An Introduction to Electrical Engineering

Communications Systems

Lectured by: Dr. A. Haghbin


Connectivity

Wired Communications

- The **Public Switched Telephone Network** (**PSTN**) is the world telephone system.
  - It is used for data as well as voice communications.
  - Twisted-pair wire and fiber-optic cable provide the connections for the system.

Wired Communications

- Home and business phones are connected to **Subscriber Loop Carriers** (**SLC**s).
- The area serviced by SLCs is called the **local loop**.

- **Multiplexing** technology enables simultaneous multi-use of transmission lines.
  - Copper wire allows up to 24 simultaneous calls per wire.
  - Fiber-optic cable permits up to 43,384 calls per strand.

Wired Communications

The "last mile" refers to the phone lines that connect homes and businesses to the local loop.

The inability of users to access the high-speed fiber-optic cable creates a bottleneck of data called the **last mile problem**.

Digital telephony technologies that use twisted-pair wire are referred to as **last mile technologies**.

ISDN (Integrated Services Digital Networks)	DSL (Digital Subscriber Line)

Wireless Transmission Media

Communications

Communications Systems and Signal Processing

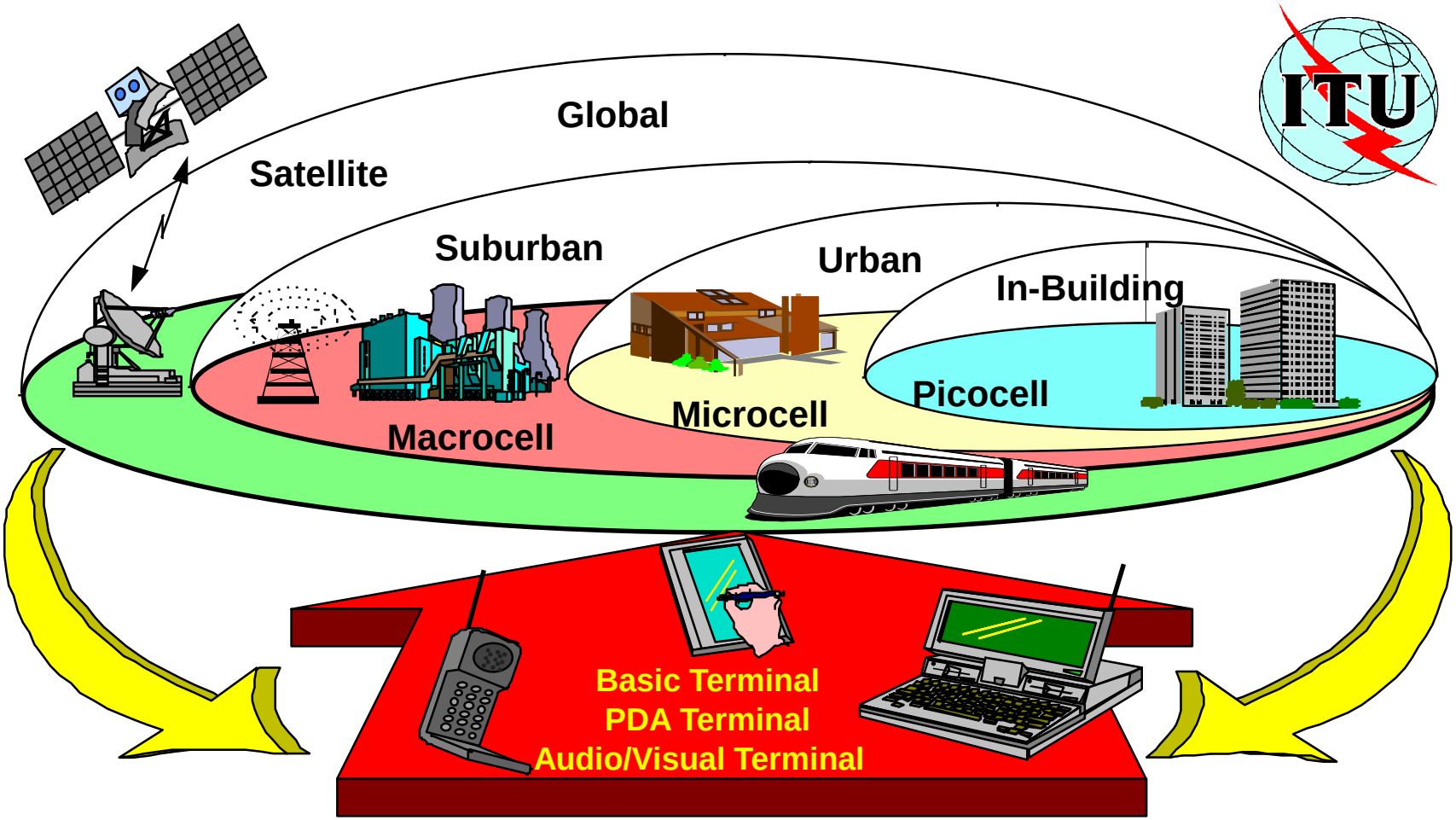
Communications Networks

Secure Communications

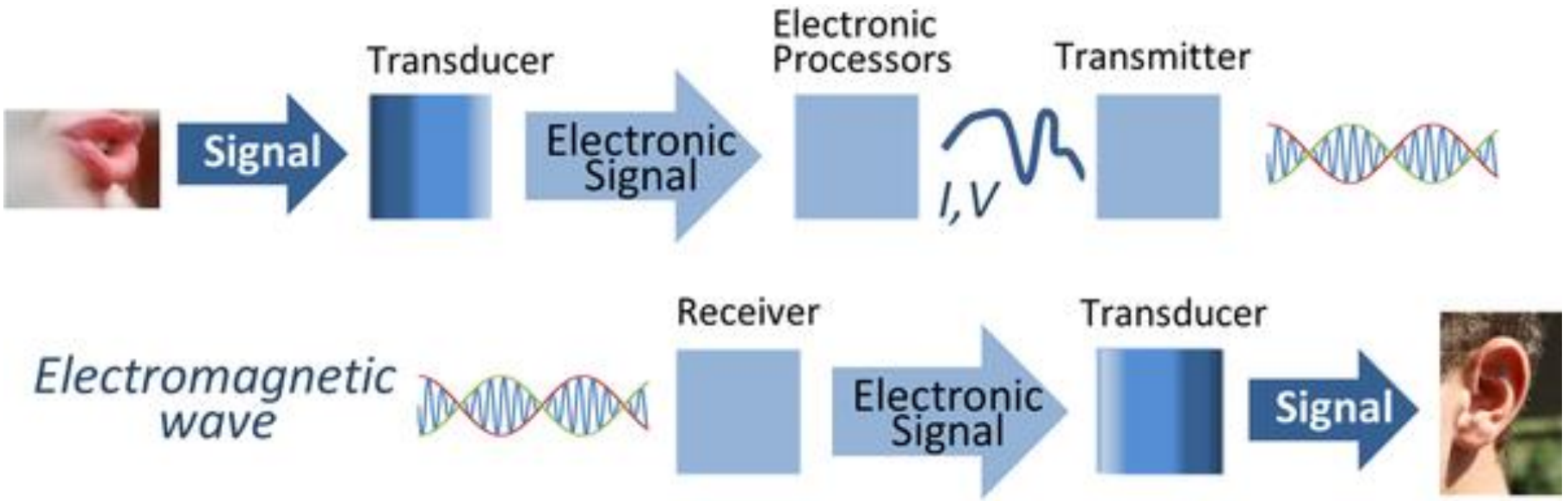
Antenna and Propagation

Optical Communications

Communications Systems



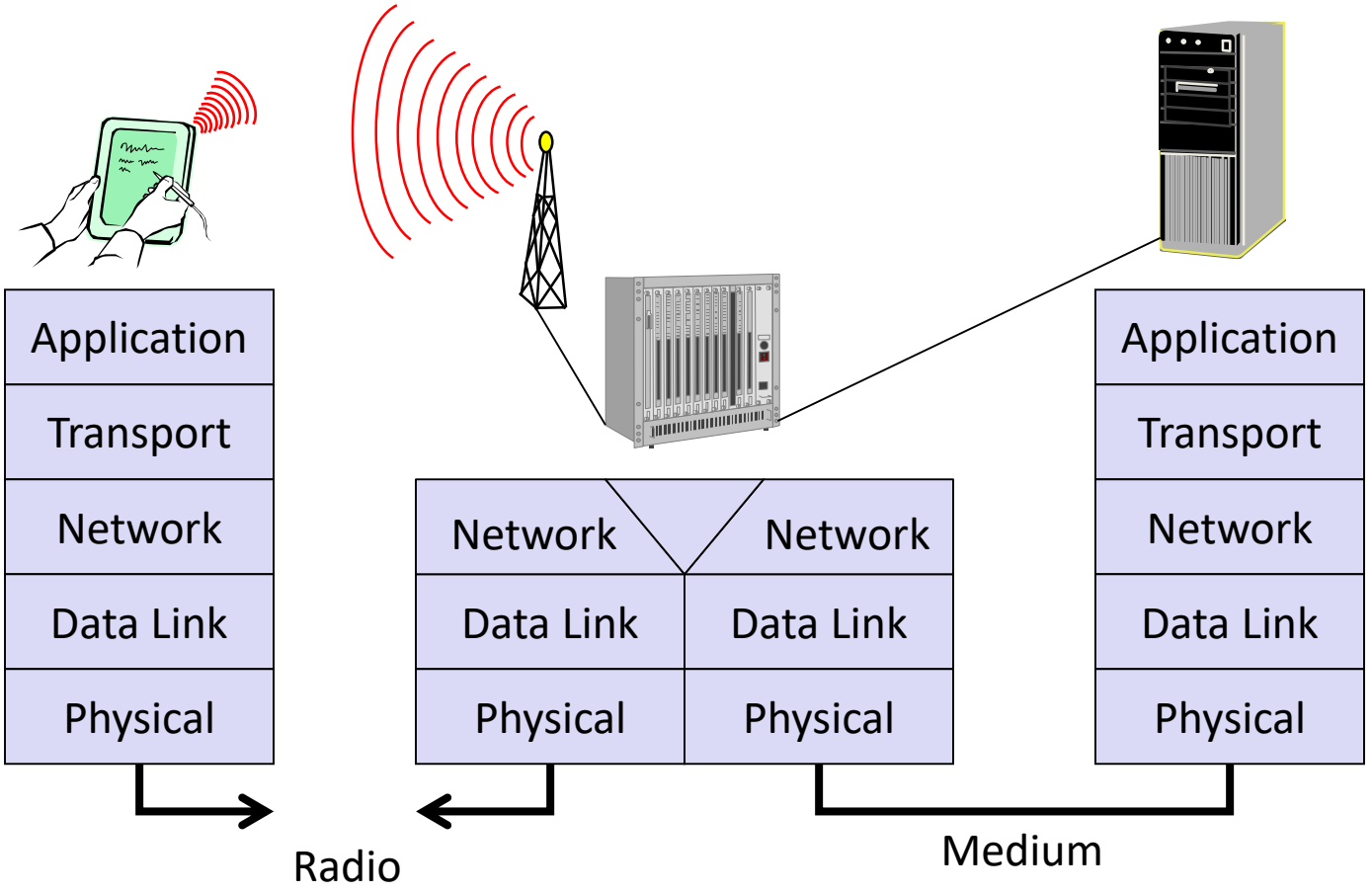
Communications Systems and Signal Processing



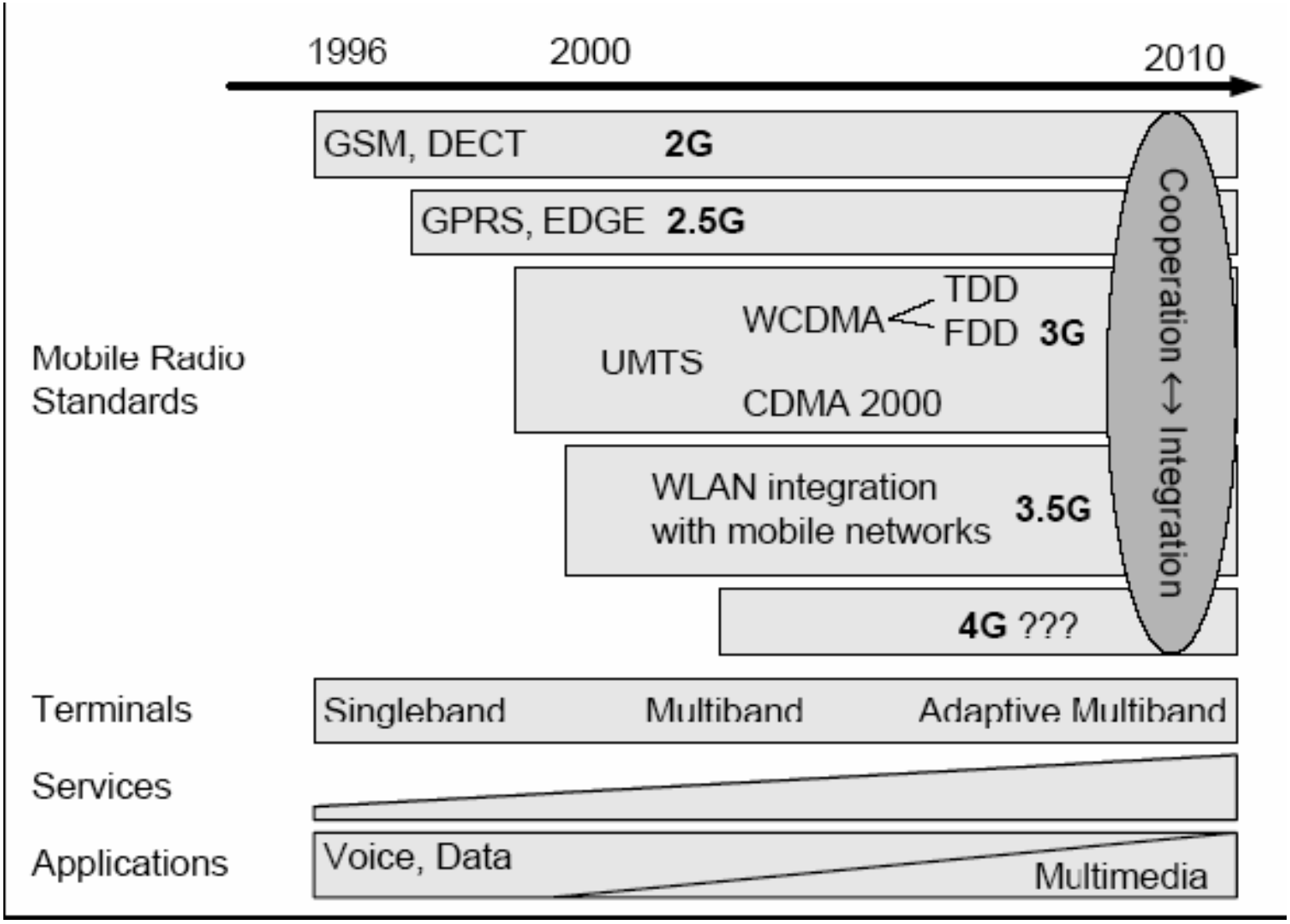
Signal Processing

- Audio Signals Processing
- Voice Signals Processing
- Image Processing
- Video Signals Processing
- Data Processing

Communication Networks



Wireless Communication Networks



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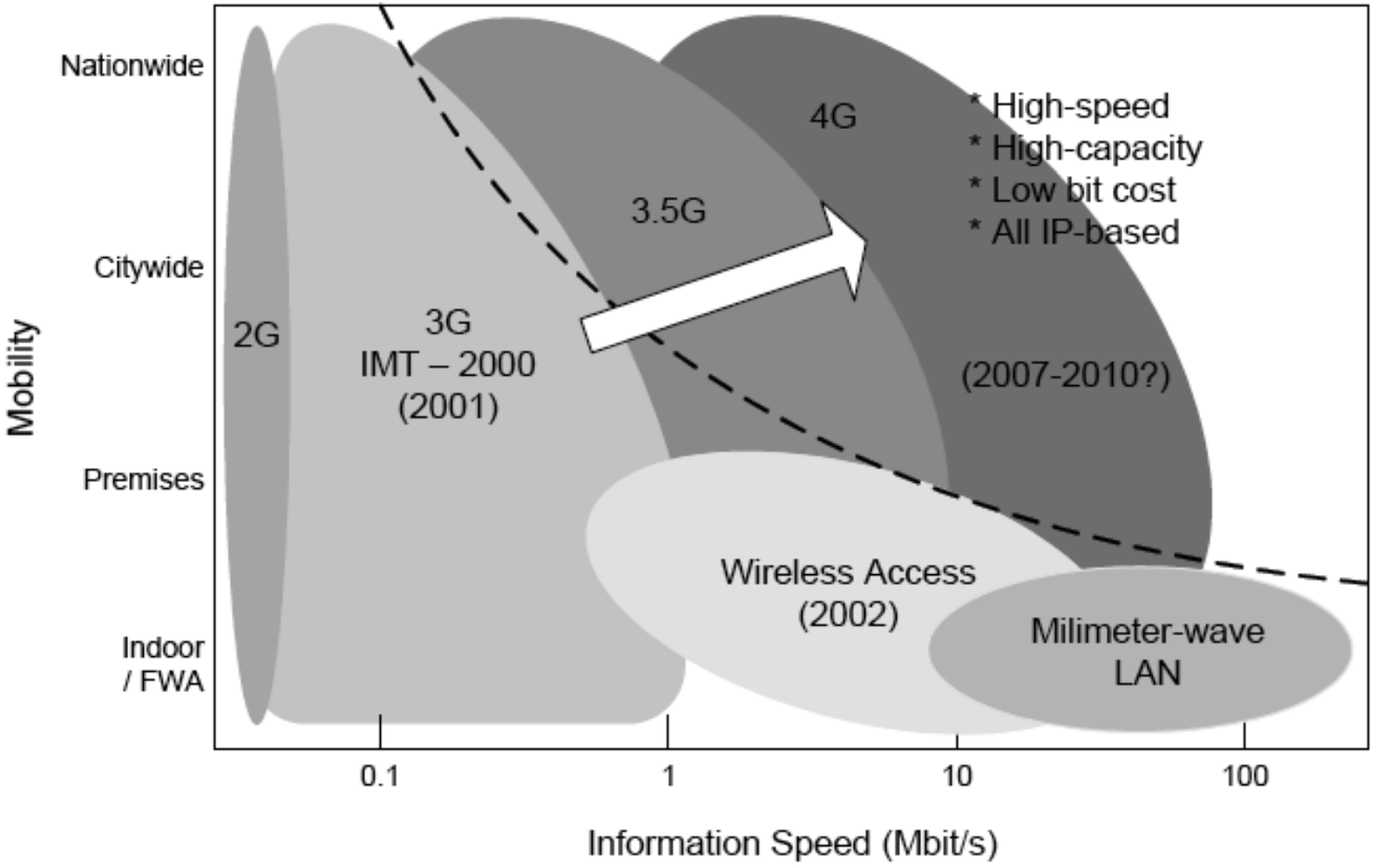

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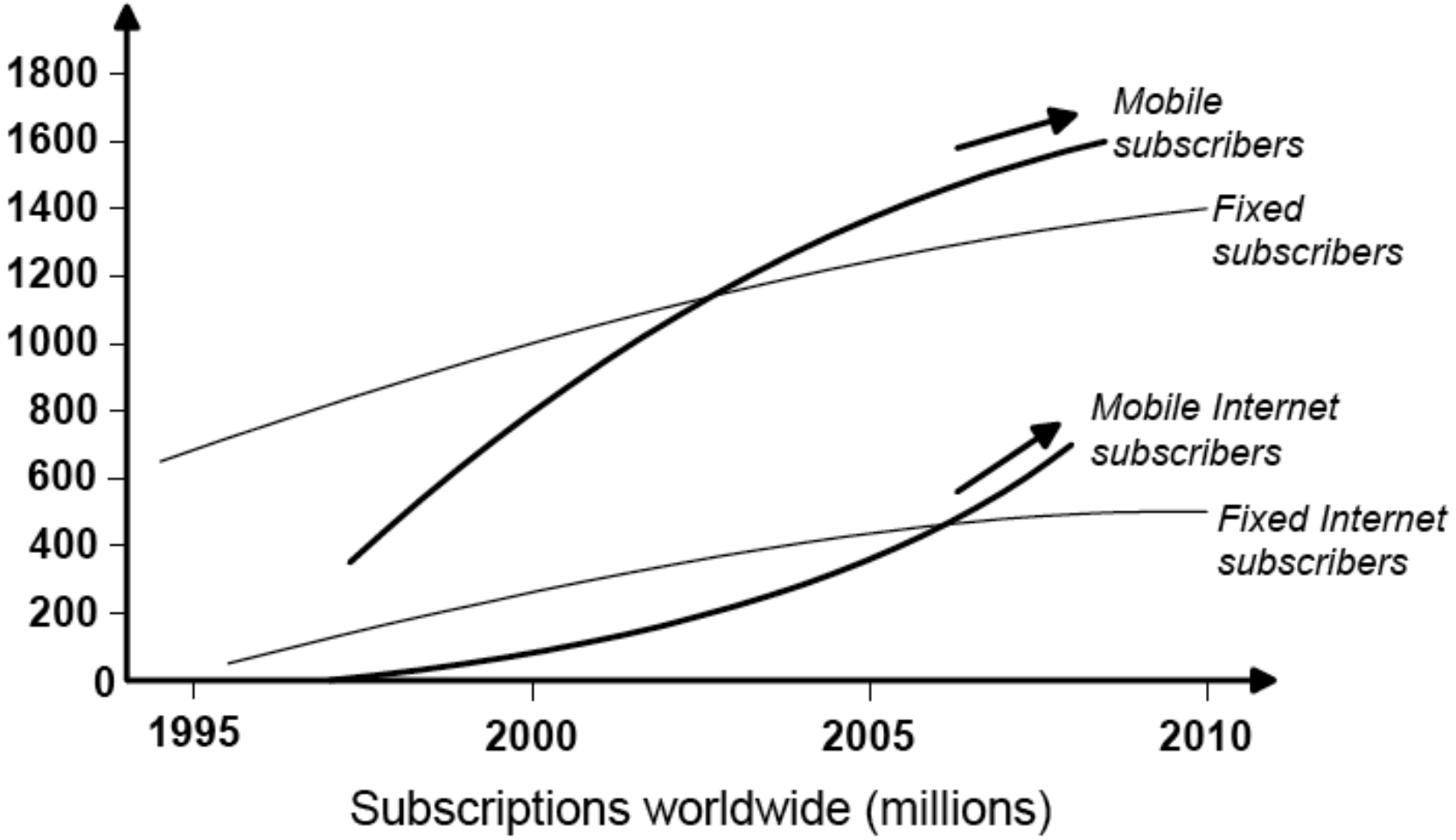

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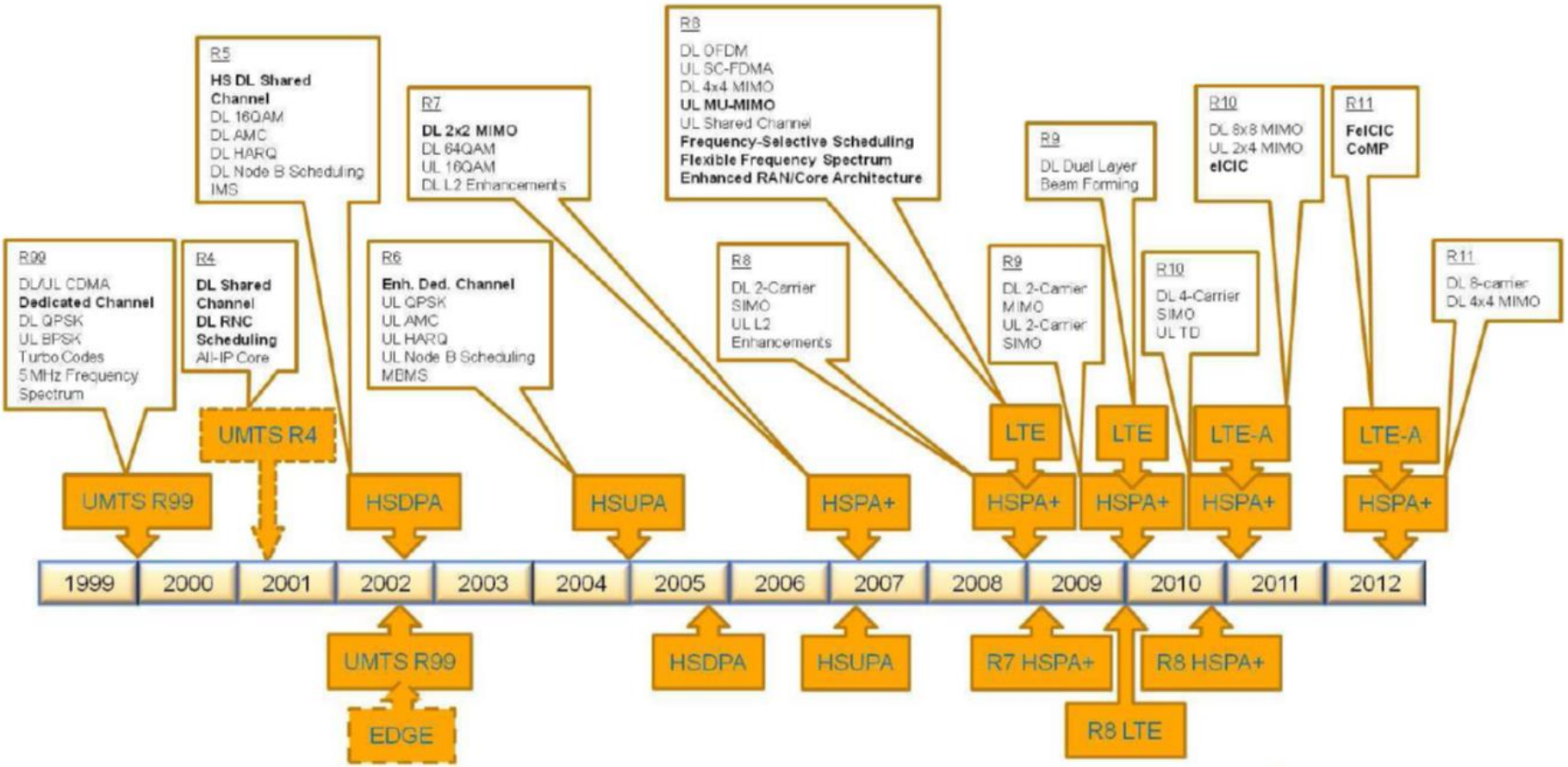
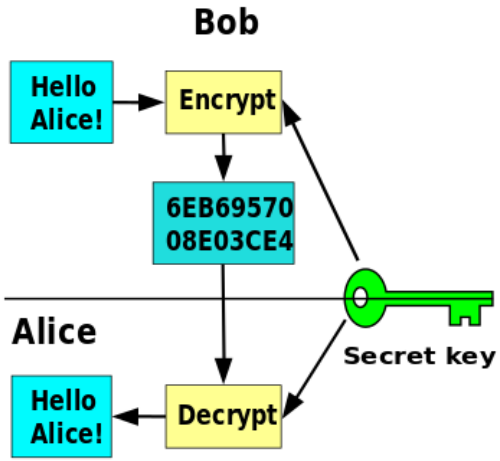
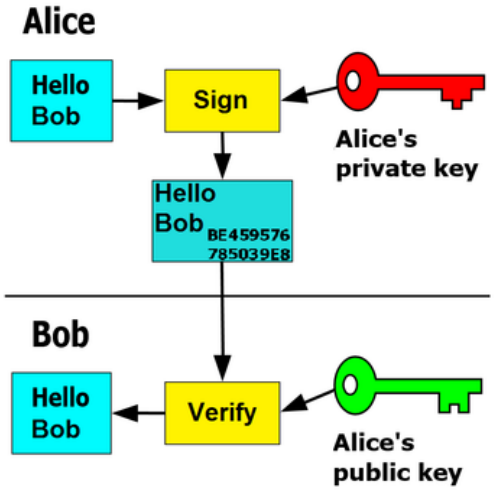
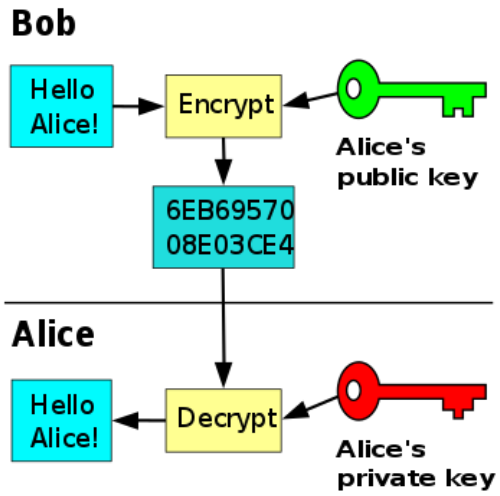


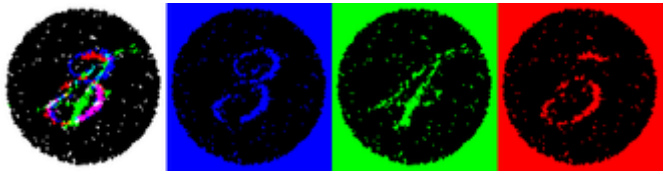






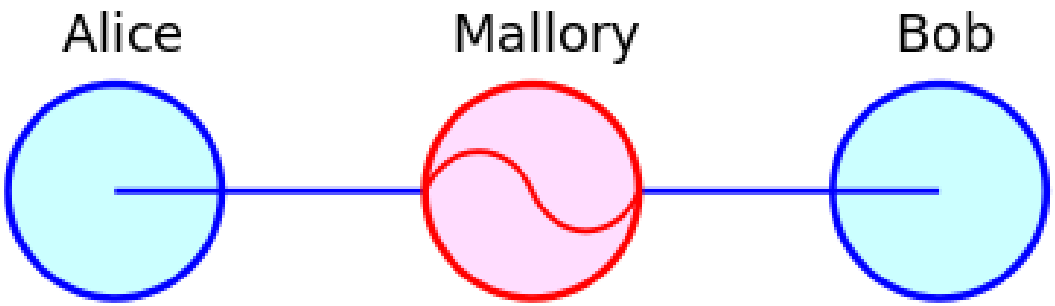
Secure Communications

Cryptography, Encryption and Decryption



Secure Communications

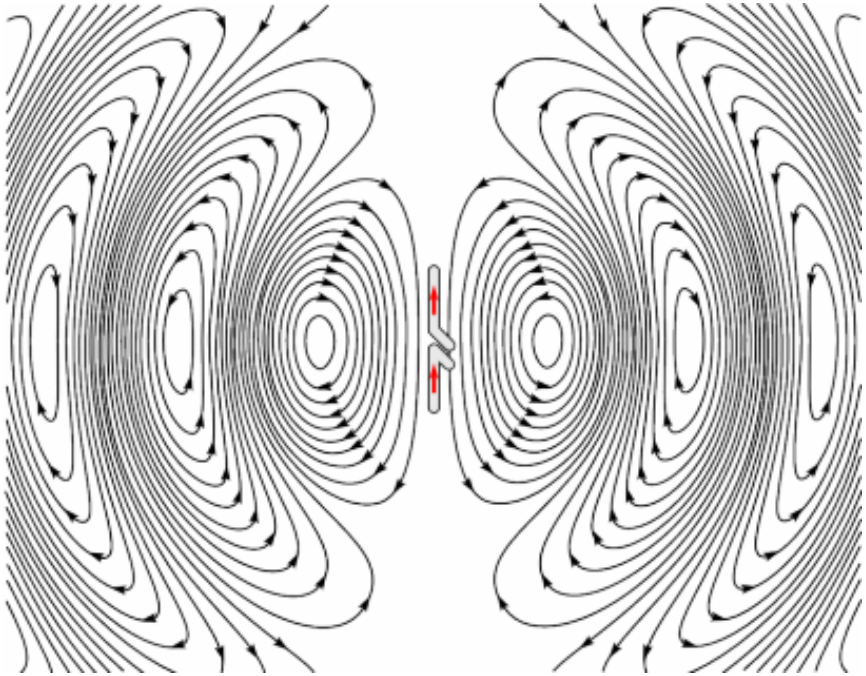
Watermarking and Steganography

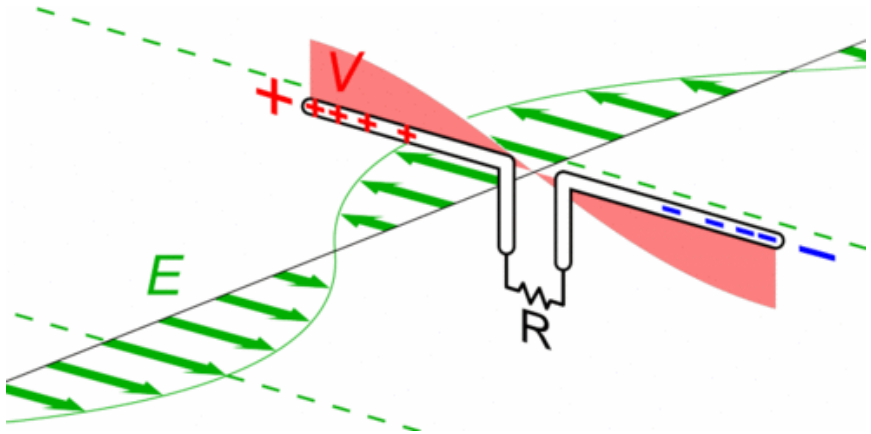


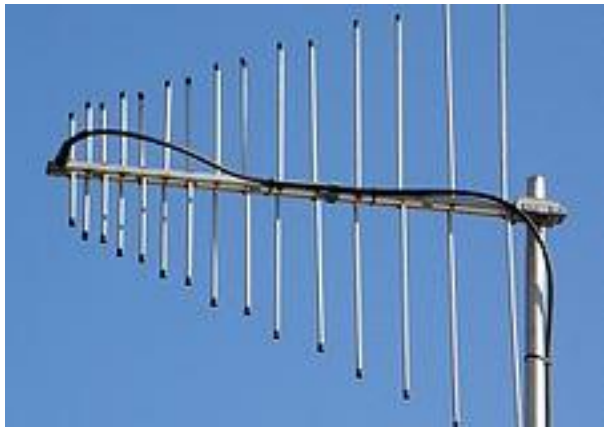
Secure Communications

Attacks, Threats and defense

Antenna and Propagation










Antennas and Propagation

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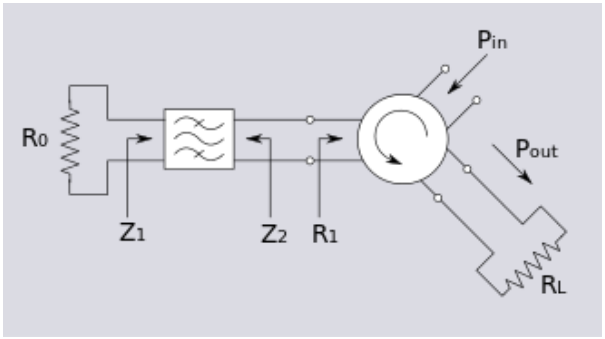
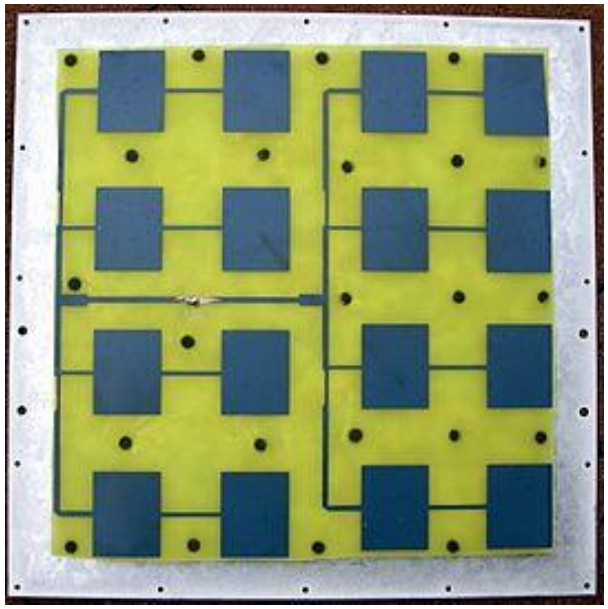
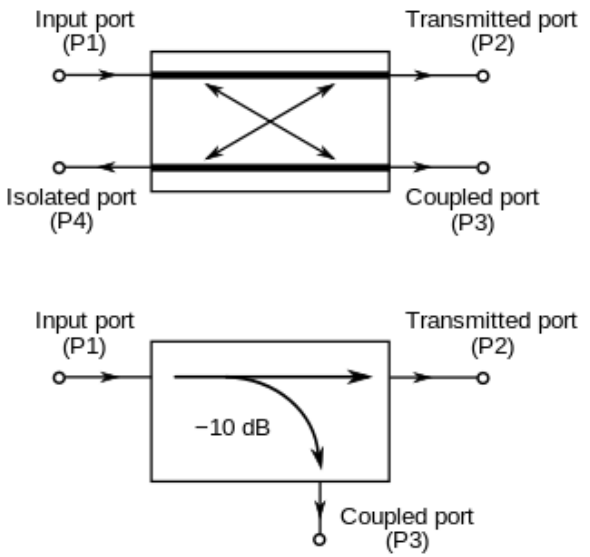
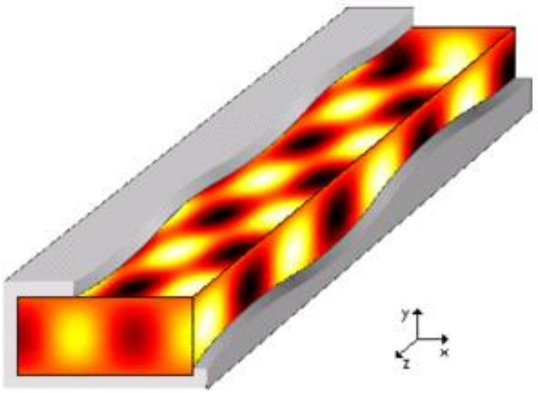
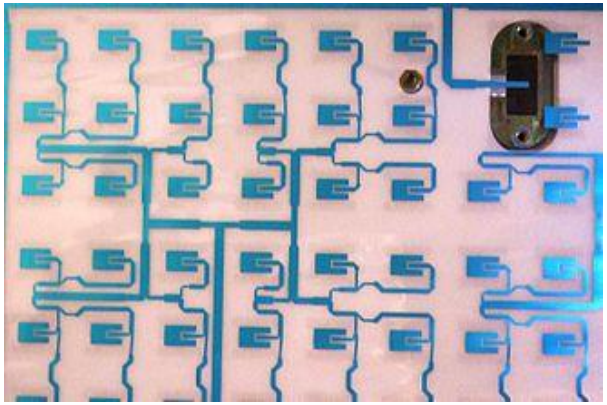




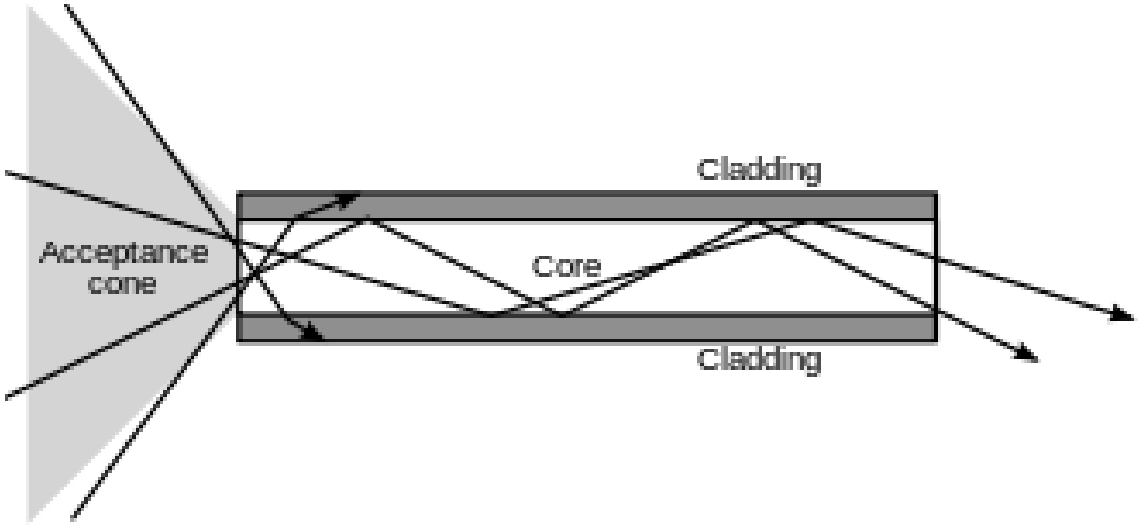


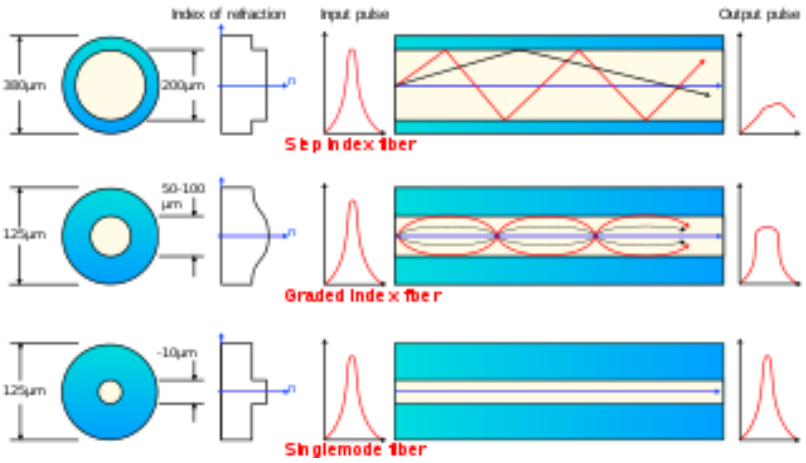




Antennas and Propagation

Optics Communications





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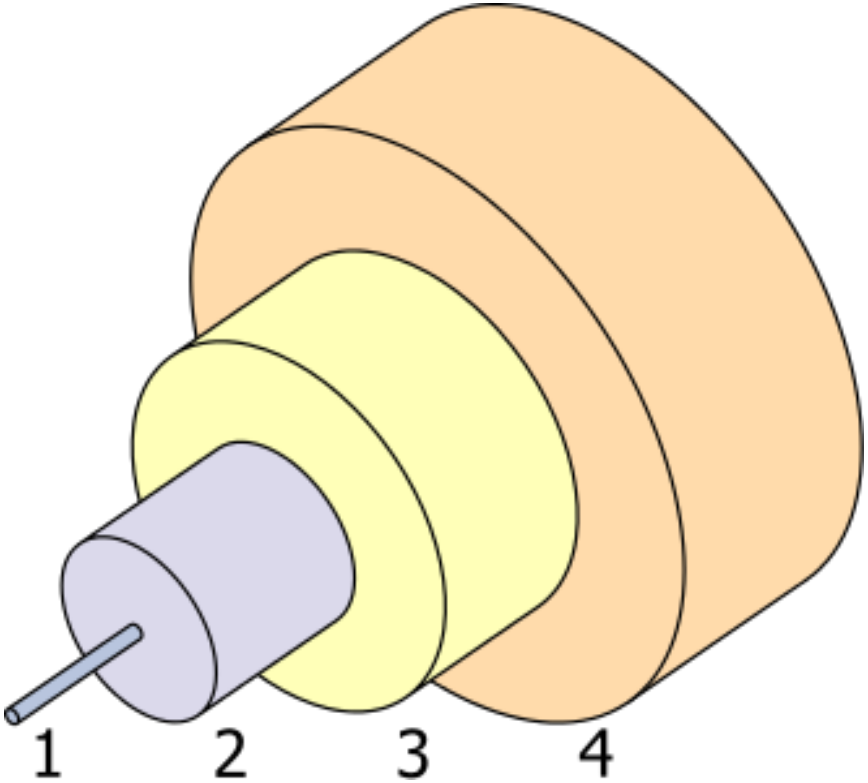

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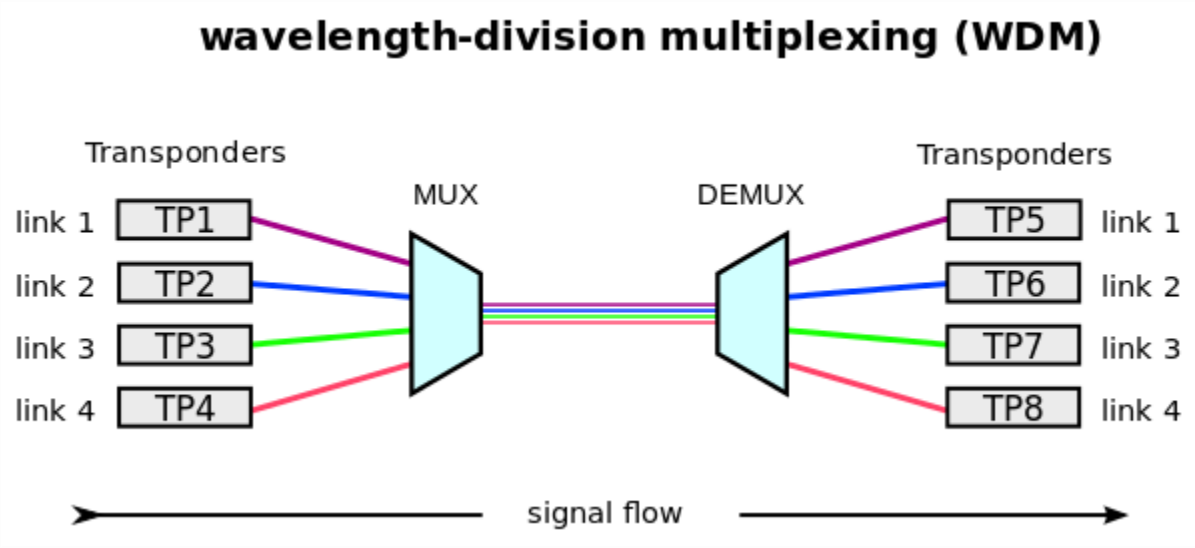

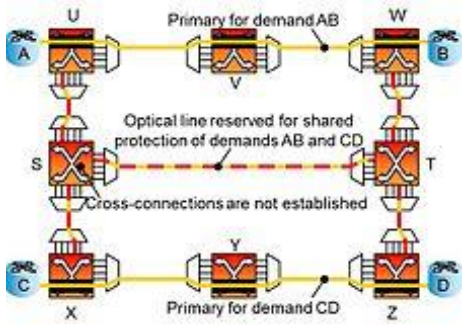

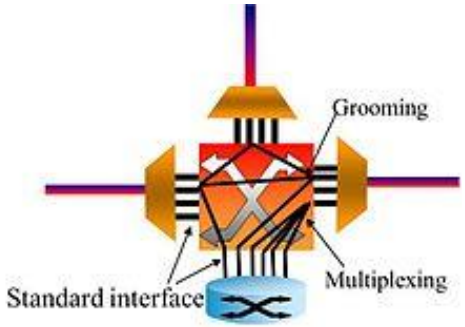

Any Question?

THANKS FOR YOUR ATTENTION