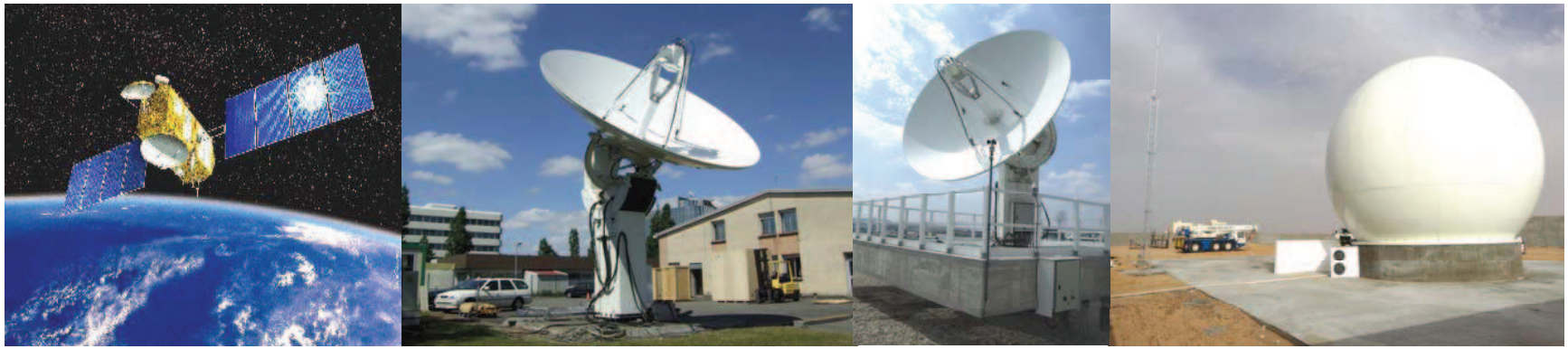
ELTA S-Band TTCET Ground Station



ELTA

AREVA

TTCET Ground Station

Main Performances

- **Reception frequency range :**
  - S Band: 2200 to 2300 MHz
- **Downlink Budget**
  - G/T S band : > 10 dB/°K @ 10° of elevation in whole Bandwidth
- **Emission frequency range :**
  - S Band: 2020 to 2120 MHz
  - Emission level: 50 dBW in whole Bandwidth
- **Visibility : from 5° Elevation**
- **Pointing accuracy:**
  - < 0,20° in Program track,

TTCET Ground Station

S-Band TTCET

- **Parabolic antenna: Ø3.1 meters (10.17 Feet)**
- **Azimuth / Elevation pedestal with dedicated pointing strategy for Zenithal passes.**
- **Designed for LEO Satellites Operations**
- **Automatic and Unmanned Station**
- **Operational Wind-Speed:**
  - > 200 Km/h (124 Mph) with provided radome
- **Operational Temperature:**
  - -40°C / +60°C with radome and suited air-conditioning unit
- **Low consumption system < 6 KW**

TTCET Ground Station

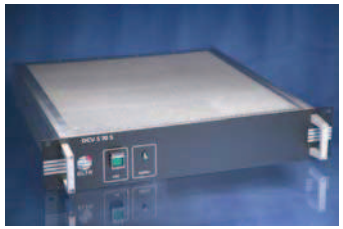
Main Features

- **Reception, demodulation and data transfer of S-Band (RHCP and LHCP) Telemetry:**
  - Simultaneous emission **and** reception in S band,
- **S-Band selectable (RHCP or LHCP) Telecommand**
- **Tracking Capabilities**
  - Program Track (CNES pointing Files format)
- **Multi-mission Station (designed for tracking several satellites and several passes per day)**
- **Permanent Remote Monitoring status**
- **Built-in Satellite Control Center interface**
- **Real time recording of station activity : Logbook.**

AREVA

TTCET Ground Station

- **Station based on COTS made by ELTA**
  - **Down-Converter**
  - **Receiver Demodulator**
  - **Up-Converter / Modulator**
  - **TT&C CCSD Font-End Processor**
  - **….**

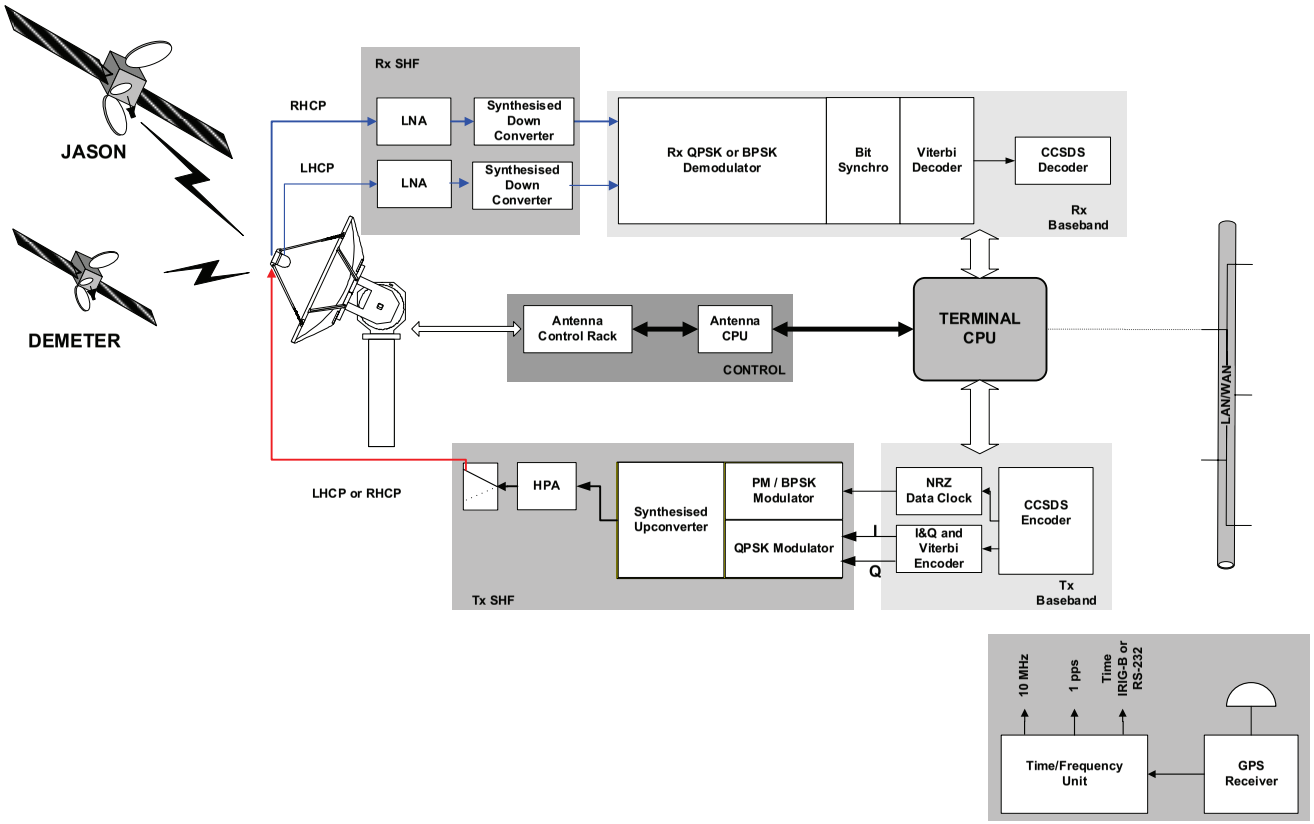


Which can be suited to specific mission requirements

AREVA

TTCET Ground Station

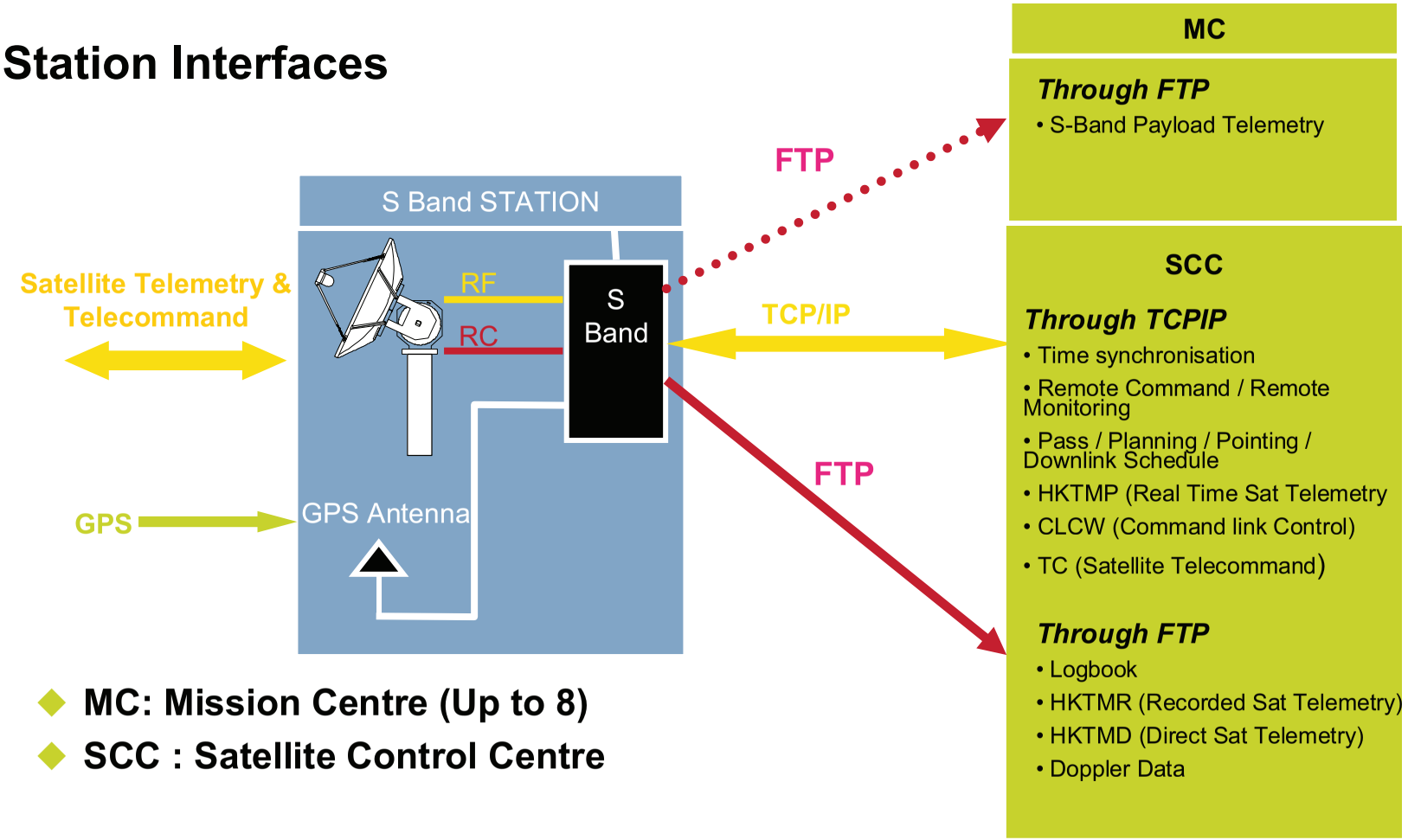
Multimission Station Synopsis



AREVA

TTCET Ground Station

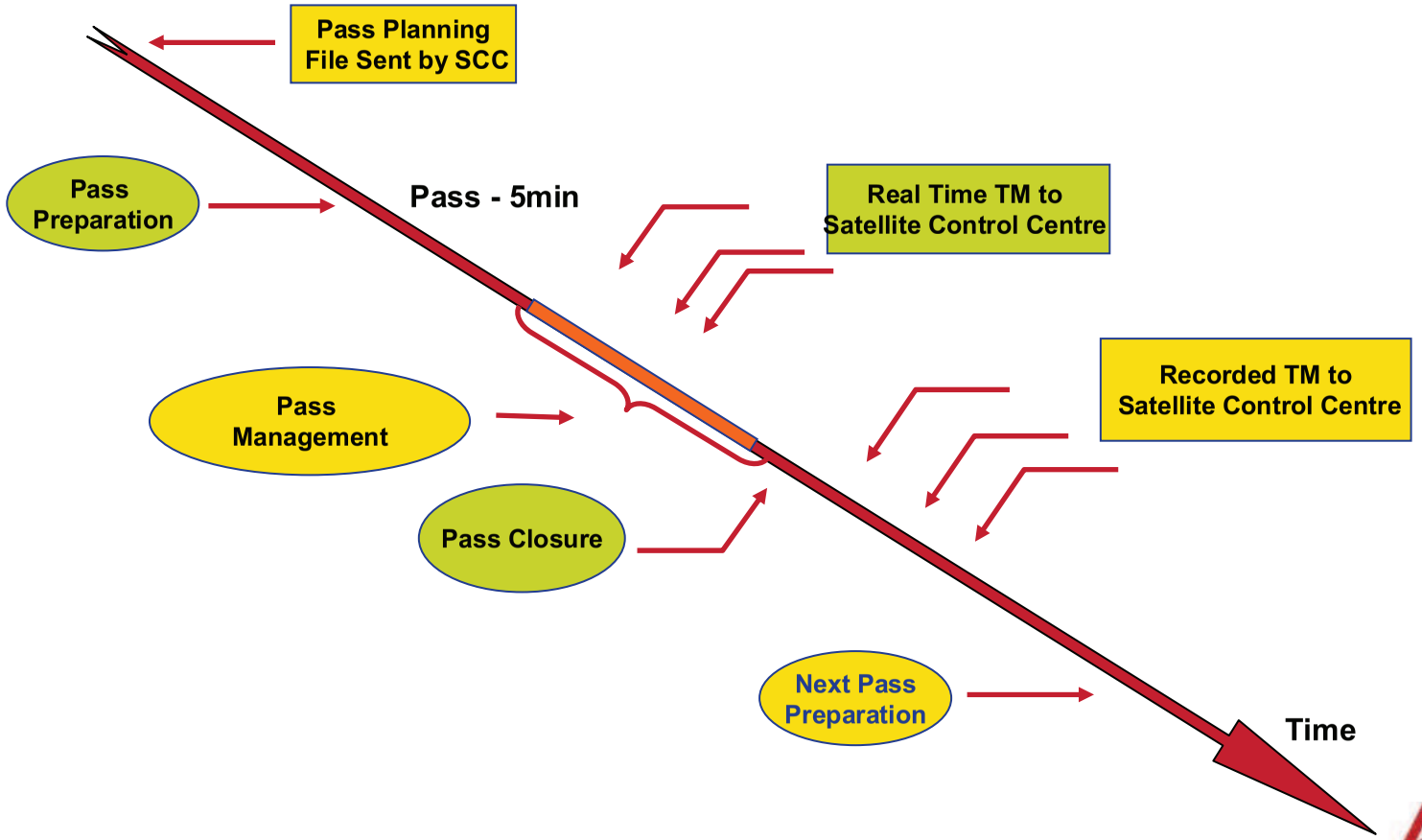
Station Interfaces



- MC: Mission Centre (Up to 8)
- SCC : Satellite Control Centre

TTCET Ground Station

Satellite Pass Processing



AREVA

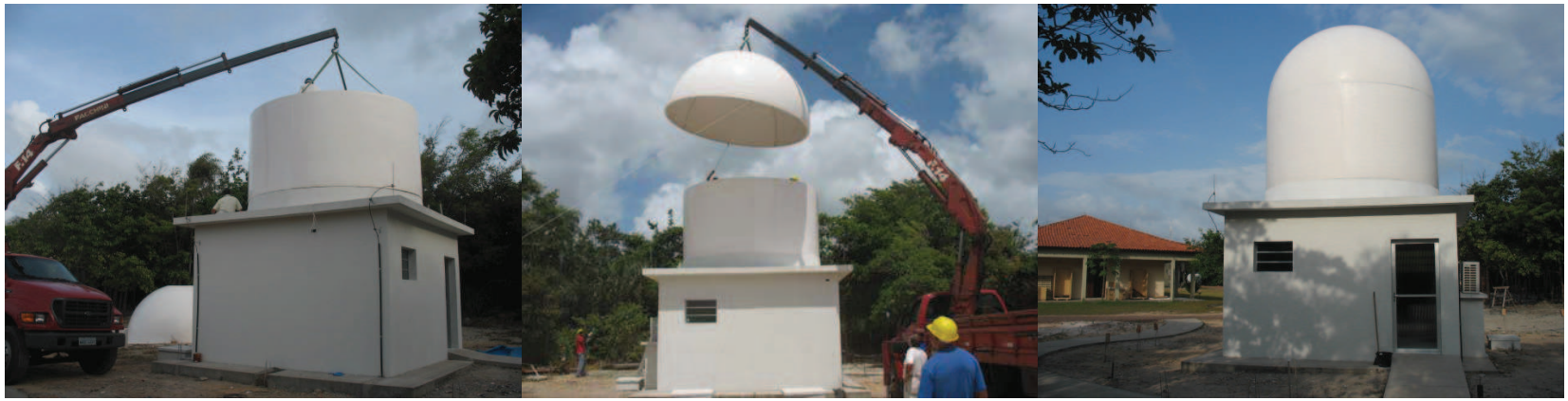
TTCET Ground Station

- **Options**
  - **Earth Terminal Test Equipment**
    - Manual bench test designed to check the performances of the station and enables an easy maintenance.
  - **GenRec**
    - Digital data stream generator from binary files or digital data stream Telemetry or Telecommand recorder.
    - Be easily installed on a Ground Station Telemetry or Telecommand chain thanks to the input connector which duplicates the input signal towards an output auxiliary connector.
  - **Service contracts**
    - Technical Visits
    - On site assistance (LEOP Support, Training,…)
    - Technical support
  - **SLE gateway (ESA licence).**

TTCET Ground Station

This station has been installed at:

- ASAL (Algeria) – 2 stations
- CNES (France) – 2 stations
- EUMETSAT (Germany) – 2 stations
- INPE (Brasil)
- Ministry Of Defense (France) – 2 stations
- SSC (Sweden)



AREVA

TTCET Ground Station

- **Significant Heritage**
  - **More than 10 satellites daily operated**
    - **JASON-1,**
    - **DEMETER,**
    - **ESSAIM (4 –Microsatellites out of service since end of 2010),**
    - **PARASOL,**
    - **COROT,**
    - **CALIPSO,**
    - **JASON-2,**
    - **SMOS.**
  - **and soon: ALSAT-2, ELISA, JASON 3, PICARD and TARANIS with installed stations basis**

AREVA

TTCET Ground Station

- **Robust Design and High Availability Figures**
  - **Mean Time Between Failure > 47 000 Hours**
    - Based on 3 passes per day with a pass duration of 20 Minutes each.
  - **A station designed for 95% of availability but availability processed from past experience is better >99%**
    - (with spare parts collocated to the station).
  - **Identical software version for all S-Band stations under Windows 2003 server.**
  - **This robust software continuously maintained contributes to the high availability of the station.**

AREVA

TTCET Ground Station

- **More than 10 satellites daily operated**

SIGNIFICANT HERITAGE & QUALIFICATION

EASY MAINTENANCE AND LOW OWNERSHIP COST

AUTOMATIC & REMOTE FUNCTIONS

OPERATIONAL UNDER ALL WEATHER CONDITIONS

DESIGN FOR MULTIMISSION

HIGH AVAILABILITY

Thank You!

AREVA