D4.5 Periodical assessment of Platform services 

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| **Deliverable Abstract** |
| The report provides assessment and statistics of all the Platform services provided under virtual access in WP4. |

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**TERMINOLOGY**

<https://confluence.egi.eu/display/EGIG>

|  |  |
| --- | --- |
| Terminology/Acronym | Definition |
| VA | Virtual Access |
| EOSC | European Open Science Cloud |
| PaaS | Platform as a Service |

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Executive summary

This report provides an assessment at M30, the end of the EGI-ACE project, of the WP4 installations provided by the project under the Virtual Access (VA) mechanism. These installations represent the Platform-as-a-Service (PaaS) layer in the project service catalogue. This assessment is based on the metrics collected by the five WP4 installations during the project duration in six rounds of 6 months each: M01-M05, M06-M10, M11-M15, M15-M20, M20-M25, M25-M30.

WP4 activity extended the EOSC Compute Platform with new installations previously not available in the EGI portfolio: CSIC DEEP training facility, LIP DEEP training facility (2 installations supporting the same service) and DODAS. The EGI Notebooks and Workload Manager services in the EGI portfolio were supported by the EGI Notebooks and EGI DIRAC installations respectively. A new service spawned from the Notebooks installation: EGI Replay, offering an environment for reproducing and sharing research. All the installations have gone through operations and maintenance tasks and installation of release upgrades following requirements from user communities. All installations are on-boarded in the EOSC Marketplace and have been progressively integrated with the EGI central services.

WP4 services have been used by 22 user communities. These 22 user communities represent 1,011 individual users in total. The user communities in EGI-ACE are mapped into Virtual Organisations (VOs) and normally named following a domain-like schema (e.g. vo.reliance-project.eu supports the Reliance Project user community). For DODAS, DIRAC and DEEP the users are ‘expert users’ from the scientific communities and interact with these technical platform services to develop/deploy and operate community specific platforms, Thematic services on top of them. Users of the Notebooks service are typically ’data scientists’ who want to parse, process, visualise data in an interactive way. In particular:

* EGI Notebooks have been used by 273 users (22% growth over the previous 15 months) belonging to the vo.notebook.egi.eu and the vo.access.egi.eu communities, open to individual users, and to nine discipline/project specific communities: auger, biomed, CESSDA, C-SCALE, eiscat\_3d, Disaster mitigation and agriculture, Lethe, PaNOSC, and vo.reliance-project.eu. EGI Notebooks outperformed the expected number of new users (150 at the end of the project) as it has become a popular entry point for getting access to the EGI infrastructure.
* EGI DIRAC has been used by 20 different communities (7% growth over baseline in previous 15 months), with 4 new communities incorporated during the project. DIRAC has supported 747 users belonging to these communities (10% over previous period). The target number of communities for DIRAC over the project period went slightly over the expectations thanks to the interest of communities incorporated during the project.
* The CSIC/LIP DEEP training facility has received usage from seven use cases from communities (a 700% growth over the previous period). The usage of the service was low until M15, and thanks to several dissemination activities it reached the target number of use cases for the project).
* DODAS usage has remained stable with one community: fermi-lat.infn.it with an increase of the number of users from 3 to 4. Although the number of users increased, DODAS was not able to meet the target of 100 deployments (reached 51 deployments) due to the lack of additional communities interested in the service.

During the M15-M30, the promotion of the installation has continued with dedicated presentations at different workshops and conferences, including the EGI Conference 2023 which featured a full day devoted to EGI-ACE with presentations, demos, tutorials and panel discussions.

Section 4 finally describes the level of satisfaction by checking the orders received via the EOSC portal and the EGI Customer satisfaction reviews, which showed an average level of 5 out of 5 during the reference period.

# Introduction

Virtual Access (VA) is financial instruments to reimburse the access provisioning costs to access providers. This instrument is provided by the European Commission to increase the sharing of research infrastructures and services that otherwise would not be available to international user groups.

In VA, the services – also called “installations” – must be made available ‘free of charge at the point of use’ for European or International researchers. VA access is open and free access to services through communication networks to resources needed for research, without selecting the researchers to whom access is provided.

Virtual Access to services of the EGI-ACE catalogue applies to the following four categories:

1. Infrastructure Services WP3 - the Cloud Compute (IaaS) and High Throughput Compute services of the EGI portfolio supported by a set of 16 datacentres from the EGI Federation. The enabling components that support the Cloud Compute service: AppDB, for resource discovery and software catalogue; Dynamic DNS, for user-managed DNS provision of domain names for VMs and services running on the e-Infrastructure; and Infrastructure Manager (IM) for the basic orchestration of IaaS resources.
2. Platform Services WP4 - mature software tools offering generic capabilities to facilitate the usage of the underlying infrastructure for EOSC users and Data Spaces.
3. Federated data spaces WP5 - services provided by major European research collaborations, research infrastructures and research institutes, and are composed of mature software tools, datasets and services that offer science discipline specific processing and data analysis capabilities for EOSC users.
4. Federated Access Services WP6 – services providing secure access to other services and enabling large-data analysis workloads in the distributed infrastructure. Included services are delivered by major European research institutions using mature open-source software with already established user communities from multiple scientific disciplines.

This document provides Virtual Access metrics and assessment for WP4.

## Installations

There are 5 service installations under VA in EGI-ACE WP4. The following of these 5 installation have been subject to change since the beginning of the project:

* DODAS target metrics were updated to consider the new operational model of the installation: In order to provide a higher level of flexibility, DODAS enabled the possibility to update the number of components and their configuration supporting a given use case from the upper layers of the service architecture (the one closest to users). This, in turn allows for the dynamic adjustment of the computing and storage resources managed by DODAS without re-deployment, when in the past any modification would imply a recreation of the cluster. With the current model, when a user community decides to add features to an existing deployment, e.g. deploy a cache close to a on-demand batch, it does not need anymore to re-deploy everything from scratch but it can compose the system on the existing deployment. As such the expected number of deployments has been reduced from 900 to 100. These changes are now formalised in a project amendment.
* WP4 services have been integrated with the EGI-ACE Key Exploitable Result 2 (Services enabling federated computing in EOSC): Table 1 summarises the integration of the WP4 services with KER2. EGI Notebooks and EGI - DIRAC installations were part of the EGI portfolio as the Notebooks and EGI Workload Manager services respectively and as such were already integrated with most of the EGI core services. During this period, Notebooks completed the integration with accounting and piloted the integration with EOSC accounting system. Check-in integration for the Workload Manager depends on the transition from X.509 certificates to token-based authentication in the EGI High Throughput Computing service, which is a still ongoing activity and has prevented the completion of the activity. DODAS have progressively completed the technical integration during the course of the project. With the start of the AI4EOSC project, DEEP are being re-implemented with a more modern technology thus the integration effort stopped in EGI-ACE and has shifted to other development projects that will achieve complete integration of the newer AI4EOSC project toolset and EGI.

Table 1: WP4 integration matrix with EGI core services

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Installation** | **Check-in** | **Helpdesk** | **Monitoring** | **GOCDB** | **Accounting** |
| **EGI Notebooks** | pre EGI-ACE | pre EGI-ACE | pre EGI-ACE | pre EGI-ACE | DONE |
| **EGI - DIRAC** | Not completed | pre EGI-ACE | pre EGI-ACE | pre EGI-ACE | n/a |
| **CSIC DEEP training facility** | DONE | Not completed | Not Completed | DONE | n/a |
| **LIP DEEP training facility** | DONE | Not completed | Not Completed | DONE | n/a |
| **DODAS** | DONE | DONE | DONE | DONE | n/a |

## Communities

Table 2 summarises the usage of the WP4 installation by the EGI communities (both existing and new communities).

Table 2: Communities integration matrix with EGI-ACE WP4 installations.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| ***Community type[[1]](#footnote-1)*** | ***Community*** | EGI Notebooks | EGI - DIRAC | CSIC DEEP training facility | LIP DEEP training facility | DODAS |
| WP2 | EISCAT\_3D | X | X |  |  |  |
|  | auger | X | X |  |  |  |
| WP5 | VIP | X | X |  |  |  |
|  | WeNMR |  | X |  |  |  |
|  | LOFAR |  | X |  |  |  |
|  | Disaster mitigation and agriculture |  |  |  |  |  |
|  | UseGalaxy.eu |  | X |  |  |  |
|  | OpenCoast |  | X |  |  |  |
| LToS | vo.access.egi.eu | X |  |  |  |  |
|  | vo.notebooks.egi.eu | X | X |  |  |  |
|  | fedcloud.egi.eu |  | X |  |  |  |
|  | training.egi.eu |  | X |  |  |  |
| Open Call | vo.reliance-project.eu | X |  |  |  |  |
|  | EMPHASIS |  |  | X |  |  |
|  | FERMI-LAT |  |  |  |  | X |
|  | CESSDA | X |  |  |  |  |
|  | C-SCALE | X |  |  |  |  |
|  | Lethe Project | X |  |  |  |  |
|  | PaNOSC | X |  |  |  |  |
| Existing | km3net.org |  | X |  |  |  |
|  | lsst |  | X |  |  |  |
|  | virgo |  | X |  |  |  |
|  | vo.grand-est.fr |  | X |  |  |  |
|  | vo.hess-experiment.eu |  | X |  |  |  |
|  | vo.sbg.in2p3.fr |  | X |  |  |  |
|  | vo.france-grilles.fr |  | X |  |  |  |
|  | beapps |  | X |  |  |  |
|  | vo.complex-systems.eu |  | X |  |  |  |

## Metrics definition

For each installation several metrics has been defined between the provider and WP4 leader, taking into account following categories:

* **Number of users** – depending on the nature of installation, number could be defined based on accounts (if registration was required) or number of unique IPs (if registration is not needed to benefit of the service)
* **Usage** – the goal of this metric is to report how much the service is used. This metric depended on functionality provided by the service.
* **Number and names of the countries reached** – the goal of this metric was to report how broadly the service is used and how the geographical coverage is changing with time.
* **Marketplace orders** – the goal of this metrics is to provide information about how often the service is being ordered via EOSC Marketplace
  + This metric is not applicable to federation services due to the nature of the service. Federation services are enabling federation and are supporting delivery of customer facing services. Thus, cannot be ordered.

# Installations

## EGI Notebooks

|  |  |
| --- | --- |
| **Description** | Notebooks is a browser-based tool for interactive analysis of data using EGI storage and compute services. Notebooks is based on the JupyterHub technology. |
| **Task** | 4.1 |
| **URL** |  |
| **Service Category** | Platform Service |
| **Service Catalogue** | <https://www.egi.eu/services/notebooks/> |
| **Location** | Czech Republic |
| **Duration** | M1-M30 |
| **Modality of access** | All the elements of the service are free at the point of use. Valid EGI user registered in Check-in is needed. There are 2 modes: notebooks for researchers available for users upon registration, and notebooks for communities with access controlled via the marketplace. |
| **Support offered** | Technical support is provided via the helpdesk central support team, and by the individual service providers. EGI Outreach activities also include webinars, training, and hands-on sessions during conferences and events. |
| **Operational since** | Nov 2019 |
| **User definition** | single researchers and communities |

### Metrics

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Metric name** | **Baseline** | **Define how measurement is done** | **Period 1 M1-M5** | **Period 2 M6-M10** | **Period 3 M11-M15** | **Period 4 M16-M20** | **Period 5 M21-M25** | **Period 6 M26-M30** |
| No of users accessing | 90 | Internal service database | 73 | 86 | 117 | 95 | 95 | 147 |
| No of notebook sessions/month | 100 | Internal logs | 66 | 104 | 106 | 104 | 154 | 236 |
| No of countries reach | 19 | Check-in | 21 | 31 | 29 | 32 | 25 | 55 |
| Names of countries reach | UK, FR, ES, BE, NO, HR, NL, HU, SE, DE, PL, ZA, TW, AT, CH, IT, GR, TR, US | Check-in | Algeria,Croatia,Czechia,Denmark,Estonia,Finland,France,Germany,Greece,Indonesia,Italy,Netherlands,North Macedonia,Poland,Singapore,Slovakia,Spain,Sweden,Switzerland,United Kingdom,United State | Algeria, Austria, Belgium, Brazil, Canada, China, Croatia, Cyprus, Czechia, Finland, France, Germany, Greece, Hungary, Indonesia, Ireland, Italy, Japan, Netherlands, Norway, Poland, Portugal, Romania, Spain, Sweden, Switzerland, Turkey, United Arab Emirates, United Kingdom, United States, Vietnam | Austria, Belgium, China, Croatia, Czechia, Denmark, DR Congo, Egypt, France, Germany, Greece, Hungary, India, Indonesia, Italy, Netherlands, Norway, Poland, Portugal, Russia, Singapore, Spain, Sri Lanka, Sweden, Tunisia, Turkey, United Kingdom, United States, Vietnam | Algeria, Austria, Bangladesh, Belgium, Canada, Chile, China, Czechia, Finland, France, Germany, Greece, Hungary, India, Indonesia, Ireland, Italy, Latvia, Mexico, Morocco, Netherlands, Norway, Poland, Russia, Singapore, Somalia, Spain, Sweden, Switzerland, Turkey, United, Kingdom, United, States | Austria, Bangladesh, Belgium, China, Czechia, Denmark, Ecuador, Finland, France, Germany, Greece, Hungary, India, Italy, Lithuania, Netherlands, Norway, Poland, Spain, Sweden, Switzerland, Turkey, Ukraine, United Kingdom, United States | Algeria, Australia, Austria, Bangladesh, Belgium, Brazil, Bulgaria, Canada, Chile, China, Croatia, Cyprus, Czechia, Denmark, DR, Congo, Ecuador, Egypt, Estonia, Finland, France, Germany, Greece, Hungary, India, Indonesia, Ireland, Italy, Japan, Latvia, Lithuania, Mexico, Morocco, Netherlands, North, Macedonia, Norway, Poland, Portugal, Romania, Russia, Serbia, Singapore, Slovakia, Somalia, Spain, Sri, Lanka, Sweden, Switzerland, Taiwan, Tunisia, Turkey, Ukraine, United, Arab, Emirates, United, Kingdom, United, States, Vietnam |

### Assessment

The EGI Notebooks service, hosted at CESNET (CZ), slightly decreased the number of users accessing during M16-M25, keeping the number of session and countries increased in all periods. Number of users increased again during the last period M26-M30. Overall there is a 22% growth in the number of users since the previous reporting period and has seen an increase of usage from 104 monthly sessions to more than 230 monthly sessions. This installation serves mostly individual users that belong to the vo.access.egi.eu and vo.notebooks.egi.eu Virtual Organization (VO)s. Additional VOs have been enabled to access the service: biomed, auger, eiscat\_3d and vo.reliance-project.eu, with five additional ones configured during the M16-M30 period: CESSDA, C-SCALE, Disaster mitigation and agriculture, Lethe, and PaNOSC.

Alongside the existing Notebooks, a new service named EGI Replay[[2]](#footnote-2) was introduced in the EGI portfolio and onboarded in the EOSC portal. Replay is based on the BinderHub technology and allows for replicating previous research with reproducible environments.

The Notebooks service was already onboarded in the EOSC Portal[[3]](#footnote-3) at the start of the project. During 2021, the installation was migrated from INFN-CATANIA provider to CESNET with new hardware and updated underlying kubernetes. The service improved its integration with EGI Check-in for better control of the authorised users including profiles enabling access to dedicated hardware and software options. The default RAM and CPU availability was increased from 1GB RAM/1 core to 6 GB RAM/2 cores and a wider range of development environments was added for all users: MATLAB, RStudio, Julia and an extensive collection of libraries for data analytics and Machine Learning. The service was integrated with the EGI DataHub and EUDAT’s B2DROP to offer users seamless access to data. The Software Distribution service was also integrated with Notebooks to facilitate access to a wide range of software libraries.

The Notebooks service also started a pilot to push accounting information towards the EOSC accounting system, which successfully sent records periodically using the available APIs.

## EGI – DIRAC

|  |  |
| --- | --- |
| **Description** | EGI Workload Manager |
| **Task** | 4.2 |
| **URL** |  |
| **Service Category** | Platform Service |
| **Service Catalogue** | <https://www.egi.eu/services/workload-manager/> |
| **Location** | CC-IN2P3/Lyon |
| **Duration** | M1-M30 |
| **Modality of access** | Access for registered EGI users |
| **Support offered** | Full user support including documentation and training. Support is offered via the EGI Helpdesk. |
| **Operational since** | 2014 |
| **User definition** | All sizes user communities from large HEP communities to multidisciplinary and long tail communities. |

### Metrics

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Metric name** | **Baseline** | **Define how measurement is done** | **Period 1 M1-M5** | **Period 2 M6-M10** | **Period 3 M11-M15** | **Period 4 M16-M20** | **Period 5 M21-M25** | **Period 6 M26-M30** |
| No of groups or experiments | 17 | Internal provider configuration | 16 | 16 | 18 | 18 | 18 | 20 |
| No of registered users | 500 | Internal provider database/logs | 737 | 740 | 735 | 742 | 746 | 747 |
| No of execute jobs | 10,000,000 | Accounting | 4,000,000 | 5,000,000 | 4,500,000 | 5,630,000 | 6,082,000 | 6,280,000 |
| No of countries where jobs executed | 12 | Accounting | 12 | 12 | 12 | 12 | 12 | 14 |
| Name of countries where jobs executed | NL, IT, PL, DE, US, BE, FR, CN, PT, ES, SK, UK, GR | Accounting | NL,FR,BE,DE,IT,PT,ES,US,PL,CZ,RO,UK | NL,FR,BE,DE,IT,PT,ES,US,PL,CZ,RO,UK | NL,FR,BE,DE,IT,PT,ES,US,PL,CZ,RO,UK | NL,FR,BE,DE,IT,PT,ES,US,PL,CZ,RO,UK | NL,FR,BE,DE,IT,PT,ES,US,PL,CZ,RO,UK | NL,FR,BE,DE,IT,PT,ES,US,PL,CZ,RO,UK,RU,CN |

### Assessment

The EGI - DIRAC installation supports the EGI Workload Manager service to manage and distribute computing tasks in an efficient way in the distributed EGI infrastructure. During EGI-ACE, the service was consolidated into a single provider (CC-IN2P3) that took over the responsibility of operating the service for the project, involving DIRAC experts and developers in the support and maintenance of the service. The service is published in the EOSC Marketplace[[4]](#footnote-4).

During the last period, the installation has increased the number of groups of experiments supported up to 20 (33% increase over the previous project), starting from 16 communities as baseline. The Virtual Organisations supported at M30 are: acc-comp.egi.eu, dteam, auger, biomed, fedcloud.egi.eu, enmr.eu, lofar, km3net.org, lsst, opencoast.eosc-hub.eu, training.egi.eu, virgo, eiscat.se, vo.access.egi.eu, vo.grand-est.fr, vo.hess-experiment.eu, beapps, vo.usegalaxy.eu, virgo, vo.grand-est.fr, vo.sbg.in2p3.fr, vo.france-grilles.fr and vo.complex-systems.eu. These VOs support a total number of 747 users (118% over baseline) from 14 different countries (+2 increase since last period) who executed a total of 31.4 Million jobs (133% increase over last period)

The service has started its integration with the EGI Check-in for Authentication and Authorization of users and it is already capable of using Check-in in the web portal interface. The integration will be completed as the underlying compute resources of the EGI High Throughput Compute service transitions from X.509 certificates to token based authentication supported by Check-in. DIRAC is actively participating in the transition campaign for this service.

The service has been presented in several workshops and a webinar will be planned for the upcoming period to further promote the installation and engage with new communities.

## CSIC DEEP training facility

|  |  |
| --- | --- |
| **Description** | Distributed training facility for Machine Learning, Artificial Intelligence and Deep Learning models hosted at CSIC. This service offers a set of tools to build and train Machine Learning, Artificial Intelligence and Deep Learning models in distributed e- Infrastructures. Ready to use models are available for transfer learning or reuse. |
| **Task** | 4.3 |
| **URL** |  |
| **Service Category** | Platform Service |
| **Service Catalogue** |  |
| **Location** | CSIC, ES |
| **Duration** | M1-M30 |
| **Modality of access** | Free at point-of-use. Additional terms: <https://confluence.deep-hybrid-datacloud.eu/display/DS/Terms+of+Use> |
| **Support offered** | Support is offered via the EGI Helpdesk. Detailed documentation about service, APIs, user guides, tutorials, etc. available. |
| **Operational since** | Jan 2018 |
| **User definition** | Single researchers, small and big communities |

### Metrics

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Metric name** | **Baseline** | **Define how measurement is done** | **Period 1 M1-M5** | **Period 2 M6-M10** | **Period 3 M11-M15** | **Period 4 M16-M20** | **Period 5 M21-M25** | **Period 6 M26-M30** |
| No of users communities | 17 | Internal provider configuration | 0 | 0 | 1 | 4 |  | 7 |
| ML training cycles in CPU/GPU hours | 350,000 | Accounting | 0 | 0 | 4,128 | 97,420 |  | 3,638,292 |
| No of countries reach | 6 | Check-in | 0 | 0 | 1 | 3 |  | 3 |
| Names of countries reach | US, SP, PT, DE, FR, UK | Check-in | N/A | 0 | France | FR, USA, ES, IT, EU-wide |  | FR, USA, ES, IT, EU-wide |

### Assessment

The CSIC DEEP training facility is a new service added to the EGI ecosystem as part of EGI-ACE. During the initial months of the project, it has integrated with EGI Check-in and EGI Configuration Database (GOCDB). Further integration into EGI was not pursued as the service is transitioning into the EOSC4AI platform[[5]](#footnote-5) and will be decommissioned in the future. This installation is registered in the EOSC Marketplace within a single entry[[6]](#footnote-6) that also covers installation described in section 2.4.

The service was promoted in a dedicated webinar (see section 3 - Dissemination), triggering the interest from the EMPHASIS community from the 4th Open Call for use cases of the project. This community has consumed 4,128 CPU/GPU hours over M11 to M15 with users coming from France. Thanks to the dissemination effort from the provider, at the end of the project, the service onboarded a total of 7 user communities, matching the target for the project. These communities consumed more than 3 million CPU/GPU hours on the infrastructure supported by the WP3 installations

## LIP DEEP training facility

|  |  |
| --- | --- |
| **Description** | Distributed training facility for Machine Learning, Artificial Intelligence and Deep Learning models hosted at LIP. This service offers a set of tools to build and train Machine Learning, Artificial Intelligence and Deep Learning models in distributed e- Infrastructures. Ready to use models are available for transfer learning or reuse. |
| **Task** | 4.3 |
| **URL** |  |
| **Service Category** | Platform Service |
| **Service Catalogue** |  |
| **Location** | LIP, PT |
| **Duration** | M1-M30 |
| **Modality of access** | Free at point-of-use. Additional terms: <https://confluence.deep-hybrid-datacloud.eu/display/DS/Terms+of+Use> |
| **Support offered** | Support is offered via the EGI Helpdesk. Detailed documentation about service, APIs, user guides, tutorials, etc. available. |
| **Operational since** | Jan 2018 |
| **User definition** | Single researchers, small and big communities |

### Metrics

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Metric name** | **Baseline** | **Define how measurement is done** | **Period 1 M1-M5** | **Period 2 M6-M10** | **Period 3 M11-M15** | **Period 4 M16-M20** | **Period 5 M21-M25** | **Period 6 M26-M30** |
| No of users communities | 17 | Internal provider configuration | 0 | 0 | 0 | 0 | 0 | 0 |
| ML training cycles in CPU/GPU hours | 290,000 | TBD | 0 | 0 | 0 | 0 | 0 | 0 |
| No of countries reach | 6 | Check-in | 0 | 0 | 0 | 0 | 0 | 0 |
| Names of countries reach | US, SP, PT, DE, FR, UK | Check-in | - | - | - | - | - | - |

### Assessment

The LIP DEEP training facility complements the CSIC DEEP training facility by supporting the storage associated with the use cases supported by the DEEP service, as such the metrics are reported in the previous installation (section 2.3.1). Technical integration is identical and the installation is part of the same entry in the EOSC Marketplace.

## DODAS

|  |  |
| --- | --- |
| **Description** | DODAS allows to instantiate on-demand complex infrastructures over any cloud with almost zero effort and with very limited knowledge of the underlying technical details. In particular, DODAS provides the end user with all the support to deploy from scratch a variety of solutions dedicated (but not limited) to scientific data analysis. DODAS provides two principal baselines ready to be used and to be possibly extended and customised  - HTCondor batch system, possibly federated, and integrated with caching mechanism  - Spark+Jupyter cluster for interactive and big-data analysis with persistent storage solutions. |
| **Task** | 4.4 |
| **URL** |  |
| **Service Category** | Platform Service |
| **Service Catalogue** |  |
| **Location** | INFN-CNAF e INFN-Bari |
| **Duration** | M1-M30 |
| **Modality of access** | Free at the point of use |
| **Support offered** | Support is offered vie the EGI Helpdesk. Reference for tutorial <https://dodas-ts.github.io/HandsOn-INFN-2019/>, General Documentation: <https://dodas-ts.github.io/dodas-doc> ; Technical Documentation [Https://dodas-ts.github.io/docs-templates/](https://dodas-ts.github.io/docs-templates/) |
| **Operational since** | Jan 2018 |
| **User definition** | Researcher, Small communities, big communities and resources providers |

### Metrics

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Metric name** | **Baseline** | **Define how measurement is done** | **Period 1 M1-M5** | **Period 2 M6-M10** | **Period 3 M11-M15** | **Period 4 M16-M20** | **Period 5 M21-M25** | **Period 6 M26-M30** |
| No of users using clusters | 30 | Internal logs | 0 | 2 | 3 | 4 | 4 | 4 |
| CPU/hours | 1,800,000 | Accounting | 0 | 2,294.8 | 464,379 | 742,941 | 999,056 | 788,478 |
| No of clusters deployments | 900 | Internal logs | 0 | 5 | 31 | 12 | 2 | 2 |
| No of visits | 90 | Internal logs | 0 | 10 | 35 | 8 | 3 | 10 |

### Assessment

DODAS is one of the new services brought to EGI with the start of the EGI-ACE project. The service was already registered in the EOSC Marketplace[[7]](#footnote-7) and during this first period of the project was integrated with the EGI core services. Currently DODAS is fully integrated with Check-in, Helpdesk, Configuration Database and ARGO Monitoring. DODAS became integrated with the PaaS Orchestrator (installation in WP6) to build a powerful service which can be then exposed via the PaaS dashboard (<https://indigo-paas.cloud.ba.infn.it>). In this way DODAS service can be exposed to communities through a more user-friendly interface. DODAS also has a new section on the EGI documentation portal that introduces the service for EGI users[[8]](#footnote-8).

During this period DODAS has been requested by the FERMI-LAT user community that applied to the 3rd Open Call for use cases of EGI-ACE. This community has consumed 2,533,000 CPU hours over the reporting period (a growth of 910% from last period) and have triggered the deployment of 52 clusters for running their analytics. This is below the target (100 deployments) due to the stability of the available clusters and the low number of users engaged with the service.

# Dissemination

In this section we report the list of events in the context of EGI-ACE that WP4 partners contributed during the project, reporting the number of attendees to measure the possible user interests .

Table 2: Dissemination activities related to WP4 installations

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Type of Activity | Title | Date | Name of Event | Location | Type of Audience | Reach | Scale |
| Presentation | Infrastructure services: Highlights from the compute, data, security areas | 2021/02/05 | EGI-ACE public launch event | Online | Scientific Community, General Public | 250 | worldwide |
| Workshop | EGI-ACE Communities Workshop | 2021/02/16 | EGI-ACE Communities Workshop | Online | Scientific Community, General Public | 150 people | worldwide |
| Presentation | EGI and FG DIRAC services Development in EGI-ACE project | 2021/05/11 | Virtual DIRAC Users' workshop | Online | Developers, service admins, users | 55 | Worldwide |
| Webinar | Access and analyze data from the EGI DataHub with Jupyter notebooks and MATLAB | 2021/05/12 | EGI Webinar 2021 | Online | Scientific communities, and programmers who support research and education. | Num. of Participants: 27  Num. of Countries: 10 | worldwide |
| Webinar | Analyze your data using DODAS generated cluster | 2021/09/22 | EGI Webinar 2021 | Online | Scientific communities, developers, integrators and end users | Num. of Participants: 11  Num. of Countries: 8 | worldwide |
| Presentation | Delivering Services and Solutions - Workshop (EGI Workload Manager Service) | 2021/10/21 | EGI Conference 2021 | Online | IT providers, Research Community reps. | 40 People | Global  (mostly European) |
| Webinar | How to train your AI model in EOSC | 2021/12/01 | EGI Webinar 2021 | Online | User communities want to use GPUs in Clouds. | Num. of Participants: 32  Num. of Countries: 9 | worldwide |
| Presentation | Les services DIRAC au CC-IN2P3 (Dirac services at CC-IN2P3) | 2021/12/15 | JCAD2021 | Online | IT providers, Research Community reps. | ~100 people | European (mostly French) |
| Presentation | Scalable Environments for reproducible Open Science | 2022/04/06 | MiniGateways 2022 | Online | Scientific user communities | ~100 people | worldwide (mainly US) |
| Presentation | EGI Workload Manager Service | 2022/05/10 | Virtual DIRAC Users' workshop | Online | Developers, service admins, users | 46 | worldwide |
| Presentation | DODAS service | 2022/05/27 | Healthycloud discussion on orchestrators | online | Researchers | 9 | EU |
| Training | Reproducible Open Science With Big Data - The EGI Notebooks and Binder services | 2022/09/23 | EGI Conference 2022 | Prague | Researchers | 10 | Europe |
| Training | Platform for distributed, big computing - DIRAC User Group meeting | 2022/09/20 | EGI Conference 2022 | Prague | Researchers | 10 | Europe |
| Training | How to deploy ready-to-use BigData Platform on top of the EOSC Compute Platform - the DODAS solution | 2022/09/23 | EGI Conference 2022 | Prague | Researchers | 10 | Europe |
| Presentation | EGI Notebook and Replay Services | 2023-03-15 | APAN55 | Nepal (remote) | Researchers involved in the Disaster Mitigation sciences | 16 | Asia Pacific |
| Presentation | EGI Notebook and Replay Services | 2023-03-24 | ISGC2023 | Taipei, Taiwan | Researchers, Students | 10 | Worldwide |
| Demo | EGI & C-SCALE: Notebooks for Earth Observation | 2023/06/21 | EGI Conference 2023 | Poznan | Researchers | 20 | Europe |
| Demo | EGI Workload Manager Service: activities in the EGI-ACE project | 2023/06/21 | EGI Conference 2023 | Poznan | Researchers | 20 | Europe |
| Training | Getting started with the EGI Workload Manager Service | 2023/06/23 | EGI Conference 2023 | Poznan | Researchers | 20 | Europe |
| Training | Processing Data from EOSC on EGI Compute resources training | 2023/06/23 | EGI Conference 2023 | Poznan | Researchers | 20 | Europe |

# Satisfaction

In this chapter we report the satisfaction on the WP4 installations are reported by EGI Customer interviews and the number of orders coming from the EOSC Marketplace.

## EGI Customer satisfaction reviews

EGI regularly interviews Communities using the services with an active SLA, in order to measure the satisfaction and discuss possible issues. The level of satisfaction is measured from 1 (min) to 5 (max). For what concerns the first period of the EGI-ACE project the communities using EGI-ACE WP4 services interviewed are reported in table 3.

Table 3: Communities interviewed during the last 15 months of EGI-ACE project

|  |  |  |  |
| --- | --- | --- | --- |
| Community | WP4 installations used | Level of satisfactions and comments | Issues/feature requests reported with WP4 installations |
| WeNMR | EGI - DIRAC | 5. Very satisfied | Nothing to report even if DIRAC will remain a critical service for this community. |
| BioMed (VIP) | EGI - DIRAC  EGI Notebooks | 5. Very satisfied    Services run smoothly, less and less issues, things are going well | The replacement of X.509 with tokens requires help, not sure what should be done, need explanation and help with the transition |
| EISCAT\_3D | EGI Notebooks  EGI - DIRAC | 5 Very satisfied | EGI Notebook: should be auto updated but at the moment it doesn't. Error happens |

## EOSC Marketplace orders

For the services that have been registered on the EOSC Marketplace, we report here the statistics of the orders during the 30 months of the project.

Table 4: Number of Orders from the EOSC Marketplace related to WP4 installations

|  |  |
| --- | --- |
| EOSC Marketplace Service - WP4 installation(s) | Number of orders |
| EGI Notebooks - EGI Notebooks | 8 |
| EGI Workload Manager - EGI DIRAC | 1 |
| DEEP training facility - CSIC DEEP training facility & LIP DEEP training facility | 12 |
| Dynamic On Demand Analysis Service | 1 |

1. WP2 - Early Adopter in WP2; WP5 - Thematic Service in WP5; LTOS - Long tail of science community from EOSC Portal or similar channels; Open Call - Approached EGI-ACE via the Open Call or via related EOSC projects initiatives. Existing - Communities that existed in the service and are generating new usage as part of EGI-ACE. [↑](#footnote-ref-1)
2. <https://marketplace.eosc-portal.eu/services/eosc.egi-fed.egi_replay> [↑](#footnote-ref-2)
3. <https://marketplace.eosc-portal.eu/services/egi-notebooks> [↑](#footnote-ref-3)
4. <https://marketplace.eosc-portal.eu/services/egi-workload-manager> [↑](#footnote-ref-4)
5. <https://eosc-portal.eu/ai4eosc> [↑](#footnote-ref-5)
6. <https://marketplace.eosc-portal.eu/services/deepaas-training-facility> [↑](#footnote-ref-6)
7. <https://marketplace.eosc-portal.eu/services/dynamic-on-demand-analysis-service-dodas-portal> [↑](#footnote-ref-7)
8. <https://docs.egi.eu/users/compute/orchestration/dodas/> [↑](#footnote-ref-8)