Tech entrepreneurship ecosystem in the Russian Federation

2018

OC&C Strategy consultants

Commissioned by Google
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Preface

The digital era has brought a fundamental shift in the global economy, pushing the limits of innovation and redefining the boundaries of global trade. Innovations have never been faster-paced, more widespread, or scaled up more quickly, creating billion-dollar “unicorns”. Over the last 15 years, the ICT sector – as a backdrop to innovation and digital advances – has seen its share grow from just 1.3 percent of the global economy to 3 percent, and it’s set to grow even more.1

Nations that nurture a digital- and innovation-based culture have pioneered the global shift toward knowledge-based industries and have enjoyed extraordinary wealth (and job creation), while transforming the way people live and do business. This shift is made possible by substantial tech entrepreneurship activity within a supportive environment that includes both government and private-sector contributions. Initiatives by leading countries are now regarded as best practices for aspiring nations that want to create a similar impact, and the global conversation around regulation and innovation policies is framed around such practices.

Countries that are more reliant on manufacturing or natural resources are eager to capture a bigger share of the expanding digital economy. In order to deliver on these aspirations, they are exploring ways to transform the fundamentals of their economic structures and to deploy more resources to cultivate competitive tech entrepreneurship ecosystems. Establishing high-impact tech entrepreneurship as a sustainable source of employment is especially critical for nations with new young populations and a need for new sources of job creation.2

Given the importance of strong fundamentals in attracting both domestic and global interest in the tech entrepreneurship ecosystem, countries which fail to make broader reforms in education, good governance and create a business environment that supports entrepreneurship risk falling behind.3

Google has commissioned this study to identify areas for improvement in policies and regulations which affect tech entrepreneurship in Russian Federation, as part of a six-country study that includes Turkey, South Africa, Nigeria, United Arab Emirates (UAE) and the Kingdom of Saudi Arabia (KSA).

For the purposes of this study, entrepreneurs are defined as those individuals who focus on building a rapidly scalable business venture with the aim of innovating, improving, or transforming the current way of doing things.4 The entrepreneurship domain, according to our definition, includes the ‘startup’ and ‘scale-up’ phases of the business lifecycle when companies experience high growth in revenues and numbers of employees while validating their value proposition. Furthermore, we specifically address technology-driven entrepreneurship – companies with technology-enabled business models and a focus on hyperconnectivity between networks, people, businesses, things, and hardware.

Using these definitions, we began with comprehensive research of existing literature to identify factors that correlate with tech entrepreneurship success, grouping them into nine components. Some of these components explain the strength of the ecosystem that supports tech entrepreneurship, while others point to the results achieved.

In our view, the inputs that form the preconditions for success and the resulting outputs feed each other in an iterative process, which determines the health of a tech entrepreneurship ecosystem. Factors such as the quality, connectedness, and efficiency of a tech entrepreneurship ecosystem – which we refer to as the inputs – create the conditions for sustainable success. Meanwhile, effectiveness in generating tangible results such as growth, employment, the creation of wealth along with further innovation – the outputs – cultivates a stronger ecosystem by attracting more of the required inputs. This holistic perspective is reflected in the framework we used to assess tech entrepreneurship success.

Based on our assessment, we identified leading and emergent countries in tech entrepreneurship, putting the USA, Singapore, Israel and UK at the top of the list. Identifying successful countries provided a filter for selecting best practices as well as setting performance indicators that aspiring countries such as Russian Federation can use to assess their status, identify improvement areas, and apply approaches that fit the nature of their own ecosystems.

To put Russia’s status in context, we have compared input and output indicators for Turkey against a peer set of countries with comparable development stages, similar characteristics, or geographic proximity.

In the final stage of the study, we conducted extensive primary research in Russia to complement the desk research. Whereas the desk research served to develop the structure of the tech entrepreneurship ecosystem and identify current initiatives that are in place to cultivate it, we gained insights and understood the context and impacts by conducting bespoke research with ecosystem participants, together with The Association of Electronic Communications (RAEC). The policy recommendations that are part of this report are suggestions from the Russian entrepreneurial community for further policy initiatives that will help strengthen the development of the tech entrepreneurship ecosystem in Russia.

In total, we interviewed 24 stakeholders (representing different components of the ecosystem), spanning public and private as well as institutional and individual perspectives. The full list of participants is presented in the Acknowledgements section.

**OC&C’s framework for assessing tech entrepreneurship success**

**FIGURE 1: THE TECH ENTREPRENEURSHIP ECOSYSTEM IS REPEATEDLY STRENGTHENED WITH TANGIBLE ECONOMIC RESULTS AND INNOVATION**

**TECH ENTREPRENEURSHIP ECOSYSTEM**

- **Financial capital**
- **Skilled talent**
- **Networks**
- **Market potential**

**RESULTS OF TECH ENTREPRENEURSHIP**

- **Economic contribution**
- **Innovation creation**

---

**FINANCIAL CAPITAL**

- Individual investors
- Crowdfunding
- Angel investors
- Personal networks
- Venture capital
- Public funding
- Corporate investment (CVCs and M&A)
- Securities market
- Debt financing

**SKILLED TALENT**

- Educational foundations
- Skills development
- Venture capital
- Professional partnerships
- Incubators / accelerators
- Mentorship

**NETWORKS**

- Mentors and coaches
- Accelerators / incubators
- Open innovation
- International linkages
- Mentorship
- University-industry partnership
- Tech transfer offices
- Physical clusters
- Co-working spaces
- Techparks

**CULTURE**

- Society’s attitude to entrepreneurship
- Entrepreneurial aspirations and appetite
- Promotion of role models / success stories
- Media coverage of entrepreneurship

**REGULATIONS**

- Ease of doing business
- Compliance
- Trading across borders
- Digital policies
- Government R&D policies

**MARKET POTENTIAL**

- Accessibility and affordability of internet (mobile / fixed)
- Cloud & data center experience

**ICT INFRASTRUCTURE**

- Digital literacy / readiness
- Potential for 5G
- Internet capacity
- Digital services
- Downtime market size
- B2B
- B2C
- Public procurement
- Social media
- Internationalization

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**DEscribes the INPUTs necessary to cultivate thriving tech entrepreneurship**

**Indicates the OUTPUTs generated by tech entrepreneurship**

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Source: Literature Research, OC&C analysis
Tech entrepreneurship ecosystem - Inputs

The tech entrepreneurship ecosystem and its components constitute the inputs in OC&C's tech entrepreneurship success assessment.

One definition of an entrepreneurial ecosystem is: “a set of interconnected entrepreneurial actors, organizations (e.g. firms, venture capitalists, business angels, banks), institutions (universities, public sector agencies, financial bodies), and entrepreneurial processes (e.g. the business establishment, growth, levels of ‘blockbuster entrepreneurship’, number of serial entrepreneurs, degree of self-out mentality within firms and levels of entrepreneurial ambition) which formally and informally coalesce to connect, mediate and govern the performance within the local entrepreneurial environment.”

OC&C’s Tech Entrepreneurship Ecosystem Framework (Figure II) presents the attributes outlined above, and the way in which they interact and influence one another. These seven components, working together, provide the habitat needed to generate successful tech entrepreneurship.

Best-in-class countries are able to offer equity funding sources in greater volume and variety (i.e. business angels, venture capital firms, and government investment funds). Deep and efficient stock markets and the high frequency of deals make the entrepreneurial challenge financially worthwhile and are instrumental in drawing in more resources – in terms of funding, skilled talent, and support – into the ecosystem.

These countries have a larger number of highly skilled employees and a labor force created by education systems and talent attraction initiatives that support tech entrepreneurship. These ecosystems are characterized by a greater pool of scientists, engineers, and research universities that foster an innovation culture.

Benchmarks demonstrate a superior level of network development that is characterized by the availability of entrepreneurial networks, startup associations, accelerators, incubators, co-working spaces, technoparks, etc. There are stronger innovation linkages between academia and the private sector such as joint-venture/strategic alliance deals, and industry-university collaborations.

In the best-practice countries, there is a higher individual risk appetite, coupled with cultures that are more supportive of entrepreneurship. It is easier and less bureaucratic to start and run companies as an entrepreneur, and the risk of failure is better managed.

Supportive digital policies - laws related to data flow, cybersecurity, data privacy, IP protection, etc. - and strong innovation capacity steered by governments’ R&D policies provide a sturdy backbone for the ecosystem. Open foreign trade policies enable these countries to internationalize their businesses.

Another fundamental differentiator is reliable fixed and mobile internet infrastructures at affordable prices. Digital policies that support cross-border data flows lead to higher utilization of efficient, cost-effective global cloud services.

Lastly, we also see that leading countries possess considerable (rich) market potential and those that don’t have a big enough market are globally oriented from the start. In the domestic market, consumer digital literacy is of great importance as consumers are then more likely to try new digital products, thus creating attractive market conditions for B2C companies. In addition, advanced markets are efficient and competitive, with minimum barriers of entry for business startups.

Role of the government in strengthening the tech entrepreneurship ecosystem

While many actors are involved in the ecosystem, the role of government deserves attention. Government policy can affect all entrepreneurial actors and components of the ecosystem: resource providers, entrepreneurial connectors within the ecosystem, and the entrepreneurial environment of the ecosystem. The government’s contribution is important because of its direct impact on the ecosystem through the creation of favorable terms and the provision of incentives for high-growth startups. Moreover, government exerts its influence on all components to create a constructive environment and facilitate interconnectivity between these components.

In the benchmark countries, the shift to knowledge-based industries has taken place both via favorable policies that support the development of each component of the ecosystem and greater government funding for high-growth firms.

**Figure II: Tech entrepreneurship ecosystem framework**

Source: OC&C analysis

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Russia at a glance

Russia is the world’s 12th largest economy, with a GDP of USD 1.3 trillion, and it is highly dependent on natural resources such as oil and gas. Several industries in the economy are dominated by large, formerly state-owned players, with a relatively low SME contribution. Recent economic challenges, including sanctions and the devaluation of the Russian ruble, have constrained the market, leaving entrepreneurs with fewer opportunities for growth and expansion.

Russia’s current path to tech entrepreneurship began with Prime Minister Dmitri Medvedev’s article “Go Russia!” in 2009, which outlined a national program for tech entrepreneurship and encouraged massive investment in technology and its related infrastructure.

The government’s top-down approach to developing innovation has yielded results in the form of an extensive physical innovation infrastructure including technoparks and funds, while other critical elements are in development. Greater support from the private sector is needed to develop the tech entrepreneurship ecosystem.

The results of tech entrepreneurship - Outputs

We evaluated Russia’s efforts in tech entrepreneurship via a series of ‘outputs’ and markers of efficiency and success. Our index of benchmark countries highlights the relatively weaker performance of Russia on a range of factors including startup density and the value of their exits, along with a similarly low score for diffusion of Russia-produced IP. The performance comparison of Russia against the benchmark set can be found in page 20.

Russian tech entrepreneurship ecosystem overview - Inputs

Russia’s startup ecosystem is broad and diverse, spread across a variety of sectors and types of business model. The e-commerce and FinTech sectors, particularly in B2C services, lead the tech ecosystem in terms of numbers of startups. Remarkably, 79 percent of all Russian startups are located in Moscow. While this type of clustering is evident in many developing nations, it highlights the need to diversify further into the regions and spread tech entrepreneur activity. Large-scale government efforts to cultivate tech entrepreneurship include the integrated residential-commercial-academic free zone Skolkovo, Russian Venture Company’s innovation ‘fund of funds’, the quasi-government Internet Initiatives Development Fund (I IDF)’s early-stage accelerator, and the grant-based innovation foundation FAISE.

Our review of the Russian tech entrepreneurship ecosystem with active stakeholders identified three areas for improvement:

- Russia’s science and innovation culture has not evolved to value strong business skills, a necessary feature for a strong tech ecosystem.
- Russia’s recent changes to digital policies will have significant implications for the ICT sector and tech entrepreneurship. Related regulation is often broadly focused and written in language that requires significant interpretation.
- Much of Russia’s private sector is highly concentrated, with a small number of large companies that have neither the objectives to cultivate tech entrepreneurship nor the necessary understanding of the requirements to do so. This reduces the prospects for young tech companies in terms of market entry, partnerships and exit options investment, and acquisitions.

Like other ecosystems, Russia enjoys a rich network of investors, ranging from individuals to venture capital funds, though corporate funding is largely absent until the acquisition stage. Attractive startups enjoy a streamlined fundraising process, but finding ‘smart money’ investors is difficult, given the relative immaturity of the ecosystem. Investor networks such as the National Association of Business Angels (NABA) help to fill this gap by encouraging investment and educating investors about appropriate expectations.

Relying mainly on individual investors and family offices, rather than large institutions such as ‘funds of funds’, makes fundraising a challenge for venture capitalists. While regulatory measures such as recognition of options and share classes are being implemented to increase the attractiveness of investments in VC, the funding gap can only be fully closed if public funds such as pensions can be invested in technology startups.

In Russia, the most common exit method is strategic acquisition. Large, industry-leading companies do full takeovers of startups, providing entrepreneurs with liquidity, but providing a lower return than an IPO might.

While the government would like the number of IPOs to increase, low liquidity in the Moscow Stock Exchange (MOEX) with extensive filing requirements makes IPOs relatively unattractive. Current government efforts to modernize the MOEX will probably make tech IPOs a more preferred exit option in the future.

Recently, Russian entrepreneurs have rapidly embraced initial coin offerings (ICOs), given the ability to raise large amounts of money with minimal requirements. However, regulatory warnings about the practice could weaken appetite for ICOs in Russia. Though popular with entrepreneurs, investors and lawyers caution against the risks associated with the low transparency and lack of financial controls with ICOs.

Technology skills remain a key strength in Russia, where software developers are considered some of the best in the world. At 25 percent of the salaries their US counterparts make on average, Russian software developers are much in demand for international startups. Business-savvy entrepreneurial talent is harder to find, given a relatively small SME sector and a low cultural focus on developing management skills. Addressing the shortage in this area requires a greater focus on introducing business skills in technical degrees and also in extracurricular programs. Increasing selective immigration and knowledge sharing visits by foreigners would also serve to close the skilled talent gap in the country.

At c.700 startups, the tech ecosystem is varied, diverse, widespread, and has a large number of network players. Government investment in a large physical infrastructure marked by technoparks and incubators has contributed significantly to tightly-networked communities around these centers.

Increasing the number of qualified, motivated mentors with the right skills, expertise, and background in entrepreneurship will create a major impact on the ecosystem. Without them, the ecosystem’s potential may be limited. Building international networks and connections continues to be a challenge for entrepreneurs with an eye on global expansion.
The R&D potential in the country will be increased by greater interaction between universities and the private sector, a common foundation for innovation in many countries. For maximum effect, the next wave of government interventions could focus on increasing interactions and deepening relationships between players, rather than building more facilities or infrastructure.

Entrepreneurs who want to go global must factor this consideration into their business’ foundations, given the unique nature of Russian market competition. Startups have been registering their companies in foreign jurisdictions to leverage more established legal, investment, and dispute resolution frameworks. This is beginning to change, as the business environment develops and incentives to register a business in Russia increase. Contract enforcement has improved significantly and there is now a well-structured framework.

The existing culture of celebrating ‘heroes’ could be leveraged to celebrate entrepreneurs, as can raising the national consciousness around entrepreneurship to increase the number of aspiring entrepreneurs. Entrepreneurs who want to go global must factor this consideration into their business’ foundations, given the unique nature of Russian market competition. The less competitive market structure of Russia deemphasizes the importance of commercial viability, so entrepreneurs who want to go global need to focus on proving their commercial proposition on a global, not a domestic, basis.

The “Yarovaya”, “242-FZ”, and “Google tax” laws, which recently came into effect, create new obligations for pricing, tax, data storage, privacy, and general internet use. Despite the potential these have to make a transformative impact on the economy, the reaction of companies may involve market retreat or increased prices, both of which could affect access to internet based services/businesses.

Any changes to the regulatory environment for digital policies should be made in line with cost and implementation requirements to ensure the best formulation and fit to consumers and startups. International alignment and a continued focus on IP/copyright law has yielded a strong legal framework, but uneven enforcement and a high level of pirated content originating from Russia has created concern. New reforms will probably positively impact perceptions of the Russian court system, but this will take time.

An ongoing import-substitution program was introduced to protect Russian companies and stimulate demand for Russian products and services. While this will probably tip the preference in favor of Russian entities, other unintended consequences such as restricted access or higher prices could result.

Export regulations, as relics from the Soviet era, could be creating barriers to startups that want to expand across borders.

The Russian government has identified R&D spending as a strategic priority. It currently stands at 1.1% of GDP and is 31% funded by government. Increasing private sector participation in R&D could create opportunities for tech entrepreneur involvement in the process and contribute to the growth of the ecosystem.

Developing a University Technology Transfer Office (TTO) policy framework to emulate practices in advanced ecosystems could help achieve greater private sector participation in R&D commercialization.

With 88 million broadband (mobile and fixed) subscribers and 74 million smartphone users, Russia’s broadband and mobile coverage is widespread and inexpensive, making it attractive for tech-enabled startups, though there is room for improvement in regional coverage.

The Russian cloud and data center infrastructure is nascent and currently unable to handle the requirements needed for customization, reliability, and security. Recent data localization policies will significantly shape the development of this sector, as companies seek to become compliant with new requirements for data storage, access, and processing. However, concerns are also voiced that such a mandate will obstruct data flows, discourage international business participation and lead to economic inefficiencies.
Recommendations designed to strengthen the tech entrepreneurship ecosystem

Insights into the Russian tech entrepreneurship ecosystem led to a series of policy recommendations to address gaps and foster a strong ecosystem. These recommendations are grouped under three main headings:

**Conclusion**

Transforming Russia into a global innovation hub, with a strong network of world-class tech startups, is an ambitious goal. Large government investments have created the infrastructure for the current innovation environment. The next wave of interventions should consider:

- focusing on improving the business and management capabilities of its technically strong workforce
- elevating the profile of the business profession and entrepreneurship
- fostering connections with large-scale private enterprises
- assessing the impact of regulations to date
- ensuring that the business process framework is tailored to increase the number high-potential startups that can become national champions.

Domestically, improved consumer and investor sentiment will magnify the effectiveness of policy initiatives taken to foster a stronger tech entrepreneurship ecosystem. Outside of Russia, an improved geopolitical climate and normalization of international affairs will further create opportunities for growth and investment in the global economy.

Details of the specific recommendations under each group can be found on page 53.
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Russia at a glance

Russia is the 12th largest economy in the world with a GDP of USD 1.3 trillion and a population of 143 million people, c.a. 45% of whom are below the age of 35. Government revenues depend heavily on oil and gas, and the private sector is primarily driven by larger corporations. SMEs represent just 21 percent of GDP (compared to 54% for the US). Russia’s Soviet history has shaped the private sector into a network of large, state-owned enterprises across heavily concentrated sectors. Against this backdrop, SMEs, startups, and nimble innovative companies have only recently been trying to make a significant contribution to the economy. The regulatory framework and related oversight is therefore evolving to accommodate this growing sector.

While the Russian economy is large, with a well-developed infrastructure, the country suffers from instability in terms of macroeconomic factors. A recent currency devaluation, falling oil prices, and political sanctions have created challenges for tech entrepreneurs to secure deals and funding, both at home and abroad. Investors and customers, wary of country risk, have sought technology and partners from economies undergoing less change.

Russia’s efforts to modernize its economy have been remarkable. A strong commitment to transforming into a knowledge society is supported by Russia’s large market, well-educated workforce, specialist capability in high technology, and significant government resources. Ecosystem participants highlight government interventions as largely effective in growing the tech entrepreneurship ecosystem. Despite this concentrated effort, uneven results point to areas where gaps persist or unintended consequences have emerged.

Russia is often seen as tightly controlled from the capital, though the vastness and diversity of the regions suggests both untapped talent and unexplored markets. Expanding the reach of government interventions beyond Moscow and St. Petersburg has begun in earnest, yet these two centers still form the bulk of startup activity in the country.

There are limits to what public policy and direct government intervention alone can achieve. An active, thriving private sector – potentially to be incentivized and supported by government – is perhaps the best facilitator for a healthy tech startup ecosystem in terms of market choice and exit opportunities.

**FIGURE 1. MACROECONOMIC INDICATORS OF RUSSIA**

| GDP (USD), 2016 | 1,283 B | 12 | SME contribution to GDP, 2014 | 21% |
| GDP per capita (PPP adj. USD), 2016 | 27 K | 52 | Consumer expenditure as a % of GDP, 2016 | 53% |
| Population (millions), 2016 | 143.4 | 9 | Stock market cap as a % of GDP, 2015 | 24% |
| Rate of population aged 15-19 over those aged 55-59, 2016 | 0.61 | | Stock market traded as a % of GDP, 2015 | 8% |

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**FIGURE 2. GLOBAL COMPETITIVENESS INDEX SCORES FOR RUSSIA**

<table>
<thead>
<tr>
<th>Score (1-7)</th>
<th>Rank (138)</th>
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<tr>
<td>GLOBAL COMPETITIVENESS INDEX</td>
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<tr>
<td>INSTITUTIONS</td>
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<td>INFRASTRUCTURE</td>
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<td>GOODS MARKET EFFICIENCY</td>
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</table>

The results of tech entrepreneurship – Outputs

Russia’s success in tech entrepreneurship as measured by outputs is just beginning, compared to the benchmark nations. While Russia performs at par with peer emerging ecosystems on some indicators, the country still has room for improvement on some of the key measurements of tech entrepreneurship ecosystem productivity such as startup density, entrepreneurial growth aspirations, and expectations related to job creation and the contribution of knowledge sectors to the economy.

“Russia is a self-sufficient and self-serving market: we are big enough to breed strong domestic companies, but still small to create unicorns.” – Aleksander Gorny, Strategy and Analysis Director, M&A, Mail.ru

### Russia vs. benchmark countries

#### TECH STARTUP PREVALENCE IN A COUNTRY* PER MILLION URBAN POPULATION

<table>
<thead>
<tr>
<th>Country</th>
<th>Density</th>
<th>Longevity</th>
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</thead>
<tbody>
<tr>
<td>Israel (IL)</td>
<td>214</td>
<td>0.49</td>
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<tr>
<td>Singapore (SG)</td>
<td>176</td>
<td>0.68</td>
</tr>
<tr>
<td>United States</td>
<td>100</td>
<td>0.48</td>
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<tr>
<td>United Kingdom (UK)</td>
<td>82</td>
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<tr>
<td>Finland (FI)</td>
<td>92</td>
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<tr>
<td>India (IN)</td>
<td>50</td>
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<tr>
<td>Spain (ES)</td>
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<td>0.57</td>
</tr>
<tr>
<td>United Arab Emirates (AE)</td>
<td>34</td>
<td>0.68</td>
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<tr>
<td>Germany (DE)</td>
<td>24</td>
<td>0.58</td>
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<tr>
<td>Romania (RO)</td>
<td>20</td>
<td>0.52</td>
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<td>Korea (KR)</td>
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#### NUMBER OF EXITS OVER USD 100M

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<td>Chile (CL)</td>
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<tr>
<td>United Arab Emirates (AE)</td>
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<td>Saudi Arabia (SA)</td>
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<td>Romania (RO)</td>
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</tbody>
</table>

Note: The definitions of the output indicators can be found in the appendix. densities show proportional values among ecosystems. Scales are only comparable within each indicator.

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Tech entrepreneurship ecosystem in the Russian Federation
ENTREPRENEUR'S GROWTH ASPIRATION SCORE

A scoring based on percentage of entrepreneurs with a sophisticated growth strategy aspiring to grow at least 50% in the next 5 years and attract VC funding (1=highest, 0=lowest)

HIGH JOB CREATION EXPECTATION (% OF ENTREPRENEURS)

Ability to create globally recognized "unicorns"* Technology start-ups with over USD 1 billion valuation in benchmark countries

CONTRIBUTION OF KNOWLEDGE SECTORS TO THE ECONOMY

ICT & High-tech exports, international data flows and IP receipts (1=highest, 0=lowest)

INNOVATIVE OUTPUT DENSITY

The abundance of knowledge creation and intangible assets in a country (out of 100)

ENTREPRENEURIAL INNOVATION CREATION*

Rate of entrepreneurs involved in new product or service creation

Note: The definitions of the output indicators can be found in the appendix.

b. A scoring based on percentage of entrepreneurs with a sophisticated growth strategy aspiring to grow at least 50% in the next 5 years and attract VC funding

c. Unicorns in tech-related categories are taken into consideration

d. Some benchmark set countries are not shown due to data availability

Source: OC&C analysis based on World Bank, GEM, GEDI, Crunchbase, INSEAD, McKinsey, CB Insights
Russia’s tech ecosystem was kick-started by then-president Dmitri Medvedev’s 2009 manifesto Go Russia!, which outlined a long-term plan for innovation and entrepreneurship development. Russia’s tech ecosystem has grown considerably since then and now spans a range of company sizes, industry sectors, and funding types.

In the tech ecosystem, e-commerce (15%) and FinTech (13%) are the two leading sectors, with mobile payments and lending services the most common focus areas in FinTech. E-commerce and content represent the fastest-growing sectors, given high customer demand. Russia’s superior tech capabilities are expected to make “smart home” and industrial applications major contributors in the future.

As much as 62% of Russian startups are B2C, in part due to the lower entry barriers compared to B2B startups. And 79% of tech startups are in Moscow, despite the government’s focus on developing innovation centers in the regions. The Russian government has targeted development of specific competencies in tech, increased participant interactions in the ecosystem, set out to improve the popularization of technological enterprise and the enhancement of regional infrastructure to increase the globalization of Russian technology. Starting with Medvedev’s Go Russia! Article, government reforms and investments have focused on the support structure, providing the connections, filling gaps, and creating a regulatory framework that works in line with the government’s technological leadership ambitions.

A number of institutions form the government infrastructure of startup support:

- **Skolkovo** is a multi-functional innovation center that includes a business school, incubator, grant program, tech transfer office, and residential development on the outskirts of Moscow. Skolkovo has distributed USD 195 million so far in more than 980 grants since 2010 (see figure 5).

- **FAISE** – a foundation formed by the government to promote small innovative enterprises – paid grants to 4,075 recipients amounting to USD 92 million in 2016.

- **IIDF** is an early-stage investor and accelerator targeting tech startups in Russia, with a fund size of USD 100 million and 295 companies in its portfolio.

- **RVC** is a government ‘fund of funds’ that co-invests in startups with venture capital funds that focus on tech entrepreneurship in Russia. RVC-backed funds amount to USD 558 million across 253 portfolio companies.

After the investment and interventions brought by Medvedev’s Go Russia! Article, a second wave of reforms and investment has focused on the support structure, providing the connections, filling gaps, and creating a regulatory framework that works in line with the government’s technological leadership ambitions.
Skolkovo represents the Russian government’s most ambitious endeavor to support startups to date and is probably one of the world’s largest technoparks, boasting hundreds of startups and various residential and support services spanning 400 hectares.6

The core of Russia's economy has always been large companies and oil and gas, and most of the legal and economic frameworks in place support this structure. For the tech ecosystem to prosper, legal and economic frameworks need to be adjusted. Also these large enterprises need to be incentivized to work with tech entrepreneurs in a way that fosters the ecosystem.

In our review of the Russian tech entrepreneur ecosystem with active participants in roundtable discussions and interviews, three major areas for focus came up frequently:

- Russia's strong science and innovation culture has yet to value strong business skills, a necessary feature for a strong tech ecosystem.
- Mature tech ecosystems around the world benefit from the right mix of both strong tech development skills, built over time on a solid foundation of STEM capabilities, as well as strong business skills. Strategy, sales, marketing, operations, management, and project management are all critical capabilities if you want to get innovations to market.
- The divergence between legislation and enforcement may create opportunities for others, it will probably see the greatest impact on their capital investments and business models.

A larger gap is the lack of integration between tech and business programs, which is critical to forming institutions that can repeatedly generate market-ready innovations. Skolkovo remains a notable exception: the large-scale technopark features innovation labs as well as a business school. More integrated programs such as these, or exchange programs between technical and business faculty (as well as students), would help address the poor business skills that are a challenge for many Russian tech entrepreneurs.

Russia's recent public policy changes have significant impact potential for some tech entrepreneurship sectors. Related regulation is often protectionist in nature, broadly focused, and written in language that requires interpretation.

Within the last five years, a number of laws forecast to significantly impact the internet industry were introduced, with a variety of aims ranging from counter-terrorism to data privacy to data protection. These laws have introduced broad-based reforms with implications for companies that offer consumer services across the internet sector, often with short timelines and limited implementation guidelines. The result of this is that certain sectors, particularly telecoms and internet services, will probably see the greatest impact on their capital investments and business models.

The divergence between legislation and enforcement may create opportunities for some young companies, which can experiment with models that are aligned with the intended effect of the legislation, but perhaps don’t comply with all components. For others, it will create uncertainty that affects their ability to operate or attract investment.

Early analysis has shown that the import-substitution program is creating a shift toward local solutions, but implementation calls for sizable capital investments, particularly in large industrial sectors. A consequence of the changes in policies has been a reduction in the focus on internationalization. Creating international relationships would otherwise facilitate market access and knowledge sharing, stimulate cross-border investment, and help create global job opportunities for Russian talent. Without this government support, young tech companies may focus their ambitions only on the Russian market, a much smaller opportunity than the global one, given their superior skills.

Russia’s private sector is highly concentrated among a small number of large companies that have neither the objectives nor the understanding to cultivate tech entrepreneurship. This profile limits market entry, partnerships, investment, and exit options for tech entrepreneurs.

Russia’s history of state-owned companies has contributed to a private sector where large, established companies dominate the landscape. These companies, in turn, are often controlled by individuals with strong personal networks and excessive influence. Successful young tech companies are often those that can successfully navigate these dynamics, regardless of the market viability of their innovations.

This market concentration creates a number of challenges for small tech companies in terms of attempts to enter the market, operate at scale, attract investment, and ultimately get acquired. Large, strong companies are able to use their market power to influence regulation in their favor, and to create competition dynamics that benefit large players.

Young tech companies that would benefit from intermediate or acquisition investment find they have a limited number of players they can approach to close deals and secure financing. Addressing this issue would involve the private sector interacting with young tech companies in new and different ways in order to foster relationships that currently don’t exist.
Insights into ecosystem components

Successful tech startups require adequate and timely funding tailored to the startups’ needs, coupled with the guidance and support required for healthy growth. There are five main sources of equity finance available for entrepreneurs:

- **Individual investors** (personal networks, angel investors, crowdfunding) – at the seed stage.
- **Venture capital** (institutional investment) from seed to later stages with high return expectations.
- **Public funding** (grants, sovereign investment funds, funds of funds) – to fill funding gaps at various stages and stimulate priority sectors.
- **Corporate investment** (direct investment and via corporate venture funds (CVCs)) – to acquire industry-specific solutions or for corporate innovation exposure.
- **Public Offerings** in the local and foreign stock exchanges that also signals success to wider audience.

Like most other ecosystems, the Russian funding landscape consists of a mix of public and private funding. Crowdfunding and initial coin offerings (ICOs) have also emerged as newer, streamlined options to raise funds from large numbers of individuals.

- **Public funding** - Grants are largely offered by the Russian government and are relatively limited and small in size. The low average amount given (USD 35,000 vs. USD 1 million for venture capital) makes grant funding suitable for targeted, early-stage funding needs rather than filling funding gaps in the startup ecosystem. By issuing high numbers of small-value grants with minimal bureaucracy, a “spray and pray” approach, and later on providing support to the most successful startups, the government has aimed to maximize efficacy. Investment funds are provided via the Russian government’s tech investment arm Russian Venture Capital, a “fund of funds” that co-invests alongside venture capital firms.

- **Angel investment** - Russian angel investors are primarily high-net-worth individuals who invest their own earnings (average investment size: USD 250,000). Angel investment in Russia has been especially important during VC funding downturns. New legislation recently introduced requires detailed reporting on foreign assets, an administrative obligation that is likely to drive preference for Russian companies registered domestically over ones registered elsewhere.9

- **Crowdfunding** - For Russian entrepreneurs, crowdfunding represents a streamlined way to attract capital with fewer restrictions or requirements. Platforms such as Russian startup StarTrack offer debt and donation funding options, though some bottlenecks and uncertainty exist around what the future legislative environment will look like.

- **Venture capital** - Recent changes to the political and economic landscape in addition to devaluation of the Russian ruble have caused the VC market to contract. While contracting, it has also diverted its focus to provide mainly seed financing. Russia relies more on domestic VC funding. A total of 56% of venture capital is sourced from domestic funds.10

- **Corporate funding** - Corporate investors rarely participate in early investment rounds, preferring instead to acquire Russian startups outright.11 Few corporate venture capital (CVC) funds exist, though companies can invest directly from their own funds. Sberbank, one of the most active Russian corporate investors, uses this method.

“There is no deficit of small money – there are numerous government initiatives that provide small funding and grants; there is no deficit of finance for large-scale companies. The problem is between small and big money – for medium-size enterprises.” – Aleksander Gorny, Strategy and Analysis Director, M&A, Mail.ru

**FIGURE 6. VOLUME OF VC TRANSACTIONS IN RUSSIA (USD MILLION)**

**FIGURE 7. NUMBER OF EARLY-STAGE VC TRANSACTIONS IN RUSSIA**

*Source: Money Tree, Venture Capital Market Navigator, RVC Annual Report, Crunchbase, OC&C analysis*
Some startups enjoy a healthy funding environment due to tight networks of investors and entrepreneurs, but in general acquiring ‘smart money’ remains a challenge among startups, with strong ideas and capable teams only attracting the attention of funders (angels and VCs) early on, often before they are actively fundraising. Part of this is due to the tight networks among some sub-sectors (e.g. FinTech).

But finding “smart money” – experienced investors – remains a challenge for many startups, given the Russian funding market’s lack of maturity. This leaves startups vulnerable to raising funds from investors with misconceptions about the nature of entrepreneurship.

To address the issue of investor/entrepreneur alignment, investor groups such as the National Association of Business Angels (NABA) have launched investor education programs designed to train investors in startup investment principles.

Venture capital investors face their own challenges related to fundraising in the tech ecosystem, relying on individuals and family offices instead of the institutional investors that typically form the basis of a stable limited partners (LP) base.

- Most investment in VC funds comes from large numbers of individuals or family offices in relatively small invested amounts, rather than institutional investment funds.
- Russia Venture Capital’s (RVC) “fund of funds” addresses this funding gap by co-investing with VCs. While this helps inject funds into the investor landscape, directly investing into VC funds themselves can prevent undue influence on commercial investment decisions.
- Due to the critical importance of pensions to Russian society, the riskier nature of Russian VC makes it more difficult to attract investment from pension funds, a model that’s common in other ecosystems and serves as a steady supply of institutional investment.

In Russia, most startups exit via strategic acquisitions by larger, more established firms. ICOs represent a popular new method for exiting or just fundraising, though global regulatory changes mean the future of the ICO market is unclear.

- High industry concentration in some sectors can limit transactions options.
- Initial coin offerings (ICOs) enable a startup to raise investment using cryptocurrency tokens, bypassing the rigorous requirements for an IPO or venture capital funding.
- Though popular with Russian entrepreneurs, most institutional investors remain highly skeptical of ICOs’ safety and legitimacy as a fundraising strategy.
- The Russian government has issued guidance numerous times cautioning the public about the financial risks of cryptocurrencies and has advised that any ICOs that share characteristics of an IPO will be treated with the same level of scrutiny, regulation, and due diligence. This could significantly reduce the attractiveness of ICOs to entrepreneurs.

Though initial public offerings (IPOs) could potentially represent a larger return than strategic acquisitions and continued independence of the firm, the practice is less common. The government has been trying to address securities market modernization through targeted interventions to assist all companies registering for a public offering. This should also help the tech sector.

1. ICOs are not preferred by many entrepreneurs due to the strict compliance requirements and limited market liquidity. Like other markets, IPOs in Russia require a diligent and extensive process of documentation, transformative changes, and arduous transaction structuring.
2. Moscow Stock Exchange Market (MOEX) depth and volatility is low, stock market capitalization is 24% and trade is 8% of GDP.
3. A new framework for the MOEX introduced in 2011 brought it more in line with leading exchanges such as the London and New York stock exchanges. However, this modernization program hasn’t yet affected the rate of tech IPOs.
4. Several government programs aim to stimulate tech IPOs through guidance and support; one program oversees the process and pays related fees, and a RUB 5 billion (USD 85 million) fund by Da Vinci Capital Group and RVC invests in startups that have the potential to IPO.
5. Long-term success will require a large number of market participants, frequent trading, high transparency, many high-growth firms, significant participation by retail investors, and stable performance. Structural reforms that target these elements are more likely to yield larger IPOs.

“The stock market is a strong and desirable exit for a company, but the market in Russia is not ready for IPOs. ICOs, on the other hand, could be an exit strategy as long as the currency is not expensive to invest.” - Iskender Nurbekov, Deputy CEO for Legal Matters and Initiatives, IIDF

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4. World Bank Global Financial Development Database
5. Russian Stabilization Fund (RSF) - “The Russian Federation”
A healthy tech ecosystem relies on a large pool of qualified potential tech founders and employees with superior skills in both technology and business. This, in turn, relies on strong STEM educational foundations and the ability to acquire the relevant business skills. While some skills can be taught in formal education, others must be learned via employment or experience, requiring private sector participation to provide training.

Russia’s history of investment in STEM fields has yielded a workforce that is particularly well skilled in technological development and innovation. However, the inexpensive high-quality talent that Russian software developers represent has made them a target of international startups, triggering a ‘brain drain’ of developers seeking bigger salaries and attractive opportunities in other countries.

Entreprenuership and business skills are far from reaching STEM skill development levels. Improving the business skills of Russian entrepreneurs will take time, and will need to start within educational institutions:

- There has been a long-term focus on STEM skills resulting in consistently high scoring by Russia since the start of the triennial PISA survey in 2006. However, business skills are not at the same level. Russia’s economic history means that business culture has developed only recently. Business education has therefore not yet become globally competitive and no Russian MBA programs appear in the top 100 lists.  

- A vibrant tech industry, anchored by established tech companies is the ideal training grounds for developing the tech skills required for a startup ecosystem. In addition, startups and SMEs are optimal locations for learning the management skills that are transferable to startups. But, with the low startup/SME participation rate and few large Russian tech companies, there are fewer employment options for Russian software engineers wishing to learn entrepreneurship skills.

The government is filling skills gaps with enhanced immigration procedures to attract talented foreigners:

- Targeting skilled foreign talent, a Highly Qualified Specialists visa makes it a simple process for Russian startups to attract and hire foreign employees.

- However, short-term visits such as those needed for meetings, projects, conferences, or other business purposes require visitors to undergo more stringent visa and administrative requirements than other countries.

“It’s not a secret that Russian engineers are some of the best in the world” – Mikhail Buhovtsev, Founder, Cinemood

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**FIGURE 9. SOFTWARE ENGINEER SALARIES**

<table>
<thead>
<tr>
<th>Country</th>
<th>HackerRank Developer Index Score</th>
</tr>
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<tbody>
<tr>
<td>US</td>
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<tr>
<td>IL</td>
<td>75</td>
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<tr>
<td>KR</td>
<td>82</td>
</tr>
<tr>
<td>RU</td>
<td>100</td>
</tr>
</tbody>
</table>

Other countries in scope of tech entrepreneurship study

Source: Startup Genome, Glassdoor, Hacker Rank, OC&C analysis
Tech entrepreneurship ecosystems function best when there is a dense array of players and structures with strong relationships between them. This helps entrepreneurs exchange ideas, build teams, get the resources they need, and grow.

The state-supported Russian network infrastructure is formed by major assets such as labs, facilities, accelerators, technoparks and funds, such as the quasi-government Internet Initiatives Development Fund (IIDF), which has a USD 100 million fund, investing in more than 295 projects since 2013. More than 90 percent of the 150+ incubators and technoparks in Russia are state or municipally owned, and the rich network that these form seems to drive tight communities.

This investment in technoparks has not always been generous. A key focus is on having business people and experts to properly commercialize innovations. For some, the insufficient business expertise of staff and the few market-ready innovations produced have limited the ability to properly commercialize innovations.

For the Russian ecosystem, mentors will be critical to establishing leadership in tech entrepreneurship

- Though often overlooked due to their informal role, the presence and quality of mentors is critical to the growth potential of a tech ecosystem. Effective mentors provide direction and funding, and are especially critical to startups’ ability to secure deals.
- The most valuable mentors are those with backgrounds launching, growing, and exiting their own successful ventures. But in Russia the starting pool of experienced entrepreneurs limits the potential for experienced mentors.
- This is further challenged by the low number of entrepreneurs who return to the ecosystem as investors or mentors, in part due to the frequency of high-growth startups that relocate outside Russia, and the many founders who go to work for corporations after a corporate acquisition.

The Mentorship Model

- The Incubator has a strong pool of external mentors that are experts in different fields. The key focus is on having business people with established successful track record, but also proposal developers, marketing specialists, PR, stakeholder management experts, economists.
- The Incubator’s team provides day-to-day support and guidance to the project team while pulling in external experts on needs basis.
- The external mentors are all volunteers including the Incubator’s alumni and business networks, impact investors. The mentors can both be based in Moscow and throughout the world (if the team needs global expertise).

Alumni

- 60% of the incubator’s alumni have successful businesses.
- 20% of the incubator’s projects receive pre-seed investments.

International expansion opportunities for the Russian tech ecosystem could come from building global networks and connections

- Building links to international ecosystems is a key pathway to open local startups up to global markets and the Russian government has launched several initiatives aimed at fostering international connections.
- Several government programs are already fostering these cross-border relationships. Accelerator Generation S has multiple campuses, IIDF’s TechMafia experience program forms a US component, and Skolkovo Foundation’s Intellectual Property program forms JV’s with international corporations for international expansion.
- While effective, these programs aren’t large enough for the majority of startups to take advantage of them.
- In general, other startup founders create their own international linkages by attracting foreign investment, seeking placement in foreign incubators, registering outside of Russia, or simply moving to another country.
- Building these linkages will become easier with a more global Russian economy in general.
FIGURE 11. CASE EXAMPLE OF A RUSSIAN TECH STARTUP LEVERAGING BOTH LOCAL AND INTERNATIONAL NETWORKS - CINEMOOD

CINEMOOD

Overview

- CINEMOOD is a wireless projector designed as a home theater for children that allows them to interact with technology in dynamic ways, while preserving curatorial power for parents.
- Though registered in Russia, its manufacturing is in China, and the company has participated in IIDF’s incubator that brings Russian entrepreneurs to Silicon Valley. The company has also launched a campaign on international crowdfunding site Indiegogo that will enable it to raise capital from both foreign and domestic investors.

Key Facts

- The first mini cinema with kids’ friendly pre-installed content for families
- $150 000 raised on Indiegogo after 2 months, it’s 200% from target goal
- 3000 V1 units are sold in 9 months on European market with 30% online, and 70% retail
- The winner of Startup Village 2016, granted USD $55,000
- Received USD 200k investment from StartTrack
- Received USD 2.5 MN investment from IIDF (Series A)

Timeline

CINEMOOD

Cinemood has worked with different ecosystem actors along their journey to global expansion.

- IIDF global accelerator (Tech Mafia)
- Skolkovo Startup Village for visibility
- Indiegogo for fundraising
- IIDF for fundraising
- Nextstepchallenge (Scale Up Denmark)

Ecosystem Actor Interaction

Source: Cinemood websites, OC&C analysis

The Russian government has targeted greater private sector participation in R&D by strengthening relationships between universities and the private sector.

- Currently Russia scores 3.6 on a 7-point scale for university-private sector linkages. Improving this score will probably come from initiatives such as Russian tech giants Qiwi and Yandex’s university collaborations, and the National Research Higher School of Economics incubator that uses mentors and lecturers from the private sector.
- Other events such as associations, events, or co-sponsorship opportunities will create informal mechanisms to strengthen the relationship between universities and the private sector.
- By establishing an endowment system, private-sector funding could fuel university research and help create collaboration opportunities and specialized research sectors.

FIGURE 12. UNIVERSITY/INDUSTRY RESEARCH COLLABORATION

Extent of collaboration and idea sharing between companies and universities/research institutions

1 = not at all, 7 = to a greater extent

Source: WEF The Global Competitiveness Report, OC&C analysis

Other countries in scope of tech entrepreneurship study

38 | Tech entrepreneurship ecosystem in the Russian Federation

Tech entrepreneurship ecosystem in the Russian Federation | 39
“Russian culture has a lot of heroes - they are not those individuals who built a successful business, but those who made a breakthrough discovery.” – Konstantin Shabalin, CEO - StarTrack crowd-funding and crowd-lending platform
5. Regulations

Tech entrepreneurship is directly and indirectly affected by a broad range of regulations that have an effect on its business construct, operational domain and boundaries and source of innovation.

A. BUSINESS PROCEDURES

The ease of executing business functions drives, in part, how many startups can be launched and survive. Straightforward business procedures help drive the interest to take up entrepreneurship. Streamlined, hassle-free, digitalized procedures minimize back-office efforts and allow entrepreneurs to accomplish more with limited resources. Tax obligations, both time and cost-wise, can affect a startup’s growth, especially in the early years when cash flow is uneven.

Regulatory and legislative practices around business, particularly dispute resolution, serve to reassure both startups and their investors of how their rights will be protected as well as any costs of protecting themselves. Bankruptcy legislation is also important, because the legislation can be a significant motivator or deterrent to starting a business.

New reforms aimed at creating fewer processes for starting a business, a simplified tax framework for small businesses that qualify, greater definition of the regulation for investment, and improvements to the enforcement infrastructure were introduced. These are expected to have a positive impact on the business environment.

Ongoing reforms in Russia have created a simple and efficient process to start a business

- Government reforms have reduced the number of days and procedures needed to launch an enterprise, and Russia now ranks 26th out of 190 economies for ease of starting a business in the World Bank’s Doing Business Index.22
- Entrepreneurs report that starting a business is more efficient and inexpensive compared to countries with stricter requirements for share capital, number of required documents, and required shareholders.

A number of recently introduced regulatory changes that recognize the stock options and futures that investors and employees prefer will probably increase the prevalence of Russian registrations, as the investment environment is brought in line with international ecosystems.

- As the law continues to be refined, and as groups such as RVC continue to dialog with the government on business framework improvements, the balance is expected to shift to a strong preference for Russian jurisdiction for new business starts.

- The overall quality of Russian judicial performance in contract litigation was found to be relatively high in a court evaluation of St. Petersburg, but a lack of automated procedures may contribute to longer proceedings than in other countries.21
- Of 190 countries surveyed in the World Bank study, Russia ranks 12th for contract enforcement, a strong standing that promises to improve with further reforms.22
- Legal frameworks can take significant time to develop, given a reliance on precedent, specific cases, exceptions, compatibility with other aspects of the court system, implementation burden, impact on industries and firms, and overall economic impact. Russia has begun this process but it will take time to fully develop.

“Starting a business and its documents are easy in Russia. You only need an address and passport. You only need two weeks to do something. The capital requirement is 10,000 RUB close to USD 160, it is not difficult” – Denis Diakonov, COO, iBox Global – Dmitry Sakharov, Head of Logistics & Business Operations Team, iBox Global

Tracking and reporting tax is a considerable endeavor for many startups, though many programs exist for tax exemptions for small companies

- Russia’s thorough tax reporting requirements mean startups must be diligent about reporting on income and procurement activities, especially invoicing and reporting procedures for international procurement.
- Reporting requirements are extensive enough that some startups need to maintain dedicated staff for reporting and compliance, a significant obligation for smaller ventures. In the Taxes and Bureaucracy Index, Russia scores near the average, suggesting the potential for improvement opportunities.3
- However, online software allows for streamlined reporting, and small tech companies qualify for selected tax exemptions that reduce their administrative burden.
- One challenge to simplifying tax reporting is the risk of raising the occurrence of fraud, so efforts to streamlining procedures must be done in line with security controls.

Contract enforcement has undergone improvements and currently reflects a well-structured framework for both litigation and enforcement. This and other investment-related improvements have meant that startups are starting to register their companies in Russia

- Historically, Russian startups typically registered in offshore jurisdictions such as Cyprus to leverage more mature legal, investment, and dispute resolution frameworks.

21 World Bank Group, Enforcing Contracts in Russian Federation - Saint Peters-
B. DIGITAL POLICIES

The benefits of the internet economy are vast but also bring growing concerns around privacy, security, crime, and anticompetitive practices. Striking the right balance between capturing the benefits of the internet, while mitigating its potential risks, has become a challenge for policymakers around the world. Russia recently introduced broad tech regulations focused on data storage/transfer, procurement, national security, and censorship. The personal data law “242-FZ” came into effect in 2016, mandating that website operators that collect personal data on Russian citizens must store it in Russian data centers. This could shave as much as 0.27% off the economy, as data-reliant companies raise prices or restrict the services they source from abroad.24

The counter-terrorism “Yarovaya laws”, which were also introduced in 2016, introduced restrictions on online speech, and compelled telecom and related companies to decrypt messages and make them available to law enforcement. Many participants raised concerns about the costs of compliance.

Recent digital reforms related to data privacy and storage may significantly impact the tech ecosystem in the coming years, both in terms of cost and industry growth

- The mandate to retain all personal data of Russian citizens on Russian servers for six months may require significant infrastructure to be compliant, given the nascent state of the Russian data center industry.
- Other laws that require hardware and software registration with the Federal Service for Technical and Export Control (FSTEC), as well as all data transfers, are projected to be a significant change for the ICT industry and any startups that offer messaging and communications services.
- The projected impact of these regulations on the ecosystem could include price increases resulting from the cost of infrastructure investments.

Copyright law and intellectual property (IP) protection is strong as drafted, though uncertainty about enforcement remains a concern

- As written, Russian IP laws protect the rights of IP owners and deliver effective penalties for breaches, and a planned enforcement court will further strengthen this capability.
- IP laws in Russia are enforced in line with the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) and the WIPO Copyright and Trademark Law Treaties. As drafted, the IP laws protect the rights of IP owners and deliver effective penalties for breaches.
- However, a debate on how well rights are protected in practice suggests that a greater focus is needed on enforcement on behalf of both Russian and international IP holders, alongside streamlined dispute resolution procedures. This need is underscored by the large amount of pirated content that originates from the country.
- A planned IP enforcement court should strengthen the capability to defend IP infringements. However, it will take time for the Russian court system to build a reputation for fairness and transparency.

A continued focus on alignment to international best practices will strengthen the attractiveness of the tech entrepreneurship ecosystem

- Russia is a signatory of several international internet-related treaties but not the Budapest Convention on Cybercrime, an international accord that targets cybercrimes including hate speech, copyright infringement, and internet fraud.
- Greater alignment with international accords and standards can help ensure that the tech ecosystem is seen as attractive to foreign investors and partners.

In July 2014, the Russian Personal Data Law was amended by a new law (242-FZ) requires data operators to store personal data of Russian citizens on servers located within the territory of the Russian Federation.

**FIGURE 13. RECENT REGULATIONS ON DATA PROTECTION AND PRIVACY**

<table>
<thead>
<tr>
<th>Storage Obligations</th>
<th>Exact Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>When collecting personal data of Russian citizens, an operator must ensure that it is recorded, systematized, accumulated, stored, corrected (updated, changed) using databases located on the territory of the Russian Federation.</td>
<td>Operators will also be obliged to notify the Federal Service for Supervision of Communications, Information Technology and Mass Media (RKN) on the exact location of the servers/data centers where the personal data of Russian citizens is/will be stored.</td>
</tr>
</tbody>
</table>

**Storage Obligations**

The entries to the RKN will be made on the basis of complaints lodged by individuals (personal data being stored overseas would be a sufficient ground for a complaint). If compliance is not provided within three calendar days, access to the website will be blocked without notice.

**Information Storage**

An operator of communication or internet operators are required to store the following:

a. Information about details of receipt, transfer, delivery and/or processing for three years from the date of completion; in addition, internet operators shall store information about the users for one year.

b. All content of communication and activities of users of communication and of the internet shall be stored; up to six months from the moment of the end of date of completion.

**Encryption Measures**

Internet operators are required to provide to government bodies information necessary to decrypt encrypted messages, when using special encrypting devices.

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Source: Russian Parliament, International Center for Non-for-Profit Law, Bryan Cave, Squire Patton Boggs, OC&C analysis
C. TRADING ACROSS BORDERS

Given national priorities and ongoing sanctions, Russia has introduced a number of reforms designed to develop the local market and become economically independent.

An ongoing import-substitution program is aimed at protecting Russian companies and services from foreign producers and aimed at protecting Russian companies and services from foreign producers and suppliers. The program’s key goals are to stimulate demand for Russian products and to become economically independent.

An ongoing import-substitution program is aimed at protecting Russian companies and services from foreign producers and suppliers. The program’s key goals are to stimulate demand for Russian products and services and to become economically independent.

A comprehensive import-substitution program has selected strategic sectors for protection, mandating that private and public sector entities must demonstrate a preference for Russian options.

Software must be purchased from domestic developers listed in a central register, with foreign software use permitted only in the absence of Russian counterparts.

A Decree on the Priority of Goods of Russian Origin provides a mechanism for the private sector to give preference to Russian company bids over foreign ones and is designed to make Russian companies more competitive without mandating their selection.

Such broad programs, while probably effective at driving preference in the short term for Russian products and services, have the potential to create unintended consequences such as restricting access to key services or driving up prices.

Export procedures may be creating barriers for startups expanding across borders.

- Extensive export requirements currently in place are largely a relic from Russia’s bureaucratic history.
- To support the growth of tech startups, more streamlined policies for export revenue reporting and tax payments are needed.

D. GOVERNMENT R&D POLICIES

Innovation, and particularly R&D, has long been part of the national agenda for Russia. Since 2009, specific sectors critical to economic diversification designed to reduce dependence on natural resource were given high priority, and centers of excellence were created to make Russia more globally competitive.

The Russian government has identified R&D spending as a strategic priority, but further gains will need to be accomplished in partnership with the private sector.

- Currently, Russian Gross Domestic R&D Expenditure (GERD) is 1.1 percent of GDP, lower than more mature ecosystems, which typically have figures ranging from 2 to 4 percent.26
- The government is responsible for 31 percent of total R&D spending - a high number compared to some benchmark countries such as Israel, in which the private sector outspends the government by 50:1.27
- Yet this ongoing focus has meant ICT research and development gets an increasing share of overall R&D, going from 1.3% to 3.7% in the last five years.28 This is a positive step that suggests that tech startups are well positioned to benefit from R&D efforts.
- One driver for the relatively low private-sector participation is the few legislative incentives that there are for private companies to invest in R&D, an otherwise critical step toward creating commercially viable innovation ecosystems.
- Countries such as the UK and many others have legislation in place that gives R&D tax benefits (or even rebates) for private-sector companies of any size that invest in R&D. Apart from designated R&D centers, these companies can also qualify via investment in selected innovation-based startups, a feature that also benefits the tech entrepreneurship ecosystem.
- Russia has already begun this process with regulation that introduces special tax rate reductions down to 0% until 2018 for entities within innovation center Skolkovo and other Technology & Innovation Special Economic Zones.29
- Creating a centralized repository for innovations that is searchable by the private sector could also stimulate more commercialization efforts and stimulate the need for joint R&D collaborations.

The policy framework for TTOs is under development, but ultimately can potentially serve as the basis for greater private sector participation.

- In Russia, the 112 TTOs that operate in universities and R&D institutes across 49 regions develop early-stage intellectual property to create innovations that can form the basis for new commercially viable solutions. The commercialization opportunities that these TTOs provide will strengthen Russia’s topic-driven centers of technological excellence.30
- The legal framework for structuring licensing deals and university-private sector collaborations is still under development, and as a result most of the research created by universities is not registered, or entered into a system that can serve as a pipeline to tech transfer or private sector collaboration.
- Improving both the framework and processes around these tie-ups is expected to grow the total number of collaborations, while creating employment opportunities for university students and alumni and securing sustainable revenue streams for universities.
- Furthering these aims, in 2016 the Russian government created a “universities as centers of innovation” initiative to achieve global competitiveness in R&D. Ten Russian universities and 100 university centers of innovation, as well as regional technological and social development programs, will be established by 2025.31

FIGURE 14. R&D INSTITUTIONS OF RUSSIA

R&D Institutions of Russia

![Image]

4 Rostec is a Russian state corporation established in late 2007 to promote development, production and export of hi-tech industrial products for civil and defense sector.

5 Rusanov is a government-owned joint-stock company established as a $106 million equity and Venture Capital Evergreen Fund by the government of Russia and aimed at commercializing developments in nanotechnology.

6 Rostec is a Russian state corporation established in late 2007 to promote development, production and export of hi-tech industrial products for civil and defense sector.


27 Minutes of October 25, 2016 No. 9

28 UNESCO

29 “Mobile Internet Economy in Russia.” May 2017. GCBIC Strategy Consultant

30 Russian Government, National Center for Monitoring the Innovation Infrastructure of Scientific and Technical Activities and Regional Innovation Systems

31 The federal law “On the Russian Federation on the support of implementation of development projects.” Passport: Priority project—Universities as centers of innovation creation. (Minutes of October 25, 2016 No. 9)
Wide penetration of high-speed internet at affordable prices reflects the ability of the ecosystem to support rapid knowledge sharing and dissemination of new technologies to the wider population. It also highlights the ability of the wider market to consume tech-enabled products and services.

ICT infrastructure coverage is widespread in Russia, with 88 million broadband (mobile and fixed) subscribers and 74 million smartphone users. This creates significant opportunities for tech startups to innovate, launch, and grow their business for a wide range of internet services.

Broadband and mobile coverage is widespread and inexpensive, making Russia a compelling location for tech startups wishing to develop internet-enabled products and services.

- The coverage and cost of the Russian ICT infrastructure is generally favorable, and nearly 50 percent of households have a fixed broadband connection.
- Russia ranks 12th and 18th out of 182 countries for fixed and mobile broadband costs, respectively, as a percentage of gross national income.

Cloud services allow businesses, especially tech startups, to reduce their capital expenditure and IT cost structure by providing hardware, infrastructure, software, and application requirements as a service instead of capital investments, thus increasing their business agility and operational resilience. Moreover, studies indicate that increased access and use of cloud computing services positively correlates with the level of innovativeness of a country.

**FIGURE 15. CLOUD COMPUTING PLAYS AN IMPORTANT ROLE IN CULTIVATING INNOVATION**

Cloud computing - innovation relationship

Recent data storage policies could significantly shape the development of the currently nascent data storage sector, while in the short term they will create challenges for the tech entrepreneurship ecosystem.

- The cloud and data center infrastructure is still very much under development in Russia, though a 2013 report by the Ministry of Communications and Mass Communications noted that the popularity of cloud infrastructure was increasing, and that the regulatory infrastructure will need to accommodate this.
- The laws that govern data privacy, data storage, and anti-terrorism have major implications for how the data centers need to be configured and maintained. Against the preference of many consumers and tech entrepreneurs, the Russian government has chosen to increase data localization requirements.
- Despite mandates that require storage, access, and processing of large amounts of data in Russia, the data center infrastructure is currently not sufficiently large, secure, or tested to absorb projected demand.
- The significant operational changes needed to become compliant may prompt companies to raise prices or exit the market. Ultimately, this could impact Russian business competitiveness.
- In addition, the early-stage nature of the cloud computing industry means that a lot of products and services are not yet available that could serve the needs of young tech companies. This, in turn, has an impact on how they can build their services and deliver them to consumers. Security, for instance, must be configured to address the needs of the market and clients.
- The data center industry and related regulatory framework will need to be developed in line with best-practice requirements for security, connectivity, and reliability, to avoid high-impact failures and/or widespread noncompliance.

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The addressable market size for tech startups in a country is a function of the national economy, digital literacy and readiness of customer groups and consumer habits affected by internet/mobile coverage as well as the tendency to try new products and services. Other factors such as access to corporate customers and internationalization opportunities define other growth opportunities for startups.

The government can impact the size of the market with consumer protection and competition rules, by building public confidence in online services, especially via procurement programs and policies.

The Russian market for internet services is large and developed enough to support tech startups, given the habits of Russian consumers.

- Compared to the US, one study found that Russian consumers are even more likely to buy physical goods online (52 percent in Russia vs. 35 percent in US for books and clothes), as well as use apps for phone calls (67 percent of Russians vs 46 percent of Americans). Furthermore, Russia ranks higher than all other BRIC countries in the Individual Usage Index, a good proxy for digital literacy.
- M-Commerce showed strong performance from 2011-2016, with 66.2% annual growth contributing 0.55% to the 2016’s GDP. The growth of local champions such as Yandex and Mail.ru as well as the expansion of Aliexpress are the main drivers for m-Commerce to flourish and establish itself as a major component of the internet economy. This expansion is expected to continue, with 21% annual growth and reaching a 1% contribution to GDP in 2021.

“If you want to be successful globally, you need to be global from day one, because the Russian market is less competitive” – Konstantin Vinogradov, Senior Associate, Runa Capitals

Source: Euromonitor, Statista, ITU, OECD, IMF WEO Apr 2017

Dr. Grabowski, Sören, “Russian Telecom operators can and need to win as digital navigators - Consumers are ready!” www.linkedin.com/pulse/russian-telecom-operators-can-need-win-digital-ready-grabowski/

The Global Information Technology Report 2016
Recommendations designed to strengthen the tech entrepreneurship ecosystem

The Russian government has focused on creating a large, innovation-driven physical infrastructure of universities, TTOs, and technoparks, supported by various funding structures and financial incentives for innovation. The next wave of policy improvements will need to involve incentivizing the private sector to take more of an active role in tech entrepreneurship ecosystem, encouraging more mentorship and embracing an entrepreneurship culture and dedicated focus on regulatory effectiveness.

Insights into the Russian tech entrepreneurship ecosystem led to the articulation of a series of policy recommendations that could be considered to address gaps and foster a strong ecosystem. These recommendations are grouped under three main headings:

**FIGURE 17. POLICY RECOMMENDATIONS DESIGNED TO STRENGTHEN THE RUSSIAN TECH ENTREPRENEURSHIP ECOSYSTEM**

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B2B startup growth in Russia relies heavily on tie-ups with large corporates, often in concentrated sectors

- The limited size of the SME sector means that most Russian B2B tech startups must turn to large, established entities for deals, partnerships, and support.
- The prevalence of state-owned entities and sector-dominant companies has contributed to highly concentrated industries in Russia with a limited number of players. Startups must navigate complex personal and professional networks to gain the required influence to strike deals and compete effectively.
- Industry concentration also affects the number of potential customers (and acquirers) available to B2B startups, especially in key sectors, such as Yandex and Mail.ru for internet companies and Sberbank for FinTech companies.

Given the technological capabilities of the country, Russian tech products and services are exceptionally well positioned to seize global market opportunities

- Russian tech skills are considered some of the best in the market and advancements in innovation have made Russian internet products world class.
- Exports of Russian IT products almost tripled in the six years before 2016 to USD 7.6 billion, in part stimulated by the weakened ruble. This happened despite political tensions and economic challenges within Russia. Furthering the export potential of Russian startups will require investors who can understand global opportunities, rather than urging a domestic focus.

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35 “Mobile Internet Economy in Russia”, May 2017, OC&C Strategy Consultants
**Improve commercialization of innovation by stimulating private sector involvement**

The top-down, central-government-led approach that characterizes Russia’s innovation development program has so far occurred with limited participation from the private sector. While technology development capabilities are strong in Russia, historically they’ve been driven by large companies and government entities, not startups. As a result, the private sector has little experience working with startups to source, deploy, or develop technology and innovation. Startups seeking investment, sales, support, and eventually acquisitions often must approach a relatively small number of relevant players in concentrated markets. In addition to creating bottlenecks in the market, this industry concentration can distort the power dynamics between buyers and sellers and limit the number of private sector entities that can absorb cutting-edge innovations.

The international private sector can play a much bigger role, given that Russia’s technological and innovation capabilities are exceptionally well regarded. However, political uncertainty has meant some international investors and tech companies are unwilling to take the risk of investment in promising innovations.

Cultivating a private-sector focus will require the Russian government to understand the needs and drivers of private-sector investment, and create incentives accordingly. This would encourage private-sector firms to acquire technologies and companies that can be critical to increasing the competitiveness of the private sector overall. 

**Strengthen market access potential by creating public and private-sector procurement programs**

Increasing the market potential for small startups can be enhanced via public and private procurement programs. The basic framework is already there – one study found that SMEs had received 36% of public procurement in St Petersburg in 2011. Pushing for tech startups contributions, especially considering the import-substitution programs, could open up significant market opportunities for smaller startups. These programs, however, would need to be accompanied by procurement and payment processes that can accommodate young tech companies.

In addition to public procurement programs, mandates that create incentives for the private sector to procure technology and innovation from young companies are likely to counteract some challenges related to industry concentration. While large companies may continue to dominate certain sectors, increasing participation by young tech companies can be facilitated via programs that encourage collaboration, co-investment, procurement, and co-creation. In fast-moving sectors such as FinTech, platforms that encourage open APIs, where startups create bespoke apps hosted on the larger partner’s platform, make both the larger and smaller entities more competitive.

**Develop incentives for private-sector firms to increase investments in innovations**

One option that can be used to amplify private sector innovation spend is government matching programs that help spur investment, compensate for any inefficiencies, and demonstrate the power of innovation for the private sector. This would both make innovation more cost-effective for private-sector firms and make Russia more globally competitive in innovation. This could be furthered by incentivizing the private sector to source or collaborate with tech entrepreneurs to develop commercial solutions.

**Create the framework for co-investment in university-led research, independent R&D centers, technopraks, and with firms**

Co-investment opportunities at various levels, if well-structured and properly communicated, would attract private-sector investment in market-ready innovations. Apart from investment and an open regulatory structure, a licensing framework that favors co-investment could make investment both more effective and more common.

Tech transfer offices are the natural location for this type of co-investment. Finding private-sector partners for existing innovations and facilitating custom research for private-sector needs is within the remit of a tech transfer office. But for this to happen, these offices must have the capability to not just source and structure deals, but also to provide the advisory services needed to remove bottlenecks and attract interest.

**Build relationships with international tech companies to attract collaboration and knowledge sharing**

Establishing a presence in Silicon Valley and other advanced ecosystems helps some existing programs such as IIDF build networks with major tech companies. This creates employment and strengthens knowledge sharing partnerships. Apart from these, additional efforts could include cross-border collaborations such as jointly-funded projects or seconded researchers, backed and facilitated by the Russian government.

**Create initiatives that help private-sector employees work within startups, and startup employee experience work in established companies**

The large, bureaucratic nature of many private-sector companies in Russia means few employees encounter entrepreneurs and are able to build the kind of interactions that lead to collaboration or mentorship. The gap between startup and corporate culture could be minimized by introducing networking, co-working, and secondment programs. It can also occur via secondments from startups into established companies. In the UK, a FinTech program cycles early-stage entrepreneurs through the UK Trade & Investment government entity, the investment company and incubator Anthemis, and large private-sector companies such as Australia’s insurance firm Suncorp. This gives entrepreneurs exposure to multiple parts of the ecosystem and facilitates collaboration between the private sector and tech startups.

Programs such as sponsored secondments could be another useful initiative. Compensating private-sector companies that send employees to work at startups, or startup founders to work temporarily at private-sector companies as advisors, could stimulate conversations that lead to further collaboration and mentoring relationships.

**Increase the appetite for entrepreneurship by fostering a business culture and national heroes**

The strong culture of science and technology has led to many innovations, but a lack of a business culture has meant few become market-ready via formation into startups.

Entrepreneurs that have scaled up and exited a business are the best candidates for mentorship of budding startups. Without this important layer in the Russian ecosystem, startups have few examples and are more likely to make risky decisions or increase the likelihood of failure.

**Develop incentives for entrepreneurs to participate in the ecosystem after exiting their business**

Currently, entrepreneurs that exit their business typically transition into employment in the mature private sector. Getting these entrepreneurs to participate in the ecosystem after their exits is critical and may require incentives, such as sponsored talks or training, mentorship programs, or matching funds for their own angel investments. This could trigger the positive cyclical dynamics of entrepreneurs returning to the ecosystem to nurture a new set of entrepreneurs.

**Develop and popularize a training course for aspiring mentors**

Current existing or aspiring mentors in the ecosystem are generally professionals with functional expertise rather than former entrepreneurs. While this can be an asset for some areas such as selling to corporate customers, in many cases mentors do not appreciate the requirements of a successful startup founder. This can lead to advice that is ill-fitting, inappropriate, or irrelevant.

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55 | Tech entrepreneurship ecosystem in the Russian Federation

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An emphasis on mentorship training could address this barrier by providing the proper background and understanding of the realities of tech entrepreneurship. Creating programs that train mentors on how to best position and deliver their knowhow in the given dynamics of the tech ecosystem could help bridge this gap and ensure that mentors are equipped to transfer relevant, value-adding advice.

Foster links between Russian entrepreneurs abroad and the domestic tech ecosystem

The large number of Russian entrepreneurs who move abroad represent an untapped resource for the tech ecosystem. Fostering links between Russian expat entrepreneurs and the domestic ecosystem can represent an opportunity for interacting with like-minded people and stimulate domestic activity.

Foster a business culture at tech universities by integrating business education and courses into innovation programs

Tech-related fields at Russian universities are strong, given the country’s foundations as a hub for innovation development. Strong STEM skills and an R&D infrastructure designed to create innovations is supported by university-led programs for R&D and dedicated regional technoparks and related initiatives. Adding business education courses within STEM programs will help encourage innovators and researchers to consider the market applications of their innovations, and to encourage spin-outs and startups that leverage the technologies. In addition, students and faculty deploying both technology and business skills while developing new technologies is likely to attract greater interest from the private sector, which typically participates in R&D in later stages once market applicability is more apparent.

Cultivate a regulatory approach that factors in monitoring and ongoing adjustments

Several interviewees expressed uncertainty about how the new digital policy laws will be implemented and enforced. This level of uncertainty affects the level of investment in innovation, given that some players are unable to assess the regulatory risks involved.

On another level the introvert nature of some policy amendments also raises concerns about how the marketplace is going to take shape and potential exclusion from reaping the benefits of ongoing technological advancements.

This suggests two choices for the government: either take a regulatory approach of prescriptive formulation with clear language on implementation dates and levels or issue general guidance and monitor ongoing developments. The benefit of the latter approach is that market leaders could set standards for the market and shape the direction of best practices for compliance.

Regardless of which path is chosen, regulators should focus on clearly communicating that the environment is under review and will be subject to change, based on market dynamics and progression against the regulatory goals.

Factor implementation costs, effort, and timelines into guidance for regulatory requirements

One concern of many interviewees was that little guidance was given for new regulations such as Yarovaya, which could require extensive investments and upgrades to become compliant.

Going forward, the government may consider issuing cost and implementation guidance that clarifies what is required, by when, and any exemptions for small companies facing significant implementation costs.

Working closely with industry participants from the tech startup ecosystem and larger firms would enable enhanced impact analysis in advance of final regulations, and could inform guidelines for compliance and implementation.

Create a sophisticated monitoring infrastructure that allows experimentation while identifying compliance issues and addressing them quickly

An alternative to developing regulation that details specific requirements and timelines is to issue guidance which is more flexible and allows time for industry adjustments before detailed requirements are outlined, along with penalties.

Some regulators issue guidance and then monitor for impact on the industry before finalizing new legislation. After a ‘wait and see’ period during which the impact is reviewed, the law is finalized and implementation directives are issued. This helps align the ultimate impact of the legislation with its objectives.

For newer technologies, a dedicated monitoring approach called ‘regulatory sandboxing’ allows startups and new innovations to operate with minimal risk to the wider market. This also shelters young startups from the burden of overregulation by creating special provisions for them to operate without the burden of being fully compliant.

In this approach, new technologies launch on a lower-risk segment of the population, with careful monitoring by the regulatory authorities. Regulators can see how these technologies operate and identify potential risks before the technologies are fully deployed, giving them time to develop an appropriate regulatory framework.

Regulators in the UK, Singapore, Abu Dhabi, Malaysia, and Australia have embraced this approach to monitor, test, and develop financial services regulation of new technologies such as cryptocurrencies.39

The emerging sector of “RegTech” develops technologies that regulators use to identify, monitor, and analyze interactions and impact. Used unobtrusively, these methods can monitor industry networks and quickly identify strategies market participants use to comply with or subvert existing regulation. It can also inform a more sophisticated approach to regulation development.


Streamline processes to minimize the impact of compliance on startups

Some of the business process reforms recently issued will probably have a positive effect once they have worked through the system. A new government portal that enables payments and management of government services is likely to help streamline the business processes considerably. Others, however, have not created the simplification that was intended: despite tax software and automated reporting requirements, many startups still need a significant reporting infrastructure to remain compliant.

Ecosystem participants report that the processes and requirements of tax reporting require dedicated operational resources. This need for additional staff is easy to absorb for the larger tech companies that have scale, but smaller startups suffer from significant cost increases as a result.

Re-examining the business process requirements, with a working group including tech entrepreneurs, could identify areas of overly burdensome processes. This working group, as well as subsequent collaboratively designed trial changes, could further identify areas that can be better tailored.

One option is to create exemptions based on revenue limits. This was suggested by several entrepreneurs who felt that the fraud or tax evasion risk of small startups was limited, but the benefits of streamlined reporting requirements was significant. Some government programs already address this issue, though they do not appear to be working as intended. While certain tax exemptions for Skolkovo residents or tech companies were appreciated, they may require significant bureaucracy to be compliant.

Another possibility is to tailor the reporting framework to the size of the enterprise, so that ‘tiers’ of companies have dedicated reporting requirements. These types of tailored structures require an additional administrative layer for a government to appropriately assess the size of companies before holding them to a standard, but this level of scrutiny may be worth it given the potential benefits.
Conclusion

The Russian government’s ambitions to transform Russia into a global innovation hub can only partially be addressed via the type of large-scale interventions that have driven changes to date. Superior technology skills, open access to education, and a strong government commitment to making Russia a world-class innovation hub increase the appeal of entrepreneurship. However, government reforms, policies, interventions and investments contain a natural limit to what can be achieved, and may create diminishing returns if overused. In some cases, enabling startups may require minimizing interventions. In others, it may involve bridging gaps and facilitating access to local and international markets and investors. A harmonious geopolitical climate and well-functioning domestic market marked by strong demand and few market barriers will also make initiatives more effective.

The next generation of government interventions should consider focusing on assessing impact, fostering connections, and carving out special exemptions for high-potential startups that have the best potential to become national champions.

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Appendix

Definitions – Tech entrepreneurship frame of reference

For the purposes of this paper, entrepreneurs are distinguished from self-employed individuals by their motivation to create a rapidly scalable business venture with the aim of innovating, improving, or transforming the given way of doing things.1,2

The entrepreneurship domain includes startup and scale-up phases of the business cycle where companies are experiencing high growth in revenues and employees numbers while validating their value proposition and building up.

Technology-driven entrepreneurship bases its business proposition on the use of new technologies as an enabler and focuses on hyperconnectivity among of networks, people, businesses, things, and hardware that’s internet-enabled. Technological applications in conventional sectors and new businesses in emerging sectors fall under its definition.

Entrepreneur’s motive

- to create a business by introducing an innovation to the way a product or service is designed, produced, delivered or performs that is preferred over existing alternatives
- to scale up the business to address a wider customer base and to repeat it in different markets
- improving the value proposition through employment of technological advancements or introduction of new goods, services and processes utilizing these advancements
- establishing product - market fit achieving fast ramp up (at least 20% annually) by establishing a new value proposition
- attracting professionally to build skills and capabilities
- bringing in seed and initial rounds of equity investment
- sustaining high growth - at least 20% CAGR1 and generating profits
- scaling up workforce and building an effective organization
- strengthening equity base by additional venture funding
- raising capital by using financial leverage

Entrepreneur’s role

- organizing, managing, and assuming the risks of an enterprise to generate commercial benefit out of the innovative idea
- establishing value proposition, setting strategic direction
- engaging external resources
- improving the value proposition through employment of technological advancements or introduction of new goods, services and processes utilizing these advancements
- continuing the entrepreneurial activity within the corporate by utilizing organizational resources to carry out innovative activities
- increasing profitability while maintaining growth
- achieving operational excellence and organizational efficiency
- growing inorganically
- optimizing debt to equity levels
- preparing for initial or secondary public offering

Business goal

- establishing product – market fit achieving fast ramp up (at least 20% annually) by establishing a new value proposition
- attracting professionally to build skills and capabilities
- bringing in seed and initial rounds of equity investment
- sustaining high growth - at least 20% CAGR1 and generating profits
- scaling up workforce and building an effective organization
- strengthening equity base by additional venture funding
- raising capital by using financial leverage
- increasing profitability while maintaining growth
- achieving operational excellence and organizational efficiency
- growing inorganically
- optimizing debt to equity levels
- preparing for initial or secondary public offering

1 High-growth Enterprises and Gazelles - Sensitivity Analysis, Ditte Rude Petersen and Nadim Ahmad, OECD 2007
Definitions - Tech entrepreneurship success outputs

<table>
<thead>
<tr>
<th>Output</th>
<th>Indicator</th>
<th>Definition</th>
<th>Source Date</th>
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<tbody>
<tr>
<td>Economic Contribution</td>
<td>Number of active tech start-ups founded after 2010 per million urban population</td>
<td>Crunchbase 2017</td>
<td></td>
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<tr>
<td>Entrepreneur's growth aspiration score</td>
<td>Survival rate of tech startups that were founded after 2010</td>
<td>Crunchbase 2017</td>
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<tr>
<td>High job creation expectation</td>
<td>Number of acquisitions and IPOs between 2012-2016 that had a valuation over USD 100 million</td>
<td>Crunchbase 2017</td>
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<tr>
<td>Ability to create globally recognized &quot;Unicorns&quot;</td>
<td>Percentage of those involved in Total Entrepreneurial Activity who expect to create 6 or more jobs in 5 years</td>
<td>GEM 2016</td>
<td></td>
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<tr>
<td>Contribution of knowledge sectors to economy</td>
<td>Number of unicorns is used as an indicator of global reach since they operate beyond their local markets and are highly international and large in scale</td>
<td>CB Insights 2017</td>
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<td>Innovation Creation</td>
<td>An index to approximate the value of global flows that are linked to knowledge economy:</td>
<td>World Bank, McKinsey, INSEAD 2015, 2016</td>
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<td>ICT exports, high-tech exports, international data flow connections, intellectual property receipts of a country (excluding domestic receipts)</td>
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<td>Innovative output density</td>
<td>An index on the abundance of knowledge creation (patents, publications etc.) and intangible assets (identity of trademark applications, industrial designs, creation enabled by ICT)</td>
<td>INSEAD 2016, GEM 2016</td>
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<tr>
<td>Entrepreneurial innovation creation</td>
<td>Percentage of those involved in entrepreneurial activity who indicates that their product or service is new to at least some customers and few of their businesses offer the same product</td>
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1. The urban population of China and India were normalized using the city populations of tech entrepreneurship activity.
2. Total Early-Stage Entrepreneurial Activity measures the percentage of working age population (18-64) both about to set up their businesses and have set up at most 42 months ago.
3. Unicorn are startup companies that are valued over USD 1 billion.
4. ICT service exports include computer and communication services and information services including computer data transactions.
5. High tech exports are R&D-intensive products, which can be found in aerospace, computers, pharmaceuticals, scientific instruments, and electrical machinery.

Disclaimer
This report was prepared independently by OC&C Strategy Consultants in collaboration with The Association of Electronic Communications (RAEC) who have both been commissioned by Google to research the tech entrepreneurship ecosystem in Russian Federation (in addition to other developing countries in Eastern Europe, Africa and GCC region) to identify policy recommendations to improve tech entrepreneurship. Information provided herein, including policy recommendations are prepared and intended for use as discussion materials on the ways to support the growth of tech entrepreneurship.

The report is based on a variety of inputs from multiple sources including official data sources such as various public institutes and foundations focusing on entrepreneurship, and other privately published data sources such as news articles, sector reports and interviews with tech entrepreneurship ecosystem actors. Recommendations are based on statements of ecosystem actors. Accuracy of analysis and recommendations are dependent on the detail and accuracy of declared data. Parties do not guarantee and are not responsible for the currency, propriety, accuracy or reasonableness of any statements, information or conclusions contained in the source documentation used.

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