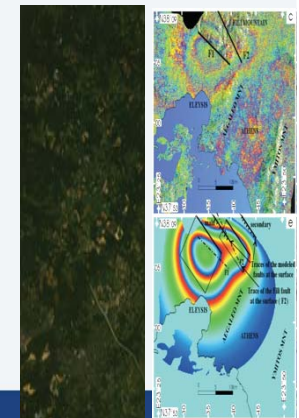




Sentinel Collaborative Ground Segment Status Report



- Recall of Sentinel GS Concept
- Sentinels CollGS Data Access
- CollGS Agreements latest status
- Conclusions
- Backup Slides
 - ✓ Sentinel CollGS detailed concept
 - ✓ Overview of main on-going ESA support activities
 - ✓ Frequently Asked Questions
 - ✓ CollGS Agreement formalisation process



The Copernicus Space Component (CSC) Operations Concept relies on a Ground Segment consisting of:

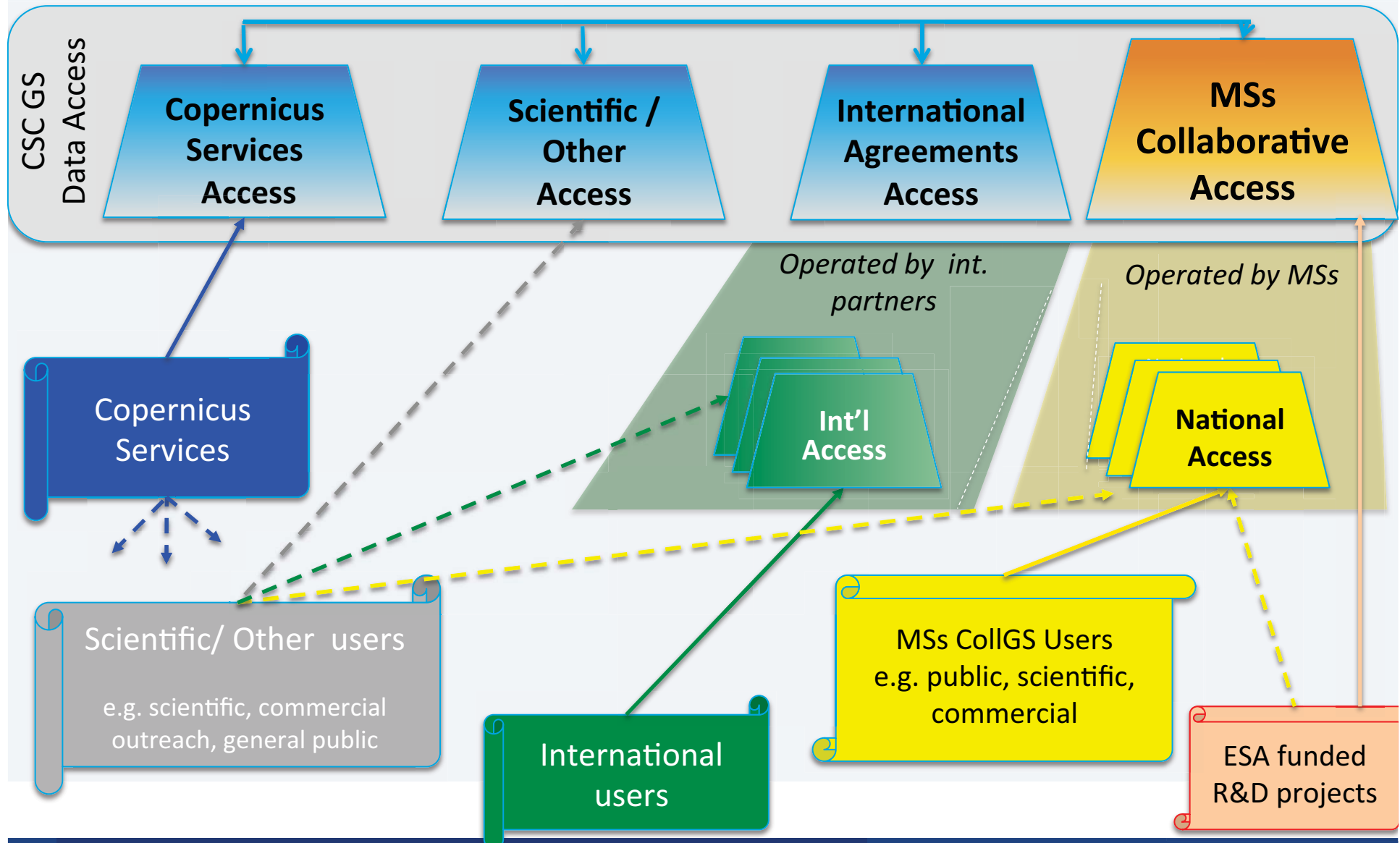
- **A CSC (Core) Ground Segment**, with CSC-funded Functions and Elements, providing:
 - Primary access to Sentinel Missions data
 - Coordination of access to Copernicus Contributing Missions (CCMs) data
 - Fulfilment of all the Copernicus Space Component (i.e. Sentinels and CCMs) formal requirements as defined in the CSC SRD and DWH documents

- **A Sentinel Collaborative Ground Segment**, with non CSC-funded Functions and Elements, providing:
 - a supplementary access to **Sentinel** Missions data, i.e. through specific data acquisition services, specific data products, mirror sites, etc.
 - the frame for cooperation with ESA Member States and at International level

- Access to Sentinel data through collaborative agreements allows further valorising the Sentinel missions exploitation
- The collaboration provides a frame for specialised solutions in 5 main areas:
 1. Sentinels data acquisition and Quasi Real Time production (**Local Stations**)
 2. Complementary **collaborative data products** and algorithms definition
 3. Sentinels core data product dissemination and access (e.g. Ntl **mirror sites**)
 4. Development of **innovative tools** and applications
 5. Complementary external **Validation support** activities

CSC Ground Segment Data Access

Tailored infrastructures adapted to different user typologies



The CSC Ground Segment provides a set of **main services to all users**, independently from the access infrastructure



User REGISTRATION and MANAGEMENT

Management of user accounts



DISCOVERY Service

Dataset and product search + visibility of planned acquisitions



VIEW Service

Visualization of browse image



DOWNLOAD Services

Interactive Download via web browser or the Download Manager. Systematic background download based on defined filters



EMERGENCY Service

Opening of an emergency “dossier” upon user call and management of data collection (tasking, selection from archive).

Restricted to eligible users



DATASET GENERATION Service

Generation of geographical/temporal data collections according to pre-defined interest/application



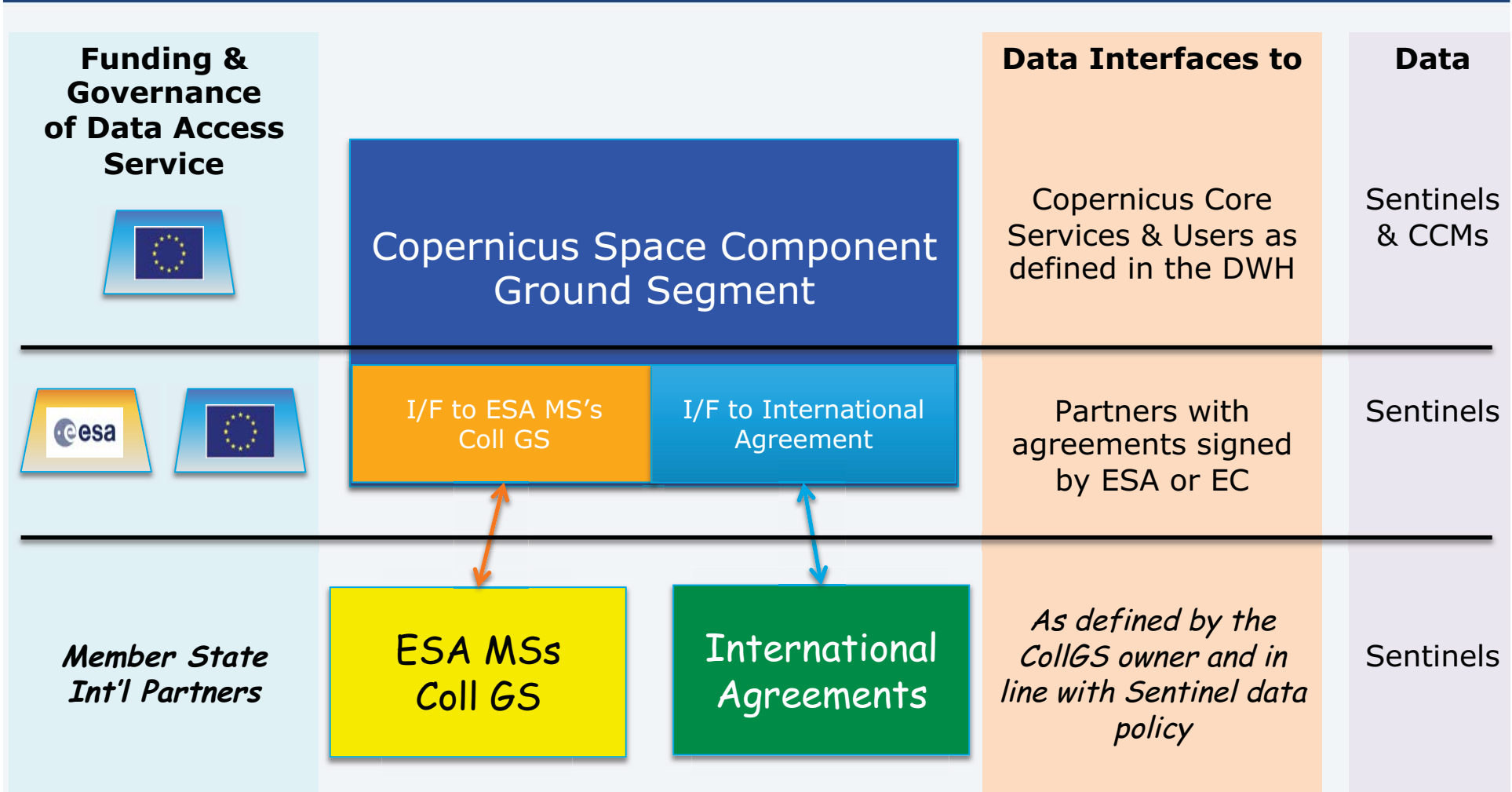
HELP DESK Service

Support and communications to users including dedicated Web Portal. Management of inquiries, feedback, and suggestions.

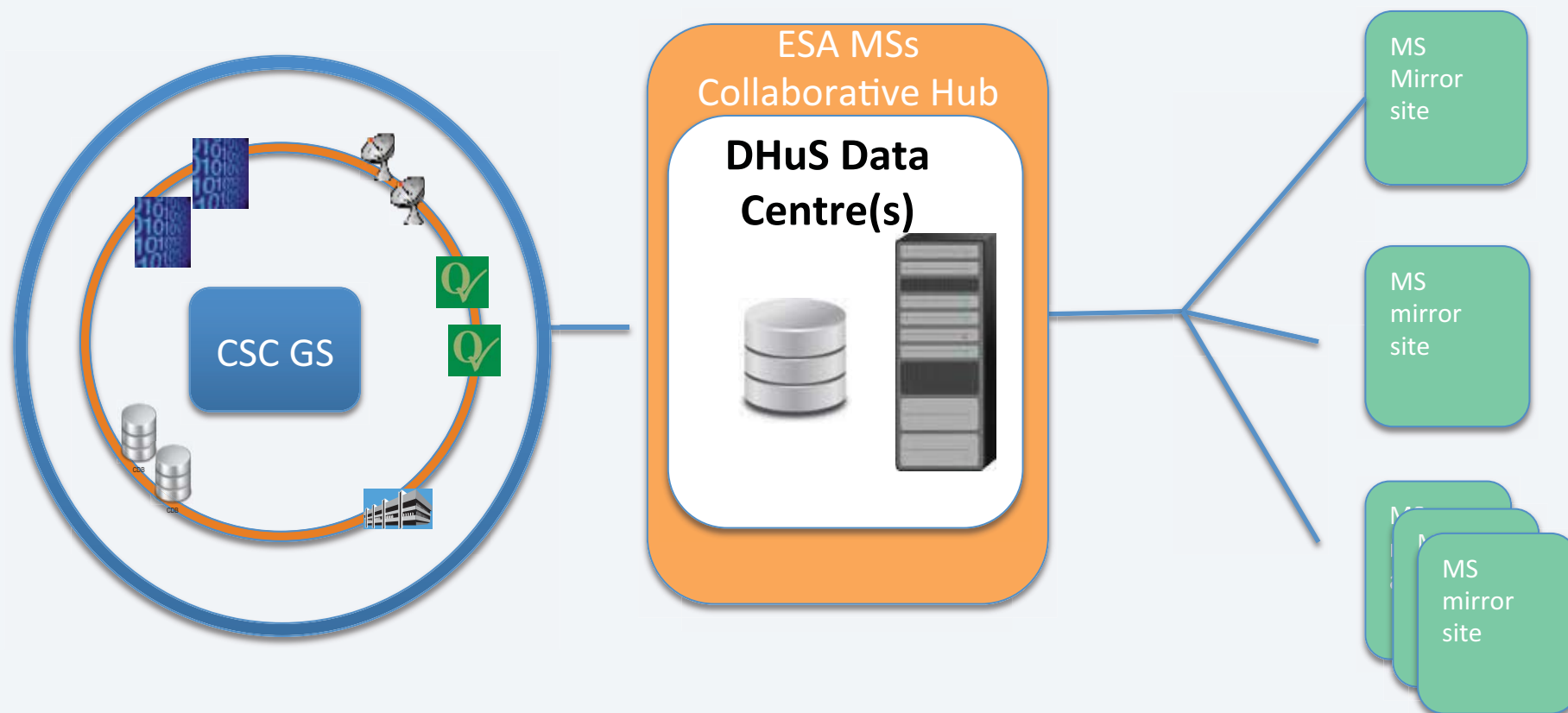


RSS and HOSTED PROCESSING Services

Research Support Service and Hosted Processing Service operations
Provided according to specific governance criteria



- Data Access to the ESA MSs Sentinels Collaborative Ground Segment will be provided by a dedicated infrastructure (HW and SW)
- DHuS Data Center(s) implemented via one or more **Data Hub Relays** deployed in different geographical locations



- ESA Member States data access infrastructure, provides access with target performances
- A rolling on-line archive covering the last month(s) of Sentinels core products, available within their specific timeliness, will be accessible. The time interval covered by this rolling archive will be scalable and include at least the last month of data
- Furthermore, access to off-line archived data will be available on-request and limited by the financial allocation assigned to this task as defined in ESA annual workplan
- The access to the infrastructure will be via the user available bandwidth to a dedicated dissemination bandwidth, this latter with committed reliability and performance
- User registration will be based on a user account pre-registration, with a dedicated single account per requesting Member State

A **progressive evolution** of the Data Access infrastructure is foreseen for deployment **in the timeframe 2014-2016**

Adapting the data access to the user demand

- ❑ Based on the EU decision to enlarge the user basis, enhancements are prepared along the following lines:
 - ➔ **Adapt the access capacity to the measured user scenario**
 - ➔ Reduce the need of products download
 - ➔ Increase reprocessing flexibility
 - ➔ Enlarge access to the archived data
 - ➔ Prototype Federated User Management

Data Access Infrastructure Scalability

- ❑ Built-in system scalability will be used to adapt the different data access infrastructures
 - ➔ Network centre configuration scalable within the 10Gb/s range
- ❑ Large & distributed complementary pick-up points will be prototyped to reach a new range of potential scalability

Hosting access

- ❑ New operational paradigm will be prototyped to reduce the need to transfer the products
 - ➔ Demonstration capacity for user processing hosting capability will be setup on S-1 reference data sets, (e.g. reusing existing ESA projects)
- ❑ Research support service will be introduced to support (big) data analytics



- The CSC GS data access infrastructure and user service charter is available **to support the Sentinel-1A initial operations**
 - User can already self-register for data download via www.sentinel.esa.int
 - This first pre-operational configuration will be the basis for monitoring and **consolidating the user scenario**
- Yearly upgrades of the infrastructure and users Service Charter are foreseen to progressively integrate new Sentinels and quickly adapt to evolving user needs
- A set of mid/long term enhancements have already been identified to anticipate some of these future needs
 - Strong synergies with ESA R&D activities related to Big data and GS evolution
- Close coordination with European Commission, Member States and Copernicus Services is envisaged to ensure needs of Copernicus core users and National Collaborative Ground Segments are feedback into the CSC GS evolution

Implementation of the collaborative is based on 3 main steps:

1. Definition of process and collection of collaboration proposals

- Started in the framework of the GMES Operations Consultation Group (GOCG)
- Requirements collection: questionnaire released end 2011
- Enable ESA to make a preliminary assessment of the planned initiatives
- Inputs from most MS received and under consolidation

2. Proposal feasibility analysis

- Execution of simulation scenarios. Identification of potential conflicts
- Proposal refinement with collaborative partner

3. Formalisation of collaboration

- Define and sign the formal agreement
- Document the technical operational interfaces
- Integrate, verify and validate the derived implementation

APPROACH TO ESTABLISH AGREEMENTS

(PB-EO paper ESA/PB-EO(2013)19, rev.2)



- The formalisation the of Collaborative Ground-Segment cooperation is described in ESA/PB-EO(2013)19, rev.2
- This frame document forms the basis for individual **bi-lateral agreements** between ESA and the respective Participating States, which will be formalized through an **exchange of letters**
- The update template of the exchange of letters has been release to PSs together with two Annexes: General Clauses and Conditions, Terms and Conditions for the use and distribution of Sentinel data
- In addition, a template of the Technical Annex has also been released. It defined the technical implementation of the interfaces, e.g.
 - ✓ Data Access details
 - ✓ Any specific reporting or support from the PS
 - ✓ Any specific support from ESA

- ESA continues to assess questionnaires submitted by Participating States
- Updates agreement templates released to PS
- (Numerous) Bi-lateral technical meetings with PS continue to define and formalize technical interfaces
- Updated Technical Annex template under final check by ESA Legal Dept
 - ✓ Content mainly focused on mirror site collaboration
- Signature of collaborative agreements started
 - First agreement formalised with Greece on 12 May 2014
 - Signature foreseen in next quarter with 3-4 PSs

- All current and future GS activities **funded via ESA and EU** in the frame of the Copernicus Space Component (CSC) are **part of the CSC Ground Segment**
 - The CSC GS is a Federation of facilities and services distributed across Europe
 - Governance and responsibility of these tasks rely on EU and ESA
 - New requirements (e.g. **enhanced data dissemination**) are managed via the joined CSC evolution process defined in the EU-ESA Copernicus Agreement
- ESA will continue to procure the associated new CSC GS functions/services via open ITTs or, if justified, direct SLAs
 - **Re-use of existing National infrastructure** will be taken into account in order to optimise cost, minimise risk, make optimum use of resources and expertise
- Sentinels CollGS elements will
 - continue to rely on **non-Copernicus Space Component** budgets
 - remain under responsibility of the collaborative partners as far as performance is concerned while the Copernicus data policy, T&C and general clauses are applicable
- ESA is **enhancing the coordination of MSs Sentinels CollGS** initiatives by
 - actively advertising the complementary services offered by MS CollGS
 - increasing the frequency of the coordination among CollGS