DEFINITIONS

- **Earth Station** - Terrestrial terminal designed for extra planetary telecommunication

- **Satellite** - Artificial Satellite is an object placed in an specific orbit to receive and transmit electromagnetic waves

- **Master Antenna** - It is an element able to emit and receive electromagnetic waves

- **TVRO** - Television reception only

- **Link Budget**
DEFINITIONS con’t

● Geo Stationary Orbit- Defines the orbit for commercial satellites applications

● BUC- Build in up converter

● HPA- High Power Amplifier

● Up Converter

● Modulator

● Encoder

● Multiplexer
DEFINITIONS con’t

- Flyaway Antenna
- DSNG
- Modulation scheme - BPSK QPSK 8PSK 16APCM
- Error correction - FEC, Reed Solomon, Interliver
- Standard DVB-S/S2
- Bit Rate and Symbol Rate
DEFINITIONS con’t

- IRD – Integrated Receiver Decoder
- Frequency Band - C, Ku, Ka
- Transponder - 36, 41, 54, 72, 112 MHz BW
- Polarization - Lineal, V (vertical), H (horizontal), Circular left and Circular right
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Ku-Band Frequency and Polarization Plan

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BASICS - EARTH STATIONS

How do Satellites Work

● Two or more stations will communicate through radio broadcast

● These stations can use a satellite as a relay station for their communication

● The master station sends a transmission to the satellite and the satellite transponder sends it down to the TVRO stations. This process is called Uplink – Downlink
(a) Point-to-point link via satellite microwave
Up-Link based upon DVB-RCS (packet mode)
Down-Link / DVB-S (circuit mode)
GT to GT single satellite hop data link
ADVANTAGES OF SATELLITE COMMUNICATION

● A satellite footprint will cover a full area regardless of the geography of the region (every point can be reached at the same time)

● A satellite Downlink can go even further than in country borders. Also, can communicate between continents.

● Transmission cost of a satellite will be always fixed and independent of the distance from the center of the coverage area.

● Satellite transmission allows to carry high bandwidths of data make it suitable for video content distribution.
GEOSTATIONARY SATELLITE (GEO)

● This are satellites located a 35,000 km above the Earth’s surface along the Equator.

● GEO Satellites will remain in the same position relative to the surface of the Earth.

● The GEO distance gives the advantage of cover the whole Earth surface with only 3 satellites, excluding the polar regions.

● One single GEO satellite can cover one particular area permanently. This makes satellites ideal for broadcast point to multi point applications.
USE OF CAPACITY ALLOCATION

● SCPC Access- Single-channel per carrier allows to transmit one single service, this access technique reduces the allocated Bandwidth making it the best cost benefit solution for small operations.

● Cons- The transponder capacity is shared with multiple users accessing the same capacity. Therefore, a reduction in power may affect the link performance (back-off.)

● MCPC Access- Multi-channel per carrier allows to transmit multiple video services in one single carrier. There is a huge advantage on using a full transponder capacity where less TVRO diameter dishes is required.
● Conditional Access

● DVB CA - COMMON INTERFACE

● DVB CLOSED SYSTEM

● DVB FTA

● BISS
FREQUENCY BANDS

● The most popular are C-Band and Ku-Band.

● C-Band demands bigger antenna diameter than Ku-Band. Between 3 and 5 meters for C-Band and 0.90 to 2.5 meters in Ku-Band.

● C-Band is less affected than Ku-Band under the effect of atmospheric conditions. Regions with heavy rains may need to have this factor in consideration.

● Ku-Band gained popularity in data transmission where small aperture terminals were used (Vsat systems)
TV NORTE
CHICLAYO – PERU
Thank You