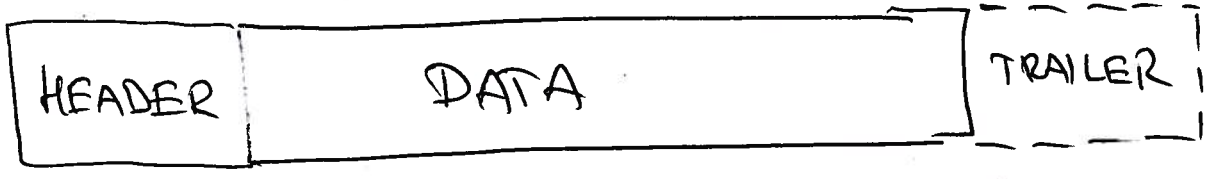
Basic Terms

- Protocol
  - An agreement on how a communication is to proceed
- Packet (frame, message, datagram, cell, ...)
  - header, data (payload), trailer
- ?-cast
  - unicast, multicast, broadcast, anycast, ...
- Single hop vs. multihop

Character of a Network

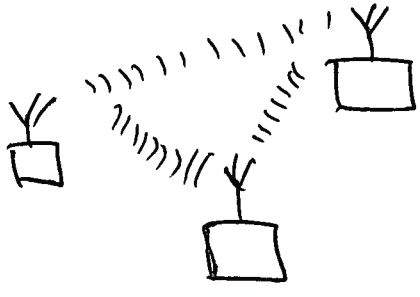
- Point to point
  - between two participants
  - simplex, duplex, full duplex
  - no need for addressing
- Broadcast and select
  - multiple nodes attached to a shared medium
  - everyone hears every transmissions (*broadcast*)
  - addresses needed to *select* transmission intended for a node

PACKET:

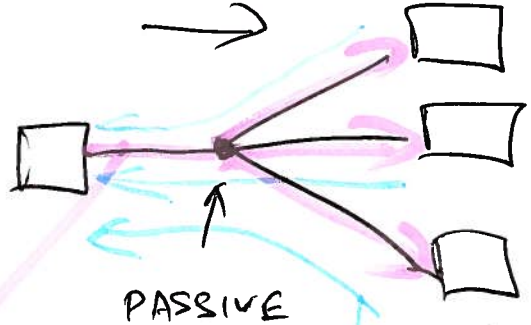


BROADCAST & SELECT

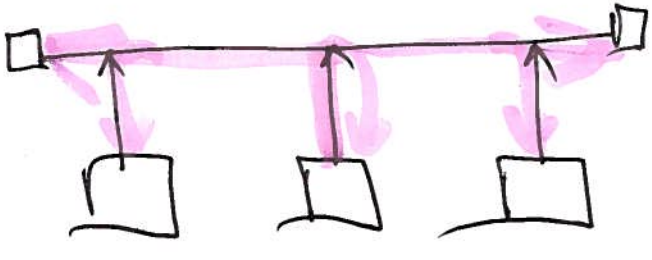
WIRELESS:



OPTICAL:



ETHERNET

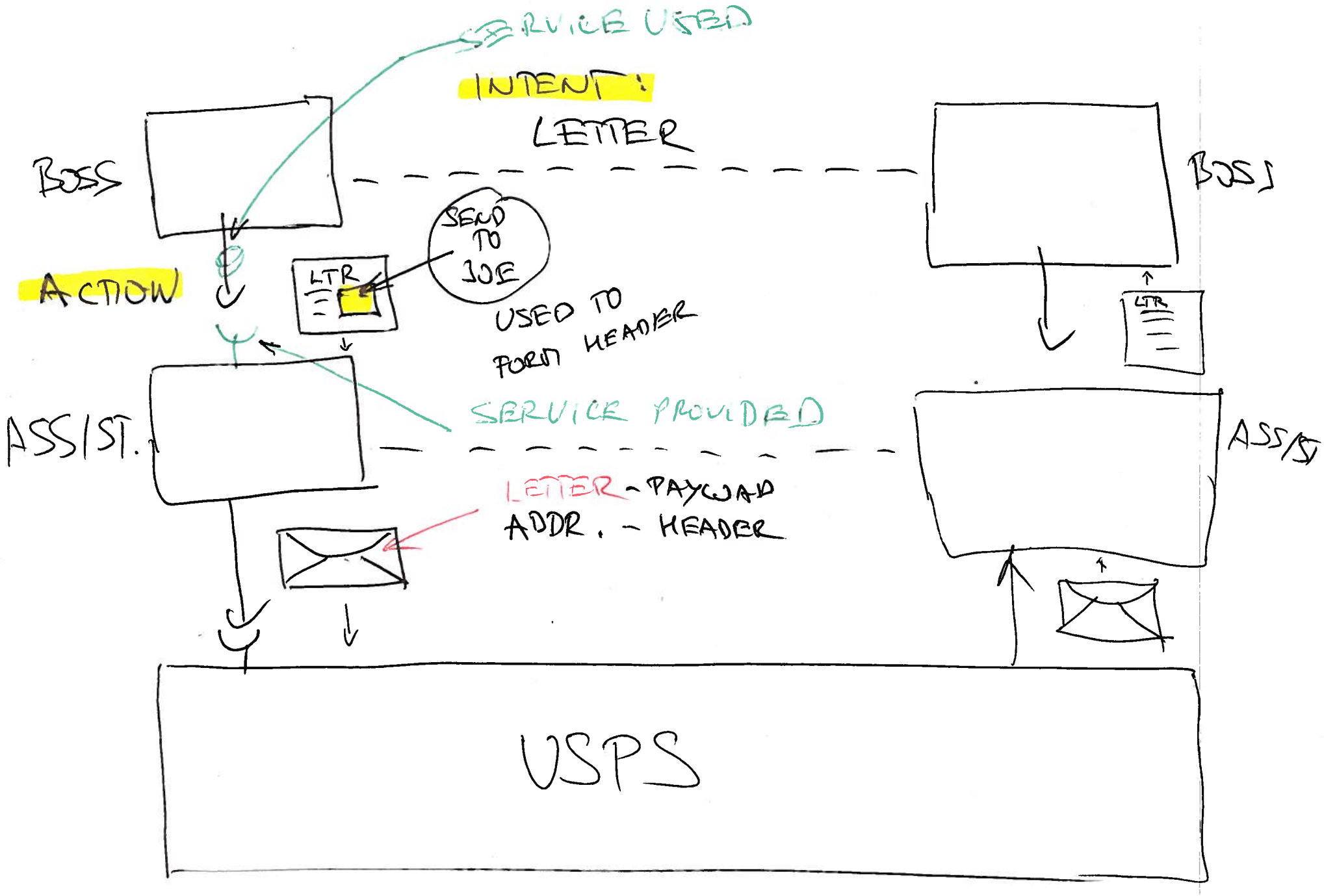


BROADCAST
(UPSTREAM)

POINT
TO
POINT
(DOWNSTREAM)

Layered models

- Motivation
  - networks require many different types of expertise
  - need to mix-and-match
- Characteristics
  - black box functionality
  - simple, well defined interfaces (service of a layer)
  - vertically stacked


SERVICE USED
INTENT
LETTER
BOSS
BOSS
SEND TO JOE
LTR
ACTION
LTR
USED TO FORM HEADER
SERVICE PROVIDED
ASSIST.
ASSIS
LETTER - PAYLOAD
ADDR. - HEADER
USPS

OSI 7-Layer Model

- L7 - Application
- L6 - Presentation
- L5 - Session
- L4 - Transport
- L3 - Network
- L2 - Link
- L1 - Physical