Geohazards Thematic Exploitation Platform

Service Level Agreement for the GEP Services

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Issue	1.0
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Geohazards Exploitation Platform

Service Level Agreement

Ref.: T2-CLEO-GEP-TN-20-022
Issue: 1.0
Date: 2020-05-25
Page: 7

2. Parties, Roles and Responsibilities

2.1. Parties

This SLA is between:

The Customer	The Service Provider (GEP Operator)
	Terradue Srl Via Giovanni Amendola 45 00185 Rome - Italy tel. +39 06 9934 1786 www.terradue.com

Table 1: Parties

2.2. Contacts

The following persons have negotiated this document and agree it will be used as the formal Service Level Agreement (SLA) for the provision of the Service.

Name	Position
For "The Service Provider"	
Fabrizio Pacini	Key Accounts Manager, Terradue
Hervé Caumont	Platform Operations Manager, Terradue
For "The Customer"	

Table 2: Contacts

2.3. The Service Provider responsibilities

The Service Provider will provide and maintain all the service(s) indicated in the section 3. Service Description.

Additionally, the Service Provider will:

- Ensure relevant services are available to the User in line with the uptime levels listed in the next sections.
- Respond to relevant user support requests within the timescales listed below.

- Take steps to investigate and resolve issues within the timescales listed below.
- Maintain good communication with the users at all times.
- Maintain good communication with the Customer at all times.

2.4. The Customer responsibilities

The Customer will:

- Notify the Service Provider of issues or problems in a timely manner.
- Provide the Service Provider with all information available about reported issues or problems in order to facilitate investigation and resolution
- Provide prompt feedback on the delivered service access grants in order to allow coordination of Platform user on-boarding and measurement of Platform user adoption rates
- Maintain good communication with the Service Provider at all times.

3. Service Description

This SLA applies to the following services (that will be collectively indicated as "The Service" in the following) provided by the GEP Platform:

Data Processing Services

This service offers access to a set of algorithms (i.e. processing services) which can be applied to one or more EO products to obtain a specific information.

The Platform is equipped with a large set of EO processing services including

- Optical and SAR services for rapid EO data screening and combination (incl. active fires and hot spots detection as well as burnt areas mapping)
- Conventional InSAR/optical services for earthquake response, land subsidence and volcanoes monitoring
- Optical services for landslide detection, inventory mapping and monitoring of landslide motion
- Advanced Terrain Motion services for SAR time series analysis
- SAR and Optical services for Flood Monitoring

In terms of functionality, it is possible to select the products on which the algorithm is applied as well as to specify some of the algorithm parameters. To support this kind of services the Platform offers a catalogue of the EO data available, to allow the selection of the input data, and the possibility to upload additional user data. Results are stored online in a user private space and can be downloaded on the user's machine. It is possible to share the processing results with other people on the platform or publicly on the internet.

The Data Processing Services operated on GEP are split in two subcategories according to the complexity of the underlying algorithm as specified in Annex 1 of this EULA document.

- ○ Conventional
- ○ Advanced

User Algorithm Hosting

This service is meant for developer users to plug onto the Platform already existing scientific applications written in a variety of languages (e.g. Java, C++, IDL, Python, R), and then deploy, automate, manage and scale them in a very modular way.

It offers access to a development environment in the Platform Cloud infrastructure and an online resource exposing a standard OGC API that allows the developer user to upload his algorithm (also developed offline) onto the platform and deploy it as a Platform-operated data processing service.

The User Algorithm Hosting Service enables the use of such algorithms with the EO data and user private data and takes care about the access to and use of processing resources. It makes possible the sharing of the algorithm with other users of the platform.

Interactive Development Services

This service provides a set of online development tools, in the form of Jupyter Notebooks or Developer Cloud Sandboxes, that allow developer users to integrate or develop an algorithm

with direct access to the other Platform services. It offers a catalogue of the EO and result data available, to allow the selection of the input data, the possibility to upload additional user data and the possibility to download the results and figures. Results are stored online in a user private space and can be shared with other users or publicly on the internet. This service also allows the creation of a processing service from a developed algorithm, that can be included in the Data Processing Services of the platform and made accessible to other users.

User Support Services

This is the specific user support provided for the exploitation of the hosted services and for the integration of the algorithms into the cloud environment. The support is provided through documentation (i.e. tutorials, forum, knowledge base) and a dedicated support team that is reachable via the Platform helpdesk instance and via email.

Advanced support for the Services Providers in best integrating their algorithms with the Platform services and tools and exploiting them is also made available via specific hands-on sessions.

Tailored technical and thematic training sessions based on the Platform services can be organized as part of this service.

Value added Products Provision

This Service offers access to pre-generated datasets (also indicated as value-added products) providing specific information derived from EO satellite products as results of the application of an algorithm. It also offers hosting of EO collections brought by the user for private use or to be shared with other users of the Platform.

The indicated products can be downloaded from the Platform, or used as input in cloud-based EO services running within the Platform.

Geohazards Exploitation Platform

Service Level Agreement

Ref.: T2-CLEO-GEP-TN-20-022
Issue: 1.0
Date: 2020-05-25
Page: 11

4. Service Objectives and Measurements

4.1. Service Coverage
The Service operates during the following hours:
- The **Data Processing Services**: 24/7, 365 days a year
- The **User algorithm hosting:** 24/7, 365 days a year
- The **Interactive Development Services:** 24/7, 365 days a year
- The **Value added Products Provision:** 24/7, 365 days a year
- The **Helpdesk ticketing system**: 24/7, 365 days a year
- The **User Support Services:** during normal working days (NWD) and hours (NWH)

with the following definitions

Coverage	Definition
NWD	Normal Working Day (Monday-Friday except on Christmas Day, 26th December, New Year's Day, Easter Monday, 1st May, 15th August, 1st November and 8th December)
NWH	Mon-Fri: 9:00-18:00 CET
24/7	24 hours per day, 7 days a week

Table 3: Service coverage definitions

4.2. Service Downtime
Planned downtime for routine maintenance of the Service, upgrades or problem resolution:
- will not be performed during NWH, except for correction of blocking issues
- will be scheduled, as far as possible, with 5 NWDs notice and agreed with the Customer
- users will be informed of any impact on services via email and via a post in the forum with 4 NWDs notice, with information on the functionality involved, the affected users, the nature and the expected duration of service interruption.
- In case of extension of the downtime, the note shall be followed up with an update.

In case of unplanned downtime, the Service Provider will inform the affected users as soon as the problem is detected with the same type of information as for planned downtimes. In addition, the Service Provider will issue a confirmation note of service restoration after every unplanned downtime.

Geohazards Exploitation Platform

Service Level Agreement

Ref.:   T2-CLEO-GEP-TN-20-022
Issue: 1.0
Date: 2020-05-25
Page: 12

4.3. Service Performance and Reliability

The Service is provided according to the KPIs reported in the following sub-sections.

A **failure** will be considered any Incident with **Criticality = Blocking** where the following definitions apply:

Incident Criticality	Definition in scope of Operations
Blocking	Anomaly which hampers the operational use of the Service by end users such as for example: - Systematic failure of a processing service over a certain AOI or temporal period (unless specified in the tutorial or terms and conditions) - Systematic failure with certain values of service parameters (unless specified in the tutorial or terms and conditions) - Failure in the hub serving Jupyter Notebooks instances - Impossibility to search for EO data or to access it for processing - …
Critical	Anomaly which impacts the internal functions or may impact the operational service to end users if timely actions are not undertaken. For example: - Reduced performance of the service delaying generation of results - Issue not directly visible by users but affecting service capability (e.g. generation of results metadata or preview layers) - Issues that can be compensated by a work-around - ...
Routine	All other issues that do not affect the delivery of the Service to users

Table 4: Incidents Criticality

Geohazards Exploitation Platform

Service Level Agreement

Ref.: T2-CLEO-GEP-TN-20-022
Issue: 1.0
Date: 2020-05-25
Page: 13

4.3.1. Data Processing Services

Conventional

KPI-ID	Description
DPSA-1	Algorithm execution service availability is at least 99% on a monthly basis
DPSA-2	Time between the launch and start of execution of an algorithm is less or equal than 5 sec
DPSA-3	Less than 5% of algorithm executions fails due to platform / algorithm issues

Table 5: KPI for conventional Data Processing Services

Advanced

KPI-ID	Description
DPSC-1	Algorithm execution service availability is at least 99% on a monthly basis
DPSC-2	Time between the launch and start of execution of an algorithm is less or equal than 5 sec
DPSC-3	Less than 25% of executions fails due to platform / algorithm issues

Table 6: KPI for advanced Data Processing Services

4.3.2. User Algorithm Hosting

KPI-ID	Description
UAH-1	Algorithm deployment service availability is at least 99% on a monthly basis
UAH-2	Time to make a new algorithm available as a data processing service from the availability of the Application Package is less or equal to 5 NWD
UAH-3	Time to share a deployed algorithm with other users is less or equal than 1 NWD

Table 7: KPIs for User Algorithm Hosting

4.3.3. Interactive Development Services

KPI-ID	Description
IDS-1	Interactive Development Service availability is at least 99% on a monthly basis

Geohazards Exploitation Platform

Service Level Agreement

Ref.: T2-CLEO-GEP-TN-20-022
Issue: 1.0
Date: 2020-05-25
Page: 14

IDS-2	Time between the launch and availability of the Interactive Development Environment is less or equal than 10 min
IDS-3	Time to make a new algorithm developed with the Interactive Development Service available as a data processing service is less or equal to 5 NWD
IDS-4	Time to share a deployed algorithm with other users is less or equal than 1 NWD

Table 8: KPIs for Interactive Development Services

4.3.4. Value Added Products Provision

KPI-ID	Description
VAP-1	Availability of Catalogue for search of value added products is at least 99% on a monthly basis
VAP-2	Retrieval of time series of value-added products is at least 99% on a monthly basis
VAP-3	Availability of value added products as input for Data Processing Services is at least 99% on a monthly basis

Table 9: KPIs for Value Added Products Provision

4.3.5. User Support Services

As indicated in section 5.1, the User Support Service operates during the following hours:

- The **Service Provider support team** is available during normal working days (NWD) and hours (NWH)
- The Service **Helpdesk ticketing system**: 24/7, 365 days a year.

Three types of user support are foreseen with the following characteristics:

	Basic	Medium	Plus
General Support	24x7 access to - documentation, knowledge base, and moderated forum	24x7 access to - documentation, knowledge base, and moderated forum	24x7 access to - documentation, knowledge base, and moderated forum
Technical Support		NWD and NWH access to support via - ticketing system - email	NWD and NWH access to support via - ticketing system - email
Number of cases	N/A	Max 10 cases/contacts per month	Unlimited cases/contacts

Table 10: User Support types

Geohazards Exploitation Platform

Service Level Agreement

Ref.: T2-CLEO-GEP-TN-20-022
Issue: 1.0
Date: 2020-05-25
Page: 15

4.3.5.1. User Support Channels

All incidents and service requests will be managed according to the Terradue User Support Management Process that was designed along with the design of the Platform Service itself. Information about user support workflows, roles and responsibilities, work products, escalation and control procedures will be communicated by the Service Provider upon Customer request.

The first-line support is the entry point defined for both processes. Users can request a service or report an Incident by using one of the following:

-   Using the Web Interface (preferred)
    https://helpdesk.terradue.com/
    which is based on the Atlassian JIRA ServiceDesk request tracker, and provides the GEP users with access to their dedicated helpdesk space "GEP Portal User Support Requests (GEPSUPPORT)"

-   Sending an email to
    support@terradue.com

4.3.5.2. Incident handling and resolution time

Disruptions to the agreed service functionality or quality will be handled according to an appropriate quality of support level based on the impact and urgency of the incident and the chosen type of support. The agreed target response and resolution time, for the different types of support, are reported in the tables below:

Plus

Criticality	Target Response Time	Target Resolution Time
Blocking	2 NWH	1 NWD
Critical	4 NWH	2 NWD
Routine	1 NWD	10 NWD

Table 11: Incidents response and resolution times - Plus

Medium

Criticality	Target Response Time	Target Resolution Time
Blocking	4 NWH	3 NWD
Critical	1 NWD	5 NWD
Routine	2 NWD	20 NWD

Table 12: Incidents response and resolution times - medium

Geohazards Exploitation Platform

Service Level Agreement

Ref.: T2-CLEO-GEP-TN-20-022
Issue: 1.0
Date: 2020-05-25
Page: 16

The following related KPIs are defined:

KPI-ID	Description
USI-1	At least 99% of incidents requests are responded within target response time on a monthly basis
USI-2	At least 95% of incidents are resolved within target resolution time on a monthly basis
USI-3	Number of incidents reopened is less than 5% of the total on a monthly basis

Table 13: KPIs for Incident Handling

4.3.5.3. Service Request handling and fulfilment time

In addition to resolving incidents, standard service requests (e.g. information requests about a data processing service, about the interpretation of results, about the tuning of input data/parameters, about the development and integration environment, documentation, software packages and tools installation etc.) will be fulfilled through the defined support channels indicated in section 5.3.7.1. User Support Channels. Response and fulfilment times according to priority are provided, for the different types of support, in the tables below. Priority is determined/updated by the support team analyst (not the customer) by first determining the impact and urgency of the request.

Plus

Priority	Target Response Time	Target Fulfillment Time
High	4 NWH	2 NWD
Medium	2 NWD	5 NWD
Low	4 NWD	20 NWD

Table 14: Service requests response and fulfilment times - Plus

Medium

Priority	Target Response Time	Target Fulfillment Time
High	1 NWD	3 NWD
Medium	2 NWD	10 NWD
Low	5 NWD	30 NWD

Table 15: Service requests response and fulfilment times - Medium

Geohazards Exploitation Platform

Service Level Agreement

Ref.: T2-CLEO-GEP-TN-20-022
Issue: 1.0
Date: 2020-05-25
Page: 17

The following related KPIs are defined:

KPI-ID	Description
USR-1	At least 99% of service requests are responded within target response time on a monthly basis
USR-2	At least 95% of service requests are fulfilled within target resolution time on a monthly basis
USR-3	The size of current request backlog (i.e. number of open service requests older than 15 days) is less than 30% of the total open on a monthly basis

Table 16: User Support Services KPIs

4.4. Measurement Details

Event Management will provide the environment for all the measurement and reporting required to monitor the components, the process and the Service itself. The primary source for monitoring the targets in this SLA is the information collected into the Service Support Desk management tool (i.e. JIRA Service Desk). In the case of measuring elapsed times (like resolution time which is pivotal for rating the Service), the value is calculated from the time the incident or request is created in the system until the time the incident or request is marked as closed.

When the incident or service request is reported outside the working hours, the record is actually created at the beginning of the next working hour, unless a special procedure is invoked to start resolution immediately.

4.5. Measurement Reporting

Reports will show collected measurements that are relevant to the targets defined in this SLA. They are of three types:
- Monthly Operational reports: to help the outgoing monitoring of Service against the targets.
- Exception reports: produced each time a service level target is breached or is about to beach.
- Periodic reports: to be discussed in scheduled Service Performance Reviews.

The periodic reports will incorporate details of performance against all SLA targets, together with details of any trends or specific actions being undertaken to improve service quality. The Platform Operations Manager will distribute these periodic reports to all participants two days before the Service Performance Review meetings.

The Service Performance Reviews will be held quarterly (to be agreed and confirmed between the Service Provider and the Customer).

Geohazards Exploitation Platform

Service Level Agreement

Ref.: T2-CLEO-GEP-TN-20-022
Issue: 1.0
Date: 2020-05-25
Page: 18

5. Communication

The following contacts will be generally used for communications related to the Service in the scope of this SLA:
- Service Provider contact for the Customer: contact@geohazards-tep.eu
- Customer contact for the Service Provider: _____

More specifically all communications between the Service Provider and the Customer regarding both incidents and service requests will take place ...

Also, as indicated in section 4.3.5.1. User Support Channels, the Platform Service Tier Provider will communicate with the Platform users through the GEP Operator Service Desk tool available at https://helpdesk.terradue.com. That tool will also be used to track status and progress of the support activities as well as to measure user support KPIs.

Geohazards Exploitation Platform

Service Level Agreement

Ref.: T2-CLEO-GEP-TN-20-022
Issue: 1.0
Date: 2020-05-25
Page: 19

6. Annex 1: GEP Processing Services

6.1. Conventional EO data processing services

Maintainer	Service
CNES / TRE-Altamira	DIAPASON InSAR Sentinel-1 TOPSAR(IW,EW)
CNES / TRE-Altamira	DIAPASON InSAR - StripMap(SM)
INGV	STEMP Hot Spots detection Sentinel-2
INGV	STEMP - Surface Temperature Map L8 and ASTER
INGV	STEMP - Surface Temperature Map Sentinel-3
Terradue	SNAP-InSAR – SNAP Sentinel-1 IW SLC Interferogram and Displacements
Terradue	COIN – Coherence and Intensity change for Sentinel-1
Terradue	SNAC - SNAP Sentinel-1 GRD Amplitude Change
Terradue	COMBI - Multi-Mission Band Combination
Terradue	RASTER - Multi-mission Full Resolution Rasterization
Terradue	GMT5SAR InSAR - Sentinel-1 TOPSAR
Terradue	GMT5SAR InSAR - Stripmap
Terradue / BRGM	SNAP CSK DInSAR
Terradue	Sentinel-1 GRD RGB composite
Terradue	Sentinel-2 RGB composites
Terradue	Sentinel-3 OLCI composites
Terradue	Sentinel-3 SLSTR composites
Terradue	Sentinel-3 Active Fire Detection
Terradue	Sentinel-2 Burned Area Analysis

Table 17: Conventional EO Data Processing Services

6.2. Advanced EO data processing services

Maintainer	Service
CNR IREA	P-SBAS Sentinel-1 processing on-demand
CNRS EOST	MPIC-OPT: Multiple pairwise optical image correlation (Sentinel-2)
CNRS EOST	DSM-OPT: Digital surface models from optical stereo satellite images
CNRS EOST	ALADIM-S2 Automatic LAndslide Detection and Inventory Mapping (Sentinel-2)
CNRS EOST	ALADIM-VHR Automatic LAndslide Detection and Inventory Mapping (Pleiades)
TRE-Altamira	FASTVEL for displacement velocity map generation

Table 18: Advanced EO Data Processing Services