EGI-InSPIRE

USER SUPPORT METRICS

EU MILESTONE: MS307

Document identifier:	EGI-InSPIRE-MS307
Date:	**28/07/2011**
Activity:	**NA3**
Lead Partner:	**EGI.eu**
Document Status:	**FINAL**
Dissemination Level:	**PUBLIC**
Document Link:	https://documents.egi.eu/document/675

Abstract

The European Grid Infrastructure (EGI) community operates a complex network of support services in order to serve national and multi-national scientific communities. Understanding the roles of the various support elements is already a challenge. Defining viable metrics to monitor their operation, their uptake, their impact, cost and users' satisfaction is an even bigger problem. However, measuring these aspects of the "EGI user support function" is necessary in order to optimise resource usage and maximise the consumers' satisfaction. The document summarises all the user-related metrics that are currently collected by the project on a quarterly basis and presents the big picture of user metrics – including those views that are not captured at the moment (mainly for economic and technical reasons), but may need to be observed in the future.



I. COPYRIGHT NOTICE

II. DELIVERY SLIP

	Name	Partner/Activity	Date
From	Gergely Sipos	EGI.eu	12/07/2011
Reviewed by	Moderator: Damir Marinovic Reviewers: Pablo Orviz	EGI.eu CSIC	22/07/2011
Approved by	AMB&PMB		09/08/2011

III. DOCUMENT LOG

Issue	Date	Comment	Author/Partner
1	12/07/2011	First draft for internal review	Gergely Sipos / EGI.eu
2	28/07/2011	Updates after external review	Gergely Sipos/ EGI.eu
3	29/07/2011	New paragraphs on metrics analysis in Section 3	Gergely Sipos / EGI.eu
4	03/08/2011	Update to Section 3 based on feedback from Tiziana Ferrari (SA1) and Daniele Cesini (JRA1)	Gergely Sipos / EGI.eu

IV. APPLICATION AREA

This document is a formal deliverable for the European Commission, applicable to all members of the EGI-InSPIRE project, beneficiaries and Joint Research Unit members, as well as its collaborating projects.

V. DOCUMENT AMENDMENT PROCEDURE

Amendments, comments and suggestions should be sent to the authors. The procedures documented in the EGI-InSPIRE "Document Management Procedure" will be followed:
https://wiki.egi.eu/wiki/Procedures

This document is the second version of four milestone documents to be produced by the EGI-InSPIRE project about User Support Metrics: MS304 [R9], MS307, MS310, MS313. The next two documents will be produced in project month 27 and 39.

VI. TERMINOLOGY

A complete project glossary is provided at the following page: http://www.egi.eu/about/glossary/.

VII. PROJECT SUMMARY

To support science and innovation, a lasting operational model for e-Science is needed − both for coordinating the infrastructure and for delivering integrated services that cross national borders.

The EGI-InSPIRE project will support the transition from a project-based system to a sustainable pan-European e-Infrastructure, by supporting 'grids' of high-performance computing (HPC) and high-throughput computing (HTC) resources. EGI-InSPIRE will also be ideally placed to integrate new Distributed Computing Infrastructures (DCIs) such as clouds, supercomputing networks and desktop grids, to benefit user communities within the European Research Area.

EGI-InSPIRE will collect user requirements and provide support for the current and potential new user communities, for example within the European Strategy Forum on Research Infrastructures (ESFRI) projects. Additional support will also be given to the current heavy users of the infrastructure, such as high energy physics, computational chemistry and life sciences, as they move their critical services and tools from a centralised support model to one driven by their own individual communities.

The objectives of the project are:

1. The continued operation and expansion of today's production infrastructure by transitioning to a governance model and operational infrastructure that can be increasingly sustained outside of specific project funding.
2. The continued support of researchers within Europe and their international collaborators that are using the current production infrastructure.
3. The support for current heavy users of the infrastructure in earth science, astronomy and astrophysics, fusion, computational chemistry and materials science technology, life sciences and high energy physics as they move to sustainable support models for their own communities.
4. Interfaces that expand access to new user communities including new potential heavy users of the infrastructure from the ESFRI projects.
5. Mechanisms to integrate existing infrastructure providers in Europe and around the world into the production infrastructure, so as to provide transparent access to all authorised users.
6. Establish processes and procedures to allow the integration of new DCI technologies (e.g. clouds, volunteer desktop grids) and heterogeneous resources (e.g. HTC and HPC) into a seamless production infrastructure as they mature and demonstrate value to the EGI community.

The EGI community is a federation of independent national and community resource providers, whose resources support specific research communities and international collaborators both within Europe and worldwide. EGI.eu, coordinator of EGI-InSPIRE, brings together partner institutions established within the community to provide a set of essential human and technical services that enable secure integrated access to distributed resources on behalf of the community.

The production infrastructure supports Virtual Research Communities (VRCs) − structured international user communities − that are grouped into specific research domains. VRCs are formally represented within EGI at both a technical and strategic level.

VIII. EXECUTIVE SUMMARY

The European Grid Infrastructure (EGI) community operates a complex network of support services in order to serve national and multi-national scientific communities. Understanding the roles of the various support elements is already a challenge. Defining viable metrics to monitor their operation, their uptake, their impact, cost and users' satisfaction is an even bigger problem. However, measuring these aspects of the "EGI user support function" is necessary in order to optimise resource usage and maximise the consumers' satisfaction.

Extending and restructuring the MS304 document [R9] (User Support Metric, published in November 2010) Chapter 2 of this document provides a categorisation of metrics that are needed if we want to have a complete and comprehensive understanding of the performance, uptake, impact and costs of EGI user support services. It is clear that many of these metrics are very difficult, economically not viable to measure. However the project needs to know what is needed to be able to implement mechanisms that capture these metrics in the future.

The project already collects a large number of metrics on a quarterly basis to monitor progress and impact of the various activities [R4]. Twenty-five of the metrics that are collected in the second year are relevant for user support and provide information about performance aspects of support activities and about achieved impact. These metrics together with changes in user metrics from the first to the second project year are summarised in Chapter 3. All the metrics that are collected by the project on a three-month basis are reported in the "Quality Plan and Project Metrics" document, produced by NA2. (Document code is D1.5 for the second project year [R4]). The user related metrics from this NA1 document evolve each year largely driven by the discussion in the MS304, MS307, MS310, MS313 series of documents.

During the second project year the NA3 activity works on the development and integration of new features into the EGI Application Database and EGI Training Marketplace that would allow members of the EGI community to provide structured and freeform feedback on the items stored within these systems. The feedback collected in this way will be an important asset for the project to know more about the users' satisfaction and will help us reallocate support effort to services and activities where it is more needed.

Given the complexity of the project and the complexity of metrics that are described in the document, collecting all of the metrics would not be viable for economic and technical reasons. However, it is expected that the formal feedback from the first year EC review will touch on metrics and will initiate discussion within the EGI-InSPIRE Project Management Board and the EGI council. This document aims to support these bodies to decide about other types of metrics that the project should capture in order to have a clearer picture of the performance, cost, uptake and impact of user-facing services.

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1 INTRODUCTION

The stated goal of EGI is to provide significant added value for existing and new user communities. The growing user demands have provided, and will continue to provide, the necessary push for development and extension of the grid infrastructure. Therefore, the active support for these communities is a primary concern for the EGI ecosystem as the users are the raison d'être of the grid [R10][R8].

The four year long EGI-InSPIRE project drives the transition of the European Grid Infrastructure to a sustainable service which is independent from project cycles. An important part of this work is establishing sustainable user support processes without introducing radical changes that would make the existing users turn to other solutions. The transition of EGI to a sustainable structure already started. The elements of this transition that are relevant to the context of this document are:

- the original Regional Operations Centres (ROCs) are being gradually replaced by an increasing number of self-sustainable NGI's Operations Centres, and
- the previously project based and centralised user support services are gradually taken over by self-sustainable NGI user support teams and by support teams within the user communities.

EGI is expected to attract research communities of different sizes, backgrounds and scopes. For this reason the user support activities within EGI must act as a bridge through which heterogeneous, multi-national communities can access infrastructure services and can become confident and sustainable users. EGI user support processes [R8] assure that the people who made contact with EGI through its dissemination activity – reading the EGI newsletters, being present at EGI related events, visiting the EGI Web page and so forth – are continuously supported up to the point when they are confident users of the infrastructure and are members of one of the self-sustainable EGI user communities, the Virtual Research Communities [R11].

The main providers of user support services in EGI are the NGIs. NGI user support teams provide consultancy through the EGI Helpdesk and through face to face mechanisms. The provided support includes various elements, such as training, arranging access to infrastructure/services/applications, porting new applications, portal development, documentation, VO setup. (The complete list of services with descriptions is available in D3.1 [R8]) Because the support skills and the interest of NGIs differ from each other, EGI users can receive different support in different countries. Meanwhile the EGI Helpdesk integrates and helps us to uniformise support services, processes and teams across countries, not all the support cases are requested and served through the EGI Helpdesk. Many of the NGIs and many of the large VRCs provide support through national or domain specific helpdesks or other electronic and face-to-face channels outside of the EGI Helpdesk.

By extending and restructuring the MS304 document [R9] (User Support Metric, published in November 2010) Chapter 2 of this document provides a categorisation of metrics would be needed to get a complete understanding of the performance, uptake, impact and costs of EGI user support services. Because many of the user support activities are delivered outside of EGI-InSPIRE, capturing all these metrics in a uniform way is practically impossible. However, the project needs to have at least a clear understanding on what metrics would be required to confidently answer questions about support processes in order to drive these processes to an optimised, sustainable structure.

The project already collects a large number of metrics on a quarterly basis to monitor progress and impact of the various activities. For the second project year these metrics are reported in the "Quality Plan and Project Metrics" document [R4]. The analysis of these metrics is given in the "D3.2 Annual Report on the status of EGI's User Services and Community Coordination" document [R13]. Twenty-five of the metrics that are collected by the project in the second year provide information about

various aspects of user support activities. These twenty-five metrics together with changes from the metrics from the first to the second project year are provided in Chapter 3.

This document aims to continue the discussion that started in the MS304 document [R9] about user support metrics. This discussion is continued in this and in the next versions of document (MS310, MS313) and in the annually updated "Quality Plan and Project Metrics" document which includes all the metrics of the project.

2 METRICS

The EGEE and the ETICS projects defined and implemented various practices to measure the performance of support activities [R1][R2][R3]. The metrics that were used in those projects can be classified into the following categories [R9]:

- SLA (Service Level Agreement) related metrics to describe the common helpdesk performance
- End user satisfaction related metrics collected with surveys
- Efficiency metrics to discover the relationship between helpdesk operating costs and performance
- Metrics related to user follow-up activities (cross-subtasks metrics)
- Direct feedback from training events, collected from trainees and trainers

EGI-InSPIRE a bigger and more complex project than EGEE and ETICS were. EGI-InSPIRE works in a different environment and with different focus. Many of the support activities within the EGI ecosystem delivered outside of EGI-InSPIRE. Several NGIs, VRCs and partner projects use their own, specialised support tools and processed to serve EGI users and quite often these tools and processes are not and cannot be monitored by EGI-InSPIRE.

Still, in order to build up a comprehensive understanding of the usage, performance, uptake, cost and impact of EGI user support services, to optimise these values according to the needs of the EGI partners the collaboration requires a number of metrics. These metrics can be classified into the following main categories:

1. User satisfaction metrics – What support experience do EGI users have?
2. Support performance metrics – How well are the EGI support services operating at the current effort level?
3. Impact metrics – How much impact do EGI support services have on the user communities?
4. Correlation between different metrics – What happens if we change some processes within the support services?

The meaning of these four main categories of metrics are elaborated in the next four subsections.

2.1 User satisfaction metrics

User satisfaction metrics can help us answer the question "How satisfied are the users with the current support mechanisms?" Meanwhile the EGI Helpdesk is the most important enabler of EGI-related support activities, some of the user support cases are solved via different channels (in and outside of EGI-InSPIRE and the EGI Helpdesk). Therefore satisfaction measurement requires the simultaneous usage of different mechanisms:

1. Monitoring satisfaction through the EGI helpdesk: This approach can provide data about support cases that are managed through the Helpdesk. A form – integrated into the helpdesk user interface – could be used to capture data about individual support cases. *Such a form does not exist at the moment but could be integrated into the Helpdesk with minimal work.*
2. Capturing users' satisfaction through surveys: Surveys could work for any support case whether these are managed inside or outside of the EGI Helpdesk. If the same survey is

used across all the national or discipline-specific support teams, then the data can be integrated and compared at the global EGI level. Satisfaction surveys with customised questions are already used in some NGIs, especially for training events[1]. *Surveying mechanisms that could be useable in NGIs and VRCs for different support cases do not exist.* The usefulness and homogeneity of answers gathered by centrally managed, locally distributed surveys is questionable. During the second project year the EGI Application Database and the EGI Training Marketplace is/will be extended with new capabilities by which visitors of these services can rank and provide feedback about the stored items (applications, developers, events, training resources, courses). This will gather satisfaction values about particular aspects of user support in a structured way. Based on the success of these new mechanisms, similar solutions can be rolled out later to other user-facing EGI services too.

3. Data about non-users: Satisfaction ratings collected from those who already used EGI support services is only one side of the coin. There may be people who did not use EGI support because they do not needed support so far, or were not satisfied with some EGI service in the past and did not request support due to the lack of confidence. Identifying these people and gathering meaningful feedback from them is very difficult. *The NGIs, EGI.eu and the VRCs use the EGI Requirement Tracking system [R14] to capture those needs, complains that emerge from the existing and potential new users and user communities.* The RT system provides an open forum where the requirements can be met by the service of any provider of the ecosystem.

The ratings given for support cases (type 1 and 2) should be weighted and merged with the metrics given by those who do not use EGI support (type 3) in order to get the full picture of user satisfaction.

2.2 Support performance metrics

The second type of metrics aim at answering the question "How do the support services perform with the current level of effort?". Performance of support processes can be defined in various different ways. The relevant definitions in the context of EGI user support activities are:

1. Solution time: how long does it take to close a support case? This metric can be easily captured for support cases that are managed through the EGI Helpdesk. This is already captured within the Helpdesk and is accessible through the GGUS report generator interface [R12] (See also Table 1). However, as it has been mentioned there are many other support cases that do not appear within the EGI Helpdesk. While some of these cases appear in other helpdesk systems (for example the EGI Requirement Tracker, "RT") we lack of having a uniform definition for the start and end date of support cases. At the time of writing there is no plan within the project for defining and using a standard method for this across all the support types and support teams.

2. Success rate: how many percent of the closed support cases were actually successful? (I.e. provided acceptable solution for the client.) Capturing this metric requires carefully designed and executed follow up processes for the different types of support. In many cases the question whether a solution is suitable for a client can be answered only weeks or month after the support case is closed. While users of the EGI Helpdesk can "verify" the solution/answer that they receive from the support experts, this does not always happen and cannot be applied

[1] Feedback forms about training events used to be collected in EGEE. Training events in EGI are delivered as NGI national tasks and therefore no feedback is collected centrally by EGI.eu or any other EGI-InSPIRE partner.

3. Cost: how much does it cost to solve a support case? Depending on the type of support, various cost factors must be included in the calculation: salaries of support experts, operational cost of software services (not only the Helpdesk), investment into new software, hardware and human resources, etc. Meanwhile such calculations have not been done for individual support cases or for certain types of support, a comprehensive financial plan to confirm the sustainability of EGI will probably require one.

2.3 Impact metrics

The first set of metrics described how users receive the support they get from EGI. The second category provided information on how support services perform under the current level of financial and other types of support. This, third set of metrics informs the community about the impact that is achieved within the user communities by the support delivered by EGI or EGI-InSPIRE. What technological or scientific achievements were accomplished because of the support delivered by the EGI community, or by the EGI-InSPIRE project?

Measuring the impact of e-Infrastructure projects is known to be a very difficult task [R15] because the e-Infrastructure services are often indistinguishably integrated into complex scientific processes run by the user communities. Identifying "the EGI part" of a scientific process/project is therefore almost impossible. Moreover, many of these scientific projects are long running, resulting relevant output towards the end, or even after their closure, so in some cases the impact of EGI can be understood only after years or even decades (for example in case of the LHC experiments). The complexities of measuring impacts of e-Infrastructure projects are studied by different EC funded projects, for example by ERINA+ [R16]. EGI-InSPIRE supports ERINA+ in the development of methods that could be used to measure impact of European e-Infrastructure projects. Whether the ERINA+ methods would work at the scale of EGI-InSPIRE, with ~50 international partners, and with the level of the EGI collaboration (worldwide ecosystem of numerous projects, NGIs, EIROs, VRCs) is still an open question.

2.4 Correlation between different metrics

The previously described metrics give information about the current performance of support processes (Section 2.2) and their impact on the user community (Section 2.1 and Section 2.3). However, they do not provide information on how these values correlate, i.e. what happens if one parameter of a support process (one metric) is changed? Any effort that aims to optimise the usage, the performance, the impact of support resources, or the users' satisfaction can be carried out responsibly, only, if the correlation between the various is known. This knowledge could help us answer complex questions, such as:

- How would the users' satisfaction change if average ticket solution time get shorter by 1 day?
- How would the solution cost increase for support case type X if average solution time gets shorter by half day?
- How would the operation cost change if we redirect tickets from support unit X to support unit Y?
- What effect would the redirection of tickets from support unit X to support unit Y have on the average cost of solving a ticket in support unit Y?

Identifying the correlation among the different processes and capturing these connections by mathematical formulas and metrics is extremely difficult and *the project does not have any plans to try it because*:

- Many of the support units did not have enough support cases in the past to identify correlations between values.
- Many of the support units have been operating under fix circumstances, with fix parameters, so we do not have information on "what happens if parameter X would change in the support mechanism".
- The reasons of changes in the parameters of a support unit is often unknown (number of tickets, average solution time, etc) or were not recorded.
- Many of the support services are delivered outside of the EGI Helpdesk, collecting objective statistics about these is very hard, sometimes impossible. (e.g. would EGI have more users if NGI X delivers twice as many training events as it did in the previous year?)

3 CURRENT STATUS

The project, the funding agencies as well as the user facing activities (particularly the NA3 and SA3 activities) must capture metrics to understand impact on user communities. Therefore the project defines activity and project level metrics in an annually updated series of deliverables (D1.1 for project year one; D1.5 for year two; D1.9 for year three; D1.13 for year four). These project and activity metrics are used to

- monitor progress towards project objectives. These metrics have targets.
- monitor the work of the different activities
- monitor the work of national operational infrastructures (NGIs)
- monitor the work of Virtual Research Communities

The metrics defined in the current version of this document (D1.5) are measured through manual and automatic means and are reported on a quarterly basis in EGI-InSPIRE Quarterly Reports. While many of the project and activity metrics require inputs from several different NGIs each quarter, and gathering these is a complicated and time consuming process, other metrics are provided by automated tools such as the Metrics Portal [R6], or Google Analytics.

Although user support services are provided by and through the NA3 work package, metrics that report on various aspects of the performance, impact and satisfaction of user support services are reported by NA2, NA3, SA1, SA2 and SA3 work packages as well (See the first column of Table 1, where the first part of the ID shows the activity which reports the metric). The user-related metrics that EGI-InSPIRE collects during the second project year are summarised in Table 1. The last column of the table shows which category(s) the given metric belongs to from the above described classification. Some of the metrics provides complex information and belong to multiple categories. The analysis of these metrics is provided in the "D3.2 Annual Report on the status of EGI's User Services and Community Coordination" document [R13], which also introduced a few changes to NA3 metrics from year 1 to year 2. These changes are also presented here, in Table 2.

Table 1. User-related metrics collected by EGI-InSPIRE during the second project year (based on [R4]).

Metric ID	Metric name	Public / Internal	Task	Comments/ Explanation (e.g. Means of data collection)	Category (Satisfaction, Performance, Impact)
M.NA2.5	Number of papers published by users of EGI	P	TNA2.2	Collected from NGIs and VRCs	Impact
M.NA2.11	Number of MoUs or agreements established with collaborating Virtual Research Communities (VRCs)	P	TNA2.3 & TNA3.1	Demonstrates the EGI capability to engage a diversified number of user communities engaged in using EGI's service	Impact
M.NA3.1	Number of GGUS tickets CREATED (grouped by submitting community – where available)	P	TNA3.2/3	Obtained from the GGUS Report Generator	Performance AND Impact
M.NA3.2	Average and Median Solution time to resolve tickets	P	TNA3.3	Obtained from the GGUS Report Generator	Performance
M.NA3.3	Uptime of User Support websites: • Training • Application Database • VO Support Services	P	TNA3.4	Obtained from Nagios server	Performance
M.NA3.4	Visitors to User Support websites: • Training • Application Database • VO Support Services	P	TNA3.4	Obtained from EGI Google Analytics	Impact
M.NA3.5	Number of VO Support Services	P	TNA3.4	Reported by service provider (LIP-Portugal, UPV-Spain)	Performance
M.NA3.6	Number of Applications in the AppDB	P	TNA3.4/3	Registered by NGIs. Reported by AppDB operator (GRNET-Greece)	Performance AND Impact
M.NA3.7	Number of Training Days delivered through NGI Training events	P	TNA3.4/3	Registered by NGIs, Reported by EGI.eu	Performance AND Impact
M.NA3.8	Number of: • New/decommissioned VOs • Low/Medium/High Activity VOs • international VOs	P	TNA3.1	An international VO is one that has a scope beyond a single country. (See registration portal.) VO Activity measured by Accounting Portal[2].	Performance AND Impact
M.NA3.9	Number of users (grouped by community and VO)		TNA3.1	Statistics from the VO registration portal.	Impact

[2] http://accounting.egi.eu/gridsite/accounting/CESGA/egee_view.php

M.SA1.Usage.1	Average number of jobs “done” per day for all VOs	P		Obtained from Accounting Portal	Impact
M.SA1.Usage.2	Normalised consumed computing capacity	P		Obtained from Accounting Portal	Impact
M.SA1.Usage.3	Normalised Computing power consumed outside of a user’s home country	P		Requires tool development	Impact
M.SA1.Support.1	Overall average number of GGUS tickets in EGI per month CREATED	P	TSA1.7	Obtained from the GGUS Report Generator	Impact
M.SA1.Support.2	Average/Median monthly ticket solution time (hours)	P	TSA1.7	Obtained from the GGUS Report Generator	Performance
M.SA1.Support.3	Assigned ticket monthly Average RESPONSE TIME (hours)	I	TSA1.7	Obtained from the GGUS Report Generator	Performance
M.SA1.Support.4	Number of tickets SOLVED by TPM (1st line support)	I	TSA1.7	Obtained from the GGUS Report Generator	Performance
M.SA1.Support.5	Average-Median ticket assignment time by TPM (1st line support) per month (hours)	I	TSA1.7	Obtained from the GGUS Report Generator	Performance
M.SA2.11	Number of tickets assigned to Deployed Middleware Support Unit	P	TSA2.5	Obtained from the GGUS Report Generator	Impact
M.SA2.12	Mean time to resolve DMSU tickets	P	TSA2.5	Obtained from the GGUS Report Generator	Performance
M.SA3.13	Number of MPI support tickets	P	TSA3.2.5	Obtained from the GGUS Report Generator	Impact
M.SA3.14	Mean time to resolve MPI support tickets	P	TSA3.2.5	Obtained from the GGUS Report Generator	Performance
M.SA3.15	Number of HEP VO support tickets	P	TSA3.3	Obtained from the GGUS Report Generator	Impact
M.SA3.16	Mean time to resolution of HEP VO alarm tickets	P	TSA3.3	Time in days	Performance

Based on the first year there are three user-related metrics that have been collected by NA3 during the first year of the project, but has been removed in May 2011. These metrics with the reasons of removal are presented in Table 2.

Table 2. User-related metrics that were collected in the first project year, but not since then.

Metric name	Reason of removal	Category (Satisfaction, Performance, Impact)
Number of GGUS tickets CREATED & SOLVED per Support Units of NGIs & EGI.eu	The M.NA3.1 metric (see in Table 1) provides the overall number of tickets that were opened by users. These two metrics do not provide useful additional information and would help understand the complete picture of by whom the various tickets are solved. It is known that NGIs delegate experts into many (almost all of the) support units, but the exact list is not known.	Performance AND Impact
Number of GGUS tickets CREATED by users and SOLVED by EGI.eu		
Number of Trainers in the Trainers database	The trainers' database is not maintained any longer, following a decision by the EGI User Community Board in UCB in February 2011 [R17]. The effort allocated to training services within the UK JRU is refocused to other elements of the Training Marketplace.	Performance AND Impact

The EGI-InSPIRE project develops, establishes and operates services that enable scientific communities to become confident, sustainable users of EGI. The project includes only a minimal effort for grid user communities. Consequence of this focus is that the impact metrics are the most important indicators for us to evaluate the uptake and success of our services within the user communities. Through the metrics the project was able to obtain a huge amount of information during the first year about the provided services. However, a few criticisms or new requirements emerged that require the consortium to extend the metrics and/or the methods and tools that provide the values:

1. The metrics (especially the impact metrics) provide information about EGI-InSPIRE services independently from each other. Relationship between these numbers is not identified at the moment. For example the links between EGI users (M.NA3.9), EGI Applications (M.NA3.6), Helpdesk tickets (M.SA1.Support.1) and infrastructure load (M.SA1.Usage.1-3) is unknown. Who are the most active users within each discipline? To what extent do the registered applications contribute to the load on infrastructure? Which users submit the highest number of jobs, tickets?

2. It has been recently recognised that the method that provides the number of EGI users per discipline (M.NA3.9) is insufficient. The number is currently provided by the Operations Portal, where the VOs are registered and classified into disciplines by the VO managers. The Operations Portal queries the VOMS servers of the registered VOs and obtains the number of users from these VOs. The portal presents these numbers through a graphical management interface. Two problems have been identified with this method:

- Some VOs are classified into wrong discipline categories and this distorts discipline user summary numbers. The User Community Support Team is currently identifying and reallocating the wrongly configured VOs into the right categories. This is a manual process.
- The registration of users who became inactive (e.g. because their certificates expired) are not removed from the VOMS server. Consequently, the user numbers that are reported by VOs with VOMS servers (almost all of the VOs) are cumulative values instead of the "current number of users". If such a VO exists for years then the number of inactive users can be significant. SA1 works with EMI to implement new features into VOMS that could help us generate separate reports about active and inactive users.

3. The Operations Portal in itself is not enough to capture the total number of users of EGI. Extensions to the portal is required alongside with new methods in order to collect a more realistic number for the M.NA3.9 metric. The following problems and actions have been identified:
   - The VOMS servers of around 120 VO (out of the 260 VOs) are not accessible for the Operations Portal and user number from these VOs are not included in the current statistics. SA1 is already working with the sites to open up the user query interfaces of the VOMS server to the Operations Portal and/or to obtain the user numbers via other channels (e.g. the top level BDII).
   - A growing number of national CAs provide robot certificates for e-Science communities. Several EGI VRCs already arrange access to their members via portals that use robot certificate. These portal users do not necessarily appear in the VOMS servers thus may be ignored in the current statistics. The User Community Support Team with the IGTF is identifying methods to reliably identify the number of users who access EGI via robot certificates.

During the second year of the project the NA3 activity – together with SA1 and JRA1 – is looking at these problems and will define methods by which such questions can be answered. As part of this APIs to export and integrate data from different tools is foreseen (the Application Database, Operations Portal, Accounting Portal, Helpdesk).

It can be seen from Table 1 and Table 2 that the user-related metrics provide information about the impact and the performance, but not about user satisfaction or metric correlation. Meanwhile some of the metrics could be considered also as user satisfaction metrics (e.g. number of EGI users, number of VRCs established), the usability of these metrics as "satisfaction-indicators" is questionable, mainly because they are driven by many factors. For example, the increase of registered grid users of a discipline can be the consequence of the kick off of a new project, the porting of a new application, a new access policy in a VO – factors that have nothing to do with the users' satisfaction with EGI.

To have a better understanding of the users' satisfaction the NA3 activity – primarily through the services that are delivered through the TNA3.4 task (Application Database, Training Marketplace, VO Services) – is currently working on new capabilities for these services that would allow the community to rank and provide feedback about the stored items (applications, developers, events, training resources, courses) [R18]. Structured (marks) and unstructured feedback (comments) collected in this way will be important to estimate and evaluate the users' satisfaction. Based on the success of these new mechanisms, similar solutions can be integrated into other user-facing services of EGI-InSPIRE or EGI stakeholders.

4 CONCLUSIONS

The metric categories that are discussed in the document could help EGI stakeholders to build up a comprehensive understanding on the efficiency and success of support services, and can drive EGI towards a cheaper, yet more efficient support model. The project already collects a large number of metrics on a quarterly basis to monitor performance and impact of the various activities. Twenty-five metrics are relevant for user support. The reporting tool inside the EGI Helpdesk [R5], the Metrics Portal [R6], the Applications Database [R7] provides additional sets of metrics to monitor support cases and support usage. The Google Analytics service, which is configured to all the user-facing services in EGI-InSPIRE, captures important statistics about web pages.

During the second project year the NA3 activity works on the development and integration of new features into the EGI Application Database and EGI Training Marketplace that would allow members of the EGI community to provide both structured and freeform feedback on the items that are stored within these systems. The feedback will be an important asset for the project to know more about the users' satisfaction and to reallocate support effort across services and activities if it is needed.

Many of the difficulties around capturing meta-information about support service are caused by the fact that EGI stakeholders (NGIs, EIROs, VRCs, projects) use different support systems and processes to serve users. More uniform definitions and terminologies for support processes and/or the wider adoption of the EGI Helpdesk could help us improve the situation. The adoption of widely established service management and operation methodologies, such as ITIL [R19], could contribute to this. An in-house ITIL training at EGI.eu in early September and one session on ITIL V3 at the EGI Technical Forum will be the first steps in this direction [R20].

At the time of writing the project is waiting for the formal feedback from the first year EC review. It is assumed that the feedback will touch on metrics and will initiate discussions on metrics within the EGI-InSPIRE Project Management Board and within the EGI council. Section 3 of this document can help these bodies understand the current situation of user-related metrics, Section 2 helps the bodies define extensions or modifications to the metrics. Any decision related to user metrics will be reported in the next versions of this milestone document, and in the next version of the "Project Quality Plan and Project Metrics" document.

5 REFERENCES

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R 9	MS304 User Support Metrics: https://documents.egi.eu/document/94
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