

Russia's first mass cable-TV and broadband internet access network using FTTB

Cable TV operator ER-Telecom has installed fibre-to-the-building networks in 31 Russian cities, bringing high-speed internet within reach of 5 million homes.

Russia is the fastest growing FTTH market on the European continent. This is partly due to the size of its population, but is mainly the result of the increasing competition between the incumbent telephone operators and the cable TV industry, especially in large cities.

General Information

Project promoter: ER-Telecom www.ertelecom.ru/

Country: Russia **City:** Perm

Project name: Urban Universal Telecom Networks (UUTN)

ER-Telecom was created in March 2001 by merging telephone operator EL-Svyaz with internet service provider Raid-Internet, which had been operating in the city of Perm since 1997. Located in the European part of Russia near the Ural Mountains, Perm is an industrial city with nearly 1 million inhabitants. Andrey Semerikov, chief executive of ER-Telecom, wanted to provide all of them with high-speed internet access.

Semerikov's vision was not just about opening up the opportunities of the World Wide Web; he wanted to break the monopoly of the legacy telecom operator in the region. To do this, ER-Telecom felt it was necessary to build its own telecom network and selected fibre-to-the-building (FTTB) and cable TV technology. Thus the project "Urban Universal Telecom Networks" (UUTN) was conceived – the first of its kind in Russia.

ER-Telecom presented its project at the Venture Fair in Perm in 2003, where it won an award, and secured the venture capital financing needed to get the project underway. Construction of the UUTN began later the same year, with the aim of providing 200,000 homes in Perm with cable TV and broadband internet access.



Following the successful launch in Perm in 2004, ER-Telecom rolled-out networks in five more cities in 2005 – Samara, Volzhsky, Volgograd, Tyumen and Penza. Perm Financial and Industrial Group acquired a controlling stake in the company in 2006, and the funds were directed to

the roll-out in an additional 11 cities. New networks were deployed in Penza, Kirov, Ioshkar-Ola, Kazan, Chelyabinsk, Tyumen, Omsk and Orenburg. ER-Telecom also purchased two local operators in Izhevsk, Naberezhnye Chelny and Nizhnekamsk and upgraded their telecom networks.

FTTB is ideally suited to Russian cities, where most people live in apartment blocks containing 100 households on average. ER-Telecom will install the network in a block of flats when two thirds of the owners have voted for it. Consumers are not charged much for the connection (less than the monthly fee); it is even free of charge in some special offers.

Deployment

Size of network: 4.8 million households passed / 3 million activated (May 2011) in 31 Russian cities: <http://www.ertelecom.ru/en/cities>.

Technology/architecture: The network is DOCSIS 3.0 cable-TV system over aFTTB network. Networks installed prior to 2008 have a three-level ring structure for redundancy with two fibres per ring. Those installed from 2008 onwards have a two-level ring with a single fibre. Inside the buildings, coaxial cable is used to distribute TV services, and FTP-cable for internet and IP telephony.

Deployment method: ER-Telecom uses aerial cable along the municipal electricity transmission lines because it is easier and faster to deploy.

Time to deploy: All business processes are optimised and standardised. It takes 4 months to build a complete optical fibre line in a new city and start to provide telecom services.

The network was based on a three-tier structure for the outside plant. A packet of cable channels is received at the main station (called the broadcast head-end) located in the centre of the city, and is transmitted in digital format via optical cables to the aggregation switch in the connected districts. From there, the packet of TV channels is delivered to the apartment buildings via more optical cable, where the signal terminates at an optical converter, usually located in the basement of each building.

The output of the optical converter is connected to coaxial cable. To ensure signal quality in each apartment, new metallic and plastic ducts and panels are mounted inside the building, and an individual cable is laid from the converter to each apartment. The signal path is exclusively via cables, from the broadcast head-end to the subscriber's wall-socket.

The optical fibre coming into the building is also used to connect subscribers to the internet. Distribution inside the building is via a foiled twisted-pair (FTP) cable that can sustain a data rate of 1 Gbps. To connect to the internet, a PPPoE (Ethernet) connection is configured on the consumer's PC or other device; no additional equipment is

required. As well as providing access to external internet resources, the connection gives users access to the city network with preferential rates for “in-network” traffic, as well as a variety of multimedia resources.



ER-Telecom has streamlined and optimised the deployment process with each city that it connects. “As ER-Telecom already has 31 projects in different cities there is much opportunity to practice and improve every detail of deployment,” said Sergey Gusev, ER-Telecoms’ technical director. “The most effective methods for each stage of deployment were

worked out through the first cities connected. Now we just practice uniformity in every new city.”

In 2006, ER-Telecom started to expand the range of services it was offering, beginning with digital TV and fixed-line telephony, which made it possible to offer the full range of triple-play service packages. In the first year, ER-Telecom added 50,000 telephony subscribers, about 95% of which were captured from other operators, it claims. ER-Telecom also launched a distribution system for digital content, including a game portal (www.citygamer.ru), a musical portal (www.citytunes.ru).

End-User Services

Service providers: ER-Telecom is a vertically integrated operator, providing cable TV, internet access and telephony.

Services: For domestic subscribers ER-Telecom provides ‘Divan TV’ (cable TV), ‘Divan TV Plus’ (digital cable TV), ‘Dom.ru’ (broadband internet access) and ‘Gorsvyaz’ (telephony). Double and triple-play packages are also available. For business purposes all services are sold under the brand ‘ER-Telecom’. ER-Telecom offers its own united multimedia portal with low prices and easy payment system: <http://turbodom.ru/>.

What is the cost? The triple-play package costs RUB 555 (approx. €13) per month. Standalone services cost between €6 and €17 per month.

By 2007 ER-Telecom’s network had reached 1.3 million households, the company had signed up 360,000 subscribers, and the Board of Directors approved a long-term strategy for the second phase of the company’s FTTB deployment, in 2008—2014. To make this happen, the operator needed new financing. ER-Telecom Holding was restructured, and 100% of all the shares of the subsidiaries were consolidated. Perm Financial and Industrial Group carried out an additional issue



(redemption) of the shares of ER-Telecom Holding in the amount of RUB 3.9 billion to increase the company’s equity capital to RUB 4.5 billion.

By 2008, ER-Telecom reached a milestone when it began to generate an operating profit in the 17 cities in the first phase of deployment. The second phase of deployment was already underway with the aim of reaching 26 more cities by 2013. The network design was revised in light of technological advances: the company now installs a two-level network, which needs more fibre, but provides higher capacity per customer, and has less equipment to maintain in the field, which reduces operating costs.

Social Responsibility

The company has also implemented several social responsibility projects that demonstrate the utility of the FTTB network:

Safe City: video-monitoring of crossroads and public places in order to maintain public order and improve crime detection;

City Education Network: a teacher-student-parent communication environment with e-textbooks and courseware, education and teaching resources, distant learning, cooperation with higher education institutions;

E-City Network: an interaction system for city authorities, business and population; constant monitoring of social and economic development of the city and public opinion surveys; consultations and open meetings; a dialogue between citizens and city authorities; environment control and emergency alert systems;

Telemedicine: a comprehensive use of telecom network capacities in healthcare: appointments via internet; consultations without visiting several hospitals; emergency consultations with specialists;

Housing and Communal Services Telemetry: efficient control and recording of tenant services (for suppliers and consumers); payment accounts based on actual consumption (for citizens).

Today the company has 3 million subscribers across 31 Russian cities. Of these, 1.3 million receive its cable TV services, and 1.5 million receive broadband internet access. The share of the Russian pay-TV and broadband internet access markets stands at 8.3% and 8.5% respectively, making ER-Telecom the fourth largest cable-TV operator in Russia. “It is astounding how small and potentially risky project has turned into a big inter-regional company,” said Gusev.

Written in April 2011

Photos provided by ER Telecom
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