



T-Systems company profile

With a footprint in more than 20 countries, 46,000 employees, and total revenues of 8.2 billion euros (2015), T-Systems is one of the world's leading providers of information and communications technology (ICT). T-Systems offers a range of integrated solutions for business customers, including the secure operation of legacy systems and classic ICT services, the transformation to cloud-based services (including tailored infrastructure, platforms and software) as well as new business models and innovation projects for the business fields of the future, such as data analytics, the Internet of Things, machine-to-machine (M2M) communication and Industrial Internet.

T-Systems can provide all this thanks to its global reach in fixed-network and mobile communications, its highly secure data centers, a comprehensive cloud ecosystem built around standardized platforms and global partnerships, and the ability to offer top levels of security.

Comprehensive cloud ecosystem

Cloud computing is increasingly gaining acceptance alongside the classic operation of IT systems. T-Systems can bring around 20 years' experience to the table in outsourcing, system integration, and the planning, assembly and operation of IT systems and networks. Together with some 90 partner companies – including industry leaders such as Avaya, Cisco, Huawei, Informatica, Microsoft, Salesforce and VMware – T-Systems offers business customers the full array of different cloud models, from tailored private clouds and low-cost public cloud services through to hybrid clouds. If required by the customer, each of these variants can be located in high-security data centers in Germany and operated in accordance with strict European data-privacy standards. Companies can choose to source their – individually scalable – infrastructure, platforms, software and cloud integration "as a service."

The majority of T-Systems' cloud products are available from the House of Clouds, the by-name for the company's high-performance data center in Biere, near the German city of Magdeburg. Biere is the only data center in the world where nearly all major cloud providers can be found side-by-side. The benefits for the customer are crystal clear. First, the data hub offers them fast processing and analysis. Second, they can use the center to transfer enormous data volumes easily within a system. Third, T-Systems is already working with its customers so that they will soon be able to move mountains of data back and forth between different systems. The data center in Biere provides customers with a "high-density cloud" service. Biere, which is considered the Fort Knox of data centers, has become a European data hub attracting more and more customers – and also partners. That is why T-Systems will begin the next expansion phase (Biere 2) in summer 2016; once completed, it will more than double the center's capacity.

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Biere's newest "resident" is the Open Telekom Cloud (OTC), Deutsche Telekom's latest public cloud product, which it developed in cooperation with technology partner Huawei. OTC offers components and resources such as servers, computing power, network capacity, archiving and backup systems along with other services. TÜV Austria Deutschland, a technical services provider, has awarded the OTC two certifications for its cloud security management system, confirming that it is operated in accordance with defined quality standards. Although some two-thirds of classic applications can already be migrated to the cloud, only very few companies have thus far developed corresponding strategies and approaches. Around 4,000 IT integration experts at T-Systems can transfer complex application landscapes to an integrated, future-proof IT system.

With its extensive experience in cloud computing, T-Systems has earned the trust of many renowned companies in recent years. Corporations such as Shell, Daimler, Spain's national postal service Correos, and financial services providers like Union Investment all rely on the expertise of the cloud-computing pioneer, sourcing T-Systems' network-based applications as well as its computing and storage capacities via the Internet. Steel giant ThyssenKrupp trusts in the cloud expertise of T-Systems as well, and is sourcing its PC workplaces from the Telekom Cloud using the Dynamic Workplace solution.

Where classic and cutting-edge IT meet

Digitization, the No. 1 topic in the business world, generally doesn't take place before a blank canvas. Business customers have complex legacy systems in place, such as applications, computers, servers and networks. T-Systems can operate these systems in a secure, stable and efficient manner. But classic IT business too is changing with the times.

T-Systems now grants companies the option of terminating their contracts three months after completion of migration if they are not satisfied with the agreed performance. This, the first contractual model to replace long contract periods and antiquated outsourcing models with dynamic SAP services and SAP HANA, is called Run on Satisfaction. T-Systems wants to continue down this path, offering its business customers novel flexible service models.

High-performance networks for enterprises

Deutsche Telekom is constantly refining its high-performance infrastructure and invests billions of euros for this purpose every year. The Internet Protocol (IP) is increasingly becoming the technical basis. Next-generation networks (NGN) and all-IP networks make it possible for companies to offer their services and applications over the Internet, through



new business models. The integrated network strategy is based on fixed-mobile convergence, the development of 5G, and a pan-European network (Pan-Net).

Advancements in the development of the 5G standard mean that Deutsche Telekom has recently been able to reduce latency to under one millisecond, which is a requirement for real-time applications such as self-driving cars, remote medical procedures, and even high-performance games.

The T-Systems telecommunications portfolio is divided into several different areas: connectivity and network access, corporate networks, and end-user communications. It includes access services for high-performance mobile and fixed networks, and secure corporate networks (LANs and WANs) based on VPN technology and including operations, maintenance and updates. T-Systems also offers communication services such as Unified Communications, voice over IP and videoconferencing systems on the basis of public and proprietary networks. For years now, Deutsche Telekom networks have ranked very high in tests for network coverage, voice quality and data transmission speeds.

International network alliances

T-Systems works together with network operators across the globe. In 2016, the company and its international partners founded a new enterprise called ngena, which stands for Next Generation Enterprise Network Alliance. Still in the establishment phase, this fixed-network alliance is going to offer secure, high-performance global services for international business customers from 2017 onward. The idea behind the new alliance is for strong local providers to share their networks with all the other members. Each partner will invest in its own network, but all will benefit from the sum total of the networks. While each partner will serve its local market, the alliance enables the partner's customers to access international networks. Like the cloud, ngena creates a technical platform for all participating partners.

T-Systems is also going global when it comes to mobile networks. Via Freemove (in Europe), Bridge Alliance (in Asia) and T-Mobile US, the company can provide its customers with reliable mobile coverage in 100 countries across the globe – giving it the best 4G network worldwide.

Combating cyber criminals

Cloud computing, mobile solutions and big data all pose entirely new challenges for IT security. What is more, cyber attacks on corporate networks and IT systems are getting ever more sophisticated and have become a huge threat to the economy. Data privacy and data security are thus crucial criteria for success in all technical developments. That is why Deutsche Telekom established the new Telekom Security business unit, which concentrates all the company's security activities, and channels the experience of its

more than 1,000 security experts. The Group is doing everything in its power to protect its own IT systems and networks – as well as the data of its corporate customers and consumers – from Internet-based attacks, to develop new security solutions for its customers, and to continuously adapt them to new requirements.

Digitizing the economy

Founded in 2015, the T-Systems Digital Division unites the company's digitization expertise in a single business unit. It focuses on refining innovative digital solutions that will help the company optimize its development, production and customer processes. The solutions in question include applications for analyzing large amounts of data in real time (data analytics), solutions for connecting objects (the Internet of Things) and machines (M2M), industry-specific solutions such as Connected Car as well as a connected healthcare system (e-health).

Data analytics, i.e., the analysis of machine and device data, is one of the core competencies for the digital transformation. The increasing integration of machines and devices in networks is triggering an explosion in the volume of data to be processed. T-Systems offers the computing capacity to process data in the cloud, analyze it as required, and make it available to customers in line with their specific needs. The analyses are based on technologies such as SAP HANA and Hadoop.

Wherever data on the status of machines and devices is available in large volumes in real time, companies can use it for predictive maintenance. This involves equipping machines and devices with sensors, which continuously record data on the status of individual components. The data is sent via the mobile network to a centralized smart software program that analyzes and processes it in real time. These analyses can recognize imminent damage or defects in vehicles or machines before they lead to downtime. Predictive maintenance can reduce maintenance costs by up to 50 percent.

Connected and autonomous driving

T-Systems is also teaching vehicles how to communicate, through sensors and smart networking. Turning the vision of autonomous vehicles into reality requires, for one thing, high-resolution roadmaps. More importantly, it involves collecting, aggregating and processing diverse sensor data and environmental information in real time. This is where T-Systems' Connected Car platform comes in. It comprises all the components needed for the secure global networking of different manufacturers' vehicles along with service providers and infrastructure operators. Major automakers such as BMW and Daimler already deploy T-Systems' Connected Car solutions.

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Under the Innovation Charter for the Digital Motorway Test Bed, a group of organizations in Germany – Deutsche Telekom, Continental, the Fraunhofer ESK Institute for Embedded Systems and Communication Technologies, and Nokia Networks – are testing real-time communication between motor vehicles via the LTE network. Vehicles traveling on the motorway can exchange information on driving hazards extremely quickly, with data transmission times in the millisecond range. This technology enables the development of applications that interface with vehicle electronics to make driving a safer and more comfortable experience.

The fastest mobile network will hit the road in summer 2016, when T-Systems equips BMW ConnectedDrive with LTE, enabling download speeds of up to 300 megabits per second (MBit/s). Deutsche Telekom will provide the Bavarian automaker with a managed mobile network and uniform service across 60 countries. BMW will also gain a complete overview of mobile network availability in each country.

For the latest news about T-Systems' solutions and projects, please visit: www.t-systems.com