “Our ambition is to work across businesses, utilizing the full access to Group information. This approach ensures that strategic innovation is embedded even deeper and more broadly in the daily work of ICT Group.” Wiebe: “It does not only make ICT Group a more attractive employer, but it also ensures that the organisation develops a broader vision as more

people are involved. It has become a part of our culture to constantly challenge each other, and to confront each technological development with the question: how will this impact the market? What does this mean for our products and services? And how does this impact the way people will purchase those products? By constantly keeping staff actively involved in these issues, not only will they contribute to today’s turnover, but also to innovations that will be taking place tomorrow and the day after.”

DURF DE STATUS QUO TE CHALLENGEN

ICT Group opereert in snel veranderende markten met snel veranderende technologieën. Hoe kunnen we ondanks de vaak schijnbare onvoorspelbaarheid toch een goede inschatting maken waar deze markten over drie tot vijf jaar staan? Hoe gebruiken we als ICT Group die kennis om onszelf goed voor te sorteren? En hoe bedden we innovatie in onze dagelijkse manier van werken in? Het zijn vragen waar de ICT Technology Council zich over buigt. We spreken daarover met voorzitter Linus Wiebe, in het dagelijks leven Director of Innovation aan de Zweedse Lund University.

FROM A SINGLE DATABASE TO AN IOT IMPLEMENTATION WITH A DATALAKE FOR STORAGE

SMARTLINK ENSURES ACTUAL AVAILABILITY OF DATA AND RELIABILITY IN PRODUCTION PROCESSES

Factories, power plants and hospitals across the entire world often use compressors. Compressed gas or ultraclean medical air from compressors the size of a sea container is a crucial aspect of the (production) process for these organisations. IoT and the latest cloud-solutions ensure the availability of actual and reliable data. Wherever and whenever you need it.

Atlas Copco is a producer and supplier of compressed air and gas solutions. Their compressors use a widely varying range of applications, but their clients have one thing in common: the need for absolute reliability. They often depend on their compressor system for their core activities. Which means that the solutions must work effectively. Louis de Jaegher, Global Process Manager at Atlas Copco: "To meet these needs, we developed SMARTLINK 1 a number of years ago. SMARTLINK 1 is a platform

which ensures that compressors are serviced on time, provides accurate insight into their functioning and ensures that compressors are deployed efficiently."

STRONG TEAM

As the number of connected compressors increased, SMARTLINK 1 was being confronted with technical constraints more and more often. This was an intolerable situation, and it was the perfect moment for Atlas Copco to develop an entirely new IoT-platform.

In April 2018 they called in help from Microsoft, the divisions Transport, Logistics and Outsourced Services of ICT Netherlands, and OrangeNXT, a subsidiary of ICT Group, with the aim of working together to build SMARTLINK 2. De Jaegher: "This combination turned out to provide the best Platform as a Service (PaaS) solution." Stan Verdiesen, Software Architect at ICT Transport and Logistics: "Microsoft delivered the cloud solution Azure.

In addition to the complete architecture, the design and realisation of the platform, ICT deployed an Agile development team, including a complete, managed and hosted service once everything was up and running. The collaboration resulted in a complete solution that allowed Atlas Copco to utilise all the latest IoT-innovations."

EXTREMELY COMPLEX

"SMARTLINK 1 used a single database. However, there was a huge number of ad hoc solutions, so nobody really knew how it worked exactly", says De Jaegher. "When the volume increased, the platform was no longer able to process the data. As a result, users were not receiving actual data or disruptions, and distorted signalling." More than 26.000 types of compressors, integration with a variety of systems such as CRM, ERP, BI and Simulator applications, 24/7 support,

scalability... These and other factors caused the transition from SMARTLINK 1 to SMARTLINK 2 to be the most complex project he has worked on for the past 20 years.

MICROSOFT AZURE: THE LATEST CLOUD SOLUTIONS

Azure is a Microsoft cloud solution which includes some twenty brand new services for data storage. Verdiesen: "We constantly asked ourselves: if you want to display certain information, then what is the most efficient way to retrieve the required data? And what is the best way to store the necessary information? The automatic result is that data is often stored in multiple locations and in different ways. The fun part is that we came up with solutions that were new even to Microsoft. And for complex problems we could liaise with the Microsoft experts in Redmond. It was an excellent collaboration and we learned a lot from each other."

NOT AN END POINT BUT A MEANS TO GREATER ENDS
SMARTLINK 2 offers clients unprecedented insight into

the status of their compressed air solutions. It increases the reliability because it enables proactive maintenance, and it helps to reduce operational costs thanks to energy efficiency. The new platform also provides the internal staff of Atlas Copco with a more complete overview of client accounts, so that customer support teams can offer a better customised experience.

SMARTLINK IOT-SOLUTION

In light of the expected growth in the number of connected devices worldwide and the number of messages, horizontal scalability was one of the most important requirements. SMARTLINK 2 resolves all issues in terms of scalability and stability, allowing Atlas Copco to connect more machines than ever before. Verdiesen: "And by providing transparent and detailed information on the status of the machines, the platform supports the development of new data-driven services. Moreover, it improves product development and increases customer satisfaction. SMARTLINK 2 has ensured that Atlas Copco and its clients are ready for the future."

"SMARTLINK 2 has ensured that Atlas Copco and its clients are ready for the future."

Stan Verdiesen, Software Architect at Transport & Logistics

SMARTLINK remote diagnostics keeps compressors running during lockdowns
Atlas Copco compressors are used in many applications that are crucial to keep society running. With several countries going in lockdown and customers concerned about on-site visits, Atlas Copco activated for all critical connected compressors a SMARTLINK Diagnostic license to monitor their compressor machines by centralized diagnostic teams. If necessary these teams informed the operational teams locally to take necessary actions. This way Atlas Copco helped their customers to keep critical applications operational while reducing on site visits. For the SMARTLINK platform this was the 'ultimate proof of execution' doubling the data capturing capacity in just 3 weeks' time, delivering near real time services to customers, field techs and global monitoring rooms.

VAN ÉÉN DATABASE NAAR DE INZET VAN IOT MET EEN DATALAKE VOOR OPSLAG

Over de hele wereld gebruiken fabrieken, elektriciteitscentrales en ziekenhuizen compressoren van Atlas Copco, producent en aanbieder van perslucht- en gasoplossingen. De pers-, gas- of ultraschone medische lucht uit de compressoren van het formaat zeecontainer is voor deze organisaties een cruciaal onderdeel van het (productie)proces.

SMARTLINK 1 is het platform dat zorgt dat de compressoren tijdig worden onderhouden, accuraat inzicht geeft in het functioneren en zorgt dat de compressoren efficiënt worden ingezet. Omdat er steeds meer compressoren werden aangesloten, liep het tegen zijn technische grenzen aan. Ze riepen de hulp in van Microsoft, ICT Netherlands en OrangeNXT. Samen ontwikkelden ze op basis van Microsoft Azure een complete oplossing waarmee Atlas Copco gebruik kan maken van alle nieuwste IoT-innovaties.

SMARTLINK 2 geeft klanten een ongekend inzicht in de status van hun perslucht oplossingen. Een actueel voorbeeld van het gebruik is te zien in de vele ziekenhuizen wereldwijd, waar de compressoren in strijd tegen het COVID-19 virus werden gebruikt op de IC's. Ondanks de capaciteit die in slechts drie weken tijd verdubbelde konden ze realtime diensten leveren. Hiermee heeft Atlas Copco bijgedragen aan #flattenthecurve.



WORKING IN A TEAM DURING COVID-19

SUPPORTING EACH OTHER FROM A DISTANCE

For some people a job is just a job, a means to an end. At ICT Group, we like to believe that what you do for a living helps shape your identity and fuels your hopes and dreams. Even in times of corona, we are proud to be a part of our colleague's journey. By facilitating our people's home offices, we ensure that we continue to make the world a little smarter every day. Four colleagues share their stories about why they chose working for ICT Group and what it's like working in teams during COVID-19.

“Also during corona times, when we are all working from home, I feel facilitated by ICT Group.”

Rik Verbeek, Senior Control Designer at Outsourced Services

PURSUING CAREER OPPORTUNITIES

Rik Verbeek came back to ICT Group after having explored a career opportunity at another IT company. “I learned a lot while I was away, but I discovered that I really liked the flexible, yet stimulating culture at ICT Group. I want to keep developing myself as a professional and ICT offers a serious training and education programme for any stage in one's career. I love the bits and bytes, and I also very much like to work with people. Now, during corona times, we support each other at a distance. ICT facilitates that very well and as an employee I don't feel forgotten. Eventually, it is my ambition to become a Service Delivery Manager. A Service Delivery Manager is responsible for the long term relationship with clients and manages the service level agreements, requiring both leadership skills and technological knowledge. This is an extra challenge now that everyone is working from home, but I'd like to take the chance. When I learned I could really pursue my career at ICT Group, the choice to return was easy to make. I joined the Service team and my Operations Manager is helping me to get started on my own accounts. I'm just really happy to be back at ICT Group,” Rik explains.

CHALLENGE YOURSELF

Lisette Lodewijks joined ICT Group as a corporate recruiter only half a year ago. “I like a good challenge. In the IT business, I definitely have my work cut out for me. I decided to transfer to ICT Group because of the opportunity to work in a team of experienced and dedicated recruiters. In my last job, I was the only recruiter and I really missed having a sparring partner to confer with and to learn from. That's what I enjoy most in my job now, the fact that I have colleagues I can talk with whenever I need some input. During these corona times, we often have team meetings via Microsoft Teams. It is weird to be apart from each other, but we'll manage it. We're extremely popular among IT professionals abroad and I think it's a wonderful challenge to recruit the high potentials who want to come for the right reasons. Therefore, I'm used to having online conversations and I know my way online. But when we're getting back to the office, I'm excited to explore more of my professional possibilities with my colleagues at ICT Group,” Lisette concludes.



Rik Verbeek



Lisette Lodewijks

“Thanks to Microsoft Teams we can help each other immediately whenever something comes up.”

Maurice Knoop, Developer at InTraffic

THE CORONA-PROOF WAY OF DEVELOPING SOFTWARE

How do you work together in a project team if the team cannot meet and everyone works from home due to the corona crisis? Now that the whole country is slowly coming to life again after an almost complete standstill, public transport remains of crucial importance. The applications developed by InTraffic (an ICT Group company) for various clients are often business-critical. In particular in the current situation it is crucial that they continue to work well. Developers Sebastiaan la Fleur and Maurice Knoop explain how they and their teams work together.

The core question is how to work together as a single team when working from home. “Our team has an open Teams meeting in the background all day long. We work with our microphones muted, but whenever something comes up, the entire team can help immediately”, says Maurice. Sebastiaan adds: “Because we’re not having any brief, informal talks, our stand-ups take longer than at other times. It’s important to discuss the day with the entire team to see whether there are areas in which we can help each other.”

“In order to maintain informal contacts we also arrange online get-togethers and game nights. Those are virtual meetings where people can talk about anything they want, except work. What’s more, our virtual Friday afternoon drinks are often attended by more people than the physical ones. After all, possible obstacles such as travelling times are gone!” Maurice concludes.



Maurice Knoop



Sebastiaan la Fleur



WERKEN IN EEN TEAM TIJDENS COVID-19

Collega's steunen elkaar op afstand

Bij ICT Group vinden we dat je baan meer is dan alleen brood op de plank, het maakt deel uit van je identiteit en helpt je dromen en doelen waar te maken. Het maakt ons trots om voor kortere of langere tijd deel uit te maken van het carrièrepad van ICT'ers, vooral vanwege de redenen waarom men voor ons kiest. Ook in tijden van de corona crisis, staan wij onze collega's graag bij. Lisette Lodewijks heeft als recruitment professional voor ICT gekozen omdat ze graag met een groep gepassioneerde collega-experts wil kunnen sparren. Momenteel gaat dit met virtuele team meetings, maar dat is voor de ervaren recruiter geen probleem. Rik Verbeek is teruggekomen bij ICT omdat hij in zijn droombaan van Service Delivery Manager kon groeien, en bij ICT Group is een belofte ook echt een belofte. Hij is blij dat hij terug is en voelt zich ondersteund, ook tijdens corona. Maurice Knoop en Sebastiaan la Fleur zijn beiden werkzaam in projectteams bij ICT's dochteronderneming InTraffic. Gedurende COVID-19 is werken in deze teams een behoorlijke uitdaging omdat de applicaties vaak bedrijfskritisch zijn, maar er wordt gezorgd dat de balans tussen hard werken en plezier op peil blijft. Want, werken bij ICT Group is meer dan werk, het is wie je bent.

REDUCTION OF THE AVERAGE NUMBER OF OBSTACLES PER HOUR

HOW SMALL ADJUSTMENTS CAN RESULT IN MAJOR IMPROVEMENTS

Port terminals use Automated Guided Vehicles (AGVs) to transport containers between the quay cranes and the stack. Because the AGVs are used in a limited area, traffic often crosses, frequently leading to unwanted stops. This has a serious impact on the traffic flow, planning and fuel consumption. Gert-Jan van der Wielen, technical consultant at ICT Netherlands, has succeeded in reducing the average number of unplanned stops by AGVs (AGV obstacles) per hour by no less than 76%.

The improvement project was a result of the Lean Six Sigma Green Belt training programme that Gert-Jan followed and that was facilitated by ICT. He learned to use a method for optimising business processes by identifying, analysing and reducing problems in processes. For his practical assignment Gert-Jan opted to address traffic flow issues of AGVs at the terminal. "It often happened that a number of AGVs had to wait for each other for a long time, sometimes even in deadlock. Traffic was delayed even more frequently because it had to slow down or (almost) stop to let other AGVs pass. The higher the traffic intensity and

the longer the route, the more frequently problems occurred. In some cases waterside control had to intervene to resolve an AGV traffic jam."

PERSONAL MOTIVATION

Gert-Jan has been working for the same client for over 20 years. "I had a personal drive to minimise the 'waiting for AGV' issue at the quay cranes and thus improve the terminal performance. Reducing the AGV traffic congestion is an important step in allowing AGVs to arrive at their destination on time more frequently during peak traffic periods, and in making the

system more predictable." To achieve this goal, Gert-Jan used the DMAIC (Define, Measure, Analyse, Improve and Control) method. After a baseline measurement, which gave him a good idea of the number and locations of unplanned stops by AGVs, he mapped out the root causes of the obstacles. "I compared the predicted claim, start and driving behaviour of the AGVs to their operational behaviour, and I logged the differences in problem tickets. In many cases the root causes turned out to be software-related." And software-related issues are the expertise of ICT!

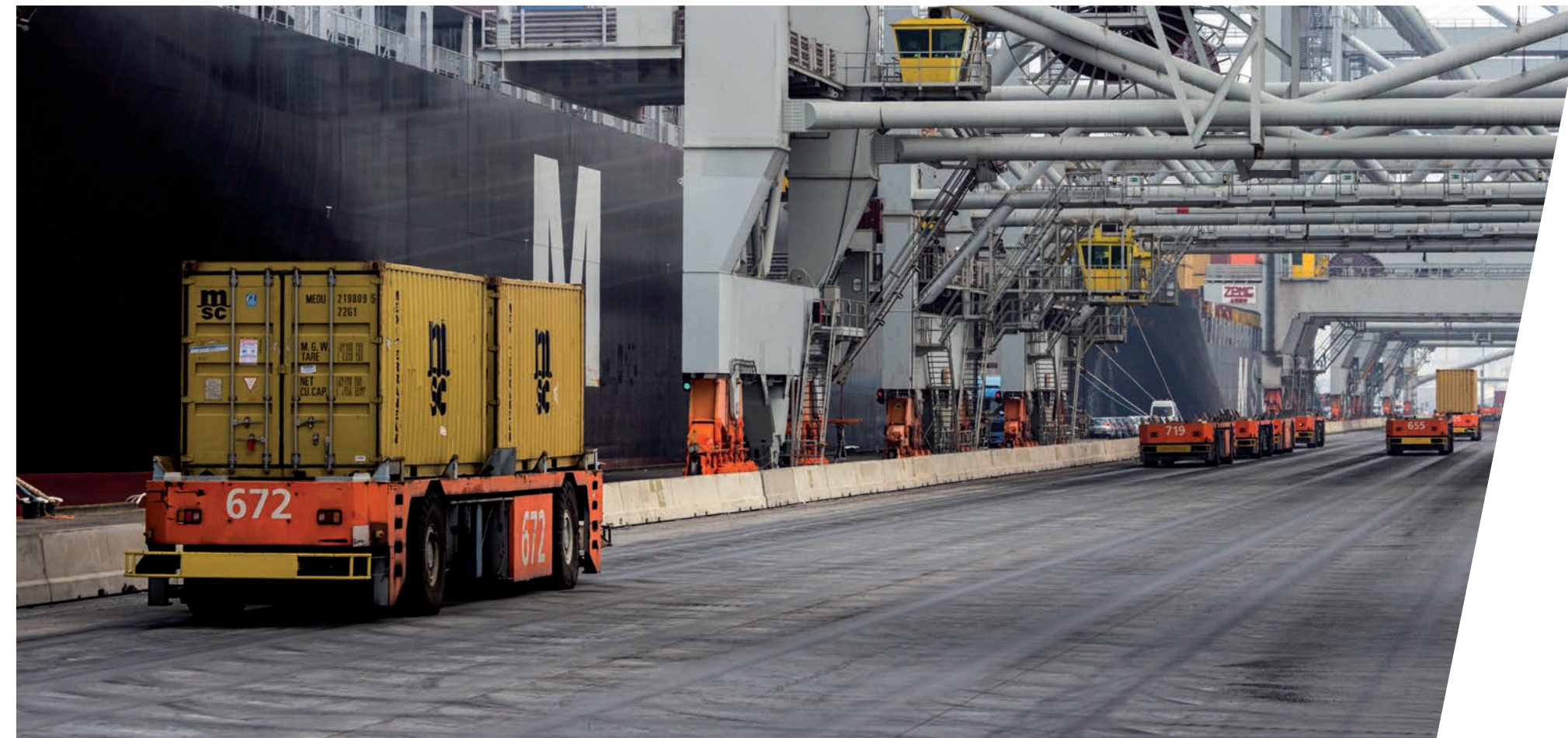
FROM 78 TO 18 OBSTACLES

In order to resolve the software problems Gert-Jan called in the assistance of his colleagues at ICT. "They took care of the programming work, and I tested whether the solutions had the desired effect." Together, they improved the accuracy of the AGV position prediction, harmonised AGV claiming and AGV claim prediction, and improved the test environment. They managed to implement a total of 28 improvements in a limited number of Scrum Sprints. "As a result, the average number of obstacles per hour dropped from 78 to 18, and the standard deviation decreased from

48 to 14 obstacles per hour. In monetary terms, the improved AGV traffic flow at the terminal results in annual savings of € 268,000 in fuel costs and € 28,000 in quay crane man-hours."

NOT DONE YET

A great result, but Gert-Jan thinks more improvements are possible. "I expect that addressing the remaining tickets will lead to a further reduction in AGV obstacles. For instance, late arrivals of AGVs can be further reduced and the system can be made even more predictable. I am proud of our achievement for my client."



HOE KLEINE AANPASSINGEN KUNNEN LEIDEN TOT EEN GROTE VERBETERING

Op de terminal van een haven rijden automatisch gestuurde voertuigen (AGV's) om containers te vervoeren tussen de kadekranen en de stack. Het kruisende verkeer op het beperkte oppervlak lijdt regelmatig

tot ongewenste stops, met verstrekende gevolgen voor de doorstroming, planning en het brandstofverbruik. Het reduceren van deze opstoppen is een belangrijke stap om de AGV's vaker op tijd op hun bestemming te krijgen en daarmee een voorspelbaarder systeem te krijgen.

Door het voorspelde en het operationele claim-, start- en rijdgedrag van de AGV's te vergelijken en de verschillen vast te leggen in probleemomschrijvingen (tickets), ontstond een beeld van de oorzaak. Deze bleek veelal software-gerelateerd te zijn. Gert-Jan van der Wielen, technical

consultant bij ICT Netherlands, implementeerde met zijn collega's in verscheidende sprints uiteindelijk 28 verbeteringen. Hiermee wisten ze het gemiddelde aantal ongepland stilstaande AGV's (AGV-obstakels) per uur met maar liefst 76% te reduceren. Een geweldig resultaat, al verwacht Gert-Jan met de

overgebleven tickets nog een stap in AGV-obstakelreductie te zetten. Zo kunnen ze het later aankomen van AGV's verder reduceren en het systeem nog voorspelbaarder maken.

THE SYSTEM UPGRADE AT NANOLAB INVOLVES MINUTE PARTICLES AS WELL AS HUGE OBJECTS

The assignments carried out by Raster entail a huge amount of variation.

Software designed and developed by Raster is used for huge objects as well as for minute particles. An assignment that combines these two extremes in a single project is the renovation of the control system of a several metres long installation at the Van Leeuwenhoek Laboratory in Delft, owned by TNO and the Delft University of Technology, and one of the largest research facilities in the Netherlands in the field of nanotechnology.

Raster and the Van Leeuwenhoek Laboratory work together with the industry to develop and test a wide variety of applications in the field of nanotechnology: the technology concerned with particles of the size of a nanometre (one-billionth part of a metre). These incredibly small nano particles are used in an increasing number of industries, including new materials, medicine, food, and computer chips. It may sound like a contradiction, but working

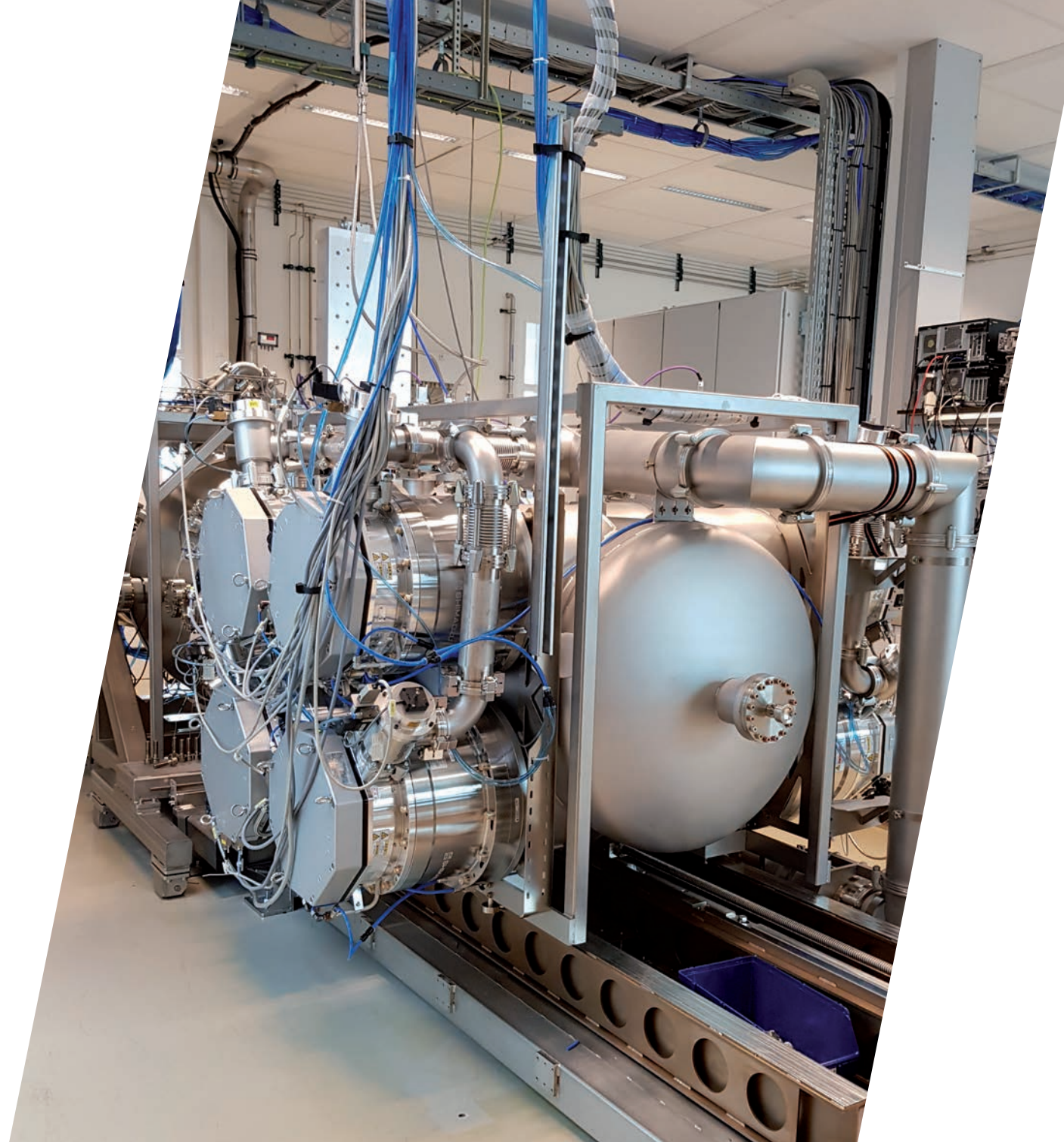
with such minute building blocks sometimes requires the use of very large machines. TNO's nanolab and Delft University use a number of controlled vacuum installations for their research. The new control system for one of these was developed by Raster, part of ICT Group. An installation of this type consists of two chambers with a 'dynamic gas lock' between them. This gas lock prevents contaminants from flowing between the chambers.

COMPLEX MACHINE

The vacuum installation Raster worked on is very complex according to Timo Huijser of the Nano Instrumentation department of TNO. He uses the machine for his own research projects, and a lot of this research is commissioned by the semiconductor industry. This complexity, he says, is due to the large number of components, its special character, and all the safety measures that need to be taken into account.

"Raster's added value is that their development work is well documented and reliable. If there is a problem with a system, you need to be able to identify the issue. And if components are well documented, this can be hugely helpful in resolving problems promptly."

The control system of the installation was ten years old and in need of an upgrade. Also, TNO wanted to introduce extensive changes to the installation, which obviously also impacts the control system. For example, the number of turbo-molecular pumps was doubled from six to twelve. To prevent the pumps from crashing, Raster built special features into the hardware and software for extra protection. As soon as the pumps are in danger of crashing, they can be switched off in a controlled manner.



"The upgrade makes the job easier and improves our work."

Timo Huijser, Research Engineer at TNO

CONTRIBUTING TO SCIENCE

The work done by Raster consisted of full replacement of the electrical control system, the PLC control, and the SCADA system (for controlling and visualising industrial processes). Although Raster had carried out a similar assignment for another client, this project has a number of unique features which made it slightly different. And that is what makes each new job challenging,

says Julian van Basten, Engineering Manager at Raster. "The most important thing is that we can apply our technical building blocks and knowledge, which we are continually extending. This gives us the opportunity to contribute to key technological developments in specialised industries such as this one."

Timo Huijser of TNO is happy with the renovated installation,

which is once again fully up-to-date and adjusted to meet the new requirements of researchers that have emerged in recent years. Ease of use has improved due to a small monitor that has been replaced by two large touch screens. New functionalities in the software enable quick implementation of changes in experiments. "This improves the quality of the research."

SYSTEEMUPGRADE MAAKT INSTALLATIE IN NANOLAB WEER UP-TO-DATE

In het Van Leeuwenhoek Laboratorium ontwikkelen en testen TNO en de Technische Universiteit Delft in samenwerking met de industrie allerlei toepassingen op nanogebied: de technologie die zich bezighoudt met deeltjes op de schaalgrootte van een nanometer (een miljardste deel van een meter). Om dat onderzoek goed te kunnen uitvoeren gebruiken beide organisaties kleinere en grotere

vacuümopstellingen. Voor één van die grotere installaties heeft Raster Industriële Automatisering een nieuw besturingssysteem gemaakt. De besturing van de installatie was sterk verouderd en daardoor hoognodig aan vervanging toe. Daar kwam bij dat TNO zelf een deel van de installatie heeft aangepast, wat van invloed was op de aansturing.

Timo Huijser van TNO, die de machine gebruikt voor zijn onderzoek voor de halfgeleider-

industrie, is blij dat de vernieuwde installatie weer helemaal up-to-date is. Ook zijn er nieuwe functionaliteiten in de software aangebracht, die het mogelijk maken om snel veranderingen door te voeren bij experimenten. "De kwaliteit van het onderzoek wordt daarmee beter." Julian van Basten, manager Engineering bij Raster, kijkt terug op een uitdagende klus. "Dit biedt ons de kans om bij te dragen aan vooraanstaande technologische ontwikkelingen in een bijzondere branche als deze."



NIJ SMELLINGHE MONITORS PREGNANT WOMEN AT HOME WITH SENSE4BABY

“THE PATIENTS’ EXPERIENCE IS OUR FIRST PRIORITY”

eHealth is becoming increasingly important and the focus on home monitoring of patients is growing.

Due to COVID-19 hospitals are planning phone appointments wherever possible and work digitally as much as they can. Care for pregnant women has continued as usual in all hospitals during the corona crisis. For several years, The Nij Smellinghe hospital in Drachten already provided some of its care by using ICT Healthcare’s Sense4Baby product. “Our primary reason is to improve our healthcare services and to further increase patient satisfaction.”

“Sense4Baby allows us to make our healthcare services more patient-friendly.”

Christien Buis, Gynaecologist at Nij Smellinghe

As early as 2013 Nij Smellinghe in Drachten was the first hospital in the Friesland region to gain experience with home monitoring of pregnant women who needed extra medical care and check-ups, says Edith Mulder, one of the hospital’s obstetrics nurses. “At that time our obstetrics nurses visited these women daily with a CTG-device and laptop, and then transferred the data to the hospital. The women could stay at home, in their familiar environment.” In this way, the hospital made its healthcare services more patient-friendly. “We provide healthcare in the hospital when it is required, and at home where possible. It is much more comfortable for a woman if she can stay in her own environment and keep carrying on with her usual activities.”

REMOTE CARE

In 2014 gynaecologist Christien Buis was added to the team. She says: “I was enthusiastic about the concept of home monitoring and the benefits we could achieve for

the patient.” At that time the development of Sense4Baby had reached a stage of maturity where pregnant women, after receiving a brief instruction, were able to easily place the strap around their middles and then send the results to the hospital themselves. “We checked which group of patients was medically eligible for this new kind of home monitoring, as it is important that we guarantee the patient’s safety. For instance, when a mother needs two CTG’s a day, or if extra check-ups are necessary, the patient is admitted to the ward.”

After this selection there still remains a large group of women who can be monitored at home. They now have daily contact by phone rather than physical contact with the caregivers of Nij Smellinghe. They only come to the out-patient clinic for Gynaecology once a week for an ultrasound and to discuss the policy. This weekly visit also used to take place before there was home monitoring. The quality of care

is just as good as before, Mulder observes.

“The interaction with the patients is as intensive as it would normally be, but now it happens by phone. Of course this is very pleasant for the patients themselves. After all, they don’t need to leave their familiar surroundings and they don’t need to travel.” For us healthcare professionals there is not much of a difference. It is just as safe as an appointment at the hospital. The only difference is that Sense4Baby allows us to accurately monitor the pregnant women remotely.”

HOME MONITORING AND COVID-19

The focus on home monitoring has increased in most hospitals due to the impact COVID-19 has had on medical care. In terms of the pregnancy and maternity care at Nij Smellinghe, not a lot has changed because the hospital has already been providing home monitoring for seven years. “We are doing this for the patient. We found

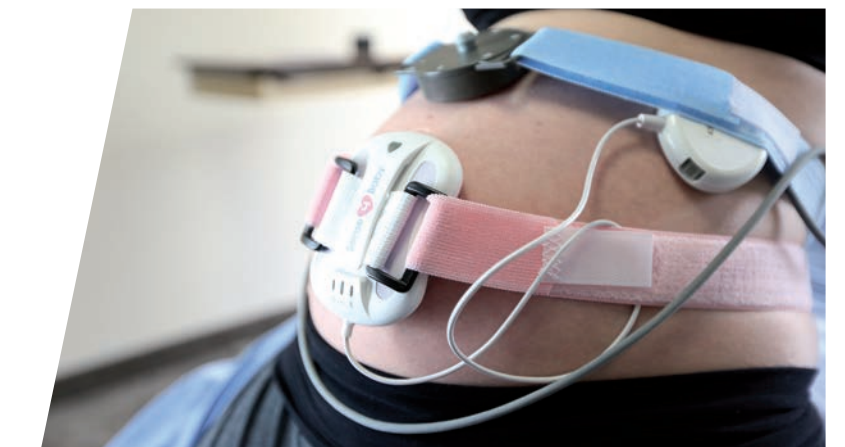
that it is generally much more pleasant for most women if they can stay at home in their own familiar environments.

And we have experienced that we can maintain the quality of our healthcare services at the same high level”, Buis concludes.

NIJ SMELLINGHE MONITORT ZWANGERE VROUWEN THUIS MET SENSE4BABY

Door de situatie met COVID-19 is de interesse van ziekenhuizen in eHealth en thuismonitoring toegenomen. De afdeling Gynaecologie van het Friese ziekenhuis Nij Smellinghe is al jaren actief met thuismonitoring van vrouwen die extra medische zorg en controles nodig hebben. Zij kiezen

hier vooral voor vanwege het gemak voor de patiënt. “Voor ons staan patiënttevredenheid en kwaliteit van zorg bovenaan”, zegt gynaecoloog Christien Buis. Een gesprek met haar en verpleegkundige Edith Mulder van ziekenhuis Nij Smellinghe in Drachten over het gemak waarmee vrouwen thuis zelf een CTG van de hartslag van hun baby maken en de gegevens doorsturen naar het ziekenhuis.



OASEN AND ORANGENXT: WORKING TOGETHER ON A SELF-REGULATING DRINKING WATER INFRASTRUCTURE

Drinking water company Oasen, Microsoft and OrangeNXT are working together to realise a smart, data-driven drinking water infrastructure that makes use of the Internet of Things. The partners met each other regularly at Microsoft and so when Oasen needed a digital representation of the drinking water network, collaboration was only natural. Business development manager Bas Lamme of OrangeNXT (a subsidiary of ICT Group specialised in cloud solutions), drinking water company Oasen's Manager ICT Nino Marino and IT-project leader Jonathan Vondeling can't wait to perform a series of live tests on the software they've developed, but the coronavirus has complicated things. In a recent online meeting during the Dutch lockdown, rather than describing the experiences gained during the series of tests, they share their enthusiastic comments about the expected benefits of the system.

REDUCED LEAKAGE LOSSES

The partners expect that this Digital Twin will allow them to manage the supply network more proactively, effectively and efficiently in order to improve the availability and quality of drinking water. The quality of the Dutch drinking water

infrastructure is high compared to other European countries. Generally our leakage losses are no more than a mere 4% to 5% depending on the region. In France for instance, this is 20% and in England even 23%. "Drinking water company Oasen supplies a total of approx.

45 million cubic metres of drinking water a year. Our aim is to reduce the leakage losses to 1% by using the Digital Twin. That would add up to some 450 million litres of drinking water," says Nino Marino.



Image: Oasen.

"A Digital Twin not only makes things easier, it also safeguards knowledge within the organisation."

Bas Lamme, Business Development Manager at OrangeNXT

PRESCRIPTIVE MAINTENANCE

The main benefit is that we can prevent calamities. We call this prescriptive maintenance. The simulations will allow us to discover possible causes of problems and ways to solve them. And because this technology will also enable us to detect even the smallest of leakages, we will be able to improve our network proactively and invest more effectively. We can detect minuscule leakages by closing down small parts of the network at night-time. Sensors and algorithms allow us to detect leakages in the closed sections of the network. This technology lets us predict the locations where breaks in the network may occur and carry out the appropriate measures ahead of time in order to prevent problems."

OASEN EN ORANGENXT WERKEN SAMEN AAN ZELFSTURENDE DRINKWATERINFRASTRUCTUUR

Van reactief naar prescriptief onderhoud, beperken van lekverliezen, sneller verhelpen van calamiteiten, leveren van een constante

AUTOMATICALLY HANDLING CALAMITIES

The Digital Twin will also allow Oasen to intervene automatically should any calamity occur. In the event of a leakage the system can shut down valves in the network. Marino: "In the current situation, engineers need to travel to the location of the leakage and even then, it takes them a while before they can shut down the water. Closing the valves automatically and more promptly means that we can achieve substantial benefits and prevent damage from water hammer. The Digital Twin will also allow us to avoid water problems in the streets. Because we automatically close down leakages and preventively replace piping, the quality of the drinking water remains consistent. In the current situation, the water quality can temporarily deteriorate after a breach in the network, and this means that customers have to boil the water before consumption."

kwaliteit van drinkwater en het digitaal testen van mogelijke scenario's. Dat is in een notendop wat drinkwaterbedrijf Oasen wil bereiken in de pilot met een Digital Twin van het drinkwaterleidingnetwerk. OrangeNXT helpt het drinkwaterbedrijf dat drinkwater

COLLECTING RELEVANT DATA

During the last couple of months a great deal of work has been performed in order to realise the pilot. To start with, we made a digital representation of the District Metered Area (DMA) which comprises multiple valves. Oasen's Jonathan Vondeling explains that the drinking water company already had a lot of the relevant information that was used for the Digital Twin, but that it was stored in different systems. "We brought this information together, but it is of crucial importance that you cross reference the right data. Only when all data in the digital representation is reliable and valid, does the Digital Twin add additional value."

SUSTAINABLE SYSTEM

The partners gained a lot of valuable insights during the implementation. OrangeNXT's Bas Lamme explains

levert aan 784.000 mensen met het realiseren van de digitale replica. De Digital Twin wordt door de dochter van ICT Group ontwikkeld als 'repeteerbare nieuwe functionaliteit' bovenop conNXT, de standaard IoT oplossing, voor drinkwaterbedrijven. Voor de digitale

that it is extremely important to design the Digital Twin step by step and that it is based on a scalable architecture. "We were continuously focused on simplicity and effectiveness during the project. We connected sources and added intelligence in stages under the watchful eye of the actual users. In addition, we paid a lot of attention to cyber security. Building a future-proof system is an interesting challenge."

SAFEGUARDING KNOWLEDGE

OrangeNXT's business development manager adds that a Digital Twin not only makes things easier, it also safeguards knowledge within the organisation. "Setting up this Digital Twin allows us to translate knowledge and experience of individuals into algorithms. We notice for example, that the aspect of ageing is another reason for companies to digitalise."

representatie Digital Twin is informatie uit verschillende systemen bij elkaar gebracht. Daarbij is het cruciaal dat de juiste data met elkaar worden verbonden, want alleen als alle data in de digitale representatie betrouwbaar en valide zijn, voegt de Digital Twin waarde toe.

ICT GROUP

ICT Group N.V.
Weena 788 (FIRST Rotterdam, 19th floor)
3014 DA Rotterdam
The Netherlands

Postbus 121
2990 AC Barendrecht

T: +31 (0)88 908 2000
F: +31 (0)88 908 2500
E: info@ict.nl

www.ict.eu



COLOFON

ICT Group Corporate Magazine

ICT Group Corporate Magazine is a unique publication of ICT Group N.V. For information about ICT Group, careers or services, please contact ICT Group at info@ict.nl or recruitment@ict.eu. All rights reserved. Nothing in this publication may be reproduced, stored in a retrieval system, photocopied or transmitted in any form or by any means without prior permission in writing of ICT Group N.V. Enquiries concerning reproduction outside of the scope of the aforementioned should be sent to info@ict.nl. Any websites or information referred to in this publication are in the public domain and are provided for information purposes only. ICT Group disclaims any responsibility for the content of those website. The general terms and conditions of purchase respectively sale and delivery of ICT are applicable to all transactions and undertakings resulting here from.

