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IDEAS FROM

BUSINESS 4.0 EDITION

Cologne



**Inspiration
Innovation
Interaction**

The best ideas from
Germany's digital capital



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Initiatoren



Dear readers,

One click and your fridge is full; a 3D printer produces the missing screw for your bike; and a handy app finds you a parking space. If all that sounds like the wild imaginings of a distant future, think again: these innovations are already a reality – and they were all dreamed up in Cologne. With more than 650 startups and almost €1 billion in revenue each year, Cologne is a hotspot for the digital economy. PricewaterhouseCoopers has even named the city Germany's digital capital. Alongside its seamless infrastructure, Cologne offers young entrepreneurs the perfect conditions for implementing their digital business models. The city is promoting exchange between digital movers and shakers in its numerous business incubators and co-working spaces, as well as providing links to investors. What's more, experienced professionals known as "business angels" are on hand with good advice, and the new platform Digital Hub Cologne is fostering collaboration between startups, industry and longstanding SMEs. In this magazine, we present 25 creative ideas from Cologne that should enthuse digital natives and keen amateurs alike.

Happy reading!

Twenty-five exciting new ideas from business, science and the digital world

01



A springboard into the future

"Design thinking" is the trailblazing motto of a new approach at **Zurich Insurance**. Agile, adaptive working groups discuss and test out innovative product concepts in "design labs" – if feasible, these concepts are then implemented digitally. The team at the design lab in Cologne is developing insurance plans for driverless cars, for example. Marcus Nagel, Chairman of the Board at Zurich Group Germany, explains: "With our 'rapid prototyping' approach, we aim to reduce product development down to just a few weeks or months. This will allow us to react more quickly to evolving customer needs."

↳ www.zurich.de

Guardian angels

Visionary ideas are important for digital business models, but no startup can succeed without also having business know-how and financial resources. New startups often lack capital – and that's where the business supporters at **Angel Club** step in. This investment group, made up of six established Cologne-based entrepreneurs, supports promising projects like evopark and Netmoms, providing up to €3 million in funding. It also helps startups with their sales and marketing.

↳ www.theangelclub.de

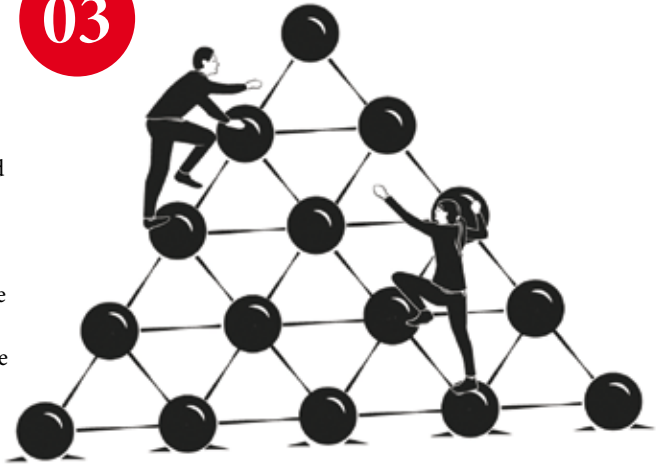
02



Rising to the top

The digital business models of startups are often vulnerable. To ensure the success of innovative and promising concepts, **Digital Hub Cologne** forges contacts with businesses, as well as scientific and research institutes. In this way, the initiative aims to sustainably foster and systematically expand the digital economy in Cologne and the surrounding region. Digital Hub Cologne is a joint project of the City of Cologne, Cologne's Chamber of Industry and Commerce and the University of Cologne.

↳ www.digitalhub.cologne



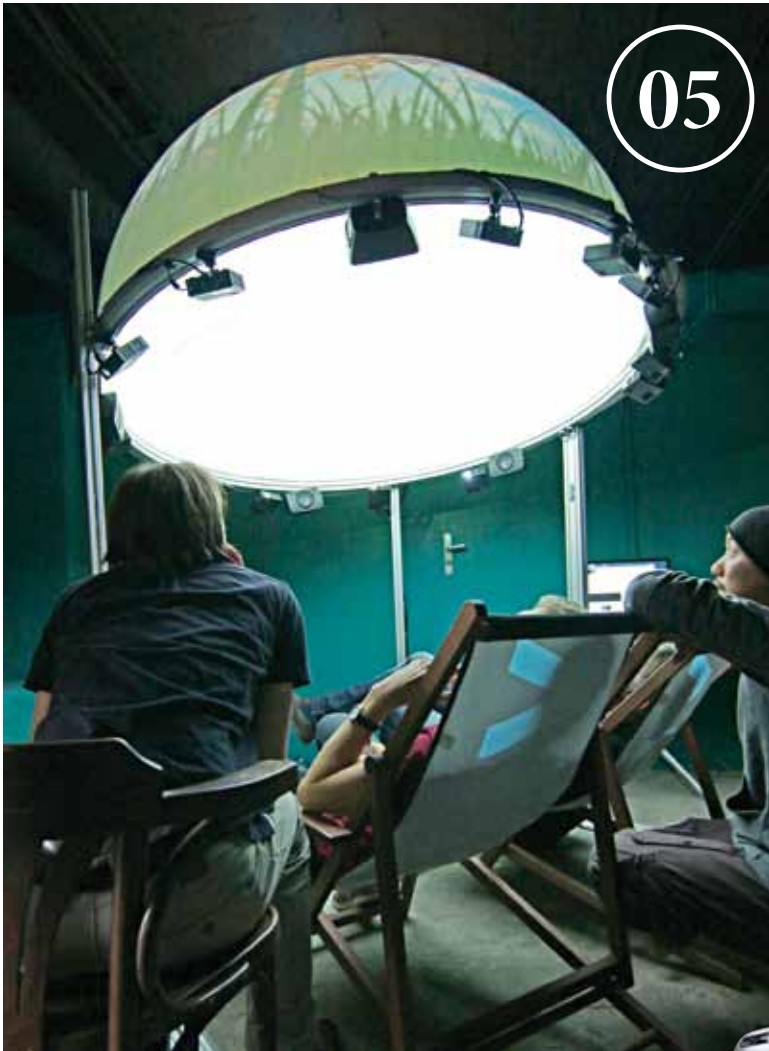
Greven Verlag, a family-owned publishing house since its founding in 1827, gives fascinating insight into the history of Cologne and its inhabitants.

Traditional and digital

The analog and digital worlds aren't always easy to interconnect, especially at traditional, time-honored companies. That isn't true in Cologne, however: publishing house **Greven Verlag** has been around since 1827, and while it still produces high-quality printed books on history, art and Cologne customs, its subsidiary Greven Medien has gone entirely digital. For example, it was involved in developing a Google AdWords-compatible campaign for regionally-based companies. It also devises customized banner advertising for clients on Greven's own websites, such as dastelefonbuch.de.

↳ www.greven-verlag.de, www.greven.de





05

Watching the future

The first German service agency in the field of virtual reality (VR), **Headtrip** specializes in VR productions and 360-degree videos. The company's work has caught the attention of the likes of car manufacturer Porsche and mass media company ProSiebenSat1, who are making increasing use of panorama techniques and VR storytelling. Headtrip was responsible for the first VR live stream of German league soccer, and it has developed software that allows up to 1,000 people in a single room to watch a movie on their VR glasses at the same time.

↳ www.headtrip.rocks



Headtrip's "Dome Projection" allows viewers to watch 360-degree videos without having to wear VR glasses.

06



The stock market coach

Nextmarkets, run by brothers Dominic and Manuel Heyden, provides everyone from novices to stock market experts the knowledge they need to multiply their assets. Established trading professionals offer real-time insight into their own strategies, furnish information and give advice to ensure that Nextmarkets users' portfolios remain profitable. If this sounds like a good idea to you, you're not alone. U.S. financial guru, PayPal's Peter Thiel, recently invested in the startup.

↳ www.nextmarkets.com

FULL SPEED AH

Many technologies currently being developed in Cologne have the capacity to change our lives – and the climate. Some examples

07

Phones come full circle

Currently, 100 million mobile phones are stashed in drawers across Germany, keeping large quantities of valuable resources like copper, silver and gold out of reach. **Mobile-Box** aims to change that. Since 2012, it has been collecting old mobile phones at return points across the country in order to recycle them. The reclaimed metals are used in new phones and other electronic devices. Also, for each phone donated, Mobile-Box gives €1 to environmental projects.

↳ www.mobile-box.eu

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Pedal medals

The **Radbonus** app rewards cyclists for their efforts. With each kilometer they cycle, users collect bonuses that they can turn into discounts or vouchers for things like bike accessories, clothes, furniture or hotel stays. The service is free of charge, and users don't even need to sign up. What's more, anyone who covers a prescribed distance in an allotted time period automatically takes part in additional prize drawings. Founders Nora Grazzini and Christoph Lippert: "Cycling is a way to actively protect the climate, is healthy and good for the healthcare system and places much less of a burden on towns and cities than other modes of transport. Radbonus honors cyclists for their contribution – with something everyone is happy to receive: money."

↳ www.radbonus.com

09

Decision aid

Each year in Germany, around 70,000 women develop breast cancer. Many patients find themselves unsure about whether or not to have chemotherapy. Sividon Diagnostics offers a gene expression analysis tool, **EndoPredict**, that helps women make that decision. The test looks at eight disease-relevant genes to determine the molecular fingerprint of the tumor and compares this with clinical data on tumor size and nodal status in order to predict the risk of relapse with the next ten years.

↳ www.endopredict.com



HEAD

Rimasys is revolutionizing trauma surgery by breaking bones. Mechatronics engineer and biomechanist Marc Ebinger and his team have developed a unique machine that inflicts realistic bone fractures on human closed soft tissue. A high-speed camera films the process, allowing the specialists to reconstruct the chronology of the tissue damage and detect whether the break is horizontal or vertical. Before, surgeons practiced on artificial bones. However, because these aren't attached to real muscles and nerves, they don't accurately reflect reality, meaning that until now, many surgeons only learned exactly what to do when operating on an actual patient for the first time.

↳ www.rimasys.com

Powerhouse

The ambitious goal of **Next Kraftwerke** is to supply the whole of Germany with energy from 100 percent renewable resources by 2050. As a certified power trader on various European stock exchanges, Next Kraftwerke is one of the biggest distributors of green electricity. Its idea is to link thousands of small and medium-scale power-producing and power-consuming units so that operators of biogas, wind and solar power facilities can sell their electricity flexibly according to demand and for a profit. This saves money for consumers and supports Germany's transition to renewable energy.

↳ www.next-kraftwerke.de

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COLOGNE
TEL AVIV

Almost a year ago, Tel Aviv and Cologne entered into a **digital partnership**. In the following interview, **Miri Danai** of Israeli innovators' community SOSA and **Stefanie Weidner** of Cologne-based Solution Space explain how founders and companies in both cities can benefit from the partnership

Interview David Mayer

Cologne and Tel Aviv have been sister cities since 1979. How did the additional digital partnership come about in early 2016?

MIRI DANAI: Digital technologies play a big role in both cities. Tel Aviv has an enormous network of startups specializing in digital technologies. In Cologne, on the other hand, there are many big companies and industries that are desperately seeking new solutions in the face of the digital transformation. We see our partnership as an opportunity to build bridges, forging a mutually beneficial relationship.

STEFANIE WEIDNER: Conversely, our relatively young startup scene can learn a lot from startups in Tel Aviv.



Miri Danai has worked for SOSA (South of Salame) since April 2016. SOSA is a global network of investors, entrepreneurs, researchers and several thousand startups. Thanks to a database that stores comprehensive details of all its members, SOSA can find partners that ideally complement one another. It also provides expert advice to help startups in the foundation phase.

Are the differences between the two locations really that big?

WEIDNER: In some senses, yes. I am impressed by how closely the community there works together. We have a lot of dedicated business founders, but many of them prefer to fly solo. Apart from that, founding a business is an integral part of the Israeli culture. And the startups there conceive their business models internationally from the very beginning.

DANAI: That's right. Because our market is relatively small, Israeli business founders nearly always have to take a global perspective and ask themselves where their technologies might be particularly in demand. At SOSA, we specialize in bringing startups and established companies into contact. Our next step is getting to know Cologne-based companies better in order to understand what kind of innovations they're looking for.

How exactly can Cologne's startups benefit from the partnership?

DANAI: For instance, young tech startup founders from Cologne can visit us anytime. We offer them a workspace, and perhaps more importantly, contact to investors, coaches or researchers they can collaborate with to optimize their business model or technology. If possible, we also foster collaboration by introducing them to company founders with a similar background.

WEIDNER: I really recommend the trip. In Israel there are many more co-working spaces, with a more professional atmosphere than here. Investors put a lot of money into chains of people, which has allowed for the creation of extensive networks. That can be an important economic factor for startups, one that we also aim to strengthen here in Cologne.

"We made friends immediately."

DANAI: Despite our differences, we were thrilled to welcome the delegation from Cologne. We got to meet many creative, ambitious, fascinating people. We made friends immediately.

You're both involved in the digital partnership as mentors alongside more than 40 others. What does being a mentor involve?

DANAI: If a founder or entrepreneur from Cologne or Tel Aviv is interested in establishing contact in the partner



At innovation center Solution Space, **Stefanie Weidner** works under a single roof with artists, creative individuals and entrepreneurs. Solution Space actively supports the developments of its "residents." Team members also organize meetings, debates and conventions – most recently for Cologne's city government on the topic of mobility.

city, they can come to us at any time. We also look after the guests who visit us from the other city.

WEIDNER: For instance, this fall, a young man who founded a sports betting startup plans to visit Tel Aviv, and we're supporting him in this venture. I also plan to return to Israel this November to strengthen some contacts.

What do you like best about your work?

WEIDNER: I like working with people who want to create something new. They exude an incredible amount of energy. In Cologne, for instance, I supervised a startup that wanted to arrange accommodation for refugees with private households – a kind of free Airbnb.

DANAI: I like the fact that in Israel we're very tolerant of failure. If someone founds their first startup and then realizes it's not going to work out, it's considered perfectly normal. Such a failure is no reason to give up on the dream of running your own company.

What makes you envy each other?

WEIDNER: Tel Aviv is in the perfect location; it's so close to the sea. After work you can pop down to the beach and have a quick swim.

DANAI: Cologne is perfectly situated in the middle of Europe. And you're so much better at soccer!

↳ www.dip.cologne

Gemeinsam Ideen groß machen.

Besuchen Sie uns vom
7.-9.2.2017 auf der Start-up-
Plattform „Innovation“
bei der E-world in Essen.



RheinEnergie

Da simmer dabei.

ENERGY 4.0

Fresh ideas sought

How can I network my home more effectively? Where do I charge my e-car? And what does an innovative residential quarter that links renewable energies, local heat, energy storage and car sharing with each other look like? These and many other questions regarding future topics and digitalisation will be intensively discussed in the RheinEnergie innovation lab.

The energy future – which has long since started – depends on fresh, innovative ideas. Energy transition and digitalisation are radically changing the energy industry, and RheinEnergie is helping to shape it. One example of such a fresh innovation is “Chargecloud”, an easy to operate charging & billing system for electric vehicles that would like to make an energy career as a joint venture.

Joint ventures are good formats for the development and market introduction of new digital applications in the energy industry. It involves the perfect mixture of young, dynamic doers and solid industry experts with a clear compass and open horizon.

RheinEnergie has 3,000 employees, and is based in Cologne, the centre of its corporate life. It is responsible as the energy and drinking water supplier for over two million people in the Rhineland, and is among the top addresses in the industry. The energy service provider is confident of the new possibilities of consumer-oriented energy supply: sustainable, intelligent, digital. As the “SmartCity Cologne” initiative shows, whole megacities are a field of experimentation which the City of Cologne has launched together with RheinEnergie.

Anyone who would like to learn more about RheinEnergie present new, promising energy ideas should please contact:

↳ Georg Tillmann: +49(0)221/178-3489 or g.tillmann@rheinenergie.com

↳ Tobias Georgi: +49 (0)221/178-4723 or t.georgi@rheinenergie.com

Or meet us at the “Innovation” start-up platform from 7 – 9 Feb. 2017 at the E-world trade fair in Essen.



Tech pioneer, startup mentor, visionary app developer: Cologne-based entrepreneur Mehrdad Piroozram (45) is a veteran of the digital scene. We asked him about hot, new developments and future challenges

By Yorca Schmidt-Junker

A Man of Action

As soon as we meet at the Wertheim co-working space, Mehrdad Piroozram lets me know, "I care about content; as a person I am entirely uninteresting." He isn't fishing for compliments: he has been more involved in digital content than almost anyone else. It's much harder to get at the man behind it all.

Born in Tehran, Piroozram came to Cologne at the age of eight. He became interested in computers at an early age, and in 1990 started work as a mainframe computer programmer at Kaufhof AG. At a time when the internet was just getting off the ground, Piroozram recognized its potential and became aware of the new working and sales structures it would herald. In 1995, he founded his first business, his very own internet provider Pironet. He was soon developing business models for web agencies and produced his own software, a content management tool for website administration. Pironet went public in 2000, guaranteeing Piroozram financial independence. "Money was never my motivation," he says. "The only luxury I afford myself is that of always stating my opinion. Even if that gives me a reputation for being difficult."

For the past 13 years, other people have benefitted from Piroozram's clearly stated opinions. His company iSteps App Ventures fosters startups and helps app-oriented young entrepreneurs. As a "business angel," he offers advice, capital and know-how. And he holds no punches: "Early phase financing is a risky time for projects. But that's mainly down to the team, not the product. A project can only be successfully implemented

if the team really works." He currently sees the most potential in insurance technology – abbreviated as "InsurTech": "For historical reasons, insurance is very sluggish and inefficient because it is still strongly fixated on the policy process. New technologies, apps, blockchains and machine learning will enable us to optimize and speed up processes." In cooperation with startups he has supported, Piroozram intends to move away from the backward-looking, inflexible data pools used in insurance and instead focus on real-time data generated by the insured people themselves, via the internet of things or wearables, for instance. In this way, he hopes to offer clients tailored, future-ready products and tariffs.

Despite his passion for new technologies, Piroozram is also very aware of the risks of big data developments, particularly where artificial intelligence is involved: "We are on the threshold between the information age and the age of knowledge. That presents us with both mental and work-related challenges. The machines and providers who stockpile knowledge will have gigantic competitive advantages and might come to occupy a monopoly position. That's very dangerous. The machines will be far superior to us in terms of

accumulating and processing knowledge and data." And thus Mehrdad Piroozram, the man who has always embraced technological developments, becomes a man who advises caution. And that makes him, after all, an entirely interesting – and relevant – person.

↳ www.isteps.de



A Cologne pioneer: Mehrdad Piroozram on Brüsseler Straße

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In safe hands

For insurance brokers, it isn't always easy to find a tailored solution for clients from among the wide range of insurance options available. This is where the **Virado** app comes in. It allows brokers to quickly and easily find policies for items that aren't generally included in home contents insurance – such as smartphones, tablets and e-bikes. There's even backpacker travel insurance for young globetrotters. Partners of the app include insurance groups HanseMerkur and Münchener Verein.

↳ www.virado.de



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Wanted: Dream job seeks perfect applicant

Platform **Talents Connect** aims to create perfect matches. Its recruiting and management system brings together companies and applicants who are ideally suited. It spares people who are entering the job market from having to trawl through dozens of job ads, instead enabling them to simply enter where and how they would like to work so that they can apply for suitable vacancies with their preferred employers at the click of a mouse.

↳ www.talentsconnect.com

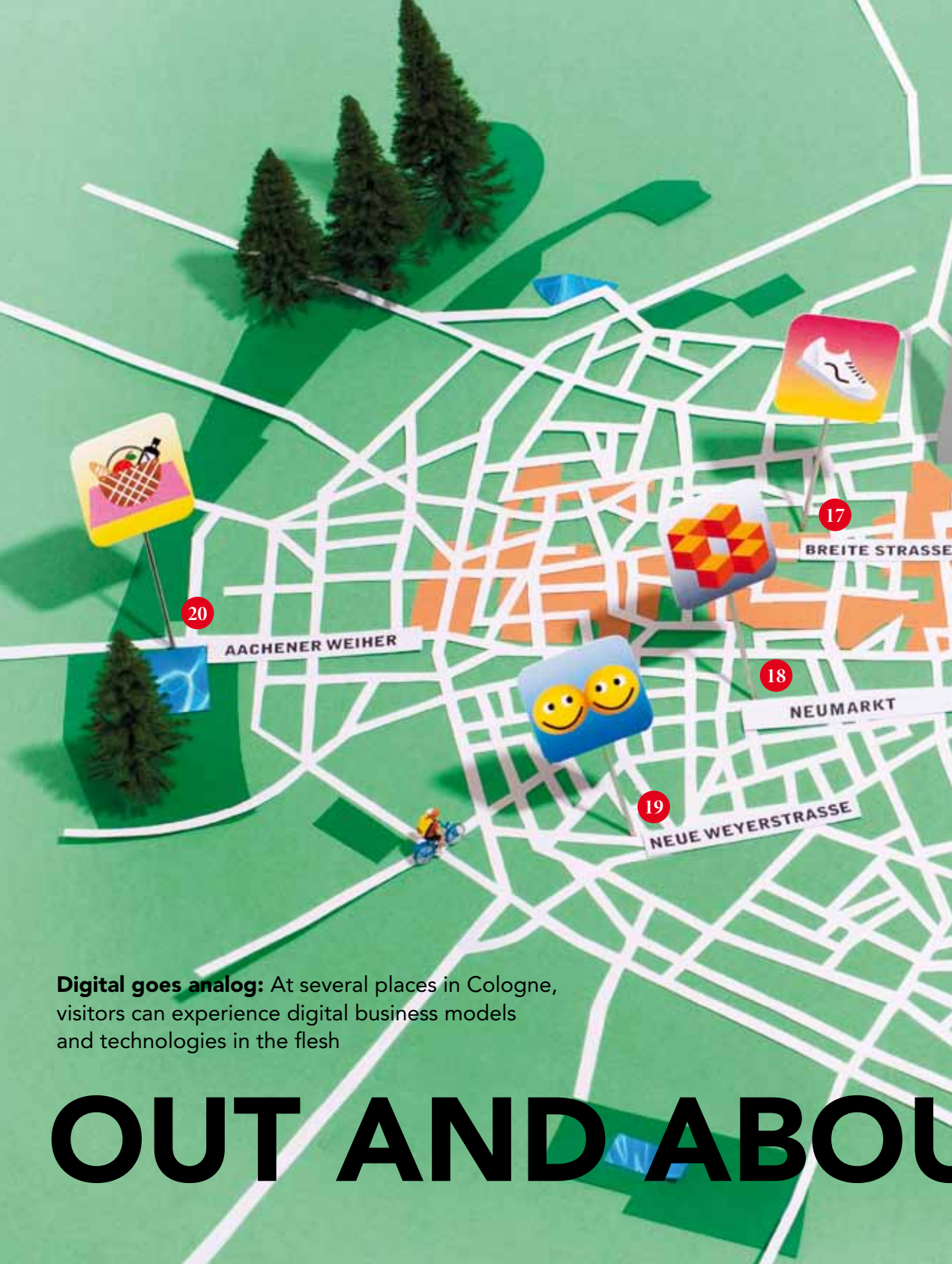
Parking made easy

Trying to find a parking space is one of the most demoralizing activities of the average city-dweller. With the **evopark** app, you can quickly and easily find a free parking space, not only in Cologne but anywhere in Germany. Thanks to an accompanying chip card, you can also park without needing cash, drive through parking barriers without having to get a ticket and enjoy exclusive discounts. And the best thing about it? Both app and card are free of charge.

↳ www.evopark.de

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Digital goes analog: At several places in Cologne, visitors can experience digital business models and technologies in the flesh

OUT AND ABOUT



Copy: Yorica Schmidt-Junker, Photo & artwork: I LIKE BIRDS

Analog shopping

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Although Zalando's founders are from Berlin, the capital for Germany's best-known online fashion store came from Cologne. The Samwer brothers of Rocket Internet invested in Zalando, which started out as an online store in 2008. Now, it is returning to the city on the Rhine with the **Zalando Outlet Store**, a physical shop selling clothing and shoes from more than 500 brands with price reductions of up to 70 percent.

Zalando Outlet Store, Breite Straße 80–90,
↳ www.zalando-outlet.de

3D printing for all

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At Cologne's municipal library **Stadtbibliothek Köln**, users can create the specific objects they want, such as a keychain or an urgently needed spare part, on a 3D printer. A special scanner transforms CAD files into three-dimensional objects – completely free of charge. Library users can learn more about 3D printing in workshops every Tuesday and Thursday at 5 p.m.

Stadtbibliothek Köln, Neumarkt,
↳ www.stadt-koeln.de

Office relationships

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Flexible working hours and interaction with other creative minds generate new ideas and trigger success.

Headquarter[s], a stylish new co-working space between Neumarkt and Barbarossaplatz, offers 42 workstations, "flexible desks" or "one-team offices" and designer furnishings. It also has an exciting program of evening cooking events, cross-sector get-togethers and lively discussions.

Headquarter[s] services, Neue Weyerstraße 2,
↳ www.hq-cologne.com

The best breakfast

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On weekends, **EarlyTaste** brings breakfast to you within 30 to 45 minutes. Start your Saturday or Sunday with a "Fitness" breakfast of a mango smoothie and fresh fruit salad, or perhaps a "Viking" breakfast including a tasty bagel topped with organic salmon. EarlyTaste also runs a pick-up point at Aachener Weiher for all who fancy a spontaneous early picnic in the park: just enter the zip code 100 when placing your order online, and then enjoy al fresco dining with a view of the inner-city green belt, the lake and the Museum of East Asian Art!

EarlyTaste pick-up point, Aachener Weiher,
Universitätsstraße / Dürener Straße
↳ www.earlytaste.de

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Fashion with a conscience

For many years, sustainability and fashion seemed to be irreconcilable concepts. But in 2007, Cologne designers Anton Jurina and Martin Höfeler founded **ARMEDANGELS** and proved that that simply isn't the case. These pioneers of green fashion show that impressive design is actually hugely compatible with conserving resources, using renewable materials and trading fairly. Their approach has made ARMEDANGELS one of Europe's most successful young eco-fashion labels.

↳ www.armedangels.de



The children's video game "Leaves," created by students Niklas Tomkowitz and Rick Hoppmann, received a prize at the 2016 German Video Game Awards.

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Serious play

Computer games are a multi-billion-dollar business. In Cologne, their potential was recognized early on, and in 2010, technical university TH Köln founded **Cologne Game Lab (CGL)**, which developed the Game Development and Research master's program. In the meantime, CGL has become a national hotspot and think tank for students, researchers and professionals in the gaming industry. Their mission is to shape the future of interactive content.

↳ www.colognegamelab.de

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Click before you cook

For anyone too busy to buy groceries, the app from Cologne-based retail giant **REWE** is just the ticket. It allows you to order everything you need quickly and easily, and then either have it delivered or pick it up from a store of your choice. REWE offers additional services such as a wine portal, a beef store, gourmet tips and recipes. The company wants to become the market leader in online grocery shopping. As Chief Digital Officer Jean-Jacques van Oosten says, "REWE is aiming to write history with this app."

↳ www.rewe-digital.com

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Taking the weight off

The founders of ergobag have received numerous awards for their sustainable and stylish school satchels. The ergonomically designed backpacks, which take the burden off of children's shoulders, have been a huge hit. **ergobag** school satchels and original accessories are available on the company's own online shop and in 1,000 retail outlets in Germany as well as throughout Europe and in Korea, the United Arab Emirates and Mexico.

↳ www.ergobag.de



INTERVIEW

Can 3D printers cheaply and conveniently make spare parts even for space rockets? We asked **Prof. Pascale Ehrenfreund**, Chair of the Executive Board of DLR, the German Aerospace Center, headquartered in Cologne



Interview Benedikt Warmbrunn

Prof. Ehrenfreund, what role does 3D printing play in the construction of rockets?

3D printing is still a newcomer in the field of production technology. At the moment, it's difficult to predict what it will be capable of in the future. But we're already developing 3D-printed components for launch vehicles.

How does the printing process work?

We use 3D printing to create metal components, and we are concentrating in particular on the "powder bed fusion" technique. It involves a laser being selectively directed onto a thin layer of metallic powder that fuses into the required component. Then the laser is lowered and the process is repeated layer for layer until the part is complete.

What are the advantages of the process?

Thanks to 3D printing, we can manufacture relatively delicate components with a high surface quality. However, with the 3D printers currently commercially available, size is limited.

What specifications do 3D-printed rocket components need to fulfill?

Most important is reliability under conditions in outer space – for example, high temperatures and strong radiation. This reliability has to be assured for the component's entire lifecycle. That's why series manufacture of high-quality components will require thorough knowledge of the entire process chain.

What can already be produced this way?

For example, there are smaller, structural parts like the clamps used to attach cables and pipes. Then there are the highly integrated components of rocket engines, such as injection heads. 3D printers obviate the need to manufacture a variety of components that once needed to be made manually.

When will the components be used for the first time?

We hope to develop a 3D-printed clamp for the European *Ariane 5* launch vehicle. The technological preparatory work is already finished. If the plan is approved, it could be ready for use in around two years. For more widespread use, our target would be 2020.

Is it conceivable for an entire rocket to be produced by 3D printers?

Simply because of the dimensions involved, for the foreseeable future, a rocket of that kind will remain science fiction.

↳ www.dlr.de

IMPRINT

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