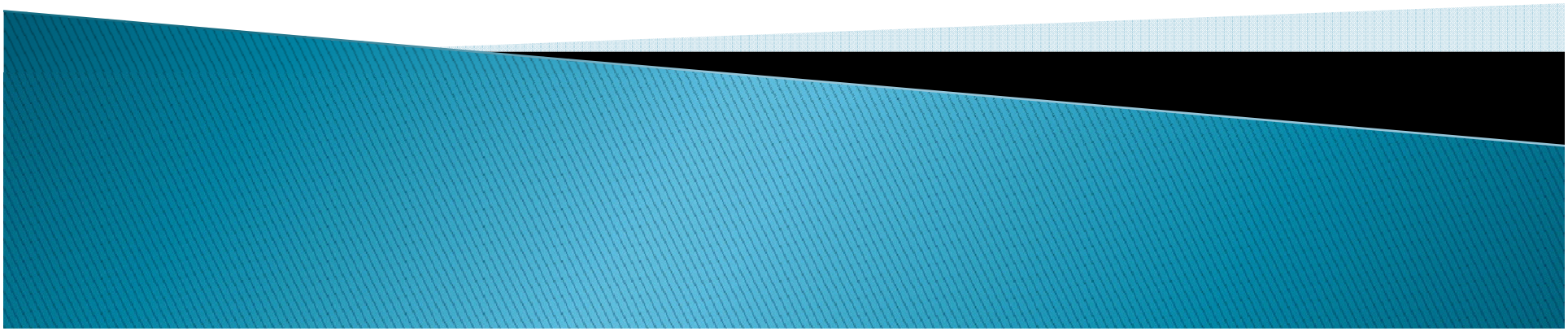
Section A

Principles of Satellite Communication



Evolution and growth of communication

1945 Arthur C. Clarke(writer)
SPUTNIK I RUSSIA
SCORE USA (1958) EXPLORER SATELLITE

Arthur C. Clarke publishes an essay about „Extra Terrestrial Relays“

1957 first satellite SPUTNIK

1960 first reflecting communication satellite ECHO

1963 first geostationary satellite SYNCOM

1965 first commercial Geostationary Satellite “Early Bird” (INTELSAT I): 240 duplex telephone channels or 1 TV channel, 1.5 years lifetime

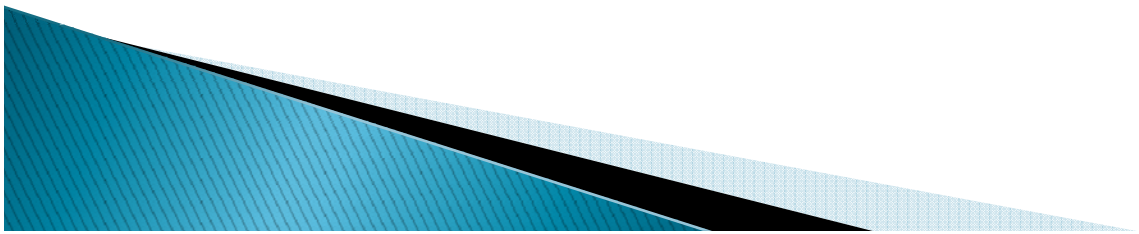
1976 three MARISAT satellites for maritime communication

1982 first mobile satellite telephone system INMARSAT-A

1988 first satellite system for mobile phones and data communication INMARSAT-C

1993 first digital satellite telephone system

1998 global satellite systems for small mobile phones



Important Milestones (1960's)

First satellite communications

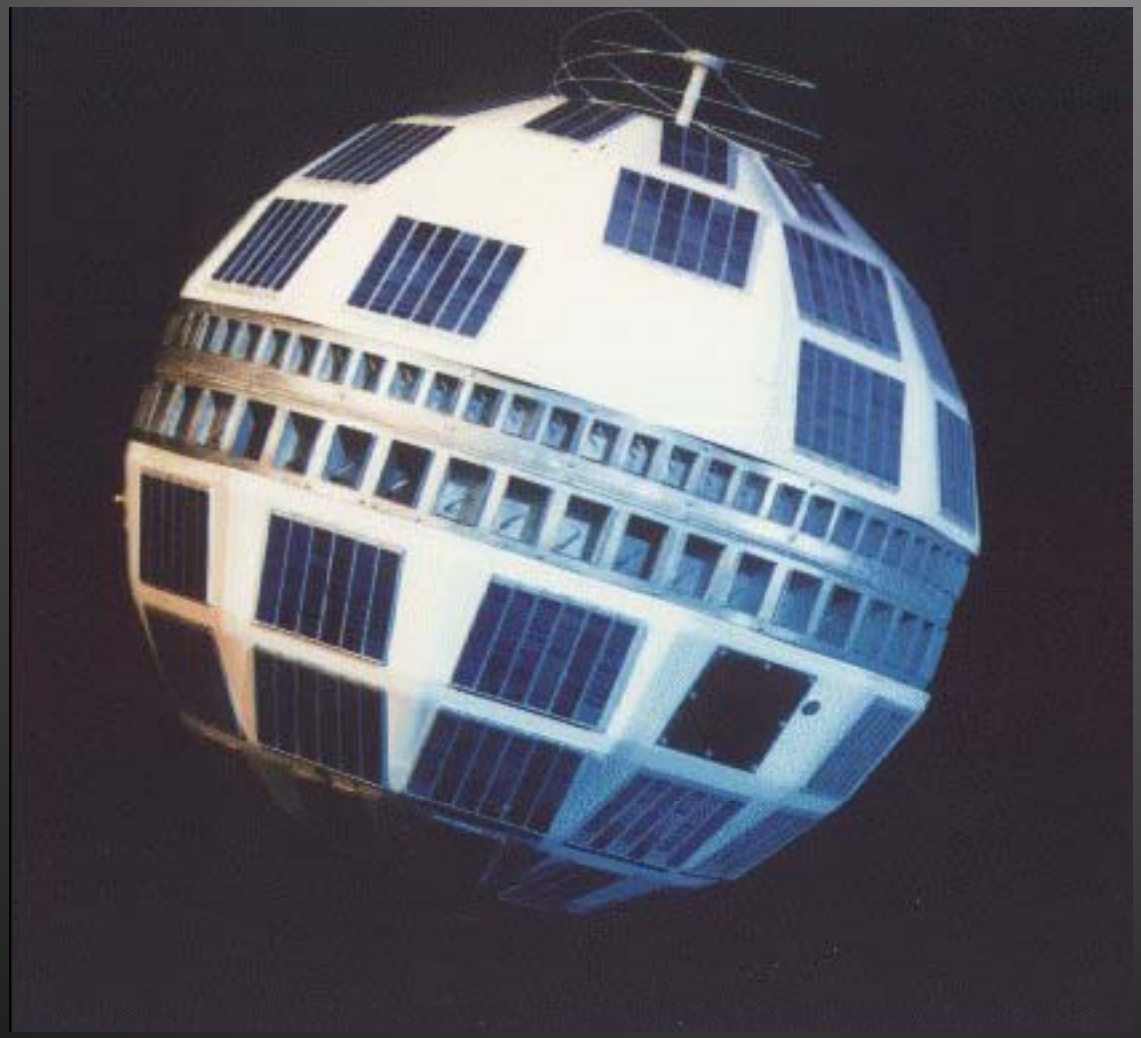
- 1960 First passive communication satellite launched into space (Large balloons, Echo I and II).
- 1962: First non-government active communication satellite launched Telstar I (MEO).
- 1963: First satellite launched into geostationary orbit Syncom 1 (comms. failed).
- 1964: International Telecomm. Satellite Organization (INTELSAT) created.
- 1965 First communications satellite launched into geostationary orbit for commercial use Early Bird (re-named INTELSAT 1).

- 1972 First domestic satellite system operational (Canada). INTERSPUTNIK founded.
- 1975 First successful direct broadcast experiment (one year duration; USA-India).
- 1977 A plan for direct-to-home satellite broadcasting assigned by the ITU in regions 1 and 3 (most of the world except the Americas).
- 1979 International Mobile Satellite Organization (Inmarsat) established.

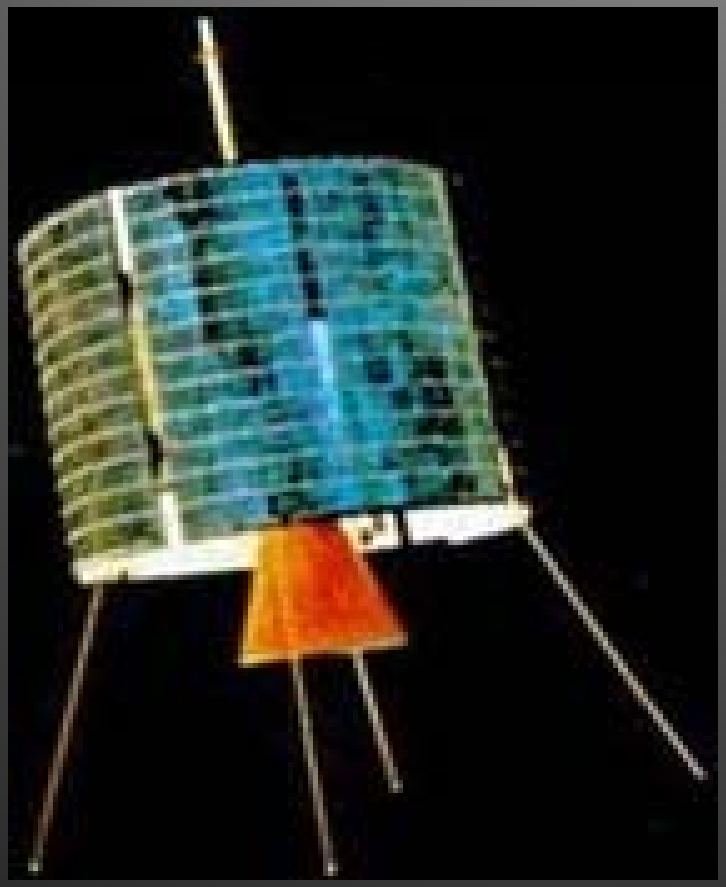
ECHO I

100 FT IN DIAMETER (PASSIVE REFELECTOR)

Telstar I



Intelsat I



SYNCHRONOUS SATELLITE

- GEO STATIONARY SATELLITE
- 24 hours
- 36000 km
- Advantage:-

a)Sufficiently small values of orbital eccentricity and inclination to the equator that changes in its apparent direction relative to the rotating earth

b)Well above the high intensity inner radiation belt

Above the most intense region considerably Milder outer belt

c)fix antenna positions, no adjusting necessary

Assignment – 1

- What do you under stand by satellite communication?
- What are active satellites?
- What are passive satellites?
- Brief discussion on evolution of satellites.