

UNLOCKING THE HIDDEN CHAMPIONS OF INDUSTRY 4.0

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INNOVATION CENTRE DENMARK

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References:

Hermann Simon, Hidden Champions of the Twenty-First Century : The Success Strategies of Unknown World Market Leaders

ENGINEERING INNOVATION

Dear friends, partners and network, dear reader

Throughout 2019, Innovation Centre Denmark has supported Danish organisations, research institutions, and companies to engage with and benefit from collaborations with German industrial players, specifically the 'hidden champions' – world market leaders in their niches.

Why so? The German business landscape is undergoing a profound transformation. The demand for innovative products and business models is reaching new heights and the fourth industrial revolution is forcing established players to reinvent themselves and forge new partnerships. Automakers now call themselves mobility service providers, machine manufacturers create industrial app stores – digitalization and globalization are rapidly changing the rules of the game: Old industries collapse, new opportunities emerge - only the most innovative companies will come out on top. For industrial midcap companies, this is a huge challenge and even the hidden champions must adapt to the new paradigm. To do so, they must step out of the shadows and into the light.

In this publication, we share our research and observations on hidden champions in Germany and real-world use cases from our partners, and we encourage you to seek collaborations across industries and borders.

We wish you happy reading and look forward to hear from you.

Innovation Centre Denmark, Munich



HOW TO SPOT A HIDDEN CHAMPION

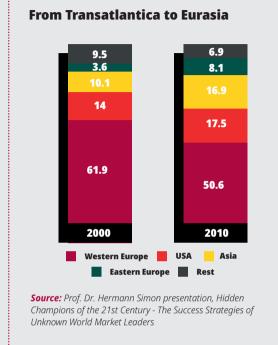
While they are little known outside of their industries, hidden champions are mid-sized world market leaders. On a global scale there are approximately 2700 of their kind – almost half of which are based in Germany.

German management authority, Hermann Simon coined the term 'hidden champion' to describe mid-sized companies that are first, second, or third in their markets yet are mostly unrecognised outside their industries. Simon stumbled across these hidden champions as he tried to explain Germany's success as one of the world's leading export nations.

In his book, Hidden Champions of the Twenty-First Century (released in 1996), Simon explained: "Many extremely successful companies escape the attention of those whose business it is to know everything (media), understand everything (scientists) or improve everything (consultants). This is the sphere of the world's best midsize companies, the world of the 'hidden champions.' Deeply hidden under the headlines of sensational business successes lies a completely unnoticed source of leadership wisdom."

In more detail, a hidden champion:

- is a company among the top 3 in the world in its industry, and first on its continent;
- 2. has revenue that is below €5 billion; and
- 3. is little known to the general public, despite its great impact.
- 4. increases its global market share every year
- 5. invests massively in innovation



Since 1995, the world's hidden champions have created 1.5 million new jobs; grown by 10% per year on average; and register 5 times more patents per employee than large corporations. Another common denominator is their resilience. In the last 25 years no more than 10% of hidden champions were acquired or disbanded. This is a significantly lower percentage than large corporations. Punctuating the point, nearly all of the world's hidden champions survived the Great Recession of 2008-2009.

Ultimately, the success of a hidden champion is based on its strategy and the continuity of its leadership. On average, their leaders maintain the helm for 20 years and are fully committed to their mission, vision, and companies. So much so, in fact, that the companies are most often familiy businesses that are passed down through generations and over lifetimes.

The question is: What can other companies learn from hidden champions? What are they doing differently from large corporations? The short answer: Almost everything!

Hidden Champions: The Backbone of the German Economy

Creating world-class products and services takes dedication and expertise. That's why Germany's "hidden champions" focus on narrow markets and their outputs are deep rather than broad. Instead of outsourcing their core competencies, they tend to do things in-house. For instance, the market leader in garden equipment, Gardena builds its manufacturing machines parallel to its product development – contributing to Germany's industrial manufacturing base. In Germany, the mittelstand – small and medium-sized companies – account for approximately 70% of all exports. And the hidden champions make up the lion's share. No other country boasts as many mid-size market leaders.

Broadly speaking, these businesses set ambitious goals in the areas of market leadership and growth.

Only **1.1%** of the world's population is German. However, **48%** of the mid-sized world market leaders come from Germany.

Source: Hermann Simon in Harvard Business Review Why Germany Still Has So Many Middle-Class Manufacturing Jobs, May 2017. Their strong and sustained performance is tied to product development strategies that ensure the highest quality outputs. The unique strategies they deploy in creating knowledge-intensive, technological products enable them to lock in customers.

Made in Germany

Most hidden champions produce items that are inconspicuous and do not take up much space. Yet, they are ranked number 1 in their product category worldwide. Similar to the German production companies they are born in, they are distinguished by their efficiency and quality.

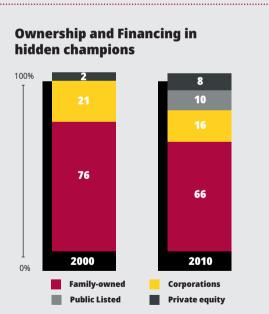
But the reasons why hidden champions are a predominantly German phenomenon extend beyond efficiency and quality. The landscape matters. Until 1918, Germany consisted of 23 monarchies and 3 republics. This meant that there were many regional crafters who were forced to internationalize early on in a company's development if they wanted to keep growing. Hidden champions have also contributed to the sustainability and scale of Germany's manufacturing base. Nearly a quarter of the German gross domestic product comes from manufacturing. Putting this in context, the percentage in most other highly industrialized countries – such as the United States, the United Kingdom, and France – is only about half of this.

This has a significant impact on employment. Manufacturing creates jobs at home and at the same time allows companies, through exports, to participate in the growth of emerging countries.

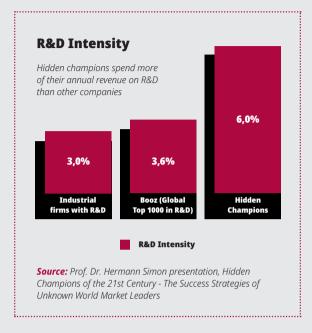
Selling in a Niche

Customer proximity is the hidden champions' greatest strength. Above and beyond their techonological innovations, hidden champions hold strong competitive positions in the global market. Advice and systems integration are their new advantages, because they reside in the brains of the employees and in the capacity of the organization to manage complexity. As a consequence, the barriers to entry for would-be competitors are probably higher today than they were even 10 years ago.

In order to achieve a superior end product, hidden champions are entrenched several steps deeper into their value chains to create unique processes, technologies, and components for their products. They appreciate that unique value can only be created internally, not outsourced. After all, if you can buy something on the market, everybody else can buy it too.



Source: Prof. Dr. Hermann Simon presentation, Hidden Champions of the 21st Century - The Success Strategies of Unknown World Market Leaders



By adopting value-driven strategies, hidden champions typically command a price premium of 10-15% above the average market price. There is a strong sense in which price only comes into the game if you don't offer differentiated value.

Globalisation

Hidden champions combine product specialisation and know-how with global sales and marketing strategies. Globalisation is their growth booster, meaning they serve target markets through their own subsidiaries and heavily invest in the markets of the future. Quite simply, these businesses have their own subsidiaries in each important market worldwide and sell directly to their customers instead of delegating their customer relations to intermediaries, agents, and importers. It is worth noting that just 10 years ago 75% of their revenue came from Europe and the United States. Today 75% comes from Europe and Asia. Because of the lagging economies of the US and Europe in recent years, and the simultaneous growth of Asian economies, this shift is happening much faster than anticipated.

As the world market leader in high pressure water cleaners, Kärcher continues to see rapid growth. Based in Winnenden, near Stuttgart, the family-owned company's ability to meet a variety of consumer needs is a crucial factor in their success. In their latest production line, Kärcher can deliver 40,000 production variants within 24 hours. Their flexibility and capacity to supply an enormous amount of products enables the business to meet individual customer requirements to exacting detail and on time.

Are Champions Born or Made?

Managers and leaders of hidden champions often spend their entire lives, or at least decades, with a single company. Their plans and goals are often shaped by unusually long-term strategic thinking. This distinguishes them from the CEOs of large corporations, who typically move from company to company every few years. As a result there is usually longevity in leadership, which results in overall stability within the organisation and there is a greater sense of commitment and accountability. Leaders usually stay in the position for many years. This also generates visionairy leaders as the purpose of the business is the purpose of the family and vice versa. Since most hidden champions are not listed on the stock exchange, their leaders do not chase the kind of short-term results that stock market analysts tend to be fixated on. As a result, hidden champions spend, on average, twice as much on R&D as other companies. This reflects the long-term nature of their thinking.

Where the ownership is oriented towards long-term strategies and capital markets do not play a big role in their decisions, they are financially solid. Because they rely on self-financing, hidden champions are conservative in financial matters.

Are Hidden Champions also Future Champions?

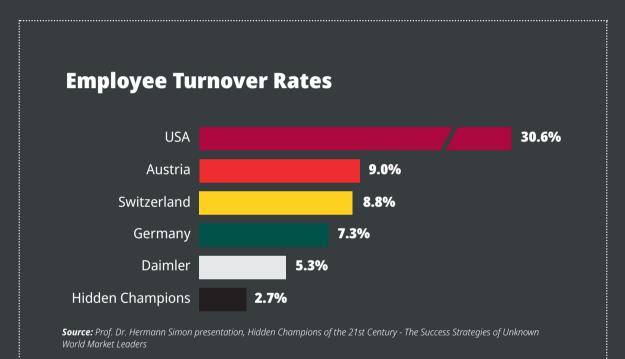
Innovation is one of the most important factors in ensuring hidden champions maintain their market leadership. According to Herman Simon, hidden champions hold 31 patents per every 1.000 employees, which is 5 times more than patent-intensive large corporations. It would seem that the evolution of a product is a stronger predictor of success than the revolution of the product. Process innovations are often more important than product innovations and many hidden champions know that they have an advantage over larger corporations. They can be agile, flexible, and creater faster innovations. For this, they rely heavily on the expertise of their employees and their passion for pace.

Whereas large corporations tend to throw big budgets at a problem, hidden champions deploy small, dedicated teams. Unlike large companies, employees of hidden champions are industry and product specialists, who aren't climbing the career ladder and viewing R&D as a stepping stone along the way. In some cases, they have devoted their entire careers to hidden champions. This has the further advantage of reducing friction between departments – saving time and creating a speed advantage.

Since global competitiveness is increasingly about qualifications, it is vital to not only hire and train top talent but to retain them. The hidden champions have extremely low turnover rates: only 2.7% annually as compared to America, where companies lose, on average, almost a third of their employees and, with them, their know-how.

Carl Zeiss, the German manufacturer of optical systems and optoelectronics, was founded in Jena in 1846. The company has been responsible for many innovations over the past 173 years and it is now active in segments spanning from medical technology to manufacturing semiconductors.

Former company CEO and current chairman, Dieter Kurz claims: "We benefit from the long-standing experience of our fine opticians. The insane innovation speed we enjoy in chip equipment is only achievable through excellent people. New markets always open up the opportunity to attain market leadership. But speed and timing are often decisive."



MAPPING THE CHAMPIONS

Kärcher

Located in Winnenden Founded in 1935

Employs more that 11.000 people Annual revenue of 2,5 billion Euro

Known for its high-pressure cleaners, floor care equipment, parts cleaning systems, waste water treatment, military decontamination equipment and window vacuum cleaners.

Holding 632 patents

Ruhr District

92 hidden champions Annual turnover 64,6 billion Euro Hidden champions employs more than 275.000 people.

Rhine-Main

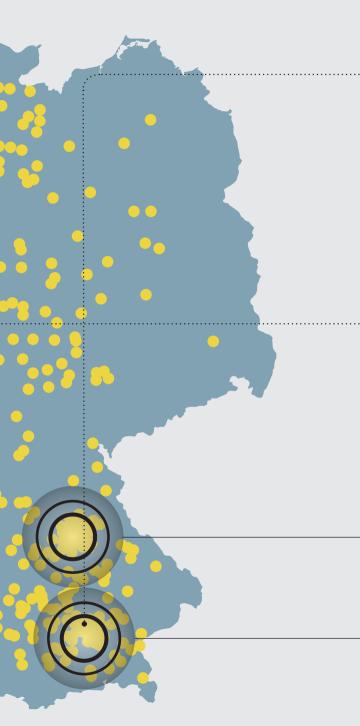
28 hidden champions Annual turnover 15,5 billion Euro Hidden champions employs more than 65.000 people

Baden-Württemberg

139 hidden champions Annual turnover 93,1 billion Euro Hidden champions employs more than 438.000 people



O Largest Hotspots



Schreiner Group

Located in Oberschleißheim Founded in 1951.

Employs 1100 people around the globe Annual turnover of 170 million Euro (2016). Europe, North America and China are key markets.

Offers customized products, solutions, and services for the pharmaceutical industry and medical technology, the automotive and electronics industry, logistics and mechanical engineering.

Telecommunications companies, banks, and government authorities are also among the customers of Schreiner Group.

Tecnaro

Located in Ilsfeld Founded 1998.

Employs 38 people. 4 employees (10%) work in R&D Annual turnover is 4 million Euro with an annual production capacity of about 12 tons.

Develop, produce and commercialise sustainable materials within the polymer sector. Especially in garden and household articles, toys and leisure articles (music instruments etc.) with a focus on durable bio-based applications!

Nuremberg Metropol Region

21 hidden champions Annual turnover 12,3 billion Euro Hidden champions employs more than 128.000 people

Munich Metropol Region

43 hidden champions Annual turnover 40,8 billion Euro Hidden champions employs more than 189.000 people

INDUSTRY-ON-CAMPUS: A SYMBIOSIS OF ACADEMIA AND INDUSTRY

The second phase of the German Excellence Initiative, which was implemented in 2012 enables university administrators and businesses to create "industry professorships" within institutional structures.

Through the industry-on-campus framework, joint partnerships between research and industry have been, and will continue to be forged, at the intersection of basic research and practical application.

A total of 533 million Euro have been allocated for the strategy from 2018 to 2024. This is a clear indication that the partnerships are meant to yield long-term and robust research initiatives.

The strategy represents an excellent opportunity for the University of Tübingen to break new ground in establishing industrial partnerships and holds great promise for research with a practical application.

According to Dr. Jochen Hirsch, who coordinates industry partnerships at University Tübingen: "The aim is to integrate motivated scientists from industry into the university's research activities. While the companies provide their employees working in research and development with flexibility and time, the main contribution of the university is to support such projects with the necessary infrastructure at the intersection of basic science and application-oriented research."

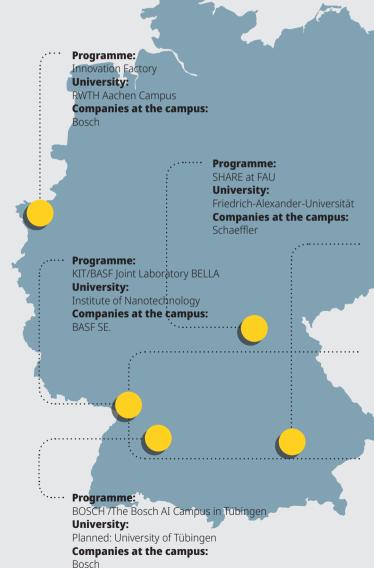
In turn, industry partners benefit from the research scope and output, enabling a symbiotic relationship.

As one of Germany's universities of excellence, Tübingen has a strong reputation in several scientific fields – making it highly attractive to industrial partners.

Hirsch refers to the "mixture of interests that has already been established with Zeiss Vision GmbH in the complex interaction between light waves, the eyes, lenses and the processing of an image on the retina in the brain." Another example is the partnership with experts from Robert Bosch GmbH in the field of foresighted diagnostics, who are harnessing artificial intelligence and machine learning algorithms.

While the industry partner gets full access to the university's infrastructure and can tap into the entire network of scientists and students on campus, the university community benefits from lectures that are filled with rich insider knowledge. What's more, the university gains access to the partner's cutting edge instruments and resources (or develops new custom-made systems with the partner). The combined expertise on a common topic often leads to faster results in application-oriented research.

In Hirsch's words: "The exchange of knowledge and expertise on both sides is what makes this model so successful. In particular, the students benefit from insights into industrial R&D processes, the scientists benefit from flexibility and time to nurture their projects, and the industrial partner benefits from the knowledge capital and cutting-edge basic research undertaken. Furthermore, industry partners have the opportunity to recruit well-educated students to work in their company."



About industry-on-campus

Bavaria and Baden-Württemberg are international hotspots when it comes to innovation and technology. They foster close collaborations between research institutions and private companies. Industry-on-campus is a paradigm of a partnership between companies and universities.

Through this initiative, private companies – to a greater or lesser extent – invest resources directly into the university in the form of part-time or full-time academic staff that carry out their research and training at the university; co-finance research and innovation projects; or contribute to research infrastructure.

Source: Ulrik Kjølsen Olsen, Research and Innovation Attaché & Consul at Innovation Centre Denmark - München.

Programme: Munich Aerospace e.V., University: Ludwig Bölkow Campus (LBC) Companies at the campus: AirBus, Siemens, IABG

Programme:

SHARE at KIT University: Karlsruhe Institute of Technology Companies at the campus: Schaeffler

Programme: Karlsruhe Service Research Institute University: Karlsruhe Institute of Technology Companies at the campus: IBM, Bosch and FZI



EMPLOYEE-DRIVEN INNOVATIONS

Becoming a world leader is not a matter of imitation. True leaders are born through research, development, and innovation.

Consistent with their core values of innovative and sustainable growth – articulated from their inception in 1951 – Schreiner Group thrives on creating a positive environment, a family-friendly company culture, and boasts a modern workplace.

As part of the second generation, the current CEO, Roland Schreiner, cites employees as making a tremendous difference in their overall success. In his own words: "Providing our employees with optimal working conditions in an attractive location is a basic prerequisite to our successes in research and development."

Highly regarded as an attractive and valued employer, the Schreiner Group has received numerous awards over the years. On a daily basis, employees are encouraged to exchange ideas through internal platforms. Equally important is customer feedback, which is integrated into the business practices and contributes to their tailor-made solutions. This has helped Schreiner Group to evolve over the past 6 decades from a conventional label printer into a supplier of smart functional parts and high-tech labels.

According to Schreiner: "The label of the future will feature a wide range of functionalities and applications. Although this makes our work more complex, it is also very exciting to break new ground in the field of electronics, with printed batteries and sensors."

Schreiner Group is organised into three business units: Schreiner MediPharm, Schreiner ProTech, and Schreiner PrinTrust. Their work is supported by competency centers, which are responsible for innovation, technology, and product development. Staff in each business unit possess specific customer and market know-how and contribute to the organisation's reputation as a leader in its field.

"As a strategic partner, we are highly familiar with the needs and processes of our customers. With these insights, we pool the company's technological expertise and are constantly developing new applications and solutions in our competency centers. Our technology and innovation management promotes the cross-functional innovation process. Through our customised solutions, we create value and proactively help our customers achieve their goals," Schreiner says.

Of course, novel solutions are not always meticulously planned; they often arise organically. Thanks to their "Innospire" initiative, Schreiner Group can scope and make projections for innovations that go beyond normal product development, providing employees with dedicated budgets, timelines, and suitable facilities to conduct their experiments.



Roland Schreiner, CEO, Schreiner Group

In describing what this looks like on the ground, Schreiner explains: "We have consistently expanded our strong research and development department in recent years, using state-of-the-art methods to continually develop and advance technologies and products. Patents and industrial designs help secure the company's long-term business success."

For Schreiner, "innovation" does not only refer to the development of unique products, but also to intelligent processes and creative solutions. Throughout their or-ganisation, every employee is motivated to contribute new ideas and see the bigger picture beyond his or her area and day-to-day business. This has resulted in the evolution of simple stickers into high-tech labels that can "think," "feel," and "communicate." In a word, it is consistent with Schreiner's philosophy that: "a company must never stop, but continually develop."

Schreiner Group

Established in 1951 in Munich 1100 Employees 190 million Euro in turnover

PARTNERSHIPS WITH MUTUAL RESPECT AND COMMITMENT

Seluxit knows how to harness the strengths of 'hidden champions' and to create value for them in return. The Danish company, based in Aalborg, collaborates with several international market leaders from Germany.

As a high-tech company that employs the latest technology to move business partners into the new digital age, 'hidden champions' are increasingly turning to Seluxit to accelerate their processes.

Broadly speaking, Seluxit works with a wide range of industry leaders, creating a smarter world by developing, supporting, and implementing solutions for the Internet of Things. Their services span electronics, software, communication technology, and cloud-based data services for data analysis and processing. In this way, they convert data into tangible value for their customers.

According to Daniel Lux, Seluxit's CEO:

"Our solutions can open new opportunities, provide business value, create a foundation for new or optimised services, sales opportunities, or even valuable information about how one's products are used in the market. Our solutions are also often used for automation, system integration, and predictive machine and equipment maintenance, helping customers save money and avoid unforeseen downtime in their production or machinery."

Today, 75% of Seluxit's revenues comes from the German market through hidden champion partnerships with large companies like Gardena and Kärcher. In Lux's words:

"It's important for companies to be agile, flexible, and every single time be able to deliver high quality and meet all the deadlines. The collaboration is professional and hidden champions control and are responsible for their end of the business. They value the efficiency of the daily developer-to-developer contact, so that time-to-market is kept to a minimum."

Highly loyal, once the companies enter into a collaboration, they will not pursue other options or revisit the contractual agreement. In return, they expect the same loyalty from their partners and suppliers. As Lux sees it, although "it takes considerable effort to get



Morten Pagh Frederiksen, co-founder and CTO (left) and Daniel Lux co-founder and CEO of Seluxit (right).

inside, once you're there, you work as partners with mutual commitment and respect."

In terms of organisational practices, hidden champions are open to new projects and to testing new solutions. They have embraced the American mentality that it is ok to fail, while tempering it with the European pragmatism of taking calculated risks.

Lux explains: "The company must risk failing the first time when building solutions that have not yet been seen on the market. In that way, we can use what we learned to come up with a successful implementation plan."

Through their partnerships, Seluxit is making great strides and continuing to improve processes – and break barriers – as they explore new opportunities. This contrasts with other typically larger companies that often rely on highly detailed and complete project plans with well-defined milestones and a predicted outcome, resulting in limited innovation As Lux sees it: "It is important for companies to take big risks and have high demands. For instance, if a manager says the new solution should be 10% better, then the results might be only 3-4% better. But if they say that the solution has to become 10 times better, then you have to find completely new ways of thinking. This creates better solutions, because it enables you to dare."

Of course, Danish companies also require a thorough understanding of German culture and business practices to team up with hidden champions. "Their business environment is relationship-based, so introductions often come through networks. If you have large Danish customers who can help with referrals, this is a clear advantage," Lux advises.

PARTNERING FOR A SUSTAINABLE FUTURE

More than 20 years ago, TECNARO (TEChnology NAchwachsende ROstoffe) was a lone wolf in the plastics industry. As one of Fraunhofer Gesellschaft's spin-offs, the business evolved from a humble bioplastics producer to an innovation driver of the burgeoning global bio-economy movement.

Located in Baden-Württemberg, just north of Stuttgart, TECNARO develops and produces thermoplastic compounds, composites, and blends using renewable raw materials, including bioplastics and biodegradable materials.

Research and development is at the heart of their operations and business success. In fact, TECNARO participated in the EU project "Bio4Self" in 2016, as part of the European Union's Horizon 2020 research and innovation programme.

The joint project was led by the Danish Technical University (DTU), Comfill, a Danish producer of thermoplastic composites based on commingled yarns, and 12 other partners. Its goal was to generate recyclable, self-reinforced, fibre-based composite materials for non-clothing applications. TECNARO was responsible for developing the compound, as well as shipping and producing the material at an industrial scale.

According to, Erna Muks " The DTU and Comfill were the main drivers for the innitiation of the project and played a very important role in the development of the materials. They analyzed the final self-reinforced demonstrator plates that were developed for thermoforming. They performed the mechanical tests on the bio-plates and compared simulated data with experimental data. Denmark is an innovation driver in this industry and the focus on sustainability and reducing environmental risks was very important for the project."

Sustainability: The Future of Plastics

Dr. Georgeios Mourgas, TECNARO's project manager explained: "A lot of things we are doing on an industrial scale are not easy to automate, because the processes are too complex and quality controls have to be carried out by experts. When our company grows we need to scale the infrastructure and many processes will have to be automized; it is not very easy to do that as a small company."

Despite the fact that Southern Germany is dominated by the automotive industry, white goods, and electricial engineering, Mourgas is optimistic about partnerships. In his own words: "We are open to every industry sector and every institution that wants to collaborate with us. Sustainabilty is a common ground where we can work together and align interests."



Dr. Georgeios Mourgas, project manager, TECNARO

ENTER THE GERMAN INNOVATION ECOSYSTEM

At Innovation Centre Denmark (ICDK), we offer Danish businesses, organisations, and higher education institutions access to the Southern German innovation ecosystem. Located in Munich, we provide deep insights and foster networks of entrepreneurial communities and research hubs. In collaboration with our sister centres in Tel Aviv, Sao Paolo, Silicon Valley, Boston, New Delhi, Seoul and Shanghai we follow global megatrends and perform tech scouting for our partners. Our global network is designed to connect to technological hot spots – ultimately bringing value to players in every single one of them.

Throughout 2019, IDCK Munich focused its efforts on identifying opportunities for Danish organisations, research institutions, and companies to engage with and benefit from collaborations with German industrial players, specifically the 'hidden champions.' Our team has scouted technologies in the Nordics for DACH based corporates, scouted research partners within Germany for Danish manufacturing companies, connected +50 Danish start-ups with stakeholders in Germany, initiated cross-border collaboration between regions and written numerous analysis and reports on ongoing and future trends. We are proud of our achievements and humbled by the role we are allowed to play - because none of our activities would have an impact or be even possible without our network of great partners.

And we hope for further collaboration going forward. Looking at the future, we encourage all start-ups, researchers, organisations and companies that are eager to find new ways to collaborate to reach out to us. We are in the midst of a technological revolution and the ones with the strongest and broadest partner base will stand strong. Let's talk! And a good way to break the ice with us is a conversation on the SDGs and how growth and sustainability can go hand in hand.

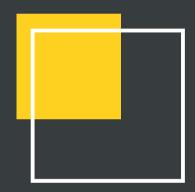
The Innovation Centre in Short

Advisory: We advise Danish companies by creating access to the latest knowledge, innovation partners, tech-scouting, and investment opportunities.

Learning & Start-up Platforms: Our programme, GOB2BMunich takes place every September and provides a platform for Danish start-ups to showcase their solutions and technologies to German corporations – including hidden champions – and investors.

Intelligence: Our master class, Industri 4.0 & Hidden Champions offers a deep-dive into the hidden champions landscape.

Science: Through workshops on research and innovation collaboration between Denmark and Germany we bring together researchers, companies, and other organisations to discuss joint proposals and partnership opportunities, with a particular focus on strengthening collaboration possibilities under Horizon 2020 and Horizon Europe.



INNOVATION CENTRE DENMARK