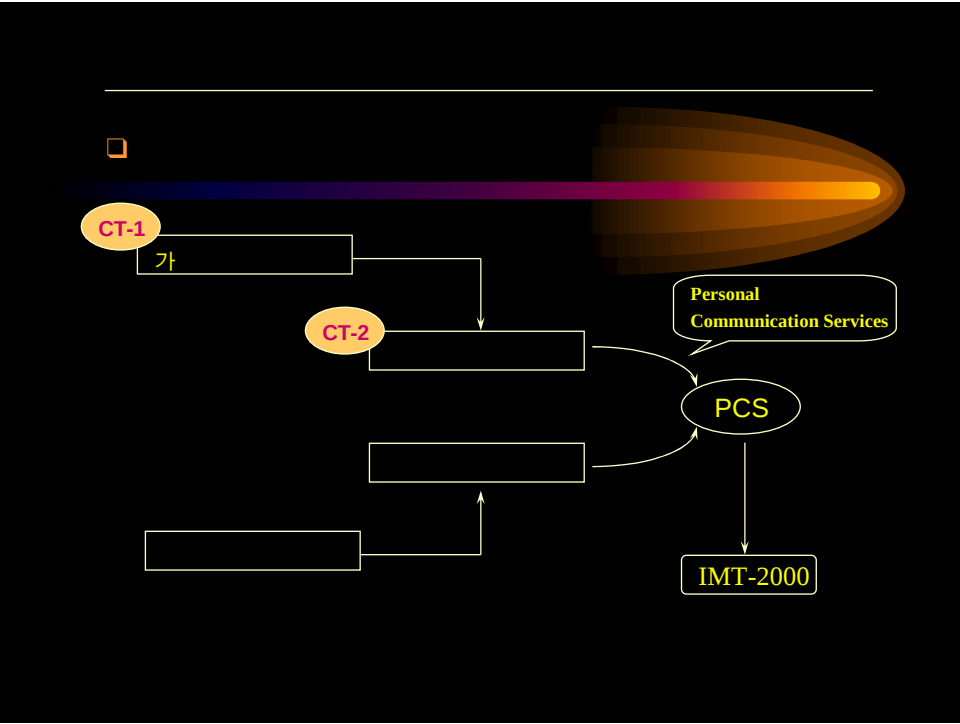
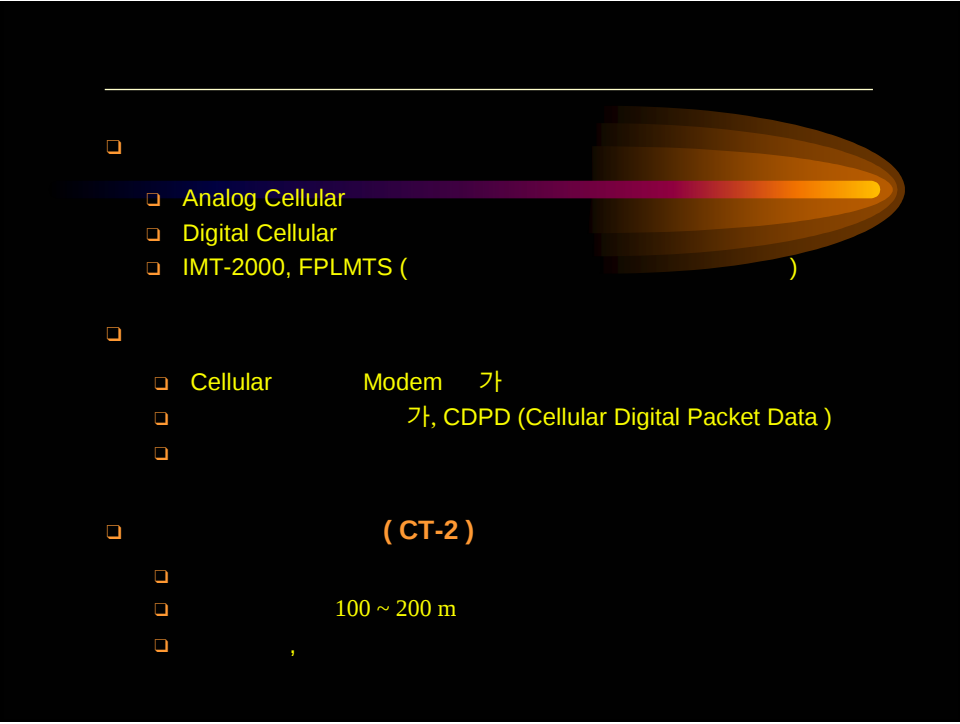
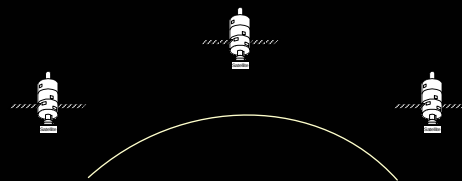




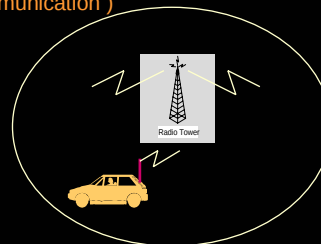
□ (LEO)

- **PROJECT 21** by INMARSAT ()
- **IRIDIUM** by MOTOROLLA
- **GLOBALSTAR** by SS LORAL
- **TELEDESIC** by /

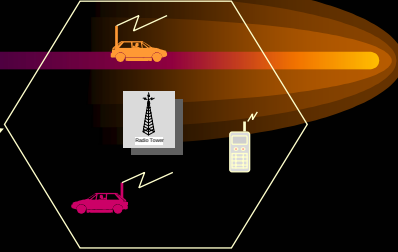
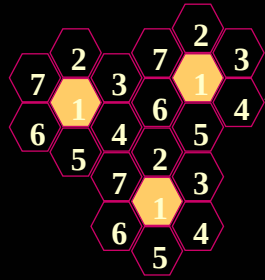


□ Analog Mobile Communication

- **AMPS** (Advanced Mobile Phone Services)
 - 800MHz 25 MHz
 - 832 30 KHz
- **FM** (Frequency Modulation)
- **FDMA** (Frequency Division Mobile Communication)
- **Cell** (Km)
 -
 -



□ Cellular Structure



800MHz

: 824 ~ 849 MHz

: 30 KHz (FM),

: FDMA

$$(849 - 824) \times 10^6 / 30 \times 10^3 = 832 \text{ channels}$$

$$832 \text{ channels} / 2 \text{ 社} - (21 \text{ control channels}) = 416 \text{ channels} / \text{社}$$

$$416 \text{ channels} / 7 \text{ cells} \sim 57 \text{ 가} / \text{cell-社}$$

□ Digital Mobile Communication

• Wireless Access

- TDMA (Time Division Multiple Access)
- CDMA (Code Division Multiple Access)

• Why Digital ?

- ISDN
- /
- RF ,

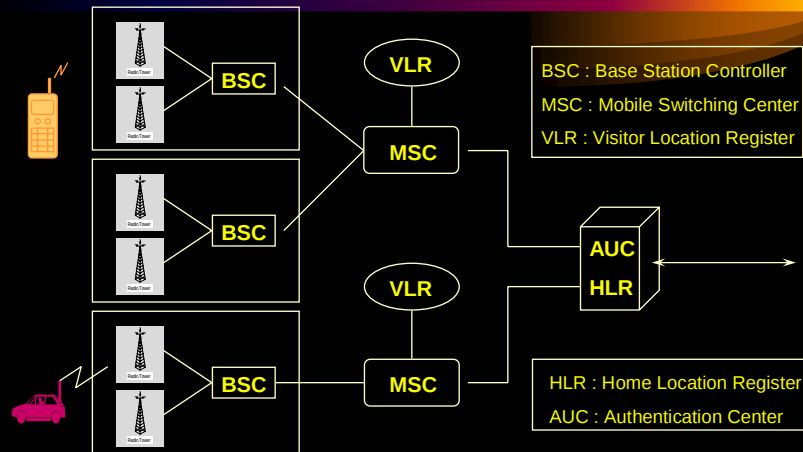
• TDMA

- GSM (Global System for Mobile Communications)
- IS-54 ()

• CDMA

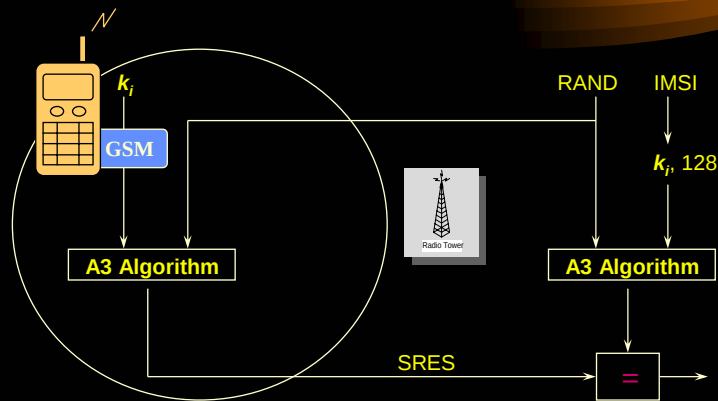
- Qualcomm , IS-95

□ Communication Structure

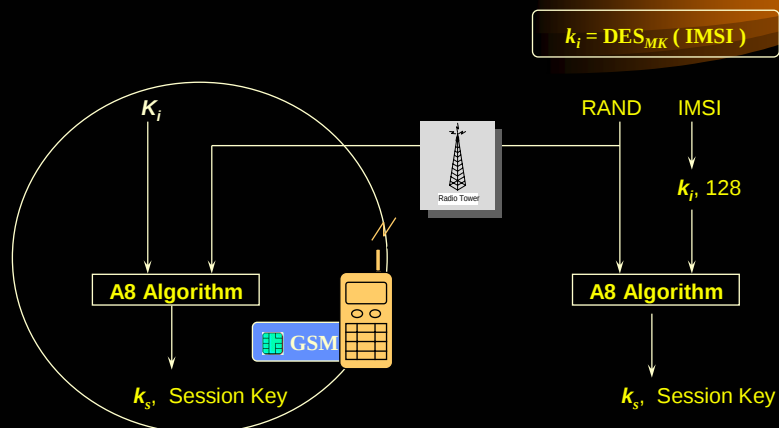


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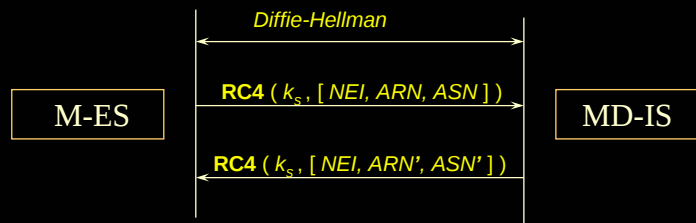
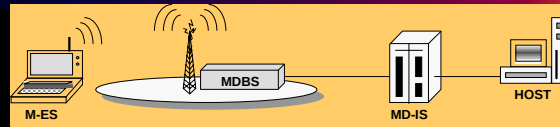
□ GSM



□ GSM Session Key



□ CDPD



- NEI (Network Equipment Identifier)
- ARN (Authentication Random Number)
- ASN (Authentication Serial Number)

