austria wirtschaftsservice **aws**
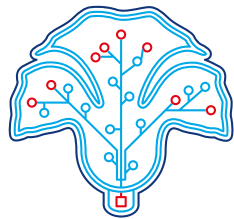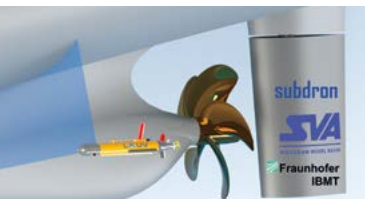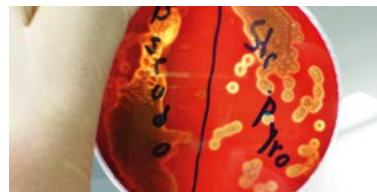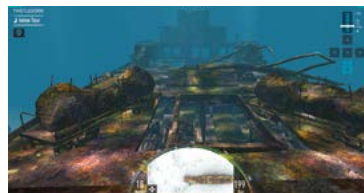
aws Seedfinancing

Projects supported in
2017

High Technology
Brought to Life

1. Anschreiben   2. Bedürfnis verstehen   3. Sofort nutzen

subdron
SVA
Fraunhofer IBMT

WUGGL
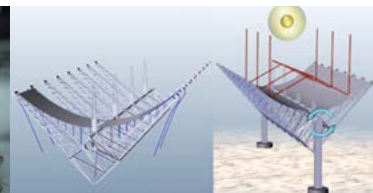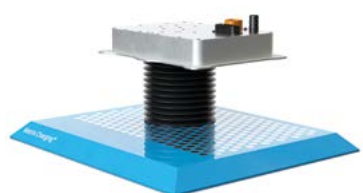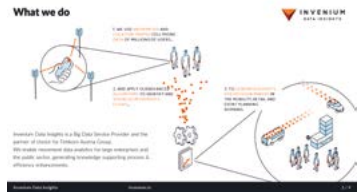
Austria was the first country in the EU to establish a ministry for digital affairs. This is of utmost importance because digitalisation is about to pervade all areas of life and transform the world. The manifold technological and creative opportunities brought about by this change have to be exploited much faster and better to get innovations to the market. Hence, we support the establishment of companies built on unconventional, technologically ambitious research and development projects by offering startup initiatives such as the PreSeed and Seedfinancing programmes.

We count on people with courage, innovative capacity and entrepreneurial spirit who turn their ideas into businesses. They take Austria to the next level and contribute to making it an innovation leader.

© BMDW/Christian Lendl

Margarete Schramböck
Federal Minister for Digital and
Economic Affairs

Federal Ministry
Republic of Austria
Digital and
Economic Affairs

Austria will spend 3.19% of its GDP on research and development this year, an effort that will pay off with the country on the road to becoming an innovation leader. During the past years, the seed has been sown in the form of increasing amounts invested in the innovation sector. Innovation is defined as an idea turned into a success story. Now is the time for the aws high-tech programme to translate the findings of research departments into products and services.

Digitalisation offers every opportunity to do so. In many sectors of the economy, newcomers and outsiders now have the unique chance to break up old structures. It is the job of politicians to give inventive spirits and businesses the space they need to realise their visions.

Norbert Hofer
Federal Minister of Transport,
Innovation and Technology

Federal Ministry
Republic of Austria
Transport, Innovation
and Technology

austria wirtschaftsservice aws

Business at Location Austria is powered and driven by the innovative strength of Austrian entrepreneurs and scientists. To be able to fully unfold their innovative capacities, creative people and firms need frameworks that enable them to turn ideas into products and services. Austria Wirtschaftsservice (aws) accompanies and supports them on their pathways to entrepreneurship by mitigating the risks encountered in their ventures. Our PreSeed and Seedfinancing programmes are the central pillars of our high-tech funding schemes. They provide technology-oriented companies with crucial first-step funds in their planning and growth phases. aws also supports innovative ideas by offering consulting services and help in the search for investors. We believe in creative people and their visions. On the next pages, we are pleased to introduce you to the people and businesses we were able to assist in 2017.

Edeltraud Stiftinger
Managing Director aws

Bernhard Sagmeister
Managing Director aws
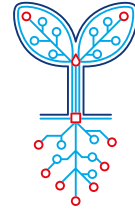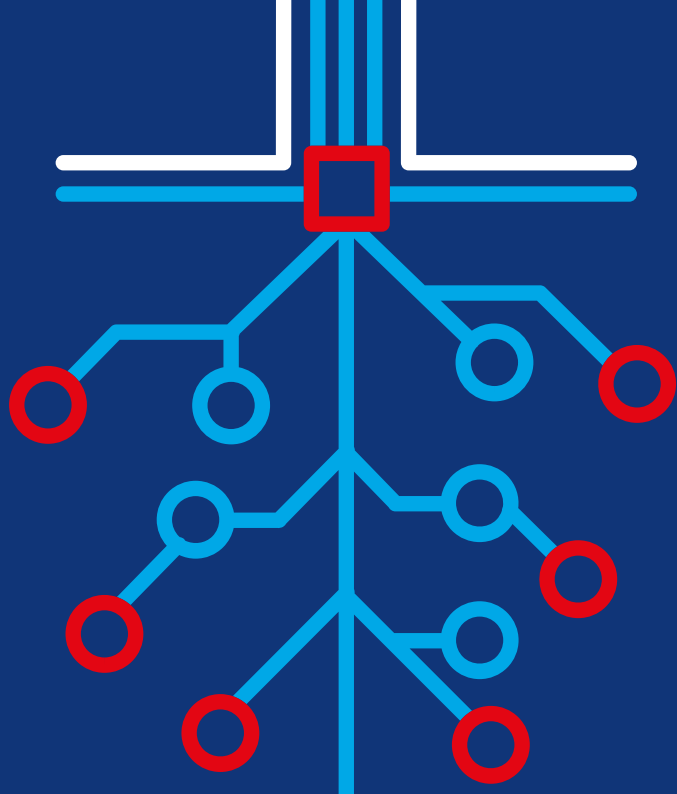
aws PreSeed

aws supports high-tech enterprises in their pre-founding stage.

In order to make an innovative idea marketable, an enterprise needs a viable, ambitious business concept as a sound basis on which to set up a company. aws PreSeed helps to fund costs incurred during the early phase of foundation. Our special focus is on digitalisation, ICT, physical sciences, clean tech, quantum technology and life sciences.

aws PreSeed finances costs incurred by doing scientific work for and preparing the commercial utilisation of an innovative project. Such costs include expenses for studies and concepts, for consumable supplies and personnel. The maximum grant is € 200,000. It is paid out in performance-related tranches on the basis of a milestone concept. Terms normally range from 18 to 24 months.

www.preseed.at
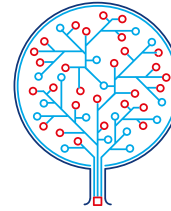
aws Seedfinancing

aws accompanies high-tech enterprises throughout their founding and company building phases. It supports all kinds of high-tech businesses, spinoffs of universities and non-university research institutions. The focus is on digitalisation, ICT, physical sciences, clean tech, quantum technology and life sciences.

Building up an internationally competitive enterprise takes knowhow, courage and capital. aws Seedfinancing wants to bridge the funding gap that emerges between the product idea and its marketability. The programme supports investments for founding and market development, external consulting and resources. In addition, startups are given individualised assistance.

The maximum grant is € 800,000, repayable subject to conditions. Repayment is made from profits earned or from revenues from the sale or IPO of the company.

www.seedfinancing.at
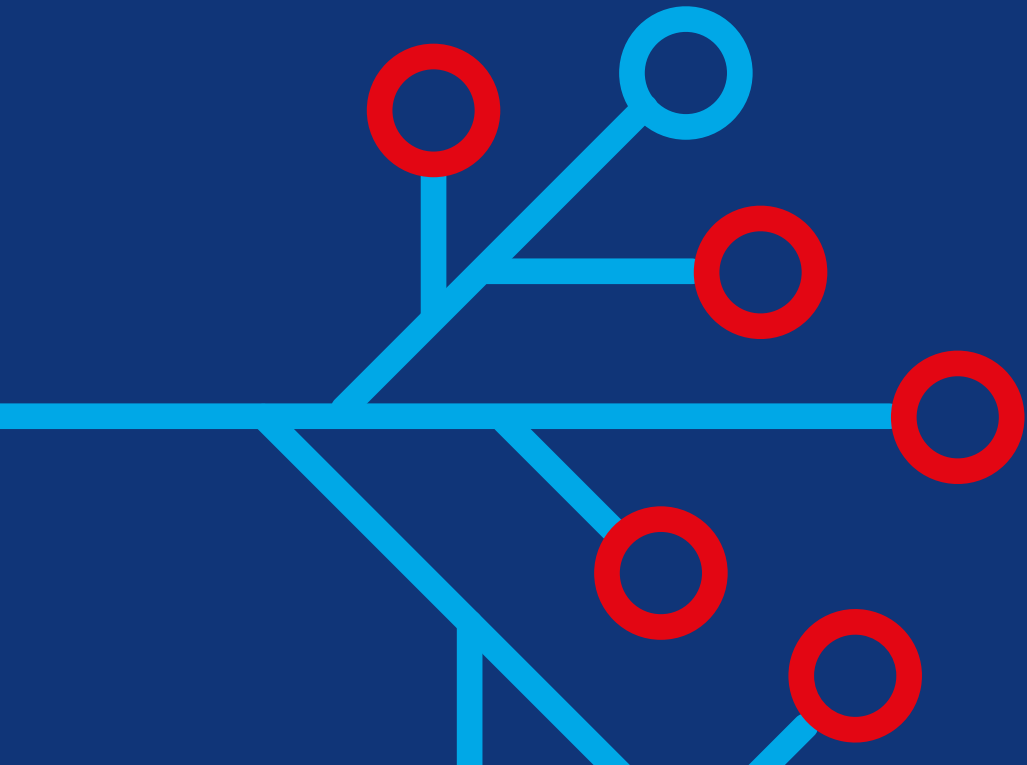
Information and
Communication Technology

Abacus

aws PreSeed

Abacus is developing a self-learning accounting assistant that undertakes fully-automated capturing, allocation and checking of tax items.

The Abacus accounting assistant helps bookkeepers in their primary job of extracting and allocating business transaction entries. The Vienna-based company is developing a self-learning assistant for tax advisers and audit departments that handles the fully automated capturing and allocation of tax items as well as audits and checks of entries. Thanks to its easily operated user surface, the assistant is ready for use within a few minutes of its installation. Abacus is already at work in more than 500 companies.

Team with a corporate background

Founders Christoph Prieler, Patrick Sagmeister and Ulrich Tröller combine years of experience in managing audit departments in multinationals, as software developer and/or as owner of an accounting service provider. In 2016, they decided to pool their knowhow and develop an artificial intelligence for use as assistant for accountants. The Abacus accounting assistant digitalises bookkeeping without the need for users to acquire a technological background knowledge.

Large range of jobs

What the accounting assistant can do:

© Robert Niederl

Abacus Accounting Technologies GmbH
Pfeilgasse 32/20, A-1080 Vienna

Founded in 2016
Management: Ulrich Tröller

https://abacus.ac

The experience of thousands of accountants united in Abacus Intelligence®
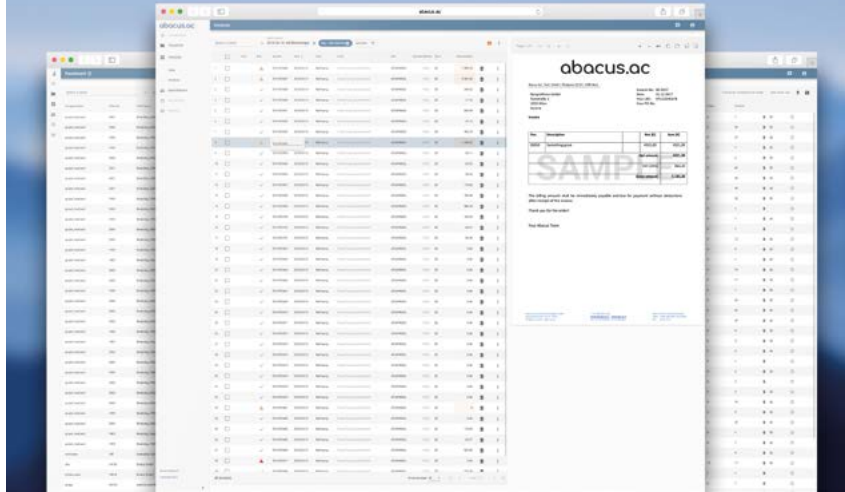
1) automatically create complete entries,
2) process items fully compliant with tax law in most countries,
3) process both structured and unstructured input data of variable formats, and
4) be combined with most of the common bookkeeping systems.

Artificial intelligence

Underpinning the accounting assistant are self-learning algorithms that constantly improve the degree of automation and analysis of bookkeeping records on the basis of structured data and texts. In 2018, the company will focus on further developing its algorithms and rolling out its product in Germany.

Greenhive

Using Greenhive technology, pesticides are spread in vineyards and orchards by a swarm of autonomous drones, unrestricted by adverse geography or weather-caused soil conditions.

Europe alone has 10 million hectares of farmland dedicated to growing perennials which are intensely tended year after year. Greenhive helps farmers spread pesticides across their vineyards, pumpkin fields and orchards by automated drones. Thanks to these drones precipitous or rain-sodden slopes are spared the ill effects but still enjoy the benefits of traditional pest control treatment. Moreover, with drones, soil compression is obviously no longer an issue. In the past, farmers had a hard time preventing fungal attacks after a rainfall since fungicide spraying was often a life-threatening affair.

Autonomous drone labour

While current drone systems for the agricultural market are designed for human-assisted treatment of soil-based plants (such as rice), Greenhive believes that the future is in automation. For founders Robert Borer and Christian Semmelrath, both farmers, this does not just mean automated flying but also automated loading of the drones. The Greenhive technology is based on three components that add autonomy, sensorics and work coordination to the well-established drone technology.

Greenhive trio

A Greenhive set consists of a flight

coordinator (greenhive Cortex), a vertical spraying unit (greenhive Bumblebee) and a control and base station (greenhive Hive). Pest control by daily microspraying to reduce spray volumes and fungus detection by deep learning are logical enhancements of the technology.

Hovering help for vintners

Viticulture is a typical best practice application for automated Greenhive drones: whether spraying pesticides or monitoring vine health – drones facilitate the cultivation of difficult areas that are characterised by rough and steeply sloping terrain. Swarms of Greenhive drones will help make pest control significantly more efficient.

Invenium

www.invenium.io

Invenium takes anonymised data from mobile wireless signalling networks to obtain mobility patterns and utilise them for planning traffic flows, customer frequencies or visitor data.

Mobile telecommunications data in their anonymised form visualise mobility. They yield information about the volume and timing of pedestrians, cars or visitors to

be expected by traffic flow planners or enterprises. Invenium Data Insights, a company located in Graz, draws on such information to track mobility patterns. The company analyses anonymous signalling data from the mobile telecommunications network to process them on a big data platform and present them in an easily understood form. Authorities and businesses alike take such information to design traffic flows with a solid underpinning of facts, project customer fluctuations on a given location or visualise visitor flows at events.

Maximum privacy protection

Invenium gets its basic data from anonymised mobile wireless signalling networks. It does not use the network that serves to exchange messages (emails, calls, text messages, etc.) but rather the network that monitors network stability and generates geotagged counts in anonymised form. Right from the start, Invenium's founders have made data privacy a prerequisite for their activities and even ran a separate research project, funded by the Austrian Research Promotion Agency
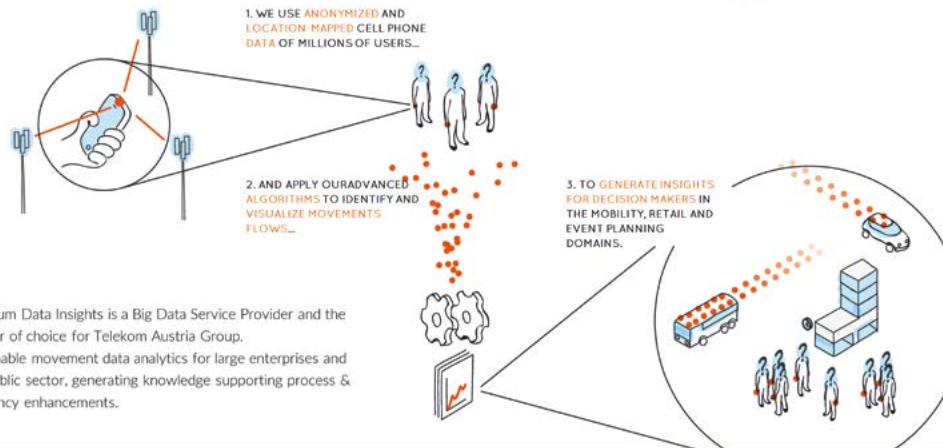

© Melanie Kraxner

Invenium Data Insights GmbH
Waagner-Biro-Straße 100, A-8020 Graz

Founded in 2016
Management: Christopher Horn

www.invenium.io

What we do

INVENIUM DATA INSIGHTS

1. WE USE ANONYMIZED AND LOCATION-MAPPED CELL PHONE DATA OF MILLIONS OF USERS...

2. AND APPLY OUR ADVANCED ALGORITHMS TO IDENTIFY AND VISUALIZE MOVEMENTS FLOWS...

3. TO GENERATE INSIGHTS FOR DECISION MAKERS IN THE MOBILITY, RETAIL AND EVENT PLANNING DOMAINS.

Invenium Data Insights is a Big Data Service Provider and the partner of choice for Telekom Austria Group.
We enable movement data analytics for large enterprises and the public sector, generating knowledge supporting process & efficiency enhancements.

Invenium Data Insights   invenium.io   2 / 9

FFG, focusing on the subject before they launched their company.

As a spinoff of Graz University of Technology and Know-Center GmbH, Invenium enjoys direct access to scientific resources – a prerequisite for setting up a secure platform of independent software architecture that can analyse a large number of data sources (mobile telecommunications, social media, corporate data) and make them available internationally. Currently, Invenium is concentrating on three sectors: public transport, retail and tourism. Its international rollout is envisaged to be completed in 2018.

ONDEWO

ONDEWO is developing artificial-intelligence (AI) technologies that facilitate an automated understanding of conversation contents and automated human-machine conversations.

The Viennese company ONDEWO develops AI-based chatbot and voice assistants that help small and medium-sized service providers find new customers on the digital real-time market. ONDEWO's technology creates a platform that connects customers and service providers. Prospective customers post their demands via social messaging channels. Service providers such as hairdressers, masseurs or plumbers connect to new customers in a wink by voice messages (e.g. via Alexa) or text messages (via Facebook Messenger) in natural language: "ONDEWO, send me a customer now!"

Teaching the digital assistant to speak and understand

Co-founder Andreas Rath had the idea for ONDEWO while he was working at Digital McKinsey, where he managed digitalisation projects for global corporations. Each contact with domestic SMEs highlighted the growing digital gap between large and small businesses. However, closing this gap also involved some challenges: the issue was to develop a technology that can master the language of the complex service sector in German. First attempts with standard technologies failed and showed an urgent need for innovation. If the algorithm is to speak and understand exactly like a hairdresser, you need to talk to at least 100

aws PreSeed

© Studio Huger

ONDEWO GmbH
Neubaugasse 21/2/29, A-1070 Vienna
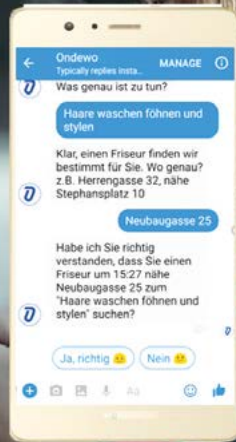
Founded in 2017
Management: Andreas S. Rath

www.ondewo.com

LÖSUNG FÜR KONSUMENTEN

1. Anschreiben

2. Bedürfnis verstehen

3. Sofort nutzen

hairdressers. Obviously, acquiring customers will only work if ONDEWO also reaches the consumers. To do so, the company relies on integration into social messaging channels, because it lets consumers instantly get to their service providers via ONDEWO by using their customary texting app.

On the expansion path

ONDEWO has several plans for the near future. The first step is to expand from Vienna to other large cities in the German-speaking countries and beyond. The second step is to go beyond digitising the

acquisition of customers and also include other business procedures used by SMEs and one-person enterprises, e.g. for accounting or human resources planning. Thirdly, technological firms have recognised the potential of ONDEWO's solutions for differentiating their products and offers.

Prewave

www.prewave.ai

Prewave is developing a software-supported risk management tool that uses social-media and news-media data to automatically detect and predict risks for corporations.

The highly complex division of labour in a globalised economy involves great risks. Disruptions in the supply chain often have drastic consequences. However, the threat to supply networks is frequently recognised too late. The damage for the world economy was recently estimated to amount to € 320 billion annually.

Automated alerts

This is where Prewave comes in. The software of the Vienna-based startup facilitates the timely recognition of imminent dangers threatening a business's work flow: Prewave is developing a novel technology that uses social-media data in the automated detection and prediction of risks.

The "Prewave Prediction Engine" combines methods of natural language processing and machine learning to analyse local social-media and news-media data and generate alerts for risk events before they happen. Target customers are logistics service providers and manufacturers dependent on complex global supply chains. The alerts enable them to react faster to potential risks.
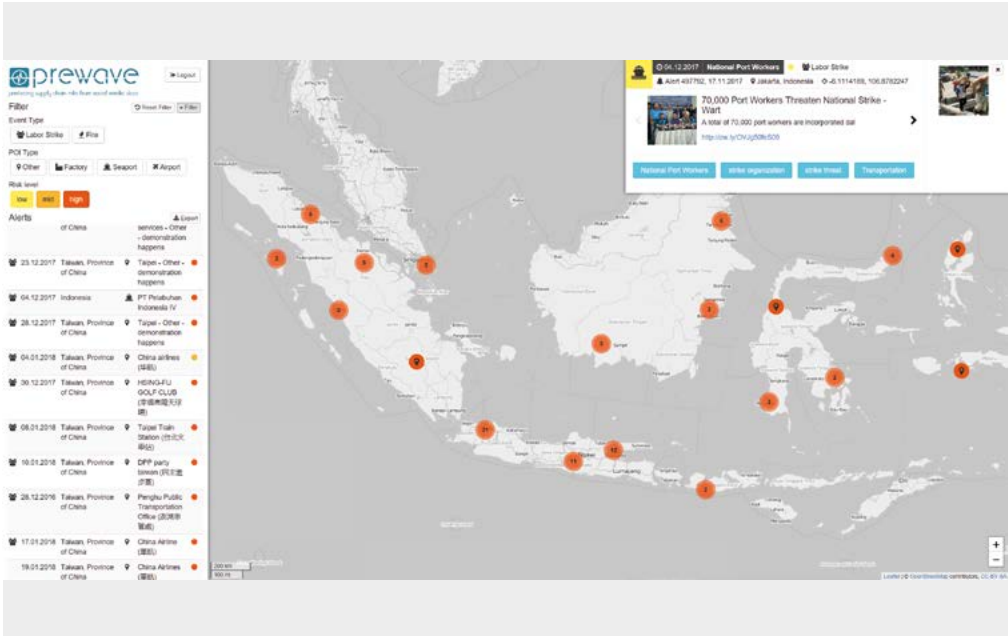
Academic basis

Prewave is a spinoff of TU Wien (Vienna University of Technology). Lisa Madlberger developed the Prewave technology in

Prewave GmbH
Floragasse 7, 7th floor, A-1040 Vienna

Founded in 2017
Management: Lisa Madlberger, Harald Nitschinger

www.prewave.ai

her dissertation at TU Wien's Institute of Software Technology and Interactive Systems and subsequently founded the startup jointly with Harald Nitschinger. Together with their team, the two founders are refining the technology to better tailor their software tool to the supply-chain-management market.

Fit for business
According to the founders, their greatest challenge is to take the technology from the academic context to a scalable platform. After the pilot phase, Madlberger and

Nitschinger work on improving the predictive power of their software tool. For 2018/19, they plan to introduce the technology to international markets and conquer new target sectors in the finance and insurance industries.

proactivaudio

The software developed by proactivaudio improves the audio quality of video conferences and hands-free talking systems by a patented echo- and noise-suppressing method.

Home entertainment and hi-fi equipment strives for ever better sound quality, while efforts to reduce the audio noise at video conferences and clear the muffled sound of hands-free talking systems continue to be of marginal interest for acoustic researchers. However, things are about to change: Luis Weruago, a born Spaniard and professor of communications engineering, as the founder and technological mastermind of proactivaudio initiated a paradigmic change in echo and noise suppression, opening up a wide range of new options for speech recognition and sound quality.

Flexible use

Proactivaudio's software significantly improves the performance of digital voice communication and can be used in many devices as it is not tied to any platform. In future, the introduction of the latest wireless communications technology known as "Voice over LTE" (VoLTE) in combination with proactivaudio's software will raise the audio quality in cars to new levels – the voice will sound more natural and clearer. The same effect can be obtained in digital communication via web services. Initial tests have shown that proactivaudio achieves a substantially better performance than any audio technology currently propagated by the major digital players.

aws PreSeed

proactiv**audio**

proactivaudio GmbH
High Tech Campus, Gutheil-Schoder-Gasse 8–12,
A-1100 Vienna

Founded in 2017
Management: Barbara Kieslinger, Luis Weruaga

www.proactivaudio.com

Demonstration

At present proactivaudio is working on an app to demonstrate the benefits of superior audio quality to potential users. Thanks to the new software, phoning will be possible at the best audio quality, with the added bonus of being able to simultaneously transmit music. First impressions of the new technology can be gained by testing it on the website.

Speech recognition with growth potential

A most promising use of proactivaudio technology is currently tested in a project run in cooperation with a major Austrian corporation. It involves automated recording and transcription of discussions between several parties. Potential applications range from medicine to law. Proactivaudio plans to have as many users as possible profit from its technology: even Alexa is to be enabled to better understand its callers thanks to knowhow from Vienna.

subdron

subdron is developing an automated navigation software for submarine drones which take reproducible 3D scans of hulls and underwater structures at much lower cost than was previously possible.

With traditional methods a digital take of offshore shallow-water zones, hulls or underwater structures (dams, piers or the foundations of wind power stations) is very time- and cost-intensive. At present, remote-controlled diving robots or manual sight checks are used. From an economic point of view, a major hurdle is the high investment cost, especially for underwater navigation: current underwater navigation systems are typically designed for long dives, but founders Thomas Vonach and Simon Ladurner from Vorarlberg are opting for a low-cost solution that involves short and near-surface dives. As an added bonus, this approach minimises risks: human divers are prone to have accidents in murky docks or when exposed to the drifts of underwater structures.
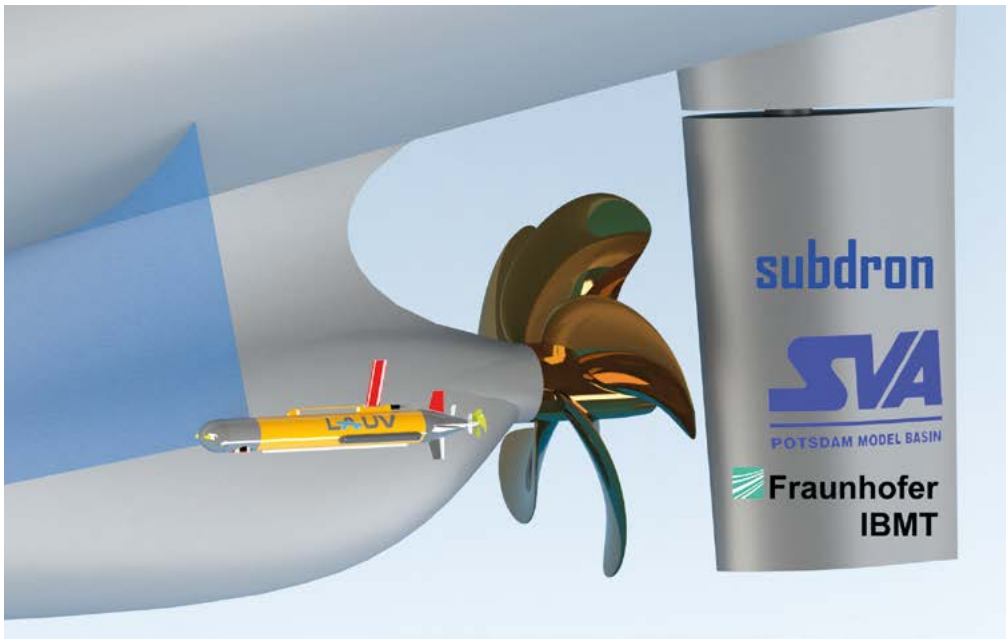
Hamburg experience

The subdron solution is undergoing practical tests in a pilot project at the port of Hamburg. On behalf of the General Customs Directorate, hulls are digitally charted. To this end subdron deploys a submarine drone provided by a partner, a three-dimensional scanner developed by a Fraunhofer Institute and its own navigation software. The special arrangement of sensors ensures that the distance to objects is continuously

subdron GmbH
Holzriedstraße 29, A-6960 Wolfurt

Founded in 2018
Management: Thomas Vonach, Simon Ladurner

www.subdron.com

measured. A subdron algorithm uses the sensor data to calculate the route to be taken for examining the hull.

Automated and quick

The experience gained in Hamburg confirms subdron's approach: it takes just one person to launch the drone. Using the automated software, the drone scans the hull or pier without the need for presettings, until it has fully covered the target. A container vessel of 300 metres in length may need several scans for full coverage. Altogether, the subdron package yields digital images of underwater objects. The data may then be analysed and compared during detailed postprocessing – another advantage over current underwater inspection methods.

Dimetor

Dimetor intends to use images taken by autonomous drones to optimise the positioning and alignment of mobile transmitting antennas with a special software.

Dimetor founder Thomas Neubauer has been into designing and optimising mobile communications networks for many years. Their performance depends on the positioning and alignment of transmitting antennas. Yet experience has shown that 20–30% of such information stored in the databases of mobile network operators is faulty. Even though many processes need accurate data in order to work reliably, some of these entries deviate by 50 metres from their actual altitude. Thomas Neubauer, a communications engineer by profession, intends to identify and, if necessary, correct such faults through his company which is located in Upper Austria and Vienna. At present, technicians need to climb the towers in order to obtain correct values.

This requires switching off the transmitter – a costly and time-consuming procedure.

Drones rather than climbers

Dimetor is currently developing a solution that combines the fully automated deployment of drones for image-capturing with a software for analysis. Software-controlled drones fly up close to the antennas to obtain clear images of the transmitters. Sensors and measuring instruments collect further information. Photogrammetry and other algorithms then analyse the data and compare them with

aws Seedfinancing

DIMETOR

Dimetor GmbH
Windpassing 16, A-4203 Altenberg bei Linz

Founded in 2017
Management: Thomas Neubauer, Thomas Wana

www.dimetor.com

the database entries, performing a fully automated audit. For its product, Dimetor primarily targets mobile communications

providers who want to cut costs for site audits and significantly improve the quality of their data.

No pilots needed

During the run-up phase it was found that, for cost reasons, commercially used drones need to operate without the help of pilots. Accordingly Dimetor is developing a platform that automatically optimises the flight route of autonomous drones. This process needs to account for a multitude of conditions such as air space, radio space, regulatory requirements, as well as wind and weather conditions.

Strong interest

We found that such an enabler platform for autonomous drones can be very useful for many purposes, among them drone flights for farm and industry reconnaissance flights, utility inspections, public safety monitoring and even parcel deliveries – all of them without human intervention. The objective is to launch the first commercial projects jointly with international sales and development partners by the end of 2019.

FARMDOK

www.farmdok.com

The FARMDOK smartphone app allows farmers to record GPS data of field cultivation patterns in order to obtain records for comparison and improve the efficiency of cultivation.

An average Austrian farm covers some 19 hectares of arable land. Fully 92% of farms are worked by families. They have no office staff to handle the statutory (food safety, environmental protection) and operational documentation and thus still rely on hand-written records of their agricultural production, use of fertilisers and herbicides. This is where the FARMDOK app comes in handy: run on a smartphone, the app opens up agriculture to the benefits of smart farming. Data from FARMDOK serve to analyse and optimise farm work management.

At work
FARMDOK records the work directly on the fields. Drawing on GPS data, it locates fields, estimates the quantity of resources required and automatically calculates travel and work times. Mobile collection of data during actual work improves their accuracy and completeness, greatly cutting down on subsequent documentation or transferring of notes and calendar entries.
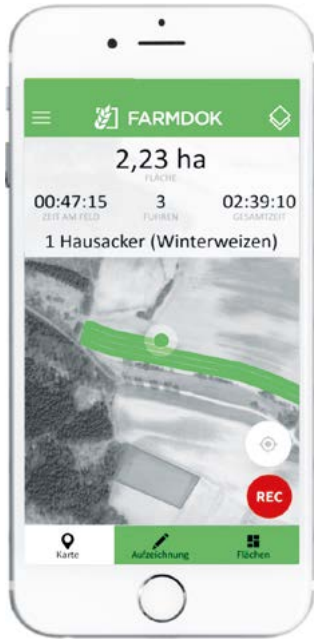
Extremely user-friendly
FARMDOK is based on widely used technology such as smartphones or tablets. The four founders of FARMDOK designed their app so that its digital data recording is integrated in the typical farmyard work

FARMDOK GmbH
Krügling 7, A-3250 Wieselburg

Founded in 2015
Management: Andreas Prankl

www.farmdok.com

without any additional input on the part of the farmer. As a result, app handling when working on the field is simplified to a minimum.

Own experience

The founders, agronomists and engineers Andreas, Johann and Peter Prankl as well as Franz Heinzlmaier, have their roots in farming. They know that smart farming and digital records will be indispensable for farmers who want to set up sustainable operations. After they had launched their product in Austria in August 2017, 10,000 customers installed the smartphone app within just six months. Following its market entry in Germany in March 2018, FARMDOK commenced its rollout in all of Europe.

myClubs

myClubs bundles the programmes of more than 600 sports providers in a single membership. Their services can be booked and administered with an app.

myClubs combines access to sports services offered throughout Austria in a single membership. In Austria, myClubs customers have a weekly choice of over 3,500 sports activities offered in more than 600 clubs, which can be booked through the myClubs app. By combining a wide range of sports with digital access, myClubs attracts not just prospective end customers. With the company's B2B solution, founder Tobias Homberger tackles a problem that is a typical cause of failure for many corporate fitness programmes.

Solutions for businesses
Companies normally limit their support to financing fitness studio membership fees and thus disregard sporting interests outside standard strength and conditioning training.

As a result, corporate-sponsored training programmes are rarely or never used and enterprises have little knowledge of the extent to which sports offers are actually taken up by their staff.

Team coordination by app
With an offer ranging from fitness to yoga, crossfit, tennis, boxing and swimming myClubs Corporate Health opens up a wide supply of favourite sports to all staff members, thereby fostering team-building through jointly practised sports. The business solution aims at enterprises

aws Seedfinancing

myclubs

that want to give their staff a large choice of sports with peer-assessment qualities. myClubs Corporate Health is the ticket to a large selection of sports, course schedules and locations that are promoted by targeted marketing and computer-based intervention through the app. A specially developed corporate dashboard provides an anonymised visualisation of the take-up level for each type of sports.

International rollout
At present, myClubs is available to B2C and B2B customers in 15 cities and regions in Austria and Switzerland. The startup plans to expand to further cities and countries. Its long-term goal is to become one of the leading quality providers of sports in Europe.

Ocean Maps

www.ocean-maps.com

Ocean Maps is the first map maker worldwide to offer interactive three-dimensional underwater maps for divers based on high-resolution sonar, satellite and video data.

Thomas Nemetz wanted to know what the underwater world of Attersee, a lake in Upper Austria, and the Red Sea looked like – without actually diving. Scouting around for information, he found that "Mars is better mapped than are underwater areas". A born Salzburger, he founded Ocean Maps which uses state-of-the-art sonars, loggers and visualisation software to chart reefs, faults and shipwrecks as well as create interactive, three-dimensional dive maps that are more accurate than anything currently on the market. They offer amateur divers and professionals the same access to state-of-the-art visualisations that provide a better understanding of conditions under water, thereby improving the safety of diving.

For all systems
Divers can explore coral reefs such as Big Brother or famous shipwrecks such as SS Thistlegorm or MV Salem Express in four types of depiction as briefings before their dive. An app available from Ocean Maps provides superior-quality three-dimensional simulations for PC, Mac, iOS and Android tablets.

Image of reality
The mapping process developed by Ocean Maps is divided into three parts. First comes data collection. A specialised survey team

collects and stores all necessary data using the latest sonar and video technology. The Ocean Maps team also contacts local partners such as diving instructors,

seafarers, harbour masters and fishermen to get inside information which is then processed to obtain highly detailed maps. The second step, i.e. post-production,

involves representing the surveyed locations in 3D format and combining metadata with the models. In a third step, Ocean Maps delivers the maps to the customers.

From diving schools to port authorities

Customers ordering a survey of a sea or lake bed from Ocean Maps typically have a sports background. They include scuba and skin diving schools, sailing and boating schools, ports, fisheries and tourist operations. Utilities also rely on Ocean Maps technology when designing power

plants and offshore systems. At present the company offers 406 maps that can be studied before diving – from the Attersee in the Austrian Salzkammergut to the Red Sea hotspots and the Florida Keys in the USA.

Waytation

The Viennese startup Waytation uses small sensors to track visitors at trade fairs and provides organisers and exhibitors with information.

Instead of cameras, RFID chips or mobile apps, Waytation uses "smart" badges and proprietary sensor hardware to survey trade fairs. The big data solution developed in-house captures the movements of thousands of anonymous visitors at all types of events and fairs. The collected data provide organisers and exhibitors with a breakdown of actual frequency rates at exhibit halls and events.

Visitor flow analyses

Waytation's software records the movements of visitors in function rooms and halls of trade fairs. The non-personalised data are transmitted via bluetooth and consolidated into visitor flow analyses by a cloud software. Founder and CEO Cemsit Yelgin estimates that around 900 million datasets are processed per event. Based on this information, organisers can analyse which booths work well, which locations in the halls are popular or which lectures are well attended, which, in turn, facilitates the optimisation of prices, spatial design and programme.

Exhibitors get feedback

Waytation's solution also permits movement analyses for specific booths. It has been difficult for exhibitors to judge their performance at trade fairs. After an event, there is hardly any other indicator
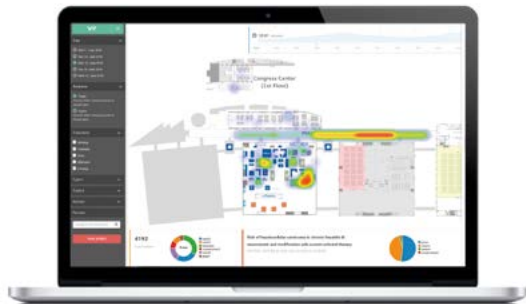
aws **Seedfinancing**

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for success than the number of business cards left at their booths. Similar to Google Analytics, Waytation provides information on frequencies, time spent at the booth and other targeted locations.

International DNA

The young company wants to revolutionise the two-century-old conference and exhibition market. Thanks to funds from investors and aws, the team of 15 developers, in 2017, was able to push the technique up to a level that has enabled the company to run parallel projects with customers all over the world. As Waytation has been an international player right from the start, it was awarded the title "Austria's Born Global Champion" by the Austrian Federal Economic Chamber in 2018. The company plans to strongly expand its international presence in 2019. Large-scale orders like the one at CeBIT 2018 in Hannover impressively document Waytation's potential in the trade fair market.

WUGGL

www.wuggl.com

Austrian startup WUGGL is developing a mobile measuring device that offers a simple and quick method to determine the weight of pigs by optical body scanning – without mechanical scales.

"Wuggling" is as simple as can be. An optical body scan identifies the weight of pigs on the hoof, simply, accurately and quickly.

Pig-breeders get the weight of the animal by taking a whole-body image that promptly shows its weight – a fast, straightforward and ongoing method to monitor the pigs' weight. It works in the barn or pen or anywhere. The image-supported scanning of animals is the next step towards smart farming.

Benefits for pig farmers and porkers

In May 2015, WUGGL was set up by Marcus Schweinzger, an engineer, and Alois Temmel, a vet, in Southern Styria. The new method radically reduces the work input required by farmers compared to traditional weighing. "Weighing without scales" involves a simple snapshot of the animal, which greatly reduces the strain on the pig – an obvious advantage of "wuggling".

Weighing without scales

WUGGL One looks very much like a smartphone: it is fitted with a three-dimensional image sensor and armoured to withstand the day-to-day rigours of the farmyard. Optical weighing resembles a snapshot taken with the mobile phone: simply focus on the pig, snap a picture and

© Trend Lukas Ilgner

the device promptly shows you the weight. WUGGLE One will also be available as a version for smartphones (Android, iOS), consisting of a snap-on 3D image sensor and a software application (mobile app) to be installed on the phone.

Stress-free for pigs and farmers alike

Compared to conventional methods, this new way to weigh pigs greatly reduces the workload of pig-breeders. Porkers remain calm when their weight is taken.

The WUGGL startup thus contributes to responsible animal husbandry and resource-friendly agriculture.
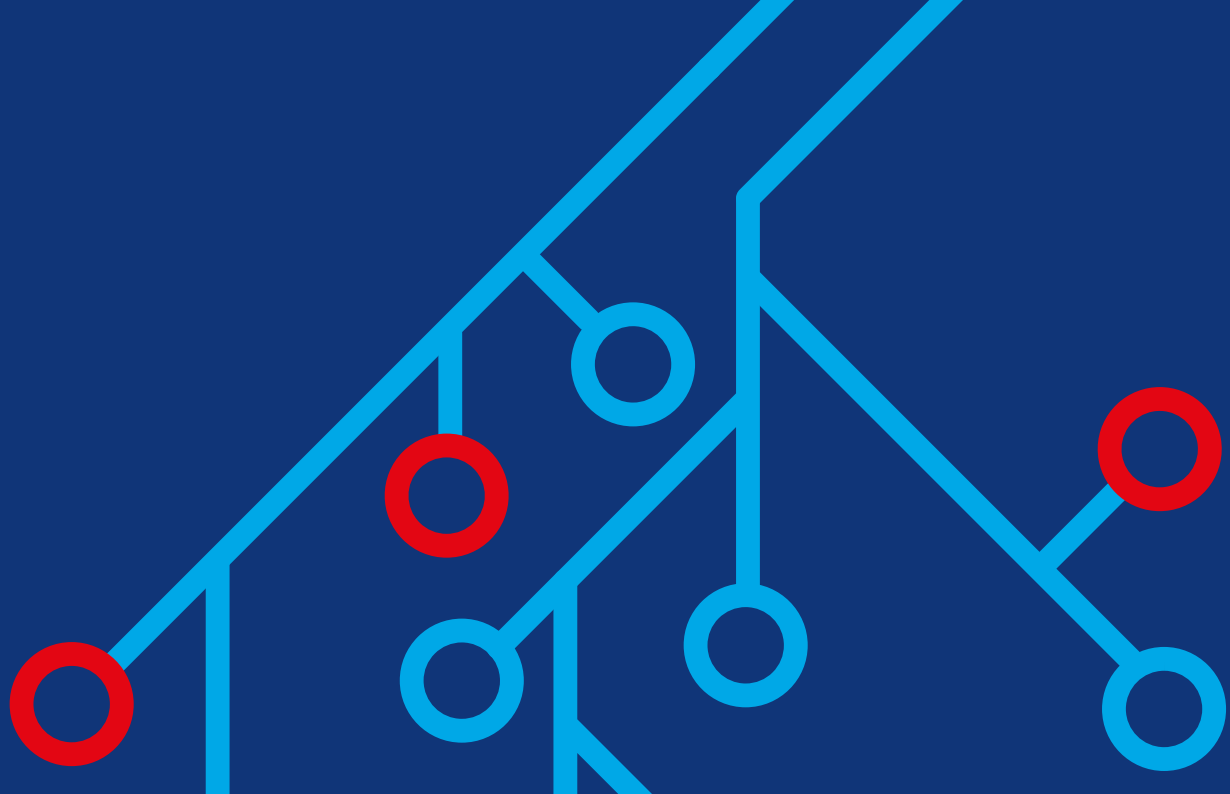
Physical Sciences

PHS

The fully automated quick unloading system designed by PHS for logistics centres more than doubles the speed of parcel unloading compared to manual handling.

The idea came at an excursion into practice. Andreas Wolfschluckner and Matthias Fritz, at the time lecturers at the Institu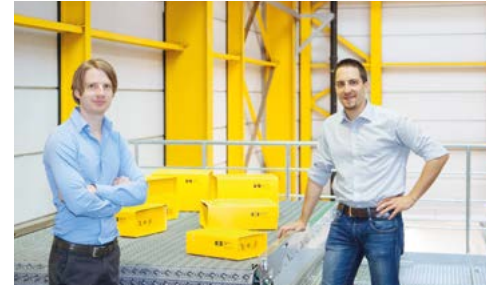te of Technical Logistics at Graz University of Technology, visited a parcel distribution centre operated by the Austrian Postal Service in order to help eliminate a problem. Their attention was drawn to the manual unloading of lorry containers to feed parcels into the automatic sorter. Given the fully automated surrounding, the procedure was time-consuming and put considerable physical strain on the workers. A discussion in the Institute's coffee room led to the initial idea that underlies the final product.

E-commerce as sectoral driver

In view of the growing number of parcels handled by CEP (courier, express and parcel) services, logistics centres need to cope with ever greater volumes of business where manual unloading of transport vehicles clashes with widely automated downstream handling. The solution developed by Wolfschluckner and Fritz involves a rapid unloading facility that is unique worldwide. PHS's technology is based on bulk handling which significantly accelerates the throughput by simultaneously handling large volumes of parcels. Moreover, automating the unloading procedure
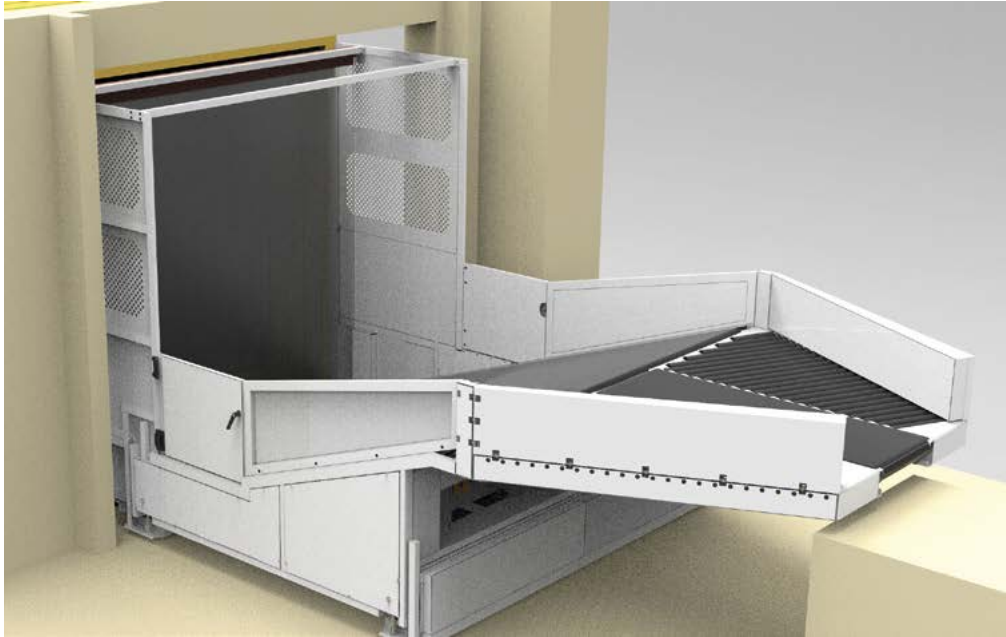

© The Schubidu Quartet

reduces the physical strain (ergonomics) for parcel handlers.

Easy to retrofit

The technology consists of a strap system for lorry containers and a stationary module that can be quickly docked onto the lorry. The strap automatically pushes the parcels out of the container and evenly distributes them across the existing conveying system. A curtain at the docking station breaks the fall of parcels stored in the top part of the container to prevent them from being damaged. The system can be retrofitted in all lorries at low cost. The unloading system is being developed and produced at the company's premises in Graz.

PrintStones

PrintStones is developing a three-dimensional printing process for cement-like materials that can be used to make component parts of any required shape directly on the building site.

PrintStones is a Vienna-based startup that deals with automation in construction. It focuses on developing 3D printing processes for concrete and other cement-like materials for use directly on the building site.

Flexible on location

Applying the PrintStones process, the user can produce component parts of any shape, colour and texture right on the construction site, thus making do without the cost of transport and fitting of the parts. Moreover, the PrintStones method reduces CO_2 and particulate emission during construction. The patented process is ideally suited to produce parts exposed to compression loads for civil engineering purposes. At present, the printing speed is about 150 mm per second.

Delicately balanced interaction

For the founders the challenge is to optimise the system parameters in order to get the interaction between machine components, environmental conditions, materials and 3D models just right. Practical testing on site is scheduled to start in 2019, jointly with selected pilot customers.

Test modules in 3D

PrintStones is a spinoff of TU Wien (Vienna

University of Technology). The business idea emerged during the development of a simulation tool designed to perform stress and deformation analyses in component parts. In order to verify the results of the analyses it was necessary to actually construct and put weights on the initially virtual parts. As this was a rather costly and time-consuming procedure, a method was sought to produce the parts directly from 3D models.

SES

www.ship-emission.solutions

The methanol-based system for storing hydrogen developed by SES in Innsbruck holds the substance at a much greater density than the customary high-pressure method while maintaining a similar energy efficiency rate.

Energy storage is one of the greatest technological challenges today. Finding a practical solution is indispensable in order to achieve the energy turnaround necessary to comply with the climate targets. The method patented by Christian Mair improves the storage of hydrogen as an energy carrier and thus facilitates its use. At his company SES he developed a methanol-based system for storing hydrogen at a considerably higher density than is possible with traditional methods while maintaining a similar energy efficiency rate.

Cost-effective method
The storage technology, safeguarded

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by patents, uses an innovative methanol synthesis reformation cycle. Methanol is reformed by a very low-cost, highly selective membrane process developed jointly with the Fraunhofer Institute for Ceramic Technologies and Systems (IKTS). The storage system is state of the art when it comes to storing large volumes of hydrogen without regard to location (i.e. in tanks rather than subterranean caverns) over long periods without leakage losses.

For ships and trains
Thanks to its high storage density and

SES – Ship Emission Solutions
Tiergartenstraße 27, A-6020 Innsbruck

Founded in 2013
Management: Christian Mair

www.ship-emission.solutions

energy efficiency, the method is ideal to operate high-powered vehicles (in particular ships and freight trains) from renewable sources across vast distances without the need for refuelling or linking up with an electricity grid.

Building a prototype
In February 2018, a project submitted by SES together with twelve partners to the "Horizon 2020" programme was selected for funding by the European Commission. The project aims to build a prototype for storing hydrogen in ships based on the technology developed by SES.

Easelink

Austrian startup Easelink has developed a technology to automatically charge e-vehicles via a pad attached to the floor – whether in an underground car park or on a parking lot.

For electric vehicles, idle periods could be potentially used for recharging, except that current charging technologies do not provide for automated charging. Easelink, an Austrian startup, pursues a totally new approach to charging: the batteries are automatically regenerated via connectors and floor pads. The method does not require cables or charging posts, and charging is automated: the driver simply parks the vehicle on the pad – where it is charged while out of use.

Matrix Charging
The Matrix Charging concept developed by Easelink uses conductive power transmission by a physical connection. A connector lowered from the underbody

of the e-vehicle automatically docks on to a pad which is fitted to the floor and connected to the electric grid. Clumsy parking does not matter as the connector automatically aligns with the pad. Every vehicle downtime can be used to recharge the car.

International standard

A conductive connection allows a charging capacity of up to 22 kW (AC) or 43 kW (DC), at an efficiency of over 99%, regardless of the vehicle's position. Compared to this, induction solutions based on electromagnetic

Easelink GmbH
Münzgrabenstraße 94, A-8010 Graz

Founded in 2016
Management: Hermann Stockinger

www.easelink.com

waves perform at less than a quarter of this rate at virtually zero parking tolerance. Matrix Charging is currently undergoing tests by a number of car makers internationally. Great Wall Motors (GWM) from Asia presented the technology at the recent IAA in Frankfurt in a concept car of the WEY premium brand.

Viable
In the mid-term, Easelink founder Hermann Stockinger intends to turn Matrix Charging into the global standard. To achieve this goal, the technology needs to be economically viable. As a system, the pad and connector are substantially cheaper than currently used solutions or those in the pipeline. Matrix Charging can be integrated in any serially manufactured car and enables automated charging in all automobile segments.

ENPULSION

www.enpulsion.com

The startup established in Wiener Neustadt is designing and manufacturing small thrusters that can manoeuvre satellites weighing 3-100 kg in space and that can be combined into larger clusters.

The space business has changed. Where once gigantic booster rockets launched huge satellites into space, you will now find cylinder-sized micro- and nanosatellites weighing 3-100 kg. They orbit Earth and send back high-resolution images or undertake exacting tasks for telecommunications. Alexander Reissner, founder and manager of ENPULSION, an innovator based in Wiener Neustadt, has specialised on developing and manufacturing the thrusters that keep such miniature space missiles on course.

Modular design
ENPULSION combines the mini propulsion units into a thruster cluster.
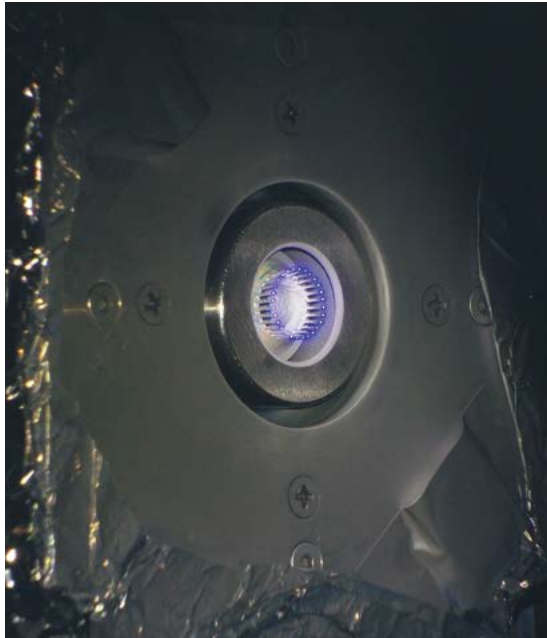
The system consists of small modules that are connected to make up larger units to fit satellites of various sizes. Each of these thrusters can be individually controlled and thus universally used to manoeuvre satellites. The first units were sold immediately after the company was launched.

Energy from indium

The thrusters are fuelled with indium, a silvery-white element shipped in its solid state. Unlike chemical or gaseous fuels that are typically poisonous or explosion-prone,

ENPULSION
SPACECRAFT TECHNOLOGY

ENPULSION GmbH
Viktor-Kaplan-Straße 2, A-2700 Wiener Neustadt

Founded in 2016
Management: Alexander Reissner

www.enpulsion.com

indium is a totally unproblematic metal and has a high energy density.

Low-cost and quick
ENPULSION is the first enterprise in the world that offers such customised thrusters. As the modular design not only improves the quality of propulsion but also radically changes the manufacturing processes, the company is able to offer its modules at a low price and with extremely short delivery times. Every year there is demand for hundreds of nanothrusters that will gradually replace the traditional large-scale models. At present ENPULSION is about to expand its production capacities to satisfy the booming demand.

Perception Park

The software technology developed by the Graz-based startup uses colour images to depict the molecular structure of materials. Hence, impurities and contaminants can be immediately identified in sorting and manufacturing processes.

It happens more often than you would expect: an international food company has to recall millions of chocolate bars because tiny plastic particles were found in one single bar. Perception Park has addressed this expensive and health-threatening problem. Thanks to its hyperspectral imaging such plastic particles can be detected and removed during the manufacturing process.
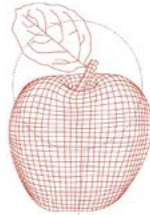
Colourful
As hyperspectral imaging supports the depiction and assessment of data on the molecular composition of materials, e.g. by way of a simple colour scheme, impurities and contaminants, but also the
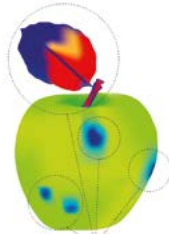
MONOCHROME IMAGING   COLOUR IMAGING   3D IMAGING   CHEMICAL COLOUR IMAGING

concentration and distribution of chemical substances can be measured in real time during sorting and manufacturing processes. These features make the technology interesting for the food processing, pharmaceutical and recycling industries.

Measuring in real time
In addition to the camera technology for capturing the molecular composition of substances, the method also requires a software that translates this complex information into readable colours within a split second.

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Perception Park GmbH
Nikolaiplatz 4, A-8020 Graz

Founded in 2012
Management: Manfred Pail, Markus Burgstaller

www.perception-park.com

Global distribution network

Perception Park's "Chemical Colour Imaging" software makes the company a pioneer in the industrial utilisation of a technology that has its roots in astronautics. Since 2016, Perception Park has cooperated with Stemmer Imaging, Europe's leading provider of image processing solutions, located in Puchheim near Munich. In Perception Park founders Markus Burgstaller and Manfred Pail have the only company that owns a self-learning data processing platform which can be handled intuitively, can be configured as desired and is compatible with various system components via plug-in interfaces. Hence, the company's distribution network is continuously expanded. Meanwhile, Perception Park has acquired strong partners not only in Europe but also in Japan, South Korea, South East Asia and Israel.
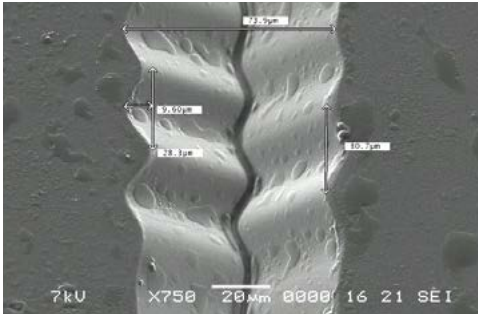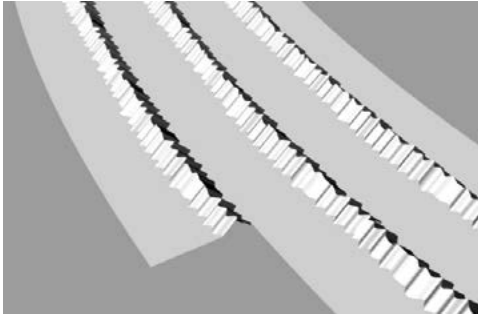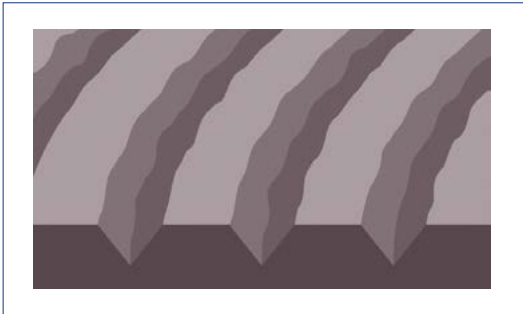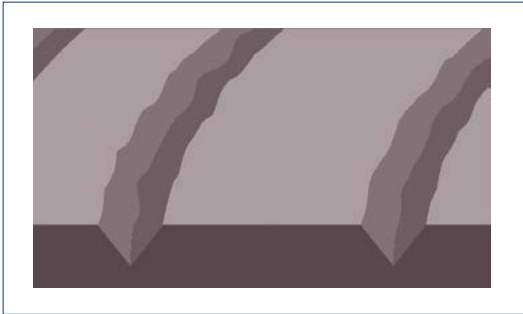
Rebeat

Rebeat offers a high definition vinyl technology that laser-cuts audio data onto record vinyl, a method that raises sound quality and playing times to new levels.

Vinyl is back in fashion. For 2016, the British Phonographic Industry (BPI) reported an increase in vinyl sales by fully 53%, to more than 3.2 million records – the highest volume since 1991. Although more and more customers return to vinyl, there has been little change in the 80-year-old technology as such. However, Günther Loibl, founder of Rebeat, a startup located at Tulln, is about to bring some dynamics into the record technology. His HD Vinyl technology, for which a patent has been filed, uses a laser to make ceramic HD Vinyl stampers, i.e. templates from which the actual records are pressed. This raises the sound quality to a previously unattainable level. The fact that the HD Vinyl records are fully compatible with traditional record

players is one more factor to boost the potential for success.

Laser ensures consistent quality

The HD Vinyl technology developed by Rebeat jointly with Joanneum Research involves a laser cutting the groove into the stamper. Thanks to its sheer precision, the laser is superior to conventional tools. Its cutting performance does not depend on frequency so that the audio quality does not deteriorate but remains at a high level. For the new method, the audio files are augmented
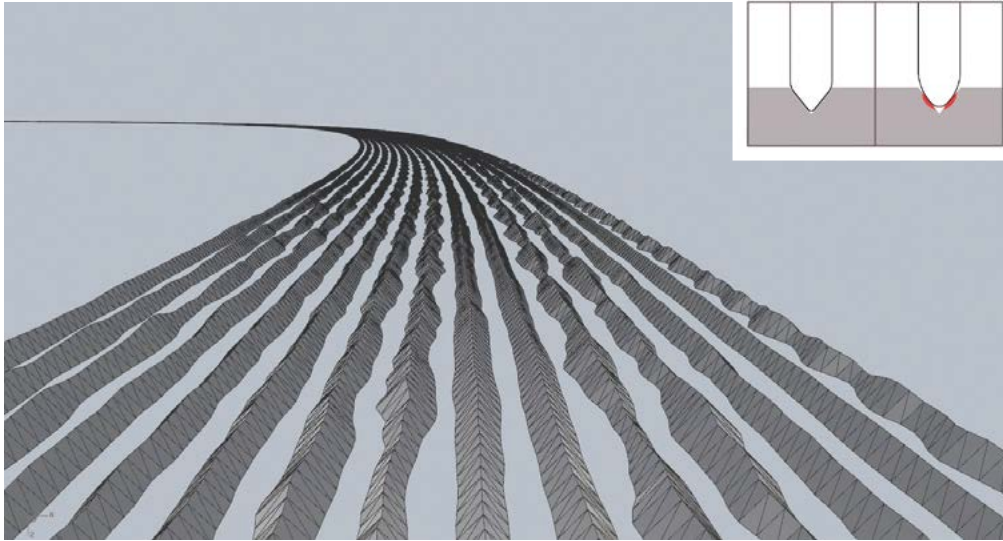
by computer and then engraved onto the stamper.

30% more information
HD Vinyl optimises the gaps between grooves, which packs about 30% more information and 30% more sound volume into the same space. A further significant improvement is the fact that the sound quality no longer deteriorates so starkly when the stylus approaches the centre of the record. Moreover, the new process steps up record production times.

Works on every turntable
A key strategic approach pursued by Günter Loibl is to develop a sound carrier format that can be played regardless of the brand. He has made a great start. With HD Vinyl, Rebeat intends to have a market share of 80% in five years.

Solabolic

Advancements made by Solabolic in parabolic trough technology have improved the efficiency and economic feasibility of large-scale solar power generation systems by more than 30%.

Over 100 years ago, suspension bridges revolutionised the feasible span of bridges, substantially reducing both material consumption and manufacturing costs. The laws of physics utilised by this novel design were harnessed by Ahmed Adel, an engineer and founder in Vienna: the patented parabolic trough collector sold by Solabolic has a perfect parabolic shape that does not require any complex manufacturing technology. The Solabolic technology allows producing the world's largest parabolic trough collectors of 10–15 metres in diameter that require 20–30% less material. Previous technologies offered apertures of a maximum of 7.5 metres.

Need for improvement

The business proposition arose from irritation and annoyance: Ahmed Adel wanted to buy a parabolic trough collector for his master thesis at TU Wien (Vienna's Technical University). Given the low number of suppliers, it was a long and tedious search that twice ended with a collector delivered in damaged condition – more time and money lost for Ahmed Adel who came to the conclusion that this field was in urgent need of optimisation.
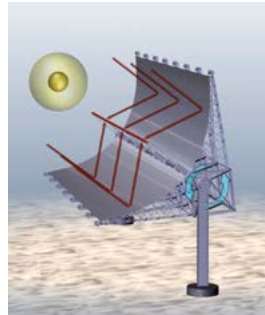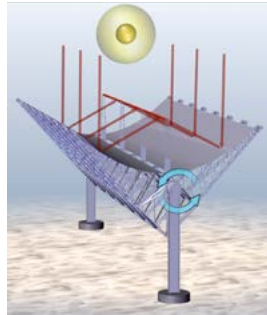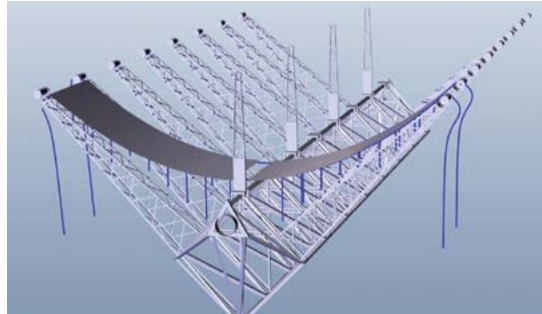
Much greater efficiency

Parabolic trough collectors concentrate sunlight to a focal line by reflecting it along a concave trough, thereby generating heat or electricity. The Solabolic-patented design reduces the investment costs for a solar field by about 35% and cuts down levelised cost of electricity (LCOE) by around 15%. Thanks to such cuts, Solabolic's industrial partners (licensees) can double their profits and still utilise a 16% bonus over traditional technologies.

Secure demand

Simplified sun tracking, low LCOE and high yield combine to give parabolic troughs a market share of 95% in the concentrated solar power industry. Solabolic plans to install a 50 MW plant (0.6% of the parabolic trough market) jointly with an industrial partner in 2019.
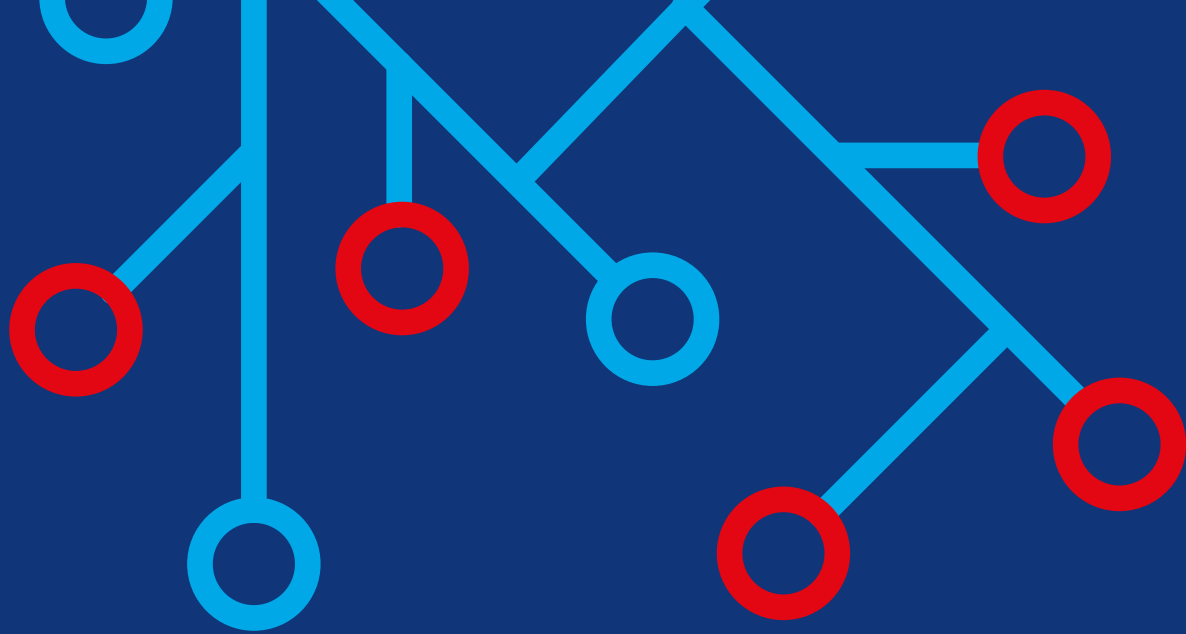
Life Sciences

aws LISA – Life Science Austria
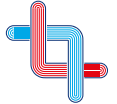
Bringing life sciences from the lab to the market

Austria as a business location will benefit from the most innovative ideas only once they have made it from the lab to the market. Austria Wirtschaftsservice (aws) has established Life Science Austria (LISA) as a one-stop shop that spans the entire value-added chain of startups in the life sciences. LISA provides customised support at every stage of a startup's development.

www.lifescienceaustria.at

BHS Technologies

BHS Technologies is building an operating microscope that ergonomically adapts to the surgeon rather than vice versa – as has been the case to date.

In microsurgery, the operating microscope is the surgeon's most important tool. The currently used technology is based on a concept developed in the late 1950s and has never been substantially refined. Markus Hütter and Michael Santek, the founders of BHS Technologies, consider this to be surprisingly neglectful: humankind has meanwhile been to the moon but there has been no progress whatsoever in operating microscopy.

Inflexible microscopy
Currently used microscopy technology has significant drawbacks:

- From an ergonomic viewpoint, it is extremely strenuous for the physician.

  The surgeon has to adapt to the operating microscope and must assume awkward positions for longer periods in order to view the operating field from the perspective required for the surgery.
- To be able to visualise the entire operating field and to make delicate structures (nerves, blood vessels, etc.) detectable, the surgeon must frequently change the viewing angle, which can only be done manually and requires putting down the surgical tool each and every time the angle is changed.

aws PreSeed

bhstech

BHS Technologies GmbH
Mitterweg 60, A-6020 Innsbruck

Founded in 2017
Management: Markus Hütter, Michael Santek

www.bhs-technologies.com

© Wolfgang Voglhuber

Operations in the ear, neurosurgical interventions (intervertebral discs), tumour removals and plastic surgery are typical microsurgical interventions carried out with the aid of a microscope.

Noticeable improvements

The operating microscope developed by the startup located in Innsbruck eliminates these drawbacks: the first pilot tests found work ergonomics and operating procedures to be substantially improved. A functional surgical microscope built by BHS Technologies from standard components was tested in several hospitals in collaboration with the users. The feedback was overwhelming.

Competitive costs

The founding team works towards making the company's technology fit for the market. The target is to successfully launch the high-tech medical device by offering it at a competitive price. BHS Technologies plans to bring the first microscopes to the market by mid 2020.

CCORE

CCORE, a spinoff of the Medical University of Vienna, is developing new methods for minimally invasive blood purification that are based on a patent-pending platform technology.

In Europe, the USA and Japan, 0.4 to 0.5% of the population are admitted to intensive care units every year. One out of three such patients needs artificial respiration for more than 24 hours. The fact that the mortality rate of these patients is extremely high (up to 40%) is due to the underlying disease, but also to additional lung injury caused by invasive mechanical ventilation.

Founders Claus G. Krenn and Roman Ullrich have studied and taught intensive care medicine for more than 20 years. At CCore Technology GmbH (CCORE), they are developing a solution to prevent lung injury caused by invasive ventilation methods or even avoid, or largely reduce, the need for invasive ventilation. The patent-pending platform technology (LiquiClear®) will save lives and cut down on the enormously high treatment costs.

Removing respiratory air by suction

The first product to be developed is a minimally invasive catheter for purifying blood (minimally invasive liquid lung – MILL) designed for removing carbon dioxide from the blood. Patients suffering from acute or chronic lung diseases are unable to sufficiently clear the carbon dioxide generated by metabolic processes in their bodies by exhaling it via the lung. While

© Georg Schlosser

CCORE Technology

CCore Technology GmbH
Argentinierstraße 35/22, A-1040 Vienna

Founded in 2015
Management: Thomas Herndl

conventional methods withdraw the blood from the body and then purify it in an extracorporeal circuit, CCORE pursues a novel approach. A catheter containing a membrane is inserted into the patient and assists in at least partially removing harmful substances (CO_2) from the body via a second circuit using a carrier solution.

Looking for a strategic partner
Developing MILLx® up to regulatory approval will require a total investment of around € 15 million. CCORE's strategy is to collaborate with a development partner in the medical engineering sector to finalise the product and launch it on the market. After the first round of financing, which has facilitated funding the first years of basic research by government research funds, some serious contacts with potential strategic partners have already been made.

meemo-tec

www.meemo-tec.com

meemo-tec's smartphone app supports people suffering from bipolar disorder in their daily lives and connects them with persons they trust.

According to the WHO around 60 million people worldwide suffer from bipolar affective disorder, a condition better known as manic-depressive illness. These people repeatedly experience phases of depression and mania which often entail serious social and economic consequences. meemo-tec's Graz-based startup trio wants to prevent an escalation of the disorder with the help of its UP! smartphone app.

Smart linked-up companion
The small software programme UP! studies the everyday behaviour of people with bipolar affective disorder based on their smartphone usage and relates it to their mental health status. Using intelligent algorithms, the programme is designed to detect shifts from healthy daily routines towards behaviours favouring the disorder

and to counteract this development. Users document their daily activities and assess their mood with UP!. The app also

automatically records physical activities, work-life-balance and sleeping habits, enabling users to better understand links

between their day-to-day lives and depression and/or mania.

Social integration

UP! Buddy, an accompanying app, is the first to integrate the social environment into the care of bipolar people by linking them with persons they trust. UP! Buddy is designed for family members, partners and close friends who play an important role in managing crises. UP! Buddy enables them to contribute to preventing relapses, easily, quickly, even across cities, countries and continents. Moreover,

© The Schubidu Quartet

meemo-tec OG
Grieskai 74a, A-8020 Graz

Founded in 2016
Management: Christian Pendl

www.meemo-tec.com

users can generate health reports covering several weeks, which give physicians and therapists a better overview of the course of the disease and help them improve their therapies.

Personal involvement

The bipolar disease of a close friend motivated Manfred Weiss, Ralph Gruber and Christian Pendl to found meemo-tec. The then girl friend of one of the founders repeatedly experienced episodes of depression and mania, which made her lose her job, break up relationships and

friendships. The idea for UP! emanates from this liminal experience.

MITS

MITS' technology allows testing single-use bags commonly employed in biopharmaceutical production for 100% integrity right at the point of use.

Patient safety is a crucial issue in the biopharmaceutical industry. To prevent contamination and ensure sterility, pharmaceutical manufacturing and research increasingly rely on single-use

technologies. Single-use bags are the backbone of these technologies. As the term implies, this type of packaging is only used once. The supplier ships the customised, sterile bags to the user. Single use lowers the risk of cross-contamination to a minimum. Moreover, the biopharmaceutical company need not deal with validating cleaning processes and sterility.

Integrity and sterility at the point of use

Due to regulatory requirements

users repeatedly face the question of potential leakage. There are very reliable manufacturing processes and devices for checking integrity, which are, however, only available at the manufacturing site. When the bags leave the factory, they are gamma-sterilised, then stored for a long time, shipped and made ready for use at the customer's site. Before these bags are utilised, damage may have occurred that jeopardises their sterility. The technologies currently offered for testing integrity at the point of use are not sufficiently sensitive to ensure sterility.

MITS GmbH
Endach 36, A-6330 Kufstein

Founded in 2016
Management: Thomas Wurm, Johannes Kirchmair

www.susupport.com

Helium as a safeguard

MITS has developed a technology for running a 100% integrity test at the very place the single-use bags will be actually used. The test has a 2 ym detection limit (1 yoctometer = 10^{-24} metres), which suffices to assure that the bags are sterile. The technology is based on filling the bag with helium and using a mass spectrometer to detect leaking helium, which can be measured and indicated.

The first routine usage of MITS' technology at the customer end was planned for the first half of 2018. Meanwhile the company has also been granted a patent for its technology.

NP Life Science Technologies

The Linz-based company is developing and manufacturing neural-like implants that support the body in regenerating traumatised peripheral nerves.

Of the 320 million people living in the US, each year an estimated 660,000 patients have their neural injuries treated with implants to reconnect cut nerves. These injuries have significant implications for the national economy as they result in 8.5 million working days of reduced work ability, i.e. costs of € 2 billion, and five million days of occupational disability each year.

Numbness

In case of serious injuries, the standard treatment is to replace a destroyed motor nerve by a "non-vital" sensory nerve. After successful treatment, patients regain their mobility but lose sensory abilities, which, in turn, reduces their quality of life. This is a high price to pay. In case of minor injuries, severed nerve ends are bridged by tubings,

which have some shortcomings as they consist of polymers that do not always meet the mechanical requirements of the nervous tissue. Their degradation products may even cause local toxic effects. Moreover, the human organism must form all nervous structures in the tubing itself to guide the cells growing between the linked ends.

A solution developed in Linz
The novel implant developed by the startup NP Life Science Technologies replicates the acellular structure of a nerve by many small, parallely aligned channels. Hence,

the growth of regenerating nervous cells between the nervous ends is instantly guided and regeneration is accelerated. The polymer's particular chemical properties facilitate the adaptation of the mechanical properties to the requirements of the nervous tissue and the covalent bonding of growth-stimulating substances. The degradation products are non-toxic, neutral substances that are removed via metabolic processes.

Regaining quality of life
The innovation developed by the three scientists and founders – i.e. Klaus

Rudolf Schröder, Ian Teasdale and Oliver Brüggemann – significantly raises the chances of injured patients to regain their quality of life. For national economies it reduces costs for treatment and eases the burden on the social system.

NP Life Science Technologies KG
Hafenstraße 47–51, A-4020 Linz

Founded in 2016
Management: Klaus Rudolf Schröder

www.nplifescience.com

UriSalt

The Tyrolian startup UriSalt is developing non-invasive tests for doctors' surgeries, pharmacies and self-testing that immediately analyse and monitor important body electrolytes from urine specimens.

Electrolytes are crucial for our health. Around two billion people suffer from derangements of their sodium metabolism. High blood pressure is frequently caused by high sodium intake via industrially processed food that contains high levels of salt. Moreover, a wide range of severe conditions such as cystic fibrosis and diarrhoea or side effects of critical medications lead to chronic hyponatraemia. At present, the sodium status is usually assessed by blood tests. As this method is invasive and logistically complex, it is only conditionally suitable for screening and monitoring. If disorders in the sodium metabolism are not treated in time, they lead to severe or even life-threatening health complications.

Point-of-care tests

The first item on UriSalt's agenda is to develop SODISENS, an affordable point-of-care test (POCT) for assessing the body's sodium metabolism from urine. POCT indicates that these tests can be done outside conventional laboratory settings, for example in doctors' surgeries or wards. The SODISENS test comprises a single-use urine test strip and a portable readout meter featuring software for analysis, display and data management. The test gives an instant result and is so easy to handle that it can also be
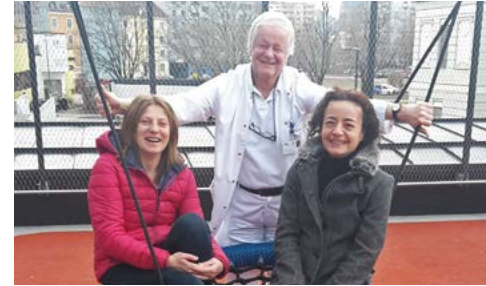
performed by patients themselves. An app provides a direct link to the physician treating the patient.

Other planned projects

The great technical challenges are manufacturing a stable test strip and designing a portable readout meter. A prototype of the readout meter has been available since April 2018. The company subsequently plans to validate SODISENS in first clinical studies. UriSalt wants to use its proprietary core technology to develop more urine POCTs for other important electrolytes and to offer a comprehensive portfolio of non-invasive tests.

Team

The idea to develop a simple test for assessing the sodium metabolism from urine is based on decades of Peter Heinz-Erian's clinical experience with patients suffering from chronic electrolyte disorders. Gerda Fuhrmann and Pinar Kilickiran bring many years of professional experience in the development of sensors gained in the private sector to the company.

Valanx Biotech

http://valanx.bio

Valanx Biotech is developing a method that permits easy modification of proteins and avoids problems encountered in conventional modification chemistry contexts.

Protein therapeutics are prominent representatives of the so-called biopharmaceuticals. In the pharmaceutical world, these are drugs produced with the help of biological systems. The best-known examples are interferons and antibodies, both of which are used to treat cancer.

Need for modification

The properties of proteins in terms of metabolic stability and efficacy constitute a challenge in their development as therapeutics. Hence, proteins often have to be modified after their production. Given the complex protein chemistry, this is a complicated and laborious process. Valanx Biotech is developing a method that permits easy modification of proteins. The solution elaborated by the two founders Michael Lukesch and Patrik Fladischer avoids problems arising from the use of conventional systems.

Artificial docking site

The technology is based on a novel amino acid which is placed into the target proteins at defined sites with the help of a specifically developed bacterium. Any desired modification can be attached to the artificial docking site created in the protein in this way. The fact that Valanx Biotech uses inexpensive base materials

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Opernring 16/1, A-8010 Graz

Founded in 2017
Management: Michael Lukesch

http://valanx.bio

to produce the amino acid gives the company a considerable cost advantage over competitors. This modification is a unique selling point as compared to currently available technologies.

Wide range of applications
Valanx Biotech's platform technology can be used to develop agents for a wide range of indications. To do so, the company intends to collaborate with partners from the pharmaceutical industry. Moreover, Valanx Biotech's technology is used for producing improved biosensors and biocatalysts.

Improved production methods
The greatest challenge faced by the founders is to bring the Valanx method to the level of established competitive techniques. Hence their current focus is on optimising production that can be translated into commercially viable solutions.

Allcyte

www.allcyte.com

Allcyte is developing new in-vitro test methods to determine the most effective cancer therapy for specific patients and/or groups of patients.

Ninety-five percent of all projects developing novel cancer therapies fail during preclinical and clinical testing. Depending on the therapy, a mere 20-60% of all cancer inpatients respond to their medication. In view of this background, Berend Snijder,

Gregory Vladimer and Nikolaus Krall, three former postdocs at the CeMM (Research Center for Molecular Medicine of the Austrian Academy of Sciences), decided to develop novel in-vitro test methods for identifying the most effective cancer therapy for specific patients and/or patient groups. The team is complemented by Giulio Superti-Furga, scientific director of the CeMM and himself an experienced biotech innovator and founder.

Allcyte's test methods are designed to support physicians in planning therapies

for their patients that achieve the highest possible response rates. Moreover, the company wants to put pharmaceutical companies in the position to better understand which molecules are most likely to be effective in which groups of patients.
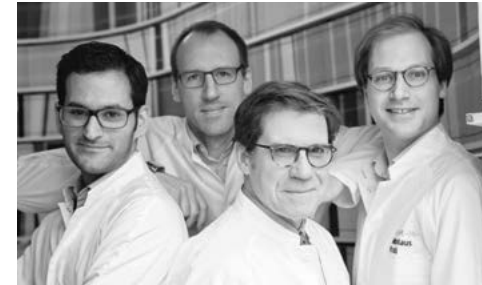
New microscopy technique
To achieve its goals, Allcyte uses pharmacoscopy, a microscopy technique developed at the CeMM in Vienna, to directly examine response to drugs ex vivo in relevant tissue samples of patients, i.e.

in the laboratory, at high resolution, and to make inferences as to potential clinical activity.

Getting ready for the market
The proof-of-concept studies carried out by the CeMM and the Medical University of Vienna have demonstrated that pharmacoscopy is a very promising technique for planning the personalised treatment of cancer patients. However, much research and development work – which cannot be funded by academic institutions – is needed before it can be used in routine

medical practice. The foundation of Allcyte offers the opportunity to prepare a promising technology with clinical and commercial potential for the market.

BlueSky Vaccines

BlueSky Vaccines is developing a novel cancer vaccine that offers the potential to fight all types of cancers. The vaccine stimulates the body's immune defences to achieve a unique effect.

Studies have shown that immunotherapy, i.e. fighting cancer by activating the body's immune system, is a pioneering approach in the treatment of cancer. The

Viennese startup BlueSky Vaccines, a biotech company specialising in this area, is developing an innovative cancer vaccine that stimulates the body's immune defences in a novel way.

Broad effect

While currently used immunotherapy medicines (antibody/checkpoint inhibitors and modified immune cells such as CAR-T) target a specific point of the immune system, BlueSky's vaccine is designed to simultaneously activate different levels of the body's immune system by initially stimulating

important immunomodulators such as interferon and other cytokines. This triggers different immune responses of the body such as dendritic cells, cytotoxic T-cells, killer cells, macrophages and regulatory T-cells and thus ensures an effective cancer therapy. The broad "anti-cancer cell front" has the potential to destroy both the primary tumour and the metastases.

Therapy against papilloma viruses

The vaccine will first be tested against cancers induced by human papilloma viruses (pharyngeal cancer, cervical carcinoma and

BlueSky Vaccines GmbH
Mariahilfer Straße 101/1/21, A-1060 Vienna

Founded in 2014
Management: Thomas Muster, Michael Tscheppe

www.blueskyvaccines.com

other types of gynaecological cancers). For this purpose, various clinically tested antigens (E6, E7) of the human papilloma virus were inserted into the vaccine to boost its ability to specifically fight these cancers.

First studies are under way
Biotech experts with many years of research experience founded BlueSky Vaccines at the end of 2014. The company currently has ten employees and uses the laboratories at the University of Veterinary Medicine, Vienna. In the second half of 2018, BlueSky Vaccines will set an important milestone by running

clinical trial phase I in humans. Subsequent plans include out-licensing the technology to pharma partners, a trade sale or going public.

ImageBiopsy Lab

https://imagebiopsylab.com

The Viennese company is developing novel software solutions for analysing X rays to improve the diagnosis of osteoarthritis, the most frequent degenerative joint disease worldwide.

The subjective assessment of digital X-rays by specialists has been the standard method for diagnosing osteoarthritis for decades. As the disease is often diagnosed late and with varying accuracy, therapies are frequently delayed and unspecific, which causes pain for the affected patients and high costs for the health care system.

Deep learning methods
Based on deep learning approaches, the ImageBiopsy solution analyses X-rays in a standardised and objective manner within a few seconds. The software is armed with a learning algorithm trained on a database comprising 150,000 radiological images. It knows what a healthy knee looks like and

can automatically identify different stages of the disease with the help of these images. The system marks abnormalities and suggests a diagnosis. Moreover, it provides a very detailed and structured report, which not only eases the burden on physicians but also improves patient care. ImageBiopsy Lab plans to obtain Medical Devices Act certification by the end of this year.

Risk assessment for osteoarthritis patients

The current research of founders Davul and Richard Ljuhar goes beyond the

image biopsy lab

IB Lab GmbH
Hietzinger Hauptstraße 50/10, A-1130 Vienna

Founded in 2016
Management: Richard Ljuhar

https://imagebiopsylab.com

mere evaluation of radiological images. ImageBiopsy Lab develops models for predicting the risk of getting osteoarthritis. In studies, they were able to forecast with an accuracy of 80% whether the knee joints of patients would significantly deteriorate within the next four years. These models are already used in clinical studies.

Osteoarthritis is a global problem
In Europe, 70 million people currently suffer from osteoarthritis. In view of the demographic change, this number is estimated to exceed 100 million by 2040. The self-learning software for analysing radiological images developed by ImageBiopsy Lab is designed to meet the rising demand.

MyeloPro

www.myelopro.com

MyeloPro's Viennese research team is developing an immunotherapy for treating myeloproliferative neoplasms, i.e. relatively rare malignant blood diseases.

Vienna is Europe's hub for research on rare types of leukaemia, i.e. myeloproliferative neoplasms (MPNs). Many of the most important discoveries and new applications of medicines in this area have been made in Vienna. There is excellent collaboration between basic researchers (CeMM – Research Center for Molecular Medicine of the Austrian Academy of Sciences) and clinical researchers (Medical University of Vienna). A CeMM team headed by Robert Kralovics discovered that mutated calreticulin (CALR) constitutes a promising target for immunotherapy as MPNs treatment. The biotech startup MyeloPro Diagnostics and Research was founded to ensure the commercial development of a therapy against these rare diseases. The team's

decision was based on the maxim: "If we don't do it, nobody else will." Diseases affecting only small groups of patients are of little interest to large pharmaceutical companies.

Severe diseases
MPNs are relatively rare malignant blood diseases. In Austria, a few thousand people are afflicted. MPNs have serious health consequences for patients as the disease often profoundly impacts on their morbidity and mortality. MPNs patients frequently suffer from thromboses and bleedings

and have an increased risk of leukaemic transformation.

Successful mutations
Pilot studies in animals using CALR-targeted monoclonal antibodies have shown that it is possible to eliminate mutated CALR stem cells and to normalise the number of thrombocytes. MyeloPro has already succeeded in manufacturing a series of monoclonal antibodies and antibody-based agents to target the mutated CALR. These research findings constitute the basis for the first potential therapies against MPNs.

Looking for a pharma partner
MyeloPro expects to start clinical development of CALR therapeutics within the next three years. The researchers are looking for a partner in the pharma industry for phase III of the clinical tests and marketing. MyeloPro wants to remain an R&D incubator that develops further ideas and concepts with a pronounced focus on haematological oncology.

myelopro

MyeloPro Diagnostics and Research GmbH
Lazarettgasse 14, BT 25.3, A-1090 Vienna

Founded in 2015
Management: Oleh Zagrijtschuk

www.myelopro.com

OxAG

OxAG, a startup located in Tulln, is developing new antibiotic therapies against multiresistant pathogens.

Bacteria are "survivalists". Under certain circumstances they develop resistance to the medication given for infections and thus become (multi)resistant pathogens, which have steadily spread in the past years. The Oxford Antibiotic Group (OxAG)

has accepted this challenge: the Tulln-based pharma development company works on new antibiotic therapies against multiresistant pathogens and takes them through all trial phases to medical usage. As the company, headed by biomedical expert and biologist Alexander Pretsch, develops a new class of antibiotics, it is very much in the spotlight of pharma development.

Besides Tulln, OxAG's second leg in eponymous Oxford is crucial for capitalisation: without links to the UK or

USA it is impossible for Central European companies to see such a project through to the end. The development of active agents requires significant investments and can only be financed at the industrial level.

New development approach

OxAG's quest for antibiotic agents is based on a new approach. Using the Logibiotic method, natural products are reduced to their active targets and subsequently designed and manufactured in line with standard criteria of medicinal chemistry. In this project, OxAG closely collaborates
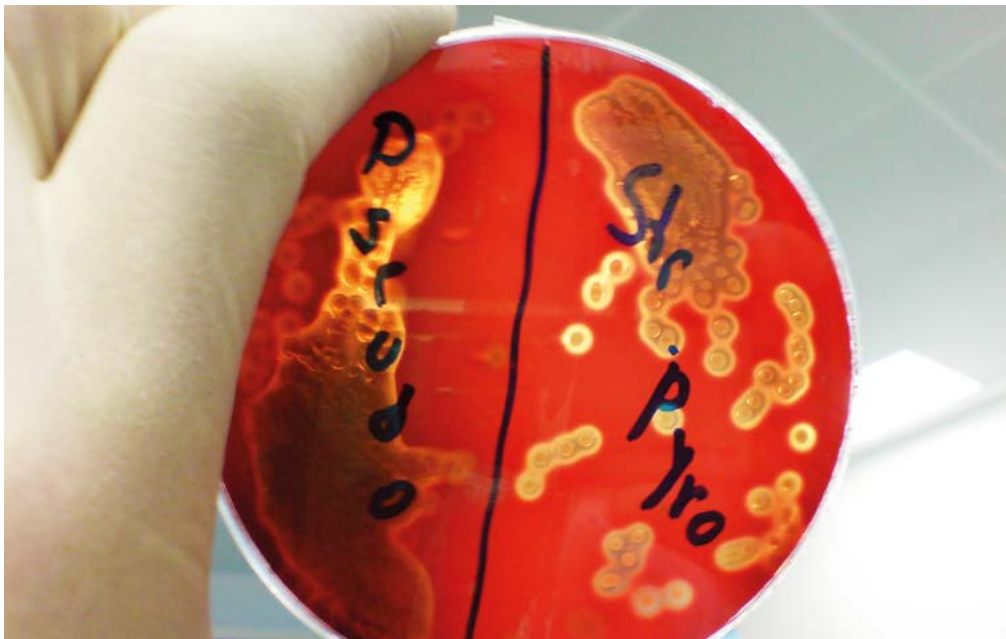
aws Seedfinancing

© Foto Wilke

OXFORD ANTIBIOTIC GROUP

Oxford Antibiotic Group GmbH
Konrad-Lorenz-Straße 24/ground floor, A-3430 Tulln

Founded in 2017
Management: Alexander Pretsch, Miroslav Genov, Dagmar Pretsch, Jutta Roth

with the Department of Chemistry in Oxford and has in-licensed two patents for further development.

Exit 2023

OxAG is a typical biotech and pharma development company that plans to run another series A/B, amounting to € 12 million, after the two-year preclinical seed phase to take a test candidate to clinical phase IIa. This A/B series is ready to be run in cooperation with a large pharmaceutical company as such corporations currently tend to safeguard their interest in projects in the preclinical phase and in phase I by contracts and payments. This is in line with the plans of the founding team to position the company for a trade sale or going public (IPO) by 2023.

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Projects supported in 2017

Abacus	PreSeed	IKT	16
Allcyte	Seedfinancing	Life Sciences	131
BHS Technologies	PreSeed	Life Sciences	106
BlueSky Vaccines	Seedfinancing	Life Sciences	134
CCORE	PreSeed	Life Sciences	110
Dimetor	Seedfinancing	IKT	44

Easelink	Seedfinancing	Physical Sciences	81
ENPULSION	Seedfinancing	Physical Sciences	85
FARMDOK	Seedfinancing	IKT	48
Greenhive	PreSeed	IKT	20
ImageBiopsy Lab	Seedfinancing	Life Sciences	137
Invenium	PreSeed	IKT	24

meemo-tec	PreSeed	Life Sciences	113
MITS	PreSeed	Life Sciences	117
myClubs	Seedfinancing	IKT	52
MyeloPro	Seedfinancing	Life Sciences	141
NP Life Science Technologies	PreSeed	Life Sciences	121
Ocean Maps	Seedfinancing	IKT	56

ONDEWO	PreSeed	IKT	28
OxAG	Seedfinancing	Life Sciences	144
Perception Park	Seedfinancing	Physical Sciences	89
PHS	PreSeed	Physical Sciences	70
Prewave	PreSeed	IKT	32
PrintStones	PreSeed	Physical Sciences	74

proactivaudio	PreSeed	IKT	36
Rebeat	Seedfinancing	Physical Sciences	93
SES	PreSeed	Physical Sciences	77
Solabolic	Seedfinancing	Physical Sciences	98
subdron	PreSeed	IKT	40
UriSalt	PreSeed	Life Sciences	124

Valanx Biotech	PreSeed	Life Sciences	128
Waytation	Seedfinancing	IKT	60
WUGGL	Seedfinancing	IKT	64

Boosting key technologies

On behalf of the Austrian Federal Ministry for Digital and Economic Affairs and the Austrian Federal Ministry of Transport, Innovation and Technology, Austria Wirtschaftsservice Gesellschaft mbH (aws) helps high-tech companies locate and set up business in Austria. A special focus is on supporting technological areas with high growth potential and innovative strength such as life sciences, information and communication technology, and physical sciences.

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and Technology