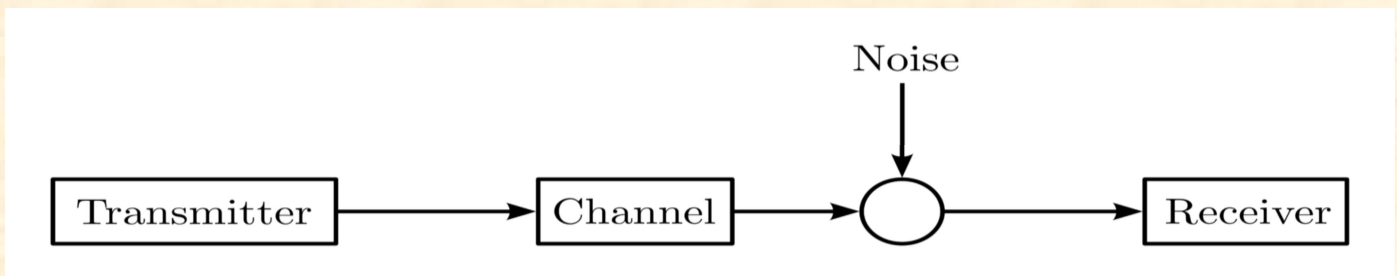


Introduction

Communication system is a system which describes the exchange of information or data between two stations, i.e. between transmitter and receiver.

To transmit signals in communication system, it must be first processed by several stages, beginning from signal representation, to signal shaping until encoding and modulation.



Application Areas

Telephone/ Mobile

Telegraph

TV cable/ Radio

Computer

Defense/ military application

Broadcasting, Mass Media or Journalism

Satellite/ Space Communication

Digital Signal Processing

Image Processing

And many more.....

Essentials of Communication System

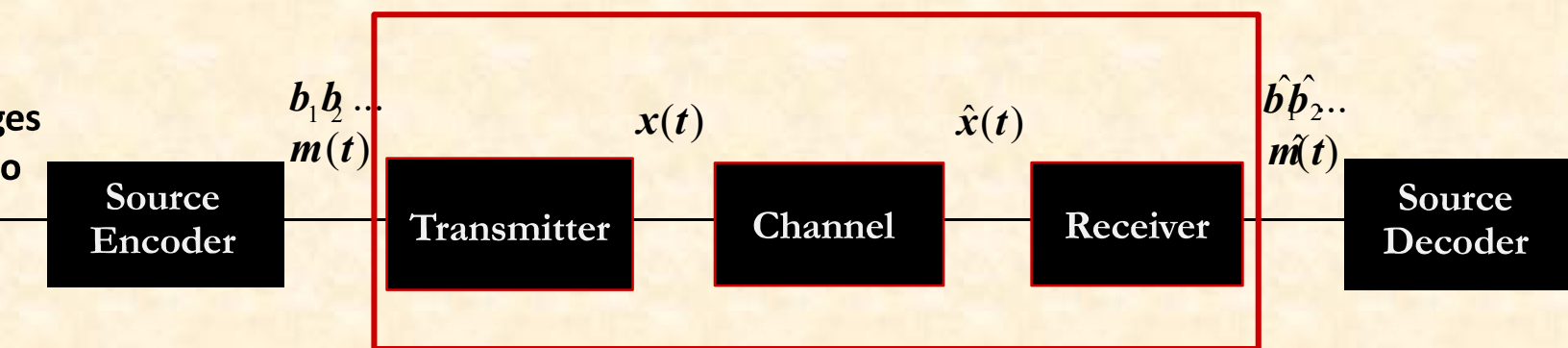


Figure: Block Diagram of Digital Communication System

Source encoder converts message into message signal or bits.

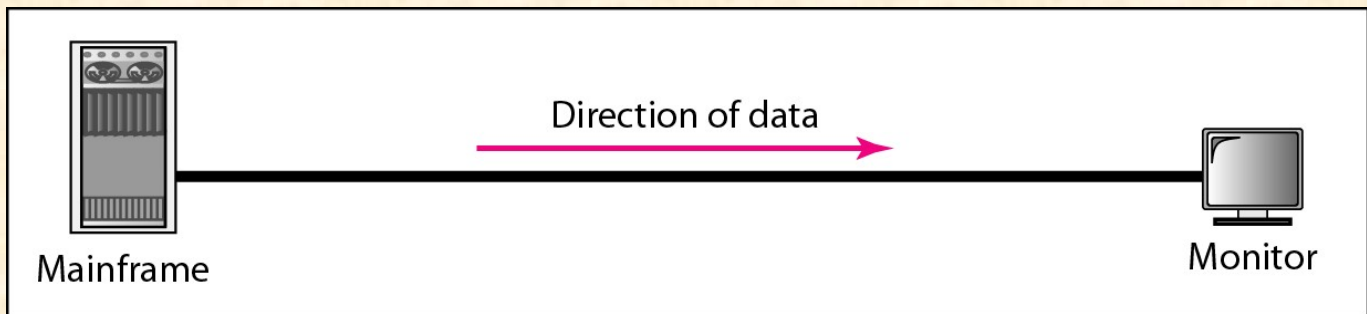
Transmitter converts message signal or bits into format appropriate for channel transmission (analog/digital signal).

Channel introduces distortion, noise, and interference.

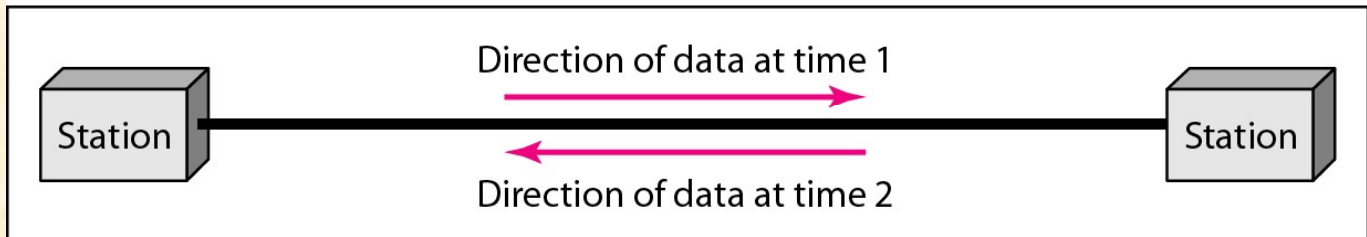
Receiver decodes received signal back to message signal.

Source decoder decodes message signal back into original message.

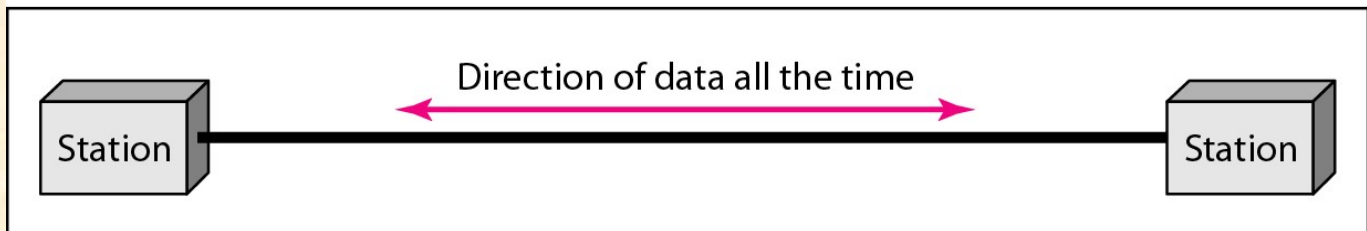
Modes of Communication: *Simplex, Half-Duplex and Full-Duplex*



a. Simplex



b. Half-duplex



c. Full-duplex

Simplex (SX) – one direction only, e.g. TV

Half Duplex (HDX) – both directions but not at the same time, e.g. CB radio

Full Duplex (FDX) – transmit and receive simultaneously between two stations, e.g. standard telephone system

Full/Full Duplex (F/FDX) - transmit and receive simultaneously but not necessarily just between two stations,
e.g. data communications circuits

Medias for Communication

Telephone Channel

Mobile Radio Channel

Optical Fiber Cable

Satellite Channel