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### **The Virtual Silk Highway – Connectivity for Central Asia and the Caucasus**

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This presentation focuses on Internet for research and education communities in the countries along the Great Silk Road, eight republics of the Former Soviet Union (Kazakhstan, Uzbekistan, Kyrgyzstan, Tajikistan, Turkmenistan, Azerbaijan, Armenia, Georgia) and Afghanistan. When the Internet became a standard science tool in the nineties, connectivity to this area was limited to analog telephone lines. The TAE fiber was installed from Istanbul via Tashkent to Shanghai, but it was based on international ISDN telephone calls at \$10 per minute, unaffordable to communities with salaries of \$300 per month. Satellites offered connectivity on short notice at better prices but funding by the communities was out of the question. Aid programs stepped in, connecting individual institutes across the area to the outside world. ISPs catered to those who could afford it, such as universities selling MBA courses, but Internet for research and education was lacking. In 2001, the NATO Science Programme added to its grants to institutes a multi-year program of providing a shared satellite service for international connectivity to all the countries above. National connectivity and solving the “last mile problem” was also funded, provided that a National Research and Education Network (NREN) organization was created in the country. SILK-1 ran 2002-6 for \$3.5m providing 30Mbps west→east and 6Mbps east→west. QOS was implemented for video and audio conferencing. Co-funding by NRENs and others was established, but sustainability is still outstanding. Only recently, affordable fiber (<\$1k/month for 1 Mbps) is offered in parts of the area, so the RFP of SILK-2 in 2006 was issued in a technology-neutral way. No fiber bids were received, but a cheaper satellite service providing a total of 120/30Mbps for \$3.5m in 2007-8. With fiber initiatives under way, it is hoped that part of SILK-2 can switch to fiber in 2009.