

# INTERNET DEVELOPMENT TRENDS

## FROM DIGITAL OPPORTUNITIES TO DIGITAL REALITY

ANALYTICAL REPORT

### About The Report

This is a fifth analytical report “Internet Development Trends: From Digital Opportunities to Digital Reality” in a series of publications prepared by the National Research University Higher School of Economics (HSE University) as commissioned by the Coordination Center for TLD .RU/.PФ. The report is compiled of the most recent statistical data for 2020 and the first half of 2021, as well as mid-term forecasts.

The [first](#) issue of the report series is devoted to studying transformational shifts in the economy, social sphere, and people’s lives that have been caused by network technologies. The [second](#) issue focuses on the analysis of public policy in the fields of the digital economy and emerging digital technologies. The [third](#) report studies Internet development trends in Russia and foreign countries. The aim of the [fourth](#) issue is to look at the Internet development trends and see if the economy and society are prepared to work in the digital environment.

The report examines Internet trends through all stages of Internet development: from a time when it was still considered an “opportunity” to the new reality, arisen out of the COVID-19 pandemic and influenced by key trends of the third decade of the 21-st century, that has shaped a new “digital reality” in the global network.

The research was conducted in the four main areas: Internet “anatomy” (domain space, telecommunications infrastructure, cybersecurity), Internet for the economy (Internet and digital technologies in industries, e-commerce), Internet for society (Internet users, digital skills and professional activity), and Internet development trends.

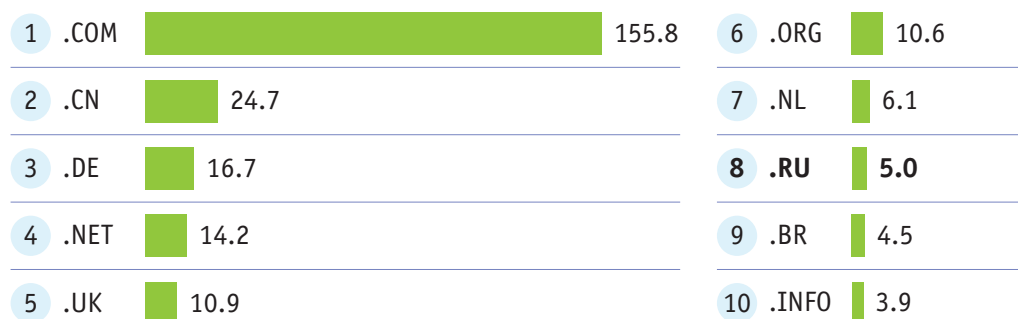
The research results are supplemented by comments from leading Russian and international experts.

## Summary

- **Russian domain market demonstrates a steady demand for country code top-level domains (ccTLD): both .RU and .PФ**

In 2020, the Russian domain .RU strengthened its position and placed 8-th in the top-10 TLDs with 5 million domain names.

Russia in top-10 top-level domains, million units



The Internationalized Domain Name (IDN) .PФ (711.8 thousand units) is the leader among Cyrillic domains and is consistently included in the top-20 of national European top-level domains.

- **Ongoing trend on expanding the telecommunications market and a shift towards wireless access technologies**

In 2020, the number of fixed broadband Internet subscriptions in Russia has increased by 3.7% as compared to 2019, mobile Internet subscriptions – by 3.3%.

Against the backdrop of the pandemic coupled with the development of network technologies that enabled downloading large volumes of data, the annual Internet traffic has increased exponentially.



Broadband subscriptions



Annual Internet traffic



Average Internet traffic per subscription

### Fixed Internet

**33.6 mln**

**23.0 units**  
per 100 inhabitants

**62.0 Exabytes**

**+35%**  
to 2019

**153.9 GB per month**

**+31%**  
to 2019

### Mobile Internet

**145.6 mln**

**99.6 units**  
per 100 inhabitants

**22.6 Exabytes**

**+47%**  
to 2019

**12.9 GB per month**

**+43%**  
to 2019

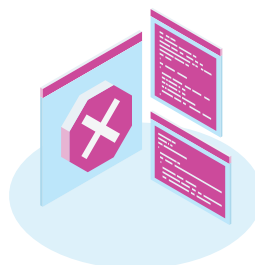
The share of subscriptions with over 100 Mbit/s access speed has grown and it proves that there is a demand for faster connection. In 2020, this type of subscriptions has for the first time ever exceeded the share of those who connect to the network at a speed of 10–100 Mbit/s (42.2% vs. 39.8%, respectively).

- **Cyber threats remain a concern for Internet users**

In 2020, there were about 750 thousand crimes committed in Russia using ICT tools, which is a quarter of all of registered crimes.



**25%**  
share of crimes  
committed using ICT  
tools out of the total  
number of registered  
crimes



**+73.4%**  
increase in  
cybercrimes as  
compared to 2019

29.1% of Russian Internet users aged 15 to 74 had to face various cybersecurity-related risks. The most common types of cyber threats were spam and virus infections leading to the loss of information (21.8 and 6.4% of network users, respectively).

Antivirus software remains the most popular method of data protection: 73% of adults use them.

- **Demand for reliable high-speed Internet connection is growing across all economy sectors and social sphere**

In 2020, the share of companies using broadband Internet reached 93%, increasing over the year by 6.5 percentage points (p.p.), — the maximum value over the past seven years.



**73.0%**  
enterprises used  
fixed broadband  
Internet

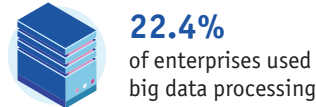
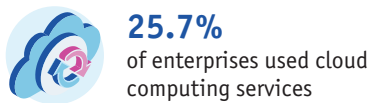


**35.4%**  
enterprises used  
mobile broadband  
Internet

Fixed broadband Internet is used by 73.0% of enterprises, mobile Internet – by 35.4%. The demand for fixed or mobile broadband Internet depends on industry features. In the financial sector and trade, the use of mobile Internet (57.8 and 53.1%, respectively) is significantly higher than in the entire economy. Healthcare sector prioritises fixed broadband Internet (82.5%), mobile network is used less frequently than in all other considered sectors (28.7%).

- **Digitalisation has a significant growth potential for all economy sectors and social sphere, while the level of penetration and the rate of implementation of digital technologies differ significantly**

Cloud services are the most demanded technology: in 2020, a quarter of Russian companies (25.7%) used them. Big data technologies were used slightly less frequently (22.4%). The most popular data sources were corporate websites (8.9%), data from enterprise accounting systems such as ERP, CRM, SCM, etc. (7.5%), and social media data (7.1%). On the third place – digital platforms: in 2020, 17.2% of Russian companies used them.

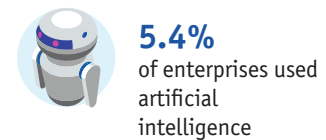
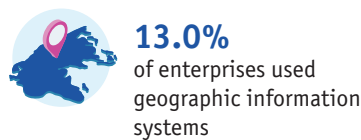
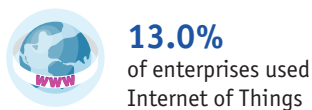


- Top-3 industries by use of technology
- Financial and insurance activities
  - Wholesale and retail trade
  - Human health and social work activities

- Financial and insurance activities
- Human health and social work activities
- Manufacturing

- Financial and insurance activities
- Wholesale and retail trade
- Human health and social work activities

The share of companies using the Internet of Things devices or systems was 13%. The main purpose of using IoT technologies is tracking the vehicles or products (5.4%). Geographic information systems, as well as the Internet of Things, were applied by 13% of companies. Despite considerable attention given to artificial intelligence (AI) technologies, only 5.4% of Russian companies used them. The most popular AI sub-technologies were data mining (3.8%) and natural language processing (3.8%).



- Top-3 industries by use of technology
- Wholesale and retail trade
  - Electricity, gas, steam and air-conditioning supply
  - Manufacturing

- Financial and insurance activities
- Electricity, gas, steam and air-conditioning supply
- Mining and quarrying

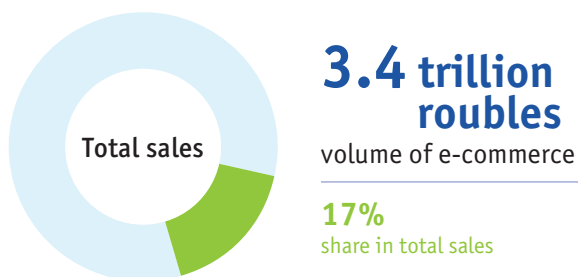
- Financial and insurance activities
- Wholesale and retail trade
- Transportation and storage

- **E-commerce as a communication tool for suppliers and consumers of goods and services solidifies its status as a driver of economic development**

When all economic activity transferred online in 2020, it triggered corporate and public involvement in e-commerce. In Russia, e-commerce opportunities in 2020 were used by 40.3% of the adult population – 4.6 p.p. more than in 2019.

According to the HSE University estimations, the volume of the Russian e-commerce market in 2020 approached 3.4 trillion roubles, the share of total sales estimated at 17%. Almost half of the e-sales in the business enterprise sector refer to wholesale and retail trade, and a little over a quarter – to manufacturing and telecommunications.

The same trends in e-commerce persist in Russia as in most countries: the dominance of e-trading platforms; diversification of sales formats; customisation and personalisation of services; shift from desktop to mobile devices.



- **Despite the generation gap, there is a growing demand for the Internet in society**

The number of Russian Internet users in 2020 grew by 2%. The share of those who have ever used the Internet reached almost 90%, and for three quarters of Russians it had become a daily practice.



**89.6%**  
Internet users



**76.7%**  
use Internet daily



**62.3%**  
use a smartphone  
for Internet access

Urban residents aged 15–24 are the most active in digital environment: 97.3% of them use Internet every day. Among young people living in rural areas, this share is slightly lower – 92.9%.

The use of smartphones for network access is increasing. Its popularity is growing among all age groups.

Social networks have remained the main tool of online communication for a long time. In 2020, social networking was the most popular among both young and middle-aged individuals.

**Most often ordered online:**



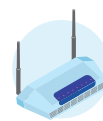
**60.7%**  
clothing, footwear,  
and sporting goods



**44.3%**  
financial  
services



**28.6%**  
household  
appliances



**28.6%**  
telecommunication  
services

- **Expansion of digital engagement requires improvement of digital skills**

In 2020, 26.2% of Russians had digital skills at a basic level. The population group with a low level of digital skills remains the largest (40.1%), and with a above basic level – the smallest (12.1%).

In general, digital skills of the employed are higher than those inactive at the labor market or unemployed. Advanced training is more often undertaken by specialists with a higher level of qualification rather than those with a low level of digital skills.

The most essential digital skills for Russian users are communications and data search.

**Top-6 digital skills among Russians**



**61.1%**  
making online  
telephone/video calls



**45.5%**  
internet banking



**43.0%**  
acquiring information via  
government/agencies'



**59.6%**  
participation  
in social media



**44.5%**  
searching for information  
about goods and services



**40.4%**  
using word processing  
software

● Communication skills

● Problem solving skills

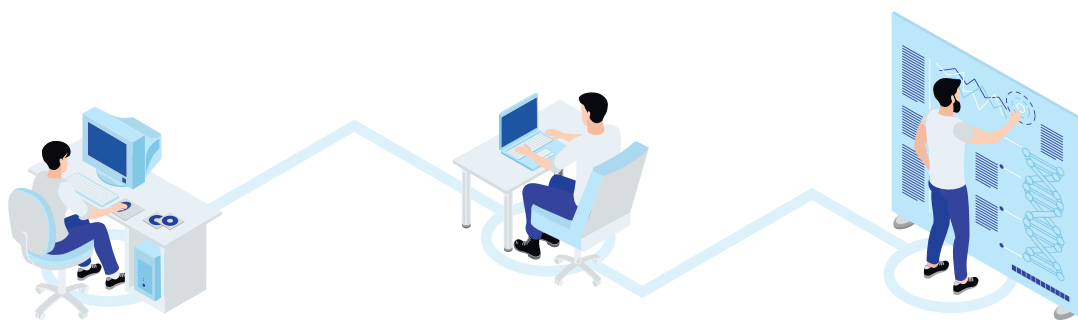
● Data search skills

● Software skills

- **With development of the Internet and new technologies, the digital world has become an inseparable part of the real world**

Further digitalisation requires a higher speed and quality of the Internet connection. New generation of mobile Internet technologies will promote the virtualisation of business operations, diversification of software for network infrastructure, emergence of smart buildings and factories, and development of immersive technologies (VR/AR, tactile Internet) and unmanned vehicles and telemedicine. The next stage of the Internet development may be the quantum Internet, faster and more reliable than the traditional one.

In the digital era, when information has factored in the process of production, the need for high quality data is growing. The data accumulated with the Internet of Things devices (digital human footprint) allows us today to talk about the emergence of the Internet of Behaviors (IoB). A new stage of the Internet development may be the creation of the Internet of Senses (IoS) – technology based on AI, VR/AR, and latest generation communication networks.



**2000**

**2020**

**2030**

**Brief description of the Internet development**

- |   |   |  |
|---|---|--|
| <ul style="list-style-type: none"> <li>• Significant restrictions on the volume and quality of content due to low connection speed</li> <li>• Mobile Internet was expensive and slow</li> <li>• Before the spread of social networks with personal profiles, users launched their own websites</li> </ul> | <ul style="list-style-type: none"> <li>• Digitalisation of all spheres of human activity has determined the need for reliability, ubiquity, and high connection speed</li> <li>• Platform ecosystems have spread</li> <li>• Cybersecurity threats have become more challenging</li> </ul> | <ul style="list-style-type: none"> <li>• The Internet will erase the boundaries between the virtual and real worlds</li> <li>• Due to high data transfer rate, autonomous robots, unmanned vehicles, remote surgery, etc. will spread</li> <li>• The use of "brain-to-brain" interfaces will mark the transition to a new level of interaction between people</li> </ul> |
|---|---|--|