

# Broadband to Trains

## Applications: Satcom Network Systems and Services



*"21Net has demonstrated that it really is possible to deliver a business-class broadband service to train passengers - multimegabit data rates over a bidirectional Ku-band satellite link with a high speed train travelling at 300 km per hour."*  
*Henry Hyde-Thomson, Chairman, 21 Net Ltd.*



### PRIME CONTRACTOR:

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### PROFILE:

21Net is providing train passengers in Europe with high speed Internet access and entertainment services, including TV, music, and films streamed directly to their own wireless-enabled laptop or PDA.

The 21Net system uses two-way Ku-band satellite links directly to a tracking antenna mounted on the roof of the train travelling at speeds of up to 300 km/h. The satellite link is augmented by "Wi-Fi" and GPRS data links in tunnels, stations and other locations where the satellite may be unavailable.

By equipping the trains with video servers and "Wi-Fi" wireless networks, 21Net gives business-class travellers Internet access and a variety of entertainment services streamed directly to their laptop screens.

Working with Spanish satellite operator Hispasat and a local partner in Spain, 21Net first demonstrated its technology in 2004 on a high speed train operating on the Madrid-Seville route. The 2MBit/s satellite connection was shared by 10 laptops which were able to send and receive e-mails with attachments of 5 MBytes or more, at the same time as receiving real-time streamed video from the Web ... all on a train travelling at 300 km/h. Since spring 2005, 21Net has been running a full trial on the Thalys train operating between Brussels and Paris, providing service to as many as 100 users per train simultaneously.

21Net believes that a 2MBit/s downlink and a 512kBit/s uplink per train are necessary to provide business class Internet services and to support broadband services for the train operator and its customers.

All major train operators are looking for Internet access and service solutions for millions of European passengers, preferably without having to manage the service themselves or to modify their trains. 21Net has demonstrated that it can deliver this.