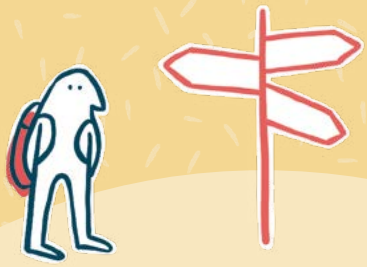
ESTABLISHING A *university spin-off*

A PRACTICAL GUIDE FOR RESEARCHERS



STARTUP HUB NEUDELI

At your side from the initial idea to company establishment

We support you on your journey from the initial idea to self-employment with our expertise in entrepreneurship and innovation. The startup hub neudeli provides individual support tailored to each startup phase. We facilitate an active exchange with the regional startup scene through cooperations and regular networking events. In addition, we offer office space and workshops in our startup villa at Helmholtzstraße 15 in Weimar free of charge during the pre-seed phase.

We believe that the interplay of science, art and technology at our university has tremendous potential for innovative and creative business ideas that make our lives both more sustainable and more enjoyable!

startup hub neudeli

Why is our startup hub even called »neudeli«?
The startup hub owes its name to a fine art project that was completed at the former premises of a delicatessen known as the »**Neu**e **Deli**katessen«, which is located at the heart of Weimar. It was subsequently converted into a workshop with exhibition space for artistic projects. High demand for support and advice on self-employment and starting a business was rapidly discerned. And so it was that the idea for the startup hub neudeli was born. To this day, the villa in the Südstadt district of Weimar continues to offer space for the realisation of ideas and a diverse community for a creative exchange across all disciplines.

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A PRACTICAL GUIDE FOR RESEARCHERS

neudeli

Bauhaus-Universität Weimar

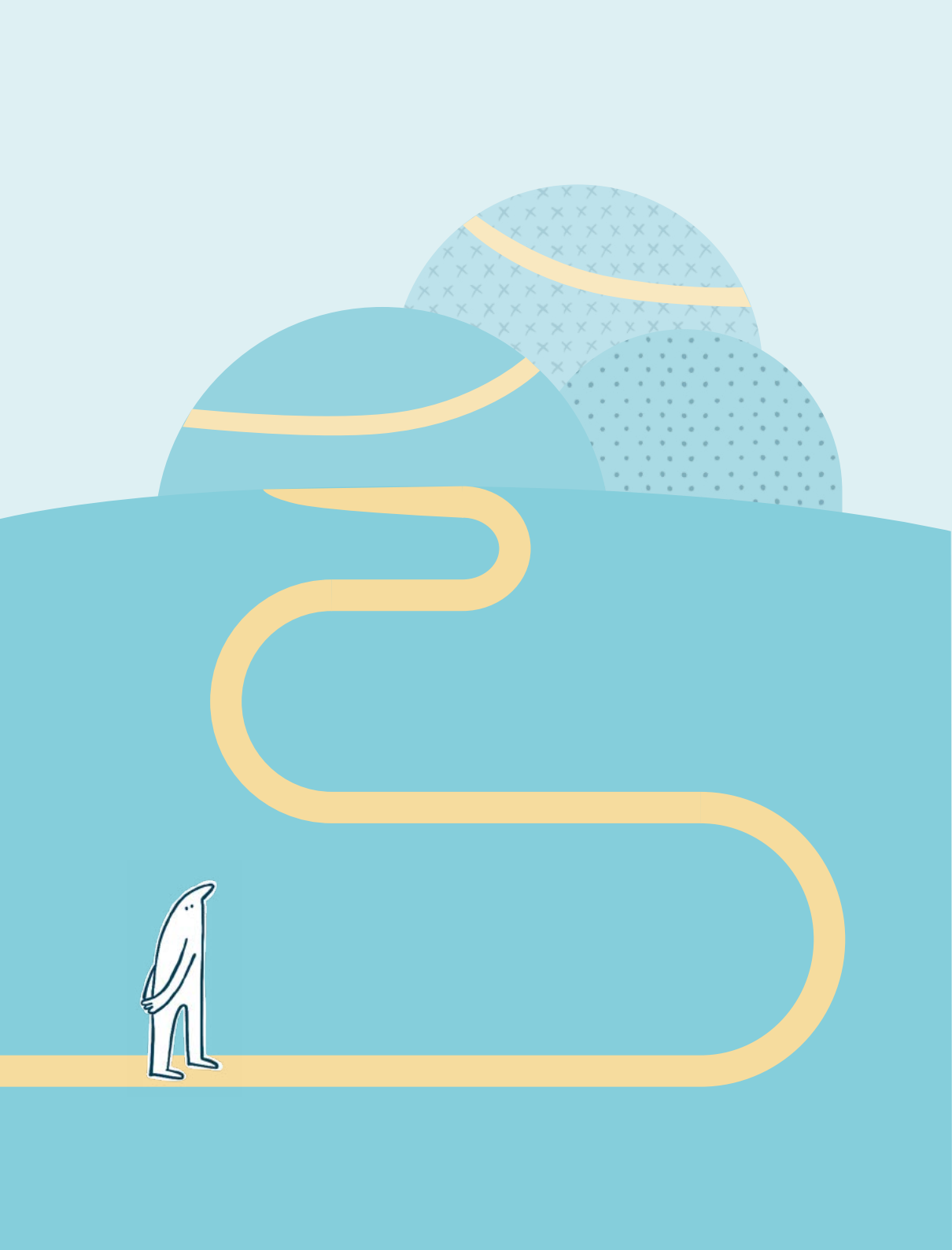
Fore-word

Whether an MP3 player, an electric jet or a high-speed X-ray detector, scientific inventions and researchers who have commercialised their technologies are often behind successful products. Your research findings might also have the potential for a spin-off. Many questions must be answered before you brave the transition from university to self-employment though: Do I even have the personality for it? What market opportunities exist for my technology? How can I protect my idea? What skills will I need in my startup team? How can I develop a viable business model? And last but not least: What funding programmes and financing options are available for research-based spin-offs?

This workbook aims to help you answer both these and countless other questions. It brings together relevant information and the details of useful contact points, along with helpful tools and space for your own notes. This workbook can thus be your constant companion on your journey to self-employment.

We wish you an enjoyable time – and plenty of inspiration while reading and working through it!

Your team at the startup hub neudeli



1

SELF-EMPLOYMENT

Is it for me?

For researchers, setting up a company is a promising yet challenging alternative to the traditional career route as an employee. Have you ever thought about becoming self-employed or asked yourself the following questions?

Am I fascinated by the idea of setting up a company? If so, why?

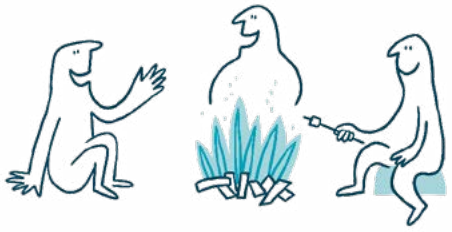
Which of my ideas and/or research findings could potentially be used for a startup?

To what extent does self-employment suit my personal life situation?

Am I prepared to make risky decisions? How important is security to me (secure income, pension, etc.)?

Am I a team player? Are there people
I can imagine establishing a startup with?

Do I need financing or do I have sufficient
startup capital of my own?
What funding programmes am I aware of?



PRACTICAL INSIGHTS

Between science and startup

What does venturing the startup path mean for researchers? Assistant professor Dr Alexander Hollberg, Dr Christiane Rößler and Dr Alexander Kulik talk about their journeys to self-employment (and back again) and explain why closer links often exist between science and business than one might expect.

Research and startups – same same, but different

Dr Alexander Hollberg
studied civil engineering at the Technical University of Munich (TUM). He came to the Bauhaus-Universität Weimar in 2009 for the master's programme in archineering and set up his first company, »vonPappe«, while he was still studying for his master's degree. In 2016, Alexander Hollberg completed the oral defence for his doctoral dissertation on the parametric life cycle assessment of buildings. He established CAALA the very next day. The startup develops and distributes the first plug-in for energetic, ecological and economic building optimisation. Following a stint at ETH Zurich as a postdoctoral researcher, Alexander Hollberg is now an assistant professor of sustainable construction at Chalmers University of Technology in Sweden.

You completed your doctorate at the Bauhaus-Universität Weimar in 2016 and became a co-founder that same year of the startup CAALA whose technology is based on your research. You subsequently returned to science some time later. What led you to this decision? The decision to accept a postdoc position in Zurich was initially mainly a financial one. The salary was high compared to Germany, which allowed me to make ends meet with just this part-time job, to have time for CAALA and to also pursue my research in the field of life cycle assessments. Findings from the scientific work could then be incorporated back into the software.

The fast-paced ups and downs of startup life, the countless pitches, networking events and investor meetings were utterly fascinating and I learned a great deal.

However, I realised after a while that it just wasn't my world and that I felt far more at home in the bubble of a university. What's more, most of the development work at CAALA that was based on my research had been completed by that time. I could only make a limited contribution to distribution and marketing of the software – and had the feeling that others were better at that than me.

Germany is one of the top locations for outstanding research. Yet at the same time, spin-offs from science are rare. Why do you think this is? There are undoubtedly a great many reasons for this. Generally, I would say that the much-discussed »fail culture« mentality still doesn't exist in Germany. Most startups simply don't come to anything. The fear of failure still deters many researchers. Our society is also far more averse to risk than American society is. While that is not necessarily always a bad thing, it isn't conducive to innovation and entrepreneurship. In terms of the university world, I would say that there are still too few role models and events for students. I attended my first entrepreneurship seminar during my Erasmus stay in Barcelona. These days, there are countless great initiatives; it will probably take a while for them to become visible in the form of startups though. After all, there are still only very few female entrepreneurs. If we could get as many women to establish startups as men do, then the number of startups would almost double!

What do you particularly appreciate about your work as a researcher? The freedom. I can more or less do what I want and it never gets boring. I never lasted longer than six months in a salaried job outside of a university. This freedom is also possible within a startup though. I found the pressure from investors and the requirement to sell too much in the long run though. There's also pressure within science to raise research funds, but personally I don't find this as intense.

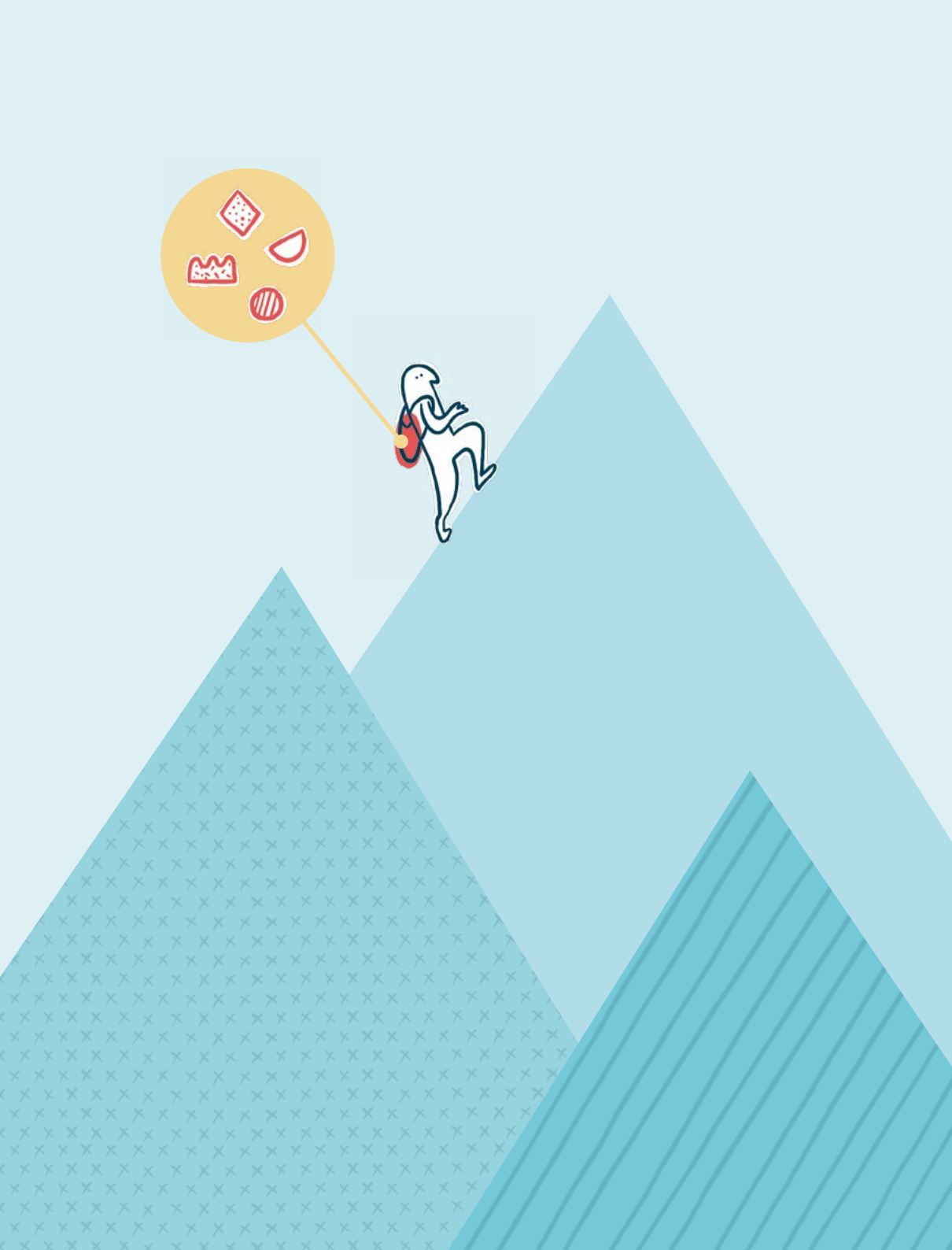
What would be your tips for researchers interested in starting their own business? Just do it! Many researchers tend to question all of the details and want to do everything very precisely. While this is by all means necessary in science, I think that in startups success can only come through trial and error, failure, learning and then moving on. We have received thousands of hours of coaching and mentoring and read countless clever books. This is of course helpful, but ultimately the only way is to try things out for yourself – and this often means failing on your first attempt. Hence it's better to try out lots of different things very quickly, rather than to spend too much time overthinking them. Us scientists have the advantage that we are often used to failure and to »dry spells«, and are good at identifying alternatives. I see this as a good basis for also having sufficient stamina for a startup to survive difficult times and ultimately succeed.

For me, the greatest reward was seeing that the findings from my doctoral dissertation could be transferred to real life and not merely gather dust in an archive.

For me, the greatest reward was seeing that the findings from my doctoral dissertation could be transferred to real life and not merely gather dust in an archive. The experience I gained at CAALA now also helps me to develop research proposals, find research partners and cooperate with industry. So a startup is certainly a valuable enrichment to any scientific career.

CAALA
UNLOCKING SUSTAINABILITY

Industry:	Software development
Headquarters:	Munich
Company launch:	December 2016
Website:	www.caala.de

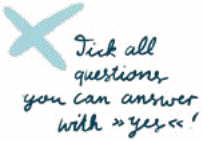


2

THE ENTREPRENEUR PERSONALITY

What qualities do I need?

In addition to the business idea, a favourable startup climate and good preparation, your personality is one of four essential pillars for a successful startup. Do I have the personality for it? You don't need to be able to immediately answer this question with »Yes« or »No«. It's more about recognising the challenges you'll face as a company founder. What are your strengths and where do you still see a need for action? The following checklist will help you to answer this question. The more boxes you tick, the likelier it is that you meet the requirements to successfully establish a startup.



Your attitude to self-employment

- Are you certain that you aren't establishing a company out of necessity, but rather because you're convinced that self-employment is for you?
- Are the goals that you wish to achieve with your self-employment realistic?
- Have you thought your business idea through well and are you convinced of its chances of success?
- Will you be able to take enough time to prepare to launch your startup?
- Are you able to form a realistic picture of your future daily life as an entrepreneur?
- Are there any entrepreneurs in your personal network (e.g. in your circle of acquaintances/friends)?

Your personal requirements

- Are you physically and mentally resilient?
- Are you healthy and physically fit?
- Do you make sure you stay fit?
- Have you discussed with your family what would change for you if you became self-employed?
- Does your family have your back?
- Are you prepared to work more hours than is the norm (including evenings and weekends), especially in the first few years?
- Are you prepared to go without holidays in the first few years?
- Can you keep a cool head, even when things get hectic?
- Can you recover quickly from stressful situations?
- Do you actually implement the goals you set for yourself?
- Do you also address less pleasant issues and attempt to resolve them?

- Do you see setbacks and disappointments as challenges to do better next time?
- Do you have the impression that you grow with your tasks?
- Do you seek help when you cannot solve a particular problem yourself?
- Can you accept criticism without being put off by it?
- Have you experienced that you've learned from your mistakes?
- Do you know your personal limits and your capabilities?
- Are you able to weigh up the pros and cons of risks and reach decisions based on these?
- Do you have personal contacts that you can also draw on during your self-employment?
- Do you like to approach people?
- Do you have the impression that you can convince those you're speaking with of your arguments and inspire them with your ideas?
- Are you good at putting yourself in other people's shoes?

Your attitude to money

- Can you sleep easy even if you don't have a fixed income?
- Would you be willing (and able) to limit yourself financially in the early days?
- Are you disciplined when it comes to money matters and can you build up reserves (e.g. for loan repayments, taxes), even if you initially have to forego new purchases (e.g. new car, new desk)?
- Have you informed yourself of the financing options?
- Do you already have a good relationship with your account manager at your bank?

- Do you have financial reserves to bridge an initial lean period (approx. six months)?
- Could your partner cover your joint living expenses in the early days?

Your professional expertise

- Does your professional work to date fit with the project and sector in which you wish to become self-employed?
- Do you have demonstrable qualifications to convince others that you're a »master of your craft«?
- Are you competent in the computer software commonly used in your industry?
- Do you know what you can do and, above all, what you cannot?
- Can you compensate for lacking skills (e.g. through training, partnerships, staff)?
- Are you familiar with the future forecasts for your industry?
- Do you ensure that you're always up to date with the advances in your field?

Your entrepreneurial capabilities

- Do you have commercial or business management expertise and do you know, for example, how to prepare a profitability and liquidity forecast, what simple book-keeping involves and what an advance VAT return is?
- Do you know which regulatory/formal requirements you must fulfil?
- Do you have experience of leading and managing staff?
- Can you delegate tasks?
- Are you familiar with marketing and sales?
- Have you already conducted sales negotiations?

- Do you already have contacts with potential clients, suppliers and/or cooperation partners?
- Do you know what's important when deciding on a location?
- Do you know where to go for information and advice?

Source:
Federal Ministry for Economic Affairs and Climate Action
www.existenzgruender.de

The checklist can provide a preliminary indication of where your strengths and weaknesses lie. Don't worry if you can't answer all of the questions with a resounding »Yes« though. No one can be perfect in all areas. Extensive professional literature is available, along with a wide range of further training opportunities to help you further yourself personally and/or professionally. Business and personality coaches can also provide invaluable assistance to help you develop your entrepreneurial qualities.

Identify your strengths and weaknesses, opportunities and risks!

A SWOT analysis provides an up-to-date overview of all of the key factors influencing your startup. Identify your personal **s**trengths and **w**eaknesses for this, along with the **o**pportunities and **t**hreats that your environment harbours for your startup (also refer to the section on identifying and assessing market opportunities here).

1. Begin by describing the strengths and weaknesses of your personal situation. What speaks in favour of setting up a business (e.g. professional qualifications, management experience)? What speaks against this or what shortcomings will you need to make up for (e.g. lack of business expertise)?

2. The opportunities and threats relate to the market environment. What opportunities exist on the market for your project (e.g. growing demand, option of rapid market entry, new technological advances)? What risks does the startup bring with it (e.g. tough competition, difficult customer retention)?

You can use the SWOT analysis throughout the startup process (and beyond) – simply gradually fill in the matrix and continuously adjust the analysis fields as the situation evolves.

SWOT analysis

	PERSONAL STRENGTHS	PERSONAL WEAKNESSES
INTERNAL		
	MARKET OPPORTUNITIES	**MARKET RISKS**
EXTERNAL		

Six typical qualities that successful entrepreneurs possess.
Have fun solving the word puzzles!

P _ _ S I _ N

R _ S I _ _ E N _ E

_ N T R _ P R _ N E U R _ _ L

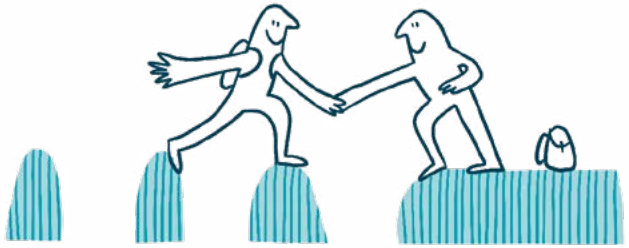
D _ I _ E

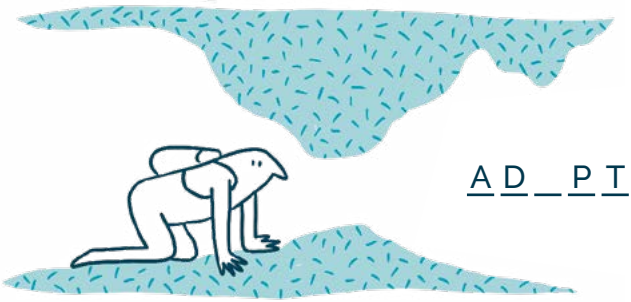
W_L_IN_N__S

_O T__E

R I__S

_RU_T





A D_P T_B_L_T_

Successful entrepreneurs are invariably passionate, resilient and proactive, too.
They can trust other people and are also able to adapt well to changing conditions.

3

ACHIEVING SUCCESS TOGETHER

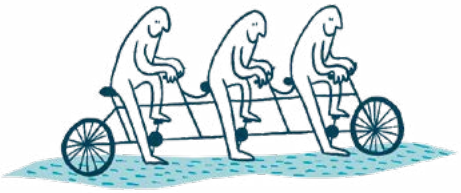
Working in a startup team

Diverse skills and talents are needed when establishing a startup. It's difficult for one single person to possess absolutely all of these. What's more, in innovative and technology-oriented projects, there's no standard recipe for solving new problems that may arise. An exchange and division of labour within a team can in principle allow challenges be resolved better and faster than an individual could. Not all teams are the same though – the composition is crucial to success. The team members not only need to have skills that complement one another, but must also harmonise in terms of their role perceptions and goals. For your startup project, you ideally need fellow entrepreneurs at your side, who fully support the business idea and share your vision.

Effective startup teams …

1 … possess complementary qualities and strengths.

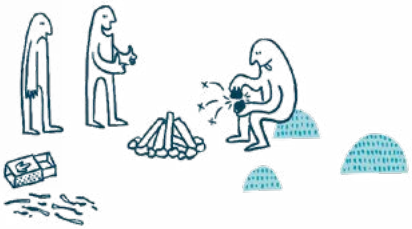
2 … share a common vision.



3 … comprise at least three, but rarely more than six people.

4 … react flexibly in the event of difficulties.

5 ... stick together – even in difficult situations.



6 ... don't give up if there are setbacks, but rather regroup to overcome obstacles on the second or third attempt.

Source:
McKinsey & Company (2010).
Planen, gründen, wachsen: Mit dem professionellen Businessplan zum Erfolg.

Strengthen cohesion with Team Canvas

Team Canvas is a tool that can help you to determine and flesh out your roles, goals and shared vision as a team. It also renders different expectations and values transparent.

See overleaf for the Team Canvas worksheet!

The Team Canvas

The key aspects we must discuss as a team to ensure that the collaboration is productive, satisfying and stress-free.

PEOPLE & ROLES

What are our names and the roles we have in the team?
What is the name of our team?

GOALS

What do we want to achieve as a team?
What are our main goals?
Are the goals feasible, measurable and time-bounded?

VALUES

What do we stand for?
What are our guiding principles?
What are the common values forming the core of our cooperation?

RULES & ACTION POINTS

What rules do we want to introduce after this session?
How do we communicate?
How do we inform each other?
How do we make decisions?
How do we work and evaluate what we do?

PURPOSE

Why do we do what we do?

PERSONAL GOALS

What are our individual personal goals?
Are there personal agendas that we want to identify?

NEEDS & EXPECTATIONS

What does each of us need to be successful?
What are our personal needs in a team to be able to give our best?

STRENGTHS & ASSETS

What skills do we have within our team that will help us achieve our goals?
What interpersonal/soft skills do we possess?
What are we good at, individually and as a team?

WEAKNESSES & DEVELOPMENT AREAS

What weaknesses do we have as individuals and as a team?
What should the other team members know about me?
What obstacles are we likely to encounter?

You'll find a template for the Team Canvas worksheet to copy and/or fill in on the inside of the back cover flap

Source:
The Team Canvas
Alex Ivanov (www.theteamcanvas.com)

Networking, networking, networking!

For entrepreneurs, partnerships and a solid network are key to success: Beside suppliers and customers, these can for example include universities, venture capitalists and business angels. These stakeholders are on the one hand important innovation drivers, as they provide feedback early on that you can use specifically to develop your startup idea and business model further. On the other hand, they are often essential providers of capital or knowledge and multipliers, and thus play a decisive role in successful development of your startup.

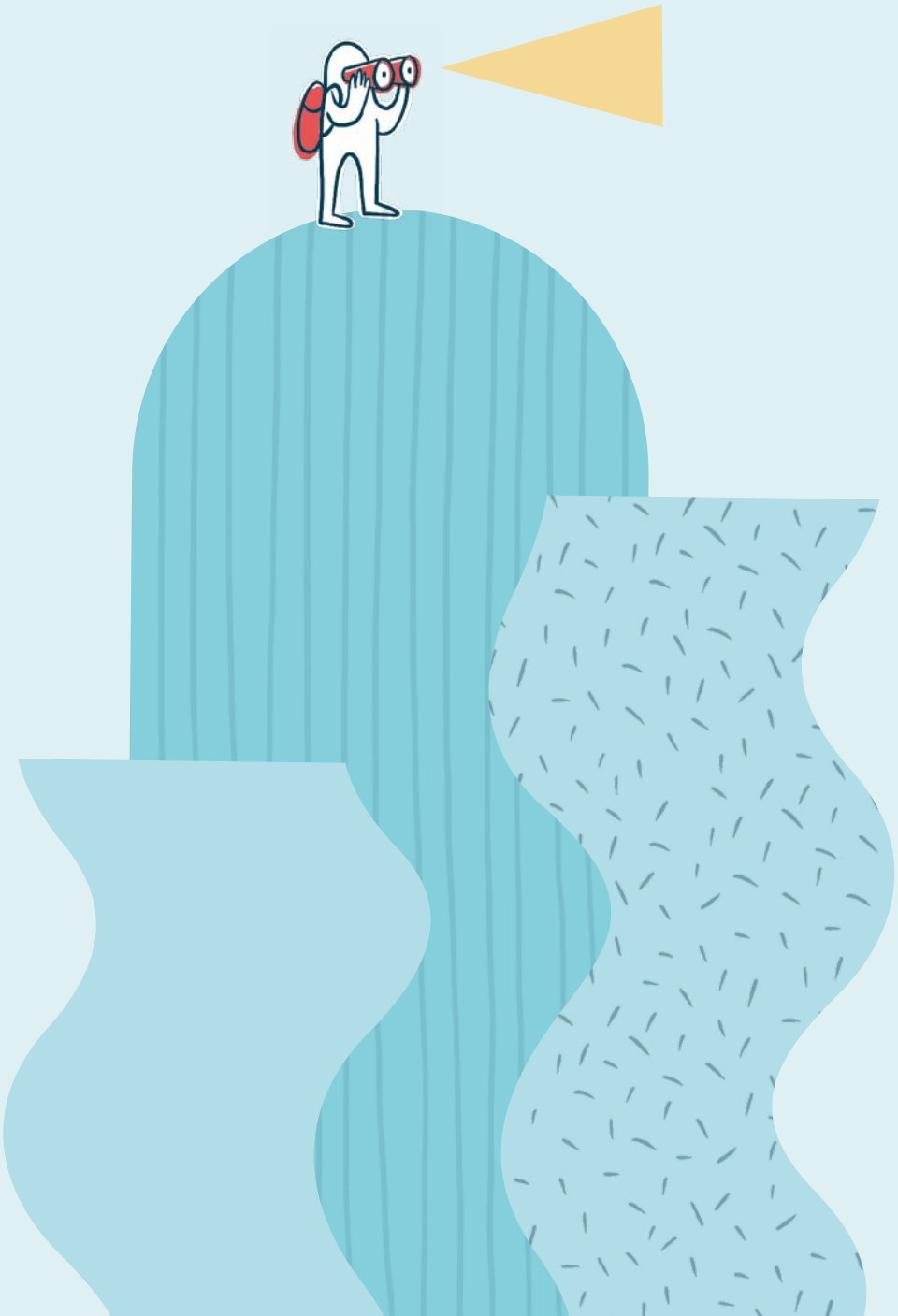
Venture capitalists (or VCs for short) are investors, who are prepared to take risks and help to finance fledgling companies.

Business angels are private persons who support entrepreneurs financially and also share their entrepreneurial expertise during the startup phase. They are often wealthy individuals, who run a business themselves and have a large network.

Five tips for networking

1. **Choose your networking events carefully!** Which contacts can you make there?
2. **Think about who you really want to talk to beforehand!** What can you already find out beforehand about the people due to attend the event – via their LinkedIn profiles, for example? Be sure not to forget your business cards!
3. **Attempt to establish contacts at associations and organisations,** who can introduce you to prospective clients.
4. **Network with industry experts,** who are familiar with your target market and can gauge your idea's potential.
5. Even if everyday life is stressful when you have a startup, **be sure to maintain your network of contacts.** It's well worth investing in CRM software to document your contacts and discussion topics to ensure you don't lose track.

CRM stands for »customer relationship management« and involves managing interactions with current and prospective clients.



4

IDENTIFYING AND ASSESSING MARKET OPPORTUNITIES

Does my idea have potential?

Are there markets in which the findings from my scientific research could be useful? Which possible applications and uses are even conceivable? Who are prospective customers and which competitors already exist?

Identifying and assessing market opportunities is the first step in determining the business potential of your idea or research findings!

Begin by answering the following questions:

What are the characteristics and advantages of my idea/technology?

What possible applications and uses are there for my idea/technology?

In which sectors or markets are these possible applications and uses?

In which direction will the sectors or markets develop? What will be the important trends in the coming years?

What requirements does the target group make of a potential product or service?

Feel free to contact us to arrange an individual appointment to discuss your ideas and the market opportunities for your technology with us!

startup hub neudeli

Telephone +49 (0) 36 43 / 58 39 24

Email neudeli@uni-weimar.de

neudeli toolbox

Do you want to move forward with your startup project, but lack suitable methods and templates for this? Our neudeli toolbox contains a variety of digital resources to help you take a structured, practical approach to the huge topic of innovation. Simply register with us to access to our toolbox.

5

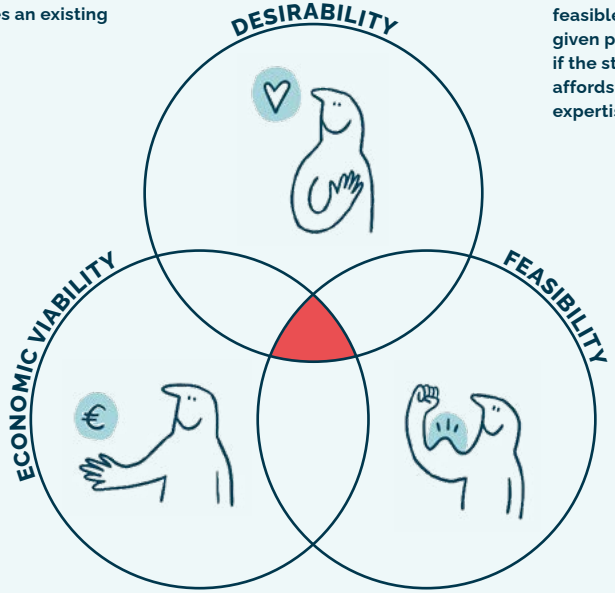
DESIRABILITY, FEASIBILITY AND ECONOMIC VIABILITY

Three perspectives on innovation

Innovation essentially means that something is »renewed«. This renewal not only refers to ideas or inventions, though, but also to the commercial success of the product or service emerging from an idea. For an idea or invention to become an innovation, it must strike a balance between three aspects:

Desirability expresses the extent to which an idea creates a concrete benefit for a target group or satisfies an existing need.

Feasibility: An idea can only become a successful innovation if it's technically feasible with the given possibilities and if the startup team affords the necessary expertise.



The **economic viability** determines whether an idea will be profitable in the long term and if a successful business model can be developed.

The innovation »sweet spot«: For a new product or service to be successful on the market, all three aspects of desirability, feasibility and economic viability must harmonise!

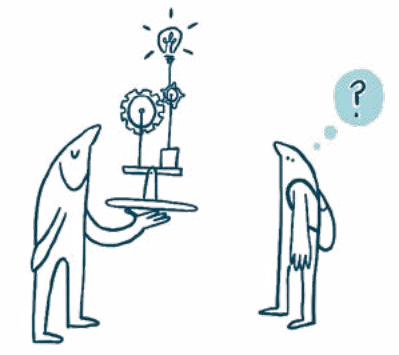
Desirability, feasibility and economic viability as the starting points for innovation

Desirability, feasibility and economic viability can not only be used as criteria for evaluating ideas, but each also serve as a starting point for developing innovation:

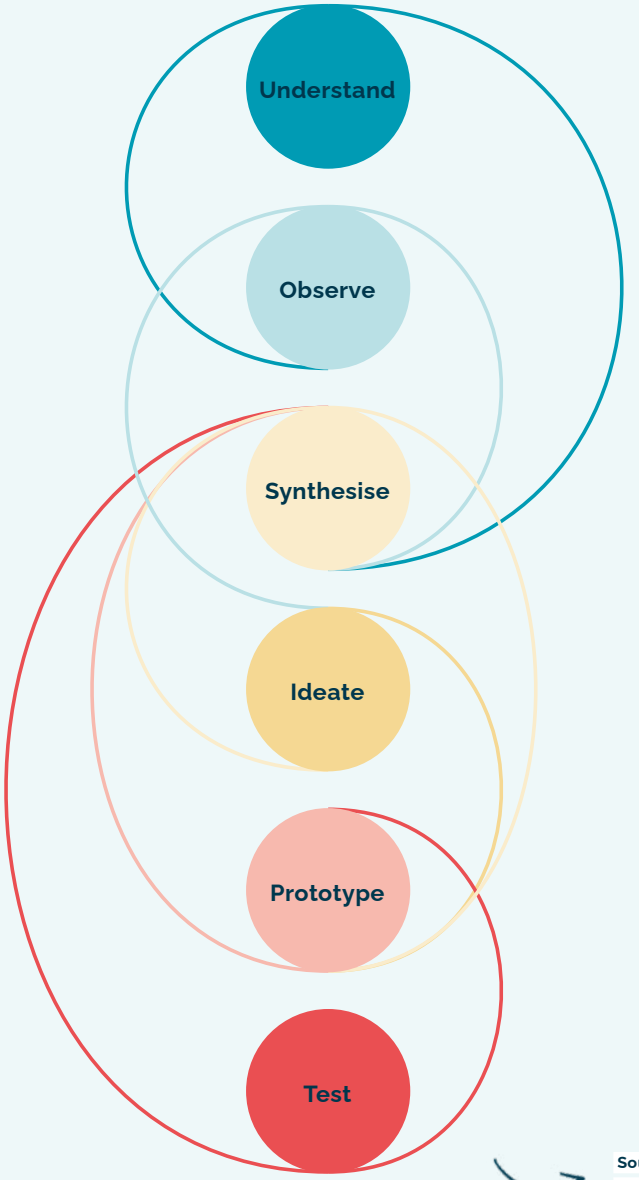
- **Desirability as the starting point:** »Which of the target group's needs can be met even better?«
- **Feasibility as the starting point:** »What else would be technically feasible or conceivable?«
- **Economic viability as the starting point:** »What would be economically viable?«

Design thinking:
a user-centred approach to economic success

In innovative and technology-oriented startup projects, the focus is often exclusively on the technical feasibility, whereby the potential users' needs are neglected. There is then a risk that the outcomes will not be in the interest of subsequent users. In a worst-case scenario, there might not be any demand for your product or service. Developing a product or service that is oriented to human needs can succeed thanks to design thinking. Design thinking involves exploring the wishes and problems of the target group, building empathy and making these insights the starting point for developing innovation during a structured process. Only when you've learned what actually motivates people and what problems they face can you create innovative solutions offering genuine added value.



The six phases in the design thinking process



Source:
www.hpi.de

Scientific know-how for startup success

Dr Christiane Rößler
has been working and researching at the Bauhaus-Universität Weimar since 2000. She leads the »Electron Microscopy and Cement Chemistry« working group within the chair of construction materials and is a co-founder of Sonocrete GmbH based in Cottbus. Dr Christiane Rößler developed a cement mixing process together with her colleagues Ricardo Remus and Prof. Dr.-Ing. Horst-Michael Ludwig while she was working as a research assistant. Ultrasound technology can be used to enhance the properties of cement to render production more sustainable. Specifically, the process accelerates hardening of the cement, allowing the CO_2-intensive component of cement (known as Portland cement) to be reduced. The energy and resource-intensive heat treatment can largely be dispensed with as a consequence. The Bauhaus-Universität Weimar patented this process in 2017, meaning that the invention is protected by the university. The startup was able to acquire the patent application from the university in 2020.

You've been a researcher at the Bauhaus-Universität Weimar for more than 20 years now and lead a working group focusing on electron microscopy and cement chemistry. At the same time, you're also a co-founder of Sonocrete. How do you manage the balancing act between science and startup? Since both relate to one and the same topic, I see them more as complementary undertakings with content in common. It's particularly exciting to see that the research findings find their way directly into practical applications. Since not everything has been conclusively researched yet of course, very good opportunities to plan and carry out joint projects arise time and time again. Fortunately, extensive funding options are available in this sector.

What have been the biggest challenges since establishing the company and what have you learned from them? A new way of thinking was needed to set up the detailed financial planning how an investor would want it. Questions arose every now and then that initially seemed straightforward, but that we needed time to consider (sometimes also to understand the question or to look up what things like EBIT meant, for example). Fortunately, we have professional support at Sonocrete now, so there's no need for me to research aspects of business any more.

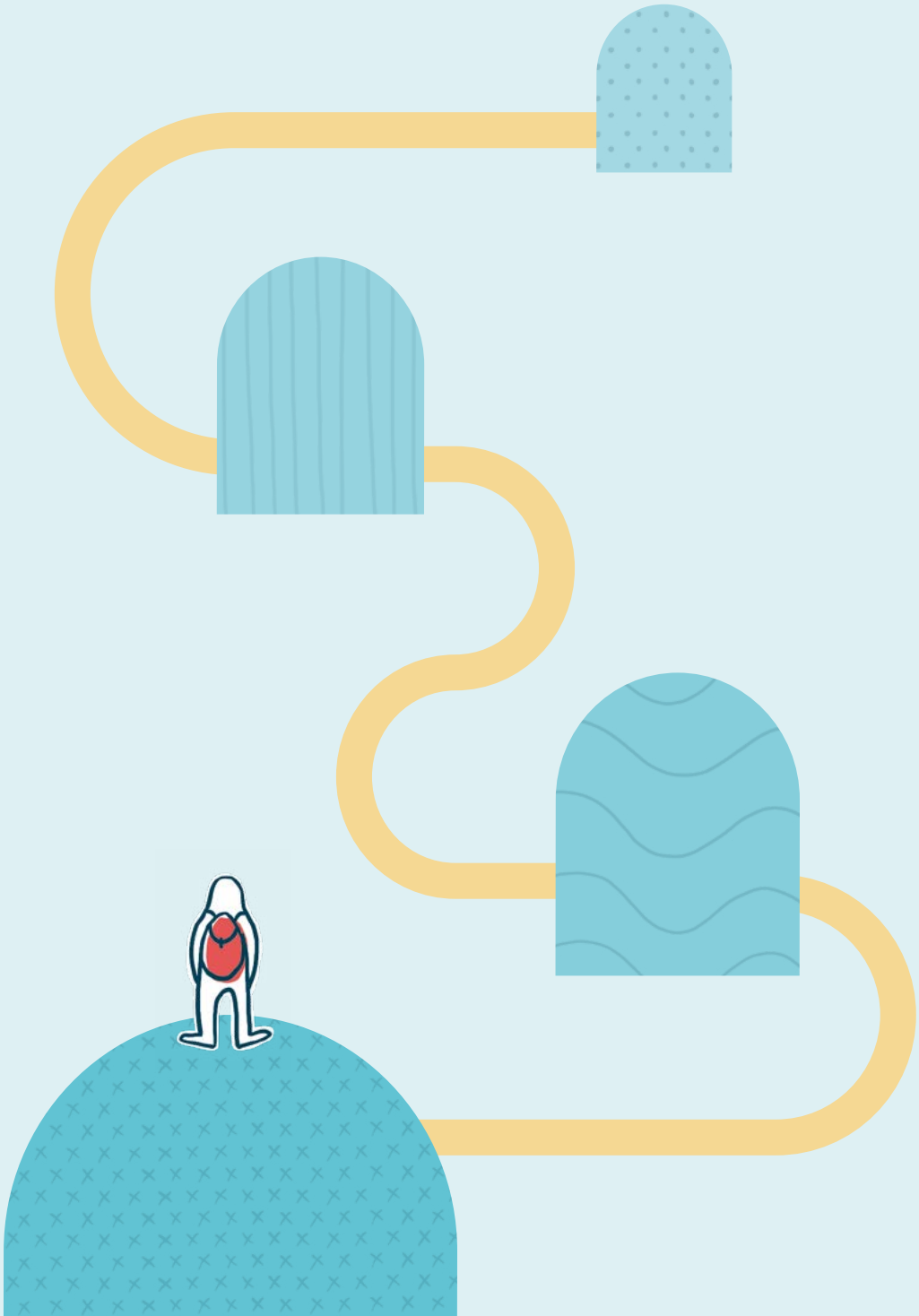
Where would you and your co-founder Ricardo Remus like to be with your company in five years? We'd like to have already installed our systems at a few cement plants by then. Ideally, these should be used to produce cement more sustainably so that cements with reduced CO_2 emissions are used more. That would be cool proof that you can create jobs and make money with sustainable technologies developed at a university!

EBIT stands for earnings before interest and taxes. As such, it indicates the operating income independent of taxes and the types of financing used, and allows a startup to compare itself to other companies internationally.

sonocrete

Industry:	Mechanical engineering
Headquarters:	Cottbus
Company launch:	December 2018
Website:	www.sonocrete.com

Patent application:
Cement and/or mortar mixing equipment and method for mixing cement and/or mortar



6

FROM INNOVATIVE IDEA TO STARTUP

The startup process at a glance

Spin-offs from science within which research findings, scientific methods and techniques are translated into marketable products or services cannot be set up overnight. Between five and ten years often lie between completion of the research and establishment of a company. A researcher ideally typically goes through four phases during this time:

1

Research phase: Your scientific work may produce research findings that are highly innovative with potential for further exploitation. Should this be the case, you must inform the Research Operations Office at the Bauhaus-Universität Weimar that you have created a new invention. Applying for industrial property protection – a patent, for example, in the case of technical inventions – can provide a solid basis for commercialisation of your research findings.

2

Once you've decided to establish a spin-off, the **orientation phase** can begin. The challenge now is to create an environment for yourself in which you can best transform your research findings into a marketable product or service. The startup hub neudeli can provide assistance here. We can advise and coach you through the economic evaluation of your startup idea and the development of a business model and business plan, for example. We can moreover help you to identify and apply for suitable funding. In addition to the business aspects, the focus is also on the search for and selection of suitable co-founders. Ideally, the orientation phase ends with the successful acquisition of funding (e.g. EXIST research transfer), which you can use to continue developing your research findings to market maturity.

3 Various tasks need to be completed during the **pre-seed phase**. Among others, these include developing the product or service further (to obtain »proof of concept«, i.e. demonstrable proof of a business idea's feasibility), concretising the business model and business plan, developing a sustainable network and acquiring pilot customers. You should also explore the possibilities for follow-up financing during the pre-seed phase. The probability of obtaining further funding increases if a patent has already been granted and industrial property protection secured. The pre-seed phase ends with formal establishment of the company, often in the form of a limited company.

4 In the **startup phase**, you and your team launch business operations and attempt to increasingly formalise the company processes. The support from the university is now limited. That being said, academic spin-offs are often linked to your research institute through licensing agreements. Depending on your capital needs, you can finance your company through sales revenue already generated or involve external investors.

7

PATENTS, UTILITY MODELS, ETC.

How can I protect my idea?

To keep up with the competition, research findings must be translated into a marketable product or service quickly and effectively. Protecting your inventions by patenting them can be decisive to securing your innovative edge and achieving economic success. Further ways to protect your intellectual property include applying for a utility model or registering a design or trademark.

Which industrial property protection is appropriate though? Have you …

… made a technical invention or developed a new process?

→ Patent

… developed something new that you'd like to protect very quickly?

→ Utility model

… designed a new external shape and/or colour for a product?

→ Registered design

… got a symbol (e.g. word mark and/or a figurative mark) for your product, service or startup that you'd like to protect?

→ Trademark

Industrial property protection – your options at a glance

	PATENT	UTILITY MODEL	TRADEMARK	REGISTERED DESIGN
Protect	Technical inventions	Technical inventions (except processes)	Trademarks for goods and services (word marks, figurative marks, word/figurative marks)	Designs on flat surfaces or of three-dimensional objects
Requirements for protection	× New × Innovation that goes beyond the state of the art × Industrial applications × Reproducible	× New × Not resulting from the state of the art – innovative step × Industrial applications × Reproducible	× Can be represented graphically × Not merely a description of a service or goods × Distinctive character	× New × Two/three-dimensional appearance of a product × Individual character
Maximum protection duration	20 years	10 years	Unlimited extensions (every 10 years)	25 years
Examples	Materials for repairs, composite components and uses of a material for repairing a component; environmentally friendly, hydraulic binder	»Everyday inventions«, e.g. football jersey with predetermined tear lines	Nivea, adidas, 4711	Furniture, textile samples

Source:
www.dpma.de

The patenting process at the Bauhaus-Universität Weimar

The Bauhaus-Universität Weimar wants to make knowledge that it acquires accessible to and usable by society. Innovative ideas and findings from basic research, applied research and creative experiments from all disciplines pave the way for new technologies and form the basis for startups. Intellectual property protection helps to protect extraordinary ideas and lays an important foundation for a wide range of exploitation opportunities.

Invention disclosure

Employees must inform the Research Operations Office at the Bauhaus-Universität Weimar of all inventions, regardless of their discipline. It will then be clarified whether the invention is a service invention. If you've made an invention during your employment at the university or that is largely based on the university's experience or work, then it is known as a service invention. An online form is available for you to disclose your inventions (www.uni-weimar.de/forschung/dokumente). In case of questions, please contact the Inventors' Advice Service at the Research Operations Office (www.uni-weimar.de/erfinderberatung).

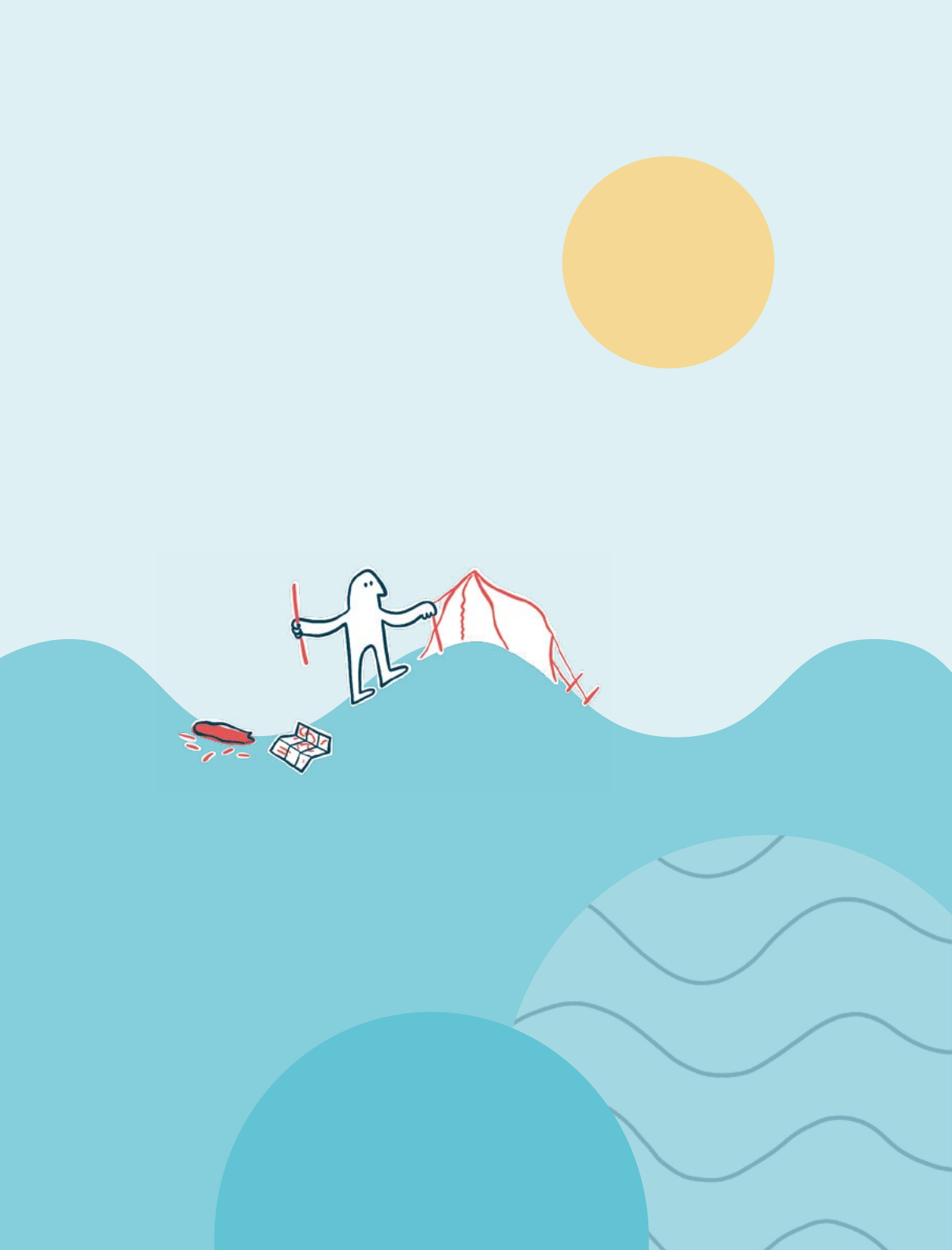
In order for inventions to be protected, they must be kept secret until they are registered. Therefore, don't talk to others about the invention and don't share any details in publications or at conferences, exhibitions or trade fairs. The invention will no longer be considered new otherwise and will instead be deemed the state of technology – and then it can no longer be patented. Only when an application has been submitted to the German Patent and Trade Mark Office will your invention enjoy full protection pursuant to patent law.

Patent application by the Bauhaus-Universität Weimar
Should the Bauhaus-Universität Weimar decide to protect your service invention by apply for a German patent, the university will bear the costs for this.

Exploitation of property rights
The university can implement your invention with you in a startup, license it to another company or sell it. If your invention is exploited, you'll receive 30 percent of the gross revenue generated.
You're able to use your invention yourself within your teaching and research activities. In addition to commercial exploitation, protected inventions can also be used in university research, for example within new research projects or cooperations with partners.

Release of the invention
If the Bauhaus-Universität Weimar releases the invention, then you're free to decide whether you wish to protect your invention, to continue using it at your own expense and in your own name, or to make your research findings freely available to the public.

What is the Employee Inventions Act?
In Germany, the Employee Inventions Act (Arbeitnehmererfindergesetz, ArbNErfG) regulates the legal relationship between employers and employees in case of an invention for which a patent or utility model can be issued.
Pursuant to the Employee Inventions Act, all university employees are obliged to report inventions to the university if they are to be made public.



8

FROM IDEA TO MARKET

How can I develop a successful business model?

An innovative idea or technology alone is not enough to build a successful startup. For lasting success in the market, you need a viable business model. This outlines the factors essential to the startup and clarifies why, with what and how you wish to make money. The central questions are:
What are you offering? Who is the intended target audience and what concrete benefits does your offer generate? And last but not least: How do you want to generate sales?

Using the Business Model Canvas to develop a business model

The Business Model Canvas is a helpful method for analysing your business idea and developing a business model. It was conceived in 2008 by the Swiss business theorist Alexander Osterwalder and has since established itself in a wide variety of versions.

Why not try it out for yourself:

Complete the nine fields in the Business Model Canvas to develop, structure and visualise your business model. Once you've outlined your business model, it's important to check the assumptions behind it. You'll need to conduct desk research to determine the feasibility of your idea in the market environment and whether there is interest in your innovation. This involves compiling market data, holding interviews with potential users, conducting quantitative surveys and trialling advertising.

Business Model Canvas

KEY PARTNERS
Who do we cooperate with closely (network of partners and suppliers)?
Why do we work with the partners?

KEY ACTIVITIES
What activities do we need to carry out to manufacture the product or provide the service (expertise, production, distribution, communication, etc.)?

KEY RESOURCES
What are the main resources on which our product/service is based?

VALUE PROPOSITION
What product or service are we offering our customers?
What benefits or added value do we create for our customers?

CUSTOMER RELATIONSHIPS
What kind of relationship do we have with our customers?
What are we doing to build, maintain and further customer relationships?

CHANNELS
Which distribution channel can we use to reach our customers (own distribution vs. partners)?
How can we communicate with our clients?
Where do points of contact exist and how should they be set up?

CUSTOMER SEGMENTS
Which clients do we serve?
Who are creating value for with our offer?

COST STRUCTURE
What are the key costs inherent to our business model (variable and fixed costs)?
Which activities or resources are cost drivers?

REVENUE STREAMS
How much are our customers willing to pay?
How can customers pay?
Are there any alternative sources of income?

You'll find a template for the Business Model Canvas to copy and/or fill in on the inside of the back cover flap!

Source:
Alexander Osterwalder & Yves Pigneur (2010)
Business Model Generation: A Handbook
for Visionaries, Game Changers and Challengers

Agile development and rapid testing: the lean startup approach

Lean startup is an approach to establishing a business in which all processes are kept as streamlined as possible. The focus is on learning by doing while bringing the product or service to market as soon as possible.

When you implement your business idea, you operate in an environment that is characterised by uncertainty and agility. In the pre-seed phase, many questions remain unanswered: Is technical implementation of my product possible as planned? Is there even a demand for it among my intended target group? Are the potential users willing to pay for it?

To reduce the likelihood of failure, startups are increasingly using the lean startup approach that was developed by Eric Ries in 2011. The focus of the lean startup approach is on bringing what is known as a »minimum viable product« (MVP) onto the market as quickly as possible and with as little capital investment as possible, then continually optimising it based on customer feedback during a »build – measure – learn« cycle. This feedback enables optimal tailoring to the target group's wishes and ultimately to the creation of an offer that is very likely to be in high demand.

Reading tip

Eric Ries (2011). *The Lean Startup: How Today's Entrepreneurs Use Continuous Innovation to Create Radically Successful Businesses.*

BUILD

The **»build – measure – learn«** cycle is an iterative process to (further) develop a minimum viable product. Once the product has been created (**build**) and made available to customers with minimal yet discernible added value, the focus is on gauging the effects (**measure**). How is the product received? What improvements are desired? A learning process is subsequently deduced from these findings (**learn**) in order to improve the product as quickly as possible and adapt it to the customers' wishes.

LEARN

MEASURE

Team startups: collaboration rather than a solo endeavour

Dr Alexander Kulik
studied product design at the Bauhaus-Universität Weimar between 2000 and 2005. From 2006, he worked and researched as a member of the university's »Virtual Reality and Visualization« research group led by Prof. Dr Bernd Fröhlich. In 2016, Alexander Kulik obtained a PhD in computer science for his research on user interfaces for cooperation. At the start of 2021, he then founded Consensive GmbH together with four colleagues that focuses on developing virtual reality applications for learning, research and training scenarios.

You recently co-founded Consensive GmbH to make the expertise from your scientific work within the »Virtual Reality and Visualization« research group available to companies and organisations. How long have you been toying with the idea of a spin-off? For me, self-employment was always an option; if it weren't, then I probably should have chosen a more specialised field of study than design! My observations during my childhood and youth of my self-employed parents also taught me respect for this work model though. After many

years of successful academic collaboration, my colleagues and I sought options to perpetuate our joint activities. This took some time. We received enquiries from the business community during third-party funded projects, which led us to decide to establish Consensive GmbH.

What have been the biggest challenges in the startup process to date? The challenges are manifold and diverse, and include matters relating to corporate and tax law. The biggest challenge remains the continuous development of sustainable value creation models though.

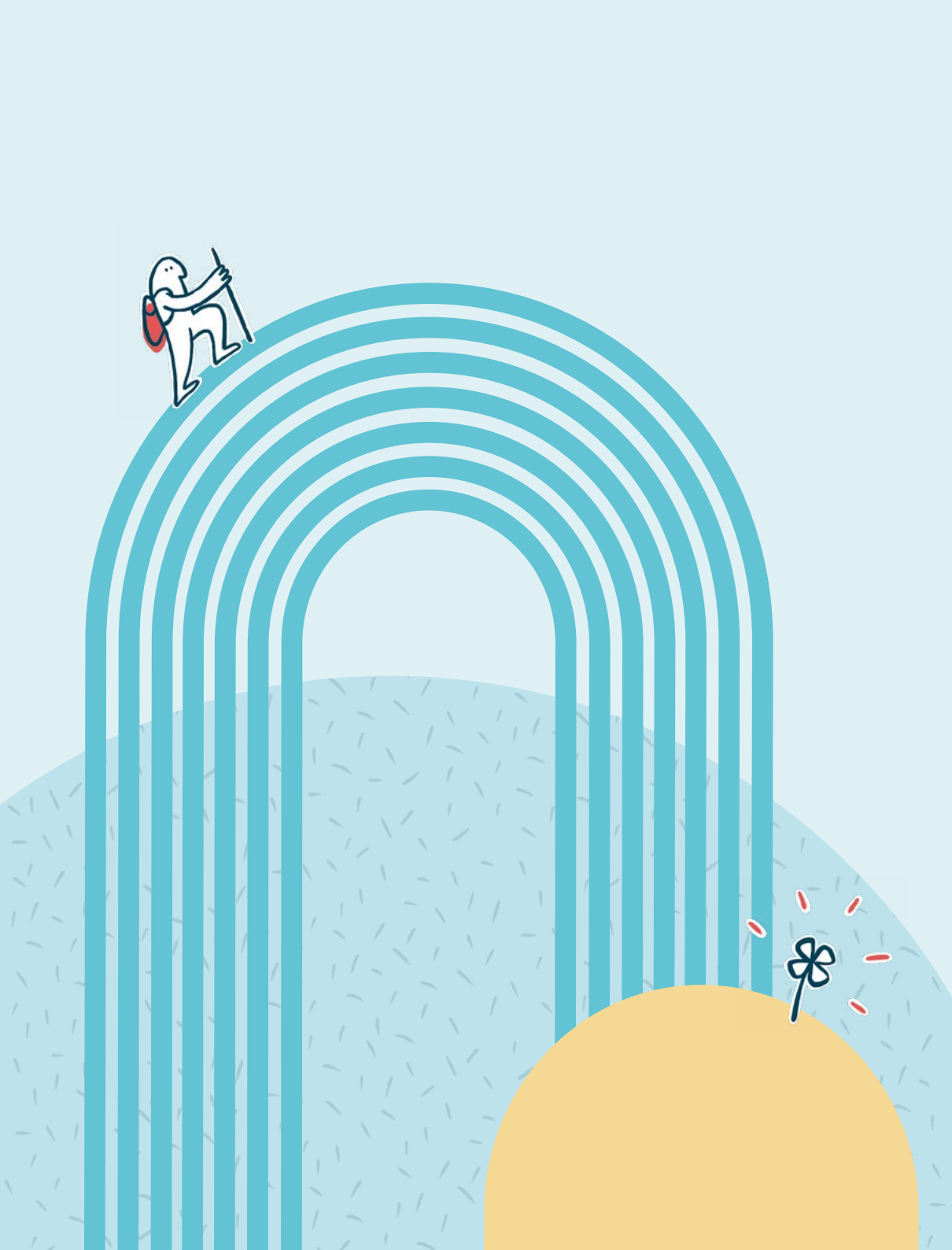
You work with four colleagues at Consensive GmbH. Why did you decide to establish the company as a team? I believe that the most interesting projects can only be completed with good colleagues and partners. I could never replace any of my co-partners or employees. Hence I am extremely pleased with the trust and the complementary skills that exist within our team.

What skills that you developed as a researcher have been helpful to you so far while setting up a company? What do you still want or need to learn? Scientific work follows very similar laws to those that apply in the business world – especially when it comes to research management in application-oriented subjects. In both cases, we attempt to raise awareness and to deliver convincing quality. So I am able to continue many of my established ways of working in my new role. I see big differences in the speed and the mutual scope for negotiation. In business, we have to convince people more quickly and it's harder to win their trust. I undoubtedly have some catching up to do. That being said, I've learned to structure my new ideas and concepts clearly and to also communicate them. That helps tremendously, of course.

It's still very early days with your company. What are your hopes for the coming months and years? I above all wish for a continued trusting and cooperative collaboration with clients, colleagues and partners. This will allow us to make important contributions to the development and marketing of useful products and services.

CONSENSIVE

Industry:	Software development (VR)
Headquarters:	Weimar
Company launch:	January 2021
Website:	www.consensive.de



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FUNDING AND FINANCING

How can I finance my startup?

Raising seed capital and securing the continued financing of a fledgling company is a major challenge for aspiring entrepreneurs. A wide range of different financing options do exist though. State funding programmes mainly provide startup assistance in the pre-seed phase; later on, loans, business angels and venture capital are important sources of financing for startups.

How can I determine my capital needs?

Your capital needs include the startup costs, investments and running costs (variable and fixed costs). Ask yourself the following two questions:

1. How much capital do I need to establish the company, i.e. what investments must I make and what startup costs will arise?
2. How much capital do I need for the so-called startup phase, i.e. how much capital will I need until my startup is self-sustaining or reaches the break-even point?

We suggest you conduct detailed liquidity planning to determine your capital needs.

The break-even point is the point in time at which the income (sales revenue) is equal to the expenditure (total costs). There is neither a profit nor a loss, whereby the first profit can in all likelihood be expected from this point onwards.

Grants

Grants generally don't need to be repaid and it is usually possible to apply for one before the startup is even launched. Allowing you to bring the technology to market maturity and to prepare for market entry. Funding programmes exist on the European, federal and state levels. The same applies for them all that you must actively apply for funding. The coaches at the startup hub neudeli and the staff of the Research Operations Office at the Bauhaus-Universität Weimar can gladly provide details of each programme and assist you with your application.

EXIST – university-based business startups

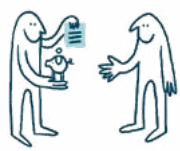
EXIST startup funding
Support for students, graduates and researchers from universities and extramural research institutes, who wish to turn their startup idea into a business plan. Funding is available for innovative technology-oriented or knowledge-based projects with significant unique selling points and good prospects of economic success. The grant covers personal living expenses, the material costs and coaching services. Funding is available for a maximum of three people for a twelve-month period.
More information: www.exist.de

EXIST Transfer of Research
Support for research-based startup projects involving expensive and high-risk resource development. The programme comprises two funding phases. The aim of the first phase is to carry out resource development to verify the technical feasibility, develop prototypes, draw up a business plan and establish the company. In the second phase, the focus is on further resource development, measures

to launch business operations and creating the conditions for external business financing. The startup team receives grants for up to three years to finance their living expenses as well as personnel and material expenses.
More information: www.exist.de

For full details of all funding programmes offered by the German federal government and federal states as well as the EU, see: www.foerderdatenbank.de

Financing and venture capital



A startup can usually only be financed through loans (borrowed capital) or investments (equity capital) once it has been established. Classic bank loans tend to play a lesser role for innovative and technology-oriented startups, as the capital needs tend to be high. Credit institutions often offer promotional loans and innovation loans that are specifically tailored to the needs of innovative companies as alternatives. Beside »family, friends and fools« and offers from (savings) banks, entrepreneurs can also draw on venture capital, which is provided by venture capital companies or other external financiers (e.g. business angels) for a fixed period of time. This takes the form of contributions (share capital or capital stock) or a silent partnership in the startup.

Venture capital is the equity or participation capital that is made available to growth-oriented fledgling companies that cannot finance themselves or cannot obtain sufficient funding from banks.

Selected financing options in overview

Family, friends and fools

Support from your family, friends and other »fools« above all plays a major role when it comes to smaller sums – to finance preliminary research and prototypes, for example. However, a personal relationship with lenders can lead to problems if the repayment terms are not sufficiently clear or the business idea proves to be unviable, for instance. Hence we recommend always putting all agreements in writing (e.g. drawing up a loan agreement) and only requesting money from people who can also do without it should things not pan out.

Venture capital

Venture capital (VC) is used to invest in startups, with investors given shares in the company in return. Venture capitalists aim to sell the shares in the startup for a profit after a few years. VC companies often specialise in certain industries or startup phases. In addition to private VC funds, there are also state and semi-public capital providers, who invest in innovative and technology-oriented startups.

Seed funding is the term used to describe the equity financing provided during the pre-seed and startup phases of a company.

- **Seed funding for high-tech startups**
  The German Federal Ministry for Economic Affairs and Climate Action (BMWK), state-owned KfW development bank and companies offer seed funding for high-tech startups. With their High-Tech-Gründerfonds (HTGF), they support fledgling technology companies taking an entrepreneurial approach to implement promising research findings. Up to €1 million can be provided in seed funding, with a total of up to €3 million in funding per company.
  More information: www.htgf.de

- **bm-t beteiligungsmanagement thüringen gmbh**
  bm-t invests in fledgling companies with growth potential based in Thuringia in the form of open investments totalling between €100,000 and €10 million. Investments are in principle made in all high-yield sectors, though particularly in the life sciences, optoelectronics and microelectronics as well as in the IT/media/internet sector.
  More information: www.bm-t.de

Further venture capital companies

- ACTON
  www.actoncapital.com
- Berlin Ventures
  www.berlinventures.com
- Capnamic Ventures
  www.capnamic.com
- DvH Ventures
  www.dvhventures.de
- Mountain Partners
  www.mountain-partners.ch
- 468 Capital
  www.468cap.com

Business angels

Business angels are private investors who provide startups with »smart money«. In addition to capital, they also assist fledgling companies by contributing their entrepreneurial and sector-specific experience and contacts.

- Business Angels Netzwerk Deutschland e. V. (BAND)
  www.business-angels.de/en

Borrowed capital

Borrowed capital can be brought into the established company through development loans from the federal government, a federal state or the EU as well as through loans from (savings) banks and cooperatives. More information:

- KfW
  www.kfw.de
- Thüringer Aufbaubank
  www.aufbaubank.de

Private banks, savings banks and cooperatives also offer useful information on their websites.

A startup accelerator is a time-limited funding programme that provides startups with the resources they need to grow and develop their ideas as quickly as possible. Depending on the programme, it may also include coaching, mentoring and workshops.

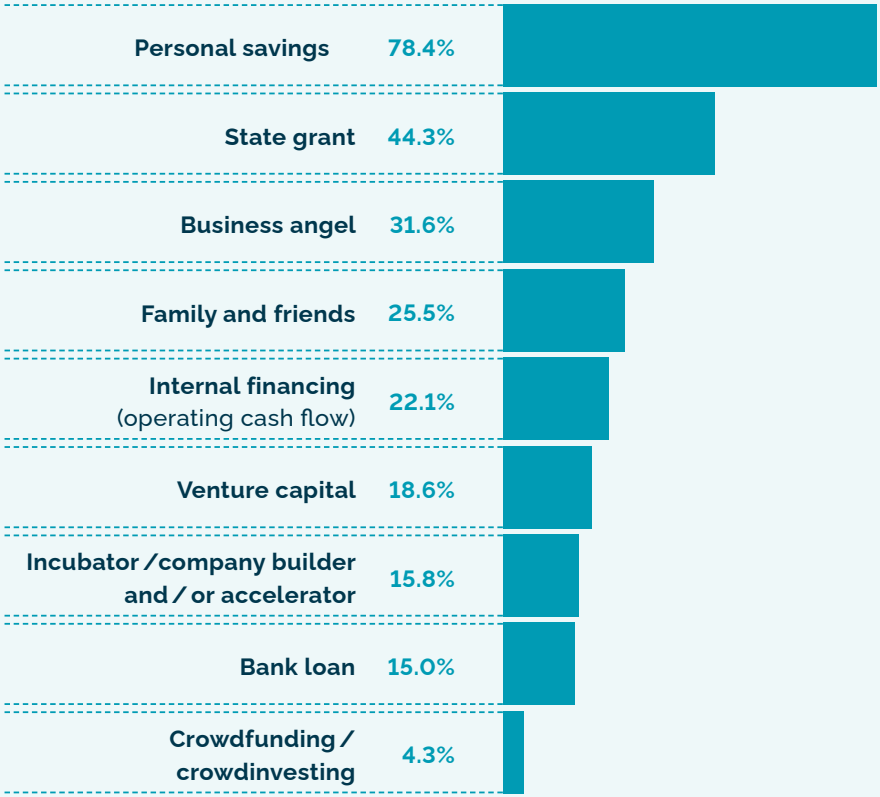
Accelerator programmes

Accelerator programmes are another form of funding and support for startups. In addition to the purely financial component, entrepreneurs receive professional guidance and support to speed the growth of their existing business model. Entrepreneurs often have to give up shares in the company (usually between five and 20 percent) in return for participation in an accelerator programme and the provision of seed capital (totalling between €20,000 and €100,000).

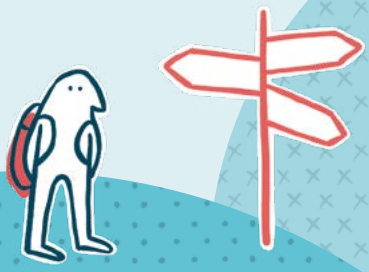
Accelerator programmes

- HAX
  www.hax.co
- Climate-KIC Accelerator
  www.climate-kic.org
- EIT Digital Accelerator
  www.eitdigital.eu/accelerator
- German Accelerator
  www.germanaccelerator.com
- Seven Accelerator
  www.sevenaccelerator.com
- Metro Xcel Accelerator
  www.metroxcel.com
- hub:raum
  www.hubraum.com
- Spinlab
  www.spinlab.co/de

Startups opted for the following types of funding in 2020:



Source:
Startup Monitor 2020



10

SUPPORT FOR SELF-EMPLOYMENT

Who can assist me on my startup journey?

If you want to set up a successful business, then you're going to need competent advice and support at some point or other. There are countless different contact points and information portals at the Bauhaus-Universität Weimar and beyond that can help you get started on your journey to self-employment.

startup hub neudeli
Bauhaus-Universität Weimar
www.uni-weimar.de/neudeli

Research Operations Office
Bauhaus-Universität Weimar
www.uni-weimar.de/de/universitaet/forschung-und-kunst

Thüringer Zentrum für Existenzgründung und Unternehmertum (ThEx)
www.thex.de

Industrie- und Handelskammer (IHK)
www.ihk.de

Forschungs- und Technologieverbund Thüringen e. V.
www.ftvt.de

Other useful websites
www.gruenderplattform.de
www.existenzgruender.de
www.fuer-gruender.de
www.businessinsider.de/gruenderszene
www.exist.de

After-word

Is there a market for my idea?
How exactly could the startup then look?
Do I really want to establish a company?

This workbook has probably raised a lot of questions for you that you'll now need to have a good think about. Remember in doing so though that even great innovations started out small! If you can imagine establishing your own business, then we're gladly on hand to assist and advise.

We look forward to meeting you in person and to hearing all about your business idea!


Feel free
to make
some notes!

Legal information

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