ergon

ANNUAL REPORT
2017

6
Retrospective
Last year's highlights

Permanent employees	Trainees	2112	2027	1851	1696	
247	20					Electricity per FTE in kWh
	Apprentices 10	2014	2015	2016	2017	

5,5 %

7

40

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The year in figures
How many clients and projects did Ergon look after? How high was staff turnover? Find these and other key details in our overview of the 2017 financial year.

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Banking platform
The Liechtensteinische Landesbank has acquired a new cross-channel platform for secure, user-friendly online banking.
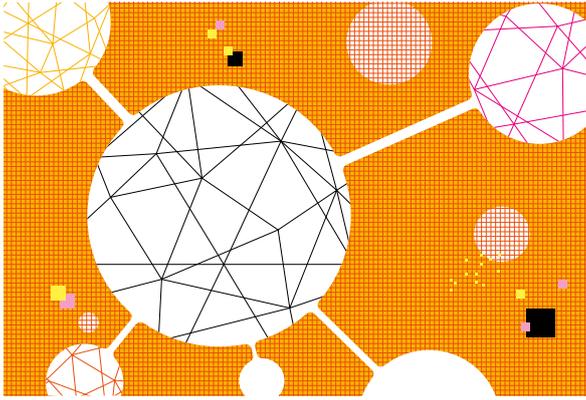
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The photographer Roland Tännler has had a glimpse of life backstage at Ergon and taken a few snapshots of our working day.

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Pleasing prospects for the future

A brief look back and forward – Patrick Burkhalter and Gabriela Keller

Patrick: 2017 has been the first full year served by the current Executive Board since taking over the reins in the summer of 2016, and it presented the management team with a several sizeable challenges. As far as I am concerned, they have overcome these masterfully – which was by no means a foregone conclusion – and this makes me very proud.

Gabriela: For me, 2017 was all about squaring the circle of "continuity versus change". We're not an SME any more; we're now working on configuring ourselves for the future as a company with more than 300 employees. The debate about how the organisation should work has been very vigorous at times, not least because our staff are involved in these processes. We further refined and simplified our salary and bonus model last year, for example, and the teams now have a greater say in awarding bonuses.

Patrick: Our biggest challenge is precisely this tension between "managing" a growing company and nurturing our agility, and this year once again showed me how important a rock our Ergon company values are here; it is obvious in the commitment of our staff, for example in their entrepreneurial contribution, which was particularly called for after the departure of a major client.

Gabriela: One of our customers, a member of a fintech startup, said about working with us: "There are 280 of you, but the company spirit is still just like in a startup." I'm very pleased about that and I think it sums up our culture nicely. My goal is to ensure that this culture and attitude of substantial personal commitment is retained and developed, even as the company expands.

Patrick: Given this trajectory, it is right that I take even more of a back seat and give the new Executive Board more room to manoeuvre. This allowed us to get topics up and running last year that were yet to become a priority when I was CEO – user experience, for example.

Gabriela: We are very pleased that the topic of user experience gained so much traction last year and that the staff have set further exciting initiatives in motion. We have been able to expand our business with our existing clients while also acquiring new and inspiring customers, and our autonomous teams have shown their mettle in an array of situations. All in all, there are pleasing prospects for the future!

GABRIELA KELLER
has a degree in IT Engineering from the Swiss Federal Institute of Technology in Zurich (ETH) and has been working for Ergon since 1994. She has been a member of the Executive Board since 2000 and CEO of the company since 2016.

PATRICK BURKHALTER
has been Chairman of the Board of Directors at Ergon since 2016. He previously served as the company's CEO for 24 years.

A dynamic year

2017 was yet another year of growth for Ergon, with sustained demand for digitalisation projects helping the firm to boost sales by 5.6 % to CHF 56 million and create 15 new jobs.

Having increased company turnover from CHF 53 million to CHF 56 million, Ergon can look back on a successful 2017. This was achieved through sustained high demand from existing customers as well as mandates from new clients from the industrial and financial sectors, including two fintech startups.

A strong emphasis was placed on innovation and business development last year, including both augmented and mixed reality (see p.20) and data science (p.18), and we were able to create prototypes or complete first projects for a range of new and existing customers. The User Experience (UX) team got into top gear, delivering a range of new and complementary services for Ergon customers and expanding from two to six staff members over the course of the year.

The loss of a major client project of many years' standing in the telecoms sector in the summer of 2017 represented a challenge, but any staff freed up as a result were largely occupied with additional business from other projects until the end of the year.

From fintech startup to online banking platform

There was a particularly broad spectrum of projects – both great and small – in the financial sector, and it was a major milestone for the Finance department when the Liechtensteinische Landesbank's new online portal went live in July (p.28). This cross-channel online banking platform allows all of the bank's in-house services to be combined flexibly with various external utilities. Ergon acted as a technology and development partner here and designed the architecture, the multi-level security package and the portal as a central access point for every service provided, including online banking and mobile apps.

Ergon also completed two projects for fintech startups with the wholly digital, ETF-based "third pillar" pension solution for Viac and a trading platform for Crypto Finance AG's brokerage business. Our agile approach, comprehensive understanding of the sector and close cooperation with the start-ups enabled us to fulfil the ambitious scheduling and functionality criteria within a matter of months. In the case of Viac, this cooperation was close in the most literal sense – the three startup founders took up residence in an office at Ergon and were briefed by developers and the UX team on a daily basis.
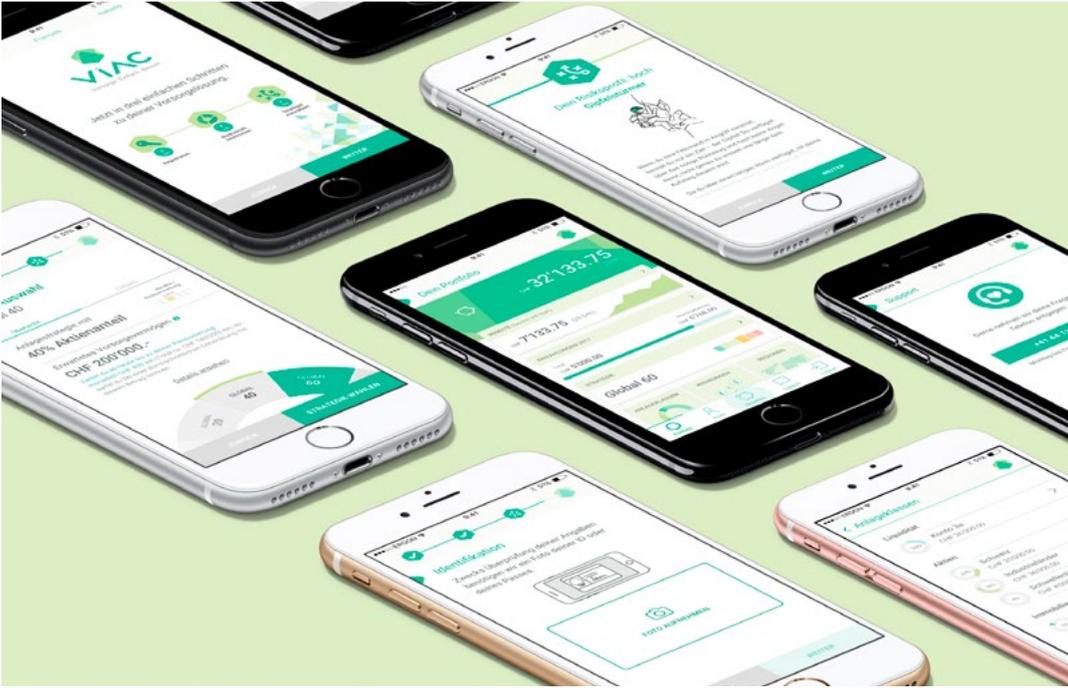
User experience as a new Ergon service

Viac is a good example of the active role played by the new UX team in Ergon's agile work environment. "It was very important to us that we could access a range of services all under the same roof, especially in the UX field," says Christian Mathis, one of the founders of Viac. "This meant we could get on with things much more quickly and sort out queries and problems promptly. We are so immersed in the finance side of things that it is not always easy to explain what we are dealing with in simple terms that can be generally understood. Whenever the UX team found our onboarding process too complicated, they gave us direct feedback and made new suggestions based on user tests. We were subsequently able to design a user interface that is much simpler and more attractive."

There was a tremendous media response when the Viac app was launched, and some CHF 7 million in customer assets had already been transferred to Viac by the end of 2017, when it had been up and running for only six weeks.

THE ERGON EXECUTIVE BOARD (l. to r.):
Dominik Moser, Heiko Faller, Roman Hugelshofer, Gabriela Keller,
Teddy Graf, Adrian Berger, Hans-Jürg Schneider.

User experience as a new Ergon service: the Viac app was created through close cooperation between the UX team, developers and the client.

First industrial cloud-based solution for the Internet of Things

In 2017, Ergon created a secure cloud solution for IoT pioneer and longstanding Ergon client Belimo that allows any internet-enabled actuator and a host of other components to be monitored, controlled and updated online. The Core Cloud also permits analysis of device data and gives Belimo scope to offer system solutions that bring even greater benefit to their customers (p.22).

Rising demand in the retail trade

Ergon completed a range of projects for both of Switzerland's leading retailers (Coop and Migros) last year, including mobile scheduling for Coop's 3,000 administrative staff, for example, and digitalisation of other time-management processes. Ergon also created a track & trace solution for Coop that makes it possible to follow the progress of orders and monitor delivery channels. Logistical data from nine Coop Group subsidiaries that had previously been held in separate systems has been bundled together and made available for Coop's www.pickup.ch service.

2017 also saw preparations for implementation of Ergon's time management solution in five more Migros industrial operations; it has been in use in a total of seven industrial applications and five Migros cooperatives since 1 January 2018.

Airlock continues to grow

The Airlock Suite experienced further growth in sales during 2017 (p.14). The Airlock department also invested additional personnel resources in ongoing development of the WAF and IAM products, with two additional sales staff being taken on for 2018.

Staff training and knowledge transfer

The "Lerngon" initiative started in 2016 was further expanded in 2017, with a total of 55 in-house vocational training events organised and carried out by HR, the CTO and other members of staff. It was also gratifying to see eight Communities of Practice (CoP) being assembled on a range of topics (p.47); the purpose of these communities is to forge links between staff with similar interests and promote access to the technical expertise available in-house.

Increased public presence

Demand among companies and organisations for talks and presentations from Ergon staff was particularly strong in 2017, and these included papers given at ETH Zurich and other universities as well as events relating to various digitalisation and Ergon's successful business model. In February,

Live deployment of a range of winter road-clearing vehicles in the Canton of Lucerne, as visualised by Ergon's new UX team.

the Swiss Management Society (SMG) held a meeting at the company that examined the succession management process at Ergon, while talks were given on technological topics in particular by Robert Adelmann (UX and augmented/mixed reality) and Adrian Berger (machine learning/AI).

Ergon was involved as a Premium Partner in three events at 2017's Finance and Economics Forum, with Ergon clients Dacadoo, Raiffeisen and Belimo presenting projects they had jointly completed with the company in the fields of eHealth, security and Industry 4.0.

Comings and goings in the Sales team

Jean-Claude Schwarzen, who has many years of experience in retail, finance and the public sector, joined Ergon's Sales team in May 2017, while the end of the year saw Ergon's Head of Sales and Executive Board member Lukas Ehrensperger leaving the company. Jean-Claude Schwarzen will head up the Sales team, and a further team member will be sought in 2018.

Scouting for the next generation

In addition to its "IT Days", Ergon organised a series of events including 9 "scratch workshops" for school classes, 8 taster days, 2 day-courses for IngCH's "IT Weeks" and a programme for the Swiss National Future Day last year. Andrea Zimmermann, who is responsible for Ergon's training programmes, and an enthusiastic team of other Ergon staff members organised trainee projects lasting 300 hours.

Ergon employs a total of 10 apprentices, and one trainee finished their apprenticeship as an application developer in the summer of 2017. School-leavers and students had an opportunity to gain their first experience of a professional IT environment as interns in the field of software-testing while also making an essential contribution to the high quality of the software we supply.

Milestones in 2017

SMG leadership meeting at Ergon

Ergon's succession management process is put under the microscope from a variety of angles at a meeting of the SMG Swiss Management Society.

Recognition as "Growth Champion"

Ergon cited as one of Switzerland's 55 "Growth Champions" by Handelszeitung newspaper.

Launch of LLB Group's new internet portals

Ergon is supporting the Liechtensteinische Landesbank and Bank Linth as a technology and engineering partner.

Jan   **Feb**   **Mar**   **Apr**   **May**   **Jun**

First rollout of track & trace solution for Coop

This solution enables tracking of order and delivery channels for Coop@home and Oecoplan textile cleaning products.

Public launch of Airlock IAM 6.3

With a new design, enhanced user-friendliness, several upgrades and deeper integration of partner solutions.

Bossard makes finals of German Industry Prize

There were a total of 95 submissions in the "Intralogistics & Production Management" category.

Belimo's cloud solution goes live

The cloud solution developed by Ergon for Belimo's Energy Valve 3 product goes live at the beginning of May.

Viac launches first digital "third pillar" pension solution

Ergon develops the first 100% digital "third pillar" pension solution in Switzerland, which runs via a smartphone app.

Ergon in Gartner's WAF Magic Quadrant

Ergon is the only Swiss company to be listed in the 2017 edition of Gartner's Magic Quadrant – for its Airlock Suite.

Release of web-based version of WiMS

The winter road-clearing services management system developed by Ergon is further refined as a web solution and is now also available to other customers.

Jul   Aug   Sep   Oct   Nov   Dec

Airlock wins the Softshell Vendor Gold Award

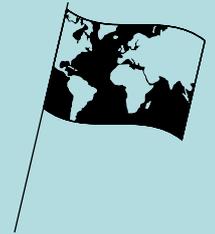Airlock achieves a perfect score in the value-added distributor Softshell's vendor report.

Production system for Crypto Broker AG goes live

Ergon delivers the trading platform for the company's brokerage business.

Public launch of Airlock WAF 7.0

The new release integrates an entirely revamped logging and reporting system with multivalent Geo-IP information amongst other features.

The year in figures

Facts and figures

Ergon continued to grow in 2017 and we can look back on a successful financial year.

56
Turnover in millions of CHF

15
Newly created jobs (full-time)

218
Clients

2919
Total number of years' experience amassed by Ergon experts

302
Active projects

85 %
University graduates

7,5 %
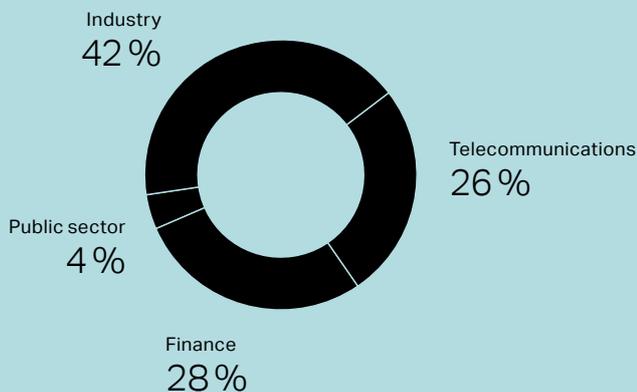Percentage of turnover derived from new-client business

5 %
Staff turnover rate

Countries with Ergon software

Ergon projects and products are in use in 24 countries.

Australia
Austria
Belgium
Denmark
Finland
France
Germany
Gibraltar
Liechtenstein
Luxembourg
Mauritius
Morocco
the Netherlands

Oman
Poland
Romania
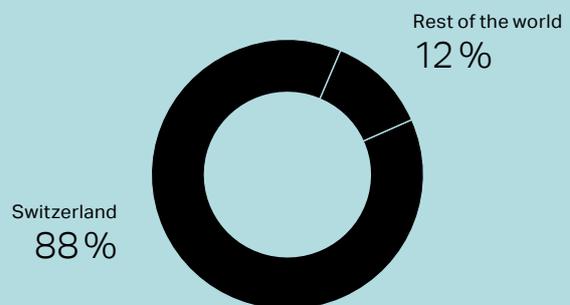Serbia
Singapore
Spain
Switzerland
Ukraine
United Arab Emirates
UK
USA

Breakdown of turnover by sector

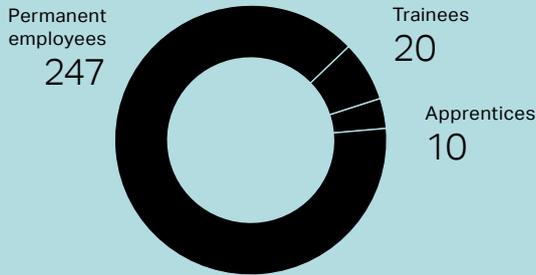Ergon has a broad customer base and the breakdown of turnover by sector remains balanced.

Industry
42 %

Telecommunications
26 %

Public sector
4 %

Finance
28 %

Geographical distribution of turnover

The most important countries for sales outside Switzerland are Liechtenstein and Germany.

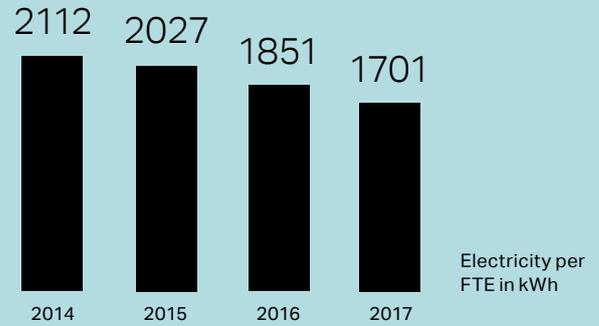Rest of the world
12 %

Switzerland
88 %

Staff

Ergon employs 277 staff and created 15 new permanent positions in 2017.

Permanent employees
247

Trainees
20

Apprentices
10

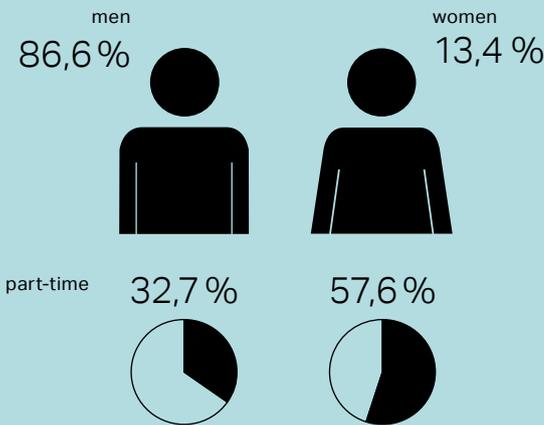## Electricity consumption (change over time)

We were once again able to reduce electricity consumption per full-time worker in 2017.

2112 — 2014
2027 — 2015
1851 — 2016
1701 — 2017
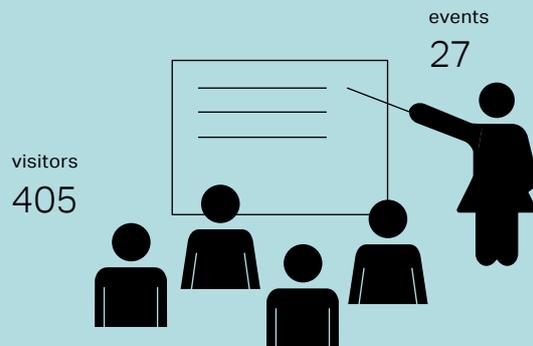
Electricity per FTE in kWh

Proportion of female and part-time workers

The percentage of female staff rose slightly from 2016's 12.6%. The percentage of part-time employees among permanent staff was 37.2%.

men
86,6 %

women
13,4 %

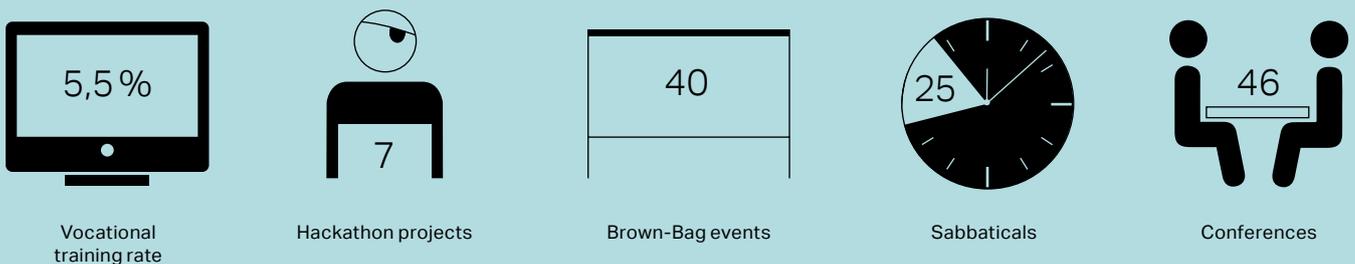part-time

32,7 %

57,6 %

Supporting future generations

Ergon continued to help train the next generation of IT employees in 2017.
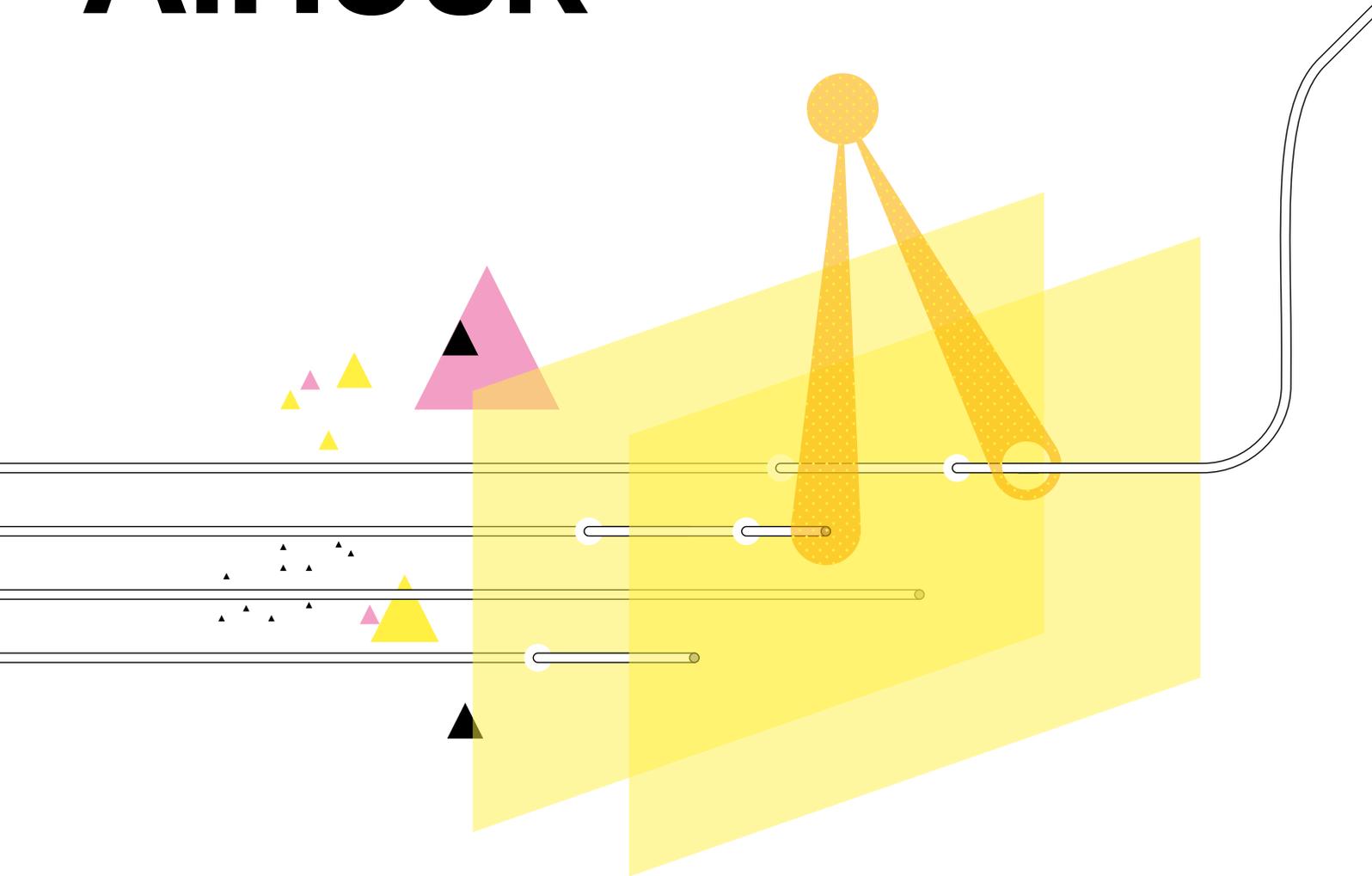
events
27

visitors
405

Training

Training plays a big part in Ergon's corporate culture. Every member of staff is entitled to 10 training days per year in addition to a sabbatical of one month every five years.

5.5% of working time was invested in vocational training; in-house hackathons are used to work on previously defined programming challenges and brown-bag events are a chance to engage in discussion and listen to papers on a range of technological topics.

5,5 %

Vocational training rate

7

Hackathon projects

40

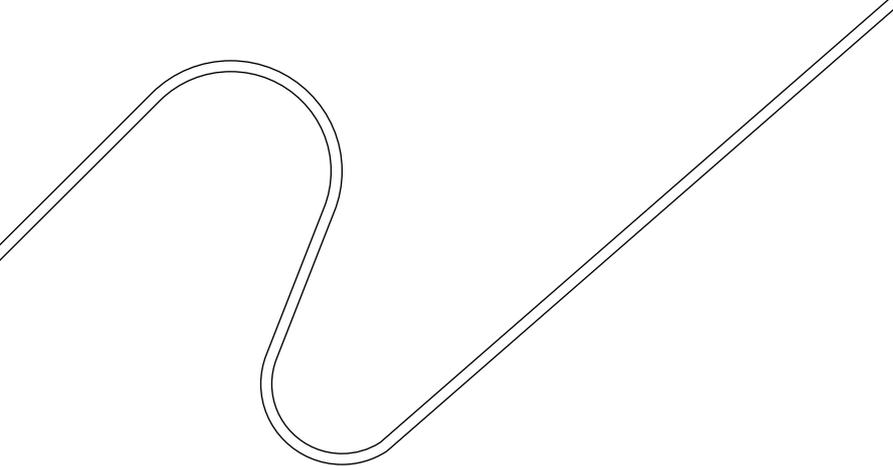Brown-Bag events

25

Sabbaticals

46

Conferences

Airlock

Sales of the Airlock Suite security product continued to increase in 2017 – and Airlock now protects more than 30,000 applications and 15 million identities worldwide.

AIRLOCK
The Web Application Firewall (Airlock WAF) filters access to web applications and protects them from a wide spectrum of attacks.

Strong growth has been achieved in the Asian banking sector in particular; in addition to forging new technology partnerships with Micro Focus, IBM and Cryptomathics, the network of sales partners has undergone further expansion.

Airlock WAF 7

October's major release of the Airlock Web Application Firewall featured a comprehensively revamped logging and reporting system that makes it possible to drill down to the most granular detail while retaining a sense of the big picture. The new release also integrates Geo-IP information at a range of levels, including reporting, the OS and the central request logic, so that unusual activity can be identified and responded to. "Policy learning" for whitelist rules also provides integrators with a powerful tool for the automatic formulation of highly secure rules.

Customer IAM

Identity and Access Management is currently undergoing a renaissance under the banner of Customer IAM (cIAM). The necessity of regulating external identities (of suppliers, partners and clients, for example) and managing their access rights has set such systems completely new challenges and Airlock has substantially expanded its IAM development team in response. Clients will benefit from this in the form of more compact release cycles and even more features over a shorter timeframe.

Compliance

2017 was the year of compliance in the fields of app security and identity and access management, with the EU Data Protection Directive the leading priority in most IT departments.

The act's requirements, which have to be applied by May 2018, are preoccupying a huge number of companies around the world and the banking sector has been placed under considerable additional pressure by the new Payment Service Directive (PSD2). The list of the ten biggest threats to web applications (the OWASP Top 10) was updated at the end of 2017, for the first time in four years.

High customer satisfaction

Airlock managed an excellent Net Promoter Score of +52 in a customer satisfaction survey conducted by Ergon; the Net Promoter Score (or NPS for short) is a performance indicator intended to reflect a company's success and customer satisfaction levels.
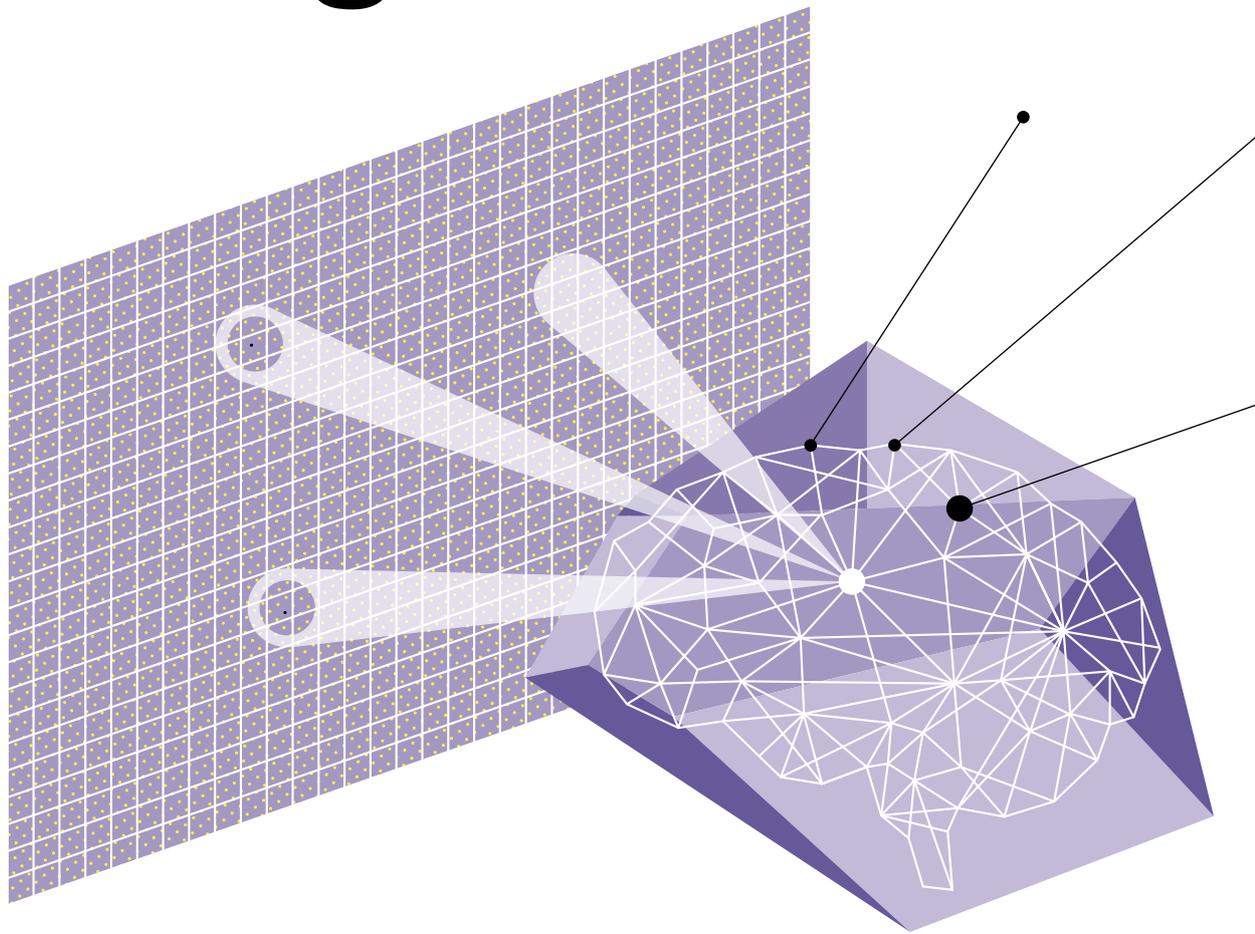
Gartner Magic Quadrant

Thanks to the product's successful efforts at internationalisation and ongoing advanced development, Airlock has retained its listing in the new Gartner Magic Quadrant for Web Application Firewalls – the only Swiss company to do so.

Softshell Gold Vendor Award

Airlock has achieved the highest possible score in 2017's Softshell vendor report and repeated last year's success by once again winning the gold Softshell Vendor Award. The Value Added Distributor Softshell analysed global IT security companies to investigate how market participants are adapting to the requirements of the German-speaking market.
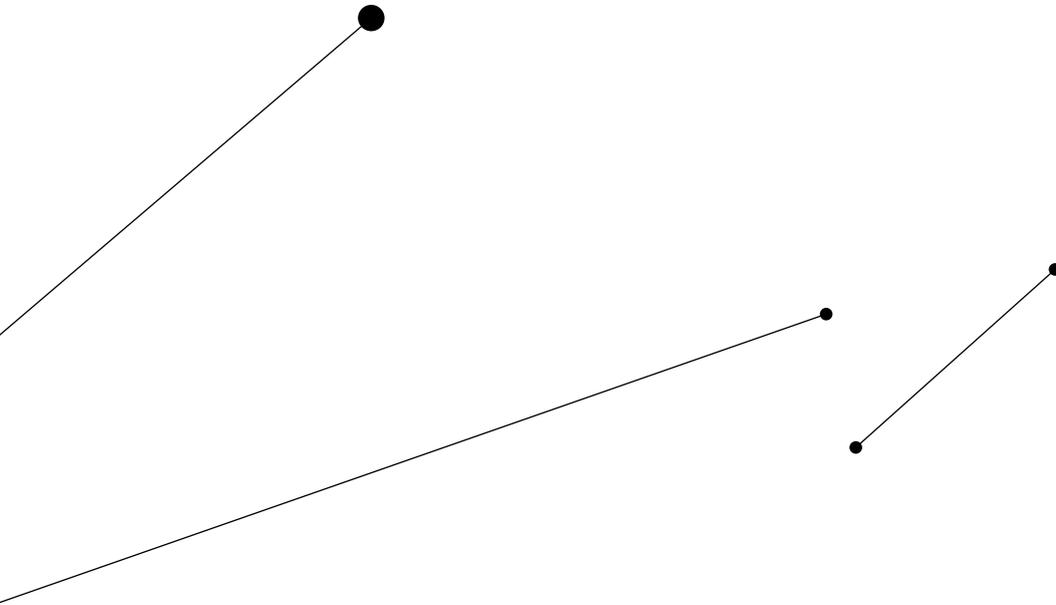
www.airlock.com

Secure payment transactions thanks to machine learning

FRAUD DETECTION
Fraud is being discovered quickly and reliably,
thanks to machine learning.

Internet tricksters are getting more cunning by the minute – so smart protective measures are called for. Thanks to artificial intelligence, the fraud detection solution developed by Ergon identifies attempted fraud in payment transactions more reliably than conventional methods.

Subsequent to its launch in 2016, the machine learning application has now completed its pilot phase and is in use in two banks. Expansion is ongoing and the application is also available in conjunction with the Airlock Suite. The autonomous learning system analyses enormous amounts of data from payment transactions, independently identifying applicable legal parameters and rapidly tracking down irregularities or attempted fraud with a high accuracy rate.
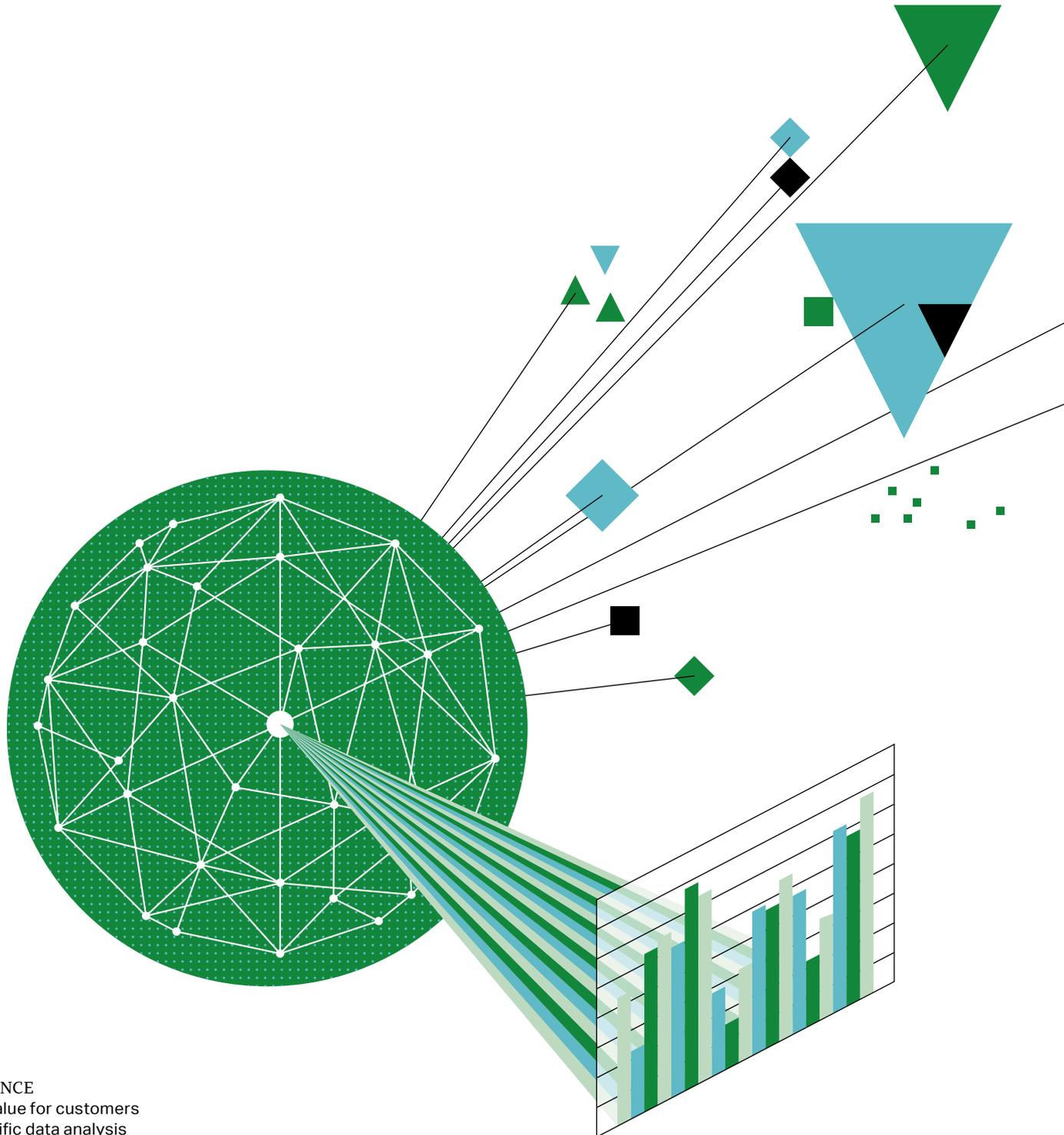
Superior to humans

More than 50 quantified payment characteristics are identified and checked for every transaction. Payment requests from any desired source are evaluated using combined models of statistics, rules and machine learning to detect anomalies and pinpoint similarities. Artificial intelligence allows the system to learn a set of rules with such fine detail that noticeably more correct identifications ("true positives") and fewer unwarranted alarms ("false positives") are generated. The system was soon performing better than human experts and continues to learn, adapting to the specific characteristics of the bank and its customers or to particular circumstances in individual countries on a rolling basis. In addition to detecting anomalies, the system learns using sample payments, constructing the rules required on its own.
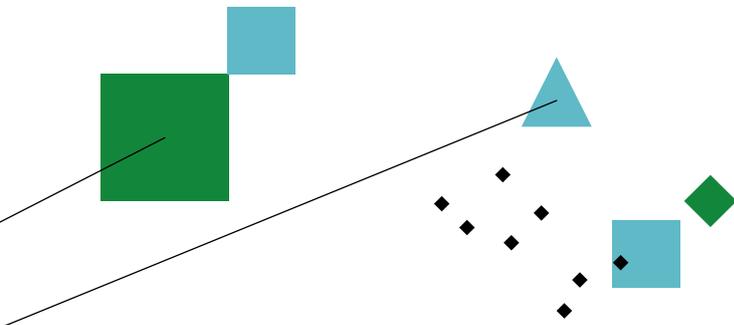
www.ergon.ch/fraud

Enormous potential for data science

DATA SCIENCE
Creating value for customers
using specific data analysis

The future of IT will be shaped by data. Although a host of fundamental problems in the fields of data science and artificial intelligence have already been solved, individual solutions will be required to tailor the benefits to a specific company.

Ongoing digitalisation is producing ever greater quantities of data even as increased network integration is steadily making such information more easily available. Modern computing power means that real-time data processing and analysis is always available, offering companies a wide range of possibilities for exploiting the data within their overall value chain. These include providing general decision-making aids, optimising and automating processes, forecasting, and personalising and improving the goods and services on offer to customers.

Domain and methodo-logical knowledge

Search engines, image recognition, voice-operated intelligent assistants, self-driving cars and personalised shopping suggestions are already part of daily life. Many of the core problems have already been solved and various platforms and solutions are now available; problems that are highly specific to particular firms still have to be solved individually, however, and this requires in-depth domain knowledge and familiarity with mathematical methodology and modelling.

Ergon does not offer platforms or products of its own in the field of data science; instead, it works jointly in close cooperation with clients to create specific solutions. The first step is to identify areas with high potential for optimisation and to define the problem on that basis. The client's data are then analysed in light of the problem. While analysis of the data will not solve the problem in itself, it will nonetheless uncover further important findings. The data gathered will form the basis for the next step in the process, with the ultimate aim of using artificial intelligence to achieve the highest degree of automation and effect ongoing improvements in quality within the parameters of the problem as defined.

Ergon has worked with its customers to successfully complete a range of data-based project in financial, industrial and retail contexts. Each of these projects has involved solving client-specific problems to generate the greatest possible benefit for the business, both through the higher quality of results and the automation of processes. The critical factors in the projects' success here are the availability of high-quality data over a long period of time, domain expertise, and working with the client to produce iterative results.

JEAN-CLAUDE SCHWARZEN, Diploma in Mechanical Engineering ETH, is one of Ergon's Sales Executives, with many years of experience in retail, finance and the public sector.

www.ergon.ch/datascience

Mixed Reality: now we have to deliver!

AUGMENTED REALITY
OPO Oeschger's customers can size up a range of door-handle models in real-world surroundings and place an order straight away.

A year ago, we reported on the potential of augmented reality (AR) and how this and related technologies are playing an increasingly important role in practical applications. And it has proved more than just potential – customer demand has skyrocketed over the last few months.

Practically applicable use cases

With the advent of modern smartphones and tablets, the topic of mobile AR has become ever more relevant; unlike head-mounted displays such as the HoloLens, for example, such devices are already in widespread use today. The following two fields in particular are ready for practical applications:

The visualisation of products in context. An example here is the innovation project developed for our client OPO Oeschger – the application enables customers to view products (such as door handles, for example) directly in the real world and to place an order with the vendor if they like what they see. This reduces both risk to the end user and costs to the dealer, as fewer items will be returned.

There has been a similar focus on the use of augmented reality in an industrial context, whether for employee training, direct visual representation of instructions or installation steps on devices, or for maintenance.

Augmented reality and machine learning

Many applications not only involve visualisation of information but often also require identification of a context and rec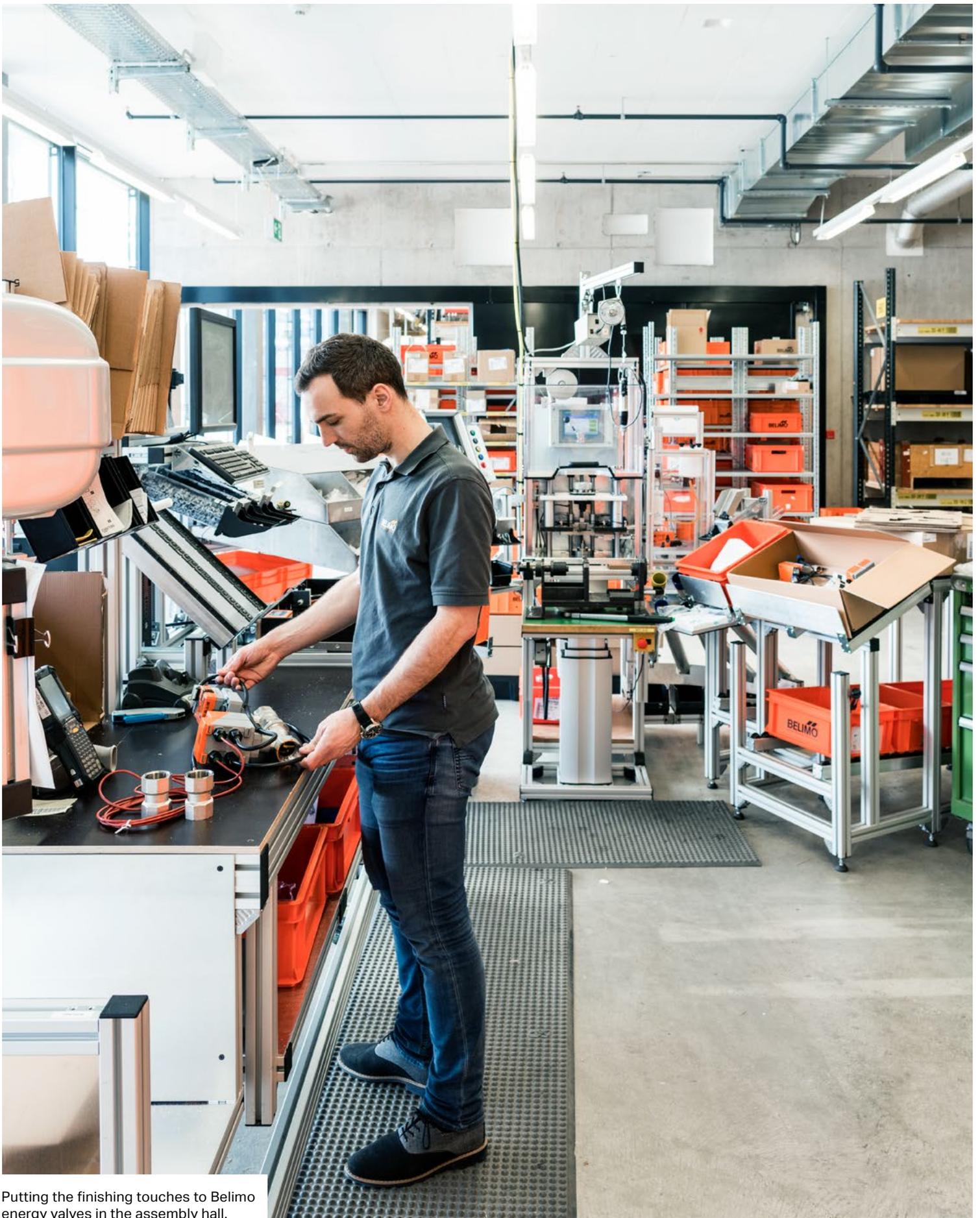ognition of objects and devices, and this is where advances in the field of machine learning come into play – in the form of Google's Vision API, for example, which enables extremely powerful text and image recognition. Technologies that can capture multiple barcodes in an image or recognise and distinguish 3D objects (e.g. varying device models) are similarly in use.

Quick delivery and scaling

We have actively got to grips with the challenge of being able to deliver results quickly, using innovative technology, ensuring scalable outcomes even for extremely large projects. We have established a Mixed Reality focus team that is making use of cutting-edge technologies for prototypes and showcases. This team has been cooperating closely with our groups of experts right across the company (Communities of Practice, p.47) to address the topics of mixed reality and machine learning, and with our development teams, with their in-depth client and domain knowledge. We are thus in a position to react speedily while simultaneously expanding and scaling broad-based expertise.

ROBERT ADELMANN, DR. SC. ETH ZÜRICH
heads up Ergon's User Experience (UX) team and Mixed Reality unit. He has a degree in IT and helped found Scandit AG. He lectures at the University of Applied Sciences Rapperswil (HSR) and Lucerne University of Applied Sciences and Arts (HSLU) in the field of Human Computer Interaction Design.

www.ergon.ch/augmented

Putting the finishing touches to Belimo energy valves in the assembly hall.

Smart climate control from the cloud

Since its launch in 2012, Belimo's Energy Valve has already won twelve international awards, and the company has now teamed up with Ergon to write the next successful chapter in the story of the "Shared Logic" IoT platform. The Energy Valve 3 cloud solution has generated considerable interest in Asia and Europe since its unveiling in 2017.

Belimo used a pioneering project run in conjunction with the Massachusetts Institute of Technology (MIT) to prove that it was possible to make concrete savings using the Internet of Things, reducing its energy costs by USD 1.5 million thanks to the locally optimised regulation made possible by the smart "Energy Valve". Flow volume and send/return temperature data readings from air-conditioning units make it possible to calculate temperature differences and levels of energy transfer in addition to gleaning other information – if the heat exchanger is polluted, for example, or some other fault has arisen in the heating circuit. Purely local measurement on individual devices imposes strict limitations on optimal data analysis and the use of information for additional services; developing a cloud solution has allowed Belimo to open up new business fields with vast potential.

Stable services from the Core Cloud

The heart of Belimo's cloud solution is the Core Cloud, a stable array of services that can be used by all business applications. The Core Cloud establishes a connection with the IoT devices in situ, stores data from these devices (and their users) and also makes it possible to send commands and new settings to equipment. Devices are registered with the Core Cloud upon manufacture (thus receiving their digital birth certificate) and the Core Cloud accompanies an IoT device throughout its entire lifespan, from production, fitting and actual operation when installed right through to its replacement when it fails. Its digital profile in the Core Cloud, the so-called "digital twin", is constantly updated. Business applications can interact with the Core Cloud via a user-friendly interface (API) and new business cases can be set up within the Cloud. The Core Cloud guarantees the IT security of all the device data that is collected, permitting access only to authorised personnel and services and ensuring that data protection regulations are upheld.

Guarantee extended

As an incentive for customers to connect their devices to the cloud, Belimo has extended its warranty period for cloud-enabled devices by 24 months to seven years. The extended guarantee also covers mechanical components. This means even more added value for customers, and Belimo will have the benefit of a larger database that can be used to make further improvements to the services on offer. Maintenance work will also be made easier as the support team can make diagnoses and order repairs using live data.
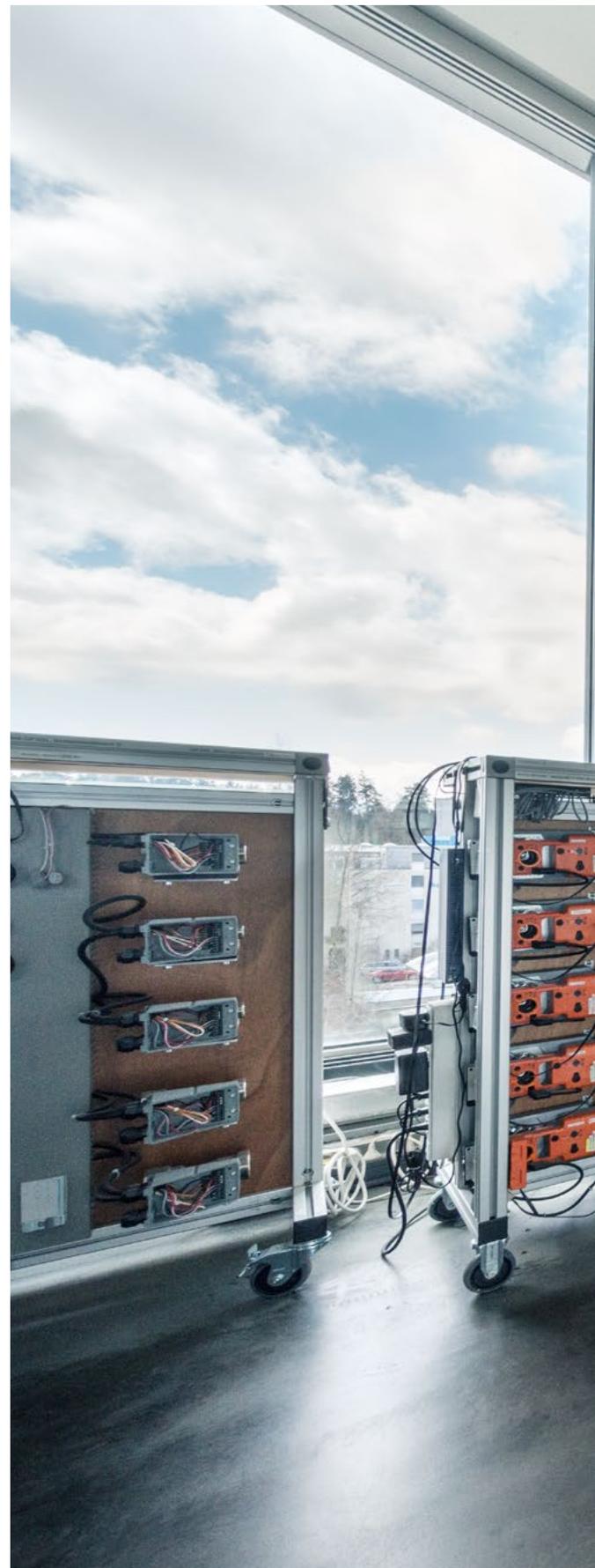
Long-term data storage in the cloud provides customers (and Belimo) with "lifetime data access" (longer than 15 years) for every device installed in any building. In future, customers will be able to access the data from their devices themselves (automatically via API rather than simply by looking at graphics), carry out additional processing for their own purposes or include them in their business cases. One practical application might involve integration into the popular IFTTT service, which allows individuals to establish a connection with other internet services and IoT devices themselves. This will open up options for of a wide variety of interactions, e.g. having faults in a Belimo device flashed up using a Philips HUE lamp or controlling "smart" heating at home with Alexa commands.

The cloud solution has been on sale since February 2017 and is available globally. The cloud data is currently hosted in Switzerland but will be distributed worldwide over the medium term because of data protection legislation and other reasons. Many countries such as the USA, Russia and China, for example, not to mention the EU, have specific legal requirements in this field.

The cloud solution's IT security is corroborated by external security audits and the security measures taken are based on best practice that is also applied in the financial sector.

Zoneease.com: air-conditioning control from the cloud

In Asia, there are plenty of skyscrapers and other commercial buildings equipped with Belimo components. Climate control in large office buildings is typically managed with air-conditioning, and Belimo has developed the "Zoneease" range of services for office high-rises, permitting modular climate control for each office cubicle. The "Room Units" must be linked together before connection and calibration with a master control system for the building (which records physical parameters such as room size, address on the building network, calibration of air distribution in the buildings etc.). All of this used to be set up manually and if the settings were not correct, offices could easily become uncomfortable. Zoneease allows building planners to capture and control all the configuration parameters for the components in the building in the Belimo cloud in advance. The configuration data are distributed to smartphones; the installer on site need only to assign them to the right spot and the relevant configuration data for the location will be automatically downloaded. The progress of the configuration process can be monitored via the cloud and, once the process has been completed, there is even a transfer protocol for handing the office spaces over to the client.

The quality of Belimo devices is assured with long-duration testing; the devices are typically built in and will be used for 20 years.

The creative heart of the System Innovation team thrashing out new ideas with Peter Schmidlin, Belimo's Chief Innovation Officer. From left: Daniel Roner, Philipp Storrer, Peter Schmidlin, Dennis Johannesen

The first Energy Valves were installed in the cellar at the company's headquarters in 2011 and tested in a real-world environment, and the firm still begins its journey with new products here today; testing out early prototypes on actual machinery has proved a recipe for success for Belimo.

Digital agility for the LLB Group

The Liechtensteinische Landesbank began its digitalisation project in the autumn of 2015 and now, scarcely two years later, the entire infrastructure is up and running with the new online portal seamlessly in place: it is modern, customer-orientated and secure.

The ultimate goal of the Liechtensteinische Landesbank, which also includes Bank Linth, was to create a modular, cross-channel online banking platform with adaptive security that would provide the best-possible combination of flexible in-house and integrated services as an online presence. Ergon provided support for the LLB Group in this venture as a technology and development partner, working in close cooperation to elaborate the architecture and the multi-level security concept while developing the portal as a central access point for all the services offered, including online banking and mobile apps.

Quick reaction times thanks to "two-speed architecture"

These days, new front-end services supplementing a bank's digital service portfolio have to be quick, flexible and capable of being implemented in short releases; back end applications are subject to considerably longer cycles and have to guarantee stability, performance and operational precision. To ensure that both are possible simultaneously, a clear division between the two layers is required, and this is achieved with "two-speed architecture" that decouples customer applications from the core bank solution. The dividing layer – the central micro-service interface – plays a major role in such circumstances; it is where the back end applications provide their services to every possible consumer in finely detailed form. The front-end applications that make use of these can combine them as they choose and assemble a unique service, but are simultaneously protected from release changes by the interface that stands between them.
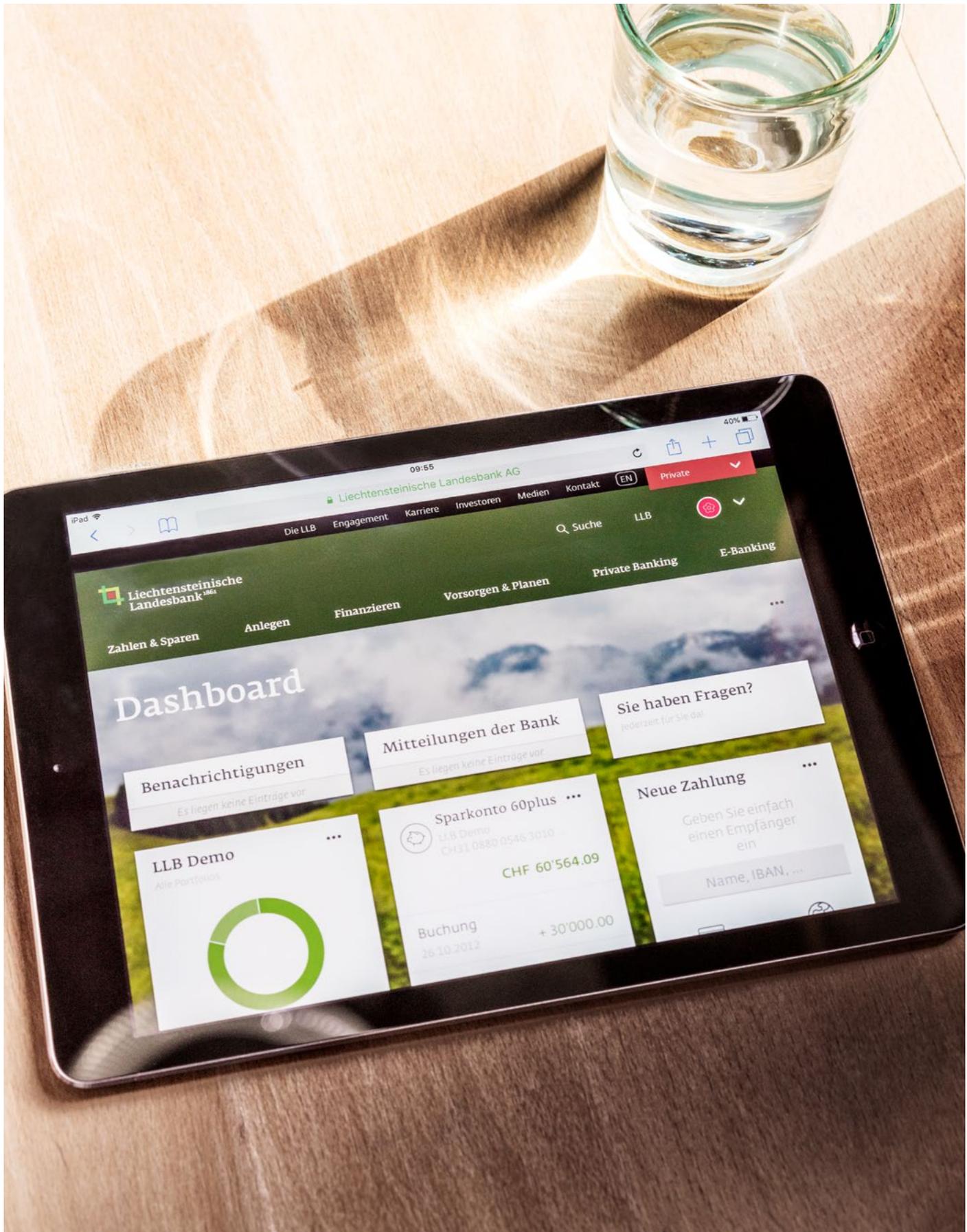
This pattern has been continued through into the portal architecture, allowing both the incorporation of in-house applications and the integration of third-party content. All this takes place hidden away beneath a designer interface, providing customers with a consistent overall appearance. Thanks to its responsive web design, the user-friendly portal can be operated from any desktop or mobile device.

The security architecture is based on the Airlock Suite. Its dynamic and multivalent upstream configuration ensures that the user is obliged to interact with the security systems as tangentially as possible and only where really necessary.

Mobile banking apps and online banking

Native apps were selected as great emphasis has been placed on the best possible user experience with high standards of security for mobile applications. A fingerprint or Face ID option offers handy functionality in the mobile banking app; customers wishing to do no more than briefly check their balance can use these methods to achieve the desired result quickly and easily. Only when additional functions such as making a transaction need to be carried out will customers have to identify themselves with extra authentication methods. The system unlocks different access rights depending on log-in method.

The Java client previously used for online banking has been replaced with a web solution, with two-stage authentication allowing users to access the system. This makes use of photo TAN identification provided by a partner organisation

that is a standard feature of the Airlock IAM authentication solution. Customers requiring assistance with online banking can seek help from staff at the Customer Service Center using the co-browsing function. This component is similarly a third-party solution that has been perfectly integrated into the overall solution via Airlock WAF and is available throughout the entire service portfolio.

In the case of corporate clients, payments often have to be signed off by several people and an encrypted push alert has been introduced to the online banking system for secure and simplified administration of such transactions. This secure notification system conveniently alerts customers of payments requiring authorisation.

The fraud detection solution developed by Ergon is also part of the new online banking system; this uses machine learning to identify fraudulent payments more reliably than human experts.

The LLB Group's portal and flexible architecture ensures an emotionally satisfying and consistent customer experience at every touchpoint, creating a basis from which the company can further expand and optimise its business processes in the future.

Kurt Mäder, Group Chief Operating Officer, LLB Group

"2017 was a year of major digitalisation initiatives for the LLB Group; we – and by that, I mean the Liechtensteinische Landesbank and Bank Linth – have been revamping both our mobile banking and our online banking system from the ground up. As with previous projects during our close cooperation over the last 15 years, Ergon has accompanied us every step of the way, providing exceptional IT expertise as we carried out this strategic undertaking. The company provided high quality work with fair conditions, and their fixed pricing – even in the planning phase – guaranteed we were spared any nasty surprises. Ergon stood by us as a flexible and reliable partner in even the intensive phases of the project.

Ergon proved agile in manoeuvring as a key partner within a network of additional organisations involved in the implementation procedure, with the ultimate aim of fully integrating the LLB and Bank Linth online banking system into our web portal. Here, we also had the benefit of Ergon's expertise in security technology, which is of crucial importance to our banks. The security architecture of the entire online access procedure is based on Ergon's Airlock Suite, which ensures that the user is obliged to interact with the security systems as little as possible.

Significant milestones were achieved in 2017 and there are new ones on the horizon; we look forward to cooperating on the ongoing development of our digital services."

www.ergon.ch/LLB

Axonlab: state-of-the-art practice software

Ergon has rebuilt its existing practice software Achilles for Axonlab. The solution is easy to use, meets high security standards and can be used flexibly, thanks to its modular construction.

"The key to Axonlab's success has always been professional partnership based on trust. Ergon and Axonlab are a strong team advocating customer-orientated practice IT and are more than a match for the challenges presented by a digital healthcare system."

Dr. Tamara Hensel, Head of Marketing and member of the Executive Board

Axonlab is an independent European distributor, service provider and production company based in Baden-Dättwil that works in the fields of medical laboratory diagnostics, software solutions and life sciences. As a company, Axonlab operates sustainably as an active and reliable partner for doctors, hospitals, private laboratories, research institutions and industrial organisations.

Achilles is a practice software arranged as a series of modules that has been proving its mettle on several thousand workstations in medical practices and hospitals since 2002. The existing solution continues to fulfil all the norms required by the healthcare system but, because of its database structure, is nonetheless finding it difficult to meet the frequently changing and ever more complex challenges that a practice software has to face; for this reason, Axonlab decided to work with Ergon to redevelop and optimise the system. An important requirement here was to replace the current solution with a modern web application.

The new solution has a modular construction that allows for using the individual modules in varying environments. From a technical perspective, however, the modular structure of the software represents a challenge; the modules are heavily isolated and communicate with one another via an event bus (a system that allows events to be exchanged).

Medical practices and hospitals work with highly sensitive patient data that under no circumstances can be allowed to fall into the wrong hands. Ergon thus took the conscious decision to set up a system with no multi-client functionality that was independent for each client. The advantage here is that data are better protected from misuse as they are stored remotely in distinctly separate databases. Ergon's Airlock Application Firewall has been used to ensure that the security of the practice software was guaranteed.

As a first step, Ergon worked closely with Axonlab's developer team to successfully redevelop the master data, document management, invoicing and scheduling modules. Axonlab can now offer its customers a state-of-the-art practice software suite that is user-friendly and orientated to practice structure. The remaining modules (laboratory, treatment and medication) are also set to appear in a new guise by the end of 2018.

www.ergon.ch/axonlab

Our fundamentals

Ergon's corporate culture is the fertile ground that nourishes our success in business. A considerable degree of personal responsibility results in high staff satisfaction and has positive consequences for the quality of the work they deliver.

Along with the right to participate in how the company is run, our democratic structure also includes transparency in all company matters and the right to take a stake in the firm's successes, along with involvement in its risks. All staff are qualified to similarly high levels and have equal rights and responsibilities.

Transparency as the basis for participation in running the company
The company's key figures and data are communicated transparently within the organisation, so everybody knows how the firm is doing, what topics are under discussion and what areas we are earmarking for further development at all times. This also means that both the salary and bonus system and the individual remuneration of staff members are universally known within the firm.

All members of staff in each organisational unit have an opportunity to impose a veto by majority vote on decisions made by their line managers – and even those of the executive board. This sometimes results in vigorous discussions and requires conflict resolution skills in all those involved. Our open culture of communication is greatly appreciated by staff and ultimately helps the company to grow and evolve.

Overall company success vs. individual performance
An entrepreneurial approach by all is a key aspect of our business philosophy and this is why our staff take a stake in Ergon's successes and risks. We have dispensed with performance-dr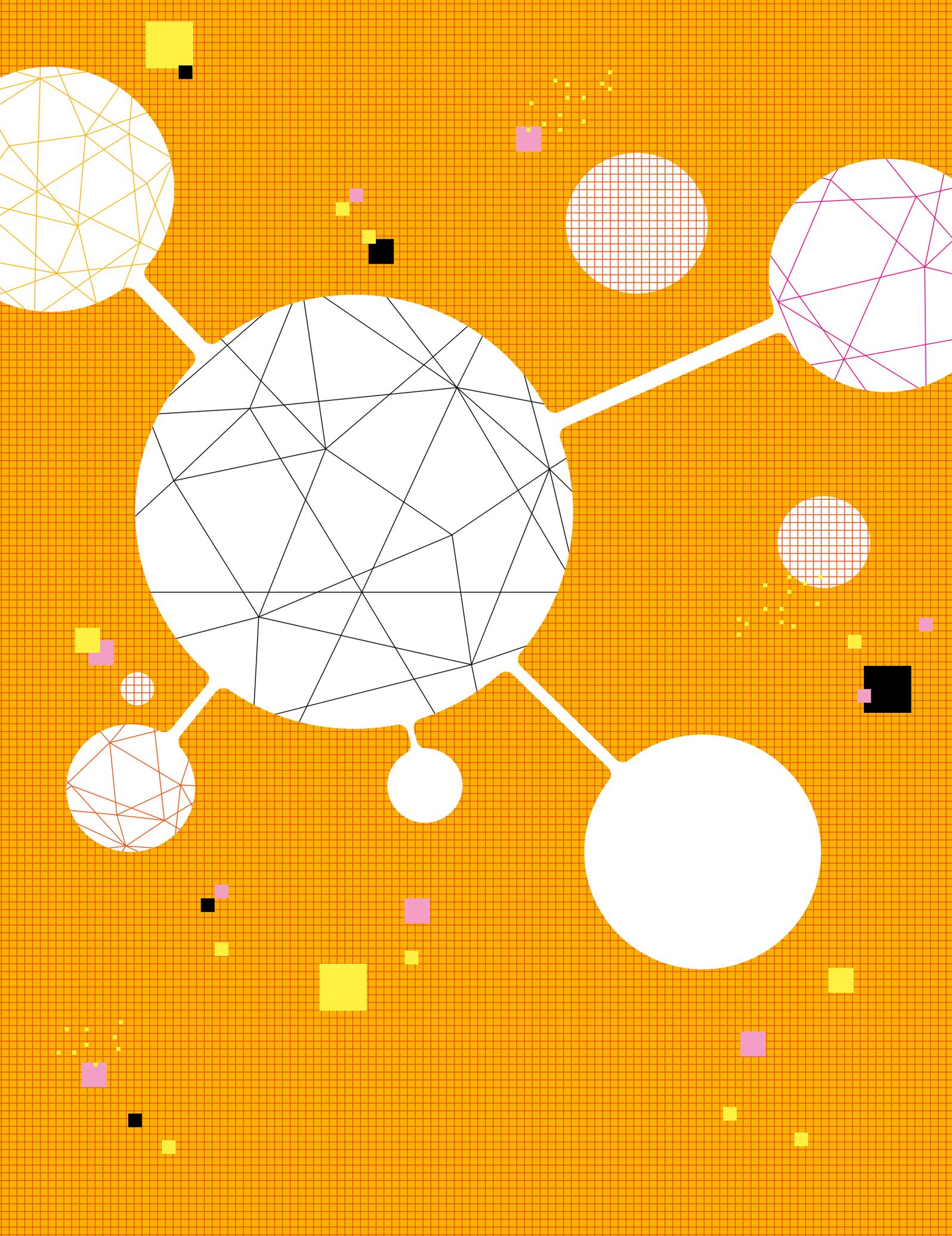iven pay based on individual targets, focusing instead on the success of the company as a whole. Staff pool their knowledge and experience, providing mutual support across all our projects and organisational units.

Plenty of individual responsibility for teams
Ergon teams decide autonomously what technologies and working methods they wish to use for their projects, often structuring their work with agile methods such as Scrum and Kanban. The "technology sounding-board", a new creation for 2016, posts reviews, dispenses advice to teams and guarantees that knowledge is shared right across the company. Planning meetings, brief daily team updates and debriefings all result in greater transparency about the progress of a project, ensuring early and productive use of software and thus enhanced customer and staff satisfaction.

Close customer contact
We look after our departments' customers with streamlined teams that have demonstrated long-term stability and are accorded considerable autonomous responsibility; these accompany projects through every phase to completion. We believe strongly in close customer contact using direct communications channels. Compact development cycles combined with short delivery intervals and early customer testing provide the optimal conditions for producing high-utility solutions that fit the bill.
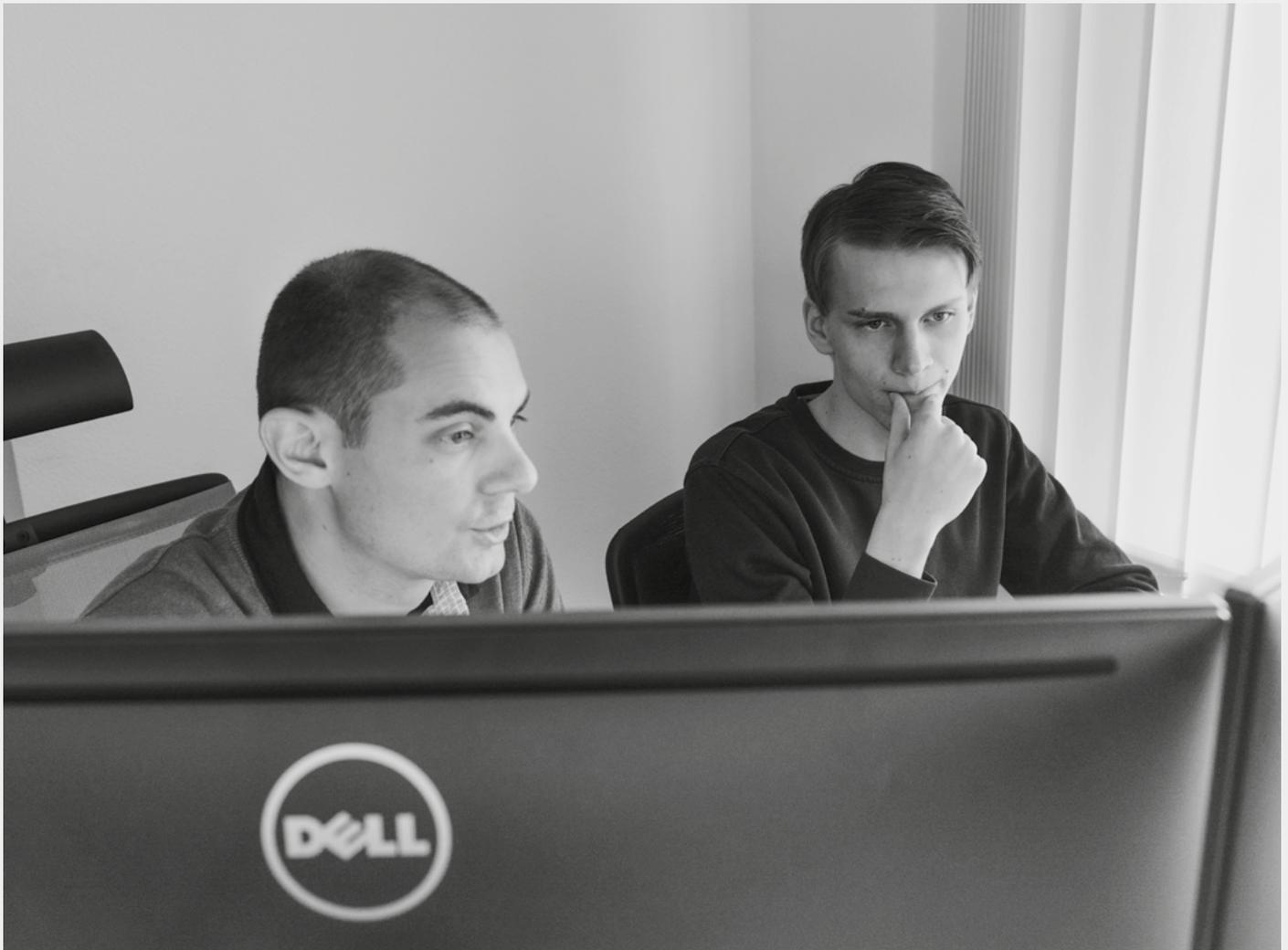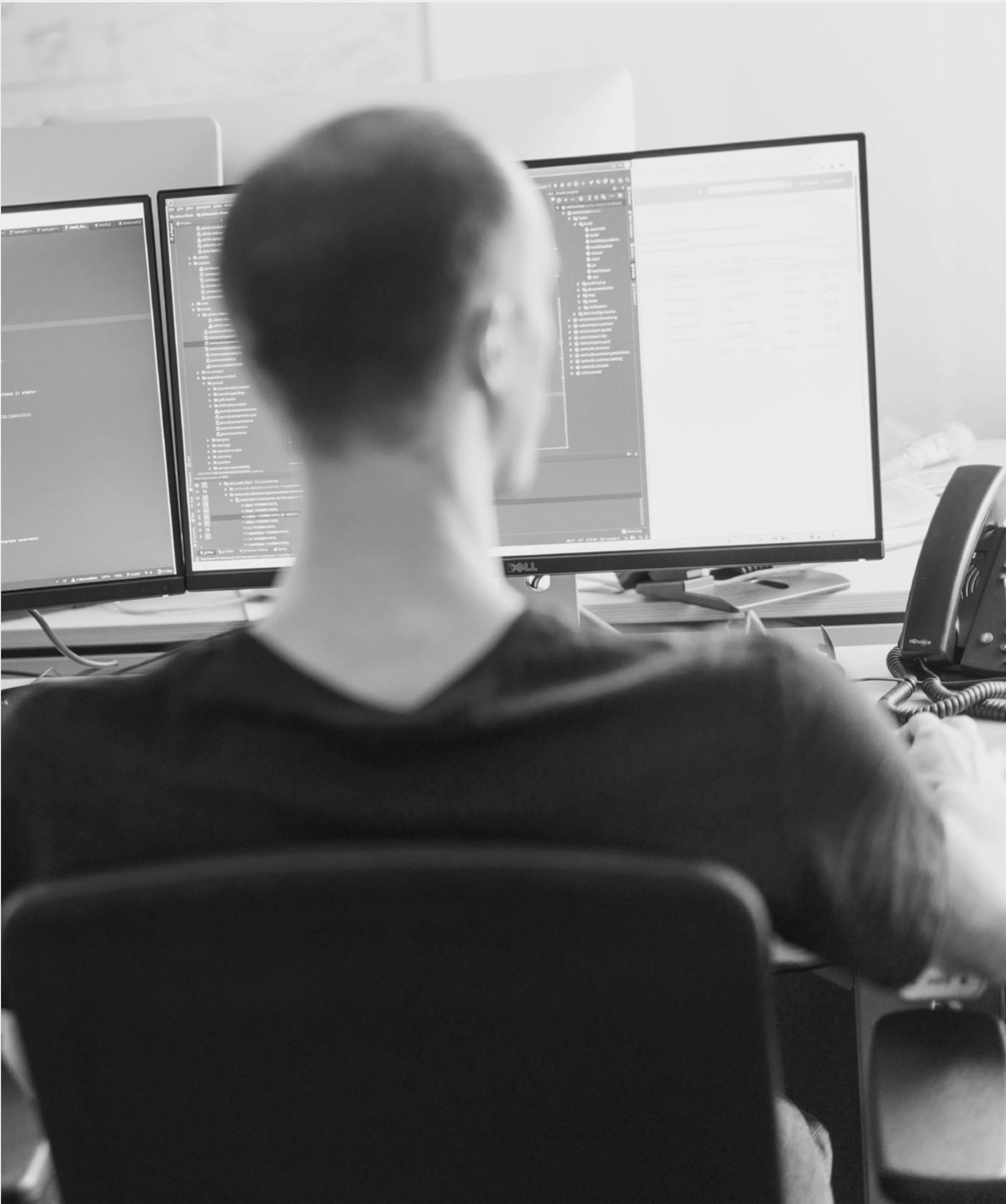
www.ergon.ch/culture

Team spirit

"I really appreciate the regular opportunities to compare notes on such a wide range of topics at Ergon. This invariably generates new ideas, accelerates knowledge transfer and means we can always be improving quality."

Jean-Claude Schwarzen

"I think it's important to work with testers as they tend to view the software from the customer's perspective and spot aspects that we as engineers may perhaps have over-looked. A tester will ask searching questions and bring any illogical elements to my attention. That couldn't be better, as far as I'm concerned, because as individuals we can't focus on absolutely everything – so the fact that a tester has a different point of view is extremely helpful."

Jens Neininger

"Programming is simply while(true) happiness()

The wide range of projects has allowed me to peek behind the scenes in a number of sectors. Experiencing something new every day. The feeling of knowing that my code is making life easier for thousands of people."

Daniel Zeiter

"The basic building blocks of my team are mutual trust and each person taking individual responsibility."

Steven Fluck

"To my mind, stand-ups are among the most important meetings for an IT engineer – in them, we discuss budgets, schedules and the current progress of the project. In addition, we establish our focus for the steps to be achieved by the next meeting. Everybody has an opportunity to contribute ideas or address problems that have arisen, and we always learn something valuable from one another."

Jessica Hediger

"I really appreciate that we have the opportunity to learn and evaluate new programming languages and frameworks at Ergon – and to make use of them in projects, if they are suitable. This ensures we arrive at the best solution rather than just the one we already know."

Sybil Ehrensberger

"To me, progressing the development of a security product like the Airlock Suite means asking the question 'what do our customers need?' every single day. The world of software is becoming more and more complex and interconnected, and thus more likely to develop faults – which means we always have exciting new questions to solve; security rules, architecture, comprehensible wording and safe defaults are hardy perennials!"

Erwin Huber

Going the extra mile for trainees

Ergon has been training IT apprentices in application development since 1999. To date, 22 students have successfully qualified for their proficiency certificate with us, with another ten currently in various years of their training courses.

Trainees at Ergon are mentored individually and undergo intensive instruction, with a personal vocational trainer accompanying them throughout their apprenticeship from the very first day they start work. Once the basic skillset of an app developer has been acquired and practised on training exercises, they will soon be put to work on their first client projects. Depending on their personal progress, apprentices will develop into increasingly autonomous IT engineers and team members. The success of this approach can be judged by the results: our trainees finish their apprenticeships with excellent professional qualifications as solidly trained experts in their own right.

This success is down to the committed staff who give 110% as vocational trainers for the apprentices. Taking on responsibility for training young people and teaching them not only technical skills but also methodological expertise – in addition to doing a hard day's work – is no mean feat. The vocational training programme has been managed and expanded by Andrea Zimmermann over the last few years, with Marco Fritschi – who himself completed his apprenticeship at Ergon – taking over the reins at the beginning of 2018.

Communities of Practice

It is an essential feature of Ergon corporate culture that development teams are organised cross-functionally. A team that unites all the skills and expertise required can largely carry out its duties autonomously and make decisions on its own as the project progresses.

It is nonetheless extremely important that those with specialised knowledge are also able to share their skills beyond their teams. Keeping up to date within your own specialist area requires a certain amount of effort, but passing on successful procedures and standards to other teams is an even more onerous task. For a long time, regular show & tell events and informal meetings (as have always been the tradition at Ergon) were sufficient to ensure this knowledge transfer took place, but as the company grows in size, the necessity of institutionalising this exchange of acquired knowledge more formally has become ever more apparent.

Ergon has thus begun to build up Communities of Practice (CoP) for special topics of this kind. These are informal groups of people dealing with similar tasks who regularly compare notes in order to learn from one another. More than half a dozen CoPs in a range of fields from project management and mobile development to application security have sprung up over the course of 2017.

The CoPs make their knowledge available to project teams via documentation, advice, reviews or training courses, for example, and, in addition to these services and periodic exchanges of ideas, a number of communities have taken concrete steps to disseminate their skills as widely as possible.

The community for modern web development organised a two-day coding camp, for example, giving front end developers the opportunity to gain a deeper understanding of the Angular framework and engage experienced experts in discussion.

Another CoP working with continuous delivery has developed its own Docker images, allowing individual steps of a continuous build process to be carried out within a precisely defined environment and thus remain completely reproducible even if other elements of the build infrastructure are updated. This means that short-notice alterations to software that is in productive use can be carried out easily and speedily.
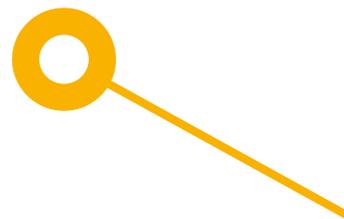
The CoPs were started as an experiment but have since thoroughly established themselves. Each community has been tasked with its own ongoing long-term development and left sufficient latitude to formulate its own objectives.

ERICH OSWALD
Chief Technology Officer, Dr. sc. techn. ETH