Conceptual Approach for the Euclid Ground Segment

Joint EIC-ENIS document, used as the basis for the SOAD and chapter 6 of YB
Role of Instruments in Science GS

• Euclid developed and operated as a PI mission
• For the complete understanding of the data, close connection needed between the instrument teams and the data centre(s).
• Interaction and collaboration within each instrument and among instruments to be set-up already during the development phase.
• Building upon experience in ESA missions (Planck and Gaia, but also XMM and Integral)
Tele-Communications

• Instrument Teams: specific responsibilities in Science GS to guarantee best data quality.

• How to do that?
  – Data rate of ~ 850 Gbit/day
  – Spacecraft in L2
    • Data Tele-Communications Period ~ 4 hrs/day
  – Telemetry (housekeeping + science)
    • Real-Time (RT)
    • Recorded
Large-Scale Data Flow Scheme

Daily Tele Communications Period  ~ 4 hrs
Large-Scale Data Flow Scheme

Daily Tele Communications Period ~ 4 hrs

RT HK
RT SCI
Events
Mem Dumps
Recorded HK
Recorded SCI

Ground Station
Large-Scale Data Flow Scheme

Daily Tele Communications Period ~ 4 hrs

RT HK
RT SCI
Events
Mem Dumps
Recorded HK
Recorded SCI

Ground Station

MOC
RT HK
Rec HK

Aux Data

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Large-Scale Data Flow Scheme

- Daily Tele Communications Period ~ 4 hrs
- RT HK
- RT SCI
- Events
- Mem Dumps
- Recorded HK
- Recorded SCI

Ground Station

MOC
- RT HK Rec HK

IWS@MOC
- RT HK+SCI Rec HK+SCI

Remote connection during Commissioning, PV (and operations)

DDS (Level 1)
Time-Critical Operations

- Ground Station
- MOC
- DDS
- SOC
- IOC
- EMA

- Science + HK data
- Real Time data
- Planning and instrument commanding

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Ground Segment concept (EIC-ENIS)

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Coordination

- Need to share information and knowledge across all elements of the GS
- Commonality to be enforced wherever needed, mainly:
  - data structures
  - common data and information system → DHS
- Whenever commonality cannot be achieved, interfaces to be defined.
SGS development

- It is assumed that the Euclid SGS (and the corresponding common data handling and processing environment) will be jointly developed by the Instrument Consortia and ESA with procedures TBD.
Thank you very much for your attention