



#Innovation  
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# German and Israeli Innovation – The Best of Two Worlds



# German and Israeli Innovation – The Best of Two Worlds

An EY study commissioned by the Bertelsmann Stiftung

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## List of abbreviations

AHK	Deutsche Auslandshandelskammer (German Chambers of Commerce Abroad)
AI	artificial intelligence
API	application programming interface
B2B	business-to-business
BDI	Bundesverband der Deutschen Industrie (Federation of German Industries)
BMBF	Bundesministerium für Bildung und Forschung (Federal Ministry of Education and Research)
BMWi	Bundesministerium für Wirtschaft und Energie (Federal Ministry for Economic Affairs and Energy)
BVDS	Bundesverband Deutsche Startups e. V. (German Startups Association, GSA)
CVC	corporate venture capital
DSM	Deutscher Startup Monitor (German Startup Monitor)
GDP	gross domestic product
GISEP	German-Israeli Startup Exchange Program
ICT	information and communications technology
IDF	Israeli Defense Forces
IDW	Institut der Wirtschaftsprüfer in Deutschland e. V. (Institute of Public Auditors of Germany)
IIoT	industrial internet of things
IoT	internet of things
IT	information technology
KPI	key performance indicator
MI	machine intelligence
MWIDE	Ministerium für Wirtschaft, Innovation, Digitalisierung und Energie des Landes Nordrhein-Westfalen (Ministry of Economic Affairs, Innovation, Digitalization and Energy of the State of North Rhine-Westphalia)
MVP	minimum viable product
NRW	North Rhine-Westphalia
NRWSM	North Rhine-Westphalia Startup Monitor
OECD	Organisation for Economic Co-operation and Development
OWL	Ostwestfalen-Lippe (East Westphalia-Lippe)
R&D	research and development
SME	small and medium-sized enterprise
SNC	Start-Up Nation Central
SNF	Start-Up Nation Finder
TTO	technology transfer office
USP	unique selling proposition
VDMA	Verband Deutscher Maschinen und Anlagenbau (Mechanical Engineering Industry Association)

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# 1 Accompanying notes

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The road to the digital age is a challenging one, but certainly one that offers enormous opportunities. Small and medium-sized companies (SMEs) in North Rhine-Westphalia (NRW) in particular can benefit from cooperation, from exchanges within their industry and beyond, and from innovative ideas. Cooperation with the many successful young founders of the startup nation of Israel can foster curiosity and trigger action.

SMEs are the backbone of the German economy. In NRW, the 708,000 small and medium-sized enterprises make an outstanding contribution to the economic strength of our federal state. Many of them are quiet success stories demonstrating market leadership in their field of business. The companies are aware of the importance of digital transformation for business, work and life, and have begun to digitalize their processes and business models in recent years. However, more can be done to develop new digital services, sustainable business models and innovative platforms. Another relevant topic is cybersecurity, the implementation of which often exceeds the abilities of many companies.

In order to unlock this potential, a change in mentality is also necessary. The good economic conditions of recent years have created little pressure to take steps in new or unfamiliar directions. Engineering prowess, rightly regarded as part of Germany's economic success, must also be combined with a culture of risk and proactive experimentation. There is no time to lose, as the decisive steps into the digital future must be taken today. Startups can provide the impulse needed and act as drivers of innovation.

In recent years, a diverse and growing startup scene has emerged in NRW. Founders appreciate the location because they will find a functioning startup ecosystem here, which

we, as the state government, want to take to the next level with our Neue Gründerzeit initiative. For this reason, NRW aims to attract the young digital elite both at home and from abroad.

We support startups in the early stage with grants of €1,000 per month for one year. This year alone, 1,000 startup ideas have already been funded in this way. Within the framework of our "Excellence Startup.Centre.NRW" program, €150 million have been invested in six universities to promote spin-off startups. Venture capital investments in startups are expected to grow to half a billion euros by 2022, which marks a fivefold increase since 2017. We are also cutting red tape for startups and expanding research funding for artificial intelligence (AI), cybersecurity and blockchain technologies. The digital hubs of the North Rhine-Westphalia's "Digital Economy NRW" initiative link the players in six cities in NRW and offer a platform for digital cooperation.

There is room for expanding this cooperation – particularly across borders. Israel is an important partner in this process. The country has a huge concentration of startups and is home to many successful startups eager to bring their innovative technologies to the European market. NRW's central location in Europe and its large number of internationally active medium-sized companies make it an ideal partner in this complementary partnership.

During a visit to Israel this spring, I received valuable insights into the Israeli startup ecosystem. The willingness to take risks, the near absence of any fear of failure, and the entrepreneurs' focus on growth are impressive. These characteristics bode well for a fruitful cooperation. It is encouraging to see that medium-sized companies are ready to do business with international startups, and that highly qualified Israeli startups are keen to expand their business

into NRW through cooperation with our SME sector.  
Cooperation between Israel and NRW, with its thriving  
Mittelstand sector and startup scene, has all the ingredients  
needed for a strong and innovative partnership.

I wish all entrepreneurs every success and the curiosity  
and love of innovation needed for such new and powerful  
partnerships.

**Prof. Dr. Andreas Pinkwart**

Minister of Economic Affairs, Innovation, Digitalization and  
Energy of the State of North Rhine-Westphalia

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## 2 Foreword

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Germany's medium-sized enterprises, many of them family-owned with decades of operations behind them, constitute the backbone of the nation's economy. Within Germany's Mittelstand population, about 0.4 % are seen as medium-sized (and larger), with employee counts of more than 250 people and revenues of more than \$50 million per year. These roughly 15,060 companies are very important with regard to employment and national output. Similarly, according to the Institute of Public Auditors of Germany (IDW), Germany is home to more than 1,300 "hidden champions," a largely overlapping category that includes companies with fewer than 10,000 employees and an export share of above 50 %, and which command a high global market share within their primary market. While few of these firms are household names, they have grown faster than their sectoral averages and generated combined sales of around \$191.5 billion in 2016. Yet despite their long track record of innovation and robust growth, these companies so crucial to Germany's economic future are today at serious risk of falling behind their larger, international rivals – or of being disrupted by digital startups.

Medium-sized Mittelstand firms, and the hidden champions in particular, are strongly exposed to global markets in which rapid innovation is an increasingly indispensable factor for survival. However, studies have shown that innovative activity has been on the decline in the Mittelstand for a number of years. Several technologies (e.g., the internet of things (IoT), artificial intelligence (AI) and machine learning, and Industry 4.0) and, indeed, the broader field of digitalization are all becoming vital parts of doing business. However, the potential for collaboration is still mostly untapped. A window of opportunity therefore presents itself to combine the best of two worlds by connecting the German Mittelstand and the Israeli startup ecosystem.

Israel's startup ecosystem is among the world's most developed. With supportive government initiatives stretching back to the early 1990s, the world's highest research and development (R&D) spending level relative to the gross domestic product (GDP), and increasing private venture capital funding, it has long since cemented its status as a global innovation hub. Today, many of the scene's 6,000-plus startups are maturing, seeking markets beyond the country's borders and partners that can boost their international profile. Israel is transforming itself from a startup nation to a scale-up nation, looking abroad for specific collaboration projects for the technologies and products it has developed. Moreover, many of the country's agile high-tech startups offer technologies or services in areas that fill gaps in Mittelstand companies' own innovation profiles, such as cybersecurity, machine learning and big data.

Consequently, we believe these firms would benefit from forging innovation-focused partnerships with small, agile firms that complement their existing capacities. In a previous Bertelsmann Stiftung report, "The German Mittelstand and the Israeli Startup Ecosystem," we outlined some of the benefits that Mittelstand companies might derive from reaching out to Israeli startups as well as some of the possible proven engagement modes.

In this study, we address the issue from a perspective of "reverse engagement," examining potential mechanisms for bringing select Israeli startups to Germany to help Mittelstand firms overcome various innovation challenges. Specifically, we examine complementarities between the German Mittelstand and the "startup nation" Israel, and develop a proposal for a German-Israeli innovation platform that would help German companies find, communicate with and engage with the Israeli startups best suited to help them pursue their innovation goals,

and vice versa. Part of this would entail a “German-Israeli Innovation Exchange,” a program that would bring startup executives to regions and federal states such as North Rhine-Westphalia (NRW), Bavaria and Baden-Württemberg, each of which has a particularly dense cluster of medium-sized companies and hidden champions, to meet with corporate executives and familiarize themselves with the local innovation ecosystem.

The Bertelsmann Stiftung is pleased to present this study, and we thank all our interview partners for their valuable contributions and the EY team for their efforts in collecting and compiling these insights.

**Stephan Vopel**

Director

Program Living Values

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Senior Project Manager

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## 3 Executive summary

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This study reviews – through desk research and expert interviews with Mittelstand companies, startups and ecosystem experts – the current status of the Israeli startup ecosystem and the Mittelstand region of North Rhine-Westphalia (NRW), Germany. As a case study, it highlights potential opportunities for collaboration and analyzes different engagement modes that might serve to connect the two regions.

The potential synergies between the two economies are based on a high degree of complementarity. A comparison of NRW's key verticals and Israel's primary areas of innovation indicates that there is significant overlap in verticals, such as artificial intelligence (AI), the internet of things (IoT), sensors and cybersecurity. Israeli startups can offer speed, agility and new ideas, while German Mittelstand companies can contribute expertise in production and scaling, access to markets, capital and support. The differences between Mittelstand companies and startups are less pronounced than those between startups and big corporations. However, three current barriers to fruitful collaboration have been identified: 1) a lack of access, 2) a lack of transparency regarding relevant players in the market, and 3) a lack of the internal resources needed to select the right partners, often due to time constraints or a lack of internal expertise on this issue.

To ensure that positive business opportunities ensue, Mittelstand companies and startups alike have to be proactive in their search for cooperation partners and draw on a range of existing engagement modes (e.g., events, communities, accelerators). The interviews and the research conducted for this study made clear that no single mode of engagement can address all the needs and challenges associated with German-Israeli collaboration. A good mix of engagement modes is needed to bring parties together.

### The German-Israeli innovation platform combining digital and non-digital tools for success

With the long-term aim of orchestrating matchmaking activities and achieving successful and measurable results, this study recommends the establishment of a prototype platform that is designed to facilitate German-Israeli innovation and that includes both digital (e.g., an online database comparable to Start-Up Nation Finder (SNF)) and non-digital (e.g., exploratory research trips and a German-Israeli Innovation Exchange) components. There are three core prerequisites for the success of an effective platform: quality, trust and reach. Underpinned by principles intended to foster and guide collaboration, the platform is meant to provide a framework for building ecosystems and communities that enable users to scout and make connections with suitable partners. Within this matchmaking process, one of the critical success factors will necessarily be a strategy for populating both the digital and non-digital components of the platform by creating incentives to use it. Third-party networks must also be included from the start. They can act as ambassadors and influencers to help the platform expand its reach. Movers and shakers may similarly offer support through their own networks – but only if they truly champion the platform's objectives. Universities and innovation hubs are also important influencers that can assist in the scouting and matchmaking processes from the beginning.

The recommended core elements of a platform targeting German-Israeli innovation are designed to facilitate collaboration while requiring a manageable amount of investments of time and money:

- The German-Israeli innovation platform acts as an administrator of the ecosystem, connects potential new members, and provides inspiration and guidance to the whole ecosystem.
- A strong partner network of stakeholders from business, politics, academia and civil society supports the platform and incentivizes participation.
- Conferences and meetups enable connections to be formed, while a German-Israeli Innovation Exchange offers preselected startups from Israel an opportunity to come to Germany and pitch their solutions to the owners and decision-makers of Mittelstand companies (based on innovation challenges).
- Standardized innovation challenges solve a real need identified by the participating Mittelstand company (rather than addressing a theoretical challenge).
- The dissemination of best-practice examples attracts new partners. A dedicated news portal should publish best practices while also providing users with an overview of current challenges, potential partners and information about newcomers to the platform.
- The platform's digital building blocks include a bidirectional application programming interface (API) enabling connections to databases from other platforms (e.g., Startbase, Mechanical Engineering Industry Association (VDMA) Startup Machine, SNF and Crunchbase).

### Adapting and scaling to other countries and ecosystems

Given the potential benefits associated with increased economic ties among nations, a future step should entail adapting and scaling the German-Israeli innovation platform to other Mittelstand regions in Germany as well as to other geographical regions in general. The blueprint developed here can be transferred to other mature ecosystems, such as those in China or India. The innovation ecosystems in these countries – with their rapidly growing and highly skilled workforces, sufficient venture capital and growing number of startups – also promise good prospects for collaboration with German Mittelstand companies.

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## 4 Introduction

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Often referred to as a “startup nation,” Israel features a dynamic, entrepreneurial-oriented culture in which startups demonstrate from the outset a keen desire to expand. Israeli startups – defined here as young, innovative companies showing fast growth in terms of revenue and employees – benefit from a highly educated workforce and a vibrant high-tech sector that cultivates a user-centric approach to research and development (R&D) and is quick to implement new technologies. Given the limited scope of the domestic market, Israeli entrepreneurs consistently seek entry into larger markets, most notably the United States. Since international expansion, in particular, has enabled many Israeli startups to mature into larger and more established companies, a growing number of young startups are becoming more and more interested in establishing cooperation agreements or partnerships with larger businesses abroad. German businesses, particularly small and medium-sized enterprise (SMEs) – often referred to collectively as the German Mittelstand – have yet to fully realize and leverage this potential. It should be noted that although the term SME includes firms with staff numbers both above and below 250, there is some definitional ambiguity regarding the term Mittelstand. As a statistical category, it includes companies with staff headcounts as low as 10. However, Mittelstand is also often used to refer to medium-sized (or larger) companies in the German-speaking world that are traditionally family-owned, and that employ more than 250 employees subject to social welfare contributions. These medium-sized (and larger) companies are the focus of this study, as they can benefit the most from an infusion of external innovation.

Recently identified by the European Union’s Innovation Scorecard as an innovation leader, Germany ranks high on most international innovation indices and enjoys a good reputation worldwide for its delivery of reliable, high-quality products. The backbone of the German economy,

the Mittelstand, features a large number of so-called hidden champions, which are innovation leaders in exclusive possession of crucial intellectual property. Most commonly, these firms are business-to-business (B2B) suppliers whose brands rarely enjoy high name recognition outside of Germany.

Despite Germany’s strong tradition of innovation, a number of studies across all sectors have found that the Mittelstand’s innovative activity has been on the decline for years. According to the 2016 SME Innovation Report (KfW Research 2016) published by the German state-owned development bank KfW, the year 2016 marked a low point in this regard. This negative trend does not only concern Germany, but Europe as a whole. The European Commission has argued since 2003 that there is a need to attract and engage with foreign entrepreneurs as part of a larger strategy to maintain market leadership through technology and innovation. In short, European medium-sized companies in particular must expand their capacity for innovation if they are to remain globally competitive. Gaps in innovative activity – let alone capacity – are worrisome for any sector or business preparing for the effects of disruptive innovations, such as artificial intelligence (AI), big data analytics, smart manufacturing, quantum computing and so on.

In Germany, Mittelstand companies are often clustered in specific regions of federal states. Talent-wise, culturally and economically, Mittelstand companies are deeply rooted in their regions of origin. In order to understand the need and potential of the German Mittelstand with regard to innovation from Israel specifically and from abroad in general, a closer look at these regions is warranted. Since Mittelstand regions share many similarities, best-practice recommendations gleaned from one Mittelstand region can be applied to other Mittelstand hot spots.

The federal state of North Rhine–Westphalia (NRW) is home to some of the country’s most industrialized regions and accounts for nearly one–fifth of German gross domestic product (GDP). A total of 3,494 Mittelstand companies are located here, the highest such number of any German state. Combined with a high number of hidden champions and a strategic location in the heart of Europe serving as an economic gateway to European markets, this makes NRW a prime example of a region in Germany that can benefit from – and serve as a case study for – recommendations for networking tools to connect the Mittelstand with Israeli startups.

A closer look at the relative needs and strengths of businesses on both sides shows that there is tremendous potential that has yet to be fully tapped. For Israeli startups, medium–sized companies based in NRW or more broadly in Germany are of interest precisely because they are embedded in their local communities, integrated into European markets and often have global scaling power. Conversely, the innovative and entrepreneurial verve demonstrated by Israeli startups in the disruptive technology sector, combined with their diverse, highly educated and high–tech–oriented pool of talent, is of considerable value to German Mittelstand companies looking to reclaim their global lead in innovation. Both sides have much to gain from engaging in cooperation with each other. The main challenge is to identify which networking tools would be most useful in maximizing the opportunities for a meaningful and sustainable exchange between German Mittelstand companies and Israeli startups.

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## 5 Methodological and theoretical design of the study

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Although there has been ample research addressing the broader potential for German–Israeli collaboration in the fields of innovation and entrepreneurship, only a small amount of research specifically on joint efforts between medium-sized German companies and Israeli startups has been conducted to date. This is striking given the fact that Germany has much to offer Israeli startups poised for takeoff. Indeed, according to data collected by Hermann Simon of the Institute of Public Auditors of Germany (IDW), the country is home to more than 1,300 of the world’s 2,734 so-called hidden champions (Simon and Block 2019).

In order to assess the parameters of such opportunities, this study sets out to explore how lasting relationships between medium-sized German companies and Israeli startups could be built. This entailed conducting a feasibility study that takes one of Germany’s Mittelstand regions, the state of North Rhine–Westphalia (NRW), as a case study. This, in turn, formed part of a broader analysis of current markets in both countries, potential target groups and needs, and existing modes of engagement, which were paired with the description and development of a platform for collaboration. For the purpose of this study, the collaboration platform is deemed to include every networking instrument that fosters collaboration between the German Mittelstand and Israeli startups. The study entailed conducting interviews with experts and performing desk research.

### Expert interviews

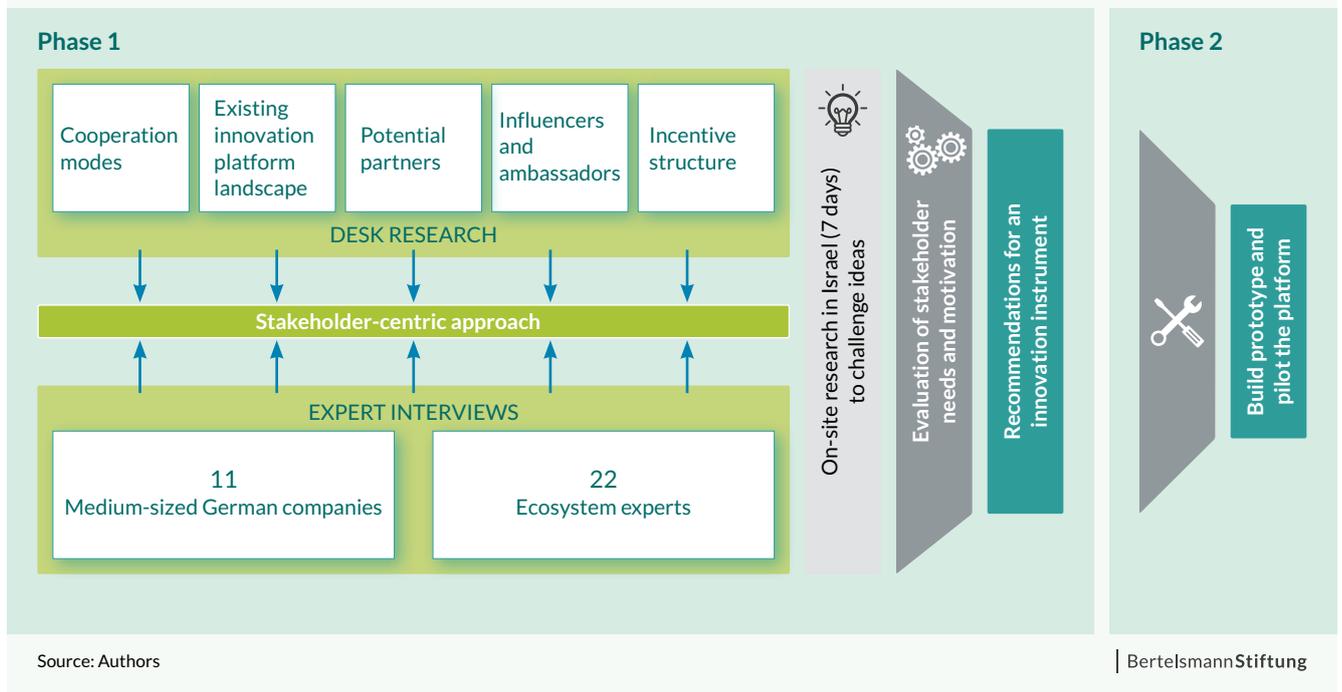
All interviews were conducted separately to ensure a comprehensive overview of both the startup and company landscapes. A total of 62 interviews were held. 11 interview partners were German managers from the Mittelstand. 23 interview partners, who were meant to provide the startup perspective, were ecosystem experts, “influencers” or

“movers and shakers.” Some of the ecosystem experts described the situation from a German perspective, while others provided insights from Israel. Four of these ecosystem experts were startup executives from Israeli firms that had already engaged with medium-sized German companies.

### Desk research

The findings from the interviews were corroborated by insights derived from desk research. This research focused on five topics: cooperation modes, the existing landscape of innovation platforms, potential partners, influencers and ambassadors, and incentive structures. First, various existing cooperation modes were compiled, and their cost and degree of success queried during the stakeholder interviews. The aim was to filter out suitable modes for a platform prototype. This allowed for an analysis of the existing market of digital and non-digital platforms serving medium-sized German companies and Israeli startups, with a focus on stakeholder structure and potential roles within a platform model. Drawing on these insights, a landscape of stakeholders was mapped with the goal of identifying potential partners in both countries and determining the platform areas (digital and/or non-digital) in which they could best contribute expertise. In order to make a platform successful, a population concept is indispensable; thus, a number of go-to-market strategies were collected and combined with incentive components designed to convert influencers into ambassadors. All hypotheses derived from the desk research were iteratively refined in the process of interviewing experts and challenged during a one-week on-site research trip to Israel. All conclusions were summarized as recommendations for action in developing a prototype for a platform designed to facilitate German–Israeli innovation.

FIGURE 1 Overview of the methodology and theoretical design of the study



## Recommendations

Recommendations for actions to be taken have been drawn from the findings of previous project phases and the feedback acquired through interviews with stakeholders in both countries. These recommendations take into consideration the frequency of interviewee feedback and the experience status of the interviewee (i.e., their degree of experience regarding co-creation between startups and medium-sized to large companies). The goal here was to pinpoint the main drivers of successful cooperation and recommendations for feasible action rather than to provide a comprehensive overview. This study therefore provides guidelines on platform design, incentive structure, primary target groups, key features and service offerings. The reader will also find suggestions regarding guiding principles, a go-to-market strategy, and thoughts on transferability and scalability.

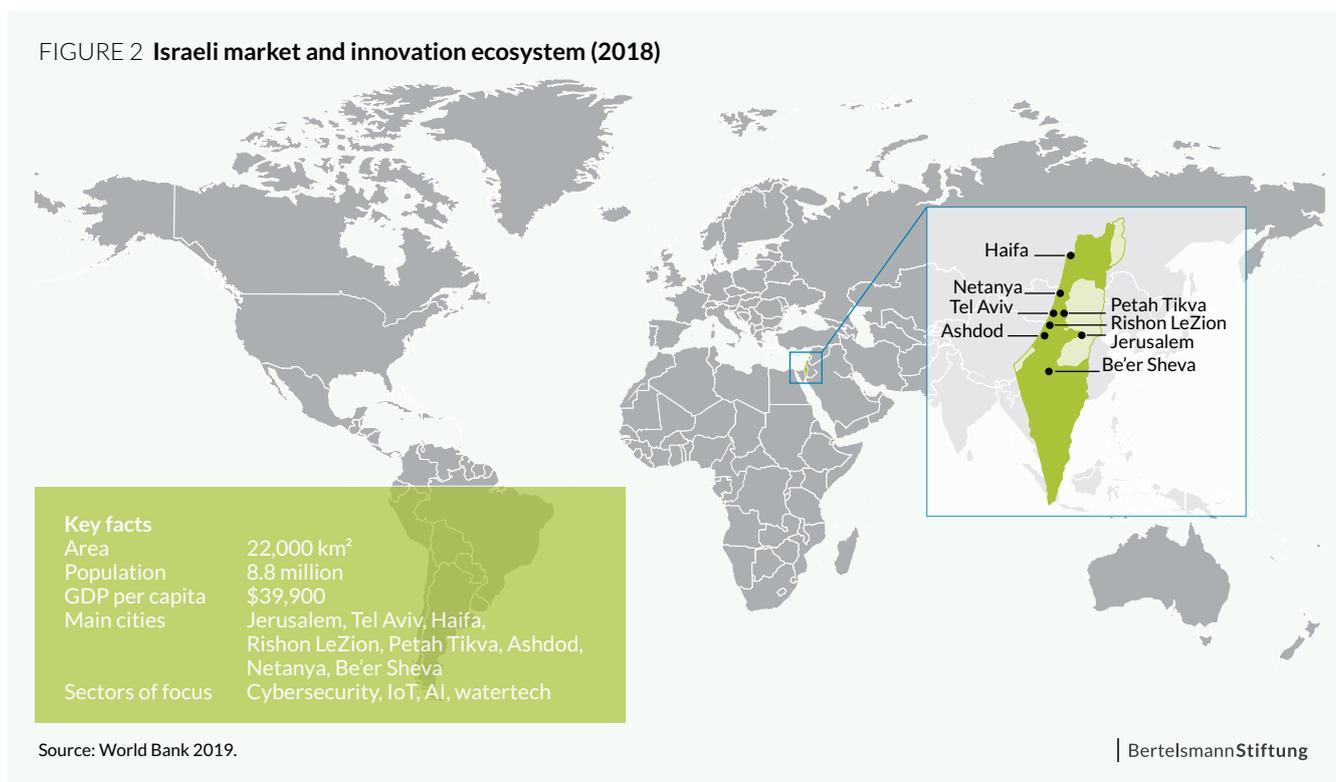
## Out of scope: prototype test and validation

As part of a prototype test and validation phase to be carried out in the future, the selected platform design (value proposition and features) will be further developed and adjusted, and potential business/incentive models will need to be validated.

In keeping with the startup mentality and given the rapid development of the innovation scene, it is highly recommended that the process begin with a prototype platform that can flexibly respond to changing needs. In today's world, collaboration is central to any innovation ecosystem. Crowdsourcing ideas has proven to be a successful approach in many contexts. Motivating influencers to take on the role of ambassador involves engaging with them and taking the feedback they provide seriously. Building a prototype and adjusting it during the process is an ideal approach for getting a head start and saving resources. This study develops a blueprint specifying the main features and services needed for a German-Israeli innovation platform.

## 6 The Israeli startup ecosystem: From startup nation to scale-up nation

FIGURE 2 Israeli market and innovation ecosystem (2018)



### A glance at the Israeli startup ecosystem

While Israel as a country only ranks 150th worldwide in geographical size, it has given birth to a rather large number of startups. The country has more than 6,000 existing startups, with around 1,000 startups newly registered every year, a clear sign that local entrepreneurs have established Israel as a global hub for innovation. With around 8.7 million inhabitants, Israel has the highest per capita density of startups in the world (see Figures 2 and 3). Indeed, there is one startup for every 1,450 people in the country. Israeli startups are providing cutting-

edge technologies for a number of high-tech industries and industrial activities, including those related to water, energy, agriculture, Industry 4.0,<sup>1</sup> software, life sciences,

<sup>1</sup> The term Industry 4.0 (I4) encompasses numerous areas of technical development. For example, internet of things (IoT) technologies, artificial intelligence (AI), cybersecurity and sensors are all significant aspects of Industry 4.0. However, they are also used in other, non-industrial sectors, such as health care and the service sector. For our purposes, we consider these technologies exclusively from an industrial standpoint. Start-Up Nation Central (SNC) refers to I4 as a set of technologies that digitalize the entire production process by connecting physical industrial assets with digital insights. The primary set of technologies used to execute this change is the industrial internet of things (IIoT) combined with the ability to rapidly and accurately process the data that IIoT sensors collect (Engelstein 2018).

mobile phones and telecommunications, big data, cybersecurity and the internet of things (IoT).

Israel's startup ecosystem has attracted growing attention in recent years, with many observers (e.g., the High-Tech Connect Suisse association) pointing to increases in exit deals and venture capital funding (Haller 2018). The country's current shift from a startup to a scale-up nation is often attributed to the healthy state of its startup ecosystem, which features a high tolerance for risk, entrepreneurs who tend to be open to sharing data and knowledge, and a network of stakeholders with strong mutual ties. Israeli startups have also gained a reputation for being able to respond quickly, engage in rapid prototyping, and take practice-based approaches to problem-solving. The country's geographical concentration of institutions in various sectors is also cited as being among the key factors facilitating multidisciplinary thinking and networking.

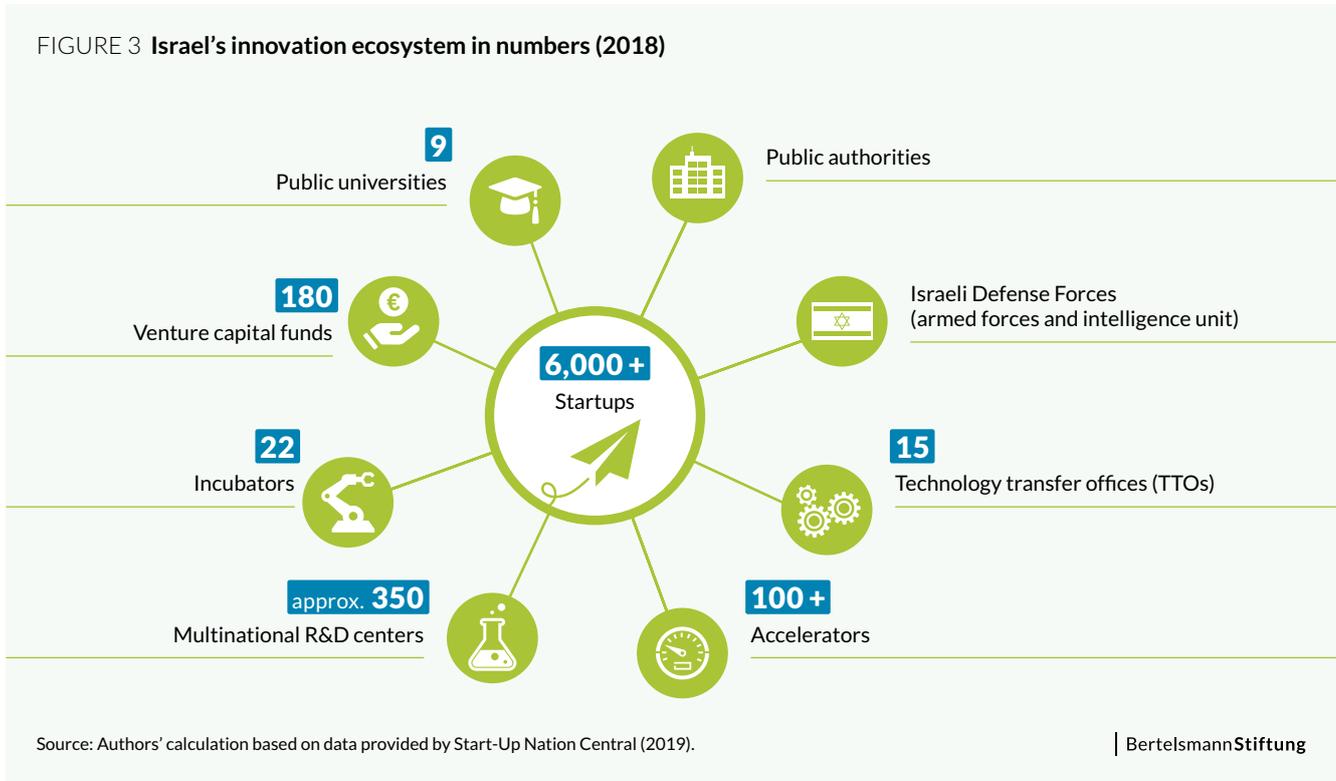
Many startups in Israel have already matured into bigger and more established companies looking for bigger markets as they scale up. "Israel is a market of an island. Startups therefore have to think global from day one," said Jeremie Kletzkine from Start-Up Nation Central (SNC). Many Israeli entrepreneurs are trying to build companies with a potential for market disruption, with the associated prospect of a big exit. "An embedded problem in the ecosystem was that entrepreneurs always had their exit model in mind," said Julia Schifter from TIPA, an Israeli startup that develops compostable packaging. However, the number of newly registered startups has been going down in recent years. While the annual quantity of scale-up funding rounds has increased significantly, fewer new businesses have been registered every year since 2014. To some extent, this is due to the intensifying "war for talent" in Israel. Until recently, Israeli labor costs have tended to be lower than in the United States or Germany. This is one reason why large companies started opening research and development (R&D) centers in Israel, seeking to recruit highly skilled employees at a lower cost than would be possible elsewhere. However, Israel and, in particular, Tel Aviv are now facing the challenge that a large number of global companies – including Google, Facebook, Amazon and Apple – are today paying above-average salaries in the market. Startups consequently have to compete with the internet giants from abroad, which is a first in Israel's history.

Nevertheless, the country's startup ecosystem has retained its position as a global innovation hub. Many experts believe that the falling number of new startups is simply a sign that the ecosystem is maturing, with entrepreneurs increasingly reaching later stages with their startup ventures. Having survived the early, risky days, they are now able to scale up companies instead of having to found new ones. Another sign of the maturing ecosystem is the high number of Israeli companies that are now listed on the NASDAQ stock exchange. Israel ranks behind only the United States and China with regard to the number of companies listed on this New York-based exchange (Williams 2018) – a further testament to the high quality of entrepreneurs in the Israeli innovation ecosystem.

The last few years have been very successful for the Israeli startup ecosystem. In 2017, the high-tech sector alone raised a record \$5.24 billion in funding. This all-time record was driven by the expansion of local venture capital funds and by the entry of new funding providers that are joining the hunt for the next big Israeli exit. Furthermore, private companies that bought Israeli startups in the past have been able to expand their activities following their exit. Intel, for example, has continued to invest billions of dollars in tech projects following its \$15 billion purchase of Mobileye, an Israeli startup focusing on artificial intelligence (AI) for self-driving cars, in 2017 (Handelsblatt 2019). Amir Mizroch from SNC called this acquisition "one of the most intriguing acquisitions in tech history, and a big indicator of tech's future." In the past, such high-value acquisitions have served to motivate other local founders to keep innovating and to start new firms while providing the necessary capital for the ecosystem to expand further.

Israel's "talent factory" is widely recognized as one of the primary contributors to the ecosystem's success. "In Israel, tech is a life choice, where you get a lot of support," said 3DSignals' Amnon Shenfeld. The independent, non-profit organization SNC estimates that the potential workforce in the country's high-tech industry amounts to 10 % of the total national workforce of 3 million people. These 300,000 Israelis in the high-tech industry are responsible for 15 % of the country's gross domestic product (GDP) and 50 % of its industrial exports.

FIGURE 3 Israel’s innovation ecosystem in numbers (2018)



Israel has the world’s highest expenditure on R&D in relation to national GDP. Indeed, with R&D expenditures totaling 4.5 % of GDP, Israel spends almost twice as much for this purpose as the Organisation for Economic Co-operation and Development (OECD) average (2.3 %) (OECD 2018b). Ongoing government support, especially with regard to the advantageous tax treatment of foreign venture capital, is another reason for Israel’s attractiveness as an investment location.

Growing venture funds seek startups with ever-bigger exit prospects, and thus look for companies with “unicorn potential” (within the high-tech startup community, a “unicorn” is a rare company with a valuation above \$1 billion). Around 335 unicorns were reported or rumored worldwide as of April 2019, and Israel is home to at least four of them (CB Insights 2019).

The Israel Defense Forces (IDF), which enjoy strong ties with Israel’s high-tech sector, have also played an important role in the rise of the country’s startup ecosystem. The ties and bonds forged among young

Israeli men and women during their mandatory military service often stretch far into their later lives. This helps to establish strong interconnections in their professional functions, which in turn result in the exchange of ideas. The IDF also runs a number of elite programs that produce entrepreneurs who stay connected through alumni programs. For example, the Talpiot training program, which accepts candidates who have demonstrated outstanding scientific aptitude in their academic careers, is a breeding ground for entrepreneurs. Similarly, alumni from the Israeli Intelligence Corps Unit 8200, which is responsible for signals intelligence collection and code decryption, often apply the knowledge gained during their military service to data-driven or cyber businesses that enjoy an excellent reputation on the market. Today, a number of former intelligence officers hold top positions in international information technology (IT) companies or have founded successful startups themselves.

The ability to think in ecosystem terms is also evident in the engagement of well-known entrepreneurs with Tmura – the Israeli Public Service Venture Fund. Tmura

was founded in 2002 with a portfolio of options donated by more than 590 companies and tens of exits. The fund has continued to receive donations of equity from Israeli and Israel-related high-tech companies, and whenever there is a liquidity event (an exit such as an initial public offering or the purchase of a company), it allocates its share of the proceeds to (primarily tech-related) education- and youth-related charities in Israel. In so doing, Tmura is helping young people who may themselves find their way into the innovation ecosystem one day to develop new skills. Efforts such as these, which foster the cross-pollination of talent and funds, have helped the Israeli startup and innovation ecosystem develop and evolve while ensuring a sufficient supply of skilled workers and entrepreneurs for the future.

Israel's ecosystem has been nurtured by many governmental initiatives that provide direct or indirect support to startups. One of these is the Israel Innovation Authority, which is a part of the Ministry of Economy and Industry and tasked with guiding government support for industrial R&D and providing financial and professional support to startups in their early seed-funding or pre-seed-funding stages.

In 1993, governmental initiative led to the formation of Israel's first private venture capital fund. Operating today as the Yozma Group, this pioneer successfully paved the way for the private equity investment landscape we see today, which encompasses 180 venture capital funds along with a supporting cast of 22 incubators and more than 100 accelerators. In a next step, 16 technology transfer offices (TTOs) were created with the aim of licensing and commercializing the knowledge generated by the nine public universities and roughly 350 multinational R&D centers. These TTOs are profit-oriented, key-performance-indicator-driven institutions that maintain close relationships with university departments in Israel. They are often owned by private investors or the universities themselves. Within the market, the TTOs are seen as being focused on generating profits through the use of the technologies originally developed by universities. For their part, multinational enterprises often enter the Israeli market by creating local R&D centers. Such centers offer these companies access to the local innovation ecosystem with relatively low risk, but with significant potential for collaboration with local startups.

To sum up, there are numerous drivers of innovation within the ecosystem, including the armed forces, universities in collaboration with TTOs, government authorities, multinational branch offices and R&D labs, venture capital funds, incubators and accelerators. This unique diversity of key drivers creates a holistic support network, enabling Israeli entrepreneurs to focus on their business ideas (Solomon 2018; Bordo 2018).

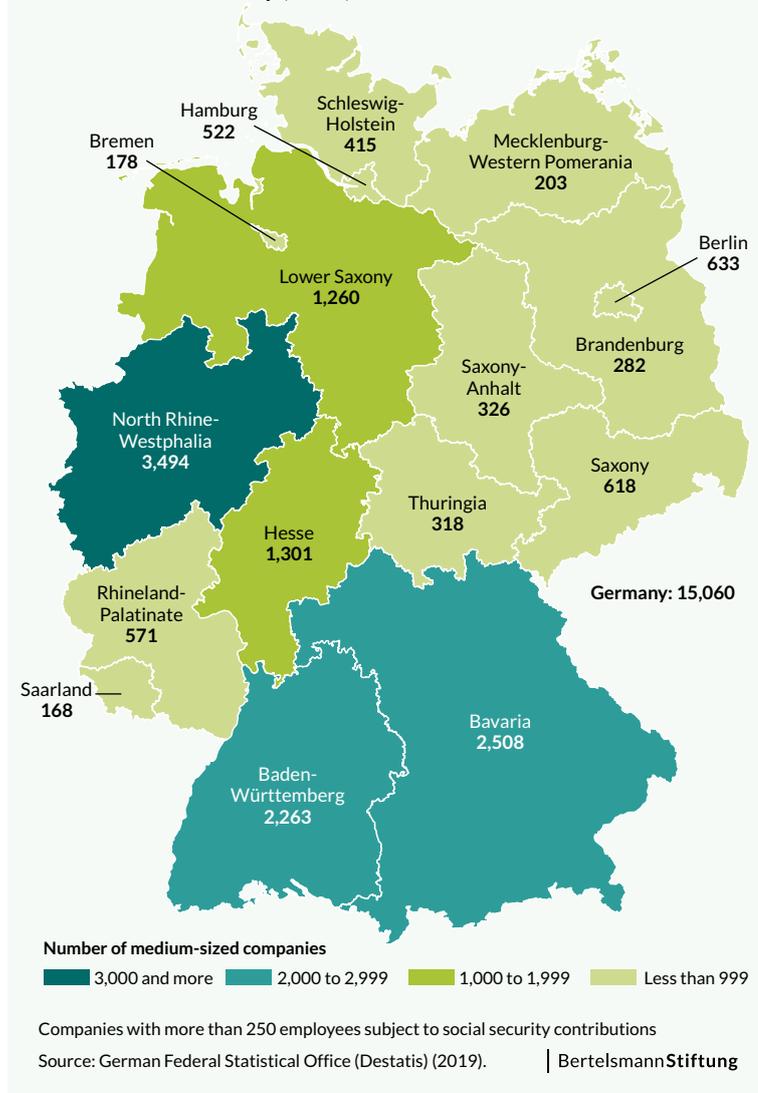
# 7 The Mittelstand: The backbone of the German economy

Germany is Europe’s largest single national economy. With its long industrial tradition today complemented by the service industry, it is also a highly diversified economy.

When many Israelis think of Germany, the first location that enters their mind is Berlin. However, the backbone of the German economy remains the German Mittelstand, which is situated mostly in the countryside, with companies often active within the industrial sector.

The segment of medium-sized and larger companies with more than 250 employees and regular annual turnover of over €50 million is the point of reference for startup cooperation within the scope of this study. As illustrated in Figure 4, Germany features 15,060 of such firms, which are likely to feature business models with proven market success. These established companies are often focused on perfecting their processes and optimizing the use of resources within the firm (operational excellence). Due to their size, they tend to feature set bureaucratic structures and standardized processes which are often highly efficient but can impede medium-sized companies’ efforts to innovate. In many cases, German Mittelstand companies focus on incremental innovation of their most successful products. Thus, such firms often need to rely on outside sources for innovation, especially when more disruptive changes in technology or markets are in sight. Collaborations with startups can fill this gap. Projects of this nature can also help a company attract talented employees who might otherwise go elsewhere, thereby increasing the company’s competitive edge.

FIGURE 4 The absolute distribution of medium-sized companies in Germany (2017)



The absolute number of 15,060 medium-sized companies offers significant overall potential – particularly when this is compared to the 1,800 large and well-known companies in Germany (KfW Research 2015).

Any discussion of the German Mittelstand often involves the term “hidden champions.” The Fraunhofer Institute defines hidden champions as companies with fewer than 10,000 employees that are primarily active in international markets (i.e., with an export share above 50 %), and that command a high global market share within their primary market. This market share must be at least 10 % for markets with a small market volume (less than \$224 million annually), at least 7 % for markets with a volume of between \$224 million and \$565 million, at least 3 % for markets with a volume of \$565 million to \$1.13 billion, and at least 1 % for markets with a volume of more than \$1.13 billion. There are currently more than 1,300 companies in Germany that meet the criteria for being hidden champions. In total, they employed around 500,000 people in 2018 and generated combined sales of around \$191.5 billion (Simon and Block 2019). As we will see later, with their high degree of dynamism and openness to innovation, Germany’s hidden champions play a special role for startup collaborations.

Among medium-sized German enterprises, in particular, many companies have struggled to integrate digitalization (a key aspect of innovation) into their business realities. Charme Rykower of the German Chambers of Commerce Abroad in Israel (AHK Israel) said: “Innovation in Germany is well-accepted, but the determination to implement it in the organization is too often missing.” Established, smoothly running departments within Mittelstand companies often struggle even to test new process ideas. Unless every single employee consents to a new approach, and is motivated to pursue it, companies will find it difficult to execute such changes. Those at the management level must also become actively involved, commit to the changes and lead by example (Freimark 2018).

So why are Germany’s medium-sized enterprises not making the necessary investments to catapult themselves into the digital age? A number of obstacles stand in their way. Since 2000, the Federation of German Industries (BDI), working with several partners, has regularly published a comparative study that puts Germany’s innovation strength into international context. The study, known as

the Innovationsindikator (Innovation Indicator), serves as a basis for innovation policy decisions. In its 2018 edition, the Innovationsindikator cites insufficient time and human resources as primary reasons for medium-sized enterprises’ failure to reinvent their business models (Frietsch et al. 2018).

In times of near-full employment, well-trained specialists can take their pick of employers. This puts medium-sized enterprises in a difficult situation, as they have to compete with well-known large companies for employees and therefore often find it hard or even impossible to fill vacancies. This applies in particular to skilled-labor positions in manufacturing, with more than 50 % of medium-sized companies having vacancies.

Germany’s currently positive economic climate has also made many medium-sized companies unwilling to look into and possibly adopt alternative business models or new forms of value generation. Feeling relatively secure, these companies are focusing instead on incremental improvements to their existing value chains. Innovation managers and startups thus have to redouble their efforts to convey the importance and necessity of accelerating transformational processes within existing business organizations. To some extent, this positive economic environment poses a risk to innovation and true disruptive trends. As Alexander Hain, then-head of Wincubator, Wilo’s corporate incubator, said: “Low market pressures concentrate all strategic decision-making on daily operations and distract from forward-looking strategic business decisions, for example, transforming from a supplier to a true solution provider.” Mirco Lange of the food retailer Edeka Nord offered an even starker warning, saying: “It is very important to wake up. We are doing too well at the moment.”

The federal state of North Rhine-Westphalia (NRW) is undergoing rapid transformation and has recognized the difficulties experienced by medium-sized companies in this area. The following chapter will take a closer look at how NRW is striving to create conditions facilitating the growth of an innovation ecosystem through internal and external innovation.

## 7.1 The case study of NRW

FIGURE 5 Comparison of Israel, Germany and NRW, regarding population, GDP, GDP per capita and R&D expenditure as a percentage of GDP (2018)

	 Israel	 Germany	 NRW
Population	8.8 million	83 million	17.9 million
GDP	\$351 billion	\$4,399 billion	\$807 billion
GDP per capita	\$39,900	\$53,000	\$45,100
% GDP spent on R&D	4.5% (2017)	3.0% (2017)	2.1% (2017)

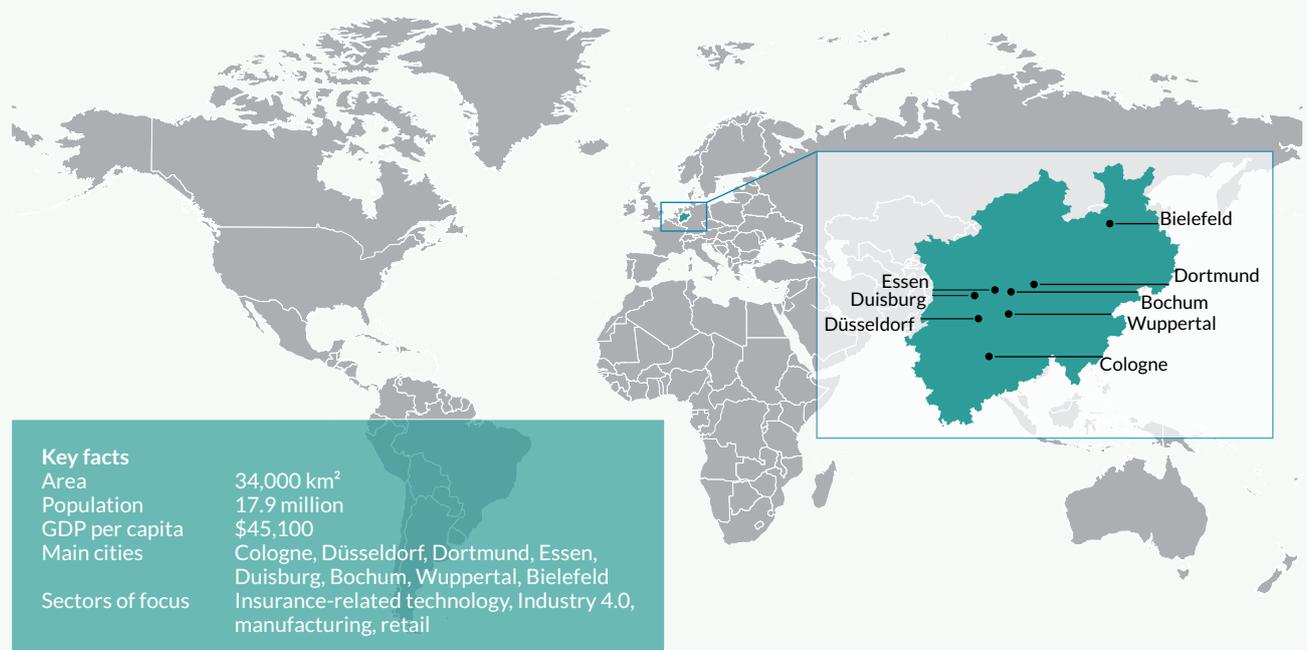
Sources: Authors' calculations based on data from the Israeli Central Bureau of Statistics (2017), IT.NRW (2017), the OECD (2018) and Statista (2019a–d).

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Among Germany's 16 federal states, NRW is most strongly defined by its industrial sector. NRW has the largest population (17.9 million inhabitants) and the greatest

economic output of all federal states. In addition, 29 of Germany's 79 large cities are in NRW. Among Germany's top 100 corporations, 37 of them are based in the state.

FIGURE 6 NRW market and innovation ecosystem (2018)



Source: Authors' calculations based on data from Statista (2019a–c).

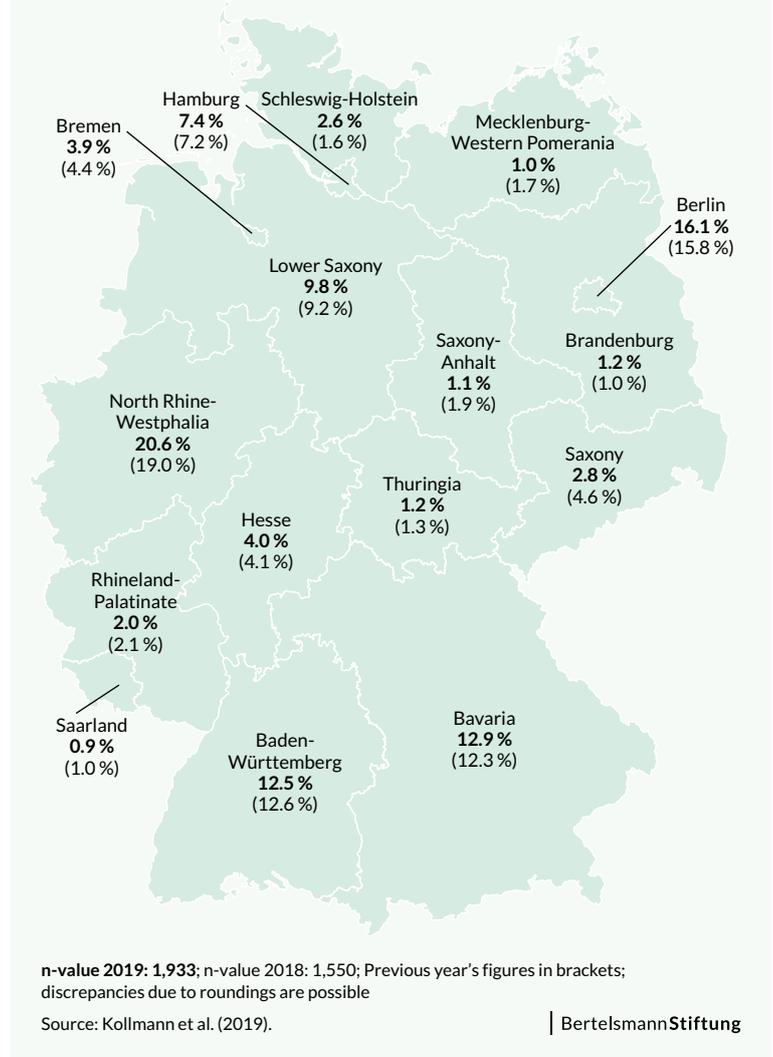
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This includes several global companies, such as Bayer, Deutsche Post DHL, E.ON, Henkel, Thyssenkrupp and Bertelsmann. NRW is the leading German industrial region and contributes significantly to the German economy.

Figure 5 compares key economic data from this study's three geographical areas of focus. NRW's overall economic output is significant – yet, in 2017, it spent only 2.1 % of its gross domestic product (GDP) on research and development (R&D) and innovation, putting it in the bottom third of all of Germany's federal states. However, since that time, a number of innovation- and startup-support programs have been established that are not reflected in the source materials of Figure 5. Most of these programs are intended to support startups or spur activity in the areas of digital transformation and digitalization within medium-sized companies, so the figures may have improved.

Part of NRW's strategy for promoting the federal state's economy and for supporting medium-sized companies, in particular, has been to create and support six innovation hubs. This initiative has helped attract around 1,500 startups to the federal state. The innovation hubs connect startups with German Mittelstand companies, with the aim of helping the larger firms engage in digital transformation (Bertenrath et al. 2017). Germany's Federal Ministry for Economic Affairs and Energy (BMWi) launched its own innovation hub initiative, DE:Hub, in 2017. It consists of 12 hubs based in Germany's most famous university cities. In NRW, two cities were selected to focus on key sectors. The first hub, in Cologne, is dedicated to insurance topics. Here, collaborations between established companies and founders from the insurance-technology community reflect the industry's willingness to develop innovative insurance solutions. The second hub is in Dortmund, a city known for its industrial tradition and science sector; here, companies and founders are working on innovations for the logistics industry (Bitkom 2018).

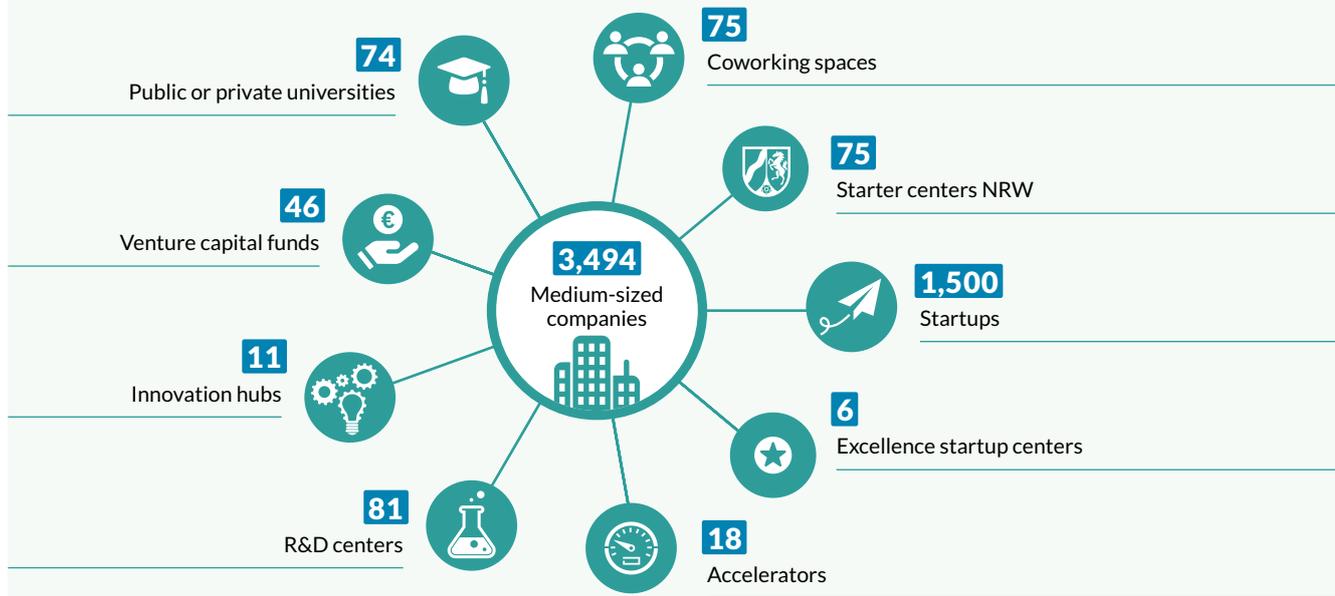
FIGURE 7 Headquarters of German startups, by federal state (2017–2018)



Three private-sector hubs complement these public initiatives. In Düsseldorf, a new hub focusing on food-related technologies opened in the beginning of 2019. In the NRW region of East Westphalia-Lippe (OWL), the Founders Foundation in Bielefeld, established and supported by the Bertelsmann Stiftung, and Garage 33 in Paderborn are both helping build diverse innovation ecosystems.

As shown in Figure 8, NRW is becoming a frontrunner with regard to innovation by startups. According to the German Startup Monitor (DSM), published by the German Startups Association (BVDS), about 20 % of all German startups originate in NRW (see Figure 7).

FIGURE 8 NRW's innovation ecosystem in numbers (2018)



Source: Authors' calculations based on data from MWIDE (2019) and own research.

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Investment has kept pace with this rise in startup activity. Working through the state-owned NRW.BANK, the government expanded its venture capital activities by \$241 million at the end of 2017. In total, the NRW.BANK manages an investment portfolio of \$525 million, which is divided between seed and later-stage funds (WIRTSCHAFT. NRW 2017). With a total of \$179.3 billion in foreign direct investment in established businesses at the end of 2016, NRW has attracted more than seven times as much foreign direct investment as Berlin (NRW.Invest 2017).

NRW is also home to around 70 universities with more than 760,000 students combined (winter semester 2017/2018), about 100 university-based research institutes and more than 60 non-university research institutes, making it Europe's densest scientific and research landscape (MKW 2018). The state has 14 public universities and 16 public universities of applied sciences, many of which offer entrepreneurial and digital-focused modules. Two of these, the University of Cologne and RWTH Aachen University, are considered to be among Germany's "elite" universities.

RWTH, in particular, is one of Germany's biggest and most prestigious institutions for technical studies. The universities are complemented by 30 private and church-affiliated higher-education institutions as well as seven higher-education institutions for music or the arts. This educational infrastructure offers critical support to the regional economies, which primarily consist of service-industry, manufacturing, media, and information and communications technology (ICT) companies.

This diverse higher-education landscape provides companies with a "talent factory" that gives students a background covering all relevant future technologies as well as the skills needed for all aspects of digital change. Recognizing the importance of the connection between academic science and the economy, NRW has established a funding program called "Excellence Startup Center. NRW." In early 2019, NRW allocated a total of \$169 million to six universities (Aachen, Bochum, Dortmund, Cologne, Münster and Paderborn) for the purpose of developing their startup initiatives (WiWo Gründer 2019; NRW 2018). This is

a very significant investment compared to other national initiatives, such as the BMWi's EXIST-Gründungskultur project, which supports universities across Germany (including in NRW) with an annual budget of only \$16.95 million. Under the NRW-funded program, entrepreneurs as well as teams of up to three persons can apply for one of 1,000 founder scholarships, which provide recipients with an unconditional basic income for one year, allowing them to focus on their startup idea.

To summarize, NRW offers a growing startup ecosystem, good mobility infrastructure, top universities and R&D departments, and 3,494 medium-sized companies, including 332 hidden champions (Simon and Block 2019). This makes it fertile ground for startup collaborations. However, the German startup ecosystem is still far behind the Israeli ecosystem, and is currently unable to meet the German Mittelstand's demand for startup collaborations and innovation. Therefore, getting external innovation from innovation hot spots, such as Israel, can cater to this demand. What is needed now is a platform that enables international startups and German Mittelstand companies to find one another, connect and collaborate.

## 7.2 NRW: A regional outlook

Within NRW itself, there are significant economic differences among regions. Situated in the eastern part of NRW, East Westphalia-Lippe's (OWL's) economic structure is dominated by medium-sized companies (12.06 % of NRW's total) that are often family-run and long-established (see Figure 9). Moreover, high equity ratios, a good sectoral mix and strong technology leadership in many sectors of the regional economy provide for flexibility when navigating the effects of broader economic ups and downs. Many companies in the region are aware of the potential offered by collaborations with startups and are eager to find innovation partners. This section will thus focus on what the region has to offer potential collaboration partners.

OWL has a population of 2.07 million, and is home to a number of well-known, globally operating enterprises. Companies headquartered here include Bertelsmann, Melitta, Miele, Dr. Oetker, Gerry Weber, Schüco, DMG MORI Aktiengesellschaft, Wincor Nixdorf, Hörmann, Phoenix Contact and Claas.

FIGURE 9 Medium-sized companies in NRW and OWL (2017)



Source: German Federal Statistical Office (Destatis) (2019).

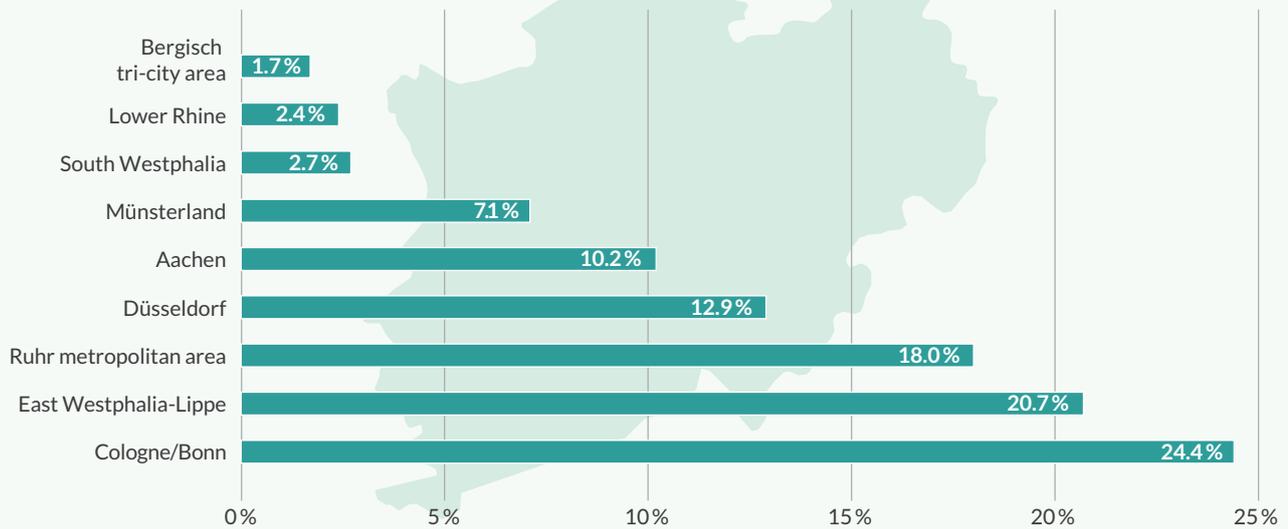
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The region also contains numerous companies integrated into broader supply chains. A connected factory, for instance, requires mechanical-engineering, automation and electrical-engineering capabilities, all of which are available locally in OWL. In 2012, OWL was chosen by Germany's Federal Ministry of Education and Research (BMBWF) to host the Leading-Edge Technology Cluster for Intelligent Technical Systems. This cluster is the largest publicly funded project within the federal government's Industry 4.0 initiative, receiving \$45.2 million in funding from the federal government and involving 200 partners.

A recent study published by the German Startups Association (BVDS) shows that the OWL region is in second place within NRW with regard to local startup activity (Kollmann et al. 2019). Drawing on the 2018 German Startup Monitor (DSM) and the NRW Startup Monitor (NRWSM) surveys, Figure 10 shows the distribution of startups throughout NRW, with 20 % based in the OWL region (Kollmann et al. 2018; Kollmann et al. 2019).

While this is not a representative study and not all of the region's startups participated in the survey, it does signal

FIGURE 10 Distribution of NRW participants in the German Startup Monitor (DSM) 2018



Source: Kollmann et al. (2019).

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that, in comparative terms, the OWL region has the second-largest number of startups in NRW, right behind Cologne/Bonn. However, the interviews conducted for this study showed that the demand for startups and their innovative technologies and services cannot be met locally at the present time, as there is an insufficient number of startups that match the sectoral focuses of the local Mittelstand companies.

Proximity to strong industrial firms plays an important role for higher-education institutes in OWL (OstWestfalenLippe GmbH 2016). Three universities – those of Bielefeld, Paderborn and Lemgo – are part of this ecosystem, with the latter two hosting Fraunhofer Institute research centers.

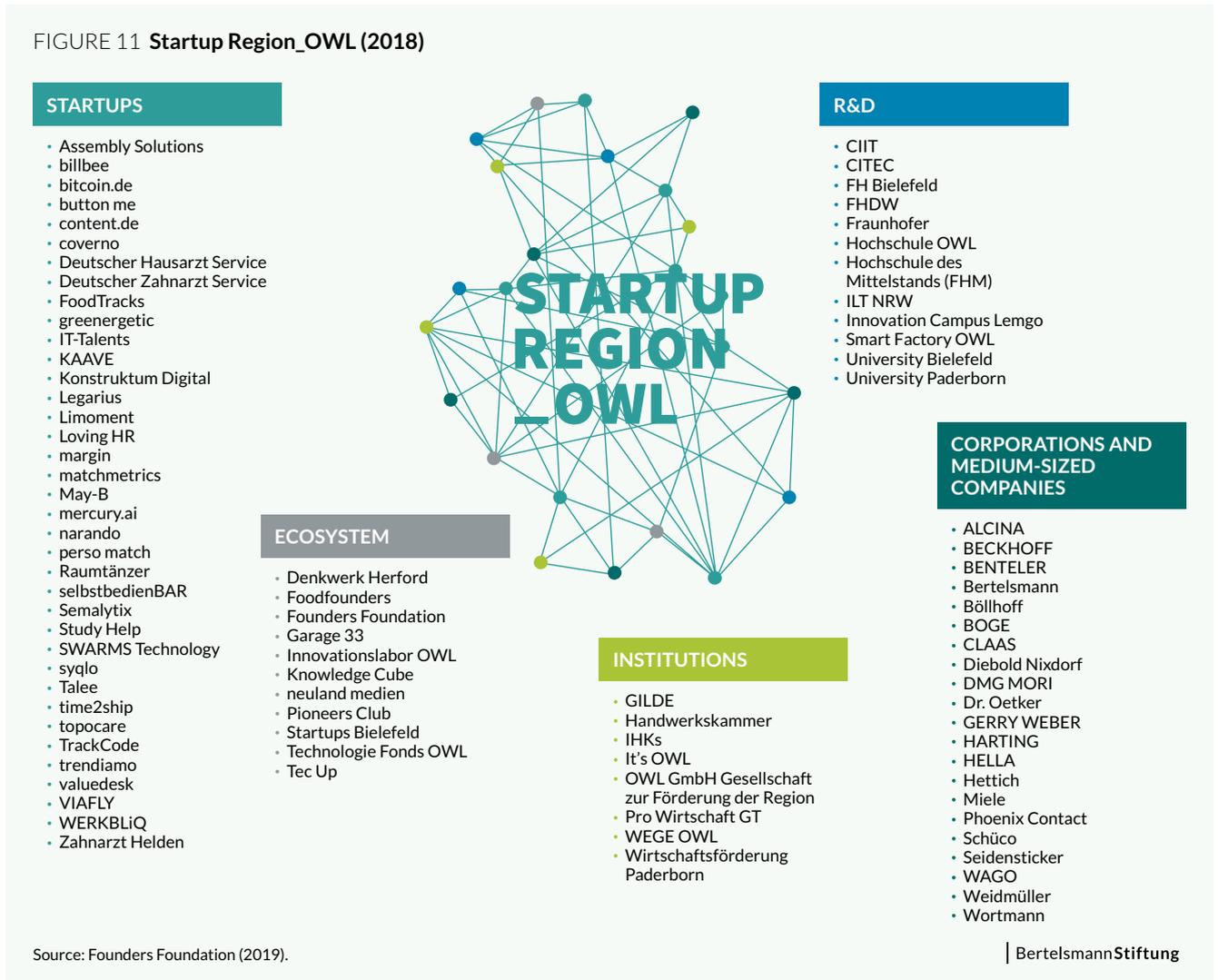
These public players in higher education and R&D as well as other initiatives, such as the Innovationslabor OWL (OWL Innovation Lab), serve as a motivating force for potential founders and help raise awareness of the concrete opportunities associated with starting a business in OWL. At the Hinterland of Things, an annual conference for “makers” in Bielefeld, students explore the topics of the internet of things (IoT) and business-to-business (B2B) activity with a special focus on the food, industry and textile

sectors. The conference is also designed to help innovators meet decision-makers from regional hidden champions in the Mittelstand. At the January 2019 Hinterland of Things, which attracted more than 1,300 people, Start-Up Nation Central (SNC) served as the main partner and brought a delegation of Israeli startups to Bielefeld.

The Founders Foundation focuses on training the next generation of entrepreneurs. The organization offers an intensive eight-week program in which participants learn how to get started with an innovative idea and what it takes to grow it. The Foundation also offers a six-month program that provides entrepreneurial training to teams that want to start their own businesses. During this period, the Foundation supports the teams with workshops (e.g., on sales, financing, legal issues, international markets, team building, etc.) and encourages them to meet venture capital companies and potential strategic partners.

OWL has also developed a technology network called “It’s OWL,” which consists of around 200 companies, research institutes and organizations (see Figure 11). The goal of this network is to reinvent OWL as a region in which clusters of companies working on “intelligent systems”

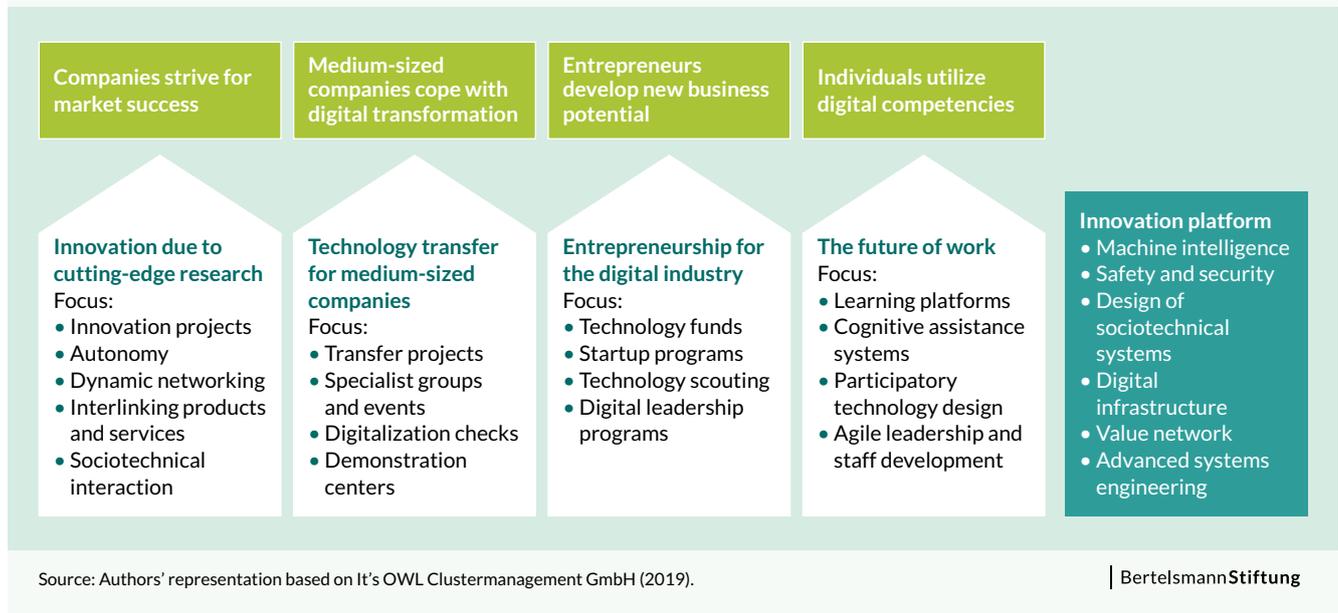
FIGURE 11 Startup Region\_OWL (2018)



and other digital hub-infrastructure topics can grow. To this end, the network's partners have developed proposals to help Mittelstand companies undergo digital transformation between 2018 and 2022. Related activities can be grouped into four main areas: 1) innovation through cutting-edge research, 2) technology transfer to the Mittelstand, 3) entrepreneurship for the digital industry, and 4) the future of work. Figure 12 highlights the roadmap of activities set out by the "It's OWL" initiative.

Given their high-tech focus, the members of the "It's OWL" network may be particularly interesting to Israeli startups. Hence, all of the abovementioned programs offer a genuine opportunity to infuse relatively traditional medium-sized German companies with the innovative spirit that defines the Israeli startup community. In the following chapter, we will therefore take a closer look at the verticals that are most likely to produce mutually beneficial collaborations between NRW and Israel.

FIGURE 12 “It’s OWL” 2018–2022 program framework



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## 8 Matchmaking: Israeli startups and the NRW Mittelstand – Combining the best of two worlds

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This chapter presents existing affinities and areas of mutual interest shared by Israeli startups and Mittelstand companies from North Rhine-Westphalia (NRW), highlighting attractions and advantages on both sides. Furthermore, it addresses motivations and prerequisites needed for a successful collaboration. Additionally, the chapter lays out some frequently encountered modes of cooperation between corporations and startups, and reviews a number of engagement formats. While the immediate focus is on a single state, NRW, the aim is to use this as a case study that will be more broadly applicable to every Mittelstand region in Germany.

### Economic and geographic affinities exist ...

While there are obvious differences between business environments in Germany and Israel, a number of economic, geographic and cultural affinities could help eliminate barriers to cooperation that exist elsewhere. Like Germany, Israel is a country of different cultures that has always been shaped by the influx of people from other backgrounds and nationalities (Hofstede Insights 2019). Hemdat Sagi of the Volkswagen Konnect innovation campus noted that “though cultural differences exist, Germany and Israel provide great complimentary attributes and thus great potential for collaboration.” Charne Rykower of German Chambers of Commerce Abroad in Israel (AHK Israel) agreed, saying that, in general, “Germany is a very interesting market for Israeli startups due to political and geographical proximity.”

A number of complementarities offer additional synergies (TheMarker Magazine 2018). As Europe’s largest national economy and its largest exporter, Germany is active in a global network. Israel, on the other hand, has established a vibrant startup culture and innovation ecosystem that supports the country’s entrepreneurs as they create new technologies and innovative digital applications.

Geographically, too, Israel is relatively close to Europe and Germany. A flight time of four hours means the region is considerably closer than other innovation hot spots, such as the San Francisco Bay area, New Delhi, Shenzhen and Singapore. Moreover, there is only one hour’s difference between Central European Time and Israel Standard Time, making it easier to conduct business between the two regions.

The expert interviews conducted for this study made clear that the Israeli startup community is already familiar with big German corporations (e.g., Daimler, Bosch and BMW) but less so with the medium-sized companies that are responsible for the majority of Germany’s economic output (and that would be considered “big companies” in many parts of the world, including Israel). Jeremie Kletzkine of Start-Up Nation Central (SNC) said that “currently, Israeli startups are not tackling the Mittelstand [companies] due to their size,” referring in this case both to total turnover and employee count. However, if startups were to direct greater attention toward Germany’s hidden champions, they would be likely to discover opportunities for mutual growth.

### ... but innovation-culture differences can present challenges

Despite these structural advantages, the differences in the two countries’ business cultures and traditions can present challenges to collaboration. Indeed, some Israeli entrepreneurs have already experienced unsuccessful collaboration with German enterprises and subsequently expressed rather harsh feedback. “German Mittelstand companies are often lazy,” said Stanislaw Grünstein from imat-uve. “When looking to innovate, they should leave their comfort zone to be successful.” Julia Schifter from TIPA agreed, saying that while Germany was once known as a country of inventors and pioneers, “innovation does

not seem to be a big thing in Germany, as the spirit of innovation is missing in current collaboration projects with German companies.”

AHK Israel’s Rykower went even further, arguing that “German companies are lagging behind in an innovation mindset so much that they need to be shaken up before they can be brought together with Israeli startups.” By “shaken up,” she meant that German companies have to realize that they are working with outdated processes. They need to reinvent themselves to become agile and responsive enough to foreign startups’ input and to allow for internal change. One way of doing this would be to look beyond their own borders, as this can often be more inspiring than searching for innovations solely within one’s own ecosystem.

According to Sebastian Borek, CEO and founder of the Germany-based Founders Foundation, established German

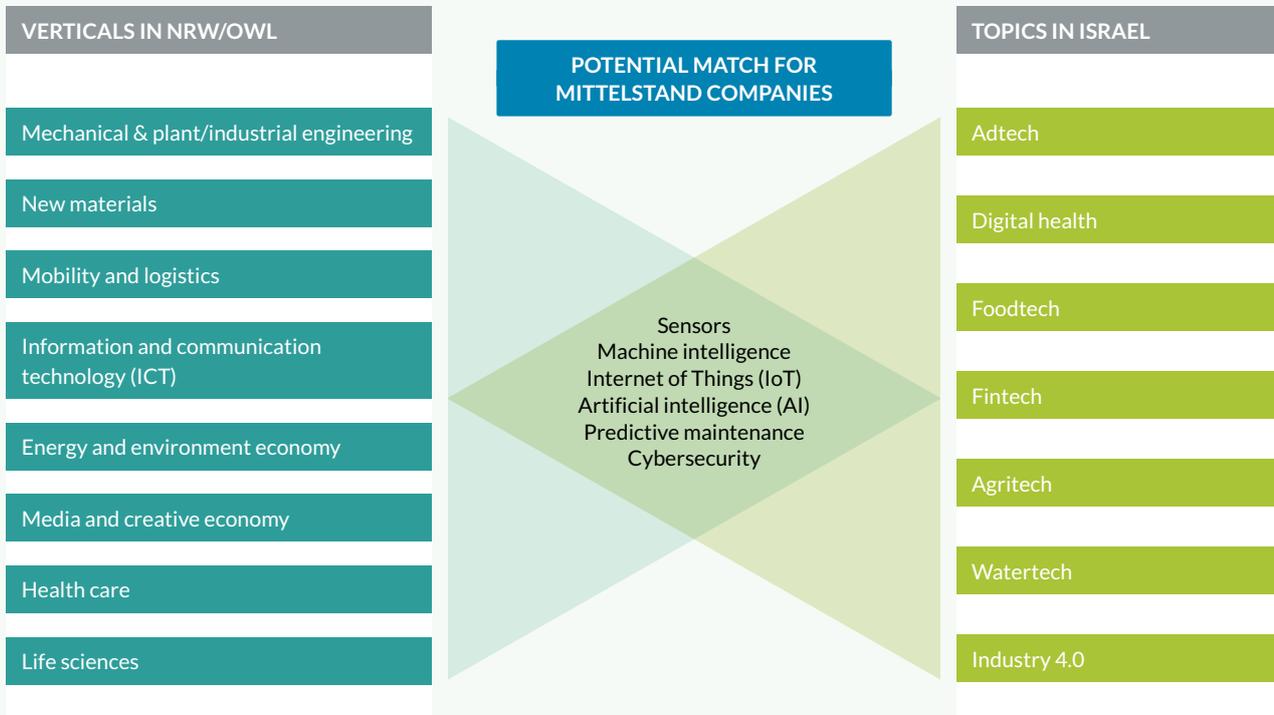
companies and industries have to adapt and transform faster in response to the needs of their younger and more agile innovation partners. He issued a stark warning in this regard: “We [Germans] are close to losing face over our potential collaborations with Israel. Results must start materializing for the Israeli ecosystem.” Failing this, the startups may lose interest in cooperation or, in the worst case, eventually come to outperform the Mittelstand companies and take over their business.

Each of these critics argued that the German Mittelstand must transform its mindsets and organizations.

### Finding common interests

Thus, despite their proximity and cultural similarities, it is clear that Israeli startups and German Mittelstand companies often have different interests and innovation mindsets. How can these be bridged for mutual benefit?

FIGURE 13 Comparison between key verticals in NRW/OWL and areas of focus in Israel



Sources: Expert interviews, IVC Research Center (2019), MWIDE (2019) and Start-Up Nation Central (2019).

One strategy is to focus on common interests. A good starting point is to identify topics and technology sectors that are currently being developed in Israel and also of great interest in Germany.

According to SNC and the IVC Research Center in Tel Aviv, current key areas of development in Israel include agricultural technology, automotive technology, cybersecurity, digital health, financial technology and services, internet of things (IoT), Industry 4.0 tools and applications, and water-related technologies. On the other hand, the NRW Ministry of Economics, Innovation, Digitalization and Energy (MWIDE) states that medium-sized companies in NRW are focused on the following areas: mechanical and plant/industrial engineering, new materials, mobility and logistics, information and communications technology (ICT), the energy and environment economy, the media and creative economy, health care and life sciences.

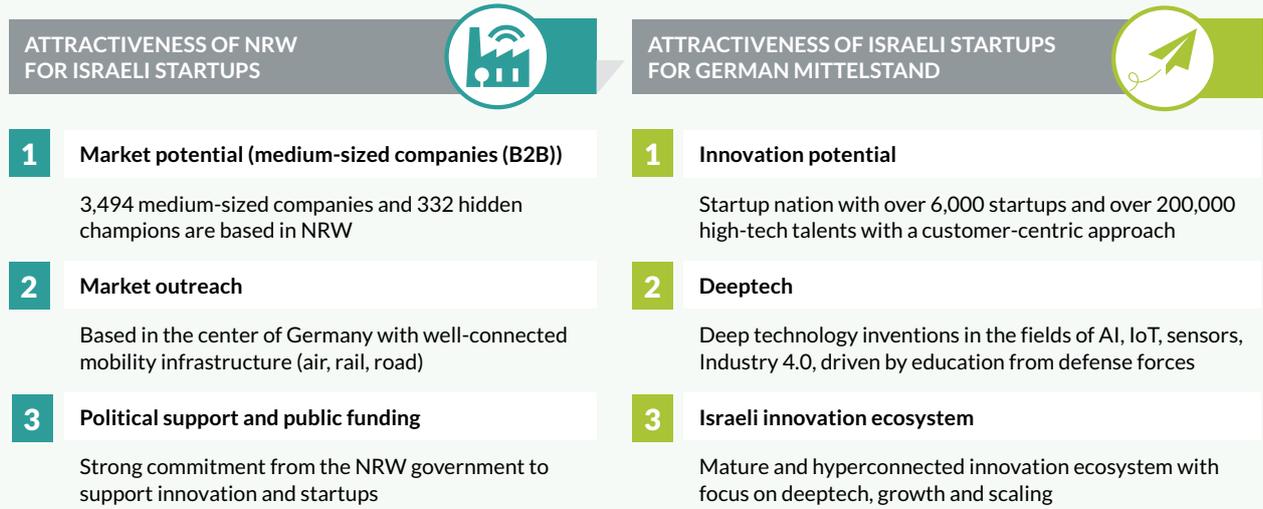
Even within these fields, companies from each country tend to have different business focuses. Companies within the Mittelstand in NRW tend to consider their activities from a production perspective, looking at new technologies as a way of improving existing processes. By contrast, Israeli

startups generally have a much less extensive industrial background and therefore see technologies mainly as a vehicle for creating innovative new business models. Nevertheless, a number of areas of overlap could give rise to fruitful collaborations (see Figure 13).

Industry 4.0 is a topic of particular interest, as there is a clear match between medium-sized German companies and Israeli startups. As Amnon Shenfeld of 3DSignals noted, “Germany is the primary market for industrial manufacturing technologies developed in Israel.”

Predictive maintenance, for example, is at the heart of Industry 4.0, with many companies in the market providing products and services in this field. In addition to the industry leaders IBM and SAP, a number of smaller companies and startups have also entered the arena. Similarly, machine intelligence (MI), a subcategory of artificial intelligence (AI), is a key expertise of Israel’s Industry 4.0 firms. According to SNC, there are 1,000 companies in Israel working on MI concepts. MI aims to develop software-based systems that can independently evaluate and interact with their environment, making and carrying out decisions in the real world autonomously or providing human users with recommendations. Such tools

FIGURE 14 Collaboration attractiveness



Sources: Authors' representation based on data from expert interviews, Start-Up Nation Central (2019) and Statista (2019a–c).

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could be of significant advantage to German Mittelstand firms seeking competitive advantages in their production processes.

Industry 4.0 has been a focus of German companies and policymakers alike. National and state-level policies currently support the development of Industry 4.0 technologies, and are working to overcome potential challenges (Bischoff 2015).

There is a high degree of complementarity between the German Mittelstand’s offerings and those provided by Israeli startups (see Figure 14). To connect these two ecosystems, the underlying motivations and prerequisites for collaboration between Mittelstand companies and startups must first be identified.

### 8.1 Motivations and prerequisites for collaboration

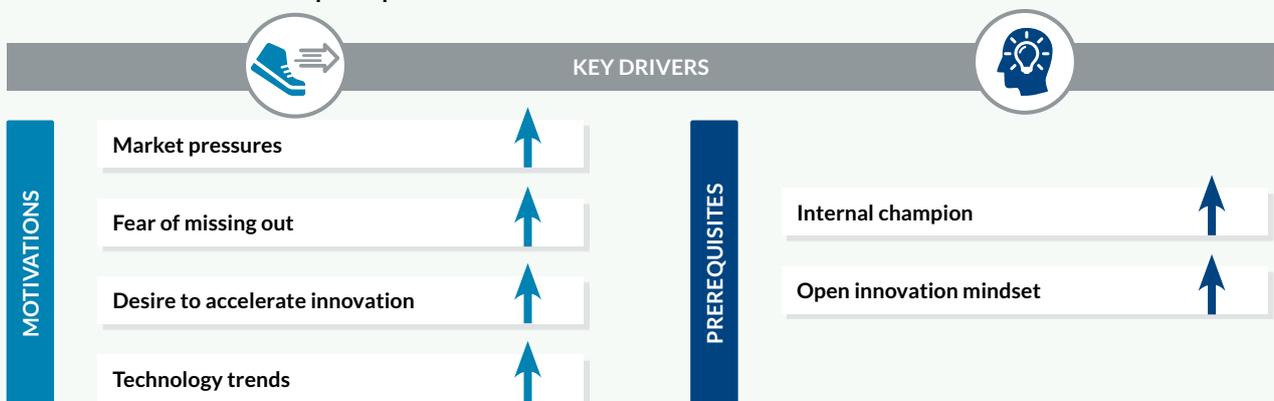
Bringing different organizations together can entail major challenges. To understand how startups and the German Mittelstand can best work together, it is critical to understand what motivations lie behind this specific kind of pairing and what prerequisites will facilitate successful collaboration.

### Motivations for Mittelstand-startup collaboration

Medium-sized companies might see several benefits in partnering with a small, customer-centric startup that can provide the innovative spark needed to transform an established company’s internal culture to suit the digital age (see Figure 15). What’s more, the fast-changing market instills fears of missing out on new technologies or technology trends, or of falling behind the large German multinationals that are already very active in Israel and other important innovation hubs, such as Silicon Valley. Partnering with startups can give Mittelstand companies the ability to leverage new business ideas and technologies, such as in the cybersecurity sector, in which Israeli startups have managed to become global technology leaders. In some cases, such arrangements will also help attract employees with highly sought-after technical skills who might not otherwise have been interested in working for a traditional company.

A partnership of this kind can have the added benefit of turning the startup from a potential rival into an ally. In this context, Jan Regtmeier, director of product management at the tech company Harting AG & Co. KG, stated that the Mittelstand’s main challenge with regard to handling market pressure is “how to cooperate in spite of competition.” Cooperating with startups not only gives Mittelstand companies the ability to respond to their competitors’ technological and industrial innovation,

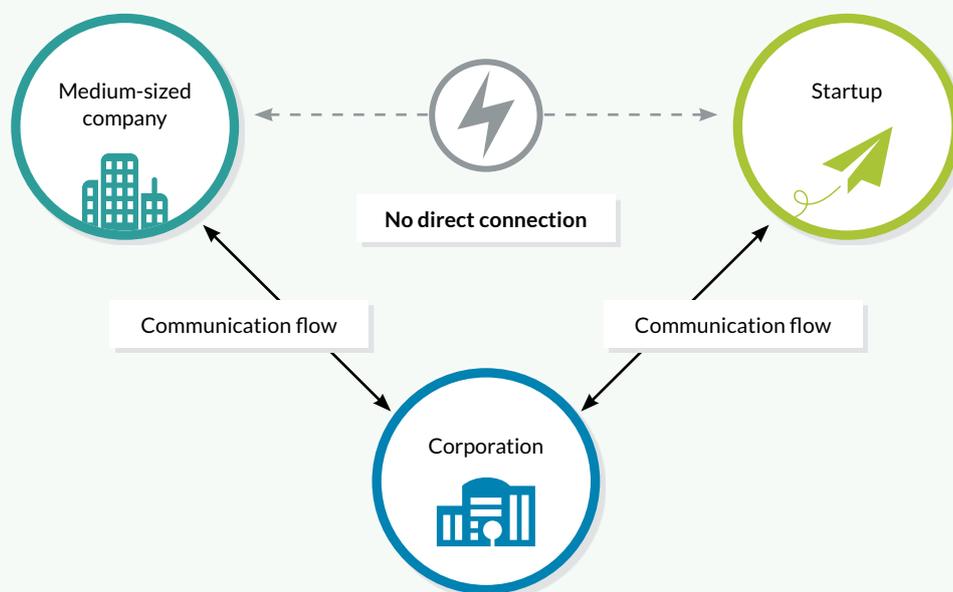
FIGURE 15 Motivations and prerequisites for collaboration



Source: Authors’ representation based on interviews with Mittelstand companies.

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FIGURE 16 Mediated collaboration



Source: Authors' representation based on interviews with Mittelstand companies.

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he said, but also enables them to take a leading role in innovation-driven markets.

In some cases, Mittelstand companies approach a startup thanks to a nudge from one of their bigger partners. In many cases, large corporations have outsourced aspects of their production processes to medium-sized companies, with these latter firms contributing finished components or services. With their significant resources and global outlooks, many large corporations stay abreast of developments in the Israeli startup landscape, or startups actively seek to pitch their offerings to them. In some such cases, the larger companies ask their suppliers to work directly with an Israeli startup that has a valuable idea or model.

The main corporation often then acts as an intermediary and moderator between the medium-sized company and the startup, which is a venture-client model widely used by BMW and other multinational German corporates. This can be extremely valuable to Mittelstand companies. "Israel is a self-contained ecosystem that is very hard to access without personal contacts," noted Stanislaw Grünstein

from imat-uve. "For successful collaboration, you need someone to establish a first liaison," added Hemdat Sagi from Volkswagen Konnect (see Figure 16).

From a startup's perspective, there are a number of motivations for working with medium-sized companies. As noted above, access to a robust new customer base is a key attraction. Moreover, startups are highly dependent on external capital, as they typically lack sustained revenue streams. A Mittelstand company can provide an additional source of capital (as either a customer or investor) to help an early-stage startup bridge this period of resource scarcity. This can potentially bring the added value of enabling startups to build their business without being dependent on venture capital.

Generally, becoming a supplier for a medium-sized company can make a huge difference to a startup, as this relationship allows the small company to scale up its operations and validate its business model. It can showcase the cooperation and thereby facilitate future customer acquisition. The startup may also recognize that it can benefit from the larger partner's experience and long-

standing sectoral expertise, allowing both sides to influence one another's internal cultures for the better.

### **Prerequisites for successful collaboration: the Mittelstand view**

The interviews conducted for this report with C-level employees of medium-sized German companies identified two primary prerequisites for successful Mittelstand-startup cooperation: an open-innovation mindset and the presence of an internal innovation advocate.

An open-innovation approach carries numerous advantages, including the promise of faster project execution, better technical performance and increased revenues. Integrating new ideas facilitates access to new markets, new technologies and new employees while generating new business models that would take immense efforts to develop in traditional, closed research and development (R&D) settings. However, this can also entail an internal cultural change requiring educational and confidence-building measures. In its 2018 edition, the Innovationsindikator study recommended overcoming internal reservations – especially within the Mittelstand – by seeking out positive experiences in the form of concrete cooperation and exchange programs (Frietsch et al. 2018).

One of the easiest ways to put open innovation into practice is through formalized engagement with startups (Wrobel et al. 2017). An ever-increasing number of established businesses have launched startup programs with the goal of learning from smaller, more agile companies. To aid in this process, a private or public platform can be developed and promoted, and co-creation labs established. However, medium-sized companies can also gain relevant experience by engaging in cooperation projects with scientific institutions. This kind of open-innovation program is often initiated by governments, frequently as a part of larger joint projects involving multiple industrial and scientific partners. Bilateral and international joint projects are also valuable for the exchange of knowledge and offer further potential opportunities (Frietsch et al. 2018).

In the interviews conducted for this report, several Mittelstand executives stated that companies must additionally have an internal advocate for this kind of open-innovation process. This person or team typically

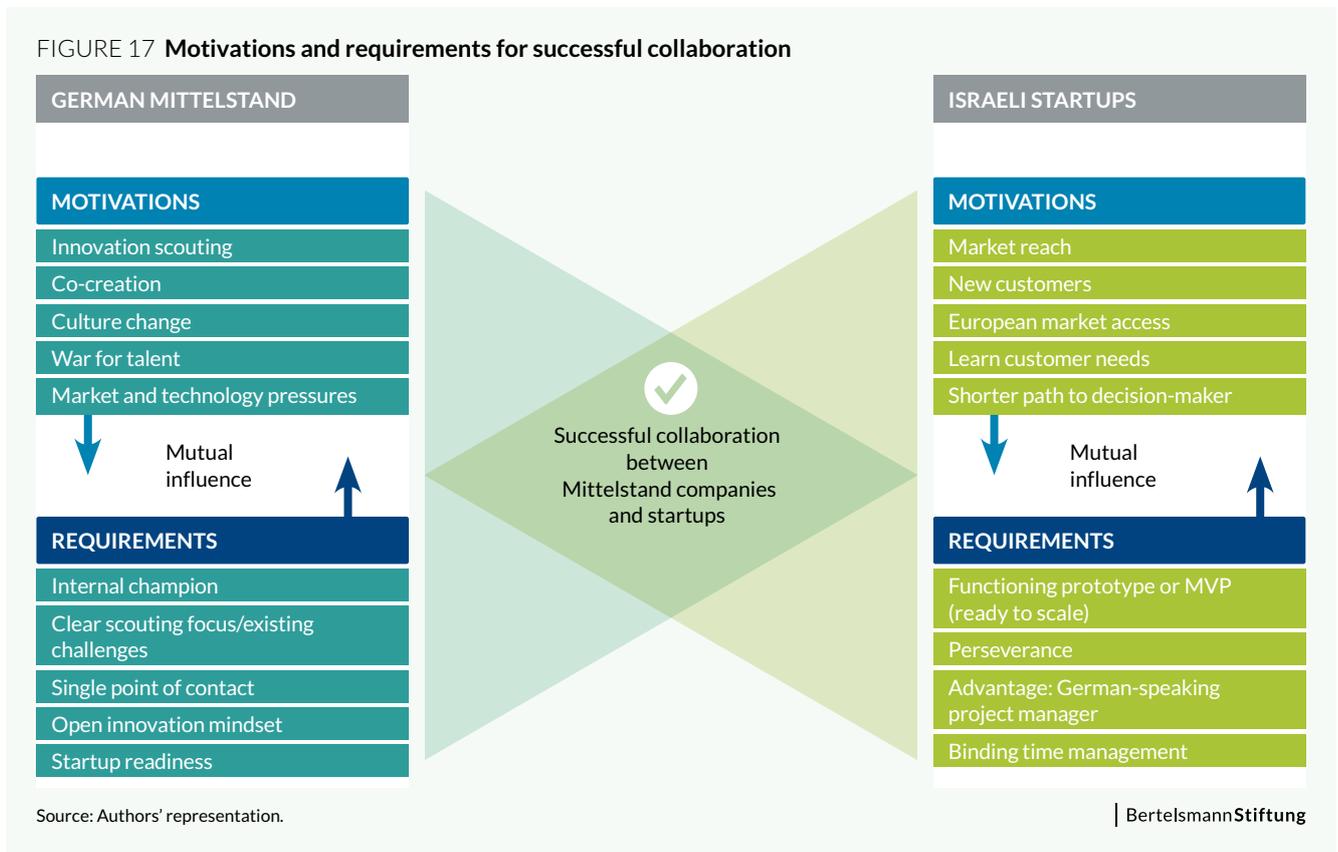
triggers the startup-collaboration initiatives and serves as a single point of contact to the startup. The “advocate” also has to make sure that the project and the innovation team will receive sufficient attention from C-level management. Harting AG & Co. KG's Regtmeier noted that becoming “startup-ready” in this way can help avoid unnecessary friction stemming from differences in organizational structures. In most cases, the internal advocate or unit tasked with managing this interaction is relatively autonomous. It often operates within a protected environment isolated from the core business operations in addition to reporting directly to the executive board. An important part of its role is to identify disruptive and transformative innovations that may be of strategic importance to business development (WEF 2018).

### **Requirements for successful collaboration: the startup's role**

Startups must also fulfill certain requirements. Critically, they have to be able to communicate their value proposition and business model using a persuasive story line that aligns with the strategic goals and mission of the Mittelstand company. In many cases, medium-sized companies will want to see some evidence of product or service validation. Startups will need to demonstrate their sector knowledge and provide a first proof of concept, such as with a working prototype and real customer feedback. Some companies may even want the startup to prove the relevance of their technology or new business model with reference to a specific use case relevant to the potential partner's current customer base. “Startups have to come to us with a compelling story that is transferable to our customers and delivers added value to our products and services,” said Mark Albrecht, global head of innovation and innovation technologies at itelligence AG, an IT services-management company. In addition, small firms and entrepreneurs must be willing to go where the German Mittelstand company is actually located, which often means a rural region.

Most importantly for both sides, it is vital to establish a relationship based on commitment, transparency and mutual trust. Companies that try to steal ideas from startups, or that only partner with them with the goal of understanding their products and subsequently trying to recreate them, will risk severe reputational damage and

FIGURE 17 Motivations and requirements for successful collaboration



might even find their name on a blacklist. The companies in Israel’s highly connected ecosystem share their experiences, which is why a mindset focused on mutual trust and transparency is so important. Without mutual trust and commitment, cooperation is doomed to fail.

Many interviewees also noted that engaging in professional communication and creating solid personal business relationships can be as important as core business metrics. Parties to a joint venture must work together transparently to align their respective goals. Creating a commonly articulated vision and engaging in direct dialogue can help both parties manage expectations and prevent future misunderstandings.

Finding the right mode of cooperation is not an easy task. However, German Mittelstand companies and Israeli startups alike have very specific needs that can be met with the right approach and through the use of well-tailored cooperation instruments. The next section will thus focus

on networking tools that are both currently available and actively used in innovation hubs around the world.

## 8.2 Networking tools

This section describes the phases and modes of engagement commonly found in collaborations between medium-sized companies and startups. The results of the desk research and the interviews conducted for this report are used to delineate and present three typical phases of engagement, followed by a more comprehensive list of individual modes or formats of engagement. In the third part of this section, the study analyzes platforms as a mode of engagement that combines non-digital assets and existing business networks with additional digital elements. Finally, the section describes the German-Israeli Innovation Exchange as an example of a platform instrument that would combine several different engagement modes to help stakeholders navigate the various engagement phases as smoothly as possible.

The length and character of engagement phases and modes will vary depending on the quantity of resources deployed and the size of the project. Different levels of engagement entail different levels of complexity, costs, relationship intensity, resource expenditure and risk. However, once the scope of cooperation has been defined, the journey through the various engagement phases and modes resembles a funnel. In the beginning, it is wide-open; the medium-sized companies are confronted by too many startups, and startups by too many companies, and it is not yet clear which, if any, may be the right partners. Toward the end of the process, the number of contenders has been narrowed down and, depending on their individual needs and goals, both sides can enter the final cooperation phase with only a few high-value partners.

### Phases of engagement

Research on ecosystem engagement formats (WEF 2018; Wrobel et al. 2017; Mocker et al. 2015), as well as the stakeholder interviews conducted for this study, suggest that there are essentially three phases of engagement. Here, these are referred to as “meet your ecosystem,” “build your ecosystem” and “Mittelstand-startup cooperation.” In the following subsections, this study will describe these three successive phases of engagement as well as several individual modes of engagement. It concludes that, for maximum effectiveness, a network-based platform connecting German Mittelstand companies and Israeli startups should employ a combination of modes across the various phases.

### Meet your ecosystem

The starting phase encompasses the first contacts between a Mittelstand company and a startup. This is where mutual understanding is developed and the initial steps are taken to establish genuine trust. In many cases, medium-sized companies might be overwhelmed by the number of startups in the market as well as by the avalanche of information regarding these smaller firms’ stages of development and potential market fit. Information overload and high levels of complexity naturally produce uncertainty and require the Mittelstand company to make significant efforts to find the right partners. However, most of the activities taking place at this stage are short in duration and do not necessarily consume large amounts of resources. Risk levels

are still low, and the process does not require significant commitment from either side.

For many Mittelstand companies, the question even at this early stage is not whether they should seek out collaboration with startups, but rather how they can find a suitable partner. The main challenge in this regard is the ability to prioritize daily business issues while still maximizing the potential value associated with the partner search. Condor MedTec CEO Dominik Schulte said: “In the digital transformation process, every firm has to set priorities based on what is more feasible and has the highest return on investment.”

Medium-sized companies looking to maximize their return on investment when entering the search for potential startup partners should first consider setting an overall strategic goal and then develop an engagement program based on interim objectives. This can help narrow down the otherwise opportunistic and random search process. Similarly, parties have to establish clear rules of engagement and requirements for their counterpart. This serves to simplify the search and due diligence process.

The next step is to identify and approach relevant startups. However, this can be particularly difficult when cross-border relationships are involved. For some German companies, “transparency about foreign local ecosystems, for example China and Israel, is lower than in Europe. [Therefore,] when a startup approaches us, it is already too late and not a good sign,” said Markus Pfuhl, chief digital officer at Viessmann Werke GmbH & Co. KG, a leading international manufacturer of heating systems. His point highlights the lack of available information and the difficulties involved in thoroughly investigating a market to find a good partner for innovation.

Intermediaries play a crucial role in this phase by bringing companies of different sizes together in various settings. As noted by Sven Virgens, vice-president of strategic management of Schnellecke Logistics, “internal advocates may not always necessarily know where to start looking for startups that might help them and solve their problems.” Intermediaries of this kind must have a keen understanding of the sector they are supporting, enabling them to foresee future market developments. This applies when the Mittelstand company lacks the resources to conduct

an extensive search itself. “When you don’t necessarily know in which areas your core business will be developing in the coming years, it is difficult to look for startups in those areas. A filtered list of potential startups to cooperate with can make all the difference,” Virgens added. Condor MedTec’s Schulte also cited the crucial role of research institutions and other intermediaries, adding that: “We had better experiences when research institutions, like the Fraunhofer Institute, were part of the collaboration.”

Intermediaries are thus critical actors in this early phase, creating transparency and trust through their intervention and curated approach. The personal networks they establish serve as information-gathering shortcuts, reducing the need for a near-random and opportunistic search for cooperation partners. As Harting AG & Co. KG’s Regtmeier said, personal networks are a vital tool in connecting with otherwise difficult-to-find startups, especially in other countries or regions. “Finding a startup to work with is primarily random and based on personal networks that develop over time,” he explained. “If you know the right people, they will introduce you to the right potential partners.”

The modes of engagement used most frequently in this phase include one-off events, such as hackathons, open-innovation competitions, meetups, pitch events, conferences and exploratory research trips.

### Build your ecosystem

The second stage involves building a sustainable basis for ongoing encounters with potential startup partners. This phase entails merging business goals with personal components to achieve a higher level of trust. For the Mittelstand company, this stage is about reducing complexity and uncertainty, establishing a good relationship and building trust, thus mitigating the risks inherent in the process of finding and working with a startup partner.

It is crucial that both sides are absolutely transparent about what they expect and what they can offer one another. For example, the Mittelstand company can provide use cases to increase the probability of finding startups that are a genuine strategic fit. In return, the startups need to demonstrate that they can add value to the company’s operations.

At this point, legal aspects of the developing relationship, such as questions of industrial- and intellectual-property rights, also need to be addressed. From a practical perspective, the two parties must come to a clear agreement regarding their respective responsibilities and contributions to the collaboration. Regtmeier, for example, explained that his company would “take care of the sales process, while the startup team focuses more on the technological development.”

The most common modes of engagement at this stage include the use of shared infrastructure and shared resources. Sharing resources and infrastructure can help create an ecosystem built on trust, with the ongoing exchange of information facilitating transparency and reducing overall risks. The established business can also demonstrate its good intentions by providing business support to the startup. Pragmatic approaches are needed, along with processes that will allow for fast implementation or product testing at low cost and manageable levels of intensity. The main challenge for the Mittelstand company at this stage is still to identify and select the most suitable startup.

### Mittelstand-startup cooperation

High levels of engagement with Mittelstand companies are only reserved for well-vetted startups that have established a strong, transparent, trust-based relationship with their potential partners. At the narrow end of the matching funnel, few potential startup partners are left, and uncertainty, complexity and information overload have been reduced.

At this stage, the aim is to establish the scope of the cooperation. Now real commitment is expected. However, adjustments are still possible as long as these are transparently communicated to all parties and do not jeopardize the nascent relationship of trust.

At this point, it is important for the Mittelstand company to reintegrate the team that had been tasked with setting up the startup-cooperation project back into the mainstream of company operations. In the early stages of collaboration, these teams are usually detached from the company’s core business.

The most common modes of engagement at this stage are venture-client models and startup acquisitions as well as co-creation partnerships in which the partners work together to develop products or services on a joint basis. Procurement models can help provide validation for startups in the broader market and assist them in finding additional customers.

### Engagement modes

Having discussed the three engagement phases and touched briefly on some common engagement modes in these engagement phases, a closer look into other modes of engagement that facilitate interaction between startups and Mittelstand companies is warranted. The list provided in Figure 18 is drawn from a variety of sources, including other studies (WEF 2018; Wrobel et al. 2017; Mocker et al. 2015), expert interviews, in-house expertise and experience. However, it should not be viewed as exhaustive; rather, it aims to convey a reasonable overview of the most common modes and formats currently in use while taking the specific needs of German medium-sized companies and Israeli startups into consideration. The

section also compares the various engagement modes with one other and offers a recommendation for facilitating engagement. The engagement modes can be of different natures: stand-alone, combined or used in a sequential strategy by Mittelstand companies, startups or even third-party organizations.

### One-off events

Events are useful ways of attracting startups that might otherwise be difficult to discover. Such events, which often take the form of competitions or business challenges, can serve as a first point of contact exposing Mittelstand companies’ employees to startups’ entrepreneurial mindsets in addition to improving their understanding of emerging technology and business trends. At the same time, the medium-sized company itself can establish an external reputation as an innovative organization. Formats of this kind offer medium-sized companies an excellent opportunity to engage with startups for a brief period at little cost, gaining valuable insights before entering negotiations regarding a potential collaboration. Specific events can include:

FIGURE 18 Available engagement modes

Events	Shared resources	Shared infrastructure	Partnerships	Business support	Capital investment	Platforms
Hackathons	Free tools: legal, technical and marketing	Coworking spaces	Innovation pilots	Corporate incubators	Corporate venture capital (CVC)	Marketplace or multiparty platforms
Startup challenges, business-plan awards or open-innovation competitions	Startup programs	Innovation labs	Procurement alliance	Accelerators	Merger or acquisition	(Online) communities
Event sponsorship	Benefit programs for startups	Conferences/trade fairs	Venture-client model	Company and venture builder	Acqui-hiring (talent acquisition)	Matchmaking platforms
Networking events (meetups)		Innovation hubs	Co-creation	(Reverse) mentoring		Information platforms
Pitch events				Excubators		Databases
Fuckup nights						
Conferences/trade fairs						
Exploratory research trips						

Source: Authors' representation.

BertelsmannStiftung

- **Hackathons:** Here, technical specialists work in teams to seek solutions to a given data or technical problem over a period of (typically) two days, usually on a weekend. Publicly awarded prizes are offered (e.g., financial awards or letters of intent for paid pilot projects).
- **Startup challenges, business-plan awards or open-innovation competitions:** These events focus on solving a concrete business problem using a new business plan or prototype. A panel of judges selects the winner.
- **Event sponsorship:** This can be applied to various kinds of events, offering a way of standing out to the entrepreneurs attending an event. It can be a good way to increase brand recognition, boost visibility and gain a reputation as a reliable partner, but it does have the disadvantage of a low level of engagement.
- **Networking events (e.g., meetups, startup breakfasts, BarCamps):** These are theme-driven events designed to help individuals interested in a certain industry or technology connect in an informal setting.
- **Pitch events:** These events, which usually offer a monetary prize for the most convincing team(s), are about communicating new business ideas to a large audience of investors and/or corporate representatives.
- **Fuckup nights:** This model originated in Mexico City and quickly spread to other innovation hubs. The name says it all: People come together to share insights gleaned from failed business ideas and unsuccessful companies. The idea is that participants will inspire one another through peer learning and promote a wider acceptance of failure.
- **Conferences/trade fairs:** These are regular events that serve as networking platforms for entrepreneurs, investors and companies, enabling attendees to meet numerous important and relevant people in a short period of time. Mittelstand companies can hold presentations or use the exhibition area to communicate with startups. A prominent example of a specifically Mittelstand-oriented conference is the Hinterland of Things in Bielefeld, but other sector-specific trade fairs have also started creating designated startup areas.

- **Exploratory research trips:** These are opportunities for employees of an established company to visit startup hubs and meet with entrepreneurs. The primary goal is to inspire them and help them adopt an entrepreneurial mindset.

### Shared resources

Sharing internal resources and providing know-how to startups can be a comparatively low-cost option for companies seeking to engage with entrepreneurs. Unfortunately, these activities do not guarantee immediate returns in terms of business relations, but they can attract numerous startups looking for (free) tools to support their growth. Such support services can include:

- **Free tools,** services and products, potentially including the provision of legal, technical or marketing advice. Formal programs can be put in place by Mittelstand companies or third parties.
- **Startup programs** offering startups mentorship services, launch pads and access to industry networks. This is a low-cost way to generate opportunities by connecting entrepreneurs, mentors, investors, industry partners and corporations with matching interests.
- **Benefit programs:** These are typically aimed at early-stage startups, providing them with basic infrastructure services at an entry-level price to ensure loyalty throughout their growth phase.

### Shared infrastructure

Another way of connecting with startups by providing access to resources can be sharing physical space. Under this model, medium-sized enterprises attract startups – which often experience fluctuations in growth rates and size – by providing suitable, flexible office space and services.

- **Coworking spaces:** Providing space of this kind allows corporations to integrate into local startup and innovation ecosystems. It is a relatively expensive form of engagement, entailing a long-term physical presence. Coworking spaces are susceptible to high fluctuations in startup occupancy rates. Hence, matching opportunities can be scarce and limited.

- **Innovation labs:** These also provide opportunities to share physical space for the purposes of ideation, co-creation and collaboration. This type of space usually focuses on one specific industry or technology, and provides infrastructure tailored to the needs of startups in this field.
- **Conferences/trade fairs:** These formats take place regularly and serve as networking platform for entrepreneurs, investors, and corporations. Some examples of established formats in Germany are Bits & Pretzels in Munich, the Pirate Summit in Cologne, and the Tech Open Air in Berlin.
- **Innovation hubs:** These serve as a point of contact and a place of encounter for founders, corporations and other potential third-party partners. This type of space is usually open to startups that need sporadic business support and are seeking a relatively simple, high-value way to engage with established businesses.

## Partnerships

Strategic business partnerships come in several different forms and may be very short- or long-term. From transactional engagements to committed relationships, partnerships can provide both sides with instant benefits. Such forms of partnerships include:

- **Innovation pilots:** These are an alternative to traditional R&D activities. They offer a step-out innovation approach that is more cost-effective and carries fewer risks for the corporate partner. Piloting with startups helps reduce the need for costly and time-consuming research. The success of this model depends on having clear guidance from the corporate partner, a well-defined budget and a clear time frame for execution.
- **Procurement alliance or venture-client models:** Here, startups contribute technologies to a corporation's value chain or perhaps even build these technologies at the core of the corporation's business. This model requires high levels of engagement and resource expenditure to be successful. Procurement models allow corporations to swiftly integrate cutting-edge technologies and new business models into their core operations. However, they require a collaborative mindset and a startup-

friendly procurement process. For startups, obtaining the validation that comes with a procurement contract can open up many future market opportunities. Procurement models can assume many different forms. They typically require the startup to have reached a relatively high degree of maturity. Mittelstand companies typically have a set of standards that the startup will have to meet; hence, robust cooperation is needed to improve the delivered product or service with each iteration.

- **Co-creation:** In times of fast and disruptive innovation waves, co-creation is a cost-effective way to collaborate with startups and other suppliers. All parties work together on a solution to a problem and invest in the new solution in terms of both time and money. To motivate all partners, the problem to be treated is not covered by an existing solution of one of the partners. It is important to define the licensing of the new solution by writing a contract that explicitly spells out how the rights to the intellectual property or other results will be divided. Usually all partners are allowed to publicly advertise their innovation abilities.

## Business support

Incubators and accelerators are very common types of business-support programs. These are designed to help early-stage startups prepare for investment, market entry and scaling, and may be run or sponsored by corporations, private-sector third parties or even public entities. In many cases, they draw on corporate employees to act as advisers or mentors; this has additional positive effects, as the employees bring what they have learned back to their own organizations, potentially triggering cultural change and internal learning. However, sponsors must remember to keep the needs of the participating startups in mind rather than focusing solely on their own interests. These models, which are cost-intensive and may require subsidies from the sponsor corporation or a third-party entity to be successful, include:

- **Corporate Incubators:** A well-established model that provides a flexible working space to startups or entrepreneurs while their ideas mature and offers access to additional resources. The sponsoring corporation usually becomes an investor in the successful startup.

- **Accelerators:** This model entails a focus on a small collection of startups for a period of intense support, often in exchange for equity. Accelerators offer startups the ability to learn, test and iterate their business models rapidly, and usually end in a pitch session for investors and corporate partners. They are one of the most common tools enabling corporations to attract and collaborate with early-stage startups.
- **Company and venture builder:** This entails establishing new companies based on specific products, technologies or services generated within a pre-existing corporate entity. The goal here is to translate a good business idea within an existing organization into a new company in a short period of time.
- **(Reverse) mentoring:** Traditional companies mentor startups to teach them about their needs and real-world problems, for which the startups then try to come up with innovative solutions. Reverse mentoring is a special kind of mentoring in which the positions of the mentor and mentee are switched. This model of mentorship is used to allow the traditional company to learn from the innovation culture of startups and to advance digital transformation.
- **Excubators:** In comparison to an accelerator program, which typically lasts for no more than about three months, an excubator is designed to support startups from the ideation phase through to a successful exit. It charges a fee from startups, which in exchange receive end-to-end support and access to a collaboration network of mentors and peers.

## Capital investment

Capital investment comes in multiple forms. For a medium-sized company, the primary goal would be to acquire equity in fast-growing startups and thereby access innovative technology or new markets more quickly than would be possible via other methods. Corporations often establish corporate venture arms or provide backing to venture capital funds that, in turn, invest in startups. It is important to establish clear goals when investing in startups. A variety of investment models can be used, depending on the stage of development of the entity receiving the investment. As previously noted, equity investments in the context of

accelerator and incubation programs can be made during the startup's early stages. Forms of capital investment include:

- **Corporate venture capital (CVC):** This model can help the corporate entity expand into future markets and gain access to disruptive technology more quickly than would be possible using other methods. Corporations typically establish subsidiaries for this form of direct investment, but these programs can also be managed internally. CVC generally focuses on companies that are growing in terms of employees and revenues, and that have reached the point of positive cash flow.
- **Merger or acquisition:** These have quick effect in terms of accessing technology or capabilities that might enable the acquirer to solve specific problems or enter new markets. Mergers and acquisitions usually take place only after the company being acquired has reached a comparatively mature stage at which growth is stable and the entity has already established itself in the market.
- **Acqui-hiring (talent acquisition):** This is a comparatively new form of acquisition in which the acquiring corporation gains access not only to the startup's technology or the market, but also to its key employees, given that coding, data-science and other skills required in the digital economy tend to be highly transferable. This type of investment usually happens when the company being acquired is still at an early stage of growth, most commonly during the startup or expansion phase.

## Platforms

The definition of “platform” for the purpose of this study is very broad, as it refers to any support mechanism that serves the purpose of strengthening collaboration between German Mittelstand companies and Israeli startups. Such instruments can take a digital and/or non-digital form. As defined here, their primary goal is to connect the supply and demand sides of a specific market; in this case, the relevant market is that of cooperation between Mittelstand companies and startups.

These platforms are built to facilitate interactions and reduce the transactional costs associated with a market

exchange (Alstynne et al. 2016; Hosseini and Schmidt 2018; Parker et al. 2016). The objective is to generate trust and transparency, which benefits all participants and stakeholders. All platforms consist of a supply side, a demand side, supporting partners and a platform owner. However, the platforms themselves can still take different forms, including:

- **Marketplaces or multiparty platforms:** These usually focus on providing the infrastructure needed for suppliers to reach out to consumers. A marketplace acts as an intermediary, connecting buyers and sellers. Today, this type of platform is most commonly found online.
- **Communities:** These can be either digital or non-digital. Such platforms aim to bring together people and entities with similar goals, needs and problems, potentially with the goal of entering into cooperative relationships to overcome shared challenges.
- **Matchmaking platforms:** These have the very specific purpose of linking parties with complementary characteristics. This can happen online or offline, such as at trade fairs or conferences.
- **Information platforms:** These help disseminate information about activities or individuals within a given network. Most commonly, this type of platform is digital.
- **Databases:** These organize complex datasets into easy-to-read tables, and can be an extremely useful tool when one is faced with overwhelming amounts of information.

Several digital platforms are already operating in Israel with the goal of attracting international investors and corporations interested in cooperative ventures. These databases (e.g., Start-Up Nation Finder (SNF)) are intended to present Israeli startups to the world, facilitate startup scouting, and provide an overview of recent technological and sectoral developments in Israel.

It became clear in the interviews and desk research conducted for this study that no single engagement mode can address all the needs and challenges associated

with collaborations between Mittelstand companies and startups. From meeting to building the ecosystem to forming a cooperation, a variety of instruments is needed to match parties and set them on a course to success. As Daimler Israel CEO Adi Ofek said: “There is a need to combine digital and non-digital. Digital can help you to take care of mass information. If you boil it down to key innovation, there you need the combination.”

### 8.3 Developing networking tools for the Mittelstand-startup market

In order to develop a framework for engagement that fits a particular market, two steps are required: First, barriers to interactions or transactions between potential market participants must be identified and analyzed; and, second, these observations must be used to develop modes of engagement that address these specific hurdles.

#### What do German Mittelstand companies want from an engagement tool?

A number of efforts have been made to establish offline networks and to develop relationships between German enterprises and Israeli startups. For example, innovation journeys and other short-term programs are pursuing this goal. However, the market seems to lack a mechanism that facilitates and sustains long-term relationships. In a recent survey by Bitkom, a German technology-industry association, 73 % of participating German companies stated that a principal reason for not cooperating with startups was that contacts could not be sustained (Bitkom 2019). This accords with the findings from the interviews conducted for this study. Not only is there a lack of contacts between German Mittelstand companies and foreign startups in general; Mittelstand executives also said there was a lack of mechanisms able to sustain such contacts. Enablers, such as collaboration platforms, are either nonexistent or unknown. For example, Markus Pfuhl of Viessmann said that, as far as he knew, there was currently no digital platform that matched German Mittelstand companies with startups from Israel.

The interviews also revealed a desire for an informational site containing relevant insights and advice about collaboration-related issues and showcasing best practices.

Such a site could serve at least two key purposes: First, it could empower startups by providing them with more knowledge about the German Mittelstand; and, second, it could empower German Mittelstand companies by helping them understand the differences between the innovation cultures of the two countries.

German Mittelstand executives indicated that a digital platform offering information on startups relevant to their industry sector and business strategies would indeed be a great asset. They additionally cautioned that any platform of this kind should include a search function with suitable quality–assurance measures as well as reputational mechanisms to signal which of the startups would be the best match for them. With regard to Israel, SNF, which pre-screens Israeli startups and offers a validation process, is one such digital platform that is already in place. However, it remains largely unknown among Mittelstand companies.

Strategic partnerships would have to be handled in such a way that neither party’s independence would be jeopardized. Some interviewees raised concerns regarding competitors; indeed, the extent to which information could be made available to competitors was identified as a major factor taken into consideration when deciding whether to participate in such an instrument.

### Desirable characteristics for Mittelstand-startup collaboration tools

A first key feature of a collaboration tool that would fulfill the desire of Mittelstand companies for improved channels of contact and communication would be a function enabling the two sides to find each other and subsequently continue to communicate. Potential matches would need to be highlighted and presented as realistic opportunities. Previously vetted startups would either have to match a company’s specific current needs or be presented as longer-term opportunities with a potential for disruptive innovation. Startup products and services still in the development phase would have to be clearly marked, while specific indicators of market traction could enable the Mittelstand companies to reliably gauge potential partners’ level of maturity. A digital platform would be well-suited to this task, allowing for rapid scalability and flexible implementation. However, non-digital platforms could also serve this purpose if they are able to respond

to both sides’ needs, provide tailored matches and enable new value creation (Bonchek and Choudary 2013; Alystynne and Schrage 2016).

A key challenge for existing digital platform operators, such as SNF, has been the task of maintaining data and keeping it relevant. Startups tend to change their models, names and contact persons. To ensure data integrity, the owner or curator of the platform might diligently vet new startups seeking to join the platform. Another possibility requiring less data administration would be to tender individual challenges on a regular basis. The startups would then reapply for each challenge, automatically keeping their information up to date in the system.

One potential problem for a platform connecting German Mittelstand companies and Israeli startups could be asymmetries between the demand and supply sides. Platform owners could find it difficult to persuade German Mittelstand companies (the supply side) to participate if this was seen as requiring more effort than simply searching for collaboration partners independently. Similarly, Israeli startups (the demand side) might want to join only after the number of participating Mittelstand companies has reached a certain critical mass. To address this chicken-or-egg situation, one possible solution could be to identify previous stories of successful collaboration between Israeli startups and German enterprises, and using these to draw attention to the platform’s value. Another solution could be to introduce group-specific requirements for participation, thereby ensuring high quality standards on both the demand and supply sides. This would provide an incentive for both sides to join, as the platform’s curated quality would exceed what individual firms could reasonably expect to obtain via their own searches. Once a high-quality network had been established, a more proactive approach could be taken to increase the number of users.

This question of appropriate size is also important. The platform would certainly need to be large enough to offer both the Mittelstand companies and the startups a significantly broad range of opportunities. However, as it grows, it would need to include capabilities enabling participants to narrow searches and engage with the counterparts best suited to their needs. A key measure is that participants would always have to see the platform as a way to reduce transaction costs and simplify interactions.

A platform owner could improve the odds of brokering successful contacts by helping medium-sized companies take the initial steps toward becoming collaboration-ready. For example, the platform owner could help medium-sized companies develop descriptive use cases that clearly define potentially fruitful areas for collaboration. This, in turn, would help startup companies identify relevant German partners and would simplify future e-procurement processes (especially with regard to the venture-client model). This investment in the German client would thus enhance the platform's initial value for both sides while also increasing the chances of triggering network effects as the participant population grows (Currier 2018). The key issue of maintaining neutrality – and ensuring that participants also perceive the platform as acting neutrally – could be addressed by soliciting ongoing feedback on this issue from both sides.

Addressing the Mittelstand executives' desire for information would require a different set of features. Simply presenting raw market data would not be sufficient; to truly add value, the platform would have to provide information relevant to strategic decision-making as well as highlighting insights and technology trends while also clarifying why a given startup might be compatible with a German company's present and future business opportunities. Visualizations of relevant data could help make individual companies more attractive to their potential counterparts. Today, along with offering company data, existing digital platforms (e.g., CB Insights and Crunchbase) scour the internet for additional relevant information and compile it into an easily digestible format, drawing connections and spotlighting industry trends. A digital platform designed to link German and Israeli companies should include similar features.

Finally, the platform would have to address cultural, linguistic and even legal hurdles relevant to its target market. This study's interviews with German Mittelstand executives revealed a range of different needs in this regard. For example, enterprises that already operate internationally, with subsidiaries and employees in other countries, have typically already established the internal capabilities to deal with intercultural issues. Other companies have much less experience when it comes to operating outside of Germany even if they do export their goods and services. Thus, some would require

more guidance than others when interacting with people from other cultural and linguistic backgrounds. "When it comes to language barriers, we have to listen and [...] learn other languages," said Mirco Lange of Edeka Nord. By contrast, Wilo's Alexander Hain said that "language and cultural barriers are rather low at our company since we are already a global company." Some Mittelstand executives interviewed also mentioned the importance of legal certainty. As Viessmann Chief Digital Officer Markus Pfuhl said: "We would have to have legal certainty and economic stability." However, he also mentioned that it is vital that "there is no restriction on whom to cooperate with based only on their country of origin."

Drawing on our analysis of this market's needs and requirements, the next section will present a recommended networking tool designed specifically for German Mittelstand and Israeli startups.

### German-Israeli Innovation Exchange

A German-Israeli Innovation Exchange is a mode of engagement in which previously vetted Israeli startups would be invited to a specific German region to engage with C-level employees of local Mittelstand companies. From the beginning, the goal of this tour would be to solve specific enterprise challenges as a starting point for sustained collaboration.

The logic behind this strategy is simple: Executives at German Mittelstand companies often lack the time, personnel and resources to visit foreign startup hubs and engage with startups on their own. They are often overwhelmed by day-to-day business and lack the capacity to scout and engage with startups many miles away from their headquarters. Therefore, bringing startups to a specific region in Germany to meet and engage with Mittelstand executives holds the potential to create valuable opportunities for both sides. Under this particular model, the method to select the startups would be an open-innovation challenge in which startups and external innovation partners would be asked to apply their technology and business solutions to concrete innovation issues or needs identified by German Mittelstand companies. Indeed, in the interviews conducted for this study, German executives reiterated that any platform's sustainability depends on its ability to generate meaningful engagement.

This model would address concerns expressed by the medium-sized companies interviewed for this study, combining the advantages of a discovery journey with those of an open-innovation challenge. A good example of a similar format is the “Founders Hack” initiated by the Founders Foundation in Germany. Here, six established regional companies present their own innovation challenges, invite startups to present specific solutions in front of a jury and the companies’ executives, and offer up to \$5,600 in prize money.

The first step in creating such an event would be to identify a set of German companies willing to commit to open innovation. This means they must be able to share their problems and needs, and convey these issues in a way that enables startups and other external innovation partners to develop innovative solutions. The companies’ C-level employees must be willing to commit to being actively involved and to allocating sufficient resources.

A good strategy in this regard would be to select a group of Mittelstand companies that are located in the same geographical region, and that have similar needs in terms of technological solutions or come from related industries. This will ensure that the challenges they formulate focus on the same area, providing startups responding to the challenges with a broader range of plausible business partners.

Third-party support organizations could play an important role in this process of selecting companies and developing challenges. For example, a number of service providers already have experience in organizing and managing such challenges, and could help Mittelstand companies craft their challenge proposals. In Germany, such entities include Octorank, the German-Israeli Startup Exchange Program (GISEP), the Founders Foundation and the German Startups Association (BVDS). In Israel, SOSA and SNC are viable contenders. Ultimately, it would make sense to reach out to local multipliers on both sides to ensure that both the corporate challenges and the startup applications are as sound as possible.

The next step would be to scout and select the participating startups based on a predefined set of criteria derived from the innovation challenges. A good communication strategy appealing to both sides will be crucial to the success of

the selection process. This should highlight business potential associated with collaboration as well as the value of engaging with overseas counterparts. This matchmaking process – finding the right startups, matching them with the appropriate Mittelstand company, and encouraging them to submit responses to the challenges – is not a simple task. Here, too, third-party organizations in Germany and Israel might be of assistance.

The exchange should also focus in part on soft-landing opportunities in the various German regions, highlighting the advantages of relocation for the startups even if only on a temporary basis related to a specific collaboration. To do so, regional partners, such as local coworking spaces and other service and infrastructure providers, could also be invited to the meetings. Overall, the visit should include a good mix of soft-landing sessions and workshops with experts and experienced mentors familiar with the business environment and potential in the selected region or industry.

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## 9 Platform for German-Israeli innovation

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A networking instrument specifically designed to connect German Mittelstand companies and Israeli startups would be of great additional value for both sides. This innovation platform would combine several digital and non-digital engagement modes to bridge the gap between Israeli startups and Mittelstand companies. Examples of services provided by such a platform would include scouting and matching services, conferences and a German-Israeli Innovation Exchange.

In the interviews conducted for this study, numerous experts cited the need for a shared collaboration platform. In particular, Mittelstand executives said they would like to have access to a better contact and communications medium, a more robust source of relevant information, and simplified funding opportunities (Wallisch & Hemeda 2018). Although a number of actors in the market currently offer to help corporations become “startup-ready,” few are actively connecting startups from Israel with the German Mittelstand.

To establish a successful platform focused on an issue such as collaborative innovation, pre-existing networks should be integrated as partners. This has two major advantages. First, it can significantly decrease the new service’s time to market. Having a strong network of pre-existing partners would help instill trust among potential participants and could help achieve the necessary reach in a short time, as the partner networks could help in efforts to build bridges to members of the target audience. Ideally, the third-party network partners would promote the platform as ambassadors rather than trying to compete with their various services. Second, forming smart partnerships can save money. Building all the necessary components and relationships from scratch as a new and unknown player in the market would take considerable time and require a significantly greater investment than if partner resources could be used.

### 9.1 Market analysis of digital and non-digital platforms

This analysis includes a number of digital and non-digital platforms that already work to connect startups from Israel with the world and sometimes with companies from Germany, albeit not specifically with the German Mittelstand. These platforms cover a wide range of topics and their reach also varies, as they address different niches and target groups. It is not possible to compare the platforms directly given that each pursues a different set of objectives. For instance, a simple comparison of members, user numbers, reach or other key performance indicators (KPIs) would distort the result of the market analysis. Therefore, the relevant platforms were mapped with regard to their innovation-supporting services and/or local context. This type of analysis makes it possible to create a map of potential partners and stakeholders for a German-Israeli innovation platform. Moreover, observing successful (digital and non-digital) platforms makes it possible to derive success factors, KPIs and guiding principles relevant to a potential new platform.

The study’s analysis of more than 60 international innovation platforms, combined with numerous expert interviews, showed that there is currently no platform in the market with the express purpose of fostering collaboration between German Mittelstand companies and Israeli startups. A review of successful instruments in other areas, combined with the opinions expressed in the study’s interviews, indicates that there is a need for a mixed platform with both digital and non-digital components that is able to provide relevant information and facilitate interpersonal relationships. In the Annex, readers can find a short list of platforms that currently help form connections between German companies and Israeli startups even if this is not their primary purpose.

If a new instrument of this type is to be successful, it must respect existing ecosystems and fully integrate its partners.

### Stakeholder mapping

A number of participants provide different kinds of support to startups (e.g., Startplatz, Jnext, SOSA) or focus on individual niches, such as cybersecurity (e.g., Tech7). Some other networks and organizations provide support to the innovation ecosystem more generally (e.g., the German Startups Association (BVDS) and German Chambers of Commerce Abroad (AHK) Israel).

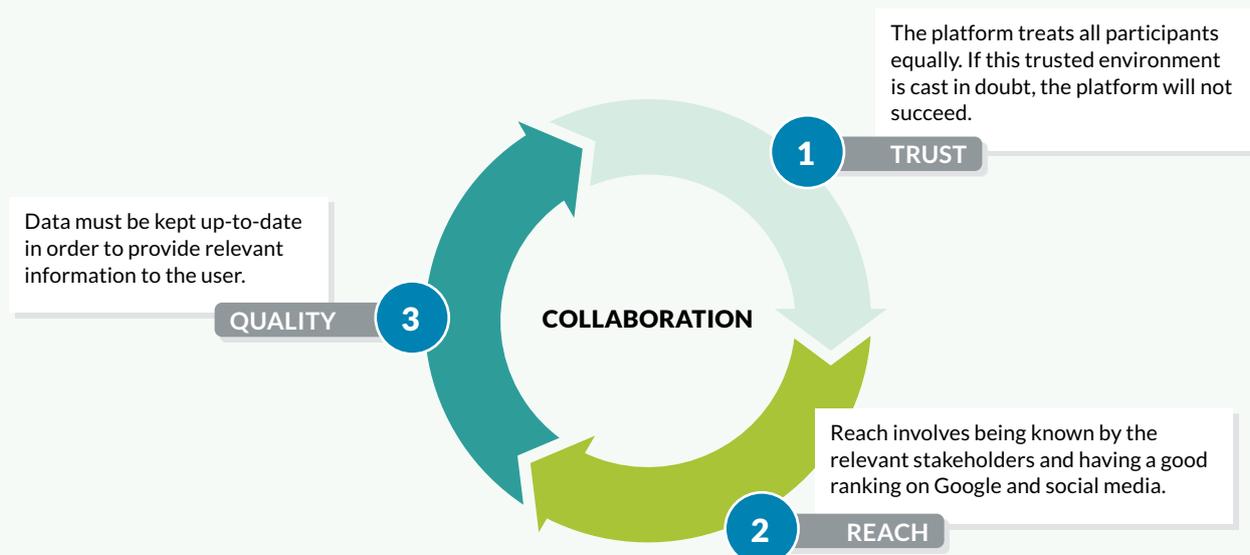
Many of the Israeli experts interviewed also cited the presence of numerous independent advisers in the ecosystem. These consultants' efforts were perceived as being very focused on specific collaborative projects, but they lack an overarching organization. As members of this consultant community have limited market visibility, providing them with the ability to showcase their efforts on an open platform could be beneficial to startups, Mittelstand companies and the advisers themselves.

Having established a picture of the existing ecosystem and relevant players in the stakeholder map, the next step in the market analysis derives core prerequisites for a successful platform.

### Core prerequisites for a successful platform

According to the analysis of existing platforms, three interdependent core prerequisites are essential for market success: trust, reach and quality (see Figure 19). Securing trust within the target community is the most important prerequisite, as users (e.g., Mittelstand companies, startups, third-party ecosystem actors, journalists, etc.) will quickly lose interest in any instrument if they perceive it as being unreliable. To establish trust, the platform must be transparent and respect the interests of the ecosystem's various actors. Partnerships and alliances can play a significant role in fostering this confidence, as actors will be more likely to trust entities that they know. A strong partner network, in turn, can draw attention from across the ecosystem, thus increasing reach (the second core prerequisite). Reach is needed for stakeholders to grasp the relevance of the platform. As we will see below, the instrument designed for this study uses a newsroom

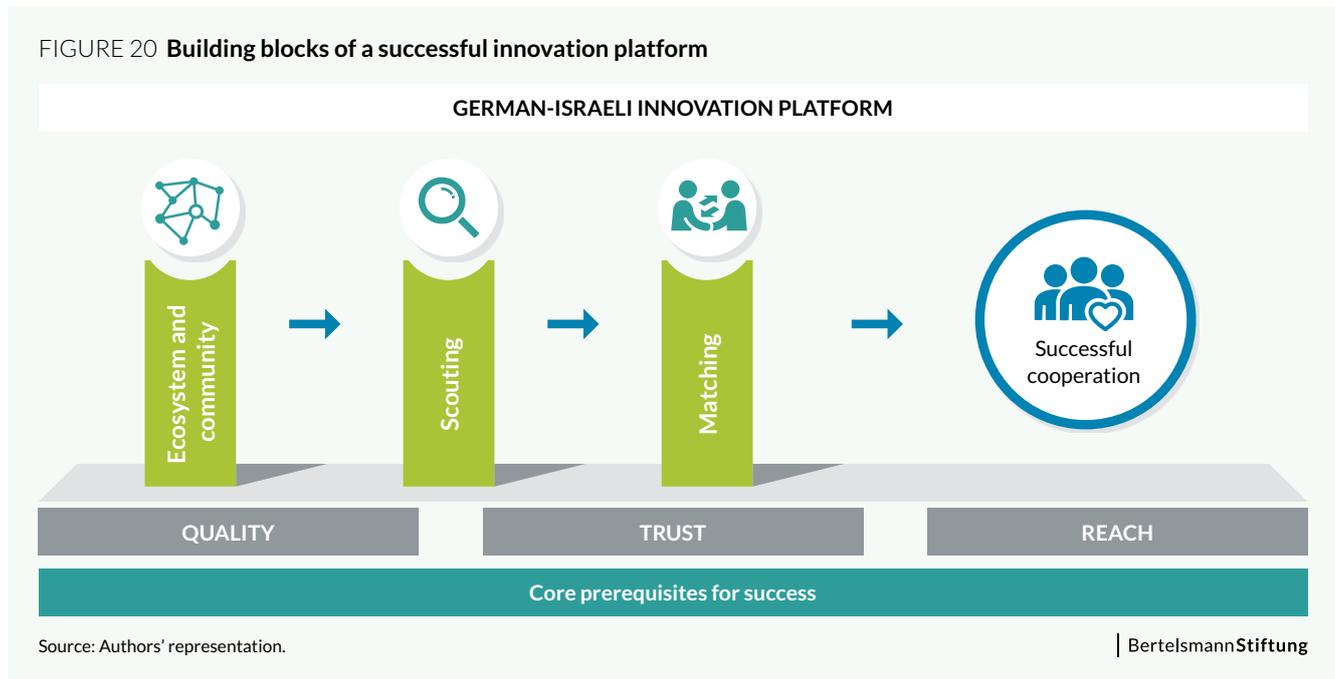
FIGURE 19 Core prerequisites for a successful innovation platform



Source: Authors' representation.

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FIGURE 20 Building blocks of a successful innovation platform



model to share the best practices discovered through successful collaborations, thereby providing inspiration to Mittelstand companies that have not yet engaged with startups. The third core value, quality, can be subjected to various definitions for a platform. On the one hand, it is important to ensure that all data is up to date and as relevant as possible to users. But “quality” can also apply to the platform’s other activities, such as pitch events featuring prominent jury members or a mentoring program with particularly respected mentors.

Having identified the three core prerequisites for platform success, a three-step process for successfully initiating collaborations through the platform was defined, moving from ecosystem and community to scouting and, finally, to matching (see Figure 20). Here, the first step in seeking to create collaborations is to build an ecosystem or community, thereby fostering relationships with influencers and ambassadors in order to establish trust. Having access to an existing ecosystem can speed up the process of establishing a platform. If the partners trust that the concept is solid and respects the purpose of the platform’s stakeholders, they will be more likely to provide access to their own networks. The second step is the scouting process. One option here is to offer a way

for a participating Mittelstand company to employ an innovation scout tasked with identifying potential startup partners and promising new technologies. However, a more cost-efficient way is to present innovation challenges (as in the German-Israeli Innovation Exchange) in which a problem is made public and a prize or award is offered for the best solution. The third step is the matching function. For example, it is a common practice to invite the best five to 10 startups responding to an innovation challenge to an event and to let them pitch their ideas before the sponsoring company makes its final decision. The platform provider may organize tours for this purpose or offer other support to the medium-sized company in the decision-making process.

This three-building-block model was validated with Mittelstand executives during this study’s research process. While following these three steps does not automatically guarantee that collaboration will be successful, ignoring any one of them will greatly increase the risk of failure. Many efforts to create platforms – in this market and elsewhere – have failed due to an inability to attract a sufficient number of active users. Clear design and operating principles are needed, as these will help reassure interested parties that the platform will be fair and secure.

## Design and operating principles

Design and operating principles function as a kind of promise from a platform operator to potential users. Operating principles express a philosophy of behavior and lay down fundamental rules regarding how participants will be treated and what they can expect as they interact in the new environment (see Figure 21). Thus, they are a fundamental tool in establishing trust. Design principles help give these operating principles concrete form. For instance, website, database or online-network components may be programmed to function in a particular way so as to further the platform's goals.

At the most basic level, users must be clearly informed of the platform's purpose, the identity of its owners and/or operators, the motivations behind its creation, and its intended target groups. For the platform being conceived in this study, another key operating principle should be openness to all participants. If the operators intend to maintain the instrument over the long term, another principle should address how users seeking to join at a

later stage will be treated. In the present case, given the ecosystem's diversity and dynamism, continuing to allow new participants to join over time will increase its relevance.

These operating principles must be reflected in the platform's design principles – that is, in the way it actually functions. The platform should allow participants to create profiles for their companies or organizations. However, having a profile should signal that the company has a genuine and serious interest in the opportunities offered by the platform and in collaboration more generally. To ensure that this high level of relevance is maintained, some barrier to entry (e.g., a registration process) will be needed. Similarly, user registrations should be validated by the platform's operators. At the same time, this process of creating a profile and submitting registrations needs to be simple in order to encourage users to provide high-quality data.

The platform operators should “think lean,” keeping aspirations and objectives within manageable limits. Prospects for success will be greatly enhanced by starting with no more than a prototype – that is, a minimum viable

FIGURE 21 **Operating principles for a successful platform**

### The platform has a purpose

The platform provides a service related to a given topic. Whatever contributes to this purpose is a service provided by the platform.

### The platform is neutral

Any supplier to the platform is dealt with in the same manner. The platform provider organization is independent from a supplier organization, especially if one legal entity acts as a platform provider and a platform supplier at the same time.

### The platform is open

Any supplier or partner can apply to participate on the platform as long as it is in keeping with the platform's purpose, fulfills the code of conduct, and follows the platform's process and technical standards (e.g., APIs).

### The platform provider owns the customer interface and brand

Any service provisioning to the customer is managed by the platform provider. The platform provider never gives any third party full access to the customer and supplier databases.

### The platform provides generic, reusable and scalable services

Technically, the platform consist of generic, reusable and scalable services, e.g., a product/services publishing engine, customer insights or a rating scheme.

### The market chooses the relevant services

The platform provider offers the relevant services, but the customer ultimately decides which services will be ordered and, after completion, rates the quality of the products and services. In this sense, the platform provides a transparent marketplace.

Source: Authors' representation.

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product with just enough features to satisfy potential users – and subsequently creating new iterations based on observed needs, challenges and feedback from real users.

### Crucial platform-profile information

A number of the Mittelstand executives and ecosystem experts stated that clear stakeholder accountability would be a crucial factor in the success of an innovation-network platform. In the case of a German-Israeli innovation platform, Mittelstand companies and startups alike should be asked to provide a certain quantity of basic information in their profiles to facilitate successful partner searches. This information could be submitted during the registration process or when applying for a challenge.

As a good example, Start-Up Nation Finder (SNF) provides an overview of the startups present in the Israeli innovation ecosystem. It gives short descriptions of the startup company and the verticals it addresses, features the technologies developed or used by the startup, and provides information about the startup's management team, funding rounds and other recent news.

By contrast, there is currently no platform providing similarly comprehensive insights regarding German Mittelstand companies, either in terms of basic market data or an index of innovative capability. In fact, many German Mittelstand companies are so specialized that they are difficult for potential international partners to discover. To gain visibility within an instrument of this kind and to garner interest within the Israeli startup community, these Mittelstand companies must at the very least provide information regarding revenues and number of employees. This information would help startups understand the companies' relevance within the German ecosystem. Some indication of whether the Mittelstand companies have already built a strong innovation network would also be helpful. Providing information on select customers or details on the number of patents held by the company would increase credibility in addition to helping startups assess whether a cooperation with that specific Mittelstand company would be plausible or likely to succeed.

Contact data for specific individuals would also be highly useful. As startups tend to be considerably smaller than German Mittelstand companies, it is generally much

easier to find a useful contact person within their ranks. In Germany, employees of medium-sized companies tend not to use business social-network platforms with great frequency. When they do use such tools, they usually register with XING, a German networking platform, while Israeli startups are more likely to use LinkedIn. Thus, an innovation instrument that contained useful contact data within an environment easily accessible to both sides would provide startups with valuable information on how to approach a company/startup and whom to contact first, greatly facilitating initial contact.

### KPIs measuring platform success

To understand how well it is serving its chosen market, a platform targeting German-Israeli innovation would need to identify the KPIs that would enable it to define and measure its success. To identify suitable KPIs, we drew on the findings from our expert interviews and desk research.

Upon first consideration, it might appear that an instrument designed to facilitate matches between startups and Mittelstand companies might judge the number of collaborations stemming from the network to be the most obvious indicator of success. However, the absolute number of collaborations established is not necessarily the most meaningful indicator in this case, as it gives no indication of the benefits provided to the companies on either side. Instead, the platform's operators should aim to measure success in terms of (equity) deals agreed upon, financing acquired, acquisitions made or successful joint innovation projects. Expressing success measured by these standards would increase the platform's market visibility and almost certainly attract more users.

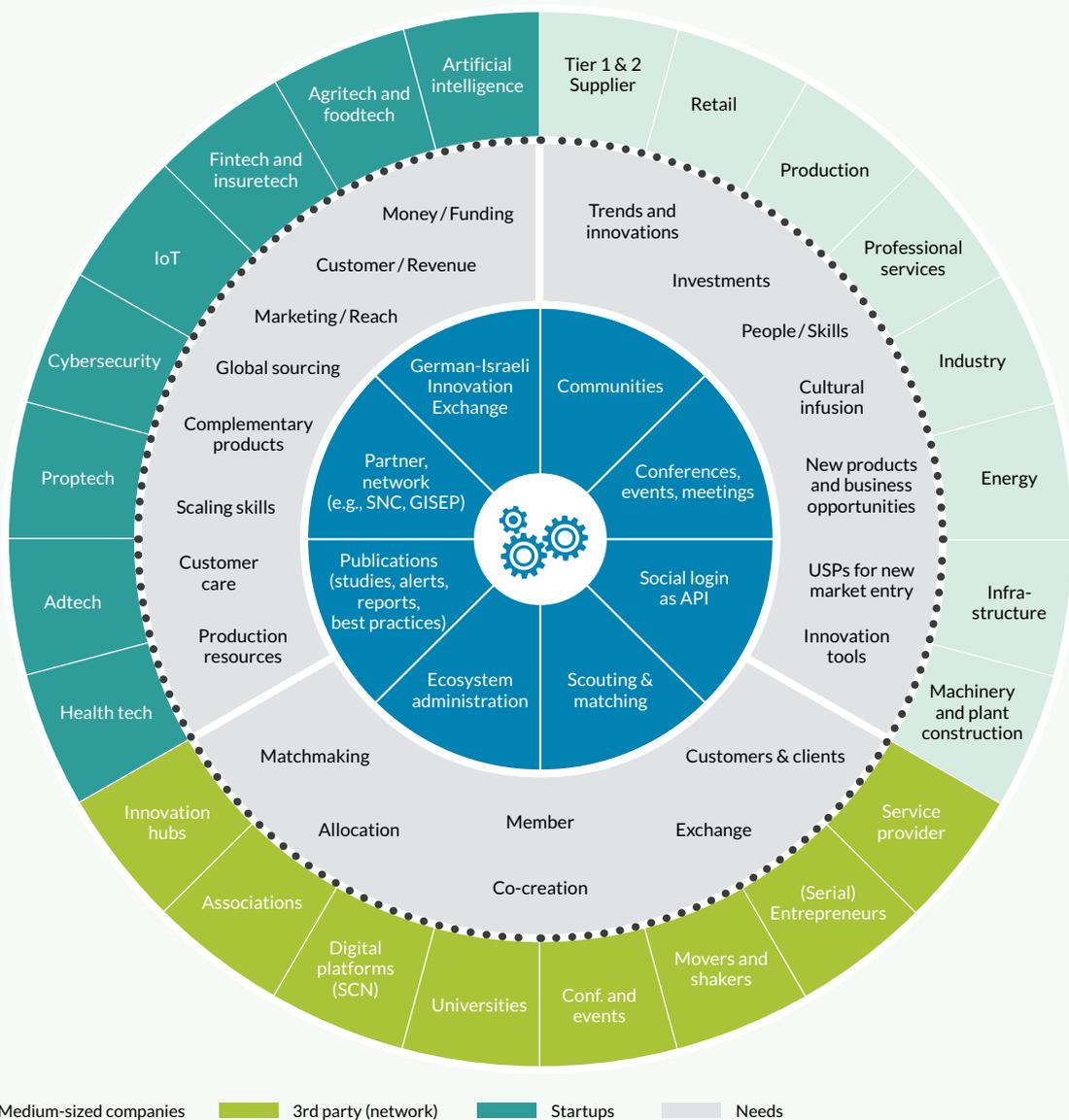
Using individual challenges as an underlying measuring unit would make it easy to assess the outcomes of collaborations, as all information on the challenge's details, the number of applications, the number of participating startups, and details on the project prototype and result (letters of interest, pilot project, rollout) will have already been provided by the users. For any given challenge or problem to be solved, the number of potentially suitable startups – and thus, applications – per challenge will be limited. In the long run, meaningful benchmarks should also include measurable cost savings and increases in turnover or market share achieved as a result of the collaboration.

These are admittedly ideal measures; in reality, many Mittelstand companies and startups might not be willing to share such information for competitive reasons. In addition, requesting such information following the end of each challenge could prove to be a large task for the platform's owner.

## 9.2 Prototype of a German-Israeli innovation platform

Having discussed existing platforms and identified core prerequisites for success, operating principles and KPIs, the following section will provide an outline view of a possible

FIGURE 22 Proposed elements of a German-Israeli innovation platform



Source: Authors' representation.

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FIGURE 23 Core of a German-Israeli innovation platform



platform promoting German and Israeli innovation. Since any such instrument will require an innovative approach to designing, building and establishing it, we recommend creating a prototype as the first step. This prototyping phase would offer a quick way of verifying the conclusions drawn from the interviews and desk research conducted for this study. Figures 22 and 23 show a mockup of the elements to be included in a German-Israeli innovation platform.

As has been noted throughout this study, an instrument of this kind cannot limit itself to addressing only startups and Mittelstand companies. Third-party networks and organizations must also be included from the start. Most of these will ideally act as ambassadors or influencers, helping the nascent platform gain reach. Movers and shakers may offer support through their own networks, but only if they truly champion the platform’s objectives.

At the heart of this mockup is the platform’s core, which will be explained in more detail in the next subsection. The concentric circle surrounding the core contains references to the needs and requirements of each of the three different partner groups: Mittelstand companies, startups and third-party networks/organizations. The outermost circle displays potentially relevant fields of operation for participating medium-sized companies and startups as well as, should there be third-party actors, the type of actors that may be interested. Building such an instrument and maintaining its data will inevitably be very costly and time-consuming. Thus, this instrument could use innovation challenges as a means of obtaining standardized, high-value applications from startups. Startups would have to create a user profile in order to apply to multiple challenges.

The core of this prototype contains several elements, such as a strong partner network and an ecosystem administrator, that would help connect potential new members with one another and provide inspiration to members. Furthermore, it would entail conferences and meetups with entrepreneurs and Mittelstand decision-makers, a novel German-Israeli Innovation Exchange in which preselected startups from Israel would come to Germany to pitch their solutions to Mittelstand owners and decision-makers (based on innovation challenges), and a news portal that publishes best practices and provides an overview of current challenges, potential partners and new platform members.

Data maintenance for digital platforms could also be facilitated through the creation of a social login function, such as those provided by Facebook or Google. With a feature of this kind, users could use their account with one platform to log in to another platform (e.g., SNF). If this platform achieves its goal of becoming an umbrella organization, its social login could also be used for other partners. This would save time for the user and offer the additional benefit of allowing the platform owner to generate insights about customers based on their login behavior. Digital platforms would have a bidirectional application programming interface (API) enabling connection to databases from other platforms (e.g., Startbase, Mechanical Engineering Industry Association (VDMA) Startup Machine, SNF and Crunchbase).

However, as established during the market analysis, building the platform is only half the solution. Populating it and providing incentives for users to remain on it – and for more users to join it – is the next big challenge.

### Attracting users and providing incentives to stay

For any matchmaking instrument to succeed, it needs not just to reach, but also to maintain a critical mass of participant stakeholders that, in turn, reach out to others, interact and generate value. Therefore, we need to consider ways in which the potential platform could encourage an increasing number of startups and Mittelstand companies to join, and how best to sustain their engagement with and via the platform (see Figure 24).

Experience in the field and our interviews with medium-sized German companies and startup-ecosystem experts indicate that digital platforms (i.e., databases containing company information) could be of great benefit to the ecosystem, but are not ideal as a stand-alone matchmaking tool. Thus, the best approach seems to be combining digital and non-digital components in order to maximize the network effects of a German-Israeli innovation platform.

As previously mentioned, a website that provides information on all companies within the network, such as SNF, has the ability to generate transparency and trust. This leads to increased interactions, which in turn increase the value of the website itself. In the case of our German-Israeli innovation platform, the databases of company information would need to be linked to non-digital components, such as events, that would help ensure a higher level of commitment from both sides. Organizing appealing one-off events (e.g., a German-Israeli Innovation Exchange, hackathons or open-innovation challenges) would further increase the level of commitment and the intensity of exchange from the beginning, thereby boosting the matchmaking platform's active population in the long run. Relationships are more likely to become sustainable if there are tangible, face-to-face meeting opportunities.

After developing a minimal-viable-product version of an innovation platform, the next step would be to encourage the Mittelstand companies and startups to interact with each other. The research conducted for this study identified

nine possible strategies that could contribute to the success of a platform, helping it to reach critical mass and sustaining the level of interaction needed to maximize value creation.

The first possibility would be to initially focus on just one side (usually the producer – in this case, the medium-sized companies), providing such entities with useful insights or other incentives to join, and only afterward expanding into the demand side (i.e., startups). To a certain extent, a robust cooperation with existing platforms, such as SNF, would provide shortcuts in terms of developing the demand side.

A second strategy could focus on first acquiring experienced stakeholders, who would then encourage others to follow. For example, if medium-sized German companies with past experience in startup-collaboration projects were to join at the beginning, this might subsequently attract additional Mittelstand companies with less experience. Similarly, engaging startups with some previous corporate-collaboration experience might later attract additional startups with less experience. The power of social media (e.g., LinkedIn) could be used to spread easily digestible, quickly consumable content about best practices, thereby attracting new members.

Another strategy could be to provide incentives for one side by creating simulated versions of the other side's as-yet-nonexistent participants – in effect, promises regarding the opportunities still to come. For instance, creating highly attractive simulated company profiles for German Mittelstand companies could help recruit startups. Alternatively, it could again be worth considering Start-Up Nation Central (SNC) as a source of potentially interested Israeli startups. Including their profiles in the platform could make it more attractive to German companies. Likewise, establishing a social-media site that included groups in which producers were also consumers could create value by attracting a growing number of participants to the platform.

Concentrating on a niche region or sector/topic and subsequently expanding to other regions or sectors/topics could be a useful way of attracting highly focused and active users. For example, the platform could initially focus on a single Mittelstand region, such as East Westphalia-Lippe

FIGURE 24 **Nine population strategies**



Source: Authors' representation.

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(OWL), and later expand to North Rhine–Westphalia (NRW) as a whole or even Germany and beyond. This could be an economical approach to generating network effects despite limited resources.

One of the most attractive strategies could be to utilize existing platforms to reach out to one side of the target audience. Support by Founders Foundation and other professional networks could provide a crucial initial push. Engaging with such networks from the beginning, perhaps by offering special access to current members, could increase the platform’s appeal in its early days.

In what is commonly termed a “big bang launch,” operators could draw on the help of influencers and ambassadors to reach further than they could themselves. A communication strategy that included such individuals or organizations might emphasize the opportunity cost

of not participating in the new platform, triggering the network effects that are vital to scaling up the platform. For example, the startup and Mittelstand experts and executives interviewed for this study could help spread the message and the benefits of joining the platform. In this regard, it would be crucial to support them through activities such as invitations to conferences and discussion forums, and to provide them with easy-to-share content for social media and other publications, helping them to highlight the value and opportunity associated with joining the platform.

Another possibility would be to implement a VIP strategy that provided exclusive content or value to existing members of the platform in return for encouraging their peers to participate. For our German Mittelstand companies, for example, this could mean showcasing exclusive partnerships in specific sectors/regions or

providing exclusive access to certain specific-sector startups, such as top Israeli cybersecurity startups.

Finally, making use of cultural symbols that convey the same idea to different individuals might foster increased willingness to join peer companies in the network. For example, strong brands could be used as shared cultural symbols to attract more users to the platform. This strategy would depend on gaining the support of prominent regional actors or industry-specific companies from the very beginning.

Figure 24 sums up the nine different user-acquisition strategies. As different as they are from one another, they share the objective of creating sustained interaction and generating long-term value.

Two proven incentive strategies are also worth considering here. First, a gamification strategy might be used to provide incentives for key multipliers, such as the experts and executives interviewed for this study. For instance, they might be awarded badges or similar rewards each time they engage in promotional activities for the platform. After collecting several badges, individuals from their companies could achieve a higher status, rendering them even more visible and motivating them to engage in more activities, which in turn would motivate others to join. Second, and along the same lines, individual users could be provided with exclusive insights and content to share via their own personal networks, thus enhancing their reputation and status.

Regardless of the strategy or combination of strategies applied, the goal of any innovation platform is to improve its brand recognition and produce tangible benefits for its owner and all participants. Due to the time- and cost-intensive labor of building, populating and maintaining a successful platform, we recommend starting with pilot projects and subsequently adding features and scope with each iteration. Feedback from the early members should be collected and analyzed to guide further development. Finally, as with any successful brand, once the platform has become established, the next question will be: How can the platform be adapted and scaled, both to other regions and other countries?

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## 10 Adapting the platform to other national ecosystems

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Since many elements of a German-Israeli innovation platform are generic, they can be readily scaled and transferred to other national ecosystems. Important in this regard is the complementarity of the needs of Mittelstand companies and available startups, especially with regard to technological verticals and the maturity of ecosystems. Mature innovation ecosystems, defined in part by the availability of highly skilled workforces and a sufficient number of startups, promise a good basis for collaboration with German Mittelstand companies.

Despite its particular strengths, Israel is not the only emerging innovation ecosystem in the world that is piquing the interest of medium-sized German companies. The innovation ecosystems in China and India, for example, with their rapidly growing and highly skilled workforces, ample venture capital and fast-growing startup communities, also offer a good potential basis for collaboration with German Mittelstand firms. Hence, for many medium-sized German companies, more preparatory groundwork in the area of international communication would be needed before entering into collaboration with Indian and Chinese startups. Mittelstand companies show a general willingness to cooperate internationally wherever there is the prospect of tangible benefits (e.g., new markets, access to skilled employees or innovation-driven collaboration). Conversely, early-stage innovation ecosystems could also benefit from innovation exchange programs, albeit with a stronger focus on education than on scouting and matchmaking.

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# 11 Conclusion

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How could collaboration between Mittelstand companies in Germany and the vibrant startup community in Israel be intensified? This study proposes the creation of a matchmaking platform focusing specifically on this objective, containing both online and offline elements. The high degree of complementarity between these two ecosystems means there is much to be gained from such cooperation. Israel is home to a fast-expanding roster of agile and mature startups with proven technologies; for their part, medium-sized German companies already have the established markets and customer bases desired by these startups, but need access to the innovative technologies and business models that will help them survive in today's increasingly competitive global environment. Cooperation thus holds great potential to help both sides expand their markets and establish sustainable, innovation-driven business models.

Nevertheless, several challenges must first be addressed. According to the executives and experts interviewed for this study, medium-sized companies must cultivate an open-innovation approach to their own activities in order to cooperate successfully with startups. This primarily means being open to ideas and practices stemming from external sources, rather than focusing solely on internally produced research and development (R&D). Interviewed executives also noted that having an internal advocate or champion for innovation – either in the form of a single contact person or an innovation-focused unit – is necessary in order to derive the greatest benefit from such collaboration. Fulfilling these conditions can help a Mittelstand company become “startup-ready” both in terms of mindset and internal processes.

For their part, Israeli startups must be able to convince potential Mittelstand partners that adopting their technologies or models would generate genuine added

value. In many cases, the startups will need to provide a proof of concept or minimal working prototype before any deal can be finalized, and must be willing to visit and sometimes work at the often-rural headquarters of German Mittelstand companies. For both sides, working to develop a relationship of trust and transparency – in part by creating a clearly articulated common vision from the beginning – will be critical for the success of any long-term collaboration.

While a number of networking tools currently on the market provide support and information for the startup universe in particular, no existing tool has been specifically designed to support collaborations between the German Mittelstand and Israeli startups. In this study's interviews, Mittelstand executives indicated a particular need for mechanisms enabling them to identify, evaluate and contact potential partner startups. In addition, they expressed a desire for a service offering information on startups relevant to their individual sectors of operation and on collaboration-related topics more generally.

Given this set of needs, this study recommends the creation of a matchmaking instrument, provisionally referred to as a German-Israeli innovation platform. To be most effective, this platform should involve digital elements as well as non-digital events and frameworks. In this way, its linked parts could help stakeholders navigate the entire partnership process, simplifying the identification of plausible partners, facilitating face-to-face meetings, and providing ongoing support as firms explore and enter into collaborative ventures.

On the digital front, the platform would respond to Mittelstand executives' needs by creating a large database of Israeli startups. This would include company profiles containing key information about the firms' technologies

and customer bases. Mittelstand companies would also maintain their own profiles on the service, enabling startups to find potential partners based on sector and market need. This online aspect of the platform would additionally entail a newsroom function providing up-to-date information on key markets, economic trends, funding announcements and other news relevant to the companies in the target communities.

The platform's non-digital components would include events, such as conferences and meetups, designed to facilitate interaction between entrepreneurs and executives. With the specific needs of this study's target communities in mind, we propose the creation of a German-Israeli Innovation Exchange, an instrument that would give Mittelstand companies an efficient means of identifying potential partners in Israel, while subsequently bringing those startups to Germany to begin the process of collaboration.

Of course, any matchmaking instrument is only as good as its network of active users. Thus, to develop a population of early users, the platform operators should establish key pre-launch partnerships with existing business-support services, networks and trade associations serving the target markets. Ideally, these partners' members and users could be quickly integrated into the platform's community, subsequently serving as ambassadors to persuade other potential members of the platform's value. Over time, the platform's success could be measured using specific key performance indicators (KPIs) examining the number and size of deals struck (e.g., equity, financing, acquisitions) or looking at increases in revenues or market share resulting from the collaborations established through the platform.

The platform model was specifically developed to foster relationships between German and Israeli companies, and reflects these ecosystems' specific needs and maturity levels. However, since many of its insights are generic, they would be easily transferable and scalable internationally. Startup communities in China and India may also offer suitable candidates for collaboration with German Mittelstand companies; thus, future iterations of this platform or others like it could focus on these ecosystems as well.

Innovation is a major driver of economic change. Just as cross-border trade allows nations to specialize efficiently in certain products and services, transnational collaboration allows individual firms to find partners elsewhere that complement their own innovation strengths and weaknesses, making both sides stronger. According to Austrian-American economist Joseph Schumpeter, one key aspect of innovation is the process of turning an invention into a successful product. Today, innovative power includes the ability to turn (mostly digital) inventions into scalable products, while often making use of refined business models to achieve global market success. Yet even in this era of disruptive change and intensifying competition, globally acting companies still depend on trusted business relationships and well-established networks to distribute their innovative products and services. Thus, combining the best of Israel's inventive startup culture with the global reach of Germany's Mittelstand will foster innovation in a very Schumpeterian sense for the benefit of all ecosystem partners – and of both our countries. Now is the right time to match partners that can innovate into the future together.

# 12 Interview partners

German Mittelstand companies	
<b>Condor Medicaltechnik GmbH</b>	
INTERVIEWEE	Dominik Schulte
FUNCTION	CEO
WEBSITE	<a href="https://condor-medtec.de">https://condor-medtec.de</a>
<b>Edeka Handelsgesellschaft Nord mbH</b>	
INTERVIEWEE	Mirco Lange
FUNCTION	Head of Digital Transformation
WEBSITE	<a href="https://www.edeka.de/nord">https://www.edeka.de/nord</a>
<b>Fette Compacting GmbH</b>	
INTERVIEWEE	Steffen Schindler
FUNCTION	Project Lead Digital Innovation
WEBSITE	<a href="https://www.fette-compacting.com">https://www.fette-compacting.com</a>
<b>Harting AG &amp; Co.KG</b>	
INTERVIEWEE	Dr. Jan Regtmeier
FUNCTION	Director Product Management
WEBSITE	<a href="https://www.harting.com">https://www.harting.com</a>
<b>itelligence AG</b>	
INTERVIEWEE	Mark Albrecht
FUNCTION	Global Head of Innovation / Innovation Technologies
WEBSITE	<a href="https://itelligencegroup.com">https://itelligencegroup.com</a>
<b>Schnellecke Logistics AG &amp; Co. KG</b>	
INTERVIEWEE	Sven Virgens
FUNCTION	Vice-President Strategic Management Office
WEBSITE	<a href="https://www.schnellecke.com">https://www.schnellecke.com</a>

<b>Schnellecke Digital Innovations GmbH</b>	
INTERVIEWEE	Sven Wosney
FUNCTION	Managing Director
WEBSITE	<a href="https://www.schnellecke.com">https://www.schnellecke.com</a>
<b>Siegwerk Druckfarben AG &amp; Co. KGaA</b>	
INTERVIEWEE	Christoph Barniske
FUNCTION	Head of Digital Business
WEBSITE	<a href="https://www.siegwerk.com">https://www.siegwerk.com</a>
<b>Viessmann Werke GmbH &amp; Co. KG</b>	
INTERVIEWEE	Markus Pfuhl
FUNCTION	Chief Digital Officer
WEBSITE	<a href="https://www.viessmann.com">https://www.viessmann.com</a>
<b>WestfalenWIND GmbH</b>	
INTERVIEWEE	Johannes Lackmann
FUNCTION	CEO
WEBSITE	<a href="https://www.westfalenwind.de">https://www.westfalenwind.de</a>
<b>Wilo SE</b>	
INTERVIEWEE	Alexander Hain
FUNCTION	Head of Wincubator
WEBSITE	<a href="https://wilo.com">https://wilo.com</a>

### Ecosystem Experts

#### 3DSignals

INTERVIEWEE	Amnon Shenfeld
FUNCTION	Co-Founder and President
WEBSITE	<a href="https://www.3dsig.com">https://www.3dsig.com</a>

#### AHK Israel – German Chambers of Commerce Abroad in Israel

INTERVIEWEE	Charme Rykower
FUNCTION	Senior Executive at Chamber of Commerce Israel-Germany Innovation and cooperation scout for NRW Invest and NRW International
WEBSITE	<a href="https://israel.ahk.de/en/">https://israel.ahk.de/en/</a>

#### Bitkom

INTERVIEWEE	Lukas Gabriel Wiese
FUNCTION	Foreign Trade and International Relations (former Project Lead GISEP)
WEBSITE	<a href="https://www.bitkom.org/">https://www.bitkom.org/</a>

#### Daimler Israel

INTERVIEWEE	Adi Ofek
FUNCTION	CEO
WEBSITE	<a href="https://www.daimler.com/">https://www.daimler.com/</a>

#### Founders Foundation

INTERVIEWEE	Sebastian Borek
FUNCTION	CEO and Co-Founder
WEBSITE	<a href="https://foundersfoundation.de">https://foundersfoundation.de</a>

#### German-Israeli Startup Exchange Program (GISEP)

INTERVIEWEE	Natalie Gips
FUNCTION	Project Lead
WEBSITE	<a href="https://gisep.co/">https://gisep.co/</a>

#### imat-uve

INTERVIEWEE	Stanislaw Grünstein
FUNCTION	Innovation Manager
WEBSITE	<a href="https://www.imat-uve.de">https://www.imat-uve.de</a>

#### imat-uve

INTERVIEWEE	Dr. Hans Peter Schlegelmilch
FUNCTION	Managing Director
WEBSITE	<a href="https://www.imat-uve.de">https://www.imat-uve.de</a>

#### NFX Guild

INTERVIEWEE	Gigi Levi Weiss
FUNCTION	Managing Partner
WEBSITE	<a href="https://www.nfx.com">https://www.nfx.com</a>

#### Octorank

INTERVIEWEE	Tim Vogelsang
FUNCTION	Managing Director
WEBSITE	<a href="https://www.octorank.com/">https://www.octorank.com/</a>

#### OrCam Technologies

INTERVIEWEE	Omer Elad
FUNCTION	Central Europe Regional Director
WEBSITE	<a href="https://www.orcam.com">https://www.orcam.com</a>

#### PIRATE.global

INTERVIEWEE	Till Ohrmann
FUNCTION	CEO/Co-Founder
WEBSITE	<a href="https://piratesummit.com/">https://piratesummit.com/</a>

#### precognize

INTERVIEWEE	Chen Linchevski
FUNCTION	CEO
WEBSITE	<a href="https://www.precog.co">https://www.precog.co</a>

#### Remagine Ventures

INTERVIEWEE	Kevin Baxpehler
FUNCTION	Managing Partner
WEBSITE	<a href="https://remagineventures.com/">https://remagineventures.com/</a>

#### Social n'Tech

INTERVIEWEE	Mohammed Salah
FUNCTION	Managing Director
WEBSITE	<a href="https://www.socialntech.com">https://www.socialntech.com</a>

Startup Berlin Partner	
INTERVIEWEE	Carl-Philipp Wackernagel
FUNCTION	Startup Coordinator
WEBSITE	<a href="https://www.berlin-partner.de">https://www.berlin-partner.de</a>

Start-Up Nation Central	
INTERVIEWEE	Irit Avni
FUNCTION	Industry 4.0 Sector Leader
WEBSITE	<a href="https://www.startupnationcentral.org">https://www.startupnationcentral.org</a>

Start-Up Nation Central	
INTERVIEWEE	Jeremie Kletzine
FUNCTION	VP of Business Development
WEBSITE	<a href="https://www.startupnationcentral.org">https://www.startupnationcentral.org</a>

Start-Up Nation Central	
INTERVIEWEE	Amir Mizroch
FUNCTION	Director of Communications
WEBSITE	<a href="https://www.startupnationcentral.org">https://www.startupnationcentral.org</a>

Startup Safari	
INTERVIEWEE	Benedikt Peckruhn
FUNCTION	Head of Startup SAFARI
WEBSITE	<a href="https://startupsafari.com/">https://startupsafari.com/</a>

Tech Sheva	
INTERVIEWEE	Yotam Tzucker
FUNCTION	President & Founder
WEBSITE	<a href="http://tech7.community/">http://tech7.community/</a>

TIPA - Compostable Packaging	
INTERVIEWEE	Julia Schifter
FUNCTION	VP Strategy Analysis
WEBSITE	<a href="https://tipa-corp.com">https://tipa-corp.com</a>

Volkswagen Konnect	
INTERVIEWEE	Hemdat Sagi
FUNCTION	Business Development and Strategic Partnerships
WEBSITE	<a href="https://www.konnect-vwgroup.com/">https://www.konnect-vwgroup.com/</a>

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