

RUSSIAN AND CHINESE MID-SIZED BUSINESS: INTERNATIONALIZATION STRATEGIES

(INCLUDES 15 CASE STUDIES)

SKOLKOVO Institute for Emerging Market Studies (IEMS)



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Dear Colleagues,

We are happy to present to you a study of the internationalization strategies of Russian and Chinese mid-sized companies, as prepared by the team at the SKOLKOVO Institute for Emerging Market Studies. We are particularly honored to publish this report with the support of EY, which for a long time has been one of the key partners of the school and the institute.

This report is a part of our continuous research effort to study mid-sized Russian firms from non-resource-based industries, which, although lesser known to the international business community, exhibit a remarkable degree of versatility and innovation and successfully compete with global players both in Russia and abroad.

In Russia, small and medium-sized entrepreneurship has had a difficult and even tragic fate over the past 100 years. In the public mind there is still a fairly strong negative bias to this activity. Moreover, the years of the state monopoly on foreign trade, although long gone, created stereotypes that persist to this day when many entrepreneurs continue to see themselves functioning strictly within local or, at best, national markets. It is therefore important to break these stereotypes and show success stories of companies in this segment.

The goal of this report is to demonstrate that the opportunities of the global market are available to medium-sized companies just as much as they are to large multinationals. As a business school, we concentrate on strategies – the choices that companies make in a given business environment. Our belief is that any environment can be more favorable or less favorable depending on the strategies adopted to deal with it. That, and a bit of luck, is what makes one company a success and another a failure.

The focus of this report is on companies from Russia and China. Mid-sized business in these countries is remarked by their creative strategies and entrepreneurial spirit, and their international experience is especially notable. Being inherently different, Russian and Chinese mid-sized companies approach internationalization in distinct ways, this is particularly stands in respect to markets, products and operations.

In the recent time, Russia and China have also proclaimed plans to strengthen economic collaboration. However, the cross-border trade between the two countries continues to be unbalanced: while the ma-



jority of Chinese exporters to Russia is comprised of the small and medium-sized firms, in the Russian export to China the share of such companies is negligible. Russia significantly lags behind China in the development of the small and medium-sized sector and that makes the exchange of experience particularly timely and relevant. We believe that understanding the differences in the ways businesses from the two countries strategize is an important step towards developing the ability to work together, leveraging each other's strengths and co-creating mutually beneficial solutions.

At SKOLKOVO we have always been committed to helping the entrepreneurs to learn about the dynamics of the international market and to develop the abilities they will need to benefit from its opportunities. This is not just a one-way street: we also learn from their experiences. We are particularly proud of having so many good examples from Russia and broader Eurasia to learn from, both in a practical but also in a motivational sense.

We hope this research will inspire more mid-sized companies from Russia, China or other markets to pursue the opportunities that exist in global markets or team up and reach out to new unknowns together.

ANDREI SHARONOV
PRESIDENT, MOSCOW SCHOOL OF MANAGEMENT
SKOLKOVO

Dear friends,

We are pleased to present you with the report entitled *Russian and Chinese Mid-sized Business: Internationalization Strategies* written by the SKOLKOVO Institute for Emerging Market Studies.

In recent years, we have seen significant progress in Russo-Chinese trade and economic relations. There is undoubtedly further potential to expand cooperation, both in large projects during which companies receive state support, as well as for small and mid-sized firms across economic sectors.

Two years ago EY released a report on China's foreign investment called *Riding the Silk Road: China sees Outbound Investments Boom*. According to that study, Russia was ranked sixth among the most attractive destinations for Chinese investments abroad. In addition, we have conducted a survey to explore Chinese perceptions of Russia and their influence on investment strategies in our country. It is noteworthy that there is high interest among Chinese companies in working in Russia, however, their active pursuits are restricted by existing barriers, including different business cultures and a lack of understanding of management and decision-making practices. We therefore believe that this report by



SKOLKOVO, which analyzes the approaches of both Russian and Chinese mid-sized companies to strategy and internationalization, will be useful for business executives of both countries and will help them to better understand each other.

Moscow School of Management SKOLKOVO is our long-time partner with whom we fully share the values of entrepreneurship and dissemination of best practice. We are very happy to have supported the work of the SKOLKOVO Institute for Emerging Market Studies, which helps Russian entrepreneurs gain access to world-class managerial knowledge.

ALEXANDER IVLEV
MANAGING PARTNER FOR RUSSIA
EY

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Executive summary

Internationalization can be beneficial for firms of all sizes. While it is usually large companies which are studied, there is a host of smaller firms that have successfully tapped into international opportunities and whose experiences are worthy of investigation. Usually overlooked by academics, practitioners, researchers and journalists, mid-sized companies receive less attention than they deserve, especially those coming from emerging markets. At the same time, firms of this sort often exhibit a remarkable degree of resourcefulness and versatility. Their international trajectories can be instructive for companies from emerging and developed markets alike. This study looks at the internationalization of a selection of Russian and Chinese mid-sized firms. As a business school in Russia, we embarked on this project with the specific goal of complementing contemporary strategic thinking derived from the experience of Western multinationals by introducing the experience of smaller firms from emerging economies. Case studies of fifteen mid-sized, private businesses from the manufacturing and IT sectors form the basis of this report.

The way companies approach internationalization varies considerably, and often depends on how they build their businesses at home. Self-identification is one of the underlying factors. Russian companies often see their medium size as an inherent characteristic and adapt their strategy accordingly. Chinese companies, on the other hand, tend to treat their current size as an intermediate step in their progression to big business. The environments from which the companies emerge also dictate differences in optimal competitive configurations. Russian mid-sized firms bypass competition by delivering high performance products and targeting narrow market segments. In-house integration of diverse competencies allows them to control quality and cost. Chinese mid-sized companies win markets through scale and speed. Supported by a flexible supplier network, these companies concentrate their efforts on downstream capabilities such as production and distribution.

The underlying proposition of this report is that internationalization means much more than selling to foreign markets. It is about a firm's ability to connect with the outside world in multiple areas: manufacturing, access to technology, foreign capital, the talent pool, strategic alliances and informal networks. Each area presents opportunities which can be used to a firm's advantage.

Russian mid-sized firms approach internationalization in a classical way. It is a step-by-step process whereby a company starts probing foreign markets and, as it gains more knowledge, it feels more com-

fortable exploring other opportunities such as localizing production, hiring local staff and building partnerships. The global niche strategy adopted by Russian mid-sized companies has many similarities with that of the German Mittelstand. The Chinese approach internationalization quite differently. Unlike Russian firms, which treat it as a separate dedicated project, Chinese mid-sized companies seem to blur the boundaries between the domestic and the foreign and exploit international opportunities more arbitrarily. Their fundamental goal is to grow and become stronger contenders, especially in the massive and fiercely competitive Chinese market. Growing in size through international sales, accessing technology through acquisitions, sourcing foreign capital or enlisting the support of stakeholders through international alliances are strategies which are deployed by the Chinese mid-sized firms in their pursuit of market dominance.

Altogether, no matter what underpins a firm's ability to connect with the outside world, it is a strategic skill which should not be ignored. This is particularly so today as the world is becoming more fragmented. The ability to discern and tap into international opportunities can be a strategic response to an increasingly uncertain environment. After all, fragmentation does not mean disconnectedness; rather it implies the changing nature of connectivity between regions, countries and companies. There is no one-directional movement. As some countries close, others eagerly open up. While the shifting patterns of global trade present companies with completely new sets of challenges and opportunities, what is clear is that these will need to be tackled with more sophisticated strategies. Internationalization is one of the range of possible answers.

Introduction: Important but Ignored

Mid-sized business is often overlooked in contemporary strategic thinking. Unlike large multinational companies and vibrant start-ups, medium-sized firms receive less attention than they deserve, especially if they are from emerging economies. But just because something is unknown does not mean it does not exist. We, as a business school in Russia, have evidence to the contrary and believe that the experience of mid-sized companies can be instructive. To educate business leaders from emerging economies, it no longer suffices to rely solely on existing strategic theory, which is derived mainly from that of companies which are both large and Western. Smaller ones from emerging markets could provide more relevant experience and therefore more powerful motivation for those trying to expand internationally.

In this research, we have looked at Russian and Chinese mid-sized firms that expanded both at home and abroad by taking opportunities presented by internationalization. The theme of internationalization did not always emerge spontaneously. Although globalization is often discussed in the light of opportunities for big companies, we believe that it offers opportunities for firms of all sizes. In this study we present the results of our research into the ways in which a selection of Russian and Chinese companies have benefited from internationalization.

Strategy is a choice. Whether adopted consciously or not, it defines a firm's response to a challenge or opportunity. While country-specific factors such as the regulatory and institutional environments are important, so are the choices made by individual companies. Internationalization is one of those, yet it does not always present a clear-cut choice. Many

smaller firms in emerging markets feel comfortable concentrating on their domestic markets. Even when justifiable, this approach is unlikely to be sustainable. In our previous report Selected 15: Winning Strategies of Russian Entrepreneurial Champions, we introduced the notion of the globally-competitive company which needs to be on par with global players in order to sustain its market position, even if it functions strictly within its own country. In both Russia and China, even smaller-sized firms face competition from multinational players and acknowledge that it is likely to intensify as slowing growth pushes global players into market segments which have been previously served by mid-sized companies. On the other hand, local players are not dormant, and many try to improve their ability to be globally competitive.

But there is more to internationalization than selling to international markets. Firms of all sizes can tap into global opportunities to optimize their value chain and upgrade their overall capabilities in order to become more competitive both at home and abroad. That is why, along with companies that sell to foreign markets, we have also considered firms which engage with the outside world through other means that benefit their business, such as production localization, the attraction of foreign capital and making international acquisitions. A company's ability to connect with the outside world is what we call internationalization. It indicates strategic maturity and commercial astuteness. It is what underlines our research focus on Russian and Chinese mid-sized firms.

To some readers, the study of Russian and Chinese mid-sized companies from a strategic perspective

might seem like a dubious undertaking. Indeed, both countries, especially Russia, have a tarnished image, with unfavorable and at times hostile conditions for private business. The natural inclination is to expect another policy paper rather than a study of strategic management. With many reputable organizations already concentrating on policy advice, we as a business school provide practical insights that help businessmen in emerging markets make more informed decisions. Emerging markets generally have regulatory and institutional problems, yet there are some firms which are more successful and others which are less so **within the same environment**. Optimal strategies are not always obvious. Importantly, what we observe in our company interviews is that success is not the result of pure luck or having the right connections. It usually depends on clear business thinking and rationales, underpinned by managerial curiosity and determination.

between the two countries. Due to a lack of the general information on the topic, we have conducted a survey among the forum participants. Its results are also included in Appendix part of this report. Though the limited sample size prevents them from being statistically definitive, they are highly suggestive of where Russian and Chinese firms stand in terms of working in international markets and with each other.

Consideration of global expansion by Russian and Chinese firms has a particular relevance today. Like most of the emerging world, the two countries have recently experienced an economic downturn. In China the annual growth rate fell from 10.6% in 2010 to 6.2% expected for 2017. The Russian economy decelerated in 2015, with annual growth contracting from 4.5% in 2010 to -3.7% in 2015, though it is projected to bounce back to 1.1% in 2017. In the face of gloomy economic prospects and higher competition

Firms of all sizes can tap into global opportunities to grow sales, optimize their value chain and upgrade their overall capabilities in order to become more competitive both at home and abroad

The choice of Russia and China for the purpose of this research is not accidental. In recent years, the governments of both countries have proclaimed their mutual interest in, and commitment to, the fostering of Sino-Russian collaboration and trade. That said, regardless of what one might expect, the two neighbors actually have little experience of working together, and their businesses poorly understand each other's markets and practices. Russia has been traditionally West-oriented, while China's partners have ranged from Asia and Africa to the US and Europe. Yet the two countries have certain similarities. Both recently had state-run economies, though their transition paths to their current positions have been strikingly different. Highlights of the facts, timelines and rankings in the key international indices are provided in the Appendices.

In an effort to shape the course of current developments, we at SKOLKOVO have undertaken the role of intellectual partner for the Russian-Chinese Business Forum for small and medium-sized businesses, which was held in Beijing in 2015 and in Sochi in 2016. The forum represents one of the first attempts to promote business connections at the SME level

for the customer's ruble or yuan, Russian and Chinese companies are increasingly pressured to look for new sources of growth. Internationalization has moved up their agendas as it offers opportunities both in terms of access to new markets and optimization of their value chain.

The governments of both countries also promote internationalization. In China the call for companies to enter international markets is part of the national Going Global Strategy, launched at the turn of the millennium and intensified since then. The Russian authorities also would like to see the country more closely integrated into the global economy. They encourage non-resource-based exports, especially now that the ruble's depreciation since 2014 has opened a window of opportunity for price competitiveness. The push for internationalization is particularly strong for high value-added manufacturing. Admittedly, for now the ambitions of both countries exceed their actual capabilities, but this is not true of their future potential. Both are already in the top 10 of the world's largest manufacturers. China, at number 1, accounts for over 23% of the world's manufacturing value-added. Russia contributes over 2.3%. That may

be dwarfed by China's output, but it is comparable with that of France or the United Kingdom. The goal that China and Russia have set for themselves is to transform their primarily low-tech production into something more globally competitive.

The four main selection criteria were: **private (non-state) ownership; operating in the manufacturing sector and IT; international experience; and medium size.** The latter was taken to mean that a company's annual turnover was between

In the face of gloomy economic prospects and higher competition for the customer's ruble or yuan, Russian and Chinese companies are increasingly pressured to look for new sources of growth

While the authorities do what they can to support value-added exports, companies from Russia and China are already out there exploring the global terrain. Driven by business considerations, they are exhibiting a remarkable degree of versatility and innovation as they pursue new opportunities, both at home and abroad. This study describes a few such companies and their internationalizing strategies. We hope this research will interest practitioners and business scholars in a number of ways. From a management education perspective, its insights contribute to the current body of knowledge on international management, while company case studies can enrich the curricula of business schools. From a business perspective, the research represents an important reference point not only for mid-sized firms from emerging markets seeking to augment their strategic thinking, but also for companies from the developed world looking for a better understanding of the emerging market champions. Finally, from an economic development perspective, policy-makers and legislators in emerging markets might also find value in this research by delving into the business logic of smaller companies and understanding what drives them in going global and how they can be helped.

Mainly intended for a practical audience, this report does not aspire to academic rigor. Though backed by a wide reading of the existing academic and business literature, the research specifically undertaken is largely based on in-depth case studies. Considering the general lack of knowledge about internationalizing Russian and Chinese mid-sized firms, we have adopted an explorative approach and brought forward what we see as the most likely explanations for our observations. Altogether fifteen companies have been studied: seven are Russian, seven are Chinese and one is a Sino-Russian joint venture.

10 mln and 1 bln USD. This corresponded to the definition adopted for German mid-sized firms (widely known as *Mittelstand*) as well as for American mid-sized firms according to the National Center for the Middle Market. Information was collected based on a literature review, expert consultations, company interviews and analysis of secondary sources. The report comprises the analytical part, the appendices and 15 company cases studies.

Themes: Companies in Focus

Stories of individual companies are at the core of this research. Their cases serve as examples for our observations rather than as hard evidence. The companies were selected so that they met the underlying criteria as mentioned above, and also helped to explore the internationalization of some smaller firms in Russia and China. They are illustrative stories in themselves and can be read separately, both informationally and motivationally.

While many more than fifteen companies have been studied as part of this research, the ones quoted stand out the most, not least because of their entrepreneurial founders and company leaders. Each has a proven track record which gives clues to their success and shows how they have developed. Although mainly in manufacturing, they represent a diverse range of industries, each of which has its own dynamic. In view of the current trend, a Sino-Russian joint venture between mid-sized firms is also included. The list of the selected companies and their key information is provided in the Table. Below is a discussion of their histories, their founders and the industries that the companies represent.

Innovation perspectives

With innovation being high on the agenda both in China and Russia, we have concentrated on firms with a strong R&D and skill-intensive background. This includes such sectors as communications, machinery, chemicals, medical and optical






















instruments, and information technology. Among the Russian examples there are firms that operate in some of the most advanced sectors. Diakont produces sophisticated control and inspection systems for such hostile and high-risk environments as nuclear reactors and gas pipelines. Argus-Spectr is a worldwide manufacturer of fire detection products and a leader in wireless technologies for fire protection. Neurosoft designs and manufactures diagnostic electrophysiological equipment used in clinical medicine. What these firms have in common is their strong engineering base: while all three are engaged in manufacturing, it is the programming and computing function that represents their core skill.

The effect of the Russian engineering tradition is particularly evident in the IT sector. That is where the majority of innovative Russian small and mid-sized companies have emerged. SPIRIT DSP is an outstanding example. Despite its small size, the company has, for more than two decades, been developing voice and video engines for the world's most renowned technology leaders and telecom giants.

China is also experiencing an upsurge in its technological sector. Its booming mobile internet industry has given a boost to home-grown IT firms. Apus, the software company, is a representative of this latest generation of Chinese firms. In the two years of its existence, the company achieved striking global success by focusing specifically on consumers in emerging markets who want improved performance from their less powerful and cheaper Android-based mobile phones.

Innovation in China is not confined to the IT sector only. For long a land of industrial imitators, the country is rapidly transforming itself. Chinese innovation

TABLE: PROFILE OF SELECTED 15 COMPANIES

 Company	 Market	 Foundation Year	 City of Origin	 Turnover, USD mln	 Number of Employees
 ARGUS SPECTRUM	Fire protection & security	1993	St. Petersburg	< 50	350
 ATLANTIS-PAK	Food packaging	1993	Rostov-on-Don	> 100	2 500
 avgust crop protection	Agrochemicals	1990	Troitsk	> 100	2 200
 DIAKONT	High tech & robotics	1990	St. Petersburg	< 100	1 300
 Lighting Technologies	Lighting fixtures	1997	Ryazan	> 100	1 300
 Neurosoft	Medical device	1992	Ivanovo	<50	200
 SPIRIT DSP Voice & Video Engine Experts	Information technology	1992	Moscow	< 50	120
 APUS	Mobile Internet	2014	Beijing	—	200
 Tiertime 天玑时代	3D printers	2003	Beijing	< 50	150
 BGB GLOBAL GOLDENWAY BIO TECH	Waste management & agriculture	2001	Beijing	> 100	400
 大族激光 HAN'S LASER	Industrial machinery	1996	Shenzhen	> 500	6 200
 Hytera	Telecommunications & electronics	1993	Shenzhen	>500	3 800
 SDL 北京雷迪龙科技股份有限公司 Beijing SDL Technology Co.,Ltd	Clean technology	2001	Beijing	< 100	1 200
 Sinocare Inc.	Biotechnology	2002	Changsha	< 100	1 200
 ICG INTERSKOL CROWN GROUP	Interskol Crown Electrical machinery	1991 1983	Moscow Yongkang	> 100 > 100	1 200 2 300

icons can be found in a variety of fields, with some of them responding to the country's most glaring challenges, such as the increased incidence of diabetes. Sinocare, a Chinese biotech firm, is developing real-time detection products with its rapid-trace blood glucose testers designed specifically for Chinese consumers. Another company, SDL Technology, is a representative of the Chinese clean-tech firms which are responding to the country's environmental problems. The same logic has driven Beijing-based BGB. It operates in both the environmental services and agriculture industries by recycling organic waste to manufacture biological humic acid fertilizer and biofeed.

The majority of the selected firms work in the B2B markets, which ultimately define the nature of innovation within the companies. In addition to high tech sectors, where innovation is driven by technological breakthroughs, the companies are also represented by industries where innovation is provoked by ever-evolving client needs. Atlantis-Pak is a Russian company which manufactures plastic casings for the meat and dairy industries used in the processing of perishable food items such as wieners, frankfurters and cheese. Lighting Technologies, which admits that it originally established itself in the Russian market by copying competitors' products, today offers innovative lighting products for commercial, industrial, emergency and medical sectors. The Chinese firm Han's Laser researches, produces and distributes high performance laser equipment used in a wide range of different industries.

In addition to serving B2B clients, some companies in the list also cater to the consumer market. Avgust, the Russian producer of plant protection solutions, sells its chemical mixtures for use in industrial agriculture as well as to private owners of subsistence farms and country residences. Beijing's Tiertime produces both industrial-grade and portable desktop 3D printers. Russia's Interskol and China's Crown produce and sell power tools such as drills, saws and perforators for DIY and professional users.

Entrepreneurial pioneers

The majority of the Russian firms studied here were established in the early 1990s, in the aftermath of perestroika when the privatization of state assets created a new breed of businessmen. It is not by accident that the founders' profiles and their ways

they got into business are similar. Many had an engineering background and, in Soviet times, were employed in the country's leading research institutes. Already established professionals, they were in their early thirties when the re-structuring hit the country. As the state scientific complex began to disintegrate, its employees started looking for other means of subsistence. Many found this an emotional strain. From being esteemed scientists, they found themselves forced to go into business, an activity that they previously considered of inferior status.

The business landscape that existed at the time also left much to be desired. With the economy in ruins, speculation and trade became the easiest and quickest ways to earn money. Alexander Uskov had a degree from the Moscow Institute of Physics and Technology and a PhD from the Russian Academy of Sciences' Institute of Chemical Physics, but nonetheless he was forced to try his hand at several businesses, including publishing, brokerage services, real estate and trade, before he set up Avgust.

Such forays into business did not sever the connections most had with their original education and specialization. Mikhail Fedosovsky from Diakont held a PhD in Technical Science from the acclaimed Polytechnic University of St. Petersburg and was one of the first to set up a cooperative in the 1980s. It developed radiation-resistant television cameras for inspecting nuclear reactors in icebreakers and, even though Fedosovsky later engaged in other businesses, it was this cooperative that marked the beginning of Diakont and defined its specialization. Such connections with their original professions are also evident in the cases of Alexey Shubin from Neurosoft, Sergey Levchuk from Argus-Spectr, and Sergey Nazarov from Interskol.

In addition to ex-engineers, the 1990s in Russia also produced a completely new type of entrepreneur. Just out from university and in their early twenties, these young graduates saw the beginning of their professional life marked by economic and political turmoil. The more enterprising of them plunged into the market economy. Their business pursuits tended to be chaotic and opportunistic in nature, yet it seasoned them as businessmen. The founders of Atlantis-Pak were involved in several sectors such as cable production, package production and tobacco before settling on the casings business. Dmitry Nalogin and Sergey Mishkin from Lighting Technologies were still at university when they began to import lighting fixtures from Dubai and sell them in Russia. At the time he set up SPIRIT DSP, Andrey Sviridenko was also a student studying Computing Mathematics and Cybernetics. He and a classmate

developed artificial intelligence software which they sold to a German firm while on a student exchange to Europe.

It is not by accident that the Russian companies in this study originated in the 1990s. The modern Russian manufacturing sector has capitalized on the technological legacy of the Soviet time to a disturbing extent. While large Russian corporations have made technological advances, not many new manufacturing firms have been established since then.

By contrast, the Chinese firms in the study represent several generations of private business. The company cases trace the entrepreneurial waves in the country from Deng Xiaoping's reforms through to the modern internet economy.

Starting in the 2000s, China began to see businesses emerging not only in manufacturing but also innovative industries. The number of entrepreneurs grew throughout the 2000s. Many had a background in science and engineering. Guo Ge had an engineering degree and researched rapid prototyping as part of his PhD thesis prior to setting up Beijing Tiertime. Others had worked in management. Entrepreneurship came naturally, and the business idea was closer to strategic planning than a simple reaction to the immediate opportunities in the market. Li Shaobo from Sinocare and Ao Xiao Qiang from SDL Technology both had significant industry experience before taking the plunge as entrepreneurs. A physician by education, Li Shaobo worked as a senior manager for

Despite the diverse range of backgrounds, industries and demographics, Russian and Chinese entrepreneurs share some common underlying qualities: tremendous passion for action, insatiable curiosity and steadfast tenacity

Xu Chaosheng from the Crown Group was one of the early pioneers who took advantage of the liberalizing economy in 1983. At the time, privately owned rural manufacturing firms had just been legalized and China saw village and township enterprises springing up all over the country. Xu first established a small grinding wheel operation in this home village of Shanghu in Zhejiang province. Later he moved production to the nearby Xian village, and eventually to Yongkang City.

Hytera's founder, Chen Qingzhou, and Gao Yunfeng from Han's Laser represent the generation of entrepreneurs from the 1990s. It was the time when the pro-market reforms rekindled by Deng Xiaoping's Southern Tour in 1992 boosted business development in China, especially in its southern cities. Shenzhen-based Hytera and Han's Laser have very humble origins. Unlike entrepreneurs from the 1980s, who had little education, Chen Qingzhou and Gao Yunfeng were well-educated professionals. But they still had to work their way up. Gao Yunfeng from Han's Laser came from a poor rural community and a family of 8 children. He graduated from Nanjing University of Aeronautics & Astronautics as an aircraft designer, but before the establishment of Han's Laser he worked as a teacher and, later, as a technician.

an investment holding company when he realized that, due to the rapid development of China's economy and consequent lifestyle changes, diabetes was becoming increasingly widespread.

Apus and its founder Li Tao exemplify Chinese entrepreneurship today. Li Tao was an experienced businessman and a serial entrepreneur by the time he launched Apus. He started off in sales and marketing at a state-owned telecom equipment maker in 1998 before moving to the internet sector a year later. This was also around the time of the rapid expansion of China's internet industry, as many entrepreneurs saw they could incorporate internet technology in their businesses. Li completed successful projects in mobile apps that attracted hundreds of millions of active users. Apus was such a rapid success on the market that it became a "unicorn" i.e. a non-listed company valued at over US\$ 1bln.

Despite the diverse range of backgrounds, industries and demographics, Russian and Chinese entrepreneurs share some common underlying qualities: tremendous passion for action, insatiable curiosity and steadfast tenacity. Venturing into business in an environment which is not very conducive to it seasoned the entrepreneurs from the very start.

In most of these cases, the original business configurations were very simple and served the purpose of

making quick gains. In China, most of the initial entrepreneurial activity started in contract production. As the country was turning itself into the workshop of the world, many novice entrepreneurs saw opportunities in becoming a part of the global value chain. Crown Group, Hytera and Han's Laser all followed that route.

Engagement in importing and trading goods allowed many Russian entrepreneurs to respond rapidly to unsatisfied consumer demand in a growing market. However, the economic crisis of 1998 forced many Russian entrepreneurs to reconsider their business models. Dependence on foreign imports proved to be risky as the significant devaluation of the ruble eroded margins. Companies like Avgust, Interskol and Lighting Technologies moved from importing to opening their own production facilities in Russia. These initial undertakings, no matter how simple in design, provided Russian and Chinese entrepreneurs

with important skills and business know-how. By the time they threw themselves into scalable ventures, these entrepreneurs had a solid understanding of the market and experience of running real companies. Being highly opportunistic, they were keen to respond to the emerging opportunities, whatever the obstacles. It was that resourcefulness which defined the subsequent trajectory of their companies.

A study of the internationalization of Russian and Chinese mid-size firms would be incomplete without consideration of their strategies in the domestic market. International strategy, whether intentional or emergent, is an extension of whatever strategy a firm adopts in its home market. This is particularly true when a company spends its early years operating domestically and considers internationalization only later on.

As it establishes itself on its home turf, a firm develops a so-called “winning formula” of how it operates and competes. This is a response to opportunities and challenges in the marketplace and the broader environment, though it evolves over time as the company finds its optimal competitive configuration. Below we look at three areas which, in our opinion, best illuminate the market strategies and business configuration of Russian and Chinese mid-sized firms, and which in turn help to define the way how they internationalize. These areas are: markets, products and operations.

Markets: focusing on a niche market vs. going for volume

In Russia, the market for consumer and industrial products is mainly dominated by big players, leaving smaller firms little opportunity to compete in the mainstream. Many Russian mid-sized firms have responded by focusing on specific market niche. The narrow specialization has benefited them in a number of ways. First of all, it has allowed them to concentrate time, money and effort on their core product, avoiding unnecessary dilution of limited resources. Secondly, by aligning their processes and practices around a given product or product range, companies have achieved better operational performance. Finally, working in a niche segment has helped companies to develop a high level of expertise in a particular product and thereby build customer intimacy and lasting relationships.

Let's look at Avgust, a major Russian producer of plant protection solutions. Founded in 1990 by a chemical scientist as a distribution business, the company soon moved to launch its own production. Unlike its main rivals, who had large budgets, fully

The narrow specialization has allowed Russian mid-sized firms to concentrate time, money and effort on their core product, avoiding unnecessary dilution of limited resources

integrated value chains and international clout, Av-gust had to play to other strengths. Underpinned by strong R&D, the company has evolved so that today it offers highly specialized chemical mixtures and provides personalized technical support and training to farmers. Another outstanding example is Atlantis-Pak, which grew from a modest start-up in the south of Russia to one of the top three global manufacturers of plastic packing for the meat and dairy industries. Working in a narrow product category, the company has excelled at quickly responding to evolving customer needs, including more specialized ones such as halal.

However, the niche strategy has its downside as it

companies is not confined to the emerging world. Beijing-based Tiertime Technology influenced the global market of portable 3D printers by focusing specifically on the US with its growing DIY and craft segments. Enthusiasts did not mind the limited functionality of the Tiertime's printers as long as they were affordable.

In the pursuit of volume, Chinese companies are open to diversification, often through acquisitions. For example, numerous acquisitions of other Chinese players have been made by Han's Laser, Crown and SDL Technology, allowing these companies to enter new market segments.

In Russia mid-sized companies often intentionally confine themselves to the mid-sized category, while in China mid-size is generally considered to be just an intermediate stage in a firm's development

means growth opportunities are capped. Russian mid-sized firms find different ways of dealing with that. Some explore new niches within their niches, such as Argus-Spectr, which has applied its technology to watches for servicemen. Others, like Atlantis-Pak, adopt a policy of mild diversification: the company has opened facilities to produce a barrier film that, compared to casings, lends itself to more wide-ranging uses in meat and cheese packaging.

Unlike in Russia, where mid-sized companies often intentionally confine themselves to the mid-sized category, in China mid-size is generally considered to be just an intermediate stage in a firm's development. Facing fierce competition at home both from international and a multitude of local players, Chinese mid-sized businesses are under pressure to continuously increase in scale in order to survive. Volume-driven strategy is encouraged through the cost advantage that many Chinese businesses enjoy. By selling products that offer a fair level of functionality and quality at a relatively low price, Chinese businesses have found traction not only in the local market but also abroad, especially in other emerging economies.

For example, the Chinese biotech company Sino-care first developed its rapid trace blood glucose testers specifically for Chinese consumers but soon discovered demand in Africa, the Middle East and Latin America. The success of Chinese mid-sized

Products: making it perfect vs. learning as-you-go

Speed is one of the most noticeable characteristics of Chinese business overall, and this is especially the case in the mid-size sector. Having a beta version is enough for a Chinese company to feel ready to launch a product. A rapid innovation culture with a high tolerance for trial and error makes Chinese businesses very flexible and quick to grasp opportunities. A good example is Han's Laser, today one of China's largest manufacturers of industrial laser equipment. In its early years the company prioritized speed over quality to the extent that it had service engineers on site to fix problems and customize machines on location. Within its first three years, the company made thousands improvements to its machines but in the end managed to find an optimal price-quality offering. Known as a "good-enough" strategy, this approach has allowed emerging Chinese champions to grab market share in the middle segment and has also enticed some higher-end customers to trade down.

In Russia, the mindset is different. The pursuit of excellence is something that tends to be engraved into

the engineering background of the founders. It is often “love for the high-level mind-game”, as Mikhail Fedosovsky from Diakont confessed. With this attitude, each product is almost handcrafted. With perfectionism and attention to detail, companies like Diakont produce systems of superior precision and functionality. But too much emphasis on the engineering mindset can be a disadvantage as it encourages scientific pursuits at the expense of client needs and commercial considerations.

supply of professional business services and a lack of outsourcing options, pushes Russian mid-sized companies to bring in house activities that otherwise would be considered ancillary and would be undertaken elsewhere.

One peculiarity of the Russian economy is that it is very much configured to serve the needs of large companies. This goes back to Soviet times when large plants and factories agglomerated different stages of the value chain. The situation has not changed

Insufficient supply of components and lack of outsourcing options in Russia pushes Russian mid-sized companies to bring in house activities that otherwise would be considered ancillary and would be undertaken elsewhere

Argus-Spectr learned this lesson when, in 2002, it opened a production facility in Italy. The company soon realized that although the technical features of their products were excellent, the usability and visual appearance were lagging behind that of their foreign competitors. They subsequently created an Italian R&D facility that would focus on aesthetics, while leaving the development center in Russia to be responsible for the technical features. This combined approach proved to be successful and yielded higher sales both in the Russian and European markets.

much today. The large companies which continue to dominate the Russian economy tend to operate as self-reliant, closed systems, making it difficult for smaller firms to be part of the procurement and supply chains. The challenge is particularly notable at the sourcing level, with many companies having to rely on the import of components and raw materials. This, together with insufficient supply of professional business services and a lack of outsourcing options, pushes Russian mid-sized companies to bring in house activities that otherwise would be considered ancillary and would be undertaken elsewhere. Lighting Technologies, a leading manufacturer of professional light solutions, is acutely aware of these difficulties. In order to compensate for an unreliable supplier network, the company has had to build a vertically integrated business by bringing in house the production of optics and LED drivers, and also to construct its own facilities for aluminum and plastic molding. The same goes for Neurosoft which makes its own USB plugs because European analogues are too expensive, while Asian ones are not sufficiently reliable. The company, which produces medical devices, says that it cannot compromise on quality, yet it has to keep an eye on margins when choosing components.

Even when it is an involuntary strategy and adopted only in response to deficiencies in the environment, the integration of multiple competences in-house can bring important benefits. For the niche players discussed here, such a configuration of business allows for quality control and flexibility in introduc-

Operations: bringing in-house vs. playing downstream

One peculiarity of the Russian economy is that it is very much configured to serve the needs of large companies. This goes back to Soviet times when large plants and factories agglomerated different stages of the value chain. The situation has not changed much today. The large companies which continue to dominate the Russian economy tend to operate as self-reliant, closed systems, making it difficult for smaller firms to be part of the procurement and supply chains. The challenge is particularly notable at the sourcing level, with many companies having to rely on the import of components and raw materials. This, together with insufficient

tion of modular designs and speedy, tailor-made solutions.

In China the situation is very different. With the country for some time having been the world's main production center, it has established and comprehensive supplier networks. A strong infrastructure and supplier base provides significant cost savings and allows companies a higher degree of freedom in designing production. When Gao Yunfeng, the founder of Han's Laser, started his business in 1996, the laser equipment industry was practically non-existent in China. Despite having to rely on imported components at the beginning, the company quickly went on to start manufacturing parts in China through local outsourcing partners.

scaling up of production, it well fulfils its purpose in serving the specific needs of a narrow market. In the next section we see how Russian companies profit from this configuration in the international landscape. The search for an additional client base is expected to be one of the key motivations, as a niche strategy often means limited growth opportunities in the domestic market. Given the deficiencies of the supply network, optimization of the value chain is likely to be another area where Russian mid-sized companies can profit from the opportunities presented by internationalization.

Chinese companies will also consider foreign markets as additional opportunities for sales. Besides market considerations, there is another increasingly

With the advantage of easy access to sourcing available to all Chinese firms, the key factor shifts to who brings the product to the market first. Speed is more important than quality, and this brings downstream capabilities such as production and distribution to the forefront

With the advantage of easy access to sourcing available to all Chinese firms, the key factor shifts to who brings the product to the market first. Speed is more important than quality, and this brings downstream capabilities such as production and distribution to the forefront. Companies set up facilities at a level just adequate to start manufacturing as soon as possible and then they make the necessary improvements to the production lines at the later stage. In 1994 Crown was still producing grinding wheels. When the company saw a market opportunity in power tools, it quickly moved to set up a power tool manufacturing facility. While it took the company another decade to bring its production to the proper level, the preceding years allowed it to secure a strong position on the market.

In general, the strategies which emerged as a result of Russian and Chinese companies' responses to their domestic contexts are quite different. Driven by the competitive landscape, Russian companies have gone for tight focus and specialized offerings, while Chinese firms more for volume and speed.

The pursuit of thoroughness and a focus on the products mean that Russian companies attach great importance to creation of technology, original designs, selection of materials and the design of equipment. While this approach does not allow for the easy

important factor which is likely to push Chinese mid-sized firms internationally. In the race for production and scale, many Chinese companies have found themselves with excess capacity. Whereas, a few years ago, this was not an issue, today it is repeated across different industries and exacerbated by the slowing domestic economy. This will tend to push an internationalization agenda on Chinese firms. Compensation for deficient capabilities is expected to underpin the international pursuits of Chinese companies too. Seeking access to technology is likely to be one of the key drivers in this area as building a technological competence which was skipped in the pursuit of speed now becomes increasingly important if they are to stay ahead of the competition. Beyond that, as China changes the way it does business with the world and transforms itself with the establishment of many new industries, we expect to see more sophisticated patterns in the Chinese approach to internationalization.

Expanding Horizons

Conventionally, internationalization is discussed in the context of business leaders looking outside their national borders for new customers. This is still the main strategic aim of firms considering global expansion. It is particularly so for smaller-sized firms, who, due to their limited resources and more concentrated focus, tend to approach the global scene mainly from a market perspective.

Our view is that there is more to internationalization than expanded geographical presence. It also involves an ability to connect with the outside world in other ways that are also beneficial to the business. What makes a company want to become globally competitive is not necessarily just winning abroad. It could be successfully protecting a firm's home market against global competitors, or those at home who have managed to tap international opportunities first. In the end, competition is less about where a company is based and much more about whom it competes against and whether the firm's rivals are leveraging the benefits of internationalization. If a company ignores the international domain, it will lose its market eventually.

There are many ways in which a firm can connect with the outside world. Manufacturing abroad, tapping into the international human talent pool, accessing technology, sourcing foreign capital, establishing strategic alliances or leveraging connections with international stakeholders – all these represent different opportunities that internationalization provides. Though all are generally accessible and affordable for mid-sized firms, using them successfully requires developing some special capabilities, including in less obvious areas as discussed in the Box insert.

Internationalization is about a company's being able to orient itself in a global universe of opportunities,

recognizing areas which can be beneficial for its business and configuring its processes and systems accordingly. There are many ways to do this. Below we take a look at how some Russian and Chinese companies have internationalized by building their ability to connect, and what their rationale was for doing so.

Russian firms: seizing the global niche

Delivering a speech at the CEO Club of Moscow School of Management SKOLKOVO in 2015, Nassim Taleb, a famous Lebanese-American essayist and author of *The Black Swan*, said that Russian business does not have a high rate of failure. In general, Russian companies come across as cautious, distrustful and highly-risk averse. For many of them, especially those of smaller size, internationalization is seen as an expensive and risky undertaking, or even a diversion, with uncertain benefits to the business. That may be true overall, but looking at the big picture often obscures important detail and conceals small gems worthy of investigating.

This is exactly what we have discovered in our research. The firms we have studied are all exceptions to the general rule. Their remarkable journeys to international markets demonstrate grit and assertiveness. We believe that their experiences are particularly valuable from an international management perspective, which is what we would like to discuss next.

Despite the fact that many of the Russian companies that we studied harbored international ambitions

early on, their first experience of international markets was driven more by impulse rather than strategic intent. So, for Diakont's founder Mikhail Fedosovsky, getting into the international market was a matter of self-respect. As a representative of the Russian scientific elite, he believed that Diakont's high-tech products absolutely had to have an international footprint. Polisan, a pharmaceutical company, started its international pursuits in Vietnam after its founder got to know a Russian ex-ambassador to the country, who encouraged the company give it a try. In the case of Neurosoft, it was a solicitation from a European distributor that sparked the company's interest in foreign markets.

companies also wanted to be near their customers as this allowed them to be better attuned to their needs and to improve the level of service. In the case of Atlantis-Pak, the company chose a lighter local presence and opened an assembly and logistics center in the Czech Republic which would handle distribution and carry out simple production activities. Argus-Spectr and Diakont went further and invested in greenfield facilities abroad, thereby also obtaining access to the local expertise and talent pool.

The firms above are examples of companies for which internationalization was high on the agenda early on. Along with them, there is another group of companies which have taken a slightly different

Internationalization is evidenced not by the extent of a firm's geographical presence but rather by its ability to connect with the outside world in multiple ways that are beneficial to the business

Most of the Russian firms' key motivation in going internationally was the opportunity to tap into a new customer base. For some companies, especially in the IT sector, this was particularly pronounced. The companies were established at a time when the market for IT products in Russia did not exist. Having globally-competitive offerings, firms like SPIRIT quickly managed to gain success abroad. The same applied to many other Russian IT champions, including ABBYY, Kaspersky Lab and Luxoft.

In the manufacturing sector, companies which had more niche offerings tended to look to global markets sooner. Growth considerations were their primary driver as internationalization makes even narrow markets large and thus helps achieve economies of scale. In 1996, Atlantis-Pak, then only a 3-year old company, made sure it was actively present in all major trade fairs in Europe. Back then Igor Perepletchikov, now the company's CEO, was traveling across Europe with suitcases of casings, actively offering them to European meat processing plants. Very quickly, this "old trooper" approach to penetrating foreign markets was replaced by more professional and systematic activities.

Once companies established international sales, localization of production in target markets emerged as the next strategic consideration. The business rationale behind it was the need to avoid high import duties and to reduce transport costs. Besides, the

route to internationalization. These firms tend to be larger in size and, although they specialize in specific product categories, their offerings serve a wider audience, including the B2C sector. Avgust, a producer of chemical protection solutions, Lighting Technologies, a manufacturer of lighting fixtures, and Interskol, a producer of power tools, are examples of companies in this group. For the large part of their existence, these firms have concentrated on the domestic market. An attractive price-quality combination, matched with deep understanding of the local market, has helped them to achieve a significant share of the Russian market.

Prompted by the growing economy and increasing consumption in the decade 2000-2010, these firms channeled most of their efforts into satisfaction of the booming domestic market. With favorable macroeconomic conditions, both consumer and industrial segments of the economy were on the rise. However, the economic growth also attracted a great deal of competition, especially from large international players. Establishing a home base therefore became one of the key objectives for the firms at that time. Maintaining satisfactory margins was critical to the business. Once these got into the risk zone, the companies began to seek solutions internationally.

Intensification of competition and squeezing of margins pushed the companies to re-evaluate their value chain. The search for cheaper sourcing options

and a production base urged them to look abroad, especially at China. Avgust and Interskol went to establish joint ventures with Chinese counterparts. Although at that time limited in scale, these grass-root ventures represented an important period in familiarization of the companies with the international landscape. In 2008, amidst the economic crisis in Europe but with the ruble still strong at home, companies like Lighting Technologies and Interskol

The path of Russian mid-sized companies in international markets very much resembles the global niche strategy popularized in the context of the Mittelstand (German mid-sized firms). Focus on narrow markets, attention to product and tight control of production are Mittelstand's key characteristics, which among others have helped them attain a fair share of international success with many of them being leaders in their global niches. While resem-

In the manufacturing sector, Russian mid-sized companies which had more niche offerings tended to look to global markets sooner

bought their European partners up the value chain from whom they had been previously purchasing premium products. Although this provided access to advanced technology and the European markets, its main purpose was to strengthen positions in Russia by widening product ranges and securing higher shares of the consumer segment.

Besides seeking growth and value chain optimization, companies have also proactively looked at the international space for best practices. In many cases, conformity to requirements of international standardization organizations and industry-specific associations had entered the companies' strategic agenda before they even considered selling outside Russia. Moreover, companies like Lighting Technology or SPLAT, a Russian oral care producer, went further and developed their own quality standards which were stricter than those required internationally. Obviously, such an approach significantly facilitated their later entry into foreign markets.

What is clear that no matter where a firm started its internationalization journey, the knowledge and experience accumulated in the process endows it with strategic versatility and strength. As the recent economic stagnation in Russia has brought new challenges, we see firms actively leveraging their ability to connect with the outside world. For example, Argus has brought onboard its international partners as capital investors and is seeking to benefit from newly-found synergies. Neurosoft is busy penetrating the network of the world's universities and research institutes as it finds this segment lucrative for the company. Lighting Technologies shifted its attention to the Indian market, where it opened a greenfield facility and where it expects its future growth.

blance of Russian mid-sized firms with the Mittelstand's niche strategy is fortuitous rather than intentional, it actually might have historical roots as university education in Russia was largely based on the German model and dates back to the eighteenth century.

The global niche strategy is underpinned by the fact that narrow segments imply highly specific needs, whereby product requirements become more important than country-related factors. As a result, customers in the same niche segment exhibit a high degree of similarity, regardless of the country they come from. Therefore, it is no wonder that the pursuit of growth stands out as the key motive for Russian firms to venture internationally. High performing products and the flexibility inherent in a workshop-type of production have helped Russian companies find traction in foreign markets.

Yet, Russian firms have still to improve such critical components of the global niche strategy as client service and process excellence. Being concentrated on product and access to market, the companies have often overlooked these critical competences. However, many firms whom we interviewed are currently building service centers and upgrading their processes. Proximity to the client and logistical considerations have driven many to move production abroad to support their foreign sales. At the same time, others, like Avgust have chosen to open ultra-modern production facilities in Russia (in Alabuga Special Economic Zone), paying a particularly close attention to processes. The companies expect operational excellence in the new expanded facilities and favorable macroeconomic situation with weak ruble to aid their continued efforts in expanding to foreign markets.

TACIT WAYS TO INTERNATIONALIZATION

Internationalization involves far less obvious areas where companies can liaise with the outside world in order to improve their global competitiveness. These include alliances, networks, and institutional engagements. Though these opportunity zones are often neglected, they can be very powerful instruments especially for mid-sized businesses because in many cases they are reliant on creativity, relationship and human capital much more than on financial resources or manufacturing capacity. Proper use of these zones can help in building competitive advantage through lowering entry barriers, reducing capital needs and development costs, and shortening time to market.

Alliances and coalitions — unlike M&As, which are usually underpinned by financial commitments — are flexible and can be established on a project basis. This opens up opportunities for small firms. Joining forces with another organization, be it customers, suppliers, and even competitors can provide access to possibilities otherwise unavailable. Driven by complementarity of capabilities, a group of mid-sized companies from different locations can build coalitions that undertake complex R&D tasks which are well beyond capabilities of one small company. Such modes of cooperation are particularly widespread in knowledge-intensive industries such as pharma, bio-tech, and ICT. In certain consumer segments, partnering with an international brand leader happens quite frequently. There are many successful alliances between local businesses and large multinational firms which work to the advantage of both.

Building situational or longer-term alliances depends to a great extent on the **networks** any given firm is connected with. These often-informal groupings can range from professional, industrial or regional associations to such less explicit but nevertheless powerful networks like “diaspora”-based ones. China and India are well known for their vast and well-connected diaspora communities all over the world. This can be a route for mid-sized firms to exploit global opportunities by transacting information, money and products, often without formal contracts. This can play an important role when a firm from one emerging market starts to move into another emerging market.

Complimentary to informal relationships is an **institutional engagement with multiple stakeholders**, which is especially critical in those industries where formal standards significantly differentiate products, services and firms. From technical to ethical standards, these codes can be like entry passes to a higher league for a firm. Engagement with local and international agencies not only helps in getting certificates but also in reaching out to global supply chains. For example, the Forest Stewardship Council (FSC) trains local foresters in sustainable forestry practices as well as in business skills and negotiating techniques, which helps them sell their produce directly to international players.

Internationalization for Russian mid-sized firms appears to be a stand-alone strategic plan, which somehow is considered separately from the domestic strategy and, in fact, often goes in parallel to it. One way or another, the overall observation is that Russian mid-sized firms approach internationalization as a gradual process, which usually starts with piecemeal steps in sales before exploring other opportunities. Notably, internationalization for Russian mid-sized firms appears to be a stand-alone strategic plan, which somehow is considered separately from the domestic strategy and, in fact, often goes in parallel to it.

in the 1980s, quickly outgrew its home village and by 1993 was already producing grinding wheels for foreign partners. The period of inward internationalization was crucial for Chinese companies from the learning standpoint. Business gained access not only to advanced production capabilities and technological know-how but also to less concrete skills such as understanding global value chains, foreign markets and Western management practices. In time, contract manufacturers began to move up the value chain by enhancing their R&D capabilities and introducing some own-branded products. By then, they had accumulated enough knowledge for full-scale international expansion.

Internationalization for Russian mid-sized firms appears to be a stand-alone strategic plan, which somehow is considered separately from the domestic strategy and, in fact, often goes in parallel to it

Chinese firms: going out to come back

The Chinese path to foreign markets has been very different from that of their Russian counterparts. Prior to the Going Out policy proclaimed by the Chinese government in 2000 and escalated in the recent times, China long been involved in internationalization within its own borders. The so-called inward internationalization, whereby foreign investors were encouraged to invest and do business in China, started in the time of Den Xiaoping's reforms in 1978. Attracted by low production costs, many global firms built production facilities in China, while many others relied on Chinese-run factories, which were mushrooming across the country. Major infrastructural developments and a growing supplier base provided significant competitive advantages to China over other economies of the world.

The period of initial growth of the Chinese manufacturing sector produced many firms that we observe in the international arena today, from big names such as Haier and Lenovo to smaller sized firms such as Hytera and Crown, which are part of our study. Hytera, at that time HYT, started in 1993 as a contract manufacturer of professional two-way radios. Crown, originally established as a township and village enterprise in the aftermath of the rural reform

The internet era provided another major stimulus and gateway for Chinese companies, particularly smaller ones, to sell into foreign markets. The growth of online B2B sourcing platforms like Alibaba, Global Sources and Made-in-China.com gave Chinese companies access to virtually any country in the world. With tens of thousands of listed suppliers, these platforms trade in products from almost every industry, including heavy industrial equipment. Along with the major B2B platforms, the country also has seen an upsurge in the number of specialized e-commerce websites that are specifically aimed at connecting Chinese suppliers with customers world-wide. For example, Sinocare, a bio-tech firm from Changsha, began to sell its blood glucose testing strips through the China Medical Solution online platform which mainly targets African countries, while in the US and Europe, Sinocare actively works with Amazon and eBay.

The rapidly expanding Chinese economy and the country's welcoming investment environment have drawn in large quantities of foreign venture capital and many private equity companies. These first appeared in China in the mid-1990s and dominated its private equity sector up until mid-2000s when local investment funds began to sprang up. Chinese startups in innovative sectors have been particularly active in using the possibility of foreign financing. At the beginning of the 2000s, BGB (at that time Goldenway) was just establishing itself in the market.

The clean-tech industry was still in its infancy in China and not many local funds supported such ventures. Thanks to its sound business model, BGB became one of the first Chinese clean-tech startups to attract venture capital, including from US-based Goldman Sachs. The investment was critical as it allowed the company to expand and attract more financing from locally-based Tsing Capital. Today as investments into clean-tech and renewable energy have been encouraged by the Chinese government,

strategic thinking. Chinese firms, especially in such industries as online internet and clean-tech, are praised for their unique business models. At the core of these models are often partnerships, both with businesses as well as with government. BGB has successfully transferred its partnership-based business model to Malaysia. Apus has partnered with the Indian mobile advertising platform InMobi in order to facilitate entry to the highly competitive Indian market.

The internet era provided another major stimulus and gateway for Chinese companies, particularly smaller ones, to sell into foreign markets

more firms have access to financing. However, it was the attraction of capital in the first stages of BGB's life that allowed it to overtake the competition and eventually become one of the leaders in China's fast growing clean-tech industry.

The similar story is for Beijing Tiertime, another representative of an advanced industry. In 2014 it received investment from the Dover Corporation, an American conglomerate manufacturer of industrial products, to develop its industrial-grade 3D printers. Guo Ge, General Manager of Tiertime, pointed out that the introduction of strategic investment from foreign companies is not only the first step for the internationalization of Chinese companies, but also a crucial step in helping Chinese companies expand in a fiercely competitive global market.

Chinese companies often see internationalization as a way to avoid the tough competition at home. Apus, which specializes in developing Android apps, did just that. Founded in 2014, the company specifically targeted users in developing markets. However, it would be wrong to see the company as being detached from China. The company has an ambitious goal: to make Android as cool as iOS. So, while its apps are expanding the company's international user base, the main activity takes place at home, where the company is building a tech ecosystem aimed at longer-term investments in the future of connectivity. It would not be surprising if this kind of maneuver will help the company, which today is just one of the Chinese app developers, gather around it in the future a tech community, and help it to become an industry leader.

Using alliances is common in Chinese firms. It may have cultural roots but it often underpins their

However, gaining access to technology remains one of the most sought-after opportunities in internationalization of Chinese companies. The fast pace, learn-as-you-go approach and the pursuit of volume have kept Chinese firms from building their own technological capabilities. Now, those who have established themselves and matured are increasingly looking to upgrade their capabilities and enter higher-margin segments. Although companies such as Han's Laser, Hytera, SDL Technology and Sinocare are pushing forward with building their own R&D competence centers, all of them have also tapped into international markets to access technology through acquisitions. American, European and Japanese companies have been the main targets. As for Chinese companies, the ability to compete seems to be closely correlated with their size and scope, many firms use acquisitions as a way to diversify their business by leapfrogging a technological gap not only in the current product category and also in order to enter new ones. For example, Sinocare, whose main product are glucometers for the general public and consumers, aspires to tap into the lucrative hospital segment by buying PTS Diagnostics, US-based point-of-care biometric testing device maker.

The overarching observation is that internationalization is viewed by Chinese as making a company stronger. There appears to be a special value that Chinese business attaches to the word "stronger". A possible explanation could be that Chinese companies exist in an environment of fierce competition from day one, and therefore the ability to compete often means the ability to survive. But no matter how competitive the home market is, it remains at the top of the companies' strategic agenda. Even

with slowing growth rates, China is still the world's largest manufacturing economy and an enormous market opportunity. Let's take example of SDL Technology. As the company completes its acquisitions in Europe, its main goal is to bring them to China, as the country remains to be the world's best place to scale up clean technologies, wherever they are invented.

In this respect, the main goal behind the internationalization of Chinese firms seems to be to grow at home rather than to conquer international markets for their own sake. Companies go out to become stronger domestically. Indeed, going international sometimes is easier for Chinese companies than expanding in other regions of China.

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The appeal of the Chinese market is also explained by the fact that the country is changing rapidly as the government pushes its innovation program. Tier-time, which in the last decade focused on desktop 3D printers for foreign markets is now living a second life in China as it develops its industrial-grade printers. The same goes for Han's Laser which is actively investing in robotics to ensure its products continue to meet the needs of the rapidly transforming country.

As we can see, Chinese companies are much more adventurous in exploiting the opportunities presented by internationalization. In fact, the border between the domestic and the international is often blurred. They have a very fluid way of combining internationalization with their domestic strategy. Their home market seems to always remain at the center of their attention and all international operations are weighed against the benefits for the company's position in China.

Conclusion: Going Forward

The rise of emerging markets has produced new multinationals that are sweeping the world with their competitive offerings. The names of these big winners are on everyone's lips. However, the impact of globalization goes much deeper than the famed mega-stories. There is an array of smaller firms that have progressed on both domestic and international markets by taking advantage of the opportunities presented by internationalization. Their examples demonstrate that the global marketplace is not for large companies only. They offer valuable lessons for other companies too.

Internationalizing firms of smaller size from emerging markets provide some of the most interesting cases. Often going unnoticed, they tend to fall outside the attention zones of business practitioners and academics. Their management models, market strategies and business practices remain little studied. Contemporary knowledge about international management is still mostly confined to Western multinational corporations. While this is valuable, it does not always reflect the experience of, and is not always helpful to, the smaller-sized players from developing countries.

Yet, today emerging markets are already hosting a number of firms that successfully operate in global segments. The trend is likely to continue. With lowering international barriers, converging markets

and spreading IT infrastructure, international markets become more proximate and easier to penetrate. In addition, business in emerging markets itself becomes more sophisticated. As the traditional advantage of competing on price gradually erodes, companies in developing economies are increasingly pressured to introduce more innovative and technologically-advanced products.

At the same time, emerging economies are not homogenous among themselves. Different business landscapes and competitive environments influence how firms in their local geographies shape their market strategies and where they place their strategic bets. The overall degree of a country's integration into the global market also affects individual firms' openness to venturing outside their national borders.

Internationalization today stands out as a multifaceted opportunity. By no means is it a must-go option for every mid-sized company and, in fact, if carried out thoughtlessly, can cause damage. It is for this reason that internationalization should be considered more broadly than just selling abroad or optimizing the value chain. It includes such tacit capabilities as building international alliances, networks and institutional engagements. The ability to connect with the international space is what is likely to distinguish the more successful companies coming

The ability to connect with the international space is what is likely to distinguish the more successful companies coming from emerging markets

from emerging markets. However, developing these capabilities is not a straightforward task and is in some ways paradoxical. On the one hand, a firm has to invest in building institutional, long-term, trust-based relationships with multiple stakeholders and

markets and gradually increase their operational presence, perhaps with newly-built manufacturing facilities and an expanded market portfolio.

Chinese firms seem to be much more adaptable and ambidextrous in their ability to connect with the

Russian mid-sized firms tend to follow a very linear and sequential pattern, in which internationalization is approached one step at a time

networks while, on another hand, it becomes increasingly important to build temporary, situational alliances in which getting in and out quickly is no less critical than the alliance itself. Also, being flexible and responsive to the changing landscape goes hand in hand with an ability to comply with the strictest formal standards. All this can be possible if the firm stays creative, versatile and entrepreneurial, not only in spirit but also in its organizational structures and processes.

The account of Russian and Chinese mid-sized firms in this study highlights different approaches which firms can adopt. Russian companies are more of the niche player type, valuing product excellence overall and tending to keep quality-determining operations in-house. Chinese ones focus more on volume, valuing speed of ascent, which makes them more experimental on the product side and more flexible in connecting with other market players from whom they source what they need.

These basic differences in the core of the business configuration inevitably lead to the differences in the way firms approach internationalization. Russian mid-sized firms tend to follow a very linear and sequential pattern, in which internationalization is approached one step at a time. There is usually a key trigger that gets the process started after which the company starts to connect with the outside world in other ways on an incremental basis. Generally, they start with sales of existing products to neighboring

outside world: they do not long linger on plans but take opportunities as they arise, whether related to markets, technology, capital or partnerships. Companies may start by acquiring a foreign firm simply because it was on sale, or they might sell from China to Africa because there is a small Chinese community with good local connections in the target country. Unlike Russian firms, which design international plans **as a separate strategy**, for Chinese companies internationalization seems **to be the strategy**, which above all strengthens their positions at home and allows them to expand their global footprint. The behavior of the Chinese firms very much reflects the general progress of the Chinese economy which is, amongst others, characterized by its Going Out policy, and the recently declared “One Belt, One Road” initiative. Going out to become stronger as a country or as a company underpins international pursuits. To some extent, the “sea turtle” term, which is used to describe a returnee to China who has studied or worked abroad, well suits many Chinese mid-sized companies which employ international opportunities to bring something back from abroad in order to become stronger at home.

Obviously the context of a firm’s country of origin means a great deal. But leaving this aside, what are the less obvious but still important firm-level decisions that are taken differently? First and probably most important is a difference in the general outlook on company development. For Russian firms it

Chinese firms seem to be highly adaptable and ambidextrous in their ability to connect with the outside world: they do not long linger on plans but take opportunities as they arise

is much more common to set mid-market as a target size. This implies a whole way of doing business which to certain extent corresponds to the famous German Mittelstand. Chinese companies more often think of mid-size as a short stop on the way to big business.

Contrasting approaches to strategic thinking appear to be rooted in philosophies that have often been characterized as being typical of Western and Oriental cultures. The Western view of the world goes

need water over there' and start digging a channel; the Chinese pour water and watch where it flows."

It is important to note that the different approaches do not imply that companies from the two countries cannot work together. However, they will usually need to adjust. It is remarkable that no matter where they start and how they go forward, international experience makes them more sophisticated and versatile. A key similarity here is a willingness to explore the whole world of opportunities.

“Russians say ‘we need water over there’ and start digging a channel; the Chinese pour water and watch where it flows.”

back to Greek times with its beliefs that a human being is the most significant entity in the universe. In the East, a man is just a grain of sand, while the universe is ever-changing and supreme; whatever the universe sends is taken with gratitude. Chinese companies tend to take opportunities as they come as life for them is a more fluid process. Despite the fact that most of Russia's territory lies in Asia, the Russian mind derives more from Greek philosophy. In business, this results in a highly goal-oriented mentality, whereby plans are projects and are conceived in relation to the target rather than the context. The differences are well captured in the phrase that we heard in our interview with the Sino-Russian joint venture, Interskol Crown Group: “Russians say ‘we

Basically there are two camps: those who see internationalization as a response to business demands, and those who think that in the modern world every business is global per se, even if it is operating in a single country. In the first case, limited growth in a home market, or shrinking margins, might push a firm to seek cheaper materials, components or labor, and suggest a diversification of risks. In the second case, internationalization is assumed as a norm since there are always international competitors and customers travel or buy online from all over the world. Ultimately, there is no right or wrong way, but there is a strategy which suits each individual company best. The worst mistake is to miss the opportunity and ignore internationalization completely.

RUSSIA

ECONOMY

6th
LARGEST ECONOMY IN THE WORLD
(PPP valuation)

Over 1996–2016 the country **GREW ON AVERAGE 3.17%**
Continued contraction for 2016 -0,8% and forecast to grow 1,1% in 2017

Russia is in **TOP-10**
world's largest manufacturers, accounting for **2,3%** of the world's output

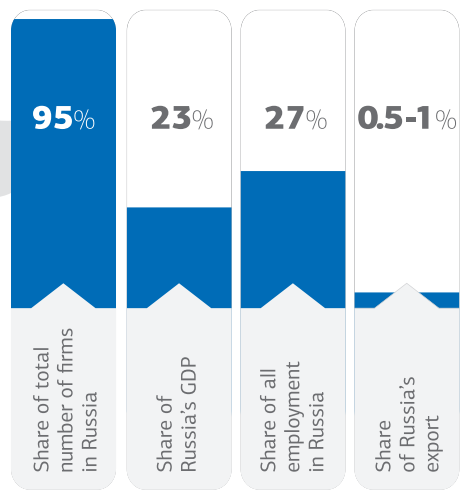
2nd LEADING DESTINATION
for FDI projects in Europe, according to FDI intelligence, 2016

TOP EXPORTERS TO RUSSIA
China **19.2%**
Germany **11.2%** | US **6.4%**
Belarus **4.8%** | Italy **4.6%**

TOP IMPORTERS FROM RUSSIA
Netherlands **11.6%**
China **8.2%** | Germany **7.4%**
Italy **6.5%** | Turkey **5.7%**

SMALL-AND-MEDIUM SIZED SECTOR

Number of SMEs is ~ 5.6 million



COUNTRY FACTS

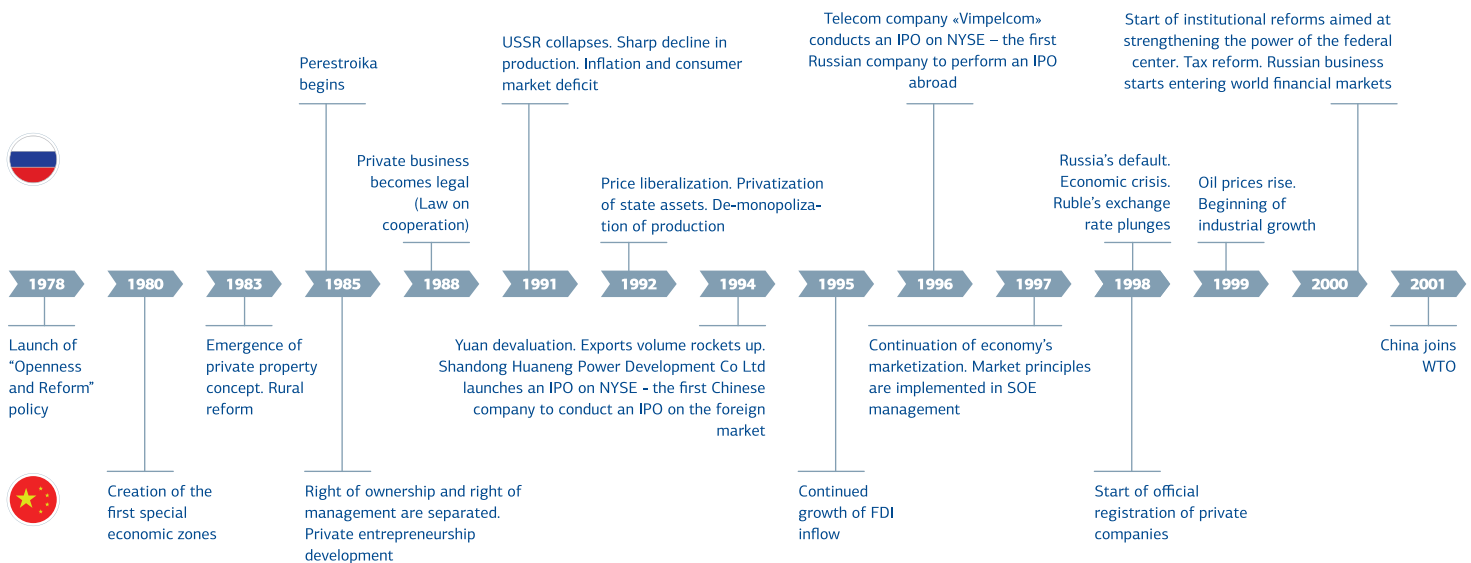
Capital — **Moscow**
12 mln inhabitants

Total **population** — **146** mln people

Largest country in the world by land area and **the most sparsely populated**

11 time zones
15 cities with more than 1 mln inhabitants

Urban population 74%. **Russia is the only deurbanizing country** in the world with -0.13% annual rate of change over 2010-2015



Note: SME definitions correspond to the official classifications in respective countries. In Russia, it is largely in line with the definition in the EU and includes companies with annual turnover of USD 30 mln or less. In China, the definition of an SME is complex and, among other, depends on the industry category; in manufacturing it is companies with annual turnover of USD 50 mln or less.

CHINA

ECONOMY

1st
LARGEST ECONOMY IN THE WORLD
(PPP valuation)

Over 1989 -2016 the country
GREW ON AVERAGE
9.82%
Expected growth
6.6% in 2016
and 6.2% in 2017

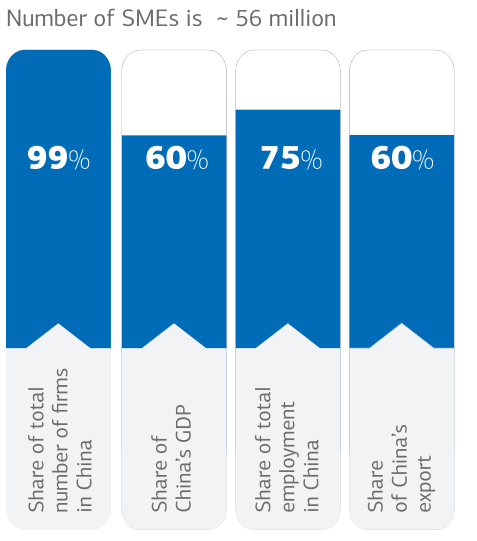
The world's
LARGEST
manufacturer,
accounting for **23,3%**
of the world's output

CHINA IS IN
TOP 3
world's biggest
CROSS-BORDER INVESTORS

TOP EXPORTERS TO CHINA
South Korea **10.9%**
US **9%** | Japan **8.9%**
Germany **5.5%** | Australia **4.1%**

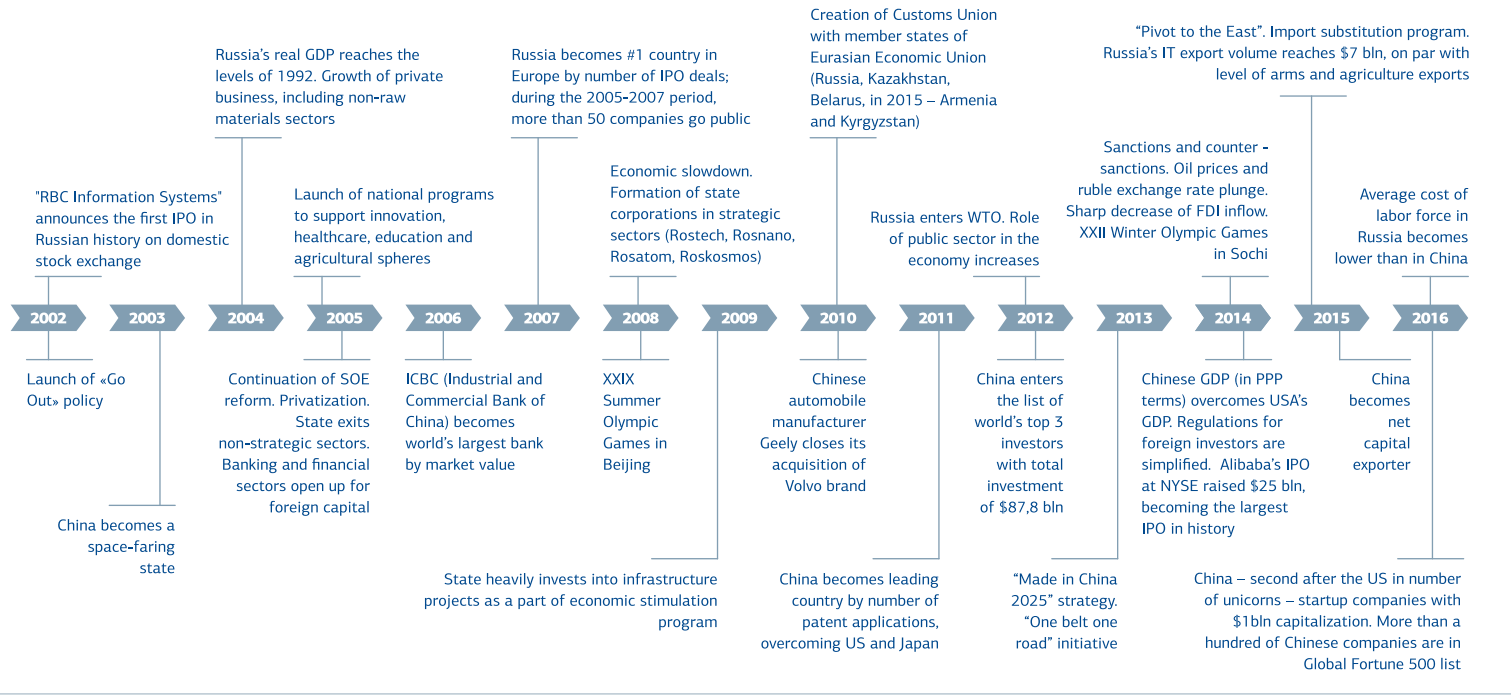
TOP IMPORTERS FROM CHINA
US **18%** | Japan **6%**
South Korea **4.4%**
Germany **3%** | Vietnam **2.9%**

SMALL-AND-MEDIUM SIZED SECTOR



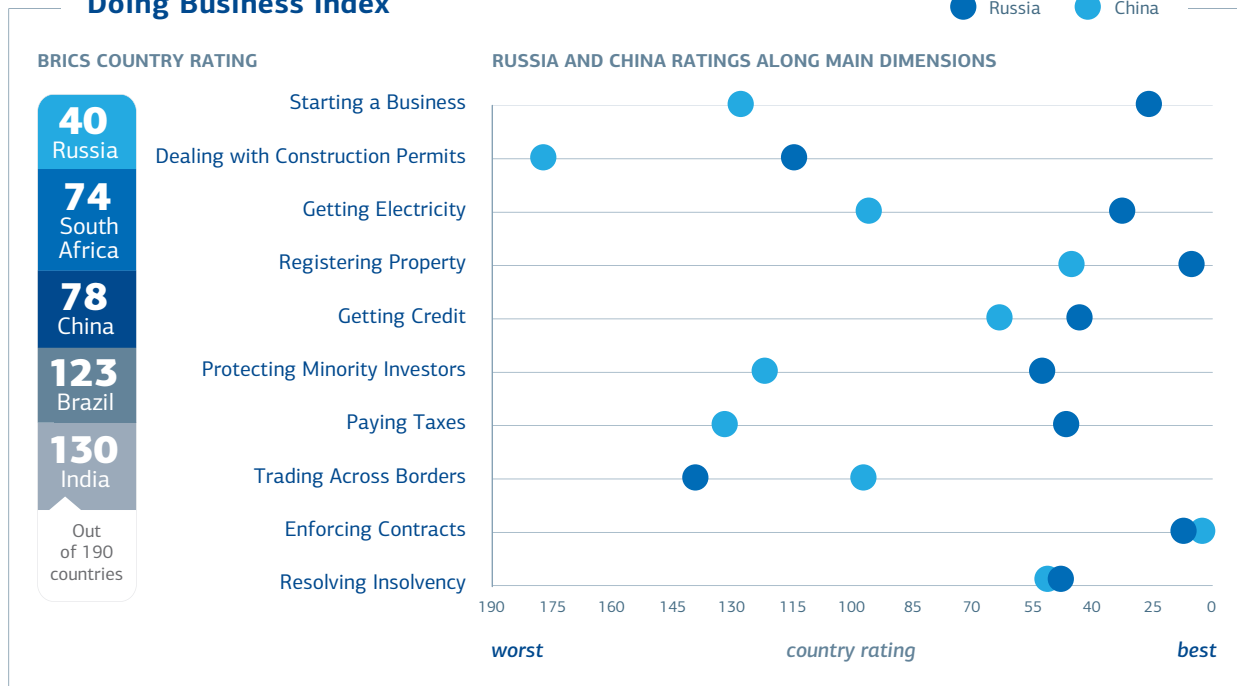
COUNTRY FACTS

Total **population** — **1.3 billion** people
Capital — **Beijing** **19 mln** people
5 megacities of 10 million inhabitants
160 cities with a population over one million people
China accounts for **6% of the world's surface** and for **20% of the world's population**
China's **population is growing old at a faster rate** than almost all other countries

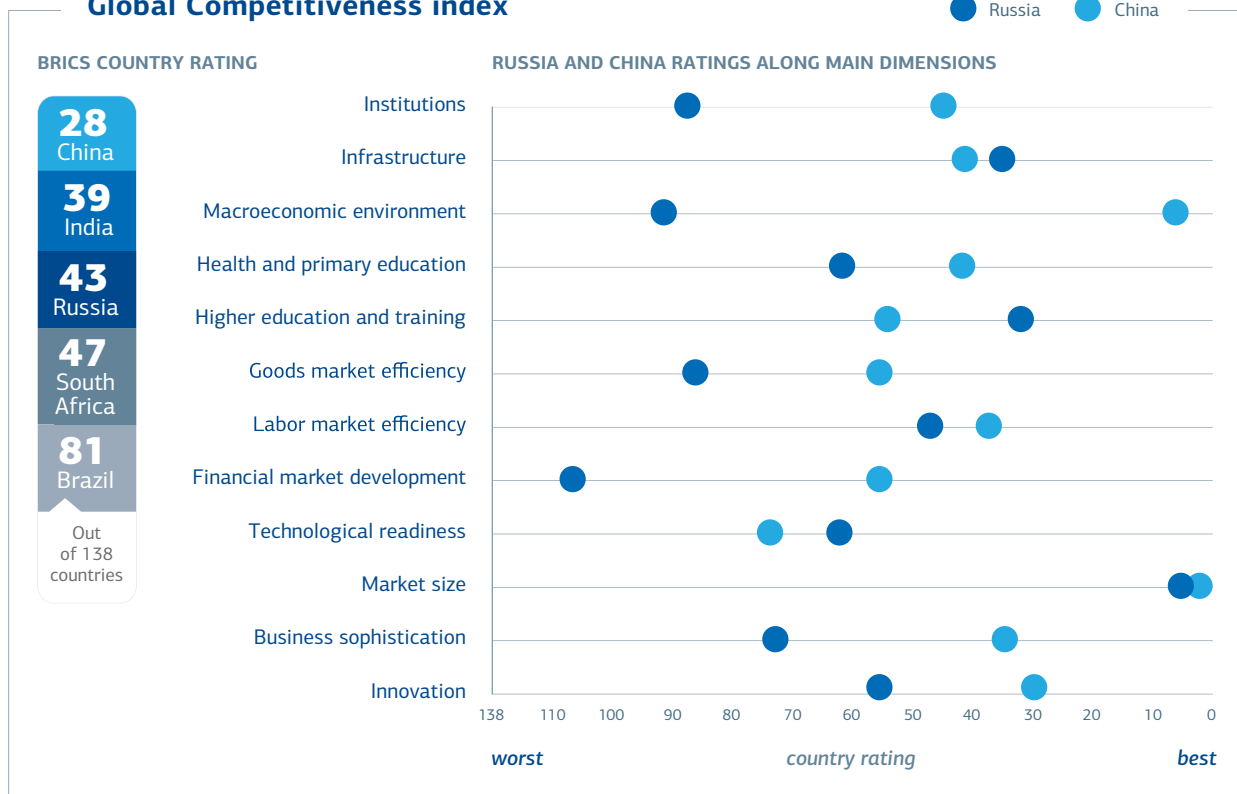


Source: prepared based on the materials published by World Bank Group, International Monetary Fund (IMF), Organisation for Economic Co-operation and Development (OECD), Central Intelligence Agency (CIA), World Trade Organization (WTO), The Economist, Forbes.ru, Expert.ru, MSP Bank, Ministry of Commerce People's Republic of China, Federal web portal for small and medium sized enterprises of Ministry of economic development of the Russian Federation, Russian SME Resource Center (RCSME)

Doing Business Index

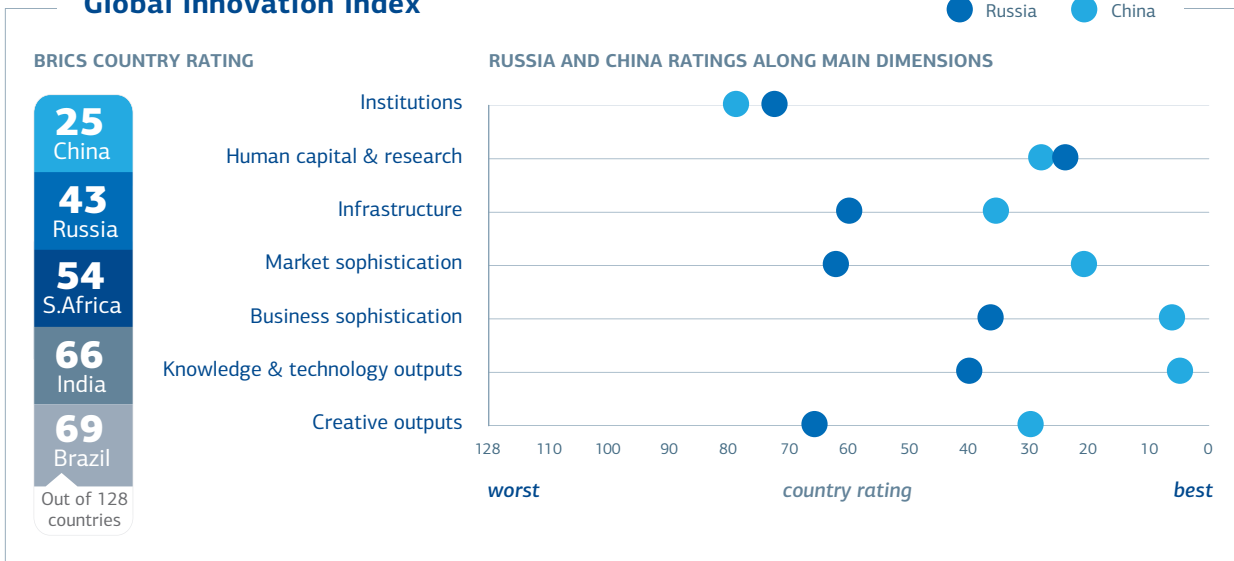


Global Competitiveness Index

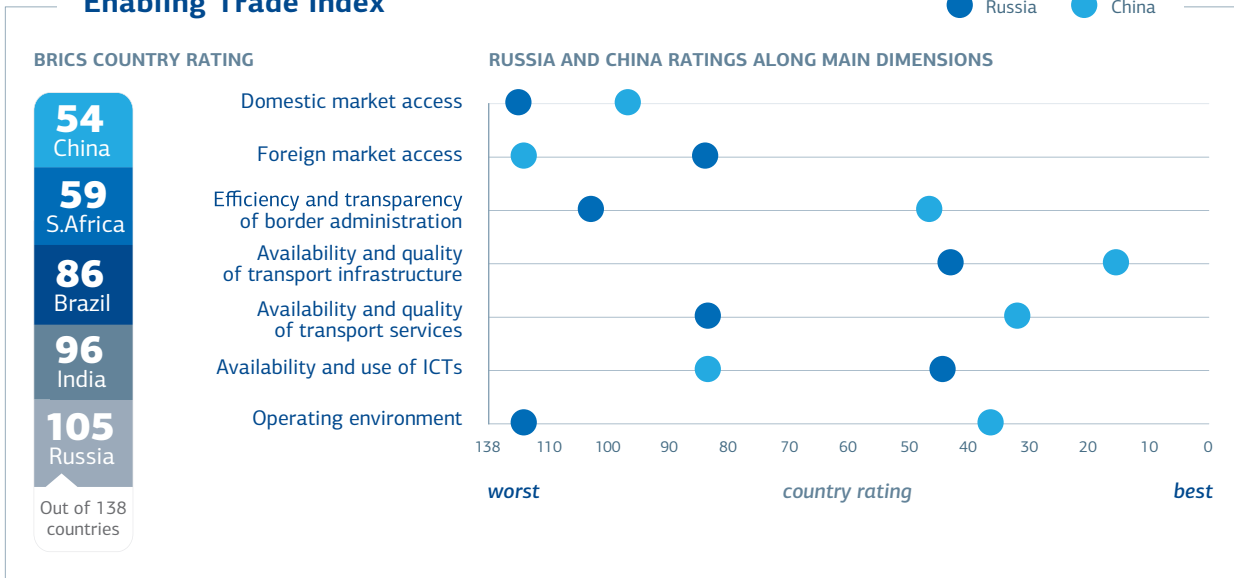


Source: Doing Business 2017, World Bank Group; The Global Innovation Index 2016, Cornell University, INSEAD, and WIPO; The Global Competitiveness Report 2016–2017, World Economic Forum; The Enabling Trade Index 2014, World Economic Forum; The Logistics Performance Index 2016, World Bank Group

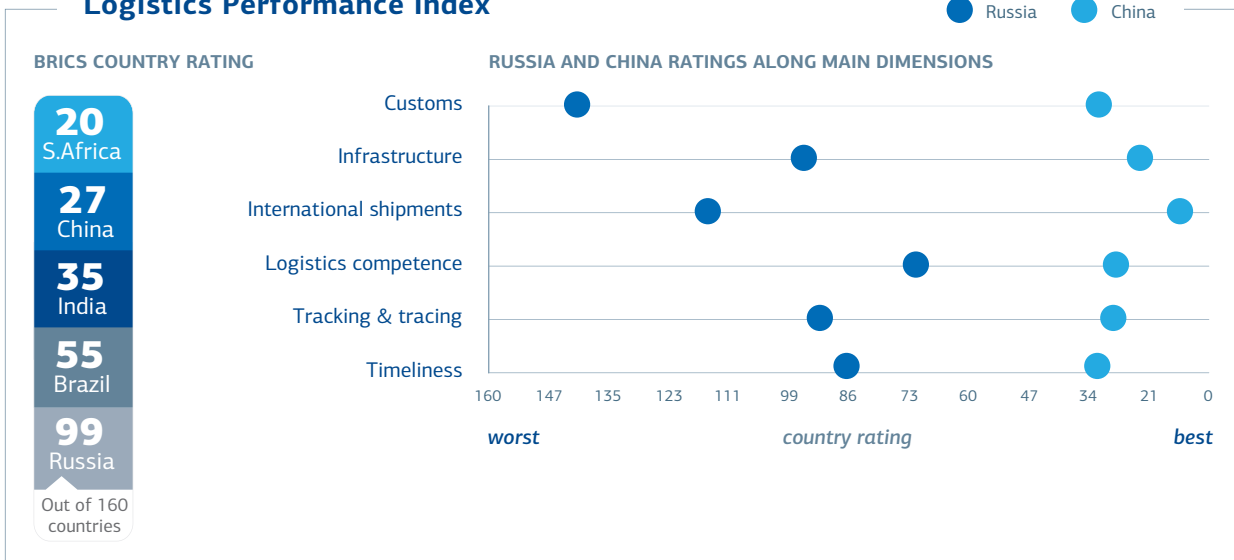
Global Innovation Index



Enabling Trade Index



Logistics Performance Index



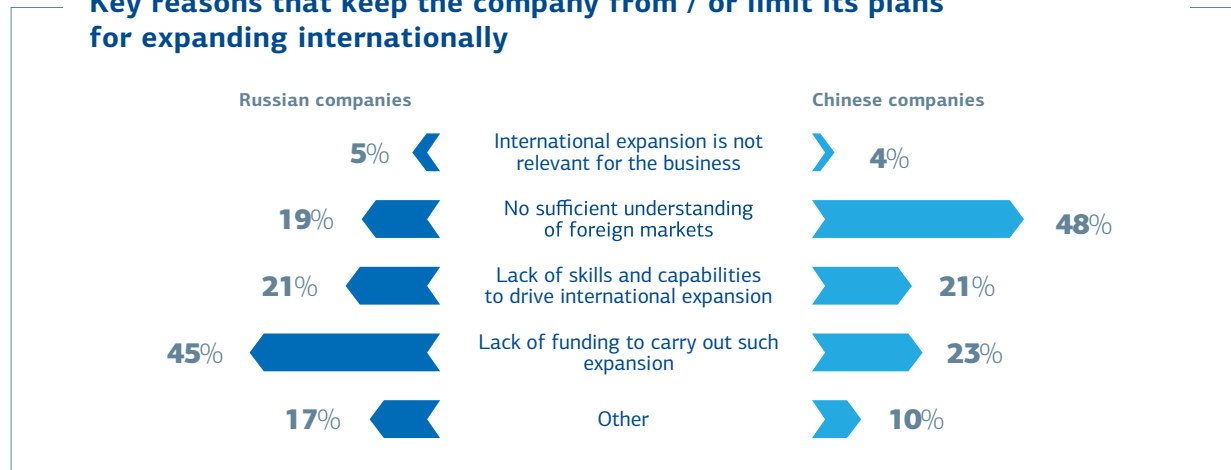
Expected sources of growth for business in the next 5 years



The extent of the company's internationalization along key dimensions



Key reasons that keep the company from / or limit its plans for expanding internationally



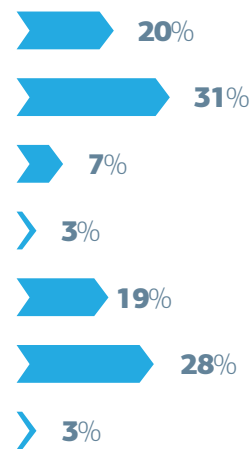
Notes: Sample size for Russian companies – 126, for Chinese companies – 99; the survey results are to be treated as indicative rather than statistically representative.

Current collaboration with another country

How Russian firms work with China

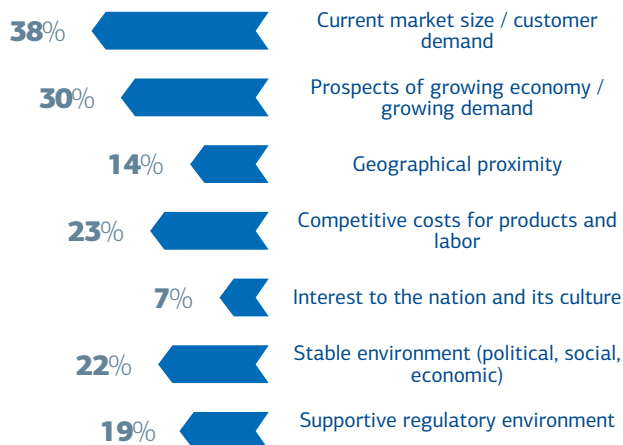


How Chinese firms work with Russia

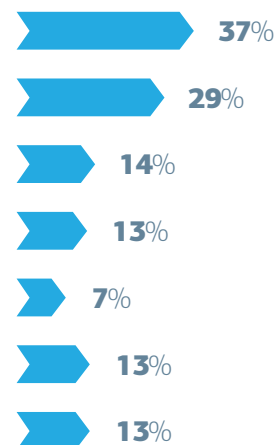


Factors that make another country an attractive business-partner

How Russian firms view China

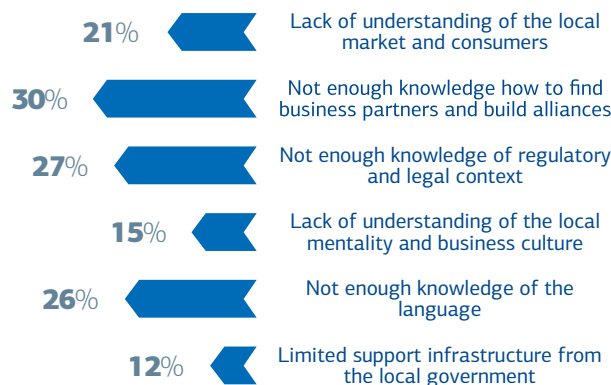


How Chinese firms view Russia

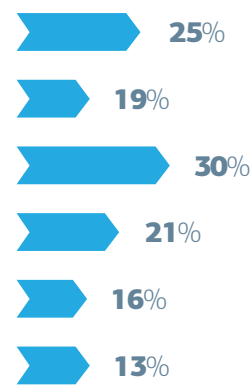


Main challenges of working with another country

How Russian firms view China



How Chinese firms view Russia



Sources: Results of the survey among participants of the Russian-Chinese Business Forum for SMEs, Beijing 2015, Sochi 2016.

Case Studies



ARGUS SPECTRUM



Sector: Engineering
Established: 1993
Origin: Saint Petersburg, Russia
CEO: Sergey Levchuk
Website: www.argus-spectr.ru
www.argussecurity.it



Argus-Spectr designs, develops and manufactures security and fire alarm devices and systems

ALTHOUGH ARGUS-SPECTR INITIALLY HAD DIFFICULTIES WITH ITS INTERNATIONAL EXPANSION, THE COMPANY'S TECHNICAL STRENGTH AND CONTINUED INNOVATION COMBINED WITH ITS EUROPEAN DESIGN HAVE ALLOWED IT TO CREATE COMPETITIVE PRODUCTS BOTH FOR THE RUSSIAN AND INTERNATIONAL MARKETS. ARGUS-SPECTR'S SUCCESS HAS BEEN LARGELY CONTINGENT ON ITS ABILITY TO UNDERSTAND ITS PRODUCT SHORTFALLS AND ADAPT ACCORDINGLY. IN 2002, ARGUS-SPECTR OPENED AN AFFILIATE COMPANY IN ITALY, INITIALLY TO REDUCE EUROPEAN DISTRIBUTION COSTS, AND SUBSEQUENTLY TO ASSIST IN THE DESIGN AND DEVELOPMENT OF PRODUCTS. THIS WAS AN IMPORTANT FIRST STEP IN UNDERSTANDING EUROPEAN CONSUMER TRENDS AND ALSO PROVIDED A BASE FROM WHICH TO HELP MANAGE SALES AND CERTIFICATIONS.

Standing on the Shoulders of Giants

Argus-Spectr was launched in 1993 by five radio physicists from Saint Petersburg's State Polytechnic University. The group included the current owner, Sergey Levchuk, who later consolidated and acquired all shares. During Soviet times, the physicists served the Soviet military industrial complex developing high-frequency radio detection, location and missile guidance systems.

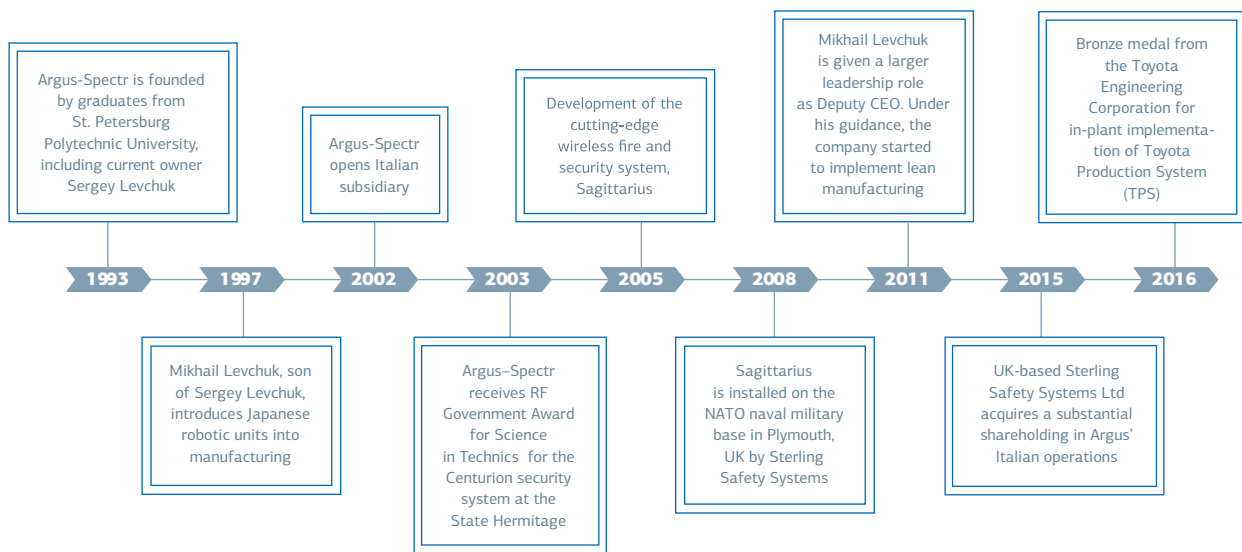
After the end of the Soviet era, the state controlled manufacturing sector, amid recession and uncertainty, was unable to fulfill increasing requests for security systems from private parties and emerging businesses. As a response to this, the Ministry of Interior of Russia (MVD) helped create several companies specialized in the design and production of security systems. It was the patronage by the MVD that ultimately determined the future of the fledgling

venture. In cooperation with the MVD, Argus-Spectr was able to familiarize itself with the technologies of the world's top security companies and to purchase the best equipment for its production needs. Initially, the MVD assisted the company in obtaining financing and helped with other resources like the rental of a bunker at a military plant for equipment testing.

Argus-Spectr has very much evolved into a family business with several members of the Levchuk family working for the company. Although, Sergey Levchuk is still the CEO, he has given his son, Mikhail Levchuk, increased responsibility over the years. The younger Levchuk is also a radio physicist and graduated from St. Petersburg Polytechnic University in 2002 and undertook graduate studies at Uppsala University in Sweden. Mikhail Levchuk has worked at Argus-Spectr in different capacities since 1995 and has been Deputy CEO since 2011. Mikhail Levchuk is also an industry leader who is very much involved in the improvement of legislation for small and medium sized businesses.

"We are not a garage business. Our emergence and development are the result of systematic work of various governmental agencies." — Mikhail Levchuk, Executive Director of Argus-Spectr

COMPANY TIMELINE



Fighting Intelligent Thieves

In the 1990s, international companies dominated the Russian security equipment industry. These companies were quickly outperformed by their Russian counterparts because local companies were better able to adapt products to the national context. Following the collapse of the Soviet Union, while many people were struggling to adapt to the new situation, security incidents were frequently carried out by highly educated persons, which required more sophisticated security products than were being offered by foreign companies.

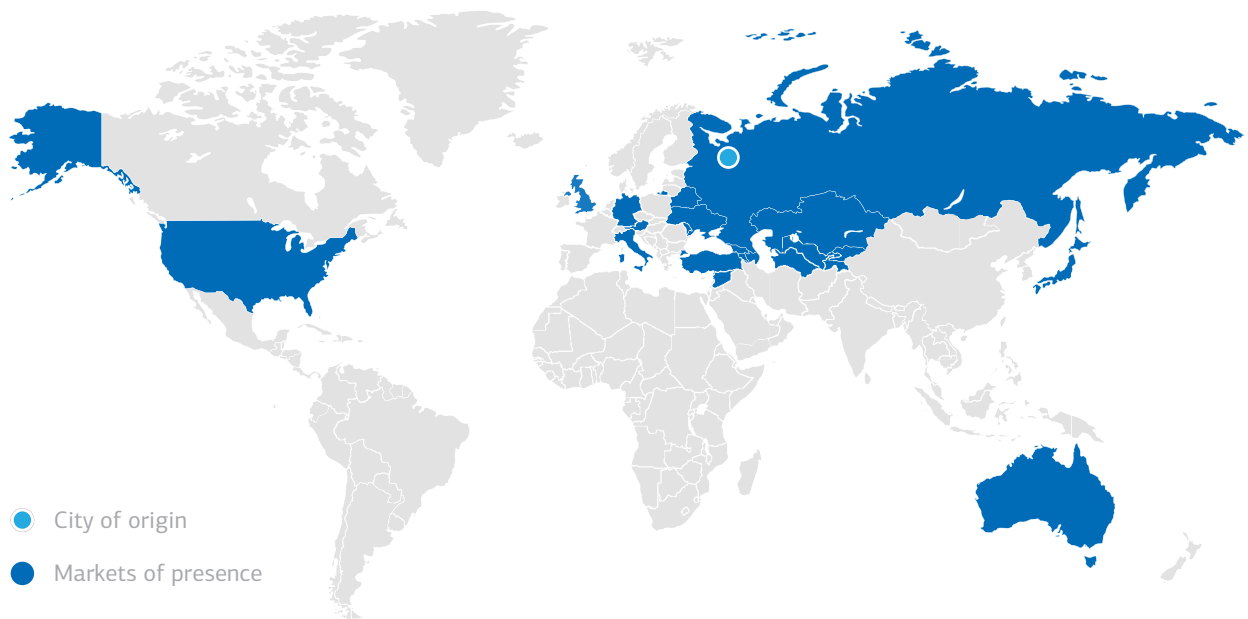
In the early 2000s, as the economic situation in Russia improved, Argus-Spectr decided to diversify its business by manufacturing fire alarm systems in addition to security systems. This coincided with a crucial point in the company's history, when it began delivering ready-to-operate systems and not just components in Russia. In addition, during this period, the rapid development of mobile telecommunications and the Internet drove Argus-Spectr's breakthrough in wireless security technologies and this became a significant competitive advantage against

European and American companies that were still working with traditional wire systems. Argus-Spectr was one of the first companies to start using wireless or hybrid platforms for alarm notification transfer. These systems proved to be more reliable and allowed firefighters to follow the dynamics of a fire and evacuate people accordingly. Using wireless technologies also allowed the company to achieve larger margins on finished goods.

In 2002, Argus opened a production facility in Italy in an effort to reduce European distribution costs and import duties. Through this operation, they soon realized that although the technical features of their products were excellent, the size, usability and visual appearance of the devices were lagging behind their foreign counterparts. They subsequently created an R&D facility to create components that were more visually appealing and less cumbersome. While the Italian facility focuses on design and visual appearance, a development center in Russia still focuses on technical features. This combined approach led to the development of unique, reliable and aesthetically pleasing products that were attractive to both the Russian and European markets, which resulted in sales growth.

"It was a mistake to engage in direct sales internationally while staying in Russia because it did not give the company any understanding what the client needs." — Mikhail Levchuk, Executive Director of Argus-Spectr

GLOBAL FOOTPRINT



L'Argus 'Italiano'

In early 2000s, the company's leaders understood that in order to be successful in the Russian market it should also be competitive in the global marketplace. The company spent over 10 years overcoming legal and technical barriers to enter the European market. First Argus-Spectr tried to expand in Europe by launching sales offices, which failed as they realized that they needed to learn about the market through product developers, who are better acquainted with the target customers' habits and preferences.

In 2002, the company opened its Italian subsidiary, Argus Security, which began as a production facility and later evolved into a full-service operation including R&D. Argus Security was the first EU certified wireless fire alarm system, which triggered expansion of Argus' products in Europe and enabled

entrance to other highly regulated markets. Today Argus actively works with large multi-service companies that offer integration services like Honeywell and Tyco. These companies buy the devices as white-label products and sell them under their own brands.

Currently the Italian facility employs 100 local staff including industrial engineers. At the outset, a local Italian partner assisted Argus with the scouting of a location in Trieste and the securing of financing for the construction of the plant at 3 percent interest in Europe (against 17 percent in Russia). Although 7 years passed before the plant began turning a profit, the facility in Europe helped Argus diversify its sales portfolio and client mix. In 2015 the company's long-standing partner, British Sterling Safety Systems Ltd, acquired a substantial shareholding in Argus Security. The two companies are now looking to tap into synergies that the new relationship provides.

"This new relationship allows us to combine the specialist product design and manufacturing established by Argus with the marketing and field support expertise inherent in the Sterling business. This co-operation will enable us to offer all of our customers new and improved products and services whilst continuing to expand into fresh markets." — Glen Jones, Managing Director of Sterling Safety Systems Ltd¹

¹ Argus-Spectr, corporate website. Available at: www.argussecurity.it [Accessed: 03 June 2016].

Size Down to Grow Up

A new generation of managers, led by Mikhail Levchuk, introduced Japanese lean manufacturing. In 1997, the company bought Japanese robot units and thus introduced the automated assembly line in order to reduce production errors. At the time, when labor costs were quite low, such modernization was not considered viable. Also, the young team encountered a high degree of resistance from employees that had a difficult time adjusting to the new work environment. As a result, the number of employees shrank from 500 to 350, while production capacity grew. This was an incredible achievement as the company was planning on expanding its production plant to grow capacity and now they were able to produce more in the same space. In 2011, under the leadership of Mikhail Levchuk the company started to implement the Kaizen principles and lean manufacturing. To this day, consultants from the Toyota Institute visit Argus' plants regularly to assess optimization strategies.

A great strength of a lean manufacturing system is its flexibility as it allows operations to be adjusted to market needs making the company both more efficient and more resilient to periods of economic uncertainty. Thanks to this early innovation, production at Argus-Spectr is currently based on a "pull" production system, thus producing in response to demand. Mikhail Levchuk also spent time studying best practices and management theory including the Scientific Organization of Labor, a humanistic

evolution of early Taylorism, which proved to be very useful particularly in the post-Soviet Russian work environment.

Outlook

Russia remains a key market for Argus-Spectr. The Russian market is growing, particularly as consumers begin to call for fire systems in addition to security systems. Local companies are also less exposed to currency fluctuations with local products, creating an advantage for the company.

In addition, there are many new niches in the Russian market that have not yet been fully developed. For instance, the application of wireless in security and fire systems still has tremendous growth potential. In addition, Argus is developing a new wearable electronics product category for use in the defense industry; these products would be used to help monitor the whereabouts of army personnel.

Argus-Spectr is also evaluating plans to enter the Latin American market, where the company is contemplating localizing a plant. Product development is nevertheless projected to stay in Russia. The company's management considers this solution a preferable form of expansion to exportation as it would potentially have lower logistics costs and import tariffs. Being physically closer to its target market is also helpful in understanding the peculiarities and needs of the local market. After success in the UK, the company is also evaluating commonwealth nations in Asia and the Middle East.

"I thought I was going to oversee sales and marketing and I was rather upset when I was tasked with improving manufacturing. Then, I read my first book about Lean Manufacturing and was immediately inspired." — Mikhail Levchuk, Executive Director of Argus-Spectr



Sector: Plastics
Established: 1993
Origin: Rostov-on-Don, Russia
CEO: Igor Perepletchikov
Website: www.atlantis-pak.net



Atlantis-Pak manufactures plastic casings for the meat and dairy industries used in the processing of perishable food items including wieners, frankfurters and cheese. The company also produces shrink bags, heat-sealable films and self-adhesive labels

WORKING TO ACHIEVE GLOBAL SUCCESS FROM THE START, ATLANTIS-PAK HAS SHOWN DETERMINATION IN RESPONDING TO EVOLVING CUSTOMER NEEDS BY INTRODUCING INNOVATIVE AND CUSTOMIZED PRODUCTS. A LARGE PART OF THE COMPANY'S ACHIEVEMENTS CAN BE ATTRIBUTED TO THE CREATION OF ITS OWN PRODUCTION LINES THROUGH THE RECONFIGURATION OF IMPORTED PLANT COMPONENTS, WHICH HAVE ALLOWED BOTH INCREASED CUSTOMIZATION AND IMPORTANT EFFICIENCY GAINS. ALTHOUGH ATLANTIS-PAK VENTURED INTO FOREIGN MARKETS FROM THE VERY BEGINNING, IT WAS ONLY IN 2011 THAT COMPREHENSIVE INTERNATIONAL EXPANSION TOOK PLACE. THE EXPANSION WAS TRIGGERED BY FALLING MARGINS AND EXHAUSTED GROWTH OPPORTUNITIES IN THE RUSSIAN MARKET. ATLANTIS-PAK THEN BEGAN TAKING ACTION TO FOSTER INTERNATIONAL GROWTH: THE COMPANY OBTAINED CERTIFICATIONS (I.E. HALAL AND BRC GLOBAL) TO EASE ENTRY INTO NEW MARKETS; IT OPENED REPRESENTATIVE OFFICES IN TARGET COUNTRIES; AND IT ACTIVELY WIDENED ITS GLOBAL DISTRIBUTION NETWORK.

Backing the Right Horse

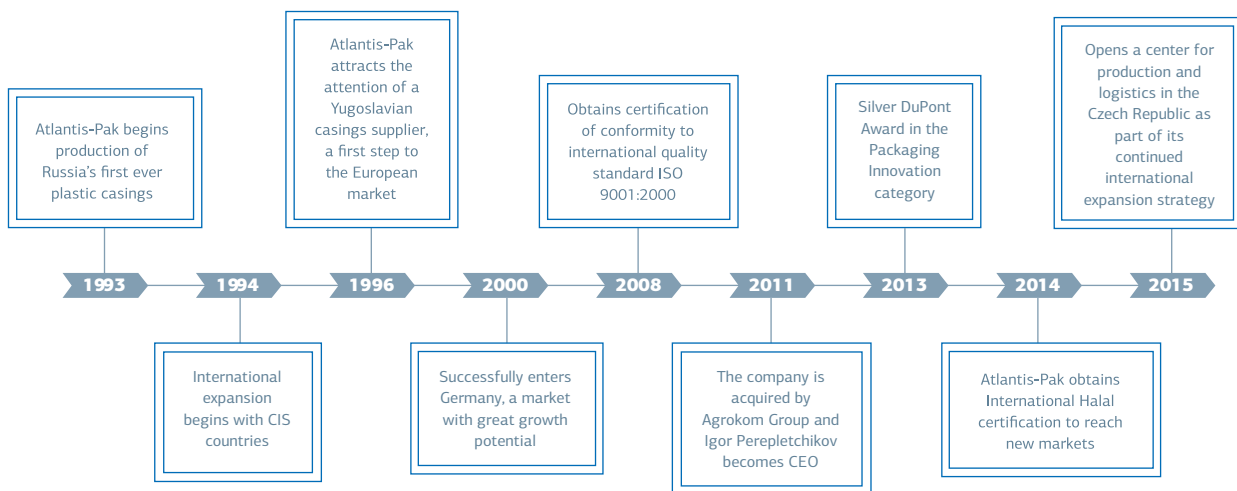
Atlantis-Pak was launched in the Russian city of Rostov-on-Don in 1993. The company's founders and initial shareholders were Igor Rudenko, Vladimir Rudenko, Sergey Ryzenko, Alexander Davidenko, Oleg Davidenko and Sergey Borodayev. The six associates combined their various skills and talents to work together during the difficult social and political years after the collapse of the Soviet Union. Initially, Igor and Vladimir Rudenko ventured into business together and later invited the others on board. The founders were involved in several sectors such as cable production, package production and tobacco before settling on the casings business. The focus on casings came to be after one of the founders visited a natural casings plant near Saint Petersburg and learned that demand for casings in

Russia significantly exceeded supply. As the team was new to the industry, they arranged to meet with scientists at the National Russian Meat Research Institute to gain a better understanding of the kinds of casing products that were already on the market. Eventually, the entrepreneurs placed their bets on plastic casings, which were not widely used at the time but, in their view, had the largest growth potential. The group bought its first production line from an East German plant that was scheduled to close; the equipment was superior to that of their Russian counterparts and this gave the company an immediate competitive advantage.

The company's first CEO, Oleg Davidenko, served until his death in 2005. In 2011, the company was acquired by Agrokom Group² and Igor Perepletchikov became CEO. Perepletchikov, former head of Sales and Marketing, had been with Atlantis-Pak since 1995 and was an integral part of the company's growth. He was initially tasked to build a small meat factory to test products internally; however, the fea-

² Agrokom Group is one of the largest private companies in Russia with assets in tobacco and food industry, agricultural sector, package industry, retail trading. The Group was founded in 2004 by Ivan Savvidi and located in Rostov-on-Don. Majority of the Group's enterprises is located in the territory of the Southern Federal District of Russia with their subdivisions and branches operating in Russia and abroad.

COMPANY TIMELINE



sibility of this bold plan was later reevaluated and the company instead focused its efforts on building stronger relationships with their clients and employing outside meat processing facilities for testing. Later, Atlantis-Pak led its customers by introducing them to new products with increased capabilities and fundamentally changed the industry from the supply side.

from this and other mistakes and soon laid out the foundation for innovation by establishing its own in-house laboratory.

Innovation in the casings industry is a combination of advanced chemistry, to create new products from the same basic polyamides, and progressive manufacturing technology. Over the years, the company has worked hard to marry skills and resources to

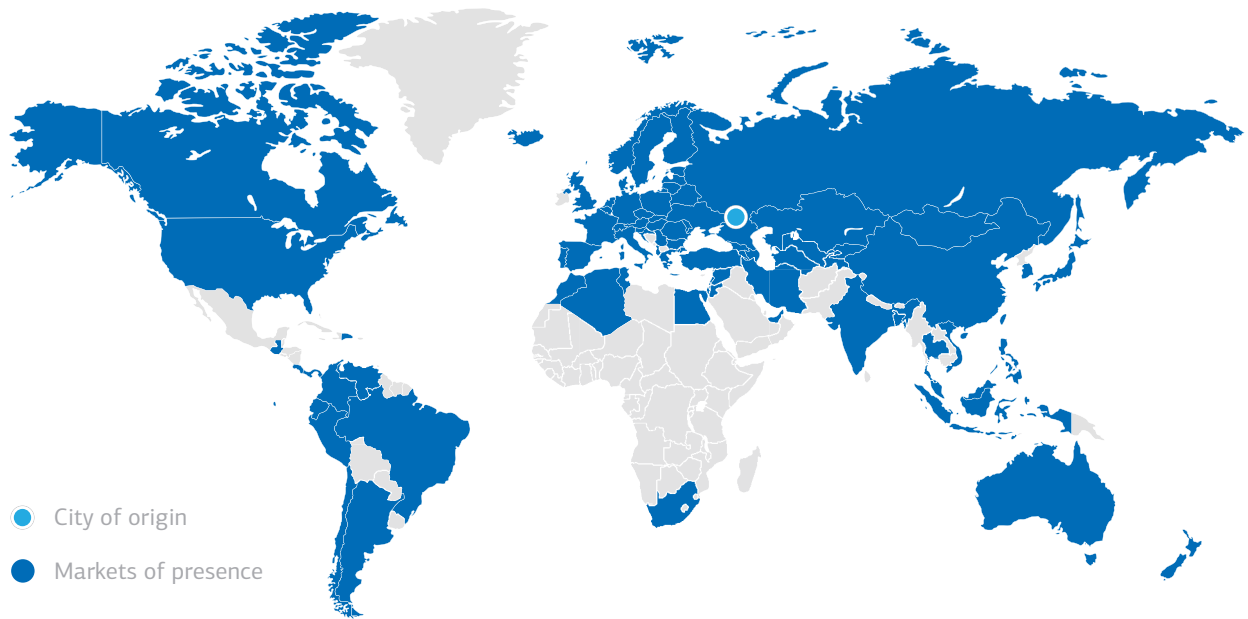
“From the very beginning, the company was centered on two guiding principles: firstly, we wanted to create value through innovative products and cutting-edge manufacturing and secondly, we aimed to expand internationally.” — Igor Perepletchikov, CEO of Atlantis-Pak

Bespoke Atelier

Although innovation has played an important role in the company's success, its first attempts at product development were at times chaotic. While in Europe plastic casings had already been on the market for some time, in Russia the technology to make these products did not yet exist. Sergey Borodayev, the former chemist who had been involved in the cable production business, was entrusted with leading new product development. Through trial and error, the first batch was produced and shipped to the Armavir meat processing plant for testing. Upon delivery of the order, the team received a call from the outraged client stating that the casings had exploded during application; later it was found that the product's edges had worn out because of inadequate transport conditions. Atlantis-Pak was quick to learn

develop innovative products. Despite the fact that polyamide casings possessed valuable properties such as high mechanical durability, stability in high temperatures and humidity, they also had a number of disadvantages that limited their marketability: they could only be used for sausages with larger calibers, had an unnatural appearance and did not allow products to be smoked. The company's first big success came in 1997 when Atlantis-Pak produced the world's first ever plastic casing for frankfurters and wieners and within just a year gained 22 percent of that massive product category in Russia. The ensuing years were highlighted by breakthroughs in innovation, most notable of which was the introduction of permeable casings. At present, the company has registered numerous patents and has received a number of national and international awards including the DuPont Silver Award in the Packaging Innovation category. The company markets a quality product and does not intend to compete on price.

GLOBAL FOOTPRINT



Yet, innovation is only half the battle in this industry. Atlantis-Pak's main competitive advantage lies in its ability to quickly accommodate the needs and preferences of different consumers across the globe. This should not be taken lightly: cultural preferences, climatic conditions, transport considerations and industry standards differ drastically from country to country. The remarkable speed and adjustability at Atlantis-Pak are made possible by its original manufacturing lines. Unlike its competitors, who buy ready-to-use integrated production lines, Atlantis-Pak has developed its own production lines from imported parts, sometimes doubling the output of a line compared to the industry standard. This innovation in manufacturing was made possible by an in-house team of skilled engineers that the company was fortunate enough to find in Rostov-on-Don, previously home to a large defense plant.

In the early years, Igor Perepletchikov traveled by train with a suitcase full of samples through Eastern Europe, sometimes to nine countries in a single trip, to pitch Atlantis-Pak casings to meat processing companies.

In 1996, during an international trade fair in Germany, the company's products attracted their first significant international attention from a Yugoslavian casings supplier. After success in the Balkan region, Atlantis-Pak hired a young team of English and German speaking sales professionals to reach the attractive German market and the rest of Europe. Germany was pivotal to the establishment of Atlantis-Pak's reputation in Europe as the country boasts a strong "sausage culture" and industry. Atlantis-Pak's fast service response and flexibility were well respected by its European partners. By the year 2000, they had successfully entered various European markets,

"We are the largest atelier of 'bespoke' (meat and cheese packing) products. Standards of production are very different from country to country; size, color and temperature requirements differ. We are unique in that we fulfill orders as we receive them." — Igor Perepletchikov, CEO of Atlantis-Pak

Genie in a Suitcase

As early as 1994, Atlantis-Pak began serving CIS countries like Ukraine and Belarus. Initial efforts to expand internationally were unsophisticated,

which ultimately launched the company's international expansion.

By 2010, the casings market in Russia began to stagnate and this pushed the company to seek global opportunities. In 2013, to ease access to new markets, Atlantis-Pak obtained BRC (British Retail Consortium)

Global Standard certification. Although it took nearly two years of paperwork to obtain this certification, it granted access not only to the UK market but also to many other countries worldwide. In 2014, in order to also reach large Islamic markets, such as Indonesia and the Middle East, Atlantis-Pak obtained International Halal certification. The company had already been certified locally to serve Russia's Muslim population, estimated at over 20 million people, thus facilitating the process.

Atlantis-Pak's international pursuits have been fruitful. Today, it sells to over 80 countries and the share of exports in the company's turnover is close to 60 percent. The economic downturn in Russia also seems to have played to the company's advantage. With a weak ruble, the company works at full capacity to satisfy growing international demand.

portant and is greatly supported by an increase in direct sales as the company can gain valuable feedback and information directly from customers.

Currently, Atlantis-Pak's only production facility is located in Rostov Province, Russia. In 2015, a production and logistical center was opened in the Czech Republic where the company has also begun operating a sales and branding office for Europe. In light of high import duties into the European Union, and other countries such as Brazil, the company is examining opportunities to localize production in Brazil and North Africa to facilitate worldwide distribution. The Czech Republic production facilities would be the first abroad and would serve as a model for plants in other countries.

“We, Russians, think of Russian products lower than they actually deserve. Outside of Russia people think that if we can fly into space then we can produce a good product too.” — Igor Perepletchikov, CEO of Atlantis-Pak

Global Connections

Originally the company penetrated international markets by working with local distributors. Meat processing plants did not want to deal with import and customs issues; therefore, the role of distributor as an intermediary was paramount. Recently, an unsuccessful experience with a dealer in Germany, as well as the general feeling that the company should develop a closer relationship with its clients, pushed Atlantis-Pak to move to a mixed distribution system. In key markets, the company establishes its own representative offices, usually by identifying preferred distributors and bringing them in-house. This new approach has allowed Atlantis-Pak to provide improved customer service and maintain close ties with dealers and clients through local sales offices. From the outset, a close relationship with meat processing companies in Russia was essential to product development. This remains im-

Outlook

The company's product line continues to evolve to surpass current industry standards. In summer 2016 it launched a new production line to manufacture Russia's first barrier shrink films, a product that lends itself to more wide-ranging uses in meat and cheese packaging. According to Igor Perepletchikov, “the team has been eyeing the market of shrink films for a long time and has made the decision to develop this business with the goal to become a leading Russian and later global player in this market”.

Atlantis-Pak continues to look for growth opportunities internationally, particularly in Africa, North and South America, the Middle East and South-East Asia. By offering innovative casings that allow the storage of long-life meat products, they are competitively placed to enter high temperature climates. As they do so, they are looking to internationalize their production and R&D and hope to increase the share of foreign staff in their team.

“I am not going to sell Atlantis-Pak, I would not have paid so much for it. But it could be very interesting to turn it into a transnational player. Why not try?” — Ivan Savvidi, Chairman of the Agrocom Group³

³ Petrova, Yu. 2012. Sausage glamour (in Russian). Magazine «Kommersant Secret of Firm» №9. Available at: <http://www.kommersant.ru/doc/2000667> [Accessed: 30 May 2016].



Sector: Agrochemicals
Established: 1990
Origin: Troitsk, Moscow Region, Russia
CEO: Alexander Uskov
Website: www.avgust.com



Avgust produces chemical mixtures to protect crops for use in industrial and subsistence farming and offers analytical and technical support to its clients

AVGUST'S VALUE PROPOSITION HAS LARGELY BEEN SHAPED BY ITS FIERCE COMPETITION WITH INTERNATIONAL PLAYERS IN THE RUSSIAN AND CIS MARKETS. UNLIKE ITS RIVALS, GLOBAL CHEMICAL CONGLOMERATES, AVGUST OFFERS SPECIALIZED NICHE PRODUCTS AND PERSONALIZED SERVICES TO MEET ITS CUSTOMERS' NEEDS. FROM THE VERY BEGINNING THE COMPANY HAS BEEN BUILDING LONG-TERM RELATIONSHIPS AND THANKS TO IT HAS NOW BECOME A REFERENCE POINT FOR ITS CUSTOMERS. IN 2010, AVGUST DECIDED TO EXPAND ITS SALES MARKETS TO INCLUDE SOUTH AMERICA, ONE OF THE LARGEST AND FASTEST GROWING PLANT PROTECTION CHEMICAL MARKETS IN THE WORLD. AVGUST'S STRATEGIC STRENGTHS CAN BE SEEN IN HOW THE COMPANY QUICKLY ADAPTED ITS PRODUCT AND SERVICE LINE TO CATER TO THE SPECIFIC NEEDS OF ITS NEW LATIN AMERICAN CLIENTS. THE COMPANY IS JUST AT THE BEGINNING OF ITS INTERNATIONAL JOURNEY AND, REGARDLESS OF SOME SETBACKS, IS DETERMINED TO SUCCEED.

Plenteous August

Avgust's founder and general director, Alexander Uskov, graduated from the Moscow Institute of Physics and Technology (MIPT) and subsequently earned a PhD from the Russian Academy of Sciences' Institute of Chemical Physics. The break-up of the Soviet Union triggered the collapse of the "state science" sector, pushing its workforce to seek other means of subsistence. In the early nineties, Uskov tried his hand at several businesses including publishing, brokerage services, real estate, trade and procurement. During this time, he began to distribute plant protection chemicals for large global companies and saw the potential in this type of business. While operating in distribution, Avgust began to study key market players and was able to establish an extensive logistics network with regional warehouses and a wide network of representatives all over Russia and later in CIS countries.

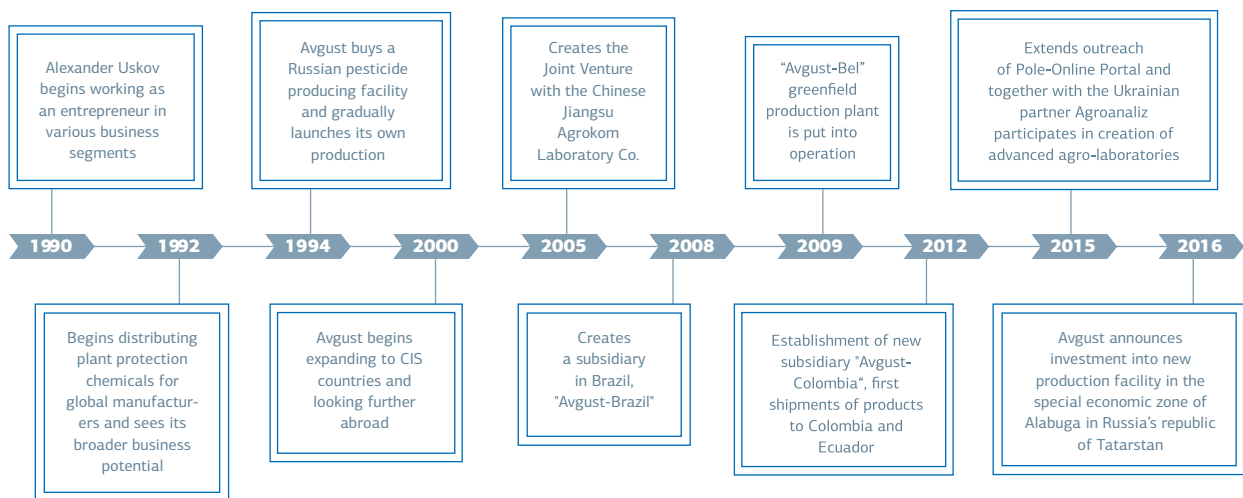
Today, Alexander Uskov is said to be a hands-on leader and is quite involved in the development of ideas and their implementation within the framework of company strategy. He is personally involved in R&D and the launching of new projects through various segments of the value-chain from production, sales and customer support. Alexander Uskov is also the President of the Russian Union of Plant Protection Chemical Producers.

The company has continuously expanded its production capacity. Until recently, its main production unit was the Vurnarsky Plant located in the Chuvash Republic, Russia. Avgust acquired it in the 90s and, over time, has turned it into a state-of-the-art crop protection chemicals producing facilities. In 2009, the company built a new plant in Belarus, which is primarily serving the local market. In 2016, Avgust announced investment of 3 billion rubles into new greenfield facility in the special economic zone of Alabuga in Russia's republic of Tatarstan.

"The main principle, which has been the cornerstone of "Avgust", from the company's founding is a sense of responsibility and honesty when working with our partners." — Alexander Uskov, Founder and General Director of Avgust⁴

4 Avgust, corporate website. Available at: <http://www.avgust.com> [Accessed: 03 June 2016].

COMPANY TIMELINE



“We Grow Well. Together”

Over the course of its existence, Avgust has operated in a highly competitive environment. Unlike its main rivals with large R&D budgets, fully integrated value chains and international clout, Avgust has had to play from other strengths. The company saw an opportunity to compete by providing personalized niche products and services and becoming a trusted partner for its clients. “We grow well. Together” – is the company’s corporate motto today and that is exactly where it saw its main purpose. Helping clients create value by providing technologically advanced chemical mixtures and personalized support has set Avgust apart from its competition. Focus on a single product category, underpinned by strong R&D, made this strategy possible.

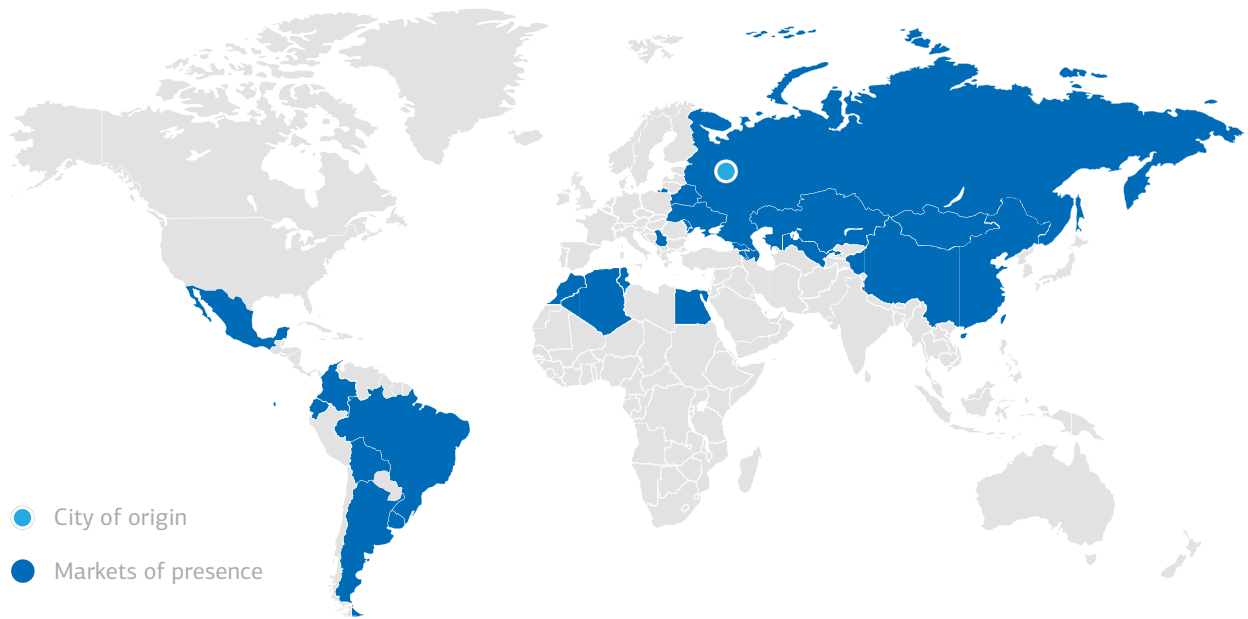
The nature of the industry is such that only constant innovation allows a company to sustain its market position. Therefore, R&D and continuous product updates to adhere to the latest industry trends and standards are necessary for long-term survival. However, Avgust went further. It meticulously studied Russia’s diverse climate zones and crop varieties to create highly specialized product solutions that the competition is simply too big to offer. Today its laboratory has developed more than 90 original mixtures and has registered 30 patents in numerous countries. The value to the client is increased through the complex approach practiced by the company. Avgust covers a range of a client’s needs over the entire life-cycle of a plant by offering complex solutions

which include protectants, herbicides, fungicides, insecticides and growth-regulating chemicals. Since 2010, Avgust has further demonstrated its strength in serving the client by creating the Pole-Online (Field-Online) portal, now active in Russia, Belarus, Ukraine and Kazakhstan. Through this portal, project participants are provided with a constant stream of information about their specific field: text messages, photographs, charts, tables, the results of laboratory investigations, etc. The project participants can also communicate with one another to share information. In addition, Avgust, together with the Ukrainian company AgroAnaliz, has developed a comprehensive agronomic service to help farmers manage their crops. The companies have created a comprehensive network of agro-laboratories throughout Russia to provide farmers with complete information about the growth of specific crops. Participants are also offered agro-consultation services to support the information gathered and help them make critical decisions that will help them achieve the best possible crop yield.

Sowing Seeds for Internationalization

Internationalization for Avgust started with the search for cheaper sourcing options. In order to reduce its dependence on large global suppliers and to reduce the cost of some of its raw materials, in 2005, the company established a joint venture with a Chinese chemical manufacturer to produce some of the substances used in its final products. Although it re-

GLOBAL FOOTPRINT



mains a small operation, over time, the joint venture also started to manufacture final products.

A notable change came in 2010 when Avgust had exhausted its growth potential in the Russian and CIS markets; its share was a stable 20% with the rest firmly divided among large players. Although the Russian/CIS pesticide market is growing significantly faster than the world market and is still far from saturation, it is also subject to serious volatility. In addition, seasonality allows for a limited number of crops per year which also negatively affects demand. Today, the Russian and CIS pesticide markets account for about 2% and 1.5% of the world market respectively, with a growth rate of 10-15% per annum. In light of this, Avgust has decided to commit to international expansion and has approached the task systematically. Following a comprehensive analysis of the world pesticide market, the countries in Latin America were prioritized due to their high consumption and significant growth potential. In addition, in Latin America, there is no seasonality issue, making the region even more attractive. The management also considered the feasibility of market penetration before deciding on its target. For example, the USA, though a very lucrative market, would have been too difficult and costly to penetrate due to the presence of powerful incumbents. Likewise, China, the largest producer of active substances for crop protection, is marked by tough local competition, therefore, despite Avgust's JV with a Chinese firm, the company decided against the Chinese market.

The first South American orders, to Colombia and Ecuador, were fulfilled in 2012. It soon became evident

that a barrier to the entry of new markets is certification. For instance, the registration of new products in Brazil took more than five years. Since certification is ongoing, the company has designated special subdivisions to register plant protection chemicals in Brazil, Ecuador, Colombia, Argentina, Venezuela, Morocco, Tunisia, Algeria and Serbia.

The creation of representative offices during the early stages of entry into new markets underlines the company's long-term commitment and dedication to building credibility with local clients. Although the company deploys distributors to sell its products, it has invested a great deal of effort to study the local specifics and client needs. It has already developed 15 new formulations for Latin American countries and actively engages with local clients to test their effectiveness. The company website is available in English, Portuguese and Spanish.

No-Till for Russia

Despite its relatively small size, Avgust has become an industry pioneer and influencer when it comes to the latest technological trends in agriculture. The introduction of no-till farming in Russia is one of the initiatives that the company actively promotes. No-till farming, also called zero tillage, is a way of growing crops from year to year without disturbing the soil through tillage. Years of increased mechanization and intensification in agriculture

have led to more soil erosion and degradation. The problem is particularly acute in Russia where close to 60% of farmland is estimated to be depleted. The development and adoption of the no-till system is a way to intensify activity and increase efficiency without degrading the soil; in fact, Avgust's system even improves soil functionality.

Avgust has been promoting no-till farming for the past ten years. The company works on different fronts. It actively engages with farmers and organizes field trips to other countries, especially Latin America, where till-farming has been widely introduced. It partners with Russia's leading agrarian universities and research institutes and divulges its message at numerous conferences and workshops globally.

Outlook

Avgust aims to become a Top-10 global chemical plant protection products company. It focuses on growing markets and plans to expand its presence in Latin American and enter new emerging markets such as South East Asia, the Middle East and Africa. In fact, Avgust has already obtained certification for its products in Morocco and Serbia and is in the process of registering products in Algeria, Tunisia, and Mexico.

"If we can manage to beat our competitors — the world's leading pesticide business in Russia on these indicators — we do not see a reason not to do the same in other markets, taking into account local conditions, of course." — Alexander Uskov, Founder and General Director of Avgust⁵

⁵ Expert. (2015). Why do you need export? Special report / export potential of mid-sized business (in Russian). Expert №9 (935). Available at: <http://expert.ru/expert/2015/09/zachem-vam-eksport/> [Accessed: 03 June 2016].



Sector: Engineering & Robotics
Established: 1990
Origin: Saint Petersburg, Russia
CEO: Mikhail Fedosovsky
Website: www.diakont.com
www.diakont.ru



Diakont develops, manufactures and services high-tech solutions that enhance the safety and economy of the energy, pipeline, automation, and manufacturing industries

DIAKONT'S FOCUS ON THE INTERNATIONAL MARKET CAME RATHER EARLY AS ITS FIRST "HIGH-TECH VISION" PRODUCTS FOR THE NUCLEAR INDUSTRY WERE QUICKLY SOLD TO MAJOR NUCLEAR ENERGY PRODUCING COUNTRIES INCLUDING SWEDEN AND OTHER EUROPEAN STATES. HOWEVER, IT WAS THE USA WHICH BECAME THE KEY MARKET FOR DIAKONT AND, IN FACT, TODAY THE COMPANY ACCOUNTS FOR 60% OF AMERICAN MARKET FOR RADIATION-TOLERANT CAMERAS. OVER TIME, DIAKONT WAS ALSO SUCCESSFUL IN THE DIVERSIFICATION OF ITS BUSINESS TO INCLUDE COMPREHENSIVE PRODUCTS AND SERVICES FOR THE OIL AND GAS INDUSTRY. MORE RECENTLY, THE COMPANY HAS ALSO LAUNCHED ELECTROMECHANICAL ACTUATORS WHICH, IT BELIEVES, COULD HAVE GREATER APPLICATIONS IN OTHER INDUSTRIES INCLUDING AUTOMOTIVE, AEROSPACE AND SHIPBUILDING. TODAY DIAKONT HAS MANUFACTURING FACILITIES IN RUSSIA, THE USA AND IS BUILDING A PLANT IN ITALY FOR THE PRODUCTION OF ELECTROMECHANICAL ACTUATORS.

Flying High

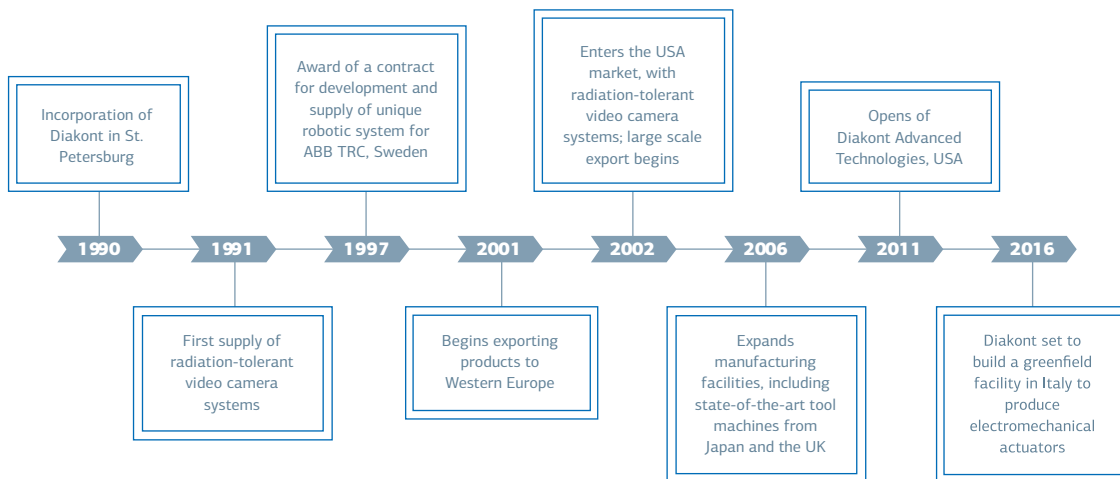
Mikhail Fedosovsky is the founder and general director of Diakont and is responsible for guiding the strategic direction of the corporation. Fedosovsky graduated from Leningrad Institute of Technology in 1983 and also holds a PhD in Technical Science from the acclaimed Polytechnic University of St. Petersburg. He is the author of several academic papers and holds a number of international patents. Before the establishment of Diakont, Fedosovsky had a successful career as a production manager in the manufacturing industry and as a scientist at the leading research center in the Soviet Union for the development and manufacture of photoelectronic devices, Electron.

Most research pursuits during the Soviet era were aimed at the strengthening of the military-industrial complex; however, following the collapse of the USSR, Fedosovsky began to look for opportunities to apply his technologies to the civilian sector. His first contract was for the Murmansk Shipping Company, a state-owned enterprise, which operated nuclear-powered icebreakers in the Soviet Arctic.

Fedosovsky supplied radiation-resistant television cameras to control atomic reactors in the icebreakers. In the late 1980s, Fedosovsky set-up a cooperative, the only type of private ownership allowed at the time, which marked the beginning of Diakont. He then began evaluating how he could apply his work to nuclear power plants.

In 1990, Fedosovsky incorporated Diakont, with the mission of enhancing nuclear safety through the application of high technology. In 1994, Diakont developed nuclear resistant cameras for the remote visual inspection of fuel levels – these were sold in Russia, Ukraine and China. For R&D, Fedosovsky involved some of the best scientists in the country, many of whom were hired on a project basis as they refused to leave prestigious research institutes to join a dubious venture in the free market. For his executive team, Fedosovsky built a team composed largely of talented people with managerial capabilities that were promoted from within the company; he generally avoided hiring people with Soviet managerial backgrounds to avoid organizational biases. In the 1990s, the company was not yet profitable and was sustained largely by Fedosovsky's other businesses, which included sugar trading among others.

COMPANY TIMELINE



Fedosovsky is the initiator and the head of ITMO University's Chair "Systems and Technologies of Tech Security" within the Faculty of Control Systems and Industrial Robotics. In 2009, Fedosovsky became a laureate of the Russian Government Award in Science and Engineering.

As the company now produces much more sophisticated control and inspection systems, its primary challenge is testing. In this industry, there is no room for error, which eliminates the possibility of testing in a "real-life" setting. As a result, innovation is not in the product itself but in the algorithm

"A man should have love for a high game, earning money is not motivation." — Mikhail Fedosovsky, Founder and General Director of Diakont

Looking into the Core

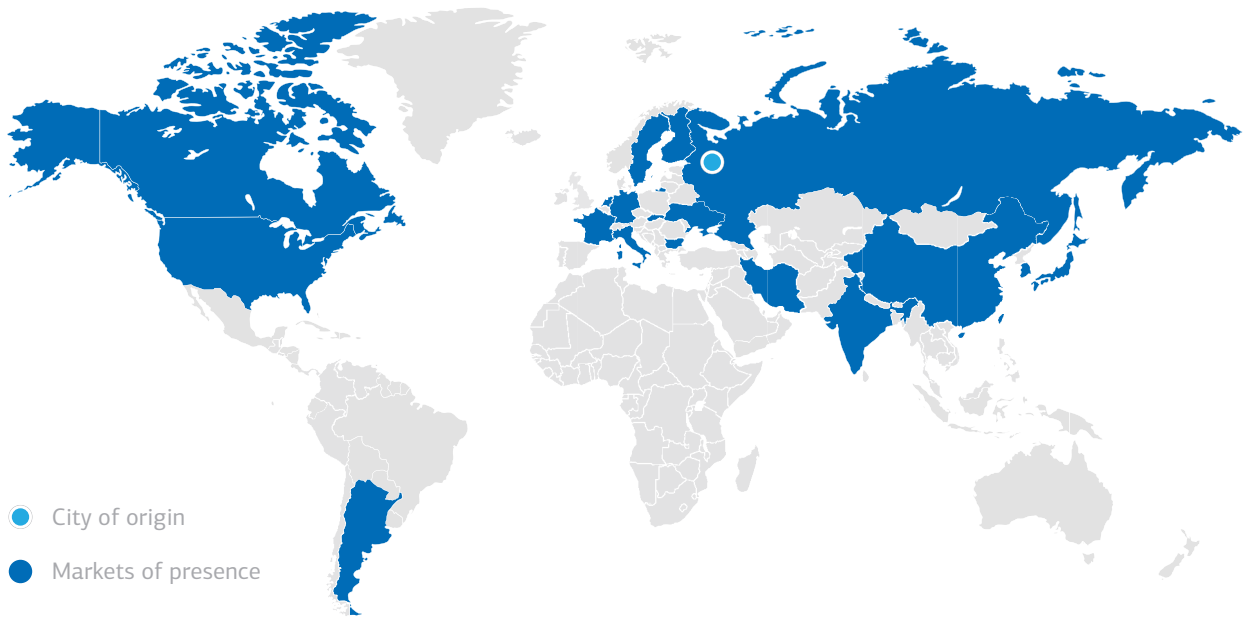
Anuclear reactor's core is where nuclear fuel is lodged and nuclear reactions take place to generate heat and energy. The inaccessibility of the core and the high risks associated with its malfunctioning make its control and inspection a critical and difficult task. In 1991, Diakont created a revolutionary radiation-resistant case for cameras. The innovation was simply in the material used to make the case, a development that dated back to Fedosovsky's time as a scientist at the Electron Research Institute. Although this was essentially a video camera "wrapped" in radiation-tolerant material, it was an important technological breakthrough at the time. Later, Diakont was able to enhance the system and began developing robotics that was able to do repairs and maintenance — in particular the robots were able to monitor the reloading of uranium rods within reactors.

used for the testing of technology to ensure safety in the field. Diakont has received patents for its unique testing methods and it is this innovation that sets it apart from the competition.

In subsequent years, Diakont differentiated its service offering and began applying its remote inspection technology to the gas industry. Today, Diakont offers a full array of products and services for the oil and gas industry including surveys and inspection services for onshore and offshore pipelines and rigs, mapping services for pipelines, cleaning services for pipelines that improve flow efficiency and much more.

Led by their technology-minded chairman, Diakont often pursues technology partnerships with universities, as they have in Russia with ITMO University and various government entities. Abroad, Diakont was awarded a USD 1 million grant by the State of California Energy Commission to demonstrate and commercialize a system to accurately detect, locate, and measure defects in pipeline girth. The agreement included USD 1.6 million in match funding from the recipient (Diakont).

GLOBAL FOOTPRINT



“The innovation in the nuclear industry is not the product itself but how it is being tested.” — Mikhail Fedosovsky, Founder and General Director of Diakont

Zooming out Internationally

Diakont’s international ambitions were present from early on. In 1997, Mikhail Fedosovsky was acquainted with Peter Schaub, the Swedish great-grandson of the influential Russian architect Wilhelm Schaub, who coincidentally worked for ABB. Schaub helped secure Diakont’s first major international contract with ABB, in Swedish krona, which helped pull the company through the 1998 economic crisis. This first contract led to a series of engineering jobs in Western and Northern Europe and Diakont began formally exporting its products to Europe in 2001.

Once the company had introduced the serial production of radiation tolerant cameras, its focus turned to conquering the USA, which had by far the largest number of nuclear reactors in the world. In 2002, the company began exporting radiation-tolerant video camera systems to the American market. Diakont initially worked with a distributor, Remote Ocean Systems (ROS), who supplied GE. Later, Westinghouse,

the major nuclear power company, became interested in Diakont’s technology and this pushed Fedosovsky to open an American representative office for sales and service. Diakont opened its San Diego facility in 2011 to facilitate the expansion of Diakont’s USA nuclear industry business and to support existing customers. Today, the company accounts for 60% of American market for radiation-tolerant cameras and, as of 2014, exports accounted for 25% of total revenue.

In 2016, Diakont announced plans to open a green-field production facility in Tuscany, Italy at an estimated cost of EUR 35 million that would employ an estimated 300 local staff. Although Fedosovsky admits that he chose Italy because of his infatuation with the country and its architecture, having an Italian presence also means easier access to European and American markets. The plant is being built in a small town where Fedosovsky has built a good relationship with the local community. The strict environmental guidelines and regulations in the Italian region have pushed the company in the innovative and environmentally-friendly development of the plant. The facility is anticipated to begin operations by the end of 2018 and is expected to become

a research and development center in the optics, mechanical and precision engineering sectors. It is expected that ITMO University in St. Petersburg, Fedosovsky's Alma Mater, will closely collaborate and have its own office within the Italian plant.

Scaling the Science

For many Russian engineering companies, moving to mass production is a rite of passage for internationalization. These companies are mainly driven by technological pursuits and have historically handcrafted individual products in a way that is very much divergent from modern production lines. Nevertheless, as a company grows, the need for automation and scaling-up operations becomes vital to survival.

Diakont first began contemplating mass mechanization when it was prompted by international markets. In 2001, ECA Hytech, the French company, noted that although Diakont's solutions were competitive, they were looking for a more standardized product. Increasing demand from such markets as the USA also signaled the need for serial production. This development did not come easy. First of all, it required a change in the company's mentality as it now had to

complement its scientific outlook with commercial considerations. Secondly, the company needed to find a way around its sourcing problem as supply of components of consistent quality continued to be a challenge in Russia. Besides working out issues with suppliers, Diakont also reverted to making some of the components in-house. Over time, Diakont overcame the challenge and introduced the serial production of radiation-tolerant cameras.

Outlook

Today Fedosovsky's main plans are about expanding the company outside of the highly specialized nuclear and gas sectors into the mass-industrial markets. Diakont is taking a step forward in the mass production of electromechanical actuators, which are expected to open up entirely new market segments for the company. These actuators are more precise, have greater power and are smaller in size than their hydraulic and pneumatic predecessors. This development has significant prospects as the technology is destined for a range of sectors including the automotive, aerospace, shipbuilding and packaging industries.

**"It was a matter of self-respect to bring Diakont to the international market." —
Mikhail Fedosovsky, Founder and General Director of Diakont**



Sector: Electrical equipment
Established: 1997
Origin: Ryazan, Russia
CEO: Dmitry Nalagin
Website: www.ltcompany.com



Lighting Technologies designs and manufactures innovative light solutions for the indoor, outdoor, commercial, industrial, residential, emergency and medical sectors

LIGHTING TECHNOLOGIES (LT) HAS EARNED ITS SUCCESS IN THE RUSSIAN MARKET BY OFFERING QUALITY AND HIGHLY COMPETITIVE LIGHTING SOLUTIONS. INITIALLY, LT WAS VERY MUCH FOCUSED ON STRENGTHENING ITS POSITION IN RUSSIA. AS THE CONSTRUCTION INDUSTRY BEGAN TO BOOM IN THE LATE 1990S, THE COMPANY WAS QUICK TO RESPOND TO EMERGING CUSTOMER NEEDS. IN 2011, LT ACQUIRED AN EMERGENCY LIGHTING COMPANY IN SPAIN (TRQ) IN ORDER TO EXPAND ITS PRODUCT OFFERING AND BECOME A KEY SUPPLIER IN THIS SPECIALIZED CATEGORY. MORE RECENTLY, THE COMPANY HAS OPENED A LOGISTICS AND PRODUCTION FACILITY IN UKRAINE TO AID IN DISTRIBUTION AND REDUCE IMPORT DUTIES INTO EUROPE. YET, IT WAS THE DECISION TO ENTER THE INDIAN MARKET THAT HIGHLIGHTED A CHANGE IN THE COMPANY'S INTERNATIONAL STRATEGY. IN RECENT YEARS, AS THE RUSSIAN MARKET BEGAN TO STAGNATE, LT BEGAN LOOKING EASTWARD FOR NEW GROWTH OPPORTUNITIES AND COMMITTED TO THE INDIAN MARKET WITH A NEW PRODUCTION AND R&D FACILITY IN BANGALORE. THE NEW PLANT IS MEANT TO SERVE THE LOCAL MARKET WHERE IMPORTANT GROWTH IS EXPECTED.

At First Light

Lighting Technologies (LT) was established in 1997 by its two founding partners Dmitry Nalagin and Sergey Mishkin. At the start, while Nalagin and Mishkin were still students at Moscow State University of Commerce, they became involved in the import and sale of lighting fixtures. Later it became clear that it would be more profitable to produce lighting fixtures in Russia and so the friends decided to build a production plant.

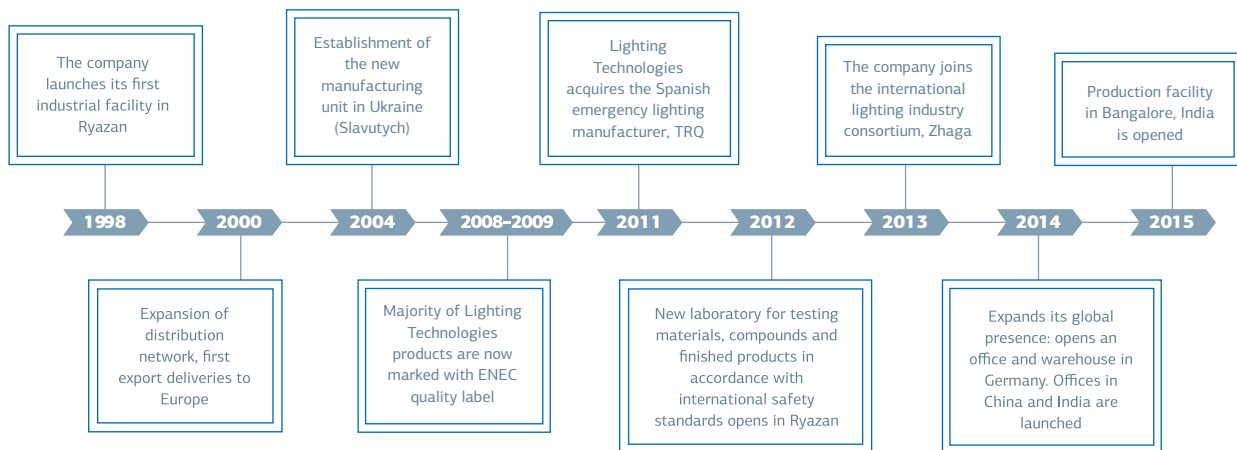
The men quickly realized that they were lacking the expertise required to build such a plant and so they enlisted the help of experienced Indian partners based in the United Arab Emirates with whom they had worked before. They chose a space in Ryazan that

was previously a repair facility for Kamaz trucks and completed the factory by 1998. At this time, their Indian counterparts, Satish Ninkileri and Gopakumar Pazhedath, were each given a 5% stake in the company as part of the deal. Part of the company's success can be attributed to the dynamics between partners, who work well together and have a highly complementary skill-set.

At first, the Russian market showed great growth potential as consumers were increasingly requesting European style furnishings in the post-Soviet era. However, the company's first year proved to be tumultuous as the launch of its production facilities coincided with the economic crisis of 1998. Luckily, they had delivered their first order and received payment for it before the onset of economic turmoil, allowing them to survive the downturn.

"I thought that I was going to Russia for a one-year project but instead I stayed." — Satish Ninkileri, Vice-President of Engineering of Lighting Technologies

COMPANY TIMELINE



Nothing Short of Quality

LT prides itself on the manufacture and design of quality, energy-efficient and price competitive lighting solutions. The company's initial value proposition very much coincided with needs of the booming Russian construction market. As the country saw shopping malls, business centers and industrial parks spring up, it also saw the demand for lighting fixtures grow. The highly competitive environment attracted many market players, both international and local. Foreign companies offered high-priced fixtures, while Russian manufacturers lacked the desired quality. This supply gap provided a great opportunity and LT decided to focus on this segment. This was not an easy task, in the beginning, the company admits that they were just copying European designs and making them cheaper by localizing production and sourcing.

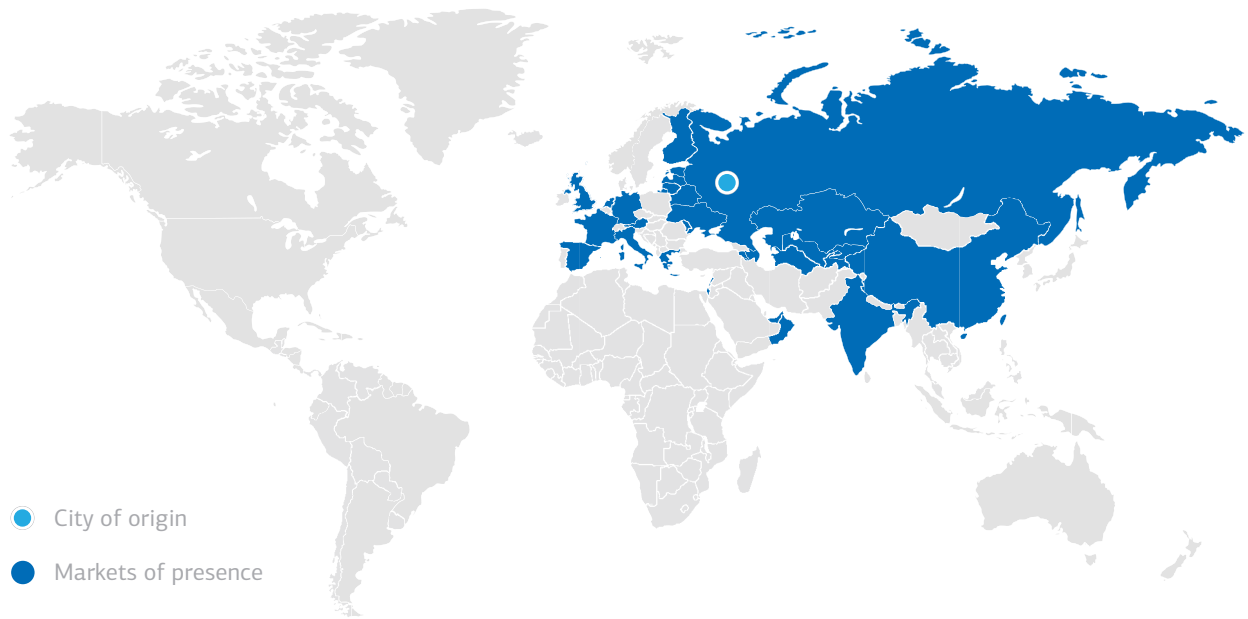
Yet, over time LT grew to become the industry leader by bringing the latest trends to Russia. Today, the company is rapidly increasing the use of LEDs, from 3.4% in 2012 to 46% in 2015. It also works to innovate and has a strong R&D department that allows it to explore new avenues. Most recently, the company has been involved in the development of Human Centric Lighting, which is expected to increase the health and efficiency of workers in indoor settings.

The company works to educate people about the benefits of this kind of lighting. In line with this innovation driven mindset, LT has been supporting a startup in the area of wireless technologies — Deus LLC, which is a resident of the Skolkovo Foundation and is the first Russian company and one of the first in the world to produce wireless drivers for LED fixtures. This company is led by a team of young engineers working to develop advanced wireless domestic lighting control systems. LT works with leading European and Russian designers to stay at the forefront of product and market trends. An example of this is the joint project with the Russian designer, Artemy Lebedev, with whom LT developed an innovative zebra crossing that integrated lights in order to better see pedestrians.

Being highly focused on quality, LT has also obtained various international quality certifications and has developed its own usability norm, SUN (Sustainable Usability Norms), which exceeds existing standards, on the Russian market. To control quality and cost, LT has increasingly chosen to produce components in-house as they have found reliable suppliers difficult to find. The company has its own plastic injection molding facility and die casting aluminum workshop, in addition to producing its own drivers and optic lenses among other components. In-house production also allows greater flexibility and is an important step in offering tailor-made solutions for clients, particularly as LT expands its large project business.

“Wide assortment, flexibility and speed are our success factors in Russia. International manufacturers do not have production facilities in Russia and thereby cannot satisfy clients’ needs as effectively as we do.” — Pavel Soshnikov, Vice-President of Sales and Marketing of Lighting Technologies

GLOBAL FOOTPRINT



Betting on India

Although LT had been trying to sell abroad from the very beginning, for many years, the company remained largely focused on the growing Russian market. It is only recently, as the Russian market slowed, that LT has begun focusing on international sales, which have grown from 5% to 18% in two years, with the increase primarily attributed to India. The company's first serious encounter with international markets took place in 2008 when it acquired a Spanish plant, TRQ, specialized in emergency lighting. The purchase was mainly intended to strengthen LT's position in Russia. Today LT accounts for 30% market share in the emergency lighting segment in Russia. TRQ was originally a supplier for LT and the management team has largely remained the same after acquisition. Despite assets in Spain, LT's European expansion has been a challenge. The company's main difficulty is positioning as a Russian company. The company has increasingly positioned itself as international to alleviate this perception. As Western European distributors were not forthcoming in working with LT, the company decided to negotiate with end-clients directly and pursue only large projects in Europe. LTT has opened representative office in Munich and, since 2004, bases its European production also from its Ukrainian plant.

The big turn in LT's international strategy was when it set its sights on India. Unlike in previous years, when the company channeled all its efforts into strengthening its position in Russia, now, it established itself in India in order to mitigate a stagnating Russian market. Nalagin and Mishkin began evaluating the potential of the Indian market and opened an office there in 2014 with the help of their Indian partners. In 2015, LT opened a large production plant with R&D and design facilities near Bangalore. The new plant is meant to serve the local market where significant growth is expected due to a boom in the construction sector. As demand for lighting solutions goes up, LT prepares to seize the momentum to move ahead of the relatively weak local competition. The company hopes to thrive on assortment, flexibility and speed of delivery as they did in Russia. As LT establishes its position in India, it is faced with new distribution challenge. With the country being highly fragmented, there are no national distributors and representative offices in each state have differing dynamics. Unlike in Russia, where the company is attuned to the market through its network of trusted distributors, the situation in India is pushing the company to introduce a wider sales network across the country to support direct sales.

“China is big but we are late for it. India today is like Russia in 2000s — construction is booming.” — Pavel Soshnikov, Vice-President of Sales and Marketing of Lighting Technologies

From Vendor to Solution Provider

In the beginning, Lighting Technologies was a distributor and then evolved into a producer of lighting solutions. In Russia, this allowed them to build on a vast network of distributors, which was established early on. The strategy of working with distributors worked particularly well for new-built projects, which were thriving at the time. The wide distribution network ensured national coverage and proximity to the customer, which was paramount as being the first-to-market eventually determined market leadership.

In recent years, LT's management made the decision to move towards high-margin project sales, which imply direct contracts with large clients. In 2013, these accounted for 36% of the company's revenue and increased to 55% in 2015. LT has begun expanding its service offering to become a complete solution provider, also growing in-house technical competence to provide client support. In 2014, LT realized a project for the global retailer Auchan for its hypermarket in Moscow's Aviapark shopping center and has now been added to the company's "brand book" for future projects. In addition, LT has also been implementing a lighting project for the

Russian retailer, Sportmaster. These projects are primarily focused on the upgrade of lighting systems in retail and commercial spaces. Increased vertical integration makes the company well-positioned to offer greater value and tailor-made solutions for clients. This increased focus on made-to-measure solutions coincides with important growth in commercial (54%), industrial (29%), medical and outdoor segments.

Outlook

The company has plans to bring its overall share of international sales to 60%. LT plans to become a top-20 player globally and top-5 player in India. The management is also hoping to leverage its position in India to enter the Middle-East. From the start, LT's sights have been set on Europe and although they believe to have a competitive product offering, they have not yet fully delineated their European market strategy.

Lighting Technologies continues to explore new applications of its products, particularly in the growing medical and outdoor segments, where the recently developed explosion-proof lighting can be applied.

Sector: Medical equipment

Established: 1992

Origin: Ivanovo, Russia

CEO: Aleksey Shubin

Website: www.neurosoft.ru



Neurosoft designs and manufactures diagnostic electrophysiological equipment for clinical neurophysiology, functional diagnostics and sports medicine

NEUROSOFT IS A TRUE GLOBAL NICHE PLAYER. WHILE WORKING IN THE RELATIVELY STABLE MEDICAL DEVICE INDUSTRY, THE COMPANY HAS BEEN HISTORICALLY STRONG AT THE DEVELOPMENT OF INCREMENTAL INNOVATIONS AND INTEGRATION OF NEW TECHNOLOGIES. SINCE ITS ENTRY INTO FOREIGN MARKETS IN 2004, NEUROSOFT HAS OBTAINED CERTIFICATIONS FOR MAJOR INTERNATIONAL MARKETS, INCLUDING THE USA, WHICH HAS BEEN TRADITIONALLY CHALLENGING. NEUROSOFT'S DEDICATION TO QUALITY CONTROL IS REFLECTED IN HOW THE COMPANY ORGANIZES ITS PRODUCTION WITH MANY OPERATIONS BEING BROUGHT IN-HOUSE TO ENSURE QUALITY. GOING FORWARD, THE COMPANY EXPECTS GROWTH TO COME FROM INTERNATIONAL MARKETS WITH ITS MAIN FOCUS BEING THE USA, CHINA, TURKEY AND BRAZIL. BESIDES EXPANDING GEOGRAPHICALLY, NEUROSOFT ACTIVELY SEEKS NEW APPLICATIONS FOR ITS PRODUCTS AND NEW BUSINESS SEGMENTS. ITS RECENT PROGRESS WITH TRANSCRANIAL MAGNETIC SIMULATORS (TMS) MACHINES IN THE USA AND ITS PURSUIT OF THE EMERGING SEGMENT OF UNIVERSITIES AND RESEARCH INSTITUTES ARE QUITE PROMISING.

Accidental Innovation

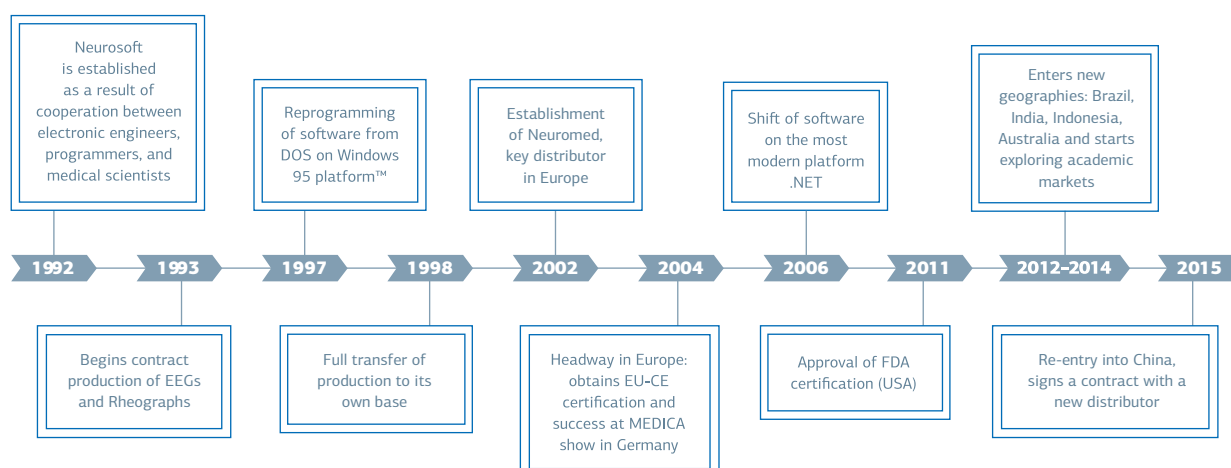
Neurosoft was established in 1992 by professors and researchers from the Ivanovo State Power Engineering University (ISPU) and Ivanovo State Medical Academy. The group was brought together by chance. Doctors from the local hospital referred to the ISPU engineers for help when their electroencephalograph (EEG) machine, used to record electrical activity in the brain, had broken down. At the time, an EEG represented a stand-alone, rather bulky piece of equipment that included a printer among other parts. It was the printing parameter that malfunctioned and its replacement was expensive. The engineers decided to develop a device which would digitalize the signal and transmit it to a computer; which in turn would allow to use a standard printer. Unknowingly, the team created a computerized EEG, which was an innovation at the time. The news quickly spread in the industry and the team then set up the company. Alexey Shubin, one of the founders, was to lead the new venture. In the beginning, Neurosoft did not have its own

production and relied on contract manufacturing at another company in Ivanovo. Neurosoft engaged in the development of software and hardware, while the actual production of the devices was outsourced. In 1996, the company finally moved from its cramped office into a larger space, which accommodated production facilities of the young company. The team was enthusiastic and they quickly set up their own production facilities and expanded the staff.

Certified to Sell

Neurosoft is a rare player in the Russian medical equipment market as it is largely dominated by international players with Russian companies mainly operating in less technological segments. Yet, Neurosoft is different; being composed of a highly scientifically-minded team, the company has prioritized innovation from its early days. Although the electrodiagnostics segment generally disallows major breakthroughs, Neurosoft is continuously busy with a large number of incremental innovations that

COMPANY TIMELINE



ultimately define the product's success on the market.

More than half of Neurosoft's employees are programmers because software is very much the core of electrophysiological diagnostic equipment: the more high-performing the software, the smaller and ultimately cheaper the device as more data analysis is transferred from the specialized hardware to a regular computer. Technological trends also drive Neurosoft's latest developments. The company was one of the first in the world to move from DOS to Windows and to introduce mobile, Android-based devices.

The team's decision to enter international markets was highly influential in developing the company's long-term competitiveness. Due to high competition on foreign markets and higher quality requirements, some products and features were first developed specifically for the needs of foreign clients and only then were they introduced on the Russian market. To enter foreign markets, the company also needed to obtain local certifications, which in this case include not only the approval of a certain product but also certification of the entire manufacturing process and quality control procedure. What was a laborious effort in the beginning paid off well in the long-term. A major milestone in the company's development

was its first FDA certification in 2011. Neurosoft had worked on it for 3 years and became one of a very few Russian companies to pass the strict American agency's requirements. By preparing to enter international markets, Neurosoft advanced its operational competencies and established a well-run mechanism to obtain certifications. The company stresses that the time and effort committed to this process should not be underestimated. While countries such as India accept European or USA certification, many other ones require the passing of local requirements. With Neurosoft operating in over 70 different countries and launching new products on a continuous basis, certification became a routine and essential part of doing business.

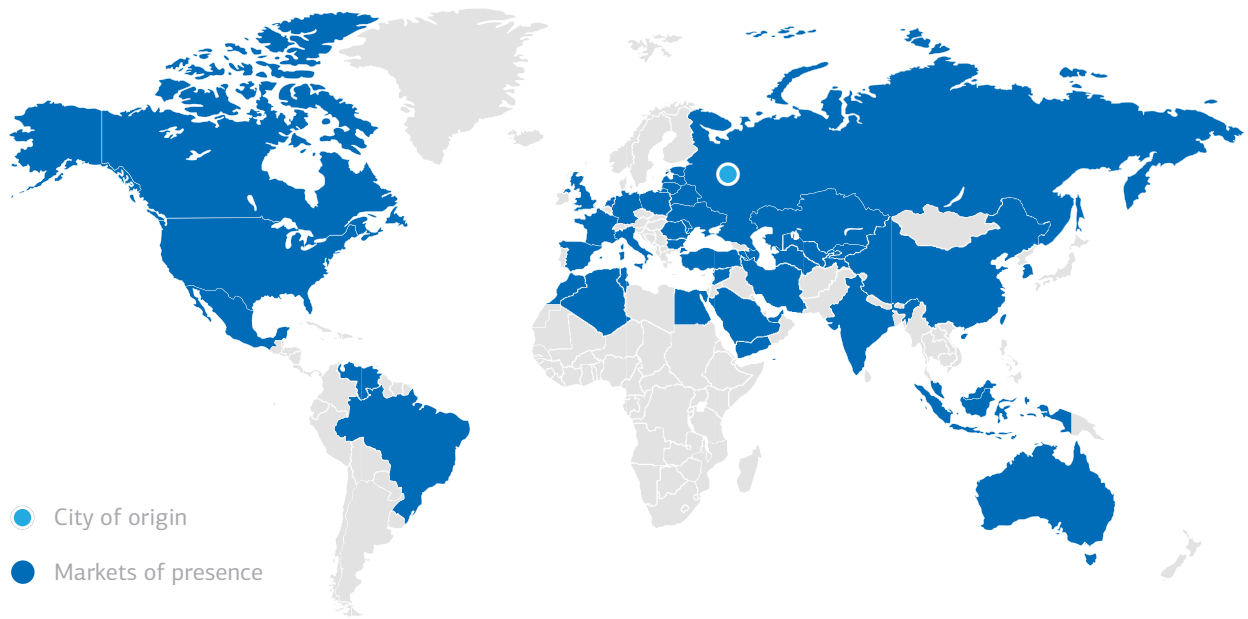
“Our Dealers Are the Company's Employees”

At the beginning of new millennium, Neurosoft's management started thinking of global expansion based on its 10-year experience of core medical

“With a light smile, we recall our first development. It was a device that digitalized data from the analog EEG machine... In fact, it was just an attachment to EEG machines produced by other manufacturers, not a self-dependent device. Nevertheless, it was our start.” — Alexey Shubin, President of Neurosoft⁶

⁶ Neurosoft, corporate website. Available at: <http://neurosoft.com> [Accessed: 08 June 2016].

GLOBAL FOOTPRINT



equipment development in Russia. At the time, the company already had high penetration in Russia and was looking for new clients. The company's pursuits coincided with important developments in the international market for medical equipment, which Neurosoft was not actually aware of at the time.

Before the year 2000, producers of medical equipment tended to concentrate on domestic markets. However, the early 2000s were highlighted by significant M&A activity. As a result, merged companies streamlined their distribution channels and the market saw most dealers being freed up and looking for new vendors. It was one of such distributors in France, Pierre Scholl, who contacted Neurosoft in 2002. The team immediately responded to the request by sending its devices. Pierre Scholl answered that "these devices are not bad but nobody will buy them", referring to their poor interface but agreed to give them a try. He became the official representative of Neurosoft in Europe and guided the company's application for ISO and later CE certification. The approval from EU authorities came during the MEDICA 2004 exhibition in Dusseldorf, Germany. The company used the event to officially launch its global expansion and sign its first international contracts. Today Pierre Scholl continues to oversee Neurosoft's operations in Western Europe and North Africa.

As the company continued to build its international distribution network, it placed great emphasis on finding 'chemistry' and establishing personal relationship with its partners. In fact, Nickolay Smirnov,

Neurosoft's Commercial Director, admits that in the majority of cases their dealers have some kind of Russian connection: some studied in Russia, others are fond of its culture.

Currently, the company exports over 50 percent of its equipment to over 73 countries globally; its priority markets outside of Russia are the USA, China, Turkey and Brazil. In the USA, the company works with a leading neurologist. In Brazil, it has partnered with a former doctor turned businessman and is now actively penetrating the market with his assistance. The company notes "a difficult situation" with distributors in China but is determined to establish itself in this lucrative market. It has recently signed a contract with a new Chinese partner who has specifically established a separate subsidiary to promote Neurosoft's products. In the recent years, Neurosoft has also recorded a rise in sales in high growth markets such as India and Indonesia.

No Detail is Too Small

The healthcare industry sets high standards for Neurosoft's performance because even a small malfunction can have a tremendous effect on the outcome of the diagnostics. Neurosoft is very careful to uphold its reputation, most especially because of the effort that it took for the company to earn its

international recognition and clients' trust.

Although the development of software and programming constitute the core competence of the company, Neurosoft has also brought in-house a whole range of auxiliary operations. The decision to integrate these was both to ensure quality control and to control costs. On the one hand, Neurosoft notes that it continues to be difficult to find reliable suppliers and outsourcing options in Russia. As the result, in 2001 it mastered vacuum forming technology used in mass production of plastic goods and in 2006 introduced silicon rubber molding technology. On the other hand, due to its small size Neurosoft has low buying power, which makes it costly to import necessary components from abroad. For example, Neu-

Outlook

In the near future, the company expects its growth to come primarily from international markets. Besides conquering new geographies, Neurosoft actively seeks new applications for its technologies and new business segments. For example, recently, Neurosoft has had commercial success with its Transcranial Magnetic Simulator (TMS) machines. Although the product had been on the market for some time, studies in the USA have recently shown that this machine is effective in the treatment of depression. This is an excellent market opportunity and sales for this product have multiplied.

“Standard practice is to outsource all non-core activities, whereas at Neurosoft, we produce everything. We just can't trust anything to be outsourced.” — Nickolay Smirnov, Chief Commercial Officer of Neurosoft

rosoft makes USB cords in-house because existing options either do not meet the required specifications or are too expensive.

As the company tries to balance these considerations, it is always on the lookout for new configurations. At the moment, Neurosoft explores the opportunity to outsource some of its production to Western Europe, which could be financially beneficial as it would avoid import duties and also increase brand perception as not “Made in Russia”.

The company is also evaluating the emerging segment of universities and research institutes. They already have connections with universities in Hong Kong, Utrecht, Rotterdam and Los Angeles. Their biggest interest in this segment is obtaining references for tailor-made and advanced products that would give them leverage for their core market segment. The university segment is also seen as a good way to enter new geographic markets.



Sector: Information
& Telecommunication Technologies
Established: 1992
Origin: Moscow, Russia
CEO: Andrey Sviridenko
Website: www.spiritdsp.com
www.videomost.com



SPIRIT DSP develops video conferencing, AI, telecom and navigation software and licenses it to global technology companies. SPIRIT has pioneered development of indoor navigation software for mobile devices and sold its subsidiary SPIRIT Navigation to California-HQ-ed global public technology company

FROM ITS START AS A RUSSIAN ‘GARAGE STARTUP’, SPIRIT DSP HAS ACHIEVED GLOBAL SUCCESS BY RELYING ON THE TECHNICAL EXPERTISE OF ITS COMPUTER SCIENTISTS AND BY ADJUSTING TO MARKET DEMANDS AND CHALLENGES IN A TIMELY MANNER. AS THE COMPANY BEGAN DEVELOPING HIGH QUALITY VOICE AND VIDEO COMMUNICATIONS ENGINES AND ITS COMPONENTS IN ADDITION TO TELECOMMUNICATION AND NAVIGATION TECHNOLOGY TO SUIT GLOBAL NEEDS, THEY QUICKLY ACHIEVED INTERNATIONAL SUCCESS. SPIRIT DSP RESPONDED TO A GAP IN SUPPLY THAT LARGE GLOBAL IT COMPANIES PREFERRED NOT TO DEVELOP THEMSELVES AS IT WASN’T PART OF THEIR CORE BUSINESS. THE COMPANY’S WORLDWIDE EXPANSION WAS FACILITATED BY ITS RELATIONSHIP AMONG GLOBAL IT PLAYERS, WITH WHOM THEY WERE ABLE TO ENTER NEW MARKETS. INFORMATION TECHNOLOGY (IT) IS NOW THE LEADING, NON-NATURAL RESOURCE RELATED EXPORT INDUSTRY IN RUSSIA AND SPIRIT DSP IS ONE AMONG MANY SOFTWARE COMPANIES WITHIN THIS THRIVING ECONOMIC CLUSTER.

Foolhardy Students

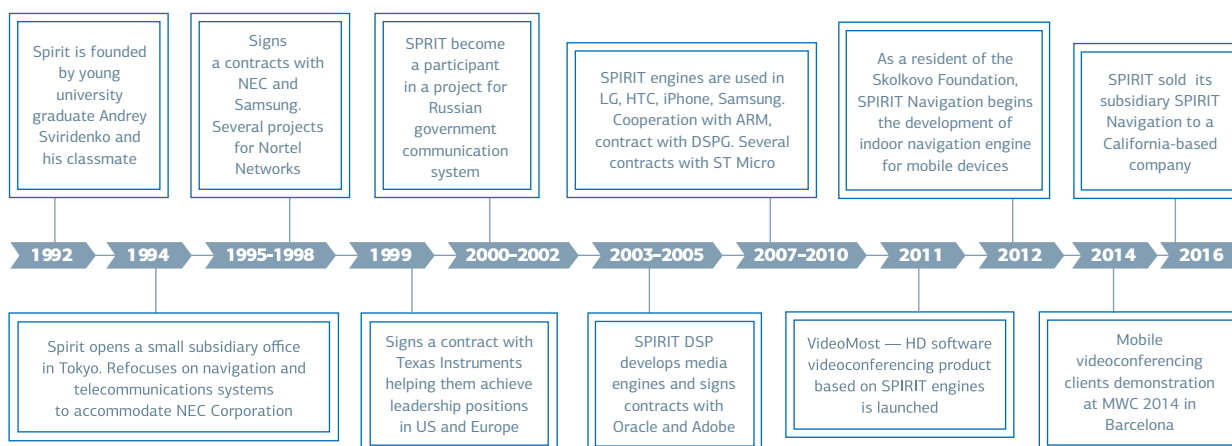
Andrey Sviridenko is the founder and chairman of SPIRIT DSP. He graduated from the Moscow State University with honors and later led SPIRIT DSP to become a global leader in voice and video engine software. In 1990, while still a Computing Mathematics and Cybernetics student, Andrey Sviridenko and his classmate developed Artificial Intelligence software product. While on a student exchange in Germany in 1991, Andrey Sviridenko was able to sell 10 licenses of the software product for USD 10 000 to small German software reseller. This was an exceptional amount of money in light of the Russian economic situation at the time. Sviridenko invested the money into SPIRIT business, bought computers and hired a team of 10 young programmers with a salary of USD 30 per month each.

In 1994, another classmate went to Japan on an unrelated project and, when his plans fell through, Sviridenko suggested him to set-up a local Tokyo office for SPIRIT DSP. This first ‘office’ was simply

a desk with a computer in the Russian-Japanese Business Council building. Sviridenko was busy with client meetings and soon discovered that the Japanese were not much interested in his Artificial Intelligence software. Instead, NEC Corporation (the largest global chip producer at the time) suggested that SPIRIT DSP develops communication and navigation software products. Sviridenko was quick to accept the offer, which amounted to USD 500 000.

In the middle of the project, the project management engineer whom Sviridenko trusted with the development of navigation software announced that he was moving to live in Germany to work for Siemens, taking along a few key programmers with him. With the NEC contract at hand and project delivery deadline approaching fast, Andrey looked for other high quality programmers that could help him with development but he eventually asked his father for help. Vladimir Sviridenko, was a professor at the University and considered to be communications and DSP technology guru. He quit his job and joined the young team as the project manager. In the end, the project was successfully executed; and Andrey’s father remains with the company as CTO to this day.

COMPANY TIMELINE



Good Things Come in Small Packages

SPIRIT DSP is a niche player. Its success on the global market can largely be attributed to its ability to make high performance software engines for very specific uses. The company has adhered to this strategy from the very beginning and still treats any plans to grow and expand with caution. Although SPIRIT DSP has explored different software product categories throughout its existence, ranging from telecommunication systems to AI to navigation, it has always focused on offering a very specific solution with cutting-edge software.

The company's main business lies in telecommunications. Today, it is a global leader in Voice and Video over IP (VVoIP) engines, its software products are used by more users than Skype; in fact, Skype licensed SPIRIT DSP video technologies. The company's innovative voice and video software platforms allow telecom carriers, equipment manufacturers and software developers to deliver superior quality and integrated VVoIP services. SPIRIT DSP's software products have been licensed or integrated

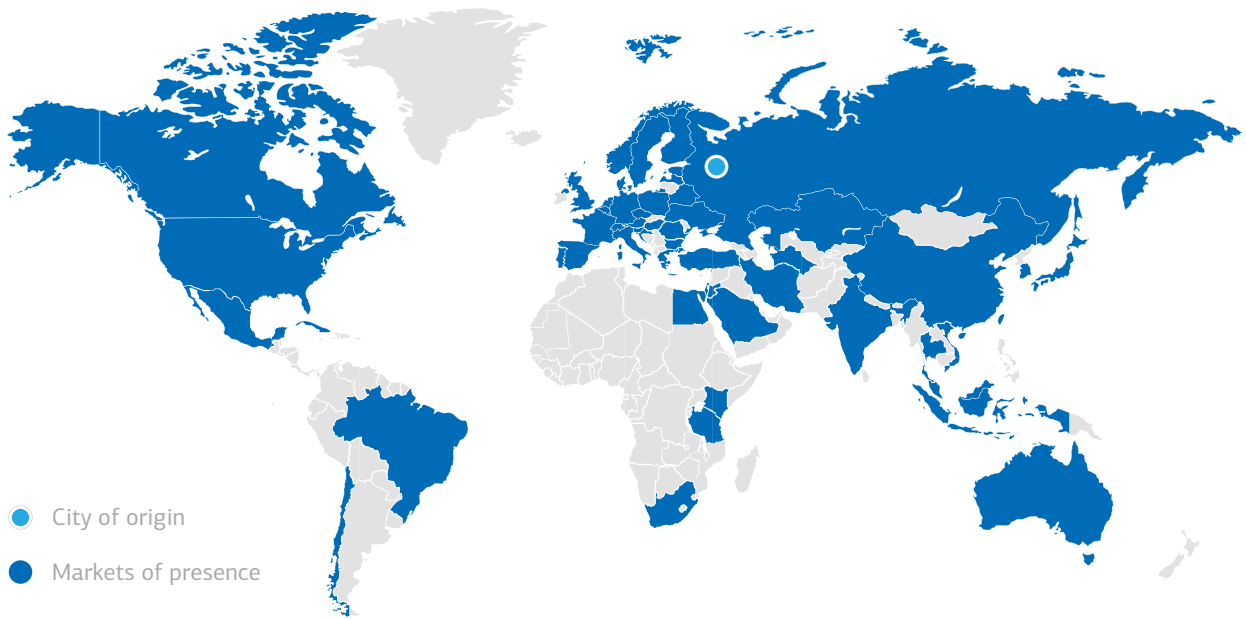
in popular end-user products from Apple, Adobe, Avaya, AT&T, BT, China Mobile, Huawei, HP, Korea Telecom, LG, Microsoft, Oracle, Texas Instruments, Polycom, Reliance, Toshiba, Skype, Samsung, Viber, ZTE, and other 200 technology leaders. SPIRIT DSP's direct licensees jointly exceed 60 percent of the global smartphone market share, bringing SPIRIT DSP's software user base to over 1 billion people in over 100 countries.

Although SPIRIT DSP developed Artificial Intelligence (AI) Software in the beginning, the company quickly adjusted to market needs and client requests by switching its product offering to DSP⁷, telecommunications and navigation systems in 1994. SPIRIT DSP occupied a leadership position for many years by offering video and audio engines for technology companies. As competition intensified and Microsoft and Google began to develop VVoIP engines in-house, SPIRIT DSP refocused its attention towards emerging technology giants in Asia. SPIRIT DSP actively utilizes the technological distribution networks and channels of its most important clients to penetrate new markets. For instance, SPIRIT DSP partnered with US-based software companies when entering telecom market including India and Indonesia mobile carriers.

“At the time (1991), I could sell furniture or vodka or move to California, but I didn’t want to do any of those things.” — Andrey Sviridenko, Founder and CEO of SPIRIT DSP

7 Digital signal processing

GLOBAL FOOTPRINT



SPIRIT DSP has also excelled in the indoor navigation by developing infrastructure-free mobile indoor navigation software application with a high level of reliability. From mid-1990s, SPIRIT DSP developed GPS-GLONASS (outdoor) navigation systems and in 2010 switched to integrated navigation software system (indoor+outdoor). Subsequently, the SPIRIT Navigation subsidiary was created to focus on the development of mobile indoor navigation software engines, a high growth potential business, for leading international retailers and indoor location-based service providers. Unlike outdoor navigation which mainly relies on satellites, indoor navigation is much more complex as GPS-GLONASS signals do not reach inside a building. Therefore, indoor nav-

igation uses radio waves, magnetic fields and built-in step counters. SPIRIT's developments in this area won several technology contests, including one organized by Microsoft in 2015. In early 2016 SPIRIT DSP sold its subsidiary company SPIRIT Navigation to a public technology company, HQ-ed in California, global top 3 in its market segment, related to smartphones (buyer name is under NDA).

Born Global

From the very start, the company's product lent itself very well to the global marketplace. Its initial achievement in Japan with NEC Corporation helped launch SPIRIT DSP's global success story. The company was determined to enter the US market due to its high demand for software products and innovation. The first contract in North America was concluded in 1997 with Nortel Networks. At the time, Sviridenko was advised to move SPIRIT DSP headquarters to the US to attract venture capital funds; however, he decided to maintain complete family ownership of SPIRIT DSP. In fact, SPIRIT DSP

"We engineer beautiful stories, albeit in tiny engines." — Andrey Sviridenko, Founder and CEO of SPIRIT DSP

is a bootstrap and has not received any external financing to date.

In 1999, SPIRIT DSP signed a contract with Texas Instruments. This contract allowed the company to obtain strong market positions not only in America, but also in Europe. For example TI European Developers' Conferences helped to increase SPIRIT visibility and subsequently its European turnover in 2001-2003. The company also began participating in various international IT fairs and conferences, which helped built its expert reputation and allowed it to

begin working with Israeli, German, French, British and Chinese clients in early 2000s.

As SPIRIT DSP established itself as a leading provider of VVoIP engines, its relationship with, and among, global IT leaders became stronger.

Intended Diversion

In search of new market opportunities, in 2011, SPIRIT DSP developed VideoMost, HD videoconferencing software for collaboration in workgroups, online meetings and distant learning for enterprises. Unlike other solutions which require expensive video conferencing hardware, VideoMost is solely software and does not need any dedicated hardware or any other additional expenses on infrastructure, while delivering the same video quality on mobile. The software is notable for two reasons. Firstly, it is the first end-user product in SPIRIT DSP's history. Unlike engines, which are integrated into somebody else's products, VideoMost represents a stand-alone product ready for use by end customers. Secondly, VideoMost is meant to serve the Russian market as well, something that the company has traditionally passed by. Sviridenko admits that selling innovative software in Russia has been a challenge as clients give preference to large international companies that provide integrated solutions. Yet, Sviridenko

believes that high performance and competitive pricing give VideoMost a strong edge and he sees great market potential.

Outlook

Going forward, SPIRIT DSP plans to leverage its core engineering abilities to develop new applications for their current communications products & extend its customers base. In 2010, eBay (Skype) made an offer to acquire SPIRIT DSP, but the company declined as it planned to grow organically and conquer new markets. Today, the company actively seeks new partners across the globe with specific focus on Asia, including countries such as China, India, Vietnam, South Korea and others.

In Russia, the company continues to market its videoconferencing software. A new Russian government policy on import substitution is changing the dynamics of the local market and could play to SPIRIT DSP's benefit. Previously, government procurement competitions were primarily awarded to American software giants; however, today there is a push for local technology companies and developers to be favored as they substitute software of global monopolies. Sviridenko hopes to make the most of this initiative.

“In the beginning we didn't have anything. When the NEC people wanted to meet our team, we asked our friends if we could move into their office for a day and pretend that it was ours. During the visit, the Japanese looked at the team and said „Okay, we believe in you.” — Andrey Sviridenko, Founder and CEO of SPIRIT DSP



Sector: Mobile Internet
Established: 2014
Origin: Beijing, China
CEO: Li Tao
Website: www.apusapps.com



Apus Group provides applications to improve performance and user experience for Android phone users

APUS IS A SHINING EXAMPLE OF THE LATEST GENERATION OF CHINESE FIRMS IN A BOOMING CHINESE MOBILE INTERNET INDUSTRY. IN ONLY 2 YEARS, THE COMPANY HAS ACHIEVED INCREDIBLE GLOBAL SUCCESS IN LARGE PART DUE TO ITS EARLY ABILITY TO RAISE FUNDS. FOCUSING ON ANDROID SMARTPHONE USERS IN EMERGING MARKETS, THE COMPANY HAS BEEN ABLE TO LOCALIZE ITS SOFTWARE TO THE SPECIFIC USER NEEDS OF THOSE SEEKING A BETTER USER EXPERIENCE WITH LESS POWERFUL AND EXPENSIVE PHONES. AS A LEADER IN THE FIELD, THE COMPANY AIMS TO GIVE BACK TO THE ENTREPRENEURIAL TECH COMMUNITY BY INVESTING, SUPPORTING AND NURTURING MANY EARLY STAGE FIRMS LOOKING FOR GUIDANCE BOTH IN CHINA AND ABROAD. LI, THE COMPANY'S FOUNDER, IS INTENT OF CREATING A TECHNOLOGY ECOSYSTEM AIMED AT CATERING TO ANDROID USERS IN EMERGING MARKETS.

The Captain

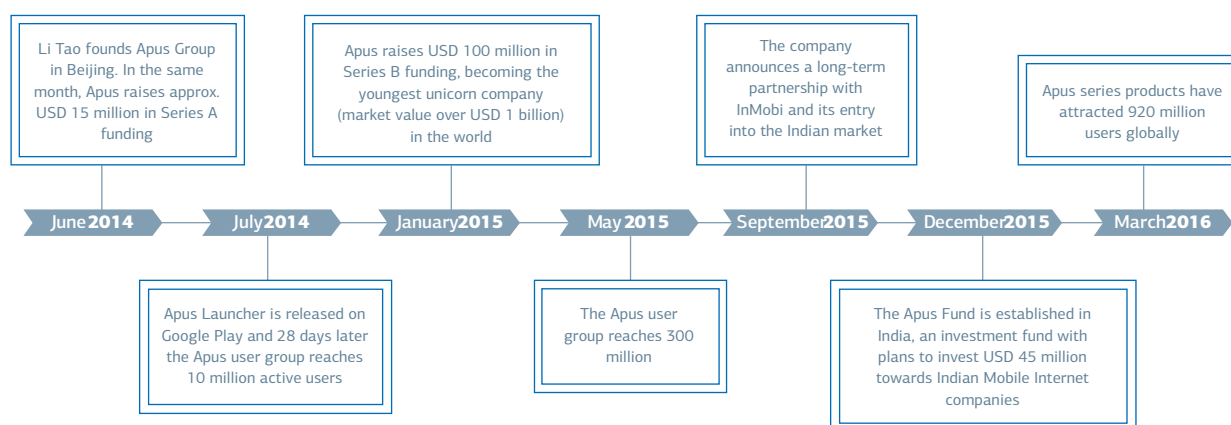
Apus Group is a technology company specialized in developing Android apps and information services, founded in June 2014 by Li Tao. The name APUS is short for "A Perfect User System" and also refers to one of the fastest flying bird species in the world. The company's main product is Apus User System (also known as Apus Launcher). Apus Launcher was released on Google Play in July of 2014 and, within the first week, gained more than 1 million users. By the end of September of 2015, Apus announced that the user group of Apus Launcher and Apus series products surpassed 510 million, covering more than 200 countries and six continents. According to Li Tao, 90 percent of users are from countries outside of China.

Li Tao was an experienced businessman and a serial entrepreneur by the time he launched Apus. Li started off in sales and marketing at a state-owned telecom equipment maker in 1998 before moving to the Internet sector a year later. He first worked at 3721.com, which offered a plug-in for Web browsers to help Chinese speakers search for information using Chinese-language characters. Li focused on

marketing and building sales channels for the service, which was acquired by Yahoo in 2003. He then worked on several startups, including a navigation app called Mapbar.com. In 2009, he reunited with some of his 3721.com colleagues at Qihoo, which they had founded in 2005. He became a top executive there, helping to launch and develop some of Qihoo's biggest mobile products, including its mobile security app and app store, which have hundreds of millions of active users.

Li ultimately left Qihoo as he finally felt ready to start his own company. At Apus, he is referred to as "the captain", in fact, even his LinkedIn profile title is "APUS Captain" as he leads a group of young programmers "charting foreign waters". Li visits California's Silicon Valley several times a year and is quick to say that the innovation landscape in China is similar. In March 2015, Apus Group was ranked the 5th largest app developer and Apus Launcher was the 7th most popular app globally. Since its foundation, Apus has become strategic cooperation partners with Google, Facebook, Yahoo, Amazon, InMobi as well as other mobile internet tycoons. In August 2015, Apus became a member of the Billion Dollar Startup Club selected by Wall Street Journal.

COMPANY TIMELINE



Going Local: Understanding Local Needs

The fast development and widespread distribution of Apus apps seems to be a clear response to Android user needs. Although the development of Android hardware and software is generally faster than that of the iPhone, the Android's user experience is comparatively poorer. Generally speaking, Chinese companies are better at innovation in business model and have a strong learning ability fueled by an intense competitive environment. These companies tend to pay more attention to the user experience so that they can provide more dedicated and localized services for users.

the apps as simple and fast as possible for different Android smartphones. Many Android apps are too large for Android smartphone models with 256MB of RAM; however, their use is widespread globally and even more so in emerging markets as these models are inexpensive. Apus apps are light and can be used to optimize the performance of less expensive phones; a hugely promising market.

Today, Chinese Internet-service companies are focusing more and more on the facilitation of daily activities, like shopping and ordering food online. For example, people can now use their phones to arrange a specific time and place to arrange food delivery or dry-cleaning pick-up. The company's main goal is to provide a good experience and to focus on user needs. Apus plans on continuously improving the user experience by adding regional tweaks to the service based on feedback from users in particular locations.

"APUS has three million fans on Facebook, and a few million fans on Google Plus. Every day, tens of millions of fans are giving us feedback on products and suggestions for improvement." — Li Tao, Founder and CEO of APUS Group⁸

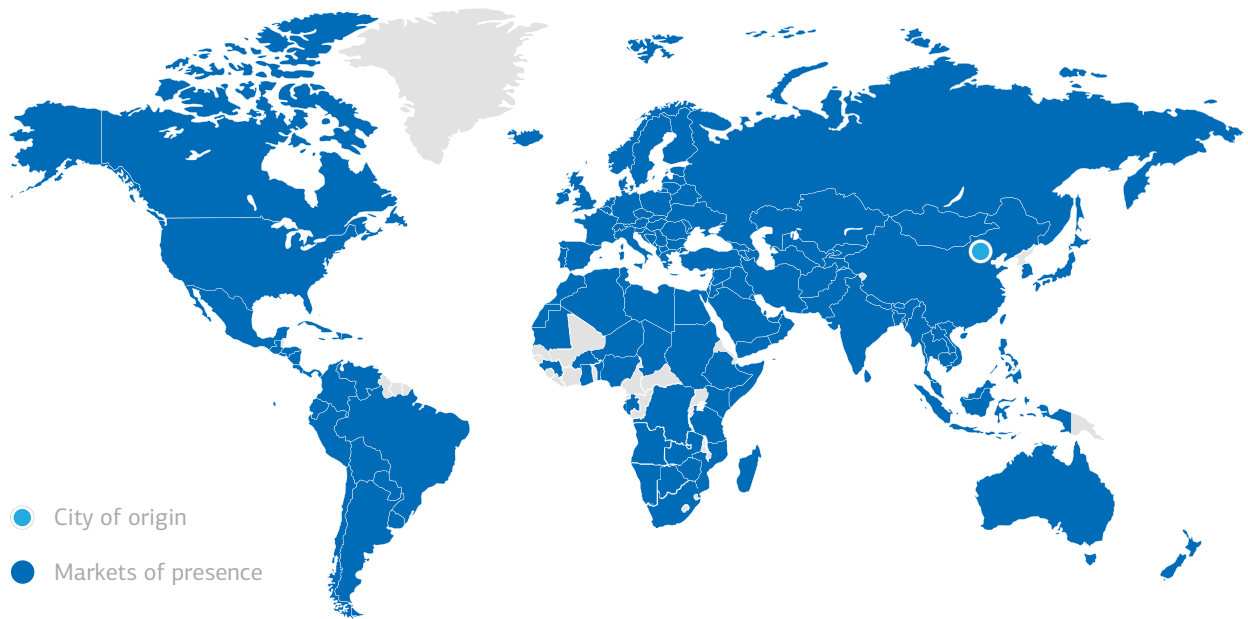
Li notes that the Android system operates very slowly; it crashes often and its user interface is very complicated. Most Chinese companies add patches when the system encounters problems, whereas Apus redesigns the operating system, offering a more comprehensive solution. Based on users' needs, the company has launched several functions including a launcher, booster and cleaner. Apus tries to make

Global Ambitions

Unlike China's biggest Internet companies that tend to focus on the domestic market, Apus set its sights on becoming an international company from the very beginning. The intense competitive

8 Koh, J. (2015). Chinese Internet sector has changed, says former-executive of Qihoo 360. The Straits Times. Available at: <http://www.straitstimes.com/business/economy/chinese-internet-sector-has-changed-says-former-executive-of-qihoo-360> [Accessed: 20 July 2016].

GLOBAL FOOTPRINT



environment in China has pushed Apus and others to look outward for opportunities, while China's telecom equipment producers and smartphone vendors have prepared foreign markets for Chinese products. Today, emerging markets are flooded with low-cost Chinese smartphones and Apus has both products tailored to these inexpensive phones and plausible access to equipment's producers in China.

and 8.7 percent in North America.

An example of their commitment to an important market outside of China is their commitment to the Indian market. In 2015, Apus partnered with the Indian mobile advertising platform InMobi. With this deal, Apus Group is hoping to make a significant foray into the Indian market that is expected to have nearly 400 million smartphone users by 2018.

“There's a gap to be filled in which two billion people might choose to use an Android smartphones. That's where we see our opportunity. American business culture tends to make standardized products instead of customizing them for foreign users. That's where we can meet the demands of global customers from a different culture, language and way of thinking.” — Li Tao, Founder and CEO of APUS Group⁹

Apus focuses on providing the best user experience for users around the world. The company's mission is very much tied to a global market as Apus aims to “change the world with innovation”. Foreign employees account for nearly one quarter of all staff. Apus Launcher supports 25 languages and over 90 percent of its users are overseas. The company has less than 500 000 users in China and 35 percent in South East Asia, 20 percent in the Middle East, 17 percent in Russia/Europe, 15 percent in South America

Creating a Tech Ecosystem

China's innovations in Internet services are mainly related to business models and localization services; this is seen as a very important auxiliary power for Silicon Valley. Apus is not only interested in developing products but more importantly in

⁹ Li, T. (2015). Changing faces: Li Tao aims bigger with Apus Group following Qihoo success. Interviewed by Wu Nan. South China Morning Post. International Edition. Available at: <http://www.scmp.com/news/china/article/1841155/changing-faces-li-tao-aims-bigger-apus-group-following-qihoo-success> [Accessed: 20 July 2016].

developing a technology ecosystem for Android. Li and his team have become involved in a number of support functions within the mobile internet and broader tech community.

Apus Group has established a Beijing-based Global Mobile Internet Incubator to provide all-around support to Chinese companies looking to go abroad and to foreign companies entering the Chinese market. The aim is to create a technological ecosystem aimed at longer-term investments in the future of connectivity. In addition, Li is now working on "Project 42", a support program for early stage developers, which showcases companies to global users through the Apus apps.

In 2015, Apus set up an investment arm to help finance Indian tech startups. The company sees India as one of its core markets going forward and wants to be an integral part of the country's entrepreneurial community. While Apus has already invested in iamwire and formed a long-term strategic partnership with InMobi, Apus' investors are backing the group to begin investment and technological cooperation with a number of other promising startups. Projects with Indian enterprises will include product, marketing, strategic cooperation and content partnerships in which both sides can share resources

to achieve a mutually beneficial result. The company is expected not only contribute financial resources to development of Indian startups, but also share its technology and ideas.

Outlook

Thus far, most technological innovations have come from the USA and Europe, whereas in the future it is expected that the USA and China will lead innovation. The USA will likely continue to lead technological innovation, while new business models will emerge in China.

Although Apple has made big changes to iOS 8, which include the addition of third-party launcher apps, Apus has no plans to tackle the Apple platform. Apus plans to focus on localization of the market, expanding users in more countries and regions, providing more localized support, including establishing R&D centers and local support centers in Silicon Valley, India and Brazil.

"iOS is known for being the easiest to use mobile operating system, and we want to be the iPhone for Android. Our goal is to make Android as cool as iOS." — Penny Pan, Marketing Director of Apus Group¹⁰

¹⁰ Efrati, A. (2015). Q&A. The Hottest Mobile App Startup in the World? The Information. Available at: <https://www.theinformation.com/The-Hottest-Mobile-App-Startup-in-the-World> [Accessed: 20 July 2016].



Sector: 3D Printing
Established: 2003
Origin: Beijing, China
CEO: Guo Ge (Allen Guo)
Website: www.tiertime.com
www.up3D.com

 Beijing Tiertime Technology develops, produces and sells industrial-grade and desktop 3D printers to the manufacturing industry, small businesses and organizations as well as individual users

INITIALLY, BEIJING TIERTIME PRODUCED INDUSTRIAL-GRADE 3D PRINTERS FOR THE CHINESE MARKET AND EXPORTED ITS FIRST 3D PRINTER ABROAD IN 2006. THE FOUNDERS SUBSEQUENTLY BEGAN DEVELOPING PORTABLE DESKTOP 3D PRINTERS AND FOUND THAT THE CHINESE MARKET FOR THESE PRODUCTS WAS TOO SMALL. INSTEAD, THEY DECIDED TO FOCUS ON THE SALE OF DESKTOP PRODUCTS FOR THE WIDER GLOBAL MARKETPLACE, SPECIFICALLY THE PROMISING USA MARKET. TIERTIME PRICED ITS DESKTOP PRINTERS AGGRESSIVELY IN AN EFFORT TO “PUSH” DESKTOP PRINTERS TOWARDS USERS THAT WOULD NOT HAVE TRADITIONALLY USED SUCH PRODUCTS. THE COMPANY’S FIRST UP! DESKTOP PRINTER HAD MINIMUM FEATURES BUT WAS AFFORDABLE AND ACCESSIBLE, MAKING IT A COMMERCIAL SUCCESS INTERNATIONALLY. AT THE TIME, THE SUCCESS AND INTERACTION WITH PARTNERS ABROAD ALLOWED TIERTIME THE OPPORTUNITY TO STRENGTHEN ITS TECHNOLOGY BOTH IN THEIR DESKTOP AND INDUSTRIAL RANGES. TODAY, THE COMPANY HAS A WIDE AND GROWING NETWORK OF DISTRIBUTORS GLOBALLY, INCLUDING AMAZON, FOR ITS DESKTOP PRINTERS AND SELLS ITS PRODUCTS IN OVER 40 COUNTRIES. IN ADDITION, THE COMPANY’S INDUSTRIAL RANGE PRINTERS HAVE SHOWN SIGNIFICANT GROWTH POTENTIAL AT HOME AND ABROAD.

Betting on the Masses

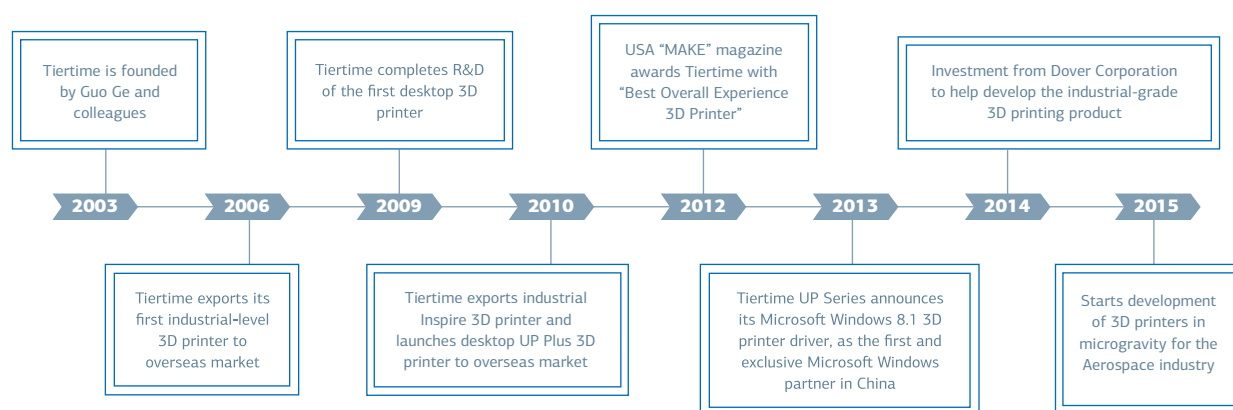
Originally, Beijing Tiertime operated as Beijing Yinhu Laser Rapid Prototyping and Mould Technology, which was founded in 1993 (nearly 17 years before the desktop 3D printing revolution started). In 2003, Dr. Guo Ge and other students of Professor Yan Yongnian, Tsinghua University professor specialized in Additive Manufacturing and Rapid Prototyping, founded Tiertime. Professor Yan was a pioneer in Chinese 3D printing and the first person to bring a prototype from the USA. Dr. Guo obtained a Bachelor of Engineering degree from Tsinghua in 1997 and received his PhD in 2002. During his PhD study, Guo focus on Rapid Prototyping Control Systems and Process Planning.

In its early years, Beijing Tiertime’s had a limited market in industrial 3D printing. In 2010, 3D printing

technology increasingly started to be applied at home and in small business settings and this changed things dramatically. After several years of research and development, Tiertime successfully developed a UP! desktop 3D printer. At this time, Guo and his team had to decide whether to continue focusing on industrial-grade 3D printers (and a B2B approach) or focus on a product with less capabilities that would be accessible to a wider audience. They decided to center their attention on more portable and usable products for the mass market.

Today, the portable 3D printing market in China is growing but still relatively small. As of 2014, Beijing Tiertime was the single largest manufacturer of portable 3D printers in China, the biggest player in Asia and the third-largest worldwide by number of machines shipped.

COMPANY TIMELINE



Getting the Price Right

Until 2010, Tiertime only produced industrial-grade 3D printers, which were sold to businesses and had a high profit margin. Initially, the company did not try to optimize its industrial products as they felt that there was not enough growth potential in that market to justify increased R&D expenditures. At that time, they wanted to survive and reduce costs as much as possible. In 2010, the company made a critical decision about its future when it developed its first desktop 3D printer. It decided to give up some of the functionality of industrial printers to concentrate on portable printers that would be affordable for a much wider audience. Its flagship products are the UP! desktop series capable of printing products layer by layer, ranging from toys and cartoon figures to mobile phone shells and home decor.

In 2011, after a year and a half of domestic sales, Guo Ge made the decision to cut the desktop printer price to approx. USD 1500 in China. At the time, Tiertime had no competitors and so was not meant to undercut the competition but was actually part of a shift in sales strategy, which was catered to "push" the products onto the Chinese market and to reach a larger market. The sales department went directly to enthusiasts, schools and enterprises to promote 3D printing with particular focus on training potential users and building a platform for the exchange of experiences and the promotion of a new lifestyle. In 2013, the mean price for comparable products in Europe and the USA was approximately USD 2300. At this time, Tiertime was clearly able to extend its pricing strategy abroad and compete with high quality portable 3D printers for a lower cost.

Tiertime's desktop product line includes the UP BOX, UP Plus 2, UP mini and most recently, the UP mini 2. Their latest portable product, UP mini 2, weighs only 8 kg and is the first of its products to have Wi-Fi connectivity and touch-screen control. The applications and potential applications of portable 3D printing are wide-ranging particularly in the design and education sectors. The UP Plus 2 has been used to prototype decorative lighting and was also used to create a display model of a prehistoric mammoth at the National Science and Technology Museum in Taiwan.

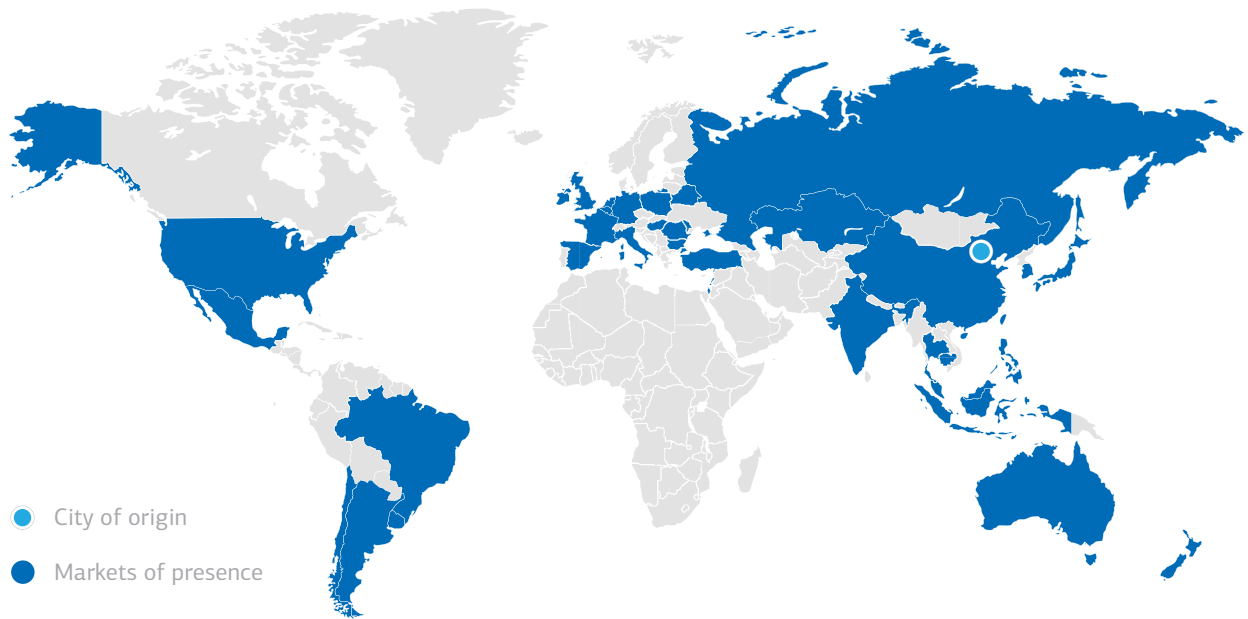
A Global Story

Tiertime exported its first industrial-level 3D printer overseas in 2006, three years after the inception of the new company. Initially, Tiertime's UP! printers had much lower brand recognition than its competitors like Makerbot (Stratasys). However, Guo was convinced that having a quality product at a lower cost would eventually prevail and the company found commercial success abroad relatively quickly.

Beijing Tiertime works with distributors worldwide and the company also develops market intelligence units in other markets as well as provides the global market with sales and after-sales service in Europe, Asia and Oceania. Through its continuously expanding network of certified resellers and distributors, Tiertime offers local support across the globe. The USA is Beijing Tiertime's largest UP! 3D market and the company is present through various distributors including Amazon.

In 2012, the company introduced a new distribution channel in the United States by beginning to sell

GLOBAL FOOTPRINT



white-label goods to Afinia, a subsidiary of Microboards Technology. Afinia began licensing hardware for their H-Series printers from Delta Micro Factory Corporation, which is the manufacturer for UP! 3D printers and owned by Tiertime. In 2015, the increased competitive environment led to patent infringement lawsuits and counter lawsuits between Stratasys, an American leader in the 3D market, and Afinia and their respective Original Equipment Manufacturers in China.

imately USD 1.5 billion by 2016, according to Luo Jun, secretary of the World 3D Printing Technology Industry Alliance¹¹.

In January 2014, Dover Investment Co., a wholly-owned subsidiary of the global manufacturer Dover Corporation, invested USD 1.6 million in Tiertime, earmarked for the expansion of its industrial-grade 3D printing business. This strategic investment is expected to help expand Tiertime's business both at home and abroad.

“Introduction of strategic investment from foreign companies is not only the first step for the internationalization of Chinese companies, but also a crucial part for Chinese companies to be bigger and stronger in the global market with fierce competition.” — Guo Ge, Founder and CEO of Tiertime¹²

In light of the growth of the Additive Manufacturing market in recent years, Tiertime's revenues jumped at an annual rate of 40 to 50 percent. At the same time, competition has intensified as numerous Chinese manufacturers have created comparable products. From 2012 to 2014, the output of China's 3D printing market has expanded dramatically and it is estimated that the industry could reach approx-

Engineering Smarts for the Future

Tiertime is located in the innovative Beijing Yanqi Economic Development Area, which was established in 1992. Today, more than 300 production

11 China.org.cn. (2015). China taps 3D printing consumer market. Xinhua, September 9, 2015. Available at: http://www.china.org.cn/business/2015-09/09/content_36540839.htm [Accessed: 11 June 2016].

12 Beijing Tiertime Technology Co., Ltd. (2014). Introduction of Strategic Investment from Dover. Beijing, Blog by up3d on January 08, 2014. Available at: <https://www.up3d.com/?r=news&id=2> [Accessed: 11 June 2016].

enterprises have based their businesses in the area including more than 70 foreign owned enterprises from 17 countries.

The company had initially focused its R&D on the development of desktop printers, which would allow access to a greater geographic market at a competitive price. However, the development of this segment allowed them raise their profile and refocus on industrial-grade printers that are still a part of the company's product offering and could have wide applications in manufacturing in coming years. In fact, the investment made by Dover Corporation into Tiertime was intended to help them expand and develop their industrial business.

China's 3D printing technology is lagging behind its Western counterparts, mostly in the development of materials used to print models and components. It is expected that metal-based printing will be the future of industrial 3D printing. The Chinese Ministry of Industry and Information Technology has been working on a national strategy for the development of 3D printing technologies. This includes creating a medium and long-term development strategy for

Additive Manufacturing, promoting the formulation of codes and standards, and increasing efforts to support 3D technology development and commercialization through special fiscal and taxation policies.

Beijing Tiertime 3D printing products are mainly based on Melted and Extruded Modeling (MEM) technology, which has achieved great success and won the 1999-2000 China National Awards for Progress in Science and Technology.

Outlook

Although, Tiertime currently sells its products in over 40 countries, its intention is to explore further business opportunities abroad and obtain a stronger market position globally.

Tiertime hopes to make desktop 3D printers a household item and help reshape consumption habits in the future. Furthermore, the company hopes to develop the technology to make its industrial-grade printers competitive in the manufacturing industry.

"Once materials, modeling and Internet technologies are ready to make 3D printing as easy to use as computers, the future of the industry will be 'unimaginable'." — Guo Qiao, Marketing Director of Beijing Tiertime¹³

¹³ China.org.cn. (2015). China taps 3D printing consumer market. Xinhua, September 9, 2015. Available at: http://www.china.org.cn/business/2015-09/09/content_36540839.htm [Accessed: 11 June 2016].



Sector: Waste Management, Agriculture
Established: 2001
Origin: Beijing, China
CEO: Yu Jiayi
Website: www.globalbgb.com
www.jiabowen.com



Beijing Goldenway Biotech (BGB) recycles organic waste to manufacture biological humic acid fertilizer and biofeed. Goldenway operates in both the environmental services and agriculture industries by collecting, processing and selling the by-products of food waste (fertilizer) to farmers

A FEW SHORT YEARS AFTER ITS FOUNDATION, BGB WAS SUCCESSFUL IN OBTAINING SIGNIFICANT FINANCIAL SUPPORT FROM NOTABLE INTERNATIONAL INVESTORS. THE CAPITAL RAISED DURING THIS FIRST ROUND OF FUNDING IN 2007 GAVE GOLDENWAY THE RESOURCES NECESSARY TO FOSTER EXPONENTIAL GROWTH AND BECOME A CLEAN-TECH LEADER IN CHINA AND BEYOND. IN 2009, BGB WAS ABLE TO RAISE ADDITIONAL FUNDING LOCALLY FOR THE EXPANSION OF ITS FOOD PROCESSING FACILITIES THUS PROVIDING AN INCREASED CAPACITY TO PROCESS FOOD WASTE IN NUMEROUS CITIES. ALTHOUGH BEIJING GOLDENWAY BIOTECH HAS FOCUSED ON THE CHINESE MARKET THUS FAR, TODAY, THE COMPANY HAS BEGUN LOOKING OUTWARD AND IS WORKING IN SOUTH EAST ASIA ON THE DEVELOPMENT OF SYSTEMS TO OPTIMIZE WASTE FROM OIL PALM PLANTATIONS TO BE RECYCLED INTO FERTILIZER. IN ADDITION, BGB HAS OBTAINED VARIOUS INTERNATIONAL CERTIFICATIONS AND PATENTS, WHICH WILL FACILITATE ENTRY INTO EUROPEAN AND OTHER WORLD MARKETS.

Goldenway to the Rescue

The improper treatment of kitchen waste in China has grown into a serious problem as the country has an estimated output of 15 million tons of food waste per annum. This has led to severe environmental pollution, making the issue a top priority for the Chinese government. In response to this environmental predicament, Yu Jiayi, a rare female find among Chinese CEOs, founded Beijing Goldenway Bio-Tech (BGB) in 2001. BGB is specialized primarily in the processing of organic waste (e.g. kitchen waste, expired food products) through high-temperature aerobic fermentation and also produces bio-feed and bio-fertilizer additives.

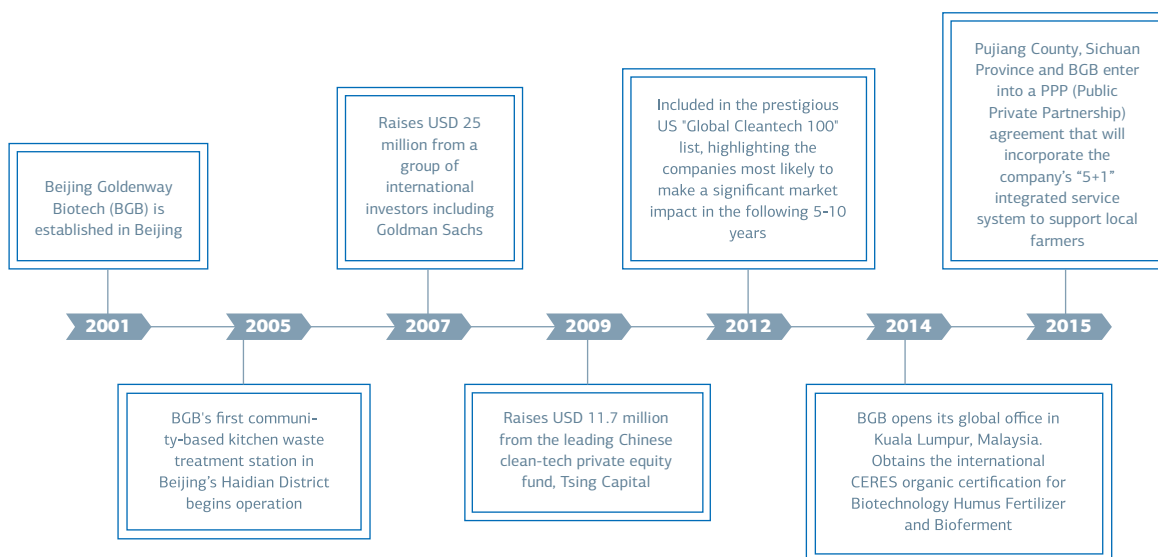
With strong support from the Chinese government, BGB has helped set national standards on kitchen waste processing technology. BGB's fermentation systems are now being employed in multiple cities across China including Beijing, Shanghai, Tianjin, Chengdu, Nanjing and Wuxi. The company also

works closely with prominent agricultural companies such as Continental Grain, Bright Food Group and Huadu Group in a bid to advance production technology and enhance product quality.

Full-Cycle Success

Since it was established, Beijing Goldenway Bio-Tech has focused on transforming kitchen waste into biological humic acid fertilizer. In recent years, humic acid has become increasingly popular across the globe because it helps reduce dependence on chemical fertilizers. It is naturally formed by coal and peat in a process that requires 10,000 years, whereas Goldenway can make it in 11 hours. Goldenway also manufactures bio-feed, which is an organic product intended to partially replace prevailing feed-stuff such as corn and fish protein, and has proven to raise livestock's growth rate, increase animals' resistance to illness, reduce the usage of antibiotics and steroids, and raise meat quality.

COMPANY TIMELINE



BGB's business can be summarized in three segments: the collection of agricultural and food waste, the transformation of waste into fertilizers and biofeed and the sale and distribution of products to farmers. The company has become a clean-tech leader by being both commercially viable, because of the use of sophisticated systems that produce high-end by-products, and sustainable due to its integrated practices. Beijing Goldenway serves both the environmental service industry (by collecting biological waste) and the agricultural industry (by processing the waste to become an agricultural input).

The transformation of waste is done with sophisticated proprietary equipment that creates quality, increasingly organic, end products. Today, BGB operates 14 large-scale food kitchen waste processing facilities. Workers pour a mixture of waste and catalyst into the equipment, then sawdust-like fertilizers come out – it produces no pollutants or offensive odors. After filtration, the fertilizers can be slightly altered by adding different trace elements compatible with the diversity of plants. BGB's equipment can be powered with electricity, gas and fuel and one of the models can also use methane generated from

garbage incineration as heating energy. This makes for an incredibly low carbon footprint, environmentally friendly business where renewable energy can be used to recycle waste into agricultural inputs.

In 2014, BGB obtained the CERES international organic certification for its humic acid fertilizer (soil conditioner), which certifies their product according to standards used in the EU, USA and Japan. Currently, BGB primarily provides its fertilizers to Chinese fruit producers. For example, in Changping District, they have provided strawberry and apple farmers with technology to improve fruit quality and increase production yield in a geographically disadvantaged location. In Malaysia, they provide "Technology Assistance" by transforming palm oil by-products into fertilizers used directly in palm plantations. This fertilizer is more effective in treating diseased plants and controlling crop yield than traditional fertilizers. It is expected to reduce by about 50 percent inorganic fertilizer application in plantations, reduce fertilizer cost, increase the microbial diversity and soil fertility.

"Compared with most other organic fertilizers, our biological humic acid is three times as effective but contains only about 1 percent heavy metals." — Yu Jiayi, Founder and CEO of Goldenway¹⁴

14 Hao Nan. (2013). Sweet smell of strawberries and success for Goldenway Bio-Tech. The China Daily. Available at: http://www.chinadaily.com.cn/beijing/2013-11/13/content_17101229.htm [Accessed: 04 August 2016].

GLOBAL FOOTPRINT



Sourcing Waste for Good

An integral part of the company's business is working with local governments and organizations to source a continuous supply of kitchen waste. To date, BGB has worked mainly with municipal governments and large organizations as the collection of separated waste from households in China is still in its infancy. BGB has worked to gain contracts with various municipal governments for the collection of food waste. In fact, when it was found that these contracts were critical to the development of the company, Tsing Capital, BGB's latest investor, stepped in to use its clout in the Chinese community to help manage the relationships with these important stakeholders.

Once these contracts are obtained, BGB works to optimize the logistics required in the collection and

transportation of waste. Whenever possible, Goldenway brings equipment close to the collection site; for example, the "Resource Recycling and Processing Station" at the 2008 Olympic Village processed 1070 tons of food waste on site through microbial high-temperature fermentation technology. More recently, BGB began working with Malaysian palm oil producers to treat agricultural by-products with bio fermentation technology to produce fertilizers. BGB is also working to improve the quality of agricultural inputs in China as these are increasingly an environmental concern. The evolution of agricultural systems often requires government involvement and financial support to farmers creating a landscape in which risks and profits are shared. An example of a pilot project to improve agricultural standards is the "5+1" public private partnership (PPP) with Pujian county in Zhejiang region. The basis of the partnership is to work on 5 key principles in order to support local farmers: decrease the number of chemical fertilizers, deploy big data to understand

"BGB's exemplary technology and business model make it a perfect contender for investment, as a clean-tech investor, we are dedicated to seeking out emerging companies that can achieve social, environmental and economic benefits with core technology and great potential for development. BGB is just such an example." —

Don Ye, Managing Partner of Tsing Capital¹⁵

15 Continental Grain, corporate website. Available at: <http://www.continentalgrain.com/newsAndCommunications/pressRelease.aspx?id=80>[Accessed: 04 August 2016].

soil specifics, increase use of organic fertilizers, increase biocontrol and deploy modern agricultural machines and +1 is the online trading platform to bring together different stakeholders like agricultural input vendors and farmers.

Clean-Tech Vision

BGB has been particularly successful in the attraction of both local and foreign capital to propel its growth. Although the company's technology is not particularly innovative on a global level, the implementation of a full-cycle biowaste operation in China is considered revolutionary and has attracted substantial attention internationally.

In 2007, BGB was able to raise USD 25 million from a group of investors, including Goldman Sachs, East-Sun (a Taiwanese venture capital fund) and Shanghai Bright Food (a large-scale food industry group specialized in modern agriculture and food processing). This initial capital injection was crucial as it allowed BGB to expand its operation and win large contracts including the Beijing Olympic Games and various municipal environmental services contracts. In 2009, Goldenway raised a further USD 11.7 million in venture capital funding from Tsing Capital, China's first clean-tech VC fund, using Tsing's cash

infusion as working capital to expand from 1 to 12 cities.

Over the years, the company has focused primarily on China as the supply of food waste in the country is high enough to allow the company significant growth. Nevertheless, BGB has secured patents for all its hardware and processes from the UK and uses European product quality standards. In 2014, the company obtained CERES organic certification, which is expected to put it in a favorable position to enter Western markets. In the same year, BGB also set up its global office in Kuala Lumpur, Malaysia.

Outlook

BGB plans to set-up manufacturing plants in Pahang, Malaysia worth approximately USD 145 million to produce humic acid, a type of bio-stimulant for soil reconditioning.

The company plans to significantly expand its partnerships with local communities on the downstream side of the business. It is expected that increased competencies in the development of organic agricultural inputs will help Chinese farmers transition from chemical fertilizer inputs to more sustainable ones.

"China has too many people with little land, which leaves no time for farmland to finish self-restoration. Most of the farmland lacks carbon and has become compacted due to years of non-stop cultivation. In short, our fertilizers can bring the soil back to life. Our potential contribution in improving China's environment is immeasurable." — Yu Jiayi, Founder and CEO of Goldenway¹⁶

16 Hao Nan. (2013). Sweet smell of strawberries and success for Goldenway Bio-Tech. The China Daily. Available at: http://www.chinadaily.com.cn/beijing/2013-11/13/content_17101229.htm [Accessed: 04 August 2016].



Sector: Industrial Manufacturing
Established: 1996
Origin: Shenzhen, China
CEO: Gao Yunfeng
Website: www.hanslaser.net



Han's Laser operates in the R&D, production and distribution of laser equipment widely used in electronic circuits, instrumentation, computer manufacturing, mobile communications, automobile parts, food and medicine, LED, solar energy and other industries

GAO YUNFENG, THE FOUNDER OF HAN'S LASER, PROVED TO BE A PIONEER IN THE ESTABLISHMENT OF NON-STATE-OWNED COMPANIES IN CHINA. IN THE EARLY DAYS, GAO WORKED TO DEVELOP AND SECURE THE MARKET FOR LASER MARKERS AND ENGRAVERS IN MAINLAND CHINA. HANDS-ON R&D AND PERSISTENCE HELPED CONQUER THE MARKET QUICKLY AND EFFECTIVELY. THE COMPANY WAS QUICK TO GAIN INSIGHTS INTO TECHNOLOGICAL CAPABILITIES AND GAO WAS SMART ABOUT FINANCING AND INVESTMENTS, WHICH FACILITATED EXPANSION AT HOME AND ABROAD. HAN'S INTERNATIONAL GROWTH STRATEGY HAS BEEN FOCUSED ON ACCESSING FOREIGN COMPANIES THROUGH CHINESE SUPPLIERS AND, STARTING IN 2007 HAN'S BEGAN ACQUIRING INTERESTS IN COMPANIES ABROAD TO GAIN ACCESS TO DISTRIBUTION NETWORKS AND TECHNOLOGY.

Humble Beginnings

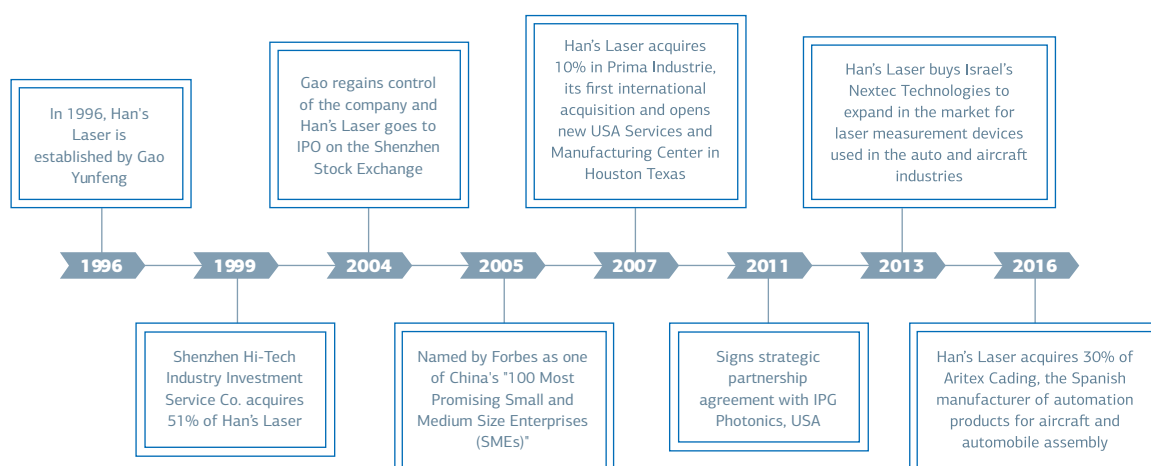
Han's Laser Technology Industry Group was established in 1996 by Gao Yunfeng. Gao came from a poor rural community and went on to graduate from Nanjing University of Aeronautics & Astronautics as an aircraft design professional. Today, Gao is a respected member of the business community and is viewed as a pioneer in the establishment of non-state-owned companies in China. In 2011, he was named the most respected chairman of China's listed companies.

In the early 1990s, Gao landed a job in Hong Kong and began work at Hong Kong Far East Electronics as a technician for laser marking machines. At that time, China's laser equipment industry was practically non-existent and most international manufacturers had not set up any support offices in the region. As a result, troubleshooting became a problem as domestic customers had to wait several months before repairmen arrived from abroad. In 1996, Gao Yunfeng decided to return to the mainland as he was convinced that there would soon be demand for laser

markers for industrial engraving. He came across a chance to develop machines for Hong Kong customers and fulfilled his first order in that way.

Gao subsequently set his sights on the promising market of button, shoe and electrical parts manufacturers in Wenzhou. In launching the business, not only did Gao design the machines and create the software himself but he also single-handedly took care of all ancillary functions. In addition, he spent considerable time and energy educating the businesses on the potential uses of the machines — he developed samples for potential clients and even created material in English for customers abroad to help the manufacturers consider the added value that laser markers could offer. Eventually, the businesses began getting orders from overseas and it is said that Han's first customer in Wenzhou recovered the sum of the investment within just 2 months. This tale spread quickly by word of mouth and the equipment went from seeing no market demand to being hugely popular.

COMPANY TIMELINE



Financing: Beggars Can't Be Choosers

Gao Yunfeng had started his business when private companies in China were few and far between. The financing options for non-state-owned companies at the time were difficult to come by. It was Gao's perseverance and active pursuit of external funding throughout the company's various stages of growth that has allowed the business to achieve the scale and compete at the level that it does today. Although Han's Laser has gained a reputation over the years for being "unbeatable", its path to success has been trying.

Over time, Han's has grown both organically and through acquisition. In the late 1990s, the company began facing intensifying competition in China and it became clear that a capital injection was needed to grow the company. Gao eventually secured capital from Shenzhen Corporation and had to give up 51% of his shares in the deal. After many trials and tribulations, Gao was eventually able to regain control of the company in 2004. In the same year, Gao finally succeeded in listing Han's Laser on the

Shenzhen Stock Exchange. The company was among the first SME to go public in China marking a new era of business in the country.

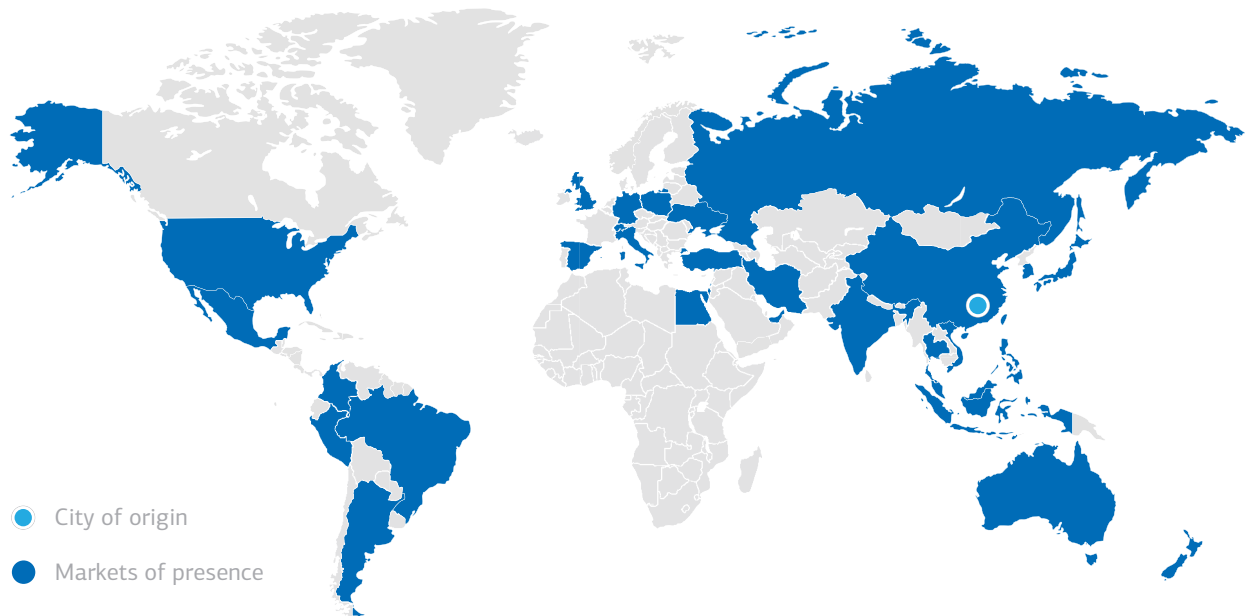
The money raised from the IPO was primarily spent on their core business i.e. new state-of-the-art production facilities. While a smaller portion of funds were allotted to the development of new laser technologies. In 2006, Han's Laser raised its first Private Investment in Public Equity (PIPE) in order to buy new equipment and modernize its production base. In 2007, the second round of PIPE investment was raised to fund expansion. In 2015, Han's Laser announced plans to raise approx. USD 842 million to support its main business and to set up a key technology R&D center for an industrial robot.

Han's has been active in the purchase of other companies in China, which have allowed it to move towards vertical integration and also opened the door to expansion of its distribution network. This was also a good way to expand into new segments like food, pharmaceuticals and tobacco. In 2006, the company acquired shares in the Chinese printing press company Hans-Gronhi, which in turn acquired the struggling Japanese press manufacturer, Shinohara in 2012.

"Compared to our competitors, we enjoyed a technological advantage of only six to 12 months. So, our stacked orders would surely inspire them to quicken their technological improvement. When they caught up, we'd have no advantage at all." — Gao Yunfeng, Founder and CEO of Han's Laser¹⁷

¹⁷ Echo Zhou. Han's Laser's Gao Yunfeng: Beating the "3 No's" -- No Market, No Technology, No Funds. Gao Yunfeng is CEIBS Alumni. Available at http://www.ceibs.edu/link/home/12/100678_2.shtml [Accessed: 15 June 2016].

GLOBAL FOOTPRINT



Global Success, Chinese Style

Today, Han's Laser has become a global company with branches in 9 countries and over 20 service offices around the globe, not to mention the various stakes in companies abroad. As the company grew and demand was being filled in China, Gao began to think about selling abroad. The machines were now more reliable than those of its foreign counterparts and were also more competitive in pricing.

Han's Laser first international order came when a foreign keyboard maker for Motorola was setting up production facilities in China and was to purchase laser-marking machines from an American company. Gao offered to let them use a Han's Laser machine while the other company fulfilled the order, which would take months. Gao dispatched a special team on site to help with any issues that could arise and was eventually endorsed by Motorola, which encouraged other Chinese suppliers to use Han's equipment. Today, Han's Laser counts Samsung, Sony, Phillips and Panasonic among others as clients.

When Han's began looking to the international stage to acquire companies, they were driven by the same strategy that they had employed in China. The focus was on access to new technologies, synergies in distribution and entry into new segments. In 2007, Han's Laser acquired 10% of the Italian company, Prima Industrie, via its wholly owned subsidiary,

Sharp Focus International Ltd. In 2008, Han's became a majority shareholder in American Apollo Instruments, specializing in laser technology. In 2013, Han's acquired Israel's Nextec Technologies to increase its shares in the market for laser measurement devices used in the auto and aircraft industries. Most recently, in 2016, Han's Laser announced plans to acquire a 30% interest in Spain's Aritex Cading, which also manufactures automation equipment for the auto and aircraft industries.

Han's Laser primarily sells its products in Asia where the company has a strong distribution and service base. In fact, Han's uses its sales network not only to sell its own products but also acts as distributor for prominent laser manufacturers such as the American IPG Photonics, which produces primarily fiber lasers. In 2015, Han's accounted for 13% of IPG's net sales, making them by far the largest purchaser of IPG goods.

Learn-As-You-Go R&D and Service

Han's Laser's success was made possible by Gao's rapid application of ideas and his approach to customer service. In most cases, companies worked 18 months before bringing a new product to market; however, Han's method was to make the products available immediately and have service staff on

stand-by to troubleshoot problems. In the early days in Wenzhou, the team had service engineers on site within minutes to help readjust the machines. This allowed the engineers to fix issues and customize machines on location and then use the information obtained to produce later editions that would be more effective.

Between 1996 and 1999, Han's laser made thousands of improvements to its machines. During the same period, they managed to streamline the design to the smallest number of components possible and began manufacturing parts locally as they found that sourcing components from different places lead to incompatibility issues. Han's was eventually successful in reducing the price of the markers to USD 40 000, compared to USD 100 000 for foreign brands. One of Gao's founding principles was that the product should be adjusted to the needs of customers. This meant a high level of customization that was only possible with the service structure that Gao had created. In addition, the company also developed its own software, which was unusual in the industry

and allowed for a greater degree of personalization for clients and most importantly a refinement of the technology.

Once the company became more established, they began creating more formal R&D structures and, in 2000 and 2003, Gao invited two renowned Chinese scientists specialized in laser technologies to lead their R&D department. These men were instrumental in leading a new wave of innovation and in attracting new talent.

Outlook

Han's Laser plans to continue to expand internationally through the acquisition of shares in foreign companies and develop new technologies. Furthermore, Gao is optimistic about new market segments and plans to focus heavily on robotics in the future. Han's scheduled R&D investments in robotics are estimated at USD 1.2 billion.

"Sometimes, it's not that there's no market, but how to open the market and help your customers make money. Persistence is what's most rewarded in the market." — Gao Yunfeng, Founder and CEO of Han's Laser¹⁸

18 Echo Zhou. Han's Laser's Gao Yunfeng: Beating the "3 No's" -- No Market, No Technology, No Funds. Gao Yunfeng is CEIBS Alumni. Available at http://www.ceibs.edu/link/home/12/100678_2.shtml [Accessed: 15 June 2016].



Sector: Telecommunications, Electronics
Established: 1993
Origin: Shenzhen, China
CEO: Chen Qingzhou
Website: www.hytera.com



Hytera provides Professional Mobile Radio (PMR) communications solutions to government entities, gas and power utilities, transportation companies and private enterprises for higher organizational efficiency

HYTERA'S INTERNATIONAL SUCCESS IS ROOTED IN PROVIDING COMPETITIVE PRODUCTS IN A GROWING INDUSTRY. AS SOCIO-ENVIRONMENTAL ISSUES CONCERNING SAFETY BEGAN TO GAIN IMPORTANCE IN THE GLOBAL SPHERE, HYTERA BEGAN SERIOUSLY EVALUATING GLOBAL EXPANSION IN 2001. ALTHOUGH THE COMPANY WORKED WITH VARIOUS DISTRIBUTORS WORLDWIDE, PARTICULARLY FOR ITS HYT WALKIE-TALKIE PRODUCTS, IT WASN'T UNTIL 2005 THAT IT BEGAN OPENING ITS OWN SUBSIDIARIES ABROAD. SOON AFTER THE COMPANY BEGAN GAINING RECOGNITION IN THE INTERNATIONAL PRESS, IT BEGAN WINNING CONTACTS WITH NOTABLE CLIENTS SUCH AS EUROPEAN AERONAUTIC DEFENSE AND SPACE COMPANY (TODAY AIRBUS GROUP). HYTERA WAS LISTED ON THE SHENZHEN STOCK EXCHANGE IN 2011 AND RAISED AN IMPRESSIVE USD 214 MILLION IN ITS IPO.

Tuning In

In 1984, Chen Qingzhou began work as a sales manager at Fujian Quanzhou Redstar, a mobile radio communications company. In 1990, Chen moved up to the rank of Deputy General Manager for Fujian Quanzhou Weixun Eletron before founding Hytera in 1993. Initially, Hytera began with the HYT line of walkie talkies, which still exists today as a sub-brand of Hytera.

Hytera has grown to be a key player in Professional Mobile Radio (PMR) communication industry with a large customer base in more than 80 countries around the world. The company is actively involved in developing global PMR standards, and is one of the few radio communication providers that operate in all three main stream digital standards, namely TETRA (Terrestrial Trunked Radio), DMR (Digital Mobile Radio) and PDT (Professional Digital Trunking).

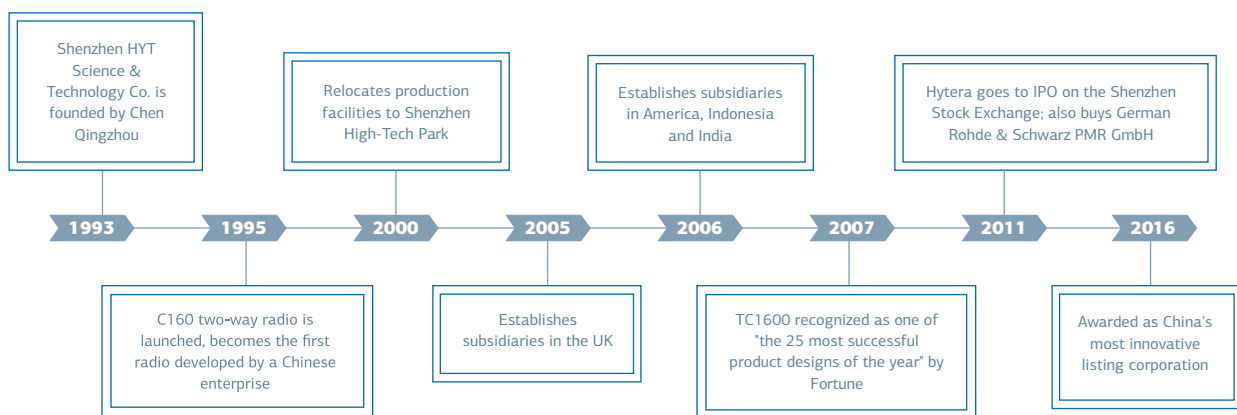
Today, Hytera holds a leading market position in China and ranks first among Chinese manufacturers in its field and is a top-five global manufacturer of professional wireless communication equipment. Hytera focuses on technological advances and reliable quality to compete globally and spends more than 10 percent of revenue on R&D.

Innovation for a Safer Future

As the world is increasingly experiencing complex security situations, governments are attaching increasing importance to public safety systems and protocols, which are nowadays contingent on the private network communications industry. The rapid growth of this industry provides a historic opportunity for development and Hytera continuously increases product innovation in order to meet the evolving needs of customers.

In 2015, more than 12 percent of revenue was spent on R&D and the company's research team amounted to over 1600 qualified staff. Hytera's headquarters in Shenzhen boasts the largest manufacturing facility and R&D center for professional two-way radios and wireless trunking systems in China. In addition, Hytera operates research centers in the USA and Germany, focusing on digital technology research, product design and application development. With a portfolio compliant to multiple leading protocols including TETRA, DMR, PDT and private network LTE, Hytera is capable of providing customized solutions to different users worldwide.

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The company is able to meld together core mature technology with product innovation, thus creating a competitive edge in the industry. Hytera holds approximately 600 patents and has won numerous prestigious Chinese awards recognizing innovation. Private network communications need to be not only cutting edge in terms of design and performance but also reliable and safe. The company has a mature and widely used high-end product line that is dust-proof, waterproof and in some cases explosion-proof to provide the highest level user experience possible.

Indonesia, India, Hong Kong, with indirect representation in other areas. Distinguished by tailored solutions, quick delivery and superior quality, Hytera is becoming the optimal choice for more overseas customers.

In 2008, HYT saw a 30 percent growth rate globally. In 2012, Hytera acquired the German company, Rohde & Schwarz PMR (R&S). The acquisition was intended to give R&S a competitive edge in projects with a large or continual demand for terminal equipment and to develop production and R&D capabilities relating to the TETRA technology.

“Hytera has gained some achievements in the past years. It will continue focusing on the professional communication network industry and promote the technology evolution of professional mobile communications. It’s Hytera’s mission to bring unlimited communication experiences to customers worldwide.” — Chen Qingzhou, Founder and CEO of Hytera¹⁹

Going Global

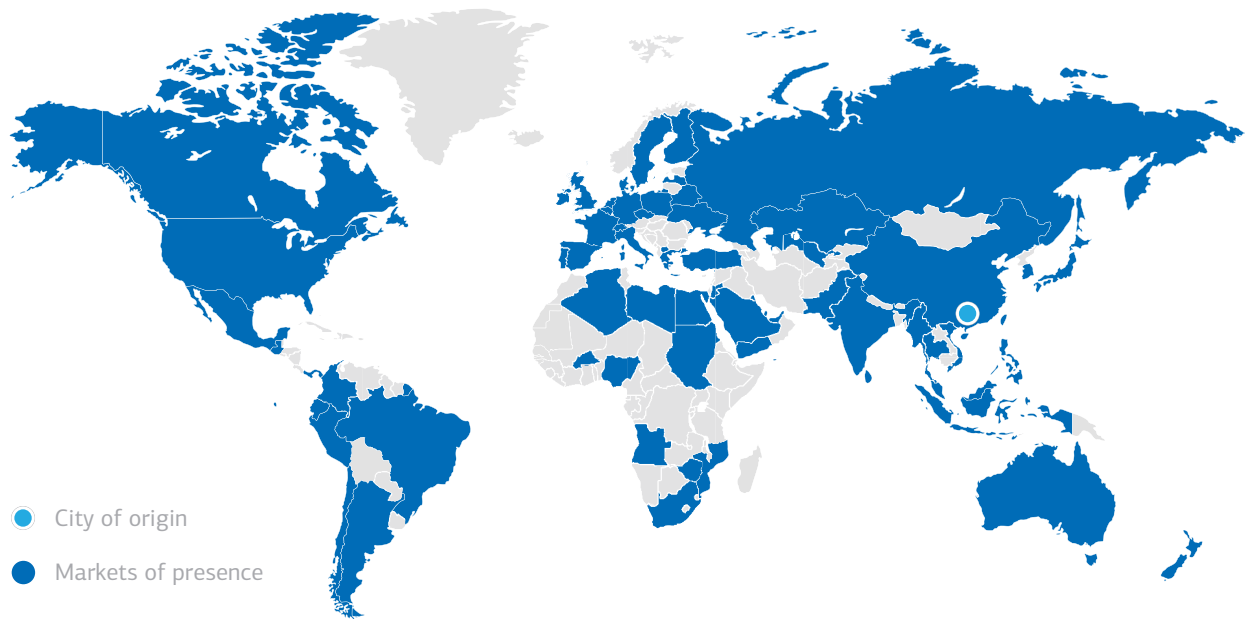
Hytera's expansion overseas is typical of privately-owned Chinese companies that are encouraged to expand internationally as China shifts from rapid growth supported by cheap exports to sustainable growth supported by advanced technology. Hytera embarked on its international expansion by beginning to explore the global market in 2001 before setting up its first subsidiary in London in 2005. Since then, it has set up branches in America, In-

In 2016, Hytera opened an office in Kuala Lumpur, Malaysia that consists of a product showroom, training center and service center. Malaysia is one of the strategic markets among the Asian countries for Hytera. The company, with its strategic partner Mal-Tel Technology, provides more than 10,000 end users with reliable mobile radio communication services in Malaysia.

Furthermore, Hytera provides its solutions and services to notable clients including Mexican Police C4 Center, Turkish National Police, Kazakhstan Armed Forces, Abu Dhabi Company for Onshore Oil

¹⁹ Business Wire. (2014). China's No. 1 Two-way Radio Provider Hytera Shipped 1 Million Units in 2013. Available at: <http://www.businesswire.com/news/home/20140212006039/en> [Accessed: 08 August 2016].

GLOBAL FOOTPRINT



Operations, Bahrain City Center and America's Cup, New Zealand. Hytera is also a well-known brand in Britain, having supplied telecommunications services to the soccer games of the London Olympics and to correctional facilities.

Global Friendships

As China is expected to experience the largest professional wireless communications market growth, Chinese companies are increasingly beginning to understand not only the benefits but also the necessity of localization. Hytera strives to achieve customer satisfaction and works closely with its distributors, dealers and integrators to clearly understand the demands and concerns of its users to quickly respond with customized solutions. The company has established a global sales and service network to bring innovative products and solutions to local markets quickly and efficiently.

In China, Hytera has established a nationwide sales and marketing network with subsidiaries and offices in major cities. Internationally, Hytera has established a global sales network with nearly 1000 distribution partners worldwide and has serves customers in over 80 countries. The company believes local management can be more effective and therefore strives to ensure local people play an important role in their overseas operations. Hytera continuously works with dealers to establish long-term stable relationships as the company rapidly expands.

Hytera and its sub-brand, HYT, have been successful in establishing themselves as brands that are valued and recognized globally. The focus on customer care has allowed the company to gain a reputation not only for its products but also for the overall user experience. In 2010, Hytera was the first Chinese company in the private network communications industry to create a "CRM Customer Management Center" as part of its marketing strategy. In 2013, the company established a set of CRM management initiatives including a hotline and online customer service as

"We were already an industry leader in China's domestic market in 2005, so we realized that it was time for us to expand internationally so we could continue to expand at a high speed." — Andrew Yuan, Managing Director of Hytera Communications UK Ltd²⁰

20 Cecily Liu. (2012). Private companies fly the flag on distant shores. China Daily. Available at: http://europe.chinadaily.com.cn/epaper/2012-11/02/content_15868723.htm [Accessed: 08 August 2016].

part of its “Global Network Marketing Center”. This integrated marketing approach quickly developed direct contact with the customer and increased sales.

Hytera plans to expand its product line and diversify its offering in order to remain competitive going forward. The company continuously seeks new patents and certifications in order to stay at the forefront of industry trends.

Outlook

Future plans for internationalization are expected both through organic expansion and through the acquisition of foreign companies. Hytera expects to provide its state-of-the-art wireless systems to advanced economies, while its more basic HYT products are aimed at emerging markets.

**"We consider Hytera the optimum new owner due to its strong position in the Chinese and Asian markets, and also due to the complementing product portfolio." —
Dr. Georg Haubs, CEO of Hytera Mobilfunk GmbH²¹**

21 TETRA web portal. (2012). New European member of the Hytera family. Available at: <http://www.tetra-applications.com/19901/> [Accessed: 08 August 2016].



Sector: Clean Technology
Established: 2001
Origin: Beijing, China
CEO: Ao Xiao Qiang
Website: www.chsdl.com
www.sdl-industry.com



Beijing SDL Technology is engaged in the research, development, manufacturing, sale and maintenance services of analysis instruments, environmental monitoring systems and industrial process analysis systems

THE CHINESE POLLUTION CRISIS AND THE CONSEQUENT BOOMING ENVIRONMENTAL MONITORING INDUSTRY HAS FUELED SDL'S GROWTH AND ALLOWED IT TO BECOME A 'CLEAN-TECH GIANT' ALONG WITH A HANDFUL OF OTHER COMPANIES. IN CHINA, THE COMPANY HAS BEEN QUICK TO DEVELOP NEW TECHNOLOGY, REACT TO REGULATORY CHANGES AND RESPOND TO EMERGING CONSUMER NEEDS. BEIJING SDL DIFFERENTIATES ITSELF BY OPERATING AS A FULL SERVICE COMPANY THAT TAKES CLIENTS FROM SYSTEM INTEGRATION TO AFTER-SERVICE AND MAINTENANCE. AS THE COMPANY GREW IN CHINA, IT SOON ACHIEVED A SCALE LARGE ENOUGH TO PLAN INTERNATIONAL EXPANSION THROUGH M&AS. SINCE 2015, THE COMPANY HAS BECOME VERY ACTIVE IN THE STRATEGIC PURCHASE OF COMPANIES IN EUROPE AND ASIA IN ORDER TO EXPAND ITS TECHNOLOGICAL OFFERING AND ACCESS NEW MARKETS. IN THE FUTURE, SDL IS EXPECTED TO FOCUS ON EMERGING MARKETS LIKE THE MIDDLE EAST AND AFRICA.

Every Cloud Has a Silver Lining

Beijing SDL Technology was founded in 2001 and is located in the Changping District of the Beijing International Information Industry Base. The company's founder, and current CEO, Ao Xiao Qiang graduated from South China University of Technology in 1985 with a Degree in Automation. Ao then worked at Beijing Beifen-Ruili Analytical Instrument Group as Senior Engineer before he left in 1998 and took the plunge as an entrepreneur. As China began facing increasing pollution, Ao built his company from supplying environmental monitoring equipment to industries such as power, steel, chemicals and waste incineration.

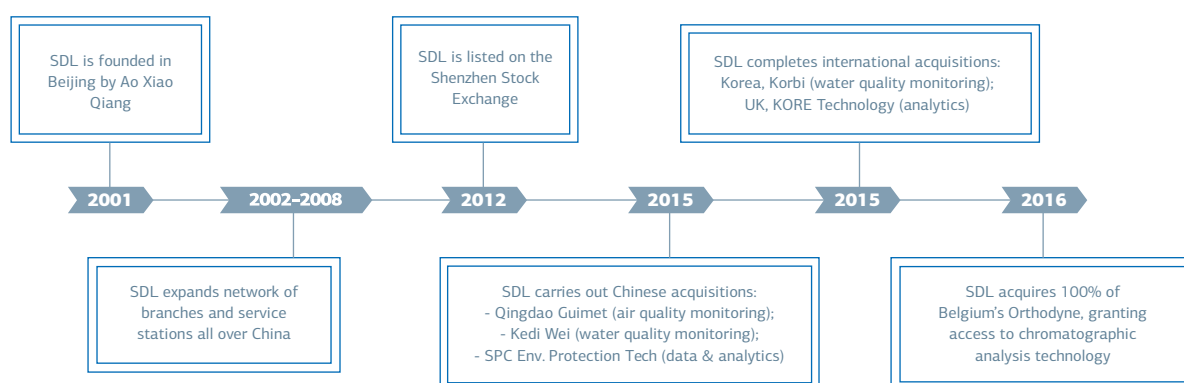
The company is specialized in environmental monitoring systems, industrial process analysis systems, analytical instrumentation and accessories, as well as operation and maintenance services of national high-tech enterprises. SDL was listed on the Shenzhen Stock Exchange in March 2012, becoming a leader in the environmental monitoring industry.

A 2015 Forbes ranking of CEOs of listed companies in mainland China listed Ao as second best-performing CEO in the business performance category. Ao became a billionaire when the company's share price rose exponentially on the prospect of new pollution laws in 2015. Ao Xiao Qiang's estimated worth at the time was USD 1.2 billion, according to the Bloomberg Billionaires Index.

The Engine Room

The environmental protection industry is very much a policy-driven industry where both regulation and government investments in the field foster growth; for governments to control pollution, monitoring must first take place. In order to meet the demands of the severe pollution that has afflicted China during its industrial revolution, Chinese companies have had to improve upon the technology already available to them from foreign enterprises. Consequently, an integral part of Beijing SDL's development strategy has been research and innovation. Today, the company is both augmenting its

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in-house R&D resources and staff and has also committed, by means of M&A, to increasingly introduce state-of-the-art products and technologies.

Although the company's products are widely used for the on-line monitoring of pollution and industrial processes in the electric power, petrochemical, building materials, metallurgy and chemical industries, Beijing SDL Technology also works with environmental protection departments and research institutions to help improve environmental pollution measuring standards. SDL currently has seven branches, 53 offices and employs more than 800 people, including more than 138 R&D personnel. In 2015, SDL's R&D staff accounted for 12 percent of its total workforce and it increased its R&D investments by 85.79 percent from 2014 to 2015²².

SDL is committed to innovation not only by improving performance but also by actualizing new concepts and breadth of business in order to stay current and competitive. As is the trend with many Chinese companies that have achieved success, SDL has chosen to do this through M&As. In July 2015, the company acquired 44 percent of the air quality monitoring business, Qingdao Guimet. In August 2015, SDL acquired the remaining 60 percent stake in Kedi Wei, the water quality monitoring company. In September 2015, Beijing SDL and CPI Yuanda Environmental Protection Group set-up a Chongqing-based joint

venture, Beijing SPC Environment Protection Tech, to carry out environmental consulting, data analysis, data exchange and trade. This last deal is significant because 'analytics' presents a big opportunity going forward and are expected to augment exports since this type of expertise is not yet developed abroad.

Calmly Taking the World by Storm

Although the environmental monitoring services industry is still largely dominated by international companies, most foreign enterprises have trouble competing in China. The Chinese environmental crisis is allowing SDL and others develop core competencies and technology in the field, which will likely lead to a future in which Chinese firms will dominate the environmental monitoring industry.

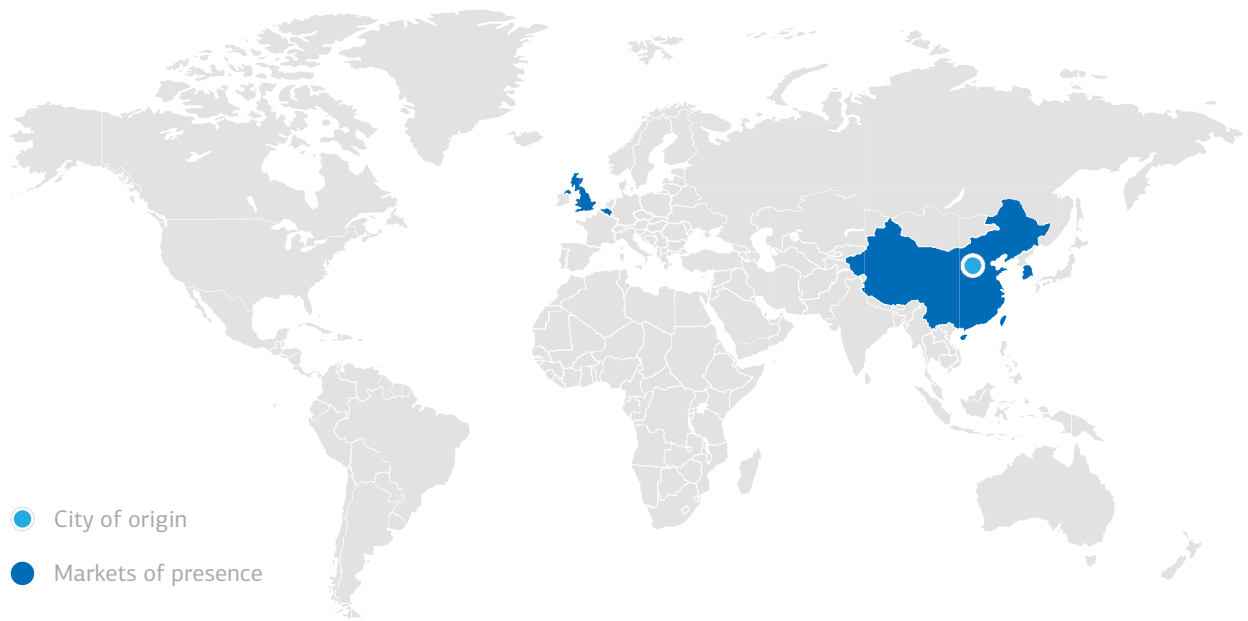
Today, SDL's business is largely confined to China with limited exports (accounting for less than 1 percent of total income in 2015) to Europe, America, Southeast Asia, the Middle East and Africa. As a system integrator, SDL is able to work with international companies in China and subsequently develop

“Technology is key for us (in acquisitions) and it does not matter whether we obtain a controlling stake or not. If there are technological competences to leverage and complement, then it is a good partner for us.” — Wei Peng Na, Director of Investment Department of SDL²³

22 Morningstar, Inc. (2015). XSHE:002658 Beijing SDL Technology Co Ltd Annual Report. Available at: <http://quote.morningstar.com/stock-filing/Annual-Report/2015/12/31/t.aspx?t=XSHE:002658&ft=&d=26e2eb2cdad2242bf013e0a72a5aa51d> [Accessed: 27 July 2016].

23 Talents magazine. (2015). SDL (002658 SZ) rely Morningstar? Available at: <http://xueqiu.com/4321743070/51899002> [Accessed: 27 July 2016].

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relationships that allow it to gain opportunities abroad. For instance, as an integrator of Siemens components, SDL purchases half of all its supplies from Siemens, which makes it an important partner in the sale of Siemens products in China.

Though SDL's ambitions have been mostly local as China has provided a large and fertile market, the company has begun acquiring stakes in companies abroad to fuel its expansion and gain access to new technology. Internationally, Beijing SDL's acquired a 60 percent stake in Korbi, a Korean water-monitoring equipment company and also acquired a 51 percent stake in the UK's Kore Technology. Kore is specialized in the R&D, production, and marketing of high performance analytical instruments and related products. In 2016, Beijing SDL Technology set-up an investment subsidiary in the UK, SDL Technology Investment Ltd, and plans to use this investment company to acquire 100 percent of Belgium's Orthodyne, which would grant it access to the company's cutting-edge chromatographic analysis technology. Orthodyne is Belgium's leading provider of detectors, chromatographic analysis instruments and total analytical engineering solutions.

Beijing SDL Technology is also a participant in the international dialogue on environmental topics. For instance, in January 2016, the company's CEO, Ao, participated in meetings with the German Agency for International Cooperation in an effort to promote the cooperation between China and Germany in the field of environmental protection.

More than Just an Integrator

Beijing SDL Technology is able to customize its products and apply its technology to new fields. The company's business model is mainly based on direct sales. In recent years, it has seen the proportion of direct sales rise over the proportion of government procurement contracts, identifying a trend in the industry as the need for environmental services becomes more widespread with an increase in regulatory obligations imposed on firms. SDL's products are now used in the power, environmental protection, metallurgical, cement, air separation and petrochemical industries, among others.

SDL operates 50 maintenance and service stations across China. By the end of 2012, SDL was maintaining 900 sets of equipment including 150 sets of products that were not initially integrated by the company. SDL has an excellent technical team consisting of 210 operation engineers & technicians. This staff has obtained various certifications to carry out the specified maintenance work. Every service station is equipped with spare parts and spare analyzers, convenient transportation and communication tools. SDL provides customers with 24/7 service and strictly operates in accordance with their quality management system.

With supervision from the environmental protection department and pollution discharge enterprises, the

company carries out daily inspections, calibrations and validations, in a timely and safe manner. Furthermore, the staff reports incidents to ensure the effectiveness and upload rate of data. Beijing SDL expects to gradually improve its on-line monitoring system in order to enhance the company's remote maintenance and service capabilities to achieve unified management of data from the pollution source monitoring station.

Outlook

The company aims to build a top-level global process analyzer brand. It is expected that in response to demand, and perhaps shareholder pressure, SDL may begin looking at car monitoring and soil monitoring products. It has already expanded its offering to include water monitoring with the acquisition of Korbi and more of this type of diversification is expected in the future.

In addition, SDL aims to improve its technological capabilities and consequently further its reach globally. Going forward, the company plans to expand to emerging markets such as the Middle East and Africa and also compete with high end products in Europe and America.

“Our business model (that is product, application and service) is our response to clients’ requirements. We know our products best and clients want us to provide the entire set of services as it is cheaper and easier for them.” — Ao Xiao Qiang, Founder and CEO of SDL²⁴

²⁴ Talents magazine. (2015). SDL (002658 SZ) rely Morningstar? Available at: <http://xueqiu.com/4321743070/51899002> [Accessed: 27 July 2016].



Sinocare Inc.



Sector: Biotechnology
Established: 2002
Origin: Changsha, China
CEO: Li Shaobo
Website: www.sinocare.com



Sinocare develops, manufactures and sells biosensor technology real-time detection products. The company's main products include rapid trace blood glucose testers and supporting blood glucose testing strips

THE CHINESE MARKET FOR GLUCOMETERS WAS INITIALLY MONOPOLIZED BY FOREIGN COMPANIES WHO STILL HOLD 50 PERCENT OF THE MARKET TODAY. LI SHAOBO, SINOCARE'S FOUNDER, RECOGNIZED AN OPPORTUNITY AS THE UPWARD ECONOMIC MOBILITY OF THE CHINESE POPULATION AND CONCURRENT LIFESTYLE CHANGES STARTED INCREASING THE INCIDENCE OF DIABETES THROUGHOUT THE NATION. SINOCARE BEGAN BY DEVELOPING PRODUCTS THAT IMPROVED ACCURACY AND USABILITY, WHILE CATERING TO THE CHINESE POPULATION BY CREATING DISPLAYS IN SIMPLIFIED CHINESE. IN 2007, AS SINOCARE BEGAN LOOKING OUTWARDS AND IT WORKED TO RECEIVE EXPORT LICENSE FROM THE CHINESE GOVERNMENT AND OBTAINED INTERNATIONAL CERTIFICATIONS TO FACILITATE THE SALE OF ITS PRODUCTS ABROAD. THE COMPANY HAS BEEN SUCCESSFUL IN SELLING ITS PRODUCTS THROUGH ONLINE PLATFORMS, RETAILERS AND DISTRIBUTORS IN EMERGING MARKETS. IN RECENT YEARS, SINOCARE STARTED ACTIVELY SEEKING INVESTMENT OPPORTUNITIES IN FOREIGN COMPANIES TO FUEL ITS INTERNATIONAL EXPANSION AND GRANT IT ACCESS TO NEW TECHNOLOGY AND DISTRIBUTION NETWORKS. IN 2016, THE ACQUISITIONS OF USA-BASED NIPRO DIAGNOSTICS AND PTS DIAGNOSTICS HAVE PROVED TO BE STRATEGIC CHOICES.

Wealth and Health

Li Shaobo, General Manager and Chairman of the Board of Sinocare, graduated from Hunan Medical University with a Master's Degree in preventive medicine. Until 1996, Li worked as a physician at the Huaihua's Municipal Center for Disease Control (CDC) and subsequently worked at China Investment Holdings Limited as a Senior Manager specialized in the bio-pharmaceutical industry.

In the late 1990s, Li realized that due to the rapid development of China's economy and consequent lifestyle changes that many people experienced, the prevalence of diabetes was showing a rapid upward trend.

He then founded Sinocare in 2002 and became its General Manager. Today, Li is very much involved in the business community and is the Vice President of Hunan Medical Device Industry Association. In 2009, he was awarded the title of Outstanding

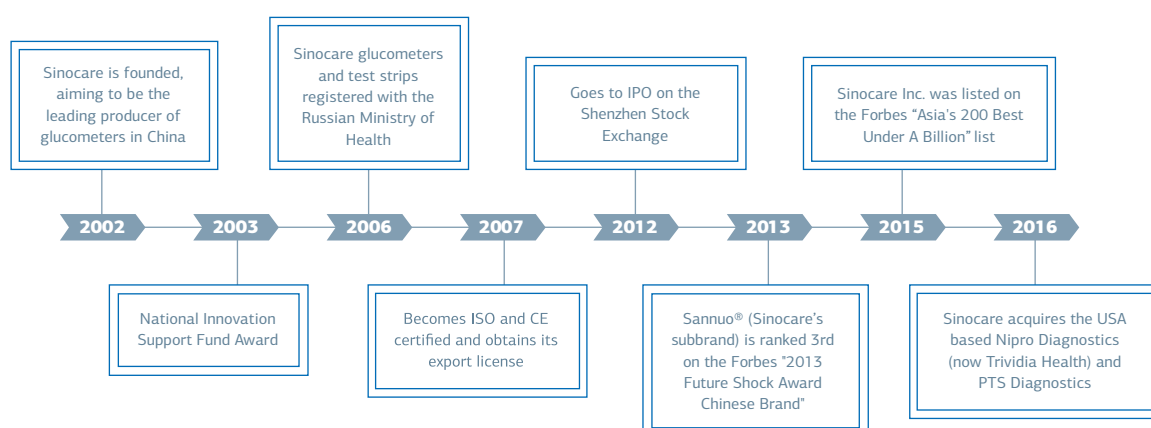
Entrepreneur by the Hunan Province People's Government.

The company's production facility is located in Lu Valley Science & Technology Park in the Changsha National High-Tech Industrial Development Zone.

Seizing the Chinese Village

Early on, Li Shaobo hired Wang Li as Technology Officer to help oversee certain changes that would be needed to adapt glucose meters specifically for Chinese consumers. For instance, foreign brands used micro-cell batteries and the replacement of these was troublesome for many Chinese consumers and so they modified the devices for use with standard batteries. In addition, the display on the monitors was improved by streamlining functions

COMPANY TIMELINE



and making the text in Simplified Chinese. The company improved the core functionality of the devices by making the readings from drip paper that catches blood for testing more accurate and with a smaller sample. With these micro-innovations, Sinocare was able to gradually open the Chinese market and become the biggest-selling domestic glucose meter company in China.

At the time of the establishment of Sinocare, the domestic glucose monitoring market was dominated by foreign brands. In fact, Johnson & Johnson, Roche and Abbott still account for 50 percent of the market today. From the very start, Sinocare did not compete directly with foreign brands but rather found pockets of business by looking elsewhere. The company sold to the many pharmacies and clinics in the villages surrounding major Chinese cities, whereas foreign companies sold primarily to hospitals. Their product was a good fit for this segment as it was more localized and accessible to the local population than that of foreign brands.

Tapping into Global Opportunities

Sinocare's main drivers towards internationalization are exposure to new technology and access to distribution networks. Sinocare primarily employs an M&A growth strategy for its global expansion. At the same time, it maintains international sales through distributors and online partners.

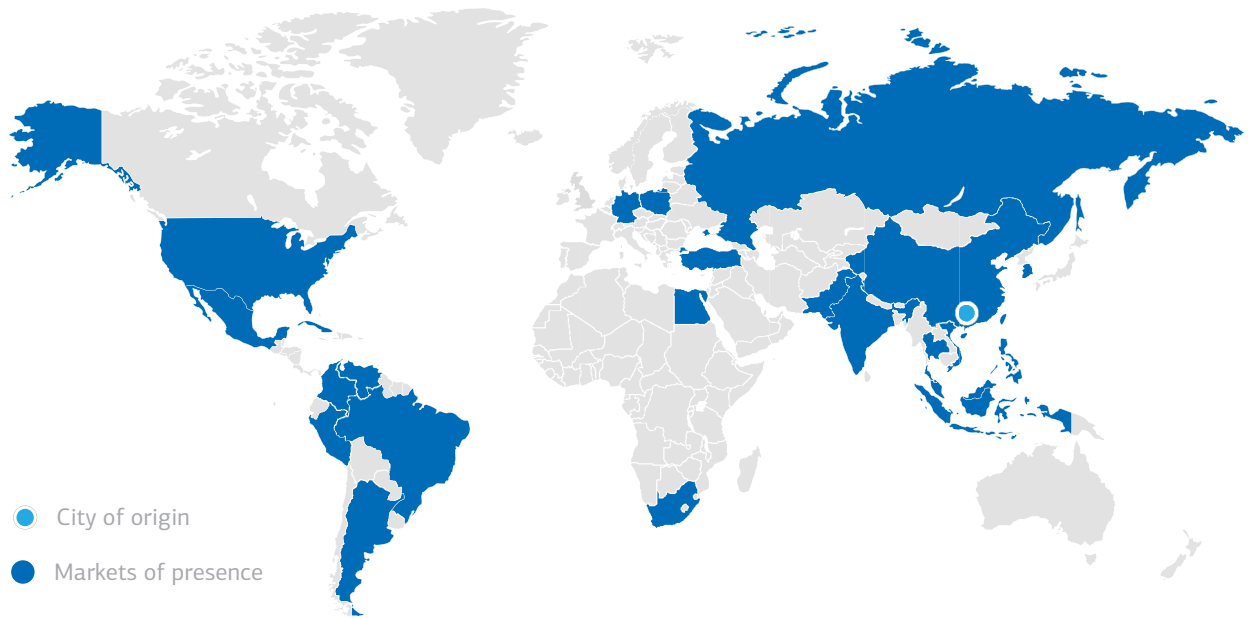
In 2007, the company attained EU CE certification and the German TUV certification. In the same year, the company also got its export license from the Chinese government. Since then, Sinocare's interna-

tional sales channels include local distributors, for instance in Russia, and also a strong e-commerce presence through online platforms such as China Medical Solution in Africa and through retail partners like Amazon and eBay in Europe and the USA. In 2014, Sinocare secured contracts for the sale of blood glucose monitoring products to TecnoSuma Internacional, the Cuban developer of diagnostic equipment for early detection of diseases, for the Cuban and Venezuelan markets. TecnoSuma has commercial offices in Mexico, Colombia, Venezuela, Brazil, Argentina, Peru and China.

The company has begun looking to acquire shares in foreign companies to grow its business. In 2015, Sinocare reportedly bid for Bayer's diabetes device unit. However, a rival bid by KKR-backed Panasonic Healthcare Holdings had been in preparation for many months and so ultimately prevailed over the Sinocare bid. Nevertheless, Li looked for other opportunities and in January 2016 completed the acquisition of Nipro Diagnostics, formerly the American subsidiary of the Japanese Nipro Corporation; the company was renamed Trividia Health.

Most recently, in May 2016, Sinocare acquired PTS Diagnostics for USD 200 million in cash including contingent considerations of up to USD 90 million for the successful accomplishment of certain milestones. PTS Diagnostics is a US manufacturer of point-of-care biometric testing devices. The company's manufacturing facilities are principally located in Indianapolis, IN and Sunnyvale, CA. These last two acquisitions are evidence of a strong emphasis on the American market, which will grant them both access to manufacturing technology and existing distribution networks.

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“We will continue to grow our business and explore opportunities globally and we will provide more innovative and systematic solutions to fight chronic diseases which allow people with diabetes and other chronic diseases live better and healthier lives.” — Li Shaobo, Founder and CEO of Sinocare²⁵

Developing New Segments

Sinocare prides itself on its dedication to the research and development of bio-sensor technology and aims to innovate in order to make significant strides in health care. Sinocare’s Deputy General Manager and Chief Scientist, Cai Xiaohua is a Chinese-born American national who obtained his BA, MA and PhD degrees in Analytical Chemistry from Wuhan University. Later, he completed postdoctoral research at University of Graz in Austria and New Mexico State University. When he returned to China, he first worked at Hunan University as a Visiting Professor and then joined Sinocare in 2013. Under Cai’s leadership, Sinocare developed the Gold Series world-class Blood Glucose Monitoring System. This product is expected to allow the company to effectively enter China’s high-end hospital market and competitively enter the European mainstream

market. The process to develop the Gold Series was arduous and systematic. The devices were revised and improved thousands of times and after repeated clinical trials.

In addition to blood glucose monitoring products, Cai also led the team that developed other Point of Care Testing (POCT) associated with diabetes, such as glycated hemoglobin, urine micro, urine creatinine, serum creatinine, blood ketone. These products will help facilitate the diagnosis, treatment and early detection of diabetic kidney disease.

Sinocare has also focused on trends in the use of mobile technologies and the Internet in glucose monitoring. The company jointly developed China’s first glucose meter for smartphones with Dnurse. This meter for smartphones hit the market in March 2014, six months before the arrival of Apple’s glucose meter app. These apps allow people to register and process data more effectively, making information more accurate and complete for healthcare professionals.

25 Sinocare Inc., corporate website (press release). Available at: <http://www.sinocare.com>. [Accessed: 18 June 2016].

“Our R&D is in medical device products, requirements are very strict, not a hint of error.” — Cai Xiaohua, Deputy General Manager and Chief Scientist of Sinocare²⁶

Outlook

As China has become the country with the largest diabetes mellitus population in the world, the market for glucose monitoring systems and related products is vast and has enormous potential. World-wide, the total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030²⁷.

Part of Sinocare’s strategy is the improvement of the value chain to develop middle-high end blood glucose products. It is currently working on various new products; most notably, they have developed their Gold line, which is intended for the European market and for the higher echelon of healthcare in emerging markets. The company is also planning to continue expanding through strategic investments in foreign companies.

“We have a shared vision and a singular focus to provide innovative and affordable solutions, so patients can live healthier lives. Together, we will offer a strong portfolio of solutions to our global customers.” — Li Shaobo, Founder and CEO of Sinocare about the Agreement with Nipro Corporation²⁸

26 Han, Y. (2014). Sinocare: Micro Innovation Power (in Chinese). China Business. Available at: <http://finance.sina.com.cn/roll/20140712/020519682898.shtml> [Accessed: 18 June 2016].

27 Wild, S., Roglic, G., Green, A., Sicree, R. & King, H. (2004). Global Prevalence of Diabetes. Diabetes Care 2004 May; 27(5): 1047-1053. Available at: <http://care.diabetesjournals.org/content/27/5/1047> [Accessed: 18 June 2016].

28 Corporate website (press release)



Sector: Electrical machinery and apparatus
Established: JV — 2008; Crown — 1983, Interskol — 1991
Management: Steven Xu, CEO at China Crown Investment Group; Sergey Nazarov, Chairman of the Board at Interskol
Websites: www.china-crown.com
www.interskol.ru



ICG produces and sells power tools in DIY and professional classes including: drills, screwdrivers, grinding machines, disk saws and perforating machines

ICG IS A SINO-RUSSIAN JOINT VENTURE. CHINA CROWN INVESTMENT GROUP AND RUSSIA-BASED INTERSKOL HAVE GROWN OVER THE LAST NUMBER OF YEARS WITH INDIVIDUAL STRENGTHS THAT WOULD ULTIMATELY HELP THEM ACHIEVE SUCCESS IN INTERNATIONAL MARKETS. THE COMPANIES BEGAN PARTNERING, FIRST, WITH CROWN WORKING AS A SUPPLIER TO INTERSKOL, AND LATER, THE BUSINESSES DEVELOPED STRONGER TIES THAT WOULD ULTIMATELY LEAD TO A GLOBAL ALLIANCE. THIS PARTNERSHIP IS THE FIRST OF ITS KIND BETWEEN A MID-SIZE RUSSIAN COMPANY AND A CHINESE ENTERPRISE. ALTHOUGH BOTH COMPANIES HAVE TAKEN DIFFERENT ROUTES TO SUCCESS AND INTERNATIONALIZATION, TODAY, THEY SEEK TO GAIN SYNERGIES IN PRODUCTION, MARKETING, DISTRIBUTION AND R&D. THEY HAVE RECENTLY STARTED A JOINT PROJECT OF INTEGRATED LOGISTICS TO SUPPLY COMPONENTS FOR INTERSKOL'S NEW PLANT IN ALABUGA AS WELL AS HAVE LAUNCHED A PROJECT TO DISTRIBUTE INTERSKOL-BRANDED PRODUCTS TO THE NEW MARKETS THROUGH CROWN'S REPRESENTATIVE OFFICES. THIS WILL IMPLY A NEW DYNAMIC BETWEEN THE TWO COMPANIES AND IS LIKELY TO CHANGE THE NATURE OF THIS COLLABORATION WHICH IS ONE OF THE FIRST BETWEEN RUSSIAN AND CHINESE MID-SIZED FIRMS.

Interskol Crown Group: An Alliance for Growth

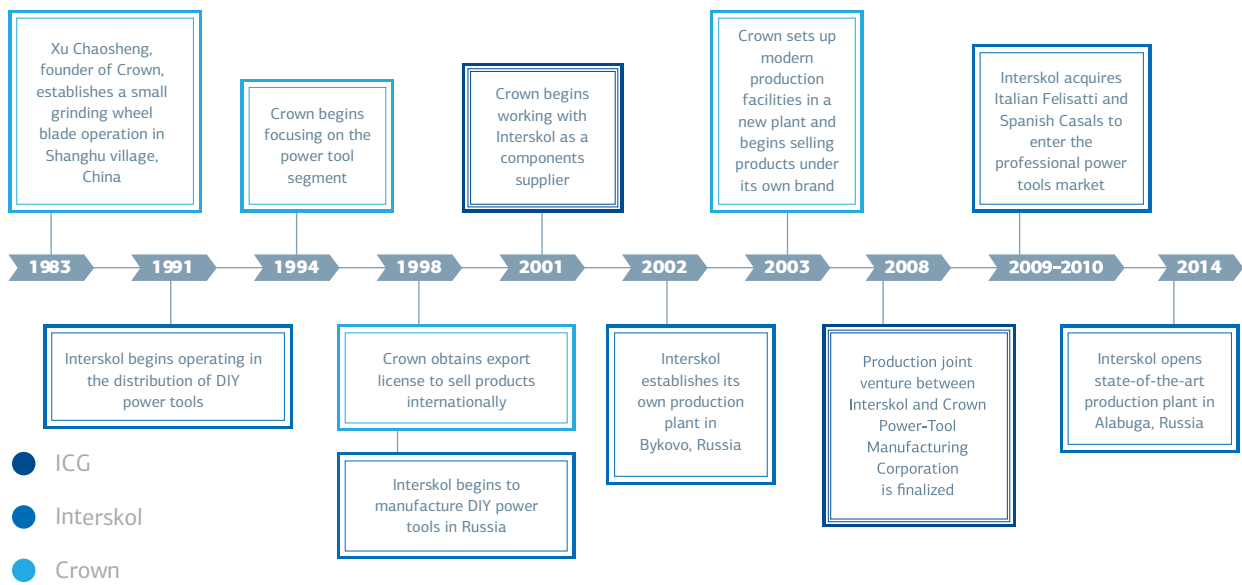
By the mid-1990s, both Interskol and Crown had chosen to concentrate on the production of power tools for the promising Russian and Chinese markets respectively. By 2001, Crown had already been working as a supplier of parts for a number of large companies and Interskol was beginning to look outward for the sourcing of components that would

reduce its manufacturing costs. Crown was a small family business with limited technological expertise that was trying to learn how to serve its market. On the other hand, Interskol had concentrated within itself engineering and technological experience of the electric-tool industry from the time of the USSR but lacked production capacity to fill the needs of the booming market. During this period, the companies had their first meeting and eventually agreed on the supply of components from Crown, which would soon reach a total value of USD 200 000 per annum. Crown's full-cycle facility, which produced both components and final products, would allow a cost reduction of 15-20% for the Russian company.

“The main goal for ICG is to combine and leverage each other's efforts in order to successfully compete in global markets.” — ICG representatives at INNOPROM 2015²⁹

29 Interskol, corporate web-site (press release). Available at: <http://www.interskol.ru> [Accessed 10 August 2016].

COMPANY TIMELINE



Gradually, despite differences in culture, the relationship between Xu and Nazarov grew and they found more ways to work together. In 2008, they created a joint venture, Interskol Crown Group, ICG, which would become the 6th power tool producer in the world in terms of output. At this stage, Interskol staff had the opportunity to work in the joint Chinese plant, providing invaluable production experience and knowledge transfer back to Russia, whereas Crown increased access to Interskol's technological expertise. Over time, the companies also created a joint R&D center, began coordinating quality management, jointly planned and executed production and logistics, and worked together on product development. This brought the partnership to an entirely new level. By 2014, their joint business totaled USD 60 million per annum.

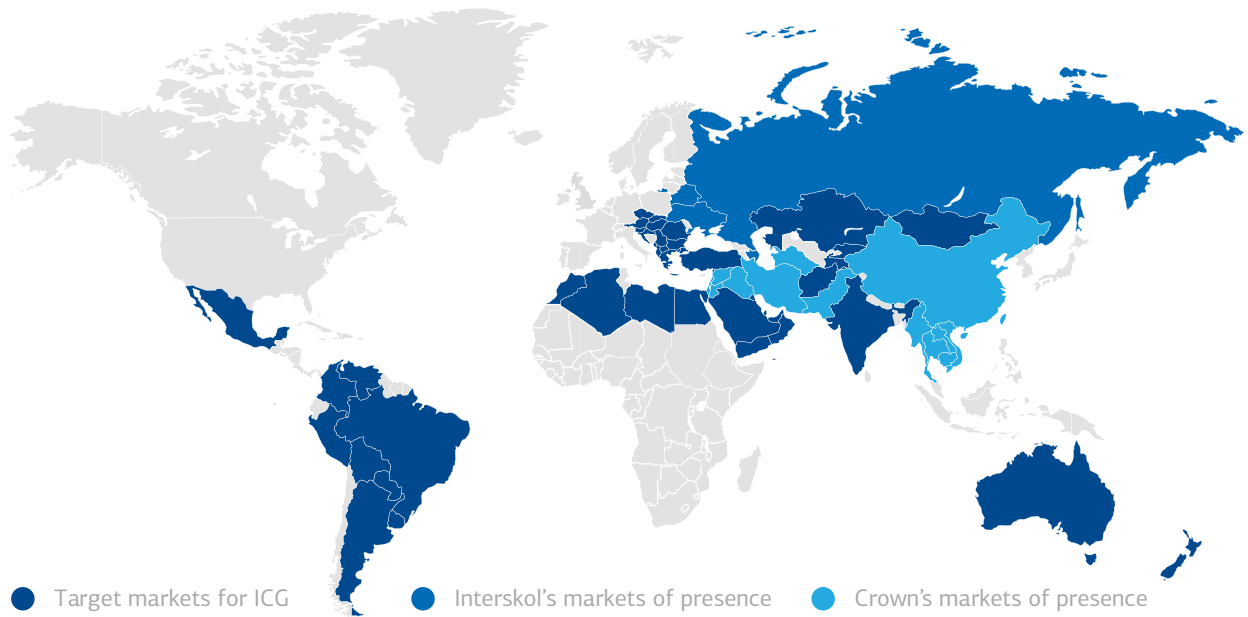
The rationale behind the joint venture certainly differed for the respective companies. For Interskol, the decision to outsource components production to China was pivotal for the business. A Chinese production base capable of producing large batches at a low cost and proximity to the rapidly growing Chinese com-

petition would allow them to scale up operations, reduce costs and ultimately compete more effectively in the Russian market and abroad. For Crown, on the other hand, the collaboration was important as they had issues linked to massive production defects that were stifling their growth. The company needed to quickly improve its technological capabilities and R&D depth.

Today, the collaboration has moved beyond a mere joint production venture and is increasingly a strategic alliance based on a trust dynamic between Xu and Nazarov. The companies are a very good fit as they each provide complementary strengths. They pledge to share long-term goals, work to develop new products and assess new markets together, appearing more and more like a unified firm with a shared vision.

“Russians say ‘we need water over there’ and start digging the channel; the Chinese pour water and watch where it flows.” — ICG partners about Chinese and Russian approaches to business

GLOBAL FOOTPRINT



Outlook

Going forward, Xu and Nazarov plan to gradually increase cooperation to tackle the global market together. The partners believe that this will distinguish the strategic alliance from the joint venture. Thus far, the companies have primarily worked together on production and R&D. Now, they aim to jointly develop the ICG brand globally to seize opportunities in the low to mid-level power tools segment, which is currently dominated by “no name” brands.

The companies also foresee synergy in combining their distribution capabilities to maintain strong positions in their home markets as well as to enter new geographies such as the Middle East and South America. More and more, the companies are integrating the sales and distribution functions; ICG intends to open branded retail outlets in Russia and China and later on in the Middle East and Asia.

“The fall of the ruble made the products produced at the Interskol-Alabuga plant ultra-competitive. There has been a substantial increase in exports as the company has signed new contracts with customers from Europe, the Middle East and North Africa.” — Sergey Nazarov, Chairman of the Board of Interskol³⁰

INTERSKOL

Interskol was founded in 1991 by former employees of the leading USSR Institute of Mechanical power tools (VNI-ISMI), Sergei Nazarov and Stepan Orlov and were later joined by Valery Lotin and Sergey Okunev. Initially, the company was involved mainly in the distribution of power tools. Then, during the 1998 Russian economic crisis, the founders realized that distribution of imported products was too risky as this type of business would be vulnerable to currency fluctuations. At this time, they decided to begin production of their own tools in Russia. Initially, they participated in joint production with other Russian partners, e.g. Izhevskii Mechanical Plant (IMZ), and in 2002 they built their own full-cycle plant for the production of power tools in Bykovo, Moscow Region.

By 2003, Interskol was the market leader in Russia by number of power tools sold. Its astute understanding of market trends and needs helped them identify a supply gap and thus focus on high quality professional equipment at middle-level prices.

After the global economic crisis of 2008-2009, Interskol had an opportunity to strengthen its position in Russia through the acquisition of European companies. In 2009, Interskol acquired the Italian company Felisatti, a global leader in the professional tools for woodworking niche, which occupied a significant market share in Europe, Israel and North Africa. Felisatti's plant was set to move due to retail development and was being sold below market value. Interskol seized the opportunity and completely moved the plant's production equipment, by truck, to its site in Bykovo, Moscow in order to optimize production resources.

Later in 2009, Interskol acquired the Spanish niche high-performer, Talleres Casals Herramientas (Casals). This company's professional power tools for woodworking are sold worldwide under the brand name Freud, and for some product groups its market share has reached 30%. Thanks to the deal with Casals, Interskol had access to a state-of-the-art production facility and improved access to the European market.

Interskol's international acquisitions have allowed it to significantly expand its product range and shift from the DIY segment to the professional tools segment. Although these tools are more expensive to manufacture, Interskol has been able to present a significant cost advantage with quality products of similar quality.

In 2014, Interskol opened a new plant in the Alabuga Special Economic Zone (Tatarstan, Russia), which is expected to produce high-end Felisatti branded tools aimed at international markets. This super-modern robotic production facility is one of the largest tool manufacturing facilities in Europe and the company foresees that it will increase its competitiveness internationally due to the recent devaluation of the Russian ruble and its access to foreign markets through its alliance with Crown.

30 Krasnova, V. (2015). With the trust resource (in Russian). Special Report / Made in Russia. Expert №13 (939). Available at: <http://expert.ru/expert/2015/13/s-resursom-doveriya/> [Accessed 10 August 2016].

CHINA CROWN INVESTMENT GROUP

In 1983, Xu Chaosheng established a small grinding wheel blade operation in Shanghu Village, China. At the time, resources were limited and distribution was very difficult as orders were delivered by post and it took up to 3 hours by cycle rickshaw to reach the post office from Shanghu. The company gradually grew and eventually moved its production facilities to Xian Village. Xu soon began getting contracts as an OEM for major global brands despite the size of his operation. This would ultimately pave the path to export and internationalization as was the case for many of his Chinese counterparts.

In 1994, Xu and his team finally decided to focus exclusively on the power tool segment. Soon after, the company obtained its export license and Xu Steven, the founder's son, joined the company after having completed university. At this time, Crown began exporting to the USA, the Middle-East, South America and South East Asia and in 1996 suffered a big loss tied to its export business due to impaired customer credit and management inexperience.

Once recovered from this period of austerity, Xu decided to focus on product upgrades and product line expansion. It is also at this time that Crown began looking at building a more global company and forging alliances with other companies to gain access to capital, technology, distribution networks and management expertise. During this period, Crown had many difficulties with its product quality and was even forced to discard an entire batch of electric hammers because of serious product defects. It is around this time that the company began working with Interskol as a supplier.

In the course of 2000s, the company was expanding. Its annual revenues were growing exponentially, from USD 10 million in 2002 to over USD 60 million in 2005. The company was forging ahead by opening up new plants and subsidiaries. Soon the enterprise turned into a large group of companies. In 2006, a training program was established in order to improve upon the relative inexperience of the management team. The following year, Crown Investment Group was created as part of a reorganization aimed at better coordinating the relationship between headquarters and subsidiaries.

As of 2004, Crown started to sell products under its own brand, primarily to South East Asian markets that were dominated by "no name" brands. The company also began to pay more attention to its sales and logistics and set up subsidiaries that were specifically dedicated to its distribution business.

More recently, the company has begun focusing on innovation and technology. Today, Crown aims for zero quality defects and uses the most advanced technical processes and equipment available globally. They have established a Power Tool Institute for R&D staffed with skilled engineers. This is expected to boost new technology development and help assess technologies according to customer needs and user demand.

"Globalization is not so much about selling across the globe but rather about optimal usage of global resources." — Steven Xu, CEO of China Crown Investment Group³¹

³¹ Sazonov, A. (2011). The right way to use the power of China (in Russian). Forbes. Own business. Masterclass. Available at: <http://www.forbes.ru/svoi-biznes/master-klass/75824-kak-pravilno-ispolzovat-moshch-kitaya> [Accessed 10 August 2016].

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