



Frequently asked questions.

What is the 'Last Mile' problem?

The 'Last Mile' problem is where a telecomms or cable company has to provide high-speed links from subscribers or potential customers sites to the carrier's backbone – such as an SDH network, which may be laid under the road nearby. Cable modems, ISDN (64 or 128kbps) or DSL technologies are solutions currently under criticism for limited bandwidth or concerns over reliability, and local authorities place limitations on the frequency at which a public right-of-way may be disrupted for digging – cost and timescale concerns are issues also for copper links. There are several 'Last Mile' solutions, connecting to the backbone at data rates from 2 to 155Mbps and beyond – removing the twisted-pair 'bottleneck'.

What's so great about Wi-fi?

Wi-fi technology is becoming more and more ubiquitous in companies, schools, colleges, coffee shops, airports, hotels, city centres and homes. The technology's biggest advantage is that it is a standard. With a wireless service, you have the flexibility to access the web from any location with a Wi-fi installation. Laptops, PDA's, mobile phones and DECT phones will soon all be able to communicate using Wi-fi. It uses the same frequency as is used in wireless baby alarms, and some car security systems. The power level transmitted in Wi-fi systems is regulated by Ofcomm and is lower than that used in car security systems and some baby alarms. Wi-fi can have a radial range of 500 Metres, and each 500 Metre cell can be linked to others creating a much larger coverage area.

What can I do with Bluetooth wireless-capable products?

While the possibilities are nearly endless for the applications of the technology, some of the current capabilities include:

- Eliminating the need for wired connections between electronic products and accessories
- Exchanging files, business cards, calendar appointments, etc. with groups of Bluetooth users
- Transferring and synchronizing files between devices
- Connecting to localized content services in public areas
- Functioning as remote controls, keys, tickets and e-cash wallets

Are there other standards/offerings within the 2.4GHz band that will interfere with Bluetooth capabilities?

The Bluetooth wireless technology uses the 2.4GHz band, which is unlicensed, and can be used by many other types of devices such as cordless phones, microwave ovens, and baby monitors. Any device designed for use in an unlicensed band should be designed for robustness in the presence of interference, and the Bluetooth wireless technology has many features that provide such robustness.

Does Bluetooth wireless technology have the same security level as GSM networks?

Not exactly certain of the GSM security level although Bluetooth wireless technology is considered very secure with a challenge response authentication algorithm and 128 bit encryption built into the baseband. The Bluetooth wireless technology security algorithms have so far not been compromised.

What is the range of Bluetooth today?

Roughly 10 or 100 meters, depending on what class radio is used. Most designs also usually exceed specifications making the distance typically well in excess of these figures.

What is FSO or Free Space Optics?

Free Space Optics (FSO), also called Free Space Photonics (FSP) or Optical Wireless, refers to the transmission of modulated visible or infrared (IR) beams through the atmosphere to obtain optical communications. Like fibre, FSO uses lasers to transmit data, but instead of enclosing the data stream in a glass fibre, it is transmitted through the air.

How is Free Space Optics (FSO) different from other forms of wireless?

Unlike RF wireless, FSO is an optical technology that operates in invisible parts of the optical spectrum at near-infrared wavelengths. The beams of light are transmitted by laser light focused on highly sensitive photon detector receivers. These receivers are telescopic lenses able to collect the photon stream and transmit digital data containing a mix of Internet messages, video images, radio signals or computer files. Transmission is highly directional making it far more secure than RF technologies but also requiring that the two points to be connected be within line-of-sight of each other.

The benefits of FSO over RF, include:

- No Licensing
- No Interference
- Much Lower Latency
- No Rain-Fade
- More Secure
- Higher Bandwidth

Do birds affect Free Space Optics (FSO) transmission?

Properly engineered FSO systems will not be affected by birds crossing the path of the beam, nor will the birds be injured by the beam. SONAbeam systems have been engineered with multiple, spatially diverse beams and a large receiver and thus will not be affected by birds.

Very basic comparisons between point to point FSO, Microwave, Radio Wireless and Cable links.

	FSO	Microwave	Radio	Cable/Fibre
Distance/Range	Up to 600M	Up to 50Kms	500M	100Km
Max Bandwidth	2.5Gbps	155Mbps	11 or 54Mbps	Unlimited
IP compatible	Yes	Yes	Yes	Yes
SNMP compatible	Yes	Yes	Yes	Yes
Upgrade-able	Yes	Yes	No	No
Security	High	High	Can be High	High
Deployment	Within 1 day	From several days to several months	From several hours to several days	Up to a year
Installation Complexity	Easy	Complex	Moderate	Moderate to Complex
Safety issues	No	No	No	No
Licensing	No	Yes	Yes at 5GHz	No
Interference	No	No	Yes	No
Line of Site required	Yes	Yes	Not complete Line of site	No