

RUSSO-BRITISH  
CHAMBER OF COMMERCE



# Bulletin

Issue 7

The Bridge between British and Russian Business

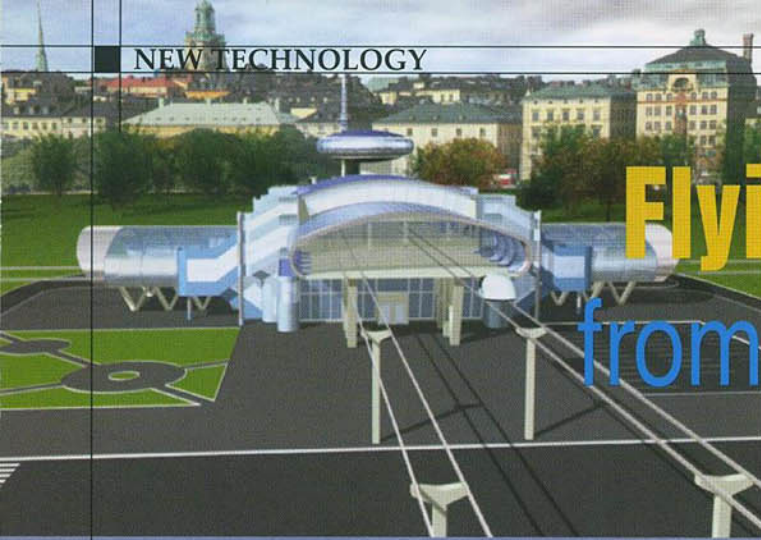
September 2007

**Medal-winning Infrastructure?  
Olympic preparation hits  
Russia and the UK**

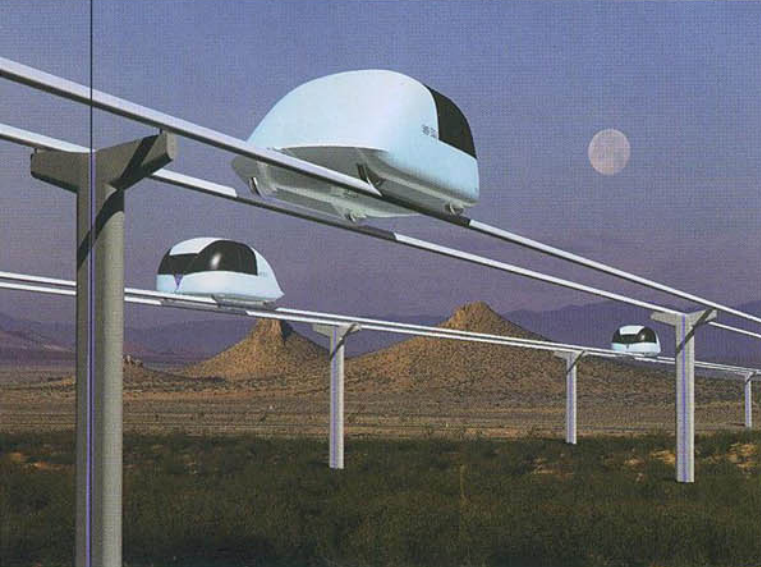
**Россия и Великобритания  
создают инфраструктуру  
к Олимпийским играм**







# Flying over the Rails from London to Tokyo



High-speed transport is an everyday part of modern life. Huge planes cross the skies and enormous trains speed across steel rails on a magnetic cushion. For most people, though, high-speed travel is still an exotic rarity. Most of us spend an increasing amount of time in cars, usually either alone or with one passenger at most. Of course cars are convenient: compact and always at hand, they run when you need them (and not according to some fixed schedule), and go wherever you want them to (so long as there's a road to drive on). But cars are not designed for high-speed travel over long distances. They do not have the necessary speed, are at high risk of accidents, do not have a toilet, and require frequent stops for refuelling. Of course, you could always equip a minibus with a toilet and try driving it at 360 km/hour (leaving safety concerns aside), but this would require a 1650 kilowatt engine that would use up 150 litres of fuel per 100 km travelled, meaning the vehicle would have to stop for refuelling every 10–15 minutes – you wouldn't get very far!

ANATOLY UNITSKY, CHIEF DESIGNER AT STRING TRANSPORT UNITSKY CO. LTD.

**T**here is an alternative, however. You need to make the minibus five times more aerodynamic in its design and fit it with steel wheels, which are 100 times more resistant to bumps and rocking than pneumatic tyres at high speed. Now the vehicle is ready to travel along two special hollow rails that are filled with an extremely sturdy composite and reinforced inside by a special structure in the form of a string made up of several hundred extremely strong fibres each 3 millimetres in diameter. The resulting rails are super-strong, very hard and compact (10 cm wide and 20 cm high) and can be erected 6–8 metres or more above ground on supports placed 35–40 metres apart. This does away at the same time with all the traditional attributes of material-intensive and costly railroad building such as the sleepers, the gravel and soil used to surround the rails, the bridges, tunnels and viaducts, and the electric power lines and poles and so on. High-speed rail transport is at least 10 times cheaper than a conventional railway.

Using this technology, a 10-person rail minibus would need an engine eight times less powerful – only 206 kilowatts – to reach a speed of 360 km/hour.

This lays the foundations for developing a completely new kind of transport system – String Transport Unitsky (STU). This would be the safest kind of transport system because the special safety systems built into the rail technology mean that there is no way a vehicle could derail – not even a construction crane can pull the minibus – the unibus – from the rails.

This kind of rail vehicle makes journeys of any distance – including from London to Tokyo – possible. The vehicle has everything you need: toilets, air conditioning, audio and video systems, comfortable seats and bunks, and the corridors are spacious enough for people to stand at full height. Rivers and other water courses along the way would be crossed not via tunnels but via suspension bridges that would be 50 times cheaper than current examples. The STU two-way rail system weighs only 250 kilograms per metre of length, and the high-speed unibus weighs 2.5 tons, which makes the construction of one or two-kilometre long suspension bridges a cheap and efficient process.

In order to get to Tokyo quicker, the unibus could be equipped with a more powerful 285-kilowatt engine and designed with a higher aerodynamic resistance coefficient of 0.08 (wind tunnel tests of the unibus prototype have given a coefficient as low as 0.075). The vehicle would then be able to reach a speed of 500 km/hour and travel 12,000 km in a day. The vehicle would be able to cover the distance of 500–700 km which is typical between European capitals in 1.1–1.5 hours, while the journey from central London to Moscow (2850 km) would take less than six hours.

In order not to have to carry a couple of tons of fuel for the journey, it would be better to use electric power and install an electric contact wire along the side of the string rails.

Passengers could travel along this network not just to Tokyo but also to Paris, Brussels, Berlin, Warsaw, Minsk,





String Transport or Unitsky String Transport is an altitude high-speed freight/passenger rail transportation system designed by Russian inventor Anatoly Unitsky ([www.wikipedia.org](http://www.wikipedia.org))

Moscow, Nizhny Novgorod, Yekaterinburg, Novosibirsk, Khabarovsk and other Russian cities. This technology would make it possible to save huge amounts of fuel – a very topical issue today – as the world's oil supplies would run out before the end of the string rail network's service life. The fuel savings would be considerable: if 100,000 people on average travelled along the trans-continental STU network every day, over the 100 years of its service life, the fuel savings compared to air travel of the same volume and following the same routes would come to more than two billion tons and would represent a value of two trillion euros.

The string-rail system's low material intensiveness and compact infrastructure, simplicity of manufacture and assembly, high speed of construction and the cheapness of the unibus vehicles themselves do not require high levels of investment. Costs come to €2–2.5 million per kilometre of high-speed route, covering the costs of the infrastructure and the vehicles. This works out 20–25 times cheaper than other high-speed transport systems such as raised railways and magnetic cushions.

In terms of its design and construction, the unibus is no more complicated than an ordinary minibus. Costs per passenger place would thus be relatively low – up to €5,000 – which is 10–15 times cheaper than one seat on a plane or on a high-speed train.

The STU system is energy efficient, offers high-speed travel, a long service life, low operating costs (there is no need to clear snow and ice from the rails in winter), low construction costs and high traffic capacity. This makes it possible to keep passenger costs within the range of €0.7 per 100 passenger-kilometres. Tickets sold for €100 for a journey of 700 km would make more than 100 percent profit for the system's operation. The STU system would therefore pay for itself rapidly and investors would find it profitable to put money into building string rail routes, including trans-continental routes crossing up to 10,000 km, because at around €20 million the cost of such a route would be similar to the cost of building the Eurotunnel under the English Channel, which is 200 times shorter.

Although the unibus has only small passenger capacity, the system can carry a large amount of passenger and freight traffic

at high speed. The system can begin operating at speeds of 300–320 km/hour and as the automatic traffic management and traffic flows are improved, the speed can be brought up to 500 km/hour. This would make it possible to increase passenger traffic in ten-seater vehicles on a two-way rail network to more than 400,000 passengers a day or 150 million a year. Design capacity of the system is even higher, allowing for passenger traffic of more than one billion a year, taking into account the limitations of having to keep to no more than a single unibus per rail section at a time (the number can be increased to up to three vehicles when travelling at lower speeds).

The number of passenger unbuses on the network can be decreased to make way for freight or mixed freight/passenger vehicles. The freight vehicles would have capacity of only up to 1.5 tons, but the STU system's high-speed transport would make it possible to ship around ten million tons of foodstuffs, everyday goods, postal deliveries and so on per year.

We have been working on the STU project for more than 15 years now. The idea of rail vehicles literally flying above the ground appeared 30 years ago. Today we have the technical possibilities we need to design a string rail system of any length and to build the vehicles for it – urban system vehicles that would travel at up to 120 km/hour, and high-speed inter-city vehicles that would reach speeds of up to 500 km/hour. Given their technical, economic, environmental and socio-political advantages, STU rail networks will cover the whole globe in the twenty-first century, because global demand for these new generation transport systems will extend to 20 million–30 million kilometres.

For more information please see [www.unitsky.ru](http://www.unitsky.ru)

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