Retrieval of Galileo SVs measurements on all the carrier frequencies except PRS and CS (E5al/Q, E5bl/Q, E1B/C, AltBOC) through an independent sensor station network.
TGVF CI FOC Upgrades

Retrieval of Galileo SVs unclassified telemetries and telecommand history from the GCS.
Processing of Galileo Service Products Facility (SPF) products, in particular Galileo Sensor Station Raw Data 1Hz and Satellite Summary Statuses, made available through GALSEE by means of an FTP Server
Further processing based on TVF and OVF products and comparison of products from different sources
TGVF CI FOC Upgrades

★ Capability to archive core products

LEGEND:
- TVF: Timing Validation Facility
- OVF: ODTS Validation Facility
- DQF: Data Quality assessment Facility
- DPAF: Data Processing & Analysis Facility
- UMF: UERE Monitoring Facility
- DPS: Data Provisioning System
- DSF: Data Server Facility
- DMZ: De-Militarised Zone

Routine/ Production
- Offline/ Campaign based Testing

FOC Upgrades

GALILEO FOC1
- SIS GPS SIS
- Ground Mission Segment Interface (SPF)
- GCC FUC
- External Data Sources (IGS, SLR, …)

GALILEO FOC1 S-Band
- Ground Control Segment Interface (SCCF)
- External Data Sources (Celestrak, IERS, UMF, …)

DPS Telemetry/ Telecommand History Retrieval
- External Data Sources (Celestrak, IERS, UMF, …)

DSF Archive
- Offline Data Analysis Tools
- G(E)SS Data Quality & Error Budget
- DPAF ODTS/ Timing / User / Service Data Analysis
- DQF

GESS Network
- Upgraded Receiver for FOC1
- Ext data (BIPM, IERS, …)

DMZ External User Access
- Core Infrastructure
- Routine/ Production
- Offline/ Campaign based Testing

Time and Geodetic Validation Facility (TGVF)
TGVF CI FOC Upgrades

★ Capability to provide access to selected products remotely through FTP and HTTP protocols
TGVF CI FOC Upgrades

**Capability to estimate Galileo SV orbits, clocks and iono/BGD products based on the existing OSPF/IONO process**
TGVF CI FOC Upgrades

 Capability to interface to UMF and process UMF products in DPAF
### Core Infrastructure reuse

<table>
<thead>
<tr>
<th>Item</th>
<th>HW</th>
<th>SW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Data Server Facility</td>
<td>New</td>
<td>Reused&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Demilitarised Zone</td>
<td>New</td>
<td>Reused&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>DataQualityAnalyser/SensorStationBudgetFacility</td>
<td>New</td>
<td>Reused&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>DataProcessingAnalysisFacility</td>
<td>New</td>
<td>Reused&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Data Provisioning System</td>
<td>New</td>
<td>New</td>
</tr>
<tr>
<td>GalileoExperimentalSensorStation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rack/Antenna/AntennaCable</td>
<td>Reused&lt;sup&gt;1&lt;/sup&gt;</td>
<td>NA</td>
</tr>
<tr>
<td>Receiver</td>
<td>New</td>
<td>New</td>
</tr>
<tr>
<td>CoreComputer</td>
<td>New</td>
<td>Reused&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

<sup>1</sup>This is owned by ESA

### Item Remarks

- **DSF/DMZ/DQF/DPAF/OSPF GNOR Hosting**
  These facilities will be hosted by the ESTEC European Navigation Laboratory, specifically at the Galileo Performance Centre (GPC), rooms Cj105A, Cj116. This includes the hosting of the GESS at ESTEC (GNOR) and communication services at ESA/ESTEC.

- **DPS**
  The DPS shall be deployed alternatively:
  - either in Cj105A (baseline)
  - or in Cj153
  The final deployment location shall be determined as a result of the Security Accreditation activity for this element.

- **GESS Sites Hosting**
  The hosting services (shelter, power, air conditioning, communication network and antenna/antenna/cables/rack) shall be provided through contracts with ESOC/GFZ. The sites are as a minimum Washington, Troll, Tahiti, Wuhan, Kiruna, Malindi, New Norcia, Kourou, LaPlata, Dunedin, Mizusawa. The GESS Hosting includes the Sensor Stations Operations.

- **Capability to operate other sensor stations on top of the requested ones.**
Sensor Station upgrades and options

★ Baseline:
  ★ Galileo receiver: E1, E5a, E5b, E5 (AltBoC). The receiver shall be capable of providing PVT for Galileo different services.
  ★ GPS geodetic quality receiver (L1, L2, L5).

★ Option 1
  ★ Baseline+E6 CS (key distribution by operational means)

★ Option 2
  ★ Baseline+E6 CS+key distribution through network.