

Destination Earth Core Service Platform

Anomaly Management Procedures



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1. Introduction

1.1 Scope

This document provides the Anomaly Management Procedure for the “*Destination Earth – DestinE Core Service Platform Framework – Platform & Data Management Services*”.

1.2 Purpose

This document defines the process for the management of DESP operational Anomalies and User Requests detected during the DESP Service Operations, raised by DESP stakeholders.

This document is crucial for maintaining the reliability and usability of the DestinE Core Service Platform (here addressed as “the platform”) by ensuring that operational anomalies and user support requests are effectively identified, reported, prioritized, and resolved in a systematic and efficient manner. It establishes a clear framework for collaboration between users and the technical teams.

1.3 Applicable Documents

Ref.	Title	Reference and Version
AD-1	[DP-SOW] Statement of Work - Destination Earth – Destine Core Service Platform Framework – Platform & Data Management Services	ESA-EOPG-EOPGD-SOW-10, v 1.0
AD-2	[AD-DSP-TSR] DESP Framework – Platform & Data Management Services – Technical and Service Requirements	ESA-EOPG-EOPGD-RS-10, v1.0
AD-3	[AD-DSP-SR] DESP Framework – Platform & Data Management Services – Security Requirements	ESA-ESO-SSRS-2022-0111, v1.0
AD-4	Space engineering – Software	ECSS-E-ST-40C, 06/03/2009
AD-5	Software Product Assurance Plan	DEST-SRCO-PL-2300326
AD-6	Operation Management Plan	DEST-SRCO-PL-2300395, v 0.3
AD-7	DESTINE – System Configuration Control and Anomaly Management Plan	DTE-MNG-001

1.4 Reference Documents

Ref.	Title	Reference and Version
RD-1.	Atlassian Jira	https://www.atlassian.com/
RD-2.	DESP Onboarding Governance and Process	DEST-SRCO-PR-2300339, v1.4
RD-3.	ITIL	https://it.wikipedia.org/wiki/ITIL
RD-4.	Identity and Access Management Service Overview	DEST-SRCO-TN-2300330_Annex 1

RD-5.	DESP Framework - Product Assurance Plan	DEST-SRCO-PL-2300326
RD-6.	DESP Change Management procedure	DEST-SRCO-TN-2300381
RD-7.	DESP Coordinated Maintenance Procedure	DEST-SRCO-TN-2300382
RD-8.	DESP Security Incident Management Procedure	DEST-SRCO-TN-2300383
RD-9.	DESP Federation Procedure	DEST-SRCO-PR-2300399
RD-10.	Operations Management Plan	DEST-SRCO-PL-2300395

1.5 Acronyms and Abbreviations

Acronym	Definition
AD	Applicable Document
ARB	Anomaly Review Board
DEDL	DestinE Data Lake
DESP	DestinE Core Service Platform
DB	Database
ECSS	European Cooperation for Space Standardization
ESA	European Space Agency
FAQ	Frequently Asked Questions
ITIL	Information Technology Infrastructure Library
NWD	Normal Work Hours
NWH	Normal Work Days
RD	Reference Document
SOW	Statement of Work
SW	Software
TO	Technical Officer

1.6 Terms and definitions

- *End Users:* Unregistered, Registered users with role “Standard User” and Federated Users, according to [RD-4].
- *Issue/Ticket:* Record within a ticketing system raised by DESP stakeholders. Issues can be categorised as Anomalies, User Requests, Maintenance requests, a Change request or Security Incidents.
- *User Requests:* a clarification, request for information or support request raised by any user of the platform.
- *Anomalies:* unexpected or irregular occurrence or behaviour within a service. An Anomaly justifies an investigation that might lead to the discovery of a nonconformance or a defect. Anomalies can be detected by any user of the platform.
- *Changes:* Service evolutions including updates to processes, technologies, configurations, or features, with the goal of improving service quality, efficiency, or functionality.

-
- *Security Incidents:* issues opened by users of the platform concerning security aspects of DESP Core Services, DESP Onboarded Services and DEDL.
 - *Onboarded Service:* service become part of the DESP ecosystem after successfully completing the Onboarding process documented in [RD-2], i.e., service that has been integrated in the DESP platform. A DESP Onboarded Service is listed in the DESP registry of services, and available with free access to authorized DESP registered users.
 - *Service under-Onboarding:* service for which the Onboarding process as defined in [RD-2] is ongoing.
 - *Federated Services:* Services with an existing active user community that becomes accessible for DESP users via their existing DESP identity, after completing the Federation Procedure [RD-9]
 - *DESP Core Service:* DESP registered services implemented and operated by Serco and its partners withing the DESP contract [RD-2].

2. Issue and communication management overview

The DESP Consortium has established a comprehensive framework to effectively handle various types of communication and issues related to DESP services according to ITIL guidelines [RD-3].

These channels have been specifically designed to manage Anomalies and User Requests, all of which originate from both End-Users, Service Providers on services Onboarded in DESP [RD-2] and DEDL Federated Service. Additionally, they handle requests for enhancements or improvements (referred to as 'Changes'), Coordinated Maintenance activities that may involve one or more DESP Services, as well as Incidents related to Security concerns.

The Consortium has identified four primary domains within this framework that require a structured approach, including the documentation of processes, workflows, and procedures:

- **Anomaly and User Request Management:** This encompasses the handling of anomalies or irregularities in the DESP services, as well as the addressing of User Requests for assistance. The management procedure for these items is described in this document.
- **Coordinated Maintenance Activities:** This category encompasses both planned and unplanned maintenance activities that can impact not only the DESP Core Services but also the Onboarded Services and DEDL. An efficient communication of these activities is crucial for ensuring the reliability and functionality of the DESP ecosystem. The management procedure for these items is described in [RD-6].
- **Change Requests:** concerns the requests of proposal for an alteration to any aspect of a service. It can involve request of new features and evolutions as well as changes to configurations, processes, procedures, documentation, or any other element associated with services. Change Request comes from DESP stakeholders and that need to be discussed with the Maintenance Manager, Service Manager and ESA to evaluate if they can be accepted and included in the roadmap. The management procedure for these items is described in [RD-7].
- **Security Incidents and Inquiries:** In this area, the focus is on addressing incidents related to the security aspects of DESP Core Services, DESP Onboarded Services and DEDL. This includes investigating and resolving security breaches, vulnerabilities, and responding to inquiries pertaining to security measures. The management procedure for these items is described in [RD-8].

While the primary focus of *this document lies in detailing the management processes and workflows associated with Anomalies and User Requests*, it also provides a broader perspective by offering an overview of all the established processes. This overview aims to provide stakeholders with a comprehensive understanding of the entire framework, including the technical solutions selected to address these processes and how they interact with one another.

Additionally, the document outlines the various roles involved in the Anomaly and User Request, Security incidents, and Change Management process, ensuring transparency and clarity in the responsibilities and contributions of each role within the Consortium's operations.

2.1 Roles

The Roles involved in the DESP Issue and Communication management framework described above, defined in [RD-5], are reported here below.

Role	Description	Context
Service Manager	Responsible for the team coordination to ensure issue resolution is done to maximize the customer satisfaction.	<i>DESP Team</i>
User Community Manager	Coordinator of all activities related to the provisioning of support and assistance to community members. He/she is responsible of the level of support provided and to guarantee user satisfaction of users. He/She oversees providing visibility about issue resolution and report to the Service Manager in case of problems. The User Community Manager is supported by a team named " DESP Support Team ".	<i>DESP Team</i>
Maintenance and Evolution Manager	Leader of the system maintenance team in charge of scheduling issue resolution and assigning it to the proper Service Champion.	<i>DESP Team</i>
Operations Manager	Responsible for the coordination of the Service Operations element and its Engineering Team [AD-6] also thanks to a technical analysis of the operational issues, subsequently assigning them to the appropriate team members or delegated entities	<i>DESP Team</i>
Service Champion	Responsible for a DESP service E2E. He/She is in charge to perform a technical analysis of the issue that have been assigned to him/her in relation to the service of which it is responsible. He/She assigns the issue to the relevant Service Provider delegated entity. When the issue is responded or solved, the Service champion takes care of forwarding the outcome to the reporter and to inform the DESP User Community Manager.	<i>DESP Team</i>
Service Provider delegated Entity	Responsible of issue resolution and technical feedback provisioning. He/she acts on behalf of the Service Provider and includes Operations Managers [Error! Reference	<i>Core Services, External Service Onboarded/under Onboarding in DESP [RD-2], and DEDL</i>

	source not found.], but also DESP developers [RD-5].	
DESP Security Team	Responsible to solve promptly any vulnerability detected in the DESP platform. It is also in charge to answer User questions concerning Security topics.	<i>DESP Team</i>
ESA	ESA can be involved in Priority evaluation. Immediately informed in case of blocking situation.	<i>DESP Customer</i>

Table 1 Roles involved in issue Management

2.2 Technical solution

To streamline its day-to-day activities, DESP Support team opted to utilize the same Issue Tracking Tool for overseeing the various processes outlined in the section above, i.e. Anomaly and User Request Management, Coordinated Maintenance activities, Security Incidents and Inquiries and Change Request Management. The selected technology to manage such processes is the Atlassian Jira Platform, [RD-1].

JIRA is a proprietary web-based application for issue tracking, developed by Atlassian. JIRA records issues and allows to define "Projects" for which specific rules (e.g. workflows, issue types) and permission schemes can be set.

Issues can then be raised and managed "within" a specific Project. Each issue must follow a (configurable) given sequence of statuses (i.e. to undergo a workflow).

The Jira platform is meant to facilitate the full lifecycle management (from entry to closure) of issues, where an issue, as reported in 1.6, is a customisable object that can be an Anomaly, a User Request, a Maintenance Request, a Change request or a Security Incident. Each issue can have an associated list of actions.

2.3 Jira Project structures

Four main projects have been defined in JIRA to manage Anomalies and User Requests, but also Security Incidents, Change Management Requests and Coordinated Maintenance activities.

Project	Key	Notes
DESP Service Desk	DSD	The primary Jira project where tickets from Registered, Unregistered, and Federated Users are gathered.
DESP Service Provider	DSP	Jira project where Service Providers of services Onboarded/under Onboarding in DESP [RD-2] and DEDL Service provider can open tickets.

DESP Performance Monitoring	DPM	Jira Project including the lifecycle of the "Operational Anomalies" issue type, which is specifically focused on operational issues. This is an internal project accessible only to DESP Administrators. User enquiry on operational matter can be addressed as well.
DESP Evolution and Maintenance System	DEMS	Jira Project including the lifecycle of the "Maintenance & Evolution Requests" issue type i.e. issues concerning software configuration, software problems or bugs and evolution included in the roadmap. This is an internal project accessible only to DESP Administrators.
DESP Coordinated Maintenance System	DCMS	Jira Project for the management of Service operational Maintenance Requests to be aware in advance of all the planned Maintenance on DESP Core and Integrated Services. This project is accessible to all DESP Service Providers.
DESP Security	DSEC	Managing all issues impacting Security of DESP services. This project is accessible only to DESP Security Team and DESP security engineers, responsible of the security of each DESP Core service, Onboarded or Onboarding services and DEDL Federated Service.
DESP Change	DC	Managing all the request of new evolutions or features not still included in the roadmap, coming from End User or Service Provider as well.

Table 2 Jira Projects

Each issue type has an independent lifecycle, however issues belonging to the same projects or to different projects can be linked to each other.

It is assumed Service Providers of services Onboarded into DESP (e.g. ECMWF) as well as DESP Federated Service have their own private issue management system or mechanism to handle the life-cycle of issues impacting their service. The DESP Support Team needs no visibility of such facilities since, as described in section 4, all communications between Service Provider delegated entities and the DESP Support Team are managed within the DSP project, according to the workflow defined in 4.1.2 and 4.2 Sections.

Hereinbelow Figure 1 DESP Jira Projects Overview provides a high-level overview of the issue management flow:

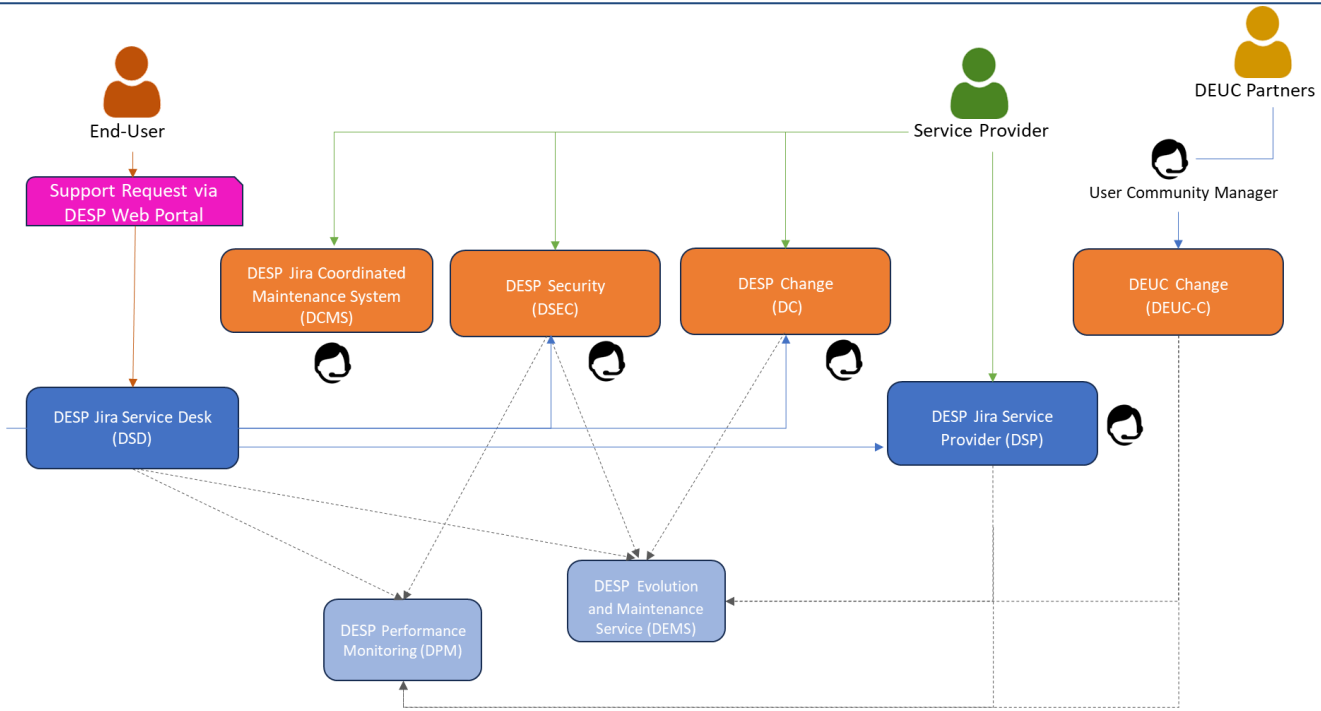


Figure 1 DESP Jira Projects Overview

Dotted arrows represent the interface with Jira Projects that are internal to the DESP consortium and not visible to users of the platform.

As shown in the diagram above, within DESP, there are two methods available for reporting Anomalies and User Requests:

- The DESP Web Portal, where any Registered, Unregistered, or Federated User can document an Anomaly or submit a query to the DESP team.
- The Jira "Service Provider project", which enables Service Providers of Onboarded or under-Onboarding services and DEDL Service to report anomalies.

Furthermore, Service Providers have the capability to report Security incidents and inquiries through the "DESP Security" (DSEC) Jira project. In the same project will be reported also security incidents detected by End-Users via the DESP Service Desk channel.

Maintenance events will be conveyed through the "DESP Coordinated Maintenance System" (DCMS) Jira project and Change Request will be conveyed in the DESP Change project (DC), or in the dedicated project to Use Cases. (DEUC-C), as per RD-6.

2.3.1 Issue types

The issues that can be raised by DESP stakeholders (users and internal teams) are categorised as:

- **DSD project**
 - Anomaly
 - User Request
- **DSP project**

-
- Anomaly
 - User Request
 - **DPM project¹**
 - Incident
 - Change Request
 - User Request
 - **DEMS project²**
 - Story (Maintenance & Evolution Request)
 - SPR (SW Bug)
 - **DCMS project**
 - Maintenance Request
 - **DSEC project**
 - Security Incident
 - User Request
 - **DC project**
 - Change Request

¹ DPM project will contain also different issue types (e.g Task, Problem, etc.) but they are out of the scope of this document that is aimed at tracing only the interaction with DSP and DSD projects. The other issue types and relevant workflows are documented in [RD-10] and [RD-6].

² DEMS project will contain also different issue types (e.g.: Change Request, Task, etc.) but they are out of the scope of this document that is aimed at tracing only the interaction with DSP and DSD projects. The other issue types and relevant workflows are documented in [RD-5] and [RD-6].

3. Anomaly and User Request Management Procedure

The documented Anomaly and User Request management procedure describes the critical process involving detection, analysis, and response to User Requests or anomalies that result in deviations from expected behavior within the DESP platform (including its services and published dataset) and in request for information/support.

The primary goal of the Anomaly and User Request management process is on the one hand to provide users with all the information they asked on the involved services, on the other hand to identify and address anomalies promptly to prevent or mitigate potential negative consequences. The Anomaly and User Request management process foresees the following steps:

- **Anomaly and User Request Detection and Recording:** this step can be performed by any user of the platform. Custom reporting channels are set up for users depending on their role (section 3.1).
- **Anomaly and User Request Analysis and Prioritization:** The DESP support team (section 3.2) investigate recorded issues to determine the cause, the assignee, and the significance of the issue. This analysis also involves reviewing historical data, comparing the issue to known patterns, and assessing potential impacts.
- **Resolution Planning:** Once the issues are prioritized, assigned and a preliminary analysis is performed, a response plan is developed. This plan outlines the actions to be taken to address each Anomaly and User Request (section 3.4).
- **Alert Generation:** For each issue, an alert is generated to inform the appropriate Service teams. The alert includes relevant information about the issue, such as its type and severity (section 3.5).
- **Resolution Implementation:** Issue resolution involves collecting all the information to answer User Requests or implementing the response plan to mitigate or eliminate Anomalies. It may require coordination across various teams or departments, depending on the nature of the Anomaly and its impact (section 3.4).
- **Reporting and Communication:** Communication with stakeholders is essential throughout the issue management process. Regular updates and reports are provided to DESP Service manager and ESA TO via dedicated ARB processes (section 3.6). Moreover, users are notified upon issue update and resolution.

3.1 Anomaly and User Request Detection and Recording

Anomalies and User Requests can be identified by users through the utilization of DESP Core Services, Onboarded Services and DEDL Federated Service.

Specific reporting channels and customized workflows are established based on the user's role.

3.1.1 Issue detected by End Users

End-users are required to use the Web Portal as their entry point for receiving support. Within the portal, they can submit their support tickets by completing the appropriate fields. These tickets are automatically integrated into a Jira project named 'DESP Service Desk Jira Project,' and they follow the workflow outlined in section 4.1.

Each update made to the Jira issue triggers a new email notification to the End-user.

The link to access the Web Portal Support page is not only available within the DESP Web Portal but also within each of the DESP services (via dedicated link). This means that users who are utilizing a specific service can click on the 'Support' section, which will redirect them to the Web Portal support form.

The step-by-step process for End-users to raise an issue is described herein below:

End-Users access to the Support page of the DESP Web Portal. Here, the subsequent ticket categories are displayed:

- Registration matters (i.e. requests of registration or issue encountered during the registration procedure);
- General information (i.e. no technical questions but questions concerning the offered data and services, news, events, way to access the services);
- A category for each specific service

Thus, the following categories can be selected³:

- General Request
- User Registration
- Onboarding
- Payment and Billing
- Service Registry
- Data Access
- Visualization
- Traceability
- Data transformation
- Development environment
- Dashboard
- Cloud Resources
- Security

Clicking on a specific category, the FAQ page is opened, and User can browse to find solution to his/her request. If the FAQ do not solve the problem, User can access and fill the Support form.

For each category, the form includes:

- the user email

³ ~~The reported list has to be updated according to the new Services that will be integrated in DESP.~~

- a field for the "Title"
- a field for the description of the issue, named "Description" where technical details have to be reported
- a field named "Relevance" where the user sets the severity of the issue according to his/her feeling, choosing among: "routine" or "outstanding"
- a field that specifies the involved service, as per ticket category.

In addition, the possibility to include attachments is present as well.

For registered users every ticket category is allowed, and the ticket is automatically turned in a Jira issue within the "DESP Service Desk" project, with:

- Assignee: User Community Manager
- Reporter: User (i.e. the email address of the User)
- Status: OPEN

Unregistered user can request support only for "Registration matters" or "General Information" category.

3.1.2 Issue detected by Service Providers

DEDL Federated Service and Registered Service Providers utilizing DESP services or seeking to integrate an 'external' service (Onboarding) are provided with a dedicated 'DESP Service Provider Jira Project' for collaborative interaction.

References to this project will be provided within each DESP service, following the guidelines outlined in [RD-2] document.

In both scenarios, the User Community Manager is responsible for assigning the issue to the appropriate entities, following the workflow delineated in section 4.2. Furthermore, the User Community Manager actively oversees the progression of the ticket throughout its lifecycle and, when necessary, establishes connections between issues related to the same problem.

In the 'DESP Service Provider Jira Project' the DESP Consortium acts as single entity, meaning that the DESP Consortium is represented here as a unified organization, rather than as a collection of individual Service Providers. Issues concerning DESP which are encountered by Onboarded/under-Onboarding services or DEDL shall be recorded and then assigned to the consortium in the 'DESP Service Provider Jira Project'.

3.2 Anomaly and User Request Analysis and Prioritization

Anomalies and User Requests identified in the previous step are initially assigned to the User Community Manager which identifies responsible entities and assigns them to relevant teams. Unusual and unexpected events leading to issue recording are documented by means of log collection, data collection, screenshots etc.

The analysis of such data leads to the definition of

- [Anomalies] the root cause of the issue

-
- [User requests] information to be provided to support end-users

Moreover, the priority of issues is defined according to:

- the initial Relevance estimation provided by users (see 3.3)
- the impact on services/user activities

Finally, issues are categorised as per 2.3.1.

Within DESP, a concept of '*Priority Channel*' has been defined. In fact, a specific set of issues are categorized and managed as Blocking if they fall in one the following categories:

- security breach: any issue affecting system security level. Issues of this category are stored in a dedicated Jira project with limited access (see 2.3);
- payment and billing: including malfunctioning of the wallet recharge function, impossibility to access purchased resources caused by wallet unexpected behaviors.

Furthermore, issues included in the Priority Channel receive expedited attention from the DESP Team, resulting in faster response and resolution times w.r.t the one expected for issues with other priority levels, as per 3.5. Specifically, for the issue (as per 1.6 definition) included in the Priority Channel, DESP aims to achieve the following:

- Initial response within 2 Network Working Hours (NWH)
- *[For Service Providers]* The option to contact the DESP Support Team via phone
- Resolution Time in 2.5 NWD

Finally, those issues have dedicated escalation paths and alert definition (section 3.5).

3.3 Issue Model

All issues are characterized by the following information, the fields that have to be mandatory filled when the issue is opened are marked with (M) symbol here below:

- **Issue Type (M):** the issue categories are indicated in 2.3.1
- **Summary (M):** it contains a summary of the issue
- **Assignee:** person who has the responsibility to resolve the issue, or the person who needs to take the next action. He/she shall be able to receive automatic notification every time an issue is updated and a status is changed.
- **Reporter:** he/she is the one that is raising the issue. He/she shall be able to receive automatic notification every time an issue is updated and a status is changed.
- **Description (M):** it can detail the problem encountered and the high-level procedure executed that led to the issue.
- **Attachment:** files and screenshots that clarify the issue description

- **Priority:** it depends on its impact on the organization, the service, the existing system, and the interfacing systems. For Anomalies and User Requests Priority can be one of the following⁴:
 - *Blocking:* An issue is considered Blocking if it would cause a major lack of functionality or a major performance drop if transferred in operations (e.g. system crash, missing feature). Blocking issues can also include configuration/usability issues that would make the software not operable. In addition, issues that are included in the Prioritized Channel, as per section 3.2 are considered automatically blocking.
 - *Critical:* An issue is considered with Critical priority if it would cause a partial lack of functionality or a performance degradation. Critical priority issues can also include configuration/usability issues that would make the software hardly operable.
 - *Low:* Issues that have a workaround that can be put on or that affects not widely used functionalities.

Priorities in the DSD Jira projects are defined by the first and second line of support (i.e. User Community Manager and Service Champions). Priorities in the DSP project are defined by the User Community Manager.

- **Relevance (M)** [*only within DSD, DSP*]: Routine, Outstanding. The value in this field represents the urgency of resolution from a user prospective.
- **Created:** it indicates the date of the event and it is automatically filled by Jira system corresponding to the date in which the issue is opened.
- **Service:** it indicates the DESP service involved in the issue or request
- **Service Element:** it indicates the software component involved in the event. It is inserted by the reporter of the issue if he/she knows it, otherwise the field is filled by the User Community Manager
- **Service Version:** it indicates the software version of the component involved in the event. It is inserted by the reporter of the issue if he/she knows it, otherwise the field is filled by the User Community Manager
- **Linked Issues:** it allows to connect different issues between DESP Jira projects
- **Time to first response** [*only within DSD, DSP and DC project*]: it corresponds to the time elapsed from the issue creation and the moment in which the first automatic response is sent to the user and the issue is updated in RECEIVED status
- **Time to resolution** [*only within DSD and DSP project*]: It corresponds to the time elapsed from when the issue is put in TO DO status to its resolution and closure. The time spent in ON GOING status shall be deduct from the count.
- **Original Estimation:** It corresponds to an estimated date for the issue resolution or to mitigate the negative consequence.
- **Label:**

⁴ Please note that the values of this field are customized in the different Jira projects. The value reported here are the ones defined for DSP and DSD Jira projects.

- **ESA ARB** *[only within DSD and DSP project]*: it is a flag to fill for the issue that need to be escalated to ESA to speed up the resolution. Issues with this flag will be discussed and reviewed during the dedicated Anomaly review board, as per section 3.6
- **ESA CAB:** *[only within DC project]*: it is a flag to fill for the issues that need to be escalated to ESA to evaluate the integration in the roadmap and the relevant schedule. Issues with this flag will be discussed and reviewed during the dedicated Change Advisory board, as per RD-6.
- **Interface** *[only within DSD, DSP and DC project]*: it is a flag to be clicked if the issue is a matter of integration

3.4 Resolution Planning and Implementation

The analysis process described above allows the identified issue assignee to define an Issue Resolution Plan which includes:

- Develop a detailed resolution plan that outlines the specific steps, timelines, responsible parties, and resources required to implement the chosen solution.
- Establish clear goals and objectives for the resolution plan which can range from the simple information collection to include an incremental approach foreseeing workarounds, patches, and final resolution.
- Resource allocation: the necessary resources, including personnel and technology, to execute the resolution plan effectively.

The abovementioned process allows the assignee to estimate the issue resolution time which is reported in the "Original Estimation" field as per 3.3. Please note that Onboarded Services and DEDL, as outlined in the [RD-2] are expected to furnish this information for the issues they are assigned.

Please note that as per [AD-2], DESP foresees a resolution time of 5 NWD for any User Request. Furthermore, Onboarded Services and DEDL, as outlined in [RD-2], are expected to meet the same resolution performance standards.

Finally, the resolution implementation follows. This results in the execution of the resolution plan according to the defined timeline and resources and applying the workflow mentioned in section 4.

3.5 Alert generation

To meet the response time and resolution time requirements defined in [AD-2] and applicable to all DESP issues, the DESP Support Team, the Onboarded Service Provider teams and DEDL team shall

- Respond to issues (as per 1.6 definition) within 0.5 NWD;
- Resolve User Request within 5 NWD.

To guarantee such performances, a chain of alerts is configured in the proper Jira projects in order to automatically send an email that reports the remaining time to *Respond* to the issue to relevant entities:

- 1st alert after 2 NWH,
- 2nd alert after 3 NWH

The recipient of the email is configurable and includes at least the User Community Manager.

Similarly, an automatic email will be sent also to meet the requirement on the *Resolution* time:

- 1st alert after 2 NWD
- 2nd alert after 3 NWD
- 3rd alert after 4 NWD

Moreover, as referred in 3.2, DESP Team will focus with particular attention on the issues included in the "Priority channel"⁵ in order to provide a quicker response and resolution.

For the priority channel the following Response and Resolution Time limits have been defined, as detailed in Section 3.2:

- Response Time: 2 NWH
- Resolution Time: 2.5 NWD

For such category of issue at this scope the following alerts have been identified to be configured on the Resolution time:

- 1st alert after 6 NWH
- 2nd alert after 12 NWH
- 3rd alert after 18 NWH

At each alert mentioned above, a specific action is undertaken, and a clear escalation path is defined.

For what concern the *Response time*, an alert is sent to the User Community manager and to the other configured recipients after 1NWH starting from the creation of the issue. Consequently, the User Community Manager provides a first response to the User ensuring that the ticket has been received and is going to be analysed.

Similarly, alerts on the *Resolution time* result in a specific escalation path:

- After the first alert received, the User Community Manager contacts via email the assignee of the issue and the Service Manager of the involved Service;
- After the second alert received, the User Community Manager contact via phone call the assignee of the involved Service;
- When the third alert is received, the User Community Mager contacts via phone call the Service Manager of the involved Service.

3.6 Reporting and Communication

To oversee all the issues that are raised within the DSD and DSP Jira projects, regular meetings will be scheduled under the name of 'Anomaly Review Board' (ARB).

⁵ Please note that for the priority channel the Resolution Time is applicable not only to User Requests but also to Anomalies.

Anomaly Review Board (ARB) organization:

- **Attendance:** The ARB meetings are attended by key stakeholders, including the User Community Manager, Maintenance and Evolutions Manager, and Operations Manager. Service Champions can also be involved if necessary.
- **Meeting Frequency:** These meetings are conducted weekly to maintain an active and timely approach to issue management.

Issue Review and Resolution:

- **Priority-Based Review:** The primary purpose of ARB meetings is to review the list of unresolved issues and formulate action plans to expedite their resolution. Issues are assessed based on their priority levels, allowing for a structured approach to problem-solving.

Preparation for ARB:

- **Issue Identification:** Prior to each ARB meeting, the User Community identifies issues that require updates or discussion, particularly those assigned to Service Provider delegated entities. Operational issues are also considered.
- **Request for Updates:** Assignees of relevant issues are requested to provide updates via email before the ARB meeting to ensure that all stakeholders are informed and prepared.
- **Deeper Discussion:** In cases where a more in-depth discussion is needed, Service Provider delegated entities may join the ARB meeting.

Meeting Output:

- After the ARB meeting, a list of issues that require commentary or specific actions to expedite resolution is compiled. The relevant entity responsible for these actions is identified.

ESA Notification:

- The Service team is tasked with identifying issues that may require notification to ESA (European Space Agency).
- The User Community Manager takes charge of collecting the list of issues to discuss with ESA and organizes a separate ARB meeting.
- Participants in the ESA-related ARB include the User Community Manager, Maintenance and Evolutions Manager, Operations Manager, Service Manager, and ESA Technical Officer (TO).

4. Anomaly and User Request resolution workflow

This section reports all the workflow for the management of issues (Anomalies and User Request) raised by users of the platform.

4.1 End-Users issue management

This section outlines the workflow in place to manage the anomalies and User Requests recorded by End-users as per section 3.3.

- The Jira system where the issue has been recorded (DSD), automatically sends a notification to the user that the ticket has been received and puts it in **"RECEIVED"** status. The User Community Manager in the DSD Jira project receives a notification at each status change and every time an issue is updated.
- The User Community Manager analyses the ticket and sets a priority, between the ones described in 3.3 section and according to the user feeling as well. If the User Community Manager needs further information to understand the problem, he/she comments the issue and asks to the User, who receives the request via email. In this step, the issue is put in **"ON GOING"** status.
 - If the User Community Manager is able to provide a solution, she/he sets the "Original Estimation" field and then replies to the issue and puts it in **"DONE"** status
 - If the User Community Manager is not able to provide an answer:
 - if the issue concerns a core service and is about a maintenance/software or an operational problem, she/he assigns the issue to the proper Service Champion and sets the **"TO DO"** status.
 - For issue concerning requests of new features or evolution, please refer to the "DESP Change Management procedure", [RD-6]
 - if the issue concerns an integrated service, he/she puts it in **"DELEGATED"** status and clones the issue in the DSP project.
 - The User Community manager is also in charge of verifying if there are other issues concerning the same problem already opened and to link them each other.

Issues raised by users through the above-mentioned flow could be affecting DESP Core Services (Platform and Data Management), Onboarded Services as well as DESP Federated Service. The following section reports the two different flows defined for the resolution of such issues.

4.1.1 DESP Core Services issues

Jira Project	Step	Description	Final status of the step
	1	The Service Champion sees the issue in "TO DO" status within the Service Desk Jira project. When she/he starts the analysis, sets the issue in "IN PROGRESS" status.	In Progress

DSD		She/He sets also the "Original Estimation" field according to her/his analysis results and the review the "priority". According to the analysis done the priority can be increased or decreased.	
	2	If the Service Champion can provide an answer by him/herself, he/she comments the issue in the DSD Jira project through "Add internal note". Otherwise, if the Service Champion can't provide an answer, he/she puts the status in " DELEGATED " and clones/updates the issue in the internal DEMS Jira Project or in the internal DPM Jira project, depending on the issue concerns a software or operational problems. In DEMS or DPM project the issue will be assigned to the proper entity and will follow the process identified in Annex 1	Delegated
	3	According to the flow identified in Annex 1, if some information is missing for the analysis the service champion asks in the DSD Jira Project via internal note.	Delegated
	4	The User community Manager asks the user for the requested information and puts the issue in " ON-GOING " status	ON-GOING
	5	When the information is provided by the User, the Service Champion checks it, puts again the issue in " DELEGATED " status.	Delegated
	6	When the issue is solved according also to Annex 1, the Service Champion puts the resolution explanation as internal note and the User Community Manager replies to the User, setting the status in " DONE ". Otherwise, if some information is missing, the User Community Manager replies in the issue adding an "Internal Note". And the flow restarts from step 2.	DONE
	7	If the user informs that the resolution is not working and the problem is still present, the User Community Manager puts again the	

		issue in "TO DO" . The flow restarts from step 2.	
	8	When the user confirms that the issue is solved, or if no feedback is received within 2 weeks, the User Community Manager can put the issue in "CLOSED" status within Service Desk project.	CLOSED

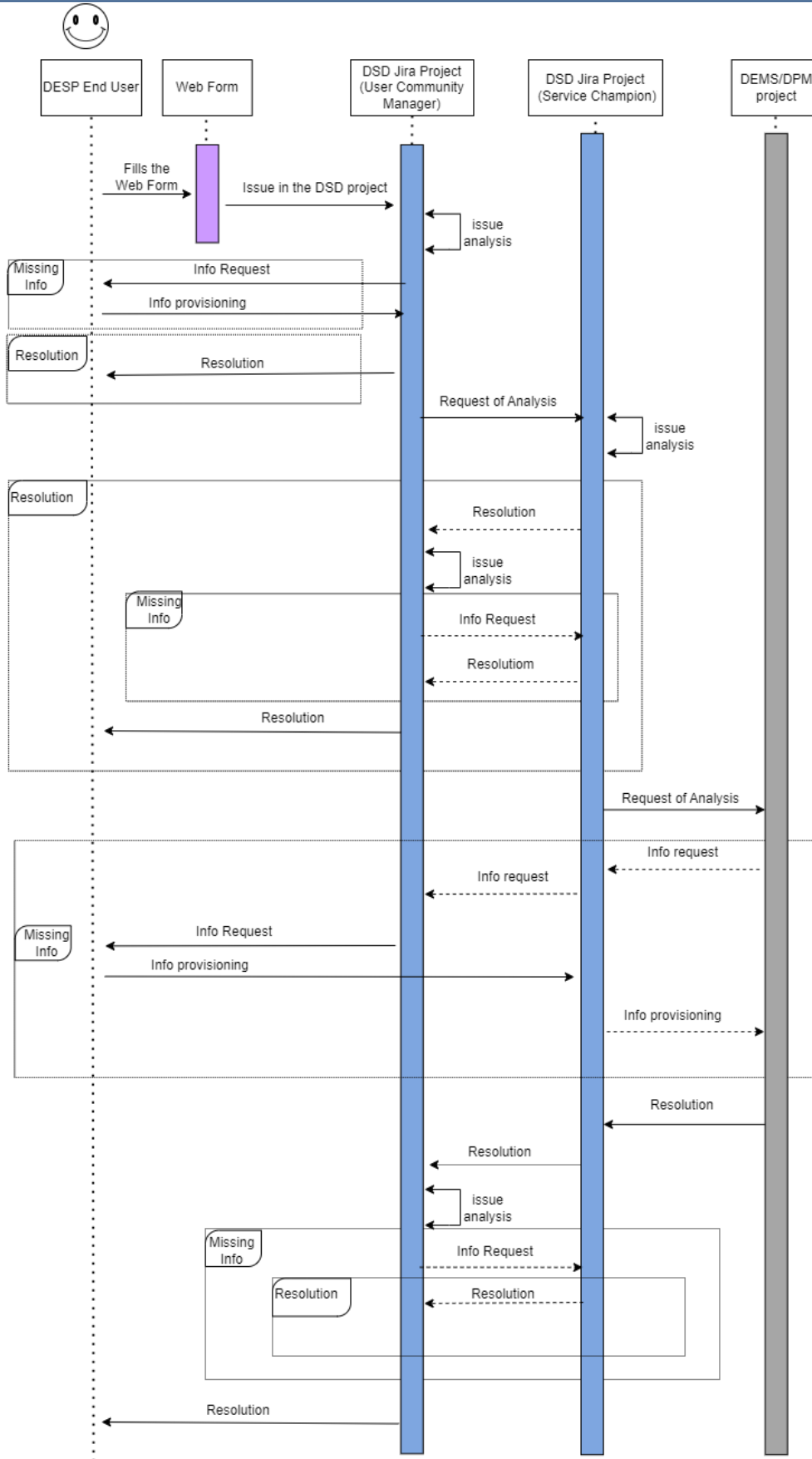


Figure 2 Core Services issues by End Users – Sequence Diagram

4.1.2 External Services issues

Issues raised to the DESP stakeholders may subsequently be allocated and cascaded down to the affected/integrated systems (Onboarded Services and DEDL Service).

As a result, anomalies that necessitate assistance from these entities will be assigned to them within the Service Provider Jira project (e.g., EUMETSAT and ECMWF) for resolution, following the procedures outlined in the table below.

Project	Step	Description	Final status of the step
DSD - DSP	1	<p>The User Community Manager sees the issue in "RECEIVED" status within the Service Desk Jira project. She/He clones it in the DSP project and assigns it to the proper Service Provider, according to the service impacted, and sets the status as "TO DO". The User Community Manager sets also the priority field according to the values listed in 3.3 section and according to the User indication provided in the "Relevance" field.</p> <p>In the DSD Jira Project the status is upgraded as well and put in "DELEGATED".</p>	<p>DSP: TO DO</p> <p>DSD: Delegated</p>
DSD - DSP	2	<p>The involved Service Provider of the impacted service is automatically notified when an issue is assigned to him within the DSP Jira Project.</p> <p>The User Community manager is notified as well at any update of the issue within DSP project.</p> <p>When the Service Provider starts the analysis of the issue she/he upgrades the status in "IN PROGRESS"⁶.</p>	<p>DSP: In Progress</p> <p>DSD: Delegated</p>
DSP	3	<p>If some information is missing to continue the analysis the Service Provider</p>	<p>DSP: In Progress</p>

⁶ Please note that the management of the issue within the Service Provider's own issue tracking system is out of scope of this documents. However, the priority to manage the ticket in the Service provider internal issue tracking system should reflect at least the one in the DSP project, or can be increased. Priority can be changed during the analysis, according to the results of the analysis.

		asks for it in the DSP Project and assigns the issue to the User Community manager	
DSD	4	The User community Manager asks the user for the requested information in the DSD Jira project and puts the issue in " ON-GOING " status	DSD: ON GOING
DSD - DSP	5	When the information is provided by the User, the User Community Manager upgrades the status to " DELEGATED " again and forwards the information in the DSP Project assigning again the issue to the proper Service Provider	DSP: In Progress DSD: DELEGATED
DSP	8	When the Service Provider solves the issue, he/she puts in the issue an explanation of the identified problem and put the issue in " DONE " status.	DSP: DONE
DSD	9	The User Community Manager see the resolution provided in the DSP Project, if some information is missing replies in the issue and put again the issue in " TO DO " to let the proper resolution entity (the assignee of the issue) to reply.	DSP: TO DO
	10	If the solution provided by the resolution entity in the DSP project is satisfying, the User Community Manager replies to the User in the DSD project, setting the status in " DONE ".	DSD: DONE
DSD - DSP	11	If the user informs that the resolution is not working and the problem is still present, the flow restarts from step 2.	DSP: TO DO DSD: Delegated
DSD - DSP	12	When the user confirms that the issue is solved, or of no feedback is received within 2 weeks, the User Community Manager can put the issue in " CLOSED " status within Service Desk project.	DSP: CLOSED DSD: CLOSED

Please note that if during the investigation it is spotted that the issue involves multiple services, the user Community Manager is in charge of:

- Creating a new issue in the DSP for each involved services and assign it to the proper resolution entity (involved Service provider), so that the flow proceeds as identified in the table above.
- Link all the new issues with the original one within the DSP project.

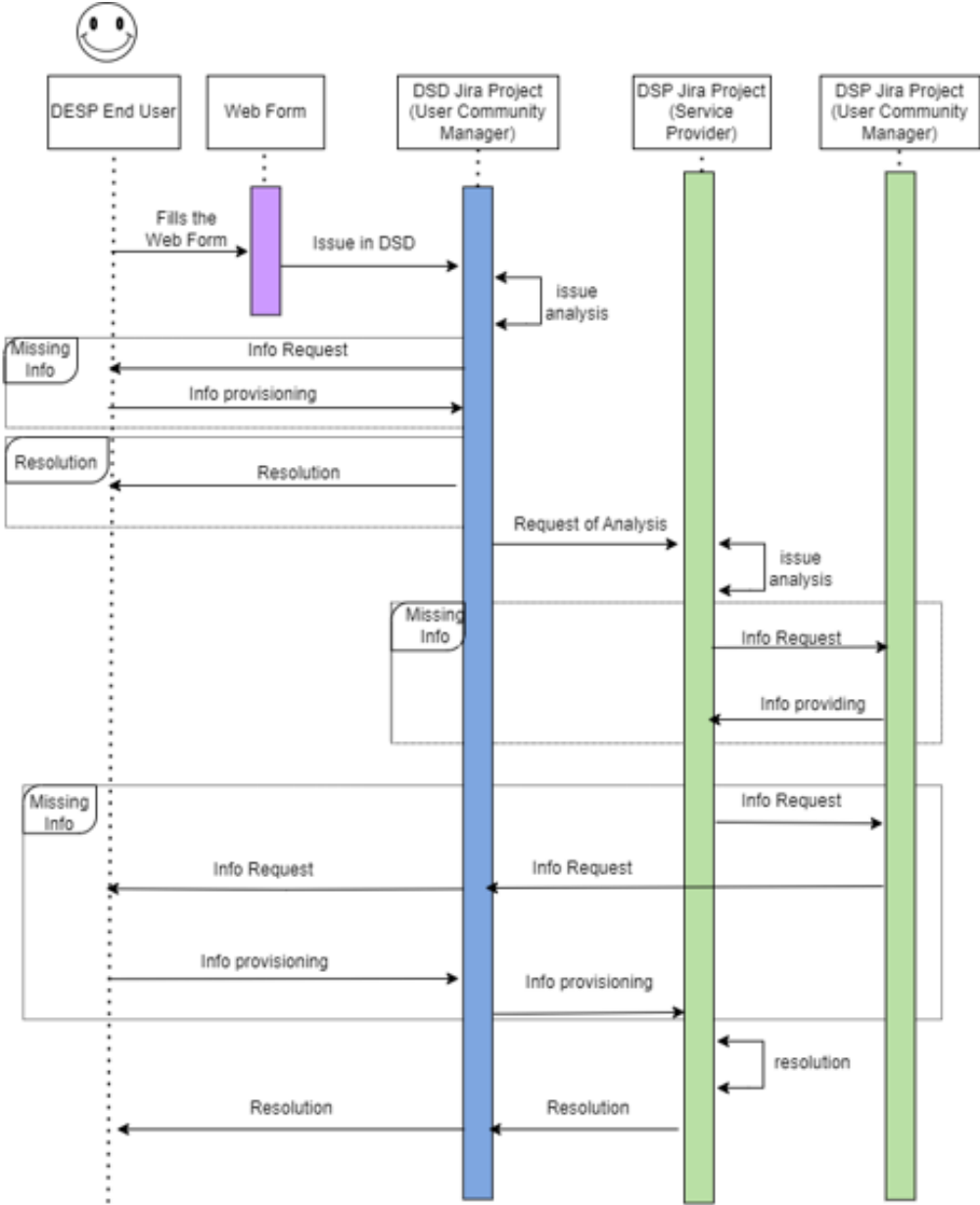


Figure 3 Onboarded Services and DEDL issues by End Users – Sequence Diagram

4.2 Service Providers issue management

The following table reports the steps that a Service Provider has to follow to open an issue towards another Service Provider of the platform also including the DESP core services.

Jira Project	Step	Description
DSP	1	The Service Provider access to the Service Provider Jira Project and clicks to open a ticket
	2	<p>The Service Provider fills the proper Jira fields according to 3.3 section and assigns the issue to the User Community Manager, that is notified at any update of the issue within the project.</p> <p>In the issue the Service Provider has to specify if the support request impact another service or it is a question of integration by the "Interface" field.</p> <p>The issue is created with status "OPEN"</p>
	3	The issue is automatically updated and put in " RECEIVED " status and a first feedback is sent to the reported of the issue confirming that the issue has been taken on board.
	4	If the User Community Manager is able to provide an answer, responds in the issue and puts the status in " DONE ". She/He sets also the priority of the issue according to the ones reported in 3.3 section and according to the "Relevance" field set by the reporter of the issue.
	5	Otherwise, the User Community Manager assigns the issue to the proper resolution entity (Service Provider involved or DESP Consortium for problems concerning the integration on the DESP platform). The User Community Manager upgrades also the status, putting it as " TO DO ". If in the DSP Project is already present another similar issue, the User Community manager will link it.
	6	If the User Community Manager or the resolution entity need further information to continue the investigation, they ask by commenting the issue and sets it in " ON GOING " status.
	7	After having received the information, the issue is put again in " TO DO " status by the assignee of the issue.
	8	<p>When the resolution entity, starts the analysis, she/he sets the issue in "IN PROGRESS" status.</p> <p>She/He sets also the field "Original estimated" providing an estimation of the resolution time.</p>

		If during the analysis additional information it needed, it is asked by the assignee to the reporter and step 6 is repeated. After having received the information the issue is put again in " IN PROGRESS " status
	9	If during the analysis of the issue the resolution entity reports the need of a fix or a mitigation action and the impacted Service is a CORE service, The User Community Manager clones the issue in the internal DEMS project as per Annex 1
	10	If during the analysis of the issue the assignee of the issue detects an operational problem and the impacted Service is a CORE service, The User Community Manager clones the issue in the internal DPM project as per Annex 1
	11	When the issue is solved, the resolution entity puts the issue in " DONE " status and provides the explanation via comment. If during the analysis it is found out that multiple services are involved, the delegated resolution entity specifies in the comment the other actors involved.
	12	When the issue is solved and in DONE status, if the reporter confirms that the issue is solved, or of no feedback is received within 2 weeks, the User Community Manager can put the issue in " CLOSED " status, otherwise the flow restart from step 5.

Please note that if during the investigation it is spotted that the issue involves multiple services, the user Community manger is in charge of:

- Creating a new issue in the DSP for each involved services and assign it to the proper resolution entity (involved Service provider), so that the flow proceeds as identified in the table above.
- Linking all the new issues with the original one within the DSP project.

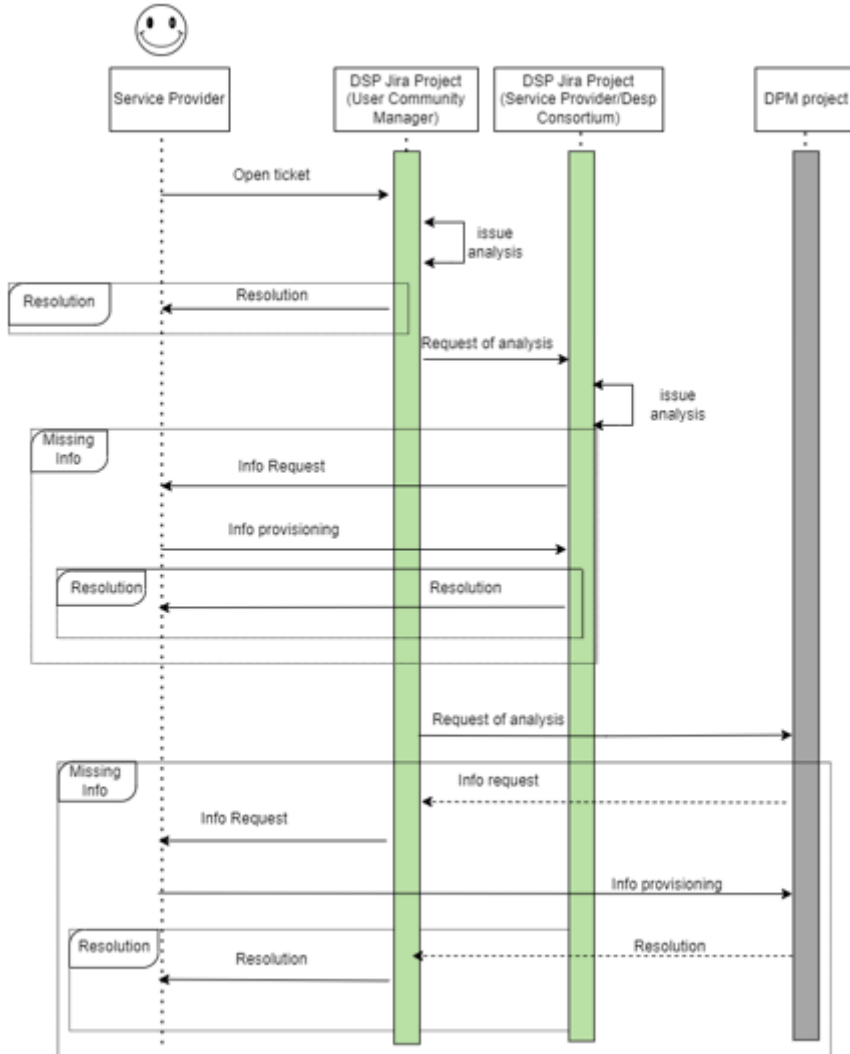


Figure 4 Issues detected by Service Providers – Sequence Diagram

4.3 Issue workflow summary

In This section are outlined the status allowed for each Jira project described in the previous section, with the relevant workflow.

4.3.1.1 DSD Jira Project

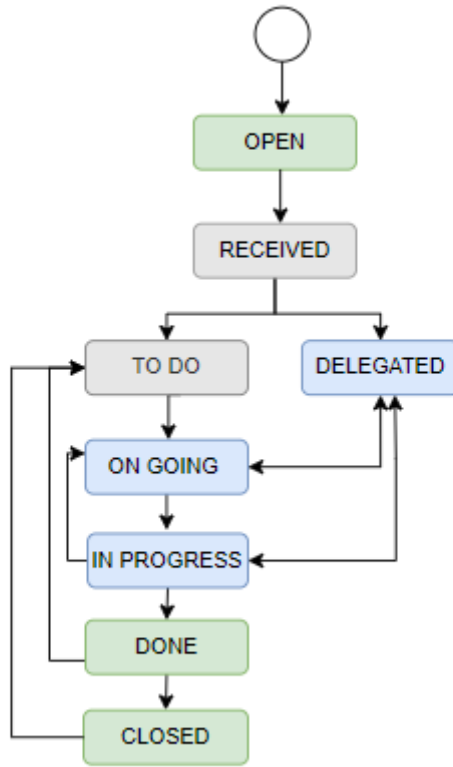


Figure 5 Status flow within DSD Jira project

4.3.1.2 DSP Jira Project

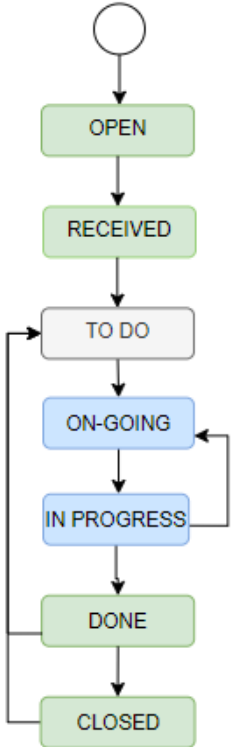


Figure 6 Status flow within DSP Jira project

4.3.1.3 DEMS/DPM Jira Project

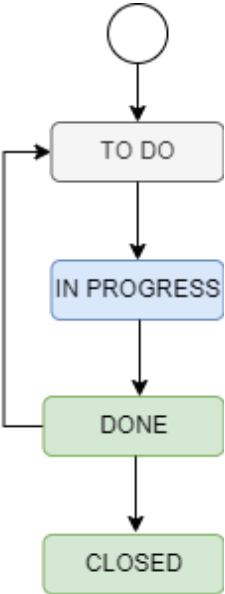


Figure 7 Status flow within DEMS and DPM Jira projects

4.4 User Satisfaction

When a ticket is put in **"CLOSED"** status within the DSD and within the DSP Jira Projects, an automatic email will be sent by Jira to the Reporter of the issue asking to rate the received support.

The following email will be received by the user:

Hi [Reporter Name],

We'd love to hear you experience about our Support Service. Please assign us a score from 1 to 5.

In the email a link to go to the issue will be provided and clicking on it the user will be redirected to the involved Jira issue. In the issue the "Action" field is present and clicking on it the use can assign the score.

The information will be stored within Jira and a dashboard is generated in Jira to view results and metrics.

In addition to this a dedicated dashboard of Jira will show:

- The number of issues solved in the month per each score received;
- the monthly average of the score received;
- number of issues closed w.r.t the one received from the start of the project and for each month.

Annex 1. DEMS and DPM Jira Project

This section is dedicated to the description of “internal” Jira Projects that the Service team uses to define the workflow to manage anomalies affecting the software functionality or the operational activities and standard.⁷

Two dedicated Jira projects have been put in place at this scope, DEMS and DPM, respectively.

In the DEMS and DPM project the reporter of the issue can be:

- Service Champion that has an issue assigned in the DSD Jira Project
- User community manager that sees an issue in the DSP Jira Project, recognizes that it has impacts at software or operational level and can require fix or mitigation actions.

The workflow is the same for both the projects and here below the steps to follow are defined.

Jira Project	Steps	Description
DEMS/DPM	1	The Service Champion or the User Community Manager sees an issue assigned to them that impacts software/operations and clones it into the DEMS/DPM Jira Project putting it in “ TO DO ” status, setting the priority of the issue as per 3.4.1 and assigning the issue to the proper delegated entity (Service Provider in the case of issue impacting the software, Operations Manager in the case of operational issue) <i>[Please note that the priority in the DEMS and DPM project should usually reflect at least the one in the project which the issue is originated from, i.e. DSD and DSP projects. Priority can be changed during the analysis, according to the results.]</i>
	3	When the Service Provider/ Operations Manager starts the analysis puts the issue in “ IN PROGRESS ” status within the DEMS/DPM project.
	4	If the Service Provider/ Operations Manager needs further information, asks for them in the DEMS/DPM project. The reporter of the issue answers or reports the request in the original Jira project which the issue come from. In particular: <ul style="list-style-type: none"> • If the original issue comes from DSD project the requested information is reported there from Service Champion via internal note and the User Community Manager will forward to the user via standard comment.

⁷ Please note that the issues flow described here can be updated or modified once the DPM project will be set up and detailed processes for that project defined [RD-10]. For details concerning Change Request and relevant interfacing between DEMS/DPM and DC Jira project please refer to [RD-6]

		<p>Once information is provided, the Service Champion will report in DEMS/DPM</p> <ul style="list-style-type: none"> • If the original issue comes from DSP project, the User Community Manager will ask for the requested information <p>Once information is provided, the User Community Manager will report in DEMS/DPM</p>
	7	When the issue is solved, it is put in " DONE " status by the Service Provider/Operations Manager
		The reporter of the issue in DEMS/DPM (i.e. Service Champion or User Community Manager) reviews the answer and if it contains all the information needed and the resolution is satisfying, he/she reports the resolution in the original Jira project from which the issue was coming from.
	8	According to the flow identified in section 4.1 and 4.2, if some information is missing, the flow restart from step 1
	10	If the user confirms that the issue is solved, or if no feedback is received within 2 weeks, the User Community Manager can put the issue in " CLOSED " status within Service Desk project and in the DEMS/DPM project as well

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