ESA ESRIN
Largo Galileo Galilei 1
00044 Frascati
Italy

PROGRAMME OF
THE EUROPEAN UNION

ESA EO OPERATIONS FRAMEWORK (EOF) - CSC - GLOSSARY

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Head Copernicus Ground Segment Systems, H/EOP-GCY		Jolyon Martin Digitally signed by Jolyon Martin Date: 2024.04.02 15:16:33 +02'00'	
Head Copernicus Mission Operations Management, H/EOP-GCM		Olivier Colin Digitally signed by Olivier Colin Date: 2024.04.02 16:49:36 +02'00'	
Head Copernicus Ground Segment Services, H/EOP-GCS		Berenice Guedel Digitally signed by Berenice Guedel Date: 2024.04.02 16:30:50 +02'00'	
Authorised By		Date	
Head Copernicus Ground Segment and Data Management Division, H/EOP-GC		Betlem Rosich Digitally signed by Betlem Rosich Date: 2024.04.02 16:45:39 +02'00'	

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Alignment of definitions for Checkpoint 2020	1	1	20/01/2021
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CHANGE RECORD

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Reason for change	Date	Pages	Paragraph(s)
Addition of ADG and MPC acronyms	Jan. 2021	7	2
Addition of terms and definitions in alignment with additional CSC GS documentation	Jan. 2021	15	3

Issue Number	1	Revision Number	2	
Reason for change		Date	Pages	Paragraph(s)
Addition of acronyms related to Copernicus Expansion missions, Ground stations, and Procurement		Apr. 2024	7	2
Addition and update of several terms and definitions		Apr. 2024	15	3

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1. INTRODUCTION AND SCOPE

1.1. Introduction

This document provides the definition of terms and acronyms commonly used as part of the European Space Agency Copernicus Space Component Ground Segment Operations. It has been created in response to the need of harmonising the use of terms in the different projects and services.

1.2. Scope

The purpose of this document is the establishment of the alphabetical list of terms and acronyms used within the Copernicus Space Component Ground Segment Operations domain and providing definitions for these. This shall allow the reduction of redundancy among projects and among operational services allowing the circulation of unambiguous terminology.

1.3. Document Structure

This document is structured in the following sections:

Section 1: Introduction, (this section) describing the purpose of the document and providing the necessary background information for the reader.

Section 2: Copernicus Space Component Ground Segment Glossary, describing acronyms.

Section 3: Copernicus Space Component Ground Segment Glossary, describing definition of terms.

1.4. Applicable and Reference Documents

[RD-1] Sentinels POD Service Glossary of Terms [GMV-GMESPOD-GLO-0001], version 1.8

[RD-2] Sentinel-1 SAR Glossary
https://sentinel.esa.int/web/sentinel/technical-guides/sentinel-1-sar/appendices/glossary

[RD-3] Sentinel-2 MSI Glossary
https://sentinel.esa.int/web/sentinel/technical-guide/sentinel-2-msi/glossary

[RD-4] Sentinel-3 OLCI Glossary
https://sentinels.copernicus.eu/web/sentinel/technical-guides/sentinel-3-olci/glossary

[RD-5] Sentinel-3 SLSTR Glossary
https://sentinel.esa.int/web/sentinel/technical-guides/sentinel-3-slstr/glossary

[RD-6] Sentinel-3 Synergy Glossary
https://sentinel.esa.int/web/sentinel/technical-guides/sentinel-3-synergy/glossary

[RD-7] Sentinel-3 Altimetry (SRAL) Glossary
https://sentinel.esa.int/web/sentinel/technical-guides/sentinel-3-altimetry/glossary

[RD-8] Generic PDGS Glossary [PGSI-GSEG-EOPG-LI-13-0033], version 3.1

[RD-9] EO Data Stewardship Glossary [CEOS/WGISS/DSIG/GLOS], version 1.2

2. DESCRIPTION OF ACRONYMS

AD	Applicable Document
ADC	Auxiliary Data Circulation
ADF	Auxiliary Data File
ADG	Auxiliary Data Gathering
ADP	Auxiliary Data Provider
AGRA	Service of the atmospheric contribution to geopotential
AIP	Archive Interface (delivery) Point
AIS	Automatic Identification System
AIUB	Astronomical Institute of the University of Bern
AIV	Assembly, Integration & Validation
ANTEX	Antenna Exchange Format
ANX	Ascending Node
AOC	Attitude, Orbit and Control
AOCS	Attitude and Orbit Control System
API	Application Programming Interface
APID	Application Process Identifier *(CCSDS Standard)*
AR	Acceptance Review
ATBD	Algorithm Theoretical Baseline Document
AUX	Auxiliary
AUXIP	Auxiliary Interface (delivery) Point
BER	Bit Error Rate
CADIP	CADU Interface delivery Point
CADU	Channel Access Data Unit
Cal/Val	Calibration/Validation
CAMS	Copernicus Atmosphere Monitoring Service
CCSDS	Consultative Committee for Space Data Systems
CDR	Critical Design Review
CFDP	CCSDS File Delivery Protocol
CFI	Customer Furnished Item

CGS	Copernicus Ground Segment
CHIME	Copernicus Hyperspectral Imaging Mission for the Environment
CIMR	Copernicus Imaging Microwave Radiometer
CMEMS	Copernicus Marine Environment Monitoring Service
CNES	Centre National D'Études Spatiales
COM	European Commission
CO2M	Copernicus Carbon Dioxide Monitoring
COTS	Commercial Off The Shelf
CRISTAL	Copernicus Polar Ice and Snow Topography Altimeter
CSC	Copernicus Space Component
CSW	Catalogue Service for the Web
CVIP	Calibration & Validation Interface (delivery) Point
DBL	Data Block
DD	Data Distribution
DFEP	Demodulator and Front-End Processor
DFT	Default Timeliness (standard value unless otherwise specified)
DIAS	Data and Information Access Services
DAIP	Data Access Interface Point
DAS	Data Access Service
DLR	Deutsche Zentrum für Luft-und Raumfahrt
DORIS	Doppler Orbitography and Radiopositioning Integrated by Satellite
DP	Documentation Package
DPC	Data Processing Control
DPM	Detailed Processing Model
DSDB	Data Session Data Block
E2E	End-to-End
EC	European Commission
ECMWF	European Centre for Medium-Range Weather Forecasts
ECSS	European Cooperation for Space Standardisation
EDIP	EDRS Interface (delivery) Point
EDRS	European Data Relay Satellite System

EDRSGEO	European Data Relay Satellite System Geostationary Earth Orbit
EMRS	Emergency Request Service
EO	Earth Observation
EOF	ESA EO Operations Framework
EOF-CSC	ESA Operations Framework for the CSC
EOP	Earth Observation Programme
ESA	European Space Agency
ESOC	ESA - European Space Operations Centre
EU	European Union
EUM	EUMETSAT
FC	Frame Contract
FFS	File Format Specification
FIFO	First In, First Out
FOCC	Flight Operations Control Centre
FOM	Flight Operations Manual
FOS	Flight Operations Service
FOV	Field Of View
FTP	File Transfer Protocol
GDPR	General Data Protection Regulation
GNSS	Global Navigation Satellite System
GPS	Global Positioning System
GPSR	GPS Receiver
GPP	Ground Processor Prototype
GS	Ground Segment
HDR	Header
HK	House-Keeping
HKTM	House-Keeping Telemetry
HLOP	High Level Operations Plan
HMI	Human Machine Interface
HTTPS	Hypertext Transfer Protocol over Secure Socket
HW	Hardware

I/O	Input/Output
ICD	Interface Control Document
ICDB	Instrument Characterization Data Base
IERS	International Earth Rotation Service
IF	Interface
ILRS	International Laser Range Satellite
INS	Inuvik Ground Station - SSC
INTA	Instituto Nacional de Técnica Aeroespacial (National Institute of Aerospace Technology)
IOCR	In-Orbit Commissioning Phase Review
IODD	Input/Output Data Description
IOV	In-Orbit Validation
IP	Interface (delivery) Point
IPF	Instrument Processing Facility
IPR	Intellectual Property Rights
ISP	Instrument Source Packet
ITT	Invitation To Tender
ITU	International Telecommunication Unit
KMF	Key Management Facility
KO	Kick-Off
KOM	Kick-Off Meeting
KPI	Key Performance Indicator
KSAT	Kongsberg Satellite Services
KSE	Esrange Ground Station
L0	Level-0
L1	Level-1
L2	Level-2
LEO	Low Earth Orbit
LEOP	Launch and Early Orbit Phase
LGS	Local Ground Station
LOL	Limit Of Liability

LRA	Laser Retro-reflector Array
LRR	Laser Retro-reflector
LSTM	Land Surface Temperature Monitoring
LTA	Long Term Archive
LTS	Long Term Scenario
MCS	Mission Control System
MEO	Medium Earth Orbit
MFF	Multiannual Financial Framework
MKMF	Master Key Management Facility
MLST	Mean Local Solar Time
MOC	Mission Operations Control
MoM	Minutes of Meeting
MP	Mission Planning
MPC	Mission Performance Cluster
MPIP	Mission Planning Interface (delivery) Point
MPS	Maspalomas Ground Station
MRD	Mission Requirements Document
MSI	Multi-Spectral Instrument
MTI	Matera Ground Station
MW	Microwave
MWR	Micro-Wave Radiometer
NCEP	National Centres for Environmental Prediction
NCR	Non-Conformance Report
NEU	Neustrelitz Ground Station
NG	Next Generation
NRT	Near Real Time
NTC	Non Time Critical
NWD	Normal Working Day (all days of the week except Saturday and Sunday)
NWH	Normal Working Hours (typically from 09:00 to 18:00)
OBSM	On-Board Software Maintenance
OCD	Operational Concept Document

ODP	On-Demand Processing
ODPRIP	On-Demand Processing Interface (delivery) Point
OFL	Off-Line
OGC	Open Geospatial Consortium
OLCI	Ocean & Land Colour Instrument
OM	Operations and performance Monitoring
OMIP	Operations and performance Monitoring Interface (delivery) Point
OS	Operating System
OSV	Orbit State Vector
OTR	Operations Traceability
PA	Product Assurance
PDEC	Primary EDRS Data Centre
PDGS	Payload Data Ground Segment
PDHT	Payload Data Handling and Transmission
PDI	Product Data Item
PDR	Preliminary Design Review
PFS	Product Format Specification
PH	Product Handbook
PI	Performance Indicator
POD	Precise Orbit Determination
PODIP	Precise Orbit Determination Interface (delivery) Point
POE	Precise Orbit Ephemeris
PR	Processing / Production
PRARE	Precise Range and Rate Equipment
PRIP	Production Interface (delivery) Point
PSD	Products Specification Document
QA	Quality Assurance
QC	Quality Control
QR	Qualification Review
RD	Reference Document
RFI	Radio Frequency Interference

RFP	Request For Proposal
RFW	Request for Waiver
RID	Review Item Discrepancy
RINEX	Receiver Independent Exchange
ROSE-L	Radar Observation System for Europe in L-band
RS	Reference System
RSIP	Reference System Interface (delivery) Point
S-1/2/3/5P	Sentinel-1/2/3/5 Precursor
S3PODIPF	Sentinel-3 Precise Orbit Determination inside the Instrument Processing Facility
SAD	Satellite Ancillary Data
SAFE	Standard Archive Format for Europe
SAR	Synthetic Aperture Radar
SAT	Satellite
SCCDB	Satellite Characterisation and Calibration Database
SGS	Svalbard Ground Station
SFTP	Secure FTP
SINEX	Solution Independent Exchange Format
SLA	Service Level Agreement
SLR	Satellite Laser Ranging
SLSTR	Sea & Land Surface Temperature Radiometer
SoW	Statement of Work
SRA	Sentinels Resource Allocation
SRAL	SAR Radar Altimeter
SRD	Systems Requirements Document
SRDB	Satellite Reference Database
SRR	System Requirements Review
SSC	Swedish Space Corporation
SSH	Secure Shell
SSRS	System-specific Security Requirement Statement
STC	Short Time Critical
SUM	Software User Manual

SW	Software
SWIR	Short Wave InfraRed
SZA	Solar Zenith Angle
TBC	To Be Completed
TBD	To Be Decided
TBS	To Be Specified
TC	Telecommand
TDS	Test Data Set
TIRS	Terrestrial Intermediate Reference System
TLE	Two Line Element
TM	Telemetry
TPCE	Third-Party Collaboration Entity
TSR	Technical and Service Requirements
TT&C	Telemetry, Tracking and Command
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
UT1	Universal Time
UTC	Coordinated Universal Time
VA	Vulnerability Assessment
WAN	Wide Area Network
WMS	Web Map Service
WO	Work Order
XB	X-Band Station
XBIP[1]	X-Band Interface (delivery) Point
XML	Extensible Markup Language

[1] To be deprecated in favour of CADIP

3. DEFINITION OF TERMS

Term	Definition
Access *(noun)*	It is the set of functions providing the means or opportunities to approach or enter a logical or physical place where a set of stored digital information is available. Access can refer to either the services or the functionalities providing the means to approach the place.
Acquisition *(noun)*	Acquisition describes the process to receive on-ground the data downlinked by the satellite, up to the reconstruction of Channel Access Data Units (CADU) on ground. See also *Acquisition Planning*.
Acquisition Planning *(noun)*	Computation of the information necessary by the ground acquisition stations to receive the Sentinel satellite data *downlink*.
Algorithm *(noun)*	Series of steps needed to generate a product.
Algorithm Theoretical Baseline Document (ATBD) *(noun)*	A document that provides in detail, the theoretical baseline of the algorithm applied for the product generation. The ATBD captures as well potential algorithm evolutions.
Analysis Ready Data *(noun)*	Satellite data that have been processed to a minimum set of requirements and organized into a form that allows immediate analysis with a minimum of additional user effort and interoperability both through time and with other datasets.
Ancillary Data *(noun)*	Data which are not obtained from the sensor itself (usually provided in the science telemetry) having the primary purpose to serve the processing of instrument data. These can be divided into data referred to as spacecraft 'engineering', 'core housekeeping' or 'subsystem' data obtained from other parts of the platform and includes parameters such as orbit position and velocity, attitude and its range of change, time, temperatures, pressures, jet firings, water dumps, internally produced magnet fields, and other environmental measurements. *Ancillary* refers to data that exist purely to serve the data processing; *auxiliary data*, while helping the process, are also data sets in their own right.
Annotation Data *(noun)*	Data other than instrument measurements and ancillary data (e.g. for Sentinel-3 this can represent pixel quality data or ECMWF data derived from Level-1 processing).
Archive *(noun)*	Refers to a set of functions aimed at storing data products, guaranteeing their preservation for future use. These include all operations to identify, store and retrieve the data and ensure their integrity.
Ascending Node *(noun)*	The ascending node of an orbit is the intersection of that orbit, when the satellite goes from the southern to the northern hemisphere, with the x-y plane of the Earth fixed reference frame.
Assembly (S-1) *(noun)*	The action to reconstruct a Level-0 product covering a complete data-take (in time and in polarisation) from partial Level-0 data-take segments. See *Data-take, Segment*.

Term	Definition
Associated Knowledge *(noun)*	As a component of a data set, the associated knowledge encompasses all *information* and *tools* relevant to the instrument data. Preserving the associated knowledge ensures that the instrument data remain useable, i.e. legible and understandable.
Attitude Data *(noun)*	Data that represent spacecraft orientation and on-board pointing information. Attitude data include: • Attitude sensor data used to determine the pointing of the spacecraft axes, calibration and alignment data, Euler angles or quaternions, rates and biases, and associated parameters. • Attitude generated on-board in quaternion or Euler angle form. • Refined and routine production data related to the accuracy or knowledge of the attitude.
Auxiliary Data *(noun)*	Data which enhance processing and utilization of remote sensing instrument data. The auxiliary data are not necessarily captured by the same data collection process as the instrument data. Auxiliary data include data collected by any other platform or process (e.g. meteorological data from ECWMF or NCEP), data providing processing configuration information typically for data calibration and or instrument characterisation (e.g. processing auxiliary files), and data providing information on satellite position and velocity (orbit auxiliary files). Auxiliary data help in data processing, but are also data sets in their own right and may be relevant for end-users in specific *User Level Data* exploitation scenarios.
Availability of a Function *(noun)*	The percentage of time that a supporting function is available in the specified working conditions.
Backscatter *(noun)*	It is the portion of the outgoing radar signal that the target redirects directly back towards the radar antenna. Backscattering is the process by which backscatter is formed. The scattering cross section in the direction toward the radar is called the backscattering cross section; the usual notation is the symbol sigma. It is a measure of the reflective strength of a radar target. The normalised measure of the radar return from a distributed target is called the backscatter coefficient, or sigma nought, and is defined as per unit area on the ground. If the signal formed by backscatter is undesired, it is called clutter. Other portions of the incident radar energy may be reflected and scattered away from the radar or absorbed.
Band *(noun)*	A selection of wavelengths or range of radar frequencies.
Beam Mode *(noun)*	The SAR operating configuration defined by the swath incidence angle, width and spatial resolution.
Beam Position *(noun)*	The area within the total possible swath that is actually illuminated while being governed by the characteristics of a specific beam mode.
Big Data *(noun)*	Big Data is a broad term for data sets so large or complex that traditional data processing applications are inadequate. Challenges related to Big Data include capture, analysis, data curation, search, sharing, storage, transfer, visualization, querying and information privacy.
Browse *(verb)*	Process of viewing browse data or browse images to assess them quickly before ordering or accessing them in their more complete form (e.g. full resolution or broader spatio-temporal coverage).

Term	Definition
Browse Data *(noun)*	(1) Subsets of data set other than the directory and metadata that facilitates user selection of specific data having the required characteristics. For example, for image data, browse data could be a single channel of multi-channel data, and with degraded resolution. The form of browse data is generally unique for each type of data set and depends on the nature of the data and the criteria used for data selection within the related science discipline. (2) Data produced primarily to provide other investigators with an understanding of the type and quality of data available. Typically, browse data sets are limited in size or resolution. The specific form of browse data depends on the type of instrument or discipline with which the browse data is related. Browse data is sometimes considered to be a sample of available data.
Browse Image *(noun)*	Visual representation of a *product* (as an image) to help and support product selection in the frame of the user service facility. Synonyms are: Browse, Quicklook, and Preview.
Building Block *(noun)*	A logical unit from which something is or can built up having a set of described capabilities with defined external interfaces
Channel Access Data Unit (CADU) *(noun)*	The CADU is a CCSDS format defining the packaging of the data downlinked by the satellite. In the CSC operations, CADU corresponds to the input for the Level-0 processing.
Calibration *(noun)*	The process of quantitatively defining the system responses to known, controlled signal inputs.
Calibration Data *(noun)*	The collection of data required to perform *calibration* of the instrument science data, instrument engineering data, and the spacecraft or platform engineering data. They include pre-flight and in-flight calibration measurements, calibration equation coefficients derived from calibration software routines, and *ground truth* data that are to be used in the data calibration processing routine.
Catalogue *(noun)*	Provides the discovery of information to the user on which EO *User Level Data* can be obtained, i.e. a “Product Catalogue”. *User Level Data* can be organized in collections with restricted access depending on specific rules and/or policies.
Catalogue Service *(noun)*	A functionality to expose or publish a collection or product level *catalogue* using specific protocols, such as the Catalogue Service WEB (CSW) defined by the Open Geospatial Consortium (OGC).
Coherence *(noun)*	The fixed relationship between waves in a beam of electromagnetic (EM) radiation. Two wave trains of EM radiation are coherent when they are in phase. That is, they vibrate in unison. In terms of the application to things like radar, the term coherence is also used to describe systems that preserve the phase of the received signal.
Collection *(noun)*	The ensemble of some *User Level Data* or *Auxiliary Data* having a common focus or theme or purpose.
Collection Group *(noun)*	Set of collections sharing a specific characteristic, e.g. same terms of conditions for access authorisation.
Consolidation *(noun)*	Consolidation is the process to organize and provide a canonical set of products for any further use (e.g. long-term archiving, further processing).
Coordinate Reference System	A coordinate-based local, regional or global framework used to define and locate geographical entities.

Term	Definition
(noun)	
Copernicus Core Operations *(noun)*	The operations performed by the Copernicus Space Component, the Copernicus Services and in situ component financed by the European Commission (to distinguish from any other initiative)
Copernicus Ground Segment *(noun)*	A short appellation synonym of the ESA Earth Observation Operations Framework (EOF) Copernicus Space Component (CSC) Ground Segment
Copernicus Data and Information *(noun)*	The data and information available from the Copernicus Space Component, the Copernicus Services and in situ component
Cycle *(noun)*	In sun-synchronous orbits, the ground track repeats precisely after a constant integer number of orbits and a constant duration. The duration in days of that period is called the repeat cycle, whereas the corresponding number of orbits is called the cycle length.
Data *(noun)*	Scientific or technical measurements, values calculated therefrom, observations, or facts that can be represented by numbers, tables, graphs, models, text, or symbols which are used as a basis for reasoning and further calculation. In the context of the CSC GS it refers to any type of *Data*, including *User Level Data*, *Engineering Level Data, Auxiliary Data* and *Personal Data*.
Data Access Latency *(noun)*	Time between the user access request for specific data and the availability of that data for user download. For *Online Data*, there is no data access latency. For *Near-Line* and *On-Demand Data*, this corresponds to the time for republishing the data online, after extraction from the near-line repository or after processing from lower level data. The data access latency depends on the system sizing configuration and on the effective user activity. Data latency is defined as a percentage of requested data available within a given time (e.g. 80% of the data available within 24h).
Data Ageing *(noun)*	Time elapsed between the satellite observation and the user request for data access
Data Base *(noun)*	(1) A collection of data sets associated with a system, project, or facility. (2) A collection of interrelated or independent data items stored together in a structured way to serve one or more applications.
Data Consumer *(noun)*	An entity or organisation that retrieves data provided by a Data Producer or a Data Provider.
Data Calibration *(noun)*	Operation that, under specified conditions, in a first step, establishes a relation between the quantity values with measurement uncertainties provided by measurement standards and corresponding indications with associated measurement uncertainties (of the calibrated instrument or secondary standard) and, in a second step, uses this information to establish a relation for obtaining a measurement result from an indication.
Data Distribution *(noun)*	A key and critical element of the Copernicus Space Component, it is the front-end service that provides the Copernicus Sentinel *User Level Data* to the user communities.
Data Producer *(noun)*	An entity or organization that generates data.

Term	Definition
Data Provider *(noun)*	An entity that archives and distributes data. The data provider may or may not be the entity that also produced the data.
Data Record *(noun)*	Data or information in a fixed form treated as a unit. A record has fixed content, structure and context. A physical record may contain one or several logical records or a part of a logical record.
Data Processing Model (DPM) *(noun)*	The description of the processing algorithm in a form reflecting its operational implementation.
Data Set *(noun)*	A logically meaningful grouping or collection of similar or related data. Data having all of the same characteristics (source or class of source, processing level, resolution, etc.) but different independent variable ranges and/or responding to a specific need are normally considered part of a single data set. A data set is typically composed by products from several missions, gathered together to respond to the overall coverage or revisit requirements from a specific group of users.
Data System *(noun)*	(1) A collection of hardware and software to perform one or more specific data processing, analysis, storage, retrieval or distribution functions. (2) An integrated system ideally containing online data catalogue(s) and inventories as well as data storage, access, manipulation, retrieval, and display capabilities.
Data User Guide *(noun)*	A document, either on-line or hardcopy, containing the necessary information for the correct usage of the data.
Data Set Series *(noun)*	Collection of data sets sharing the same product specification.
Data-take *(noun)*	The continuous acquisition of a satellite data. The definition may differ from one mission to another: In the case of Sentinel-1, a data-take is a continuous temporal segment of SAR instrument operations without instrument mode change. For Sentinel-2, a data-take represents the continuous instrument imaging operations from one Sentinel-2 satellite in a given imaging mode
Data-take segment (S-1) *(noun)*	Within a given data-take, a portion of the data-take downlinked during a pass to a given station is termed a "segment". If a particular data-take is partially downlinked to more than one acquisition station, each acquired portion of the data-take will correspond to a data-take segment.
Datastrip (S-2) *(noun)*	Within a given data-take, a portion of image downlinked during a pass to a given station is termed a "datastrip". If a particular data-take is partially downlinked to more than one acquisition station, each acquired data-take portion will correspond to a datastrip.
Designated Community *(noun)*	The designated community in this context is the scientific or other user group - usually working in the same or related *disciplines* - which will benefit from the availability and usability of a data set.
Discovery *(noun)*	Any function helping a user to identify and locate EO resource starting from his needs.
Dissemination *(noun)*	The dissemination function delivers the *User Level Data* to the user. Dissemination is primarily concerned with the management of online data access.

Term	Definition
	See also *Data Distribution*
Dissemination Request *(noun)*	A dissemination request is a request for dissemination of certain *User Level Data*. Dissemination requests are parameterized with delivery parameters such as delivery method, medium and address, and parameters to determine the *User Level Data* to be delivered.
Documentation *(noun)*	The information component of a data set's associated knowledge may include mission, instrument, calibration, and other information in the form of text documents.
Doppler Frequency *(noun)*	Doppler frequency depends on the component of satellite velocity in the line-of-sight direction to the target. This direction changes with each satellite position along the flight path, so the Doppler frequency varies with azimuth time. For this reason, azimuth frequency is often referred to as Doppler frequency.
Downlink *(noun)*	Data stream from the satellite to a receiving station during visibility of the satellite from the station. The data stream transmits the payload data and optionally telemetry and housekeeping data.
Earth System Data Record *(noun)*	A unified and coherent set of observations of a given parameter of the Earth system, which is optimized to meet specific requirements in addressing science questions.
End-to-End Operations Performance Monitoring *(noun)*	The E2E Operations Performance Monitoring aims at providing a comprehensive overall end-to-end view of the operations performance at satellite unit level, mission level and CSC GS level.
Spacecraft Engineering Data *(noun)*	Data which describe the physical condition and operation of the platform and instruments on the platform. Parameters might include temperatures at specific points, filter(s) in use, switch settings, memory data, etc.
Essential Climate Variables *(noun)*	An ECV is a physical, chemical or biological variable or a group of linked variables that critically contributes to the characterization of Earth's climate. ECV data sets provide the empirical evidence needed to understand and predict the evolution of climate, to guide mitigation and adaptation measures, to assess risks and enable attribution of climatic events to underlying causes, and to underpin climate services.
Footprint *(noun)*	Geographic area covered by a product derived from an instrument observation.
Frame *(noun)*	Fixed size (in time extension) product generated from a longer data segment. Typically the length was defined such that the product covers a square area, but with the evolution to provide dissemination systematically via on-line services, the resulting download size has become an important parameter to consider. • "Fixed Frames" have a predefined geographical footprint in accordance with a reference system. • "Floating Frames" start at an arbitrary position chosen by the user. See also *Granule* and *Scene*.
Fresh Data *(noun)*	Data generated as part of the systematic production scenario, shortly after satellite observation (typically within hours or few days).

Term	Definition
Granule *(noun)*	The smallest aggregation of data which is independently managed (i.e. described, inventoried, retrievable). Granules may be managed as logical granules and/or physical granules. See also *Frame* and *Scene*.
Ground Control Point *(noun)*	Landmark, visible and located on two images, where local residual mis-registration between these images is estimated by a matching process. Sometimes also referred to as “correlation point”.
Ground Track *(noun)*	The trace made by the sub-satellite point on the surface of the Earth's reference ellipsoid due to the motion of the satellite along its orbit.
Ground Truth *(noun)*	Geophysical parameter data, measured or collected by other means than by the instrument itself, used as correlative or calibration/validation data for that instrument data. It includes data taken on the ground, on the ocean or in the atmosphere. Ground truth data is another measurement of the phenomenon of interest; it is not necessarily more "true" or more accurate than the instrument data.
Guide *(noun)*	The guide function is part of the user information function to provide information about satellites, sensors, product types and services.
Housekeeping Telemetry *(noun)*	Housekeeping telemetry (HKTM) represents all the telemetry data necessary to monitor the health and status of the satellite. These data are not available to users.
Instantaneous Field of View *(noun)*	A measure of the spatial resolution of a remote sensing imaging system. Defined as the angle subtended by a single detector element on the axis of the optical system.
Instrument *(noun)*	(1) A hardware system that collects scientific or operational data. (2) Hardware-integrated collection of one or more sensors contributing data of one type to an investigation. See also *sensor*.
Instrument Calibration *(noun)*	The instrument calibration function is the determination of parameters describing instrument characteristics. They are to be used by the instruments and ground processing to generate calibrated and comparable physical values. These parameters vary for different instruments and modes. And they may vary over time in the long run (degradation).
Instrument Data *(noun)*	(1) Data specifically associated with the instrument, either because they were generated by the instrument or included in data packets identified with that instrument. These data consist of instrument science and engineering data, and possibly ancillary data. Instrument engineering data is produced by engineering sensor(s) of an instrument, used either for operating the instrument or for processing the science data generated by the instrument. Instrument science data is produced by the science sensor(s) of an instrument. (2) Data created by an instrument including scientific measurements and any engineering or ancillary data which may be included in the data packets. (3) Data produced and transmitted by the science and engineering sensors of an instrument, and, in the spacecraft environment, any additional data packaged with the instrument’s sensor data by virtue of services provided by the spacecraft carrying the instrument.

Term	Definition
Instrument Source Packet *(noun)*	An individual packet of data formatted by the instrument (or by the on-board computer).
Interferometry *(noun)*	A technique that uses the measured differences in the phase of the return signal between two satellite passes over the same area to detect slight changes of locations on the Earth's surface. Mapping height changes provides information on, for example, earthquake damage, volcanic activity, landslides and glacier movement.
Emergency Response Service *(noun)*	A component of the overall portfolio of services of the Copernicus Ground Segment in charge of managing data tasking/access requests expressed by EO emergency-management service entities, such as the Copernicus Emergency Management Service or the International Charter Space and Major Disasters.
Engineering Level Data *(noun)*	It refers to the data which are generated as part of the Copernicus Sentinel Data Processing workflow for instrument performance monitoring and calibration activities or as input for the processing of User Level Data. These data might be relevant to expert users for validation and quality control purposes. These data are used for operational purposes and are typically not available to users. See also *Sentinel Engineering Level data*
Interoperability *(noun)*	The ability of different information technology systems and software applications to communicate, exchange data, and use the information that has been exchanged
Logical Record *(noun)*	A record independent of its physical environment, that exists from the standpoint of its content, function, and use rather than its physical attributes. It is defined in terms of the information it contains. Portions of the same logical record may be located in different physical records, or several logical records may be located in one logical record. See also *Data Record*.
Logical Volume *(noun)*	That portion of a volume which is viewed by a computer operating system as a volume.
Long Term Archiving *(verb)*	The act of ensuring the storage of the data and the interfaces and capability for retrieving them, ensuring their integrity.
Long Term Preservation *(noun)*	The act of maintaining data and information in a correct and independently understandable form over the long term (i.e. a period of time long enough to be concerned with the impact that changing technologies, including support for media and data formats, as well as changing user communities may have).
Maintenance *(noun)*	Those activities undertaken to allow equipment and software to continue in operational conditions.
Metadata *(noun)*	Data about data, which provide an understanding of the content of the data. It consists of attributes describing the Data, including attributes extracted from the Data itself (footprint, sensing date, product type, cloud coverage, etc.), and attributes related to the Data management/life cycle (archive status, publication date, download URL, etc.) Metadata is intended as information describing significant aspects of Earth Observation data. They are predominantly used for the purposes of data search, discovery and access management.

Term	Definition
Migration *(noun)*	The transfer of digital information to a new hardware (e.g. media) or software environment with the intent to preserve it. Migration is a means to overcome technological obsolescence and to exploit new technologies.
Mission Phase *(noun)*	Mission Specific period characterized by a set of parameters (e.g. repeat cycle, instrument configuration, etc.)
Mission Planning *(noun)*	It covers to the activities necessary to implement the Sentinel observation scenarios taking into account the satellite operational constraints and the available acquisition resources. Mission planning activities include the scheduling of instrument operations, the associated on-board memory management and the necessary satellite data *downlink* operations for each Sentinel satellite as well as the resolution of potential cross-mission reception conflicts. Mission planning activities include also the stations *acquisition planning*.
Monitoring and Control *(verb)*	The monitoring & control function ensures verification that resources (e.g. hardware, software, network) of the ground segment are operating nominally. It can influence these activities by operator interaction, e.g. for failure handling.
Near-line Data *(noun)*	Data available on a storage repository requiring an additional retrieval time before it can be accessed online by users.
Near Real Time Data *(noun)*	Data that are available for use with a specified (small and application dependent) timeliness, which is typically within 3 hours from sensing time.
Offline Access *(noun)*	Access to near-line data and on-demand processed data. From a user access perspective, the two accesses are transparent, only associated data access timeliness varies.
On-Demand Data *(noun)*	*User Level Data* that are not available in online and near-line repositories (typically data evicted after the online retention period or after a near-line retention), which are to be generated in response to a user's request from lower level data.
On-Demand Processing *(noun)*	This refers to the production of *User Level Data* (typically higher level products) using a lower level (input) product in response to a user's request. It is also sometimes referred to as "on-the-fly processing".
Online Access *(noun)*	The online access function makes *User Level Data* available online for download by users.
Online Data *(noun)*	Data available online for immediate user access.
Online Retention Period *(noun)*	Time during which *fresh data* remain available online for immediate access. The retention time is configurable per mission, data type and geographical area and may be dynamically adjusted according to the user activity.
On-the-fly Packaging *(verb)*	Fully automated generation of the *User Level Data* requested for download by the user (via the *online access* function) in very short time such that the user perceives the elapsed waiting time as "download preparation".
Operational Scenario *(noun)*	End-to-end flow of operations characterised with respect to the implemented overall data flow and interaction between external entities and GS components.

Term	Definition
Orbit *(noun)*	The path in space described by a satellite revolving around the Earth where the motion of the orbiting satellite is dominated by their mutual gravitational attraction. Orbits can be different and the most common are polar and equatorial.
Orbit Prediction and Determination *(noun)*	The orbit prediction and determination function is the generation of attitude and state vectors that describe the projection of the spacecraft for certain time intervals. They are computed either beforehand (predicted orbit) or afterwards with different accuracies (restituted orbit, precise orbit).
Parameter *(noun)*	A measurable or derived variable occurring in the physical or digital world.
Payload Data *(noun)*	All the data transmitted via the payload telemetry link. After decoding and extraction of the packets from the frames the payload data is presented as: • instrument data • platform ancillary data • housekeeping telemetry
Personal Data *(noun)*	It refers to the information managed within the CSC which are related to end users. These include user registration information, credentials, email addresses, log files tracing user activity (also by IP address) and are subject to GDPR.
Platform *(noun)*	Support which carries the instrument(s)/sensor(s). In the context of the CSC a platform is typically a satellite.
Polarisation *(noun)*	The process of confining the vibrations of the magnetic, or electric field, vector of light or other radiation to one plane.
Precise Orbit *(noun)*	Precise orbit auxiliary products result from a computation using all available satellite tracking data and its correction with dynamical models. They achieve the most accurate model of representing the real orbit motion. They are generated using satellite information corresponding to the orbit(s) covered by the product. They are typically generated several days after the orbit covered by the product
Predicted Orbit *(noun)*	Predicted orbit auxiliary products result from a computation using satellite tracking data from previous orbits. They are generated using satellite information corresponding to one or several orbits in the past. .
Preliminary Orbit *(noun)*	Preliminary orbits are based on the fast delivery tracking data. They provide an improvement of the predicted knowledge of the orbit but not the optimal fit.
Processing/Production *(verb)*	The processing or production function generates higher level products from lower level products and auxiliary products. The processing is performed based on processing algorithms supplemented by administrative functions (e.g. formatting). Processing covers the action to produce the desired products systematically or on request.
Processing Baseline *(noun)*	A combination of processor versions, corresponding algorithms, auxiliary data and other needed enablers that allows the generation of a coherent set of EO products.
Processing Levels *(noun)*	Raw Data The physical telemetry payload data as received from the satellite (e.g. serial CADU data stream without de-multiplexing). Level 0

Term	Definition
	Reconstructed unprocessed data at full space-time resolution with all available supplemental information to be used in subsequent processing. Level 1A Reconstructed unprocessed data at full resolution, time-referenced, and annotated with ancillary information, including radiometric and geometric calibration coefficients and geo-referencing parameters (e.g. ephemeris) computed and appended but not applied to the Level 0 data. Level 1B Radiometrically corrected and calibrated data in physical units at full instrument resolution as acquired. Level 1C L1B data orthorectified, re-sampled to a specified grid. Level 2 Derived geophysical parameters (e.g. sea surface temperature, leaf area index) at the same resolution and location as Level 1B source data. Level 3 Data or retrieved geophysical parameters which have been spatially and/or temporally re-sampled (i.e. derived from Level 1 or 2 products), usually with some completeness and consistency. Such re-sampling may include averaging and compositing. Level 4 Model output or results from analyses of lower level data (i.e. variables that are not directly measured by the instruments, but are derived from these measurements; could be derived from multiple instrument measurements).
Product *(noun)*	The term is used in various Earth observation contexts, with slightly varying meanings. In the context of the CSC GS it refers to the packaged set of data files corresponding to EO or Auxiliary Product Format Specification.
Product Data Item *(noun)*	It refers to the *User Level Data* as they come out of a Sentinel data processor (i.e. it is the unit made available on a PRIP delivery point) and, in most cases, it is safe-guarded in the Long Term Archive. Essentially, a PDI is a low level package containing processed Earth observation data measured at a given period of time and/or location, and its metadata. The current processors for Sentinel-1, 3 and 5P generates PDIs which are already compliant with the Product Specifications. These are equivalent to the “pre-defined” *User Level Data* packages which are distributed to end users. The current Sentinel-2 processors generates PDIs which are TCIs, Datastrips, Tiles or Granules.

Term	Definition
Product Type Collection *(noun)*	The ensemble of all available products of a specific product type.
Production Order *(noun)*	Request for production of one or more products, typically related to an order received from a user. Production orders are parameterized with processing parameters and parameters to determine inputs and optionally outputs, as part of a production workflow.
Public Cloud Provider *(noun)*	A cloud provider is considered public in the frame of the CSC Ground Segment baseline whenever it provides a well-established access to the cloud services, available without discrimination to any potential customer, with a well-established public price list and customer support.
Pulse Repetition Frequency (PRF) *(noun)*	Rate of recurrence of the pulses transmitted by a radar.
Purge *(verb)*	To permanently and irrecoverably remove all copies of an Earth observation *data set* held in an organization.
Quality Indicator *(noun)*	A quality indicator provides information that allows users to readily evaluate the “fitness for purpose” (e.g. suitability of a product for a certain use or application) of the data or derived product. A Quality Indicator may be a number, set of numbers, graph, uncertainty budget, or a simple “flag”.
Quality Information *(noun)*	Secondary data required to assess the primary data set’s fitness for purpose, e.g. *calibration* and *validation* data and quality control results.
Quota *(noun)*	In the context of the CSC GS it refers to measures to restrict the over usage of an API (e.g. limiting number of parallel downloads, orders, etc.)
Range *(noun)*	Distance from the satellite to the Earth's surface.
Reconciliation *(noun)*	A confirmation process, following a re-processing, in which the processed output data, and the relevant input data are matched to detect e.g. any unexplained data losses
Reference Model *(noun)*	A framework for understanding significant relationships among the entities of some environment, and for the development of consistent standards or specifications supporting that environment. In the context of the CSC GS the reference model addresses the full range of functions including ingestion, archiving, data management, processing, access and dissemination.
Reformatting *(verb)*	A transformation process to convert data holdings from one format into another. Reformatting shall use well-described transformation rules to avoid any deterioration of the information content. Reformatting could be considered or conducted as part of a processing or reprocessing exercise.
Refreshment *(noun)*	A digital migration where the effect is to replace a media instance with a copy that is sufficiently exact so that all archival storage hardware and software continues to run nominally.
Repackaging *(verb)*	Repackaging is a digital migration which alters the packaging of EO data.

Term	Definition
Representation Information *(noun)*	The information that makes digital data legible and useable. It consists of structural, semantic, and other information and includes e.g. descriptions of data formats, file structures, or pixel value representations. Representation information can be provided either in a formalized way, such as an XML formatted data unit (xfdu), or less formalized as text documents.
Reprocessing *(verb)*	Reprocessing is a specialization of *processing* where a specific product collection (defined mainly by sensor, mode, time interval, processing baseline, output products) is systematically generated using archived lower level products. Reformatting could be considered or conducted as part of a reprocessing exercise.
Request *(noun)*	A request is the generic mean to use a function of an element that provides the function as its service. Requests are usually exchanged between elements such that one element uses the functions of the other.
Restituted Orbit *(noun)*	Restituted auxiliary products result from a computation using all available satellite tracking data and its correction with dynamical models. They are generated using satellite information corresponding to the orbit(s) covered by the product. They are typically generated within minutes after the satellite has overflowed the orbit covered by the product.
Retrieval *(noun)*	The physical transfer of data from the repository to the user or client.
Satellite Data *(noun)*	Satellite data are composed of: • Housekeeping telemetry • Payload data transmitted via the payload telemetry link.
Scattering *(noun)*	The process in which a wave or beam of particles is diffused or deflected by collisions with particles of the medium in which it traverses.
Scene *(noun)*	Subset of an instrument acquisition data segment, cut by time i.e. along-swath. Example: For Sentinel-2 this corresponds to a simultaneous observation of all bands and all detectors of approximately 3.6 seconds in duration. During this time, the satellite has moved along track by approximately 23 km measured at the Earth's surface.
Search and Discovery *(noun)*	The procedure to search a repository based on specific search criteria (search) and to obtain information on available products (discovery). Data search and discovery are enabled by generating and maintaining searchable metadata and browse image catalogues, as well as providing a *catalogue service* for making the catalogue accessible and mechanisms to retrieve and present the information contained in the catalogue, e.g. via a graphic user interface of a data portal. During the discovery following a data search a user can find data based on the search criteria and can evaluate if the data found are suitable for their application ('fit for purpose') by e.g. viewing the *browse image*, evaluating metadata such as coverage, *quality information*. The user may then decide to retrieve the data. Search and discovery as well as retrieval are components of *Data Distribution*.
Sensor *(noun)*	Device which transmits an output signal in response to a physical input stimulus as voltage. In Earth Observation a distinction between passives sensors, such as radiometers, and active sensors, such as radars, is common. EO sensors – or

Term	Definition
	instruments – are operated from different ground-/water-based, airborne, or spaceborne *platforms*.
Sensor Data *(noun)*	See *Instrument Data*
Sensor Performance Monitoring *(noun)*	The sensor performance monitoring function is the long-term recording and trend analysis of parameters that describe the quality of sensors and their outputs (e.g. L0 products).
Sentinel Engineering Level Data *(noun)*	Sentinel payload data generated as part of the Copernicus Sentinel Data Processing workflow for instrument performance monitoring and calibration activities or as input for the processing of *User Level Data*. These data might be relevant to expert users for validation and quality control purposes. These data are used for operational purposes and are typically not available to users. See also *Engineering Level data*
Sentinel User Level Data *(noun)*	Sentinel payload data generated by the CSC Ground Segment and available to users. See also *User Level Data*
Service *(noun)*	Its definition depends on the context: • In an application (software) context: Service refers to a workflow which may either be triggered via API or GUI (e.g. data discovery, view and download services, on-demand production services, registration service), or is data-driven (e.g. systematic production service, data ingestion service). • In the context of the CSC Architecture: Refers as a whole to the services (as workflows) supported by a CSC component (e.g. the Production service, the Long Term Archive service). • In the CSC contractual context: Refers to the provision of operations of an architectural CSC function through a Service Level Agreement (e.g. the CSC Reference System Service, the CSC Production Service, the CSC *Data Distribution* Service). • From an end-user perspective: Refers to a portfolio of services (as workflows) specifically tailored (in terms of quota, data offer, etc.) for a specific category of users (e.g. the Open, Copernicus and Collaborative *Data Distribution* services).
Short Time Critical Data *(noun)*	Data processed typically after several hours or days with consolidated auxiliary information. STC data are generally superseded by a further consolidated version (typically made available with Non Time Critical timeliness).
Slice *(noun)*	Subset of a data segment, cut by time i.e. along-swath, of a fixed time duration starting from the beginning of the data take. Slices may have an overlap of a pre-defined time duration.
Spatial Reference *(noun)*	Method by which location or coverage is designated (e.g. latitude and longitude). See *Coordinate Reference System*
Statistics and Reporting *(noun)*	The statistics and reporting function provides information about usage, progress, load, quality of service of a ground segment element.

Term	Definition
Subscription *(noun)*	Service allowing a client or user to receive a defined set of products made available regularly. Clients/Users can make a subscription request (e.g. for the systematic production of a certain product type or products from an entire mission) and get access to the products without additional ordering.
Sub-satellite point *(noun)*	The normal projection of the position of the satellite in orbit on to the surface of the Earth´s reference ellipsoid. It is also referred to as nadir.
Swath *(noun)*	A swath is defined as the area covered by the spatial samples collected during a scan of a spaceborne instrument defined by an incidence angle.
Telemetry *(noun)*	An automated communications process through which payload data collected by the platform are transmitted to receiving equipment for monitoring, via the telemetry link.
Telemetry Data *(noun)*	Data stream of measured values (instrument science, instrument engineering, and spacecraft or platform engineering data), not including command, tracking, computer memory transfer, audio or video signals.
Third Party Collaboration Entity *(noun)*	National/International Agency or Institute subject of a Collaboration Agreement in the frame of the CSC operations, possibly for a specific satellite mission.
Thumbnail *(noun)*	Small, very low resolution browse image which may be made available for users as part of a *catalogue service*.
Tile (S-2) *(noun)*	In the Sentinel-2 vocabulary, this refers to higher level granules in UTM/WGS84 projection (e.g. Level-1C, Level-2A)
Timeliness *(noun)*	In the context of Earth observation it refers to the time elapsed between satellite observation and the time at which the resulting data are made available to users. Data timeliness is applicable to *fresh data* only and typically includes: - Near Real Time timeliness (NRT) - Non Time Critical timeliness (NTC): data processed with a pre-defined delay after sensing, typically waiting for the necessary auxiliary data - Short Time Critical timeliness (STC) - Default timeliness (DFT): in case a unique timeliness is defined for the mission data (e.g. the case of Sentinel-2 mission) or in general, in case data timeliness does not depend on the ground operations but on the on-board data management and downlink priorities (e.g. Sentinel-1 data not downlinked in priority is available after data downlinked in priority although no difference is made as part of the ground operations). The value associated to each timeliness is mission/data type dependent.
Traceability *(noun)*	A service which allows the autonomous verification of the integrity and provenance of a given product.
Transcription *(noun)*	Migration of data from one storage medium to another (e.g. from old to new technologies) in order to preserve the data and for efficiency purposes.
Transformation *(noun)*	A digital migration in which there is an alteration to the content information of a data package. See also *Reformatting*.
Use Case *(noun)*	A list of actions or event steps, typically defining the interactions between an actor and a system, to achieve a goal

Term	Definition
User *(noun)*	External person, institution or system that consumes user services (e.g. *Data Distribution* services) provided by the CSC GS.
User Category *(noun)*	Classification of users in order to provide services with different access rights and service levels.
User Level Data *(noun)*	Sentinel payload data generated as part of the Copernicus Sentinel Data Processing workflow. User Level Data may be disseminated to users as: self-consistent and “pre-defined” packages (typically formatted as per the product specifications), “a-la-carte” packages (prepared according to user selection criteria) or as individual files.
User Management *(noun)*	The user management function maintains information about registered users and supports registration, authentication and information needed for authorization.
User Support *(noun)*	A function inside the *Data Distribution* service to support external users (e.g. to handle user registration, inquiries, complaints). This function is usually provided by a help desk.
Validation *(noun)*	The process of assessing, by independent means, the quality of data products.
Volume *(noun)*	A unit of physical storage medium which contains data. Usually physically interchangeable with other volumes of a similar type, and requiring a specific device for reading or writing.