

## Belarusian analogue of Skype

By Andrey Onufriev

### Beltelecom to launch eSpace service

The Belarusian equivalent of the Skype service should come on-line in 2013, allowing customers to use voice communication via their broadband connection, rather than phone line.

However, unlike Skype, Beltelecom's new service will be available only to subscribers of the national telecom operator, assigned to a fixed phone number for use via personal computer or mobile phone. "We'll be broadening the functionality of fixed phone numbers by allowing customers to use them on other devices, with more flexibility," notes Beltelecom's Deputy Director General for Technology, Sergey Sivodov.

## Accurate forecast for take-off and landing

### Belarusian aero meteorologists must maintain highest international standards



The safety of aircraft depends much on the weather so accurate forecasts by Belarus' Aviation Meteorological Centre are vital. Founded in 1999, it was recently awarded its ISO 9001 certificate of compliance with the highest international standards and professionalism.

The Centre comprises eight aero meteorological stations, previously belonging to the Republican Hydro-meteocentre. Mikhail Yefremov, who heads the Centre, tells us, "Our stations pass their data to pilots and air traffic control at airports. Without knowing the exact level of visibility, cloud height and atmospheric pressure, pilots cannot take off or land. Flight control officers follow aero meteorological forecasts carefully, which is essential in difficult weather conditions."

According to Mr. Yefremov, forecast accuracy was 92 percent for Belarusian aerodromes in 2012 and 98 percent for aircraft landing. Clearly, data is reliable for wind direction and speed, visibility, hazards and cloud height, despite nature often throwing surprises into the mix. Airports are given forecasts 24 hours ahead while planes also receive the latest data within two hours of their final landing.

The Aviation Meteorological Centre is soon to receive new equipment, including Doppler radars.

# Miraculous goats have value beyond compare

The Scientific and Practical Centre for Animal Breeding (part of the National Academy of Sciences of Belarus) is located near the small town of Zhodino. There, you'll find a herd of goats who, like all of their kind, will eat from your hand and allow themselves to be petted.

By Vladimir Yakovlev

However, they are not there for our amusement. Rather, they are part of a cutting edge scientific project to produce the rare and precious lactoferrin protein. A single gram sells for a phenomenal price, being a vital ingredient in the medicines of tomorrow. After joint work by Belarusian and Russian scientists, over many years, a human gene has been successfully implanted within the goats, allowing their milk to contain lactoferrin. The Director General, Nikolay Popkov, tells us, "Looking at the wider picture, we've made a serious scientific breakthrough. Do you remember Dolly the sheep being cloned abroad a few years ago? It inspired speculation worldwide. Our work has far greater significance, and involves far more complex technologies, including surgical."

The next step is using the protein effectively in medicines, which has been the subject of joint Belarusian-Russian research since 2003. Belarusian experts have been learning the secrets of transplanting human gene in animals from Russian colleagues. The transgenic goats being used in Russia today are descendants of the first transgenic goats, Lak-1 and Lak-2, which remain at the Belarusian Scientific and Practical Centre for Animal Breeding (SPC).



Experiment at Scientific and Practical Centre of National Academy of Sciences

The Head of the Biochemistry Department at the Belarusian State University, Igor Semak, notes, "Lactoferrin is a unique multifunctional protein with anti-inflammatory and immune-boosting properties, making it suitable for use in medicine, cosmetology and the artificial feeding of infants. A number of children are born with allergies to cow's milk and to particular foods."

Before moving from theory

to medical practice, many complicated problems need to be solved. A litre of transgenic goat's milk contains only about 5 grams of miraculous human lactoferrin. At the Science and Practical Centre, we've shown a small glass jar containing a white crystalline powder: the miraculous substance. To create even a little, a herd of impressive size is required. The Zhodino SPC has about 150 modified goats and is building a farm to

house another 250. However, about 1,000-1,500 goats are needed, according to the Head of its Reproduction and Genetic Engineering

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Laboratory, Alexander Budevich. This would deliver 120-150 litres of milk per day, from which the protein would be extracted.

Even more difficult is the task of developing medicines using lactoferrin and their thorough testing, in line with legislation. It's a new path for scientists but some mysteries are already being solved. Valentina Rubakhova, a researcher at the Institute of Physiology (NAS of Belarus) shows us slides of rat cells exposed to lactoferrin. "It's a serious issue for us to protect mankind from the ill-effects of drugs since many, such as antibiotics, can have a strongly adverse effect on the body. After the injection of tetracycline into a rat's stomach, the mucosae become inflamed and multiple haemorrhages appear, leading to ulcers. When we add lactoferrin, the negative effects almost disappear."

In other experiments, rats receiving lactoferrin in nutrition gain significant weight, compared to the control group. Of course, this is only the beginning. To drive forward research and avoid wasting time, the BelRosFarm action plan lays forth goals for 2014-2018, aiming to develop highly effective and safe biological medicines and food products using human lactoferrin produced artificially, alongside adequate pilot production.

