

# Strategy for a transition of the user support activity from EGEE to EGI

## 1 Introduction

This document is meant as input for discussions in EGEE-III during the remainder of the project. It provides the view of people involved in user support on how this area of work should evolve towards a model that will not disrupt the support offered to users of the EGEE infrastructure, but will also allow for a smooth transition to EGI.

One of the major problems the user support activity in EGEE encountered was by construction it was considered an operations task, and was therefore perceived from outside SA1 as something that could be happily live within SA1 only. But for providing successful user support it is important that all parties involved work together to shape an overall support infrastructure with clearly defined and tested procedures that guarantee a smooth functioning.

Given the structure of the of the EGEE project to bring together all these parties and agreeing on a model for support that would work for the user and also for everybody working in support has been, and still is, a lengthy and sometimes strenuous process.

If from the beginning user support would have been seen as across-activity task steered jointly by operations, by the middleware activity and the user communities we could have been quicker in reaching overall acceptance and success in this area.

The following paragraphs will each focus on a specific area of user support summarising the options we see how to organise this area in EGI, the main issues and concerns we see and our recommendations.

## 2 First line support

This will be taken from <http://edms.cern.ch/document/1000210> when we make a selection from current suggested models A-D.

### 2.1 *Options*

### 2.2 *Main concerns and issues*

### 2.3 *Recommendations*

## 3 Operations/infrastructure support

### 3.1 *Options*

We envisage an extension of the current model replacing 11 ROCs with a large number of operation entities, be them NGIs directly, or federation of NGIs or other non-european regional operations centres, for instance EELA.

This change calls for a standardisation of the GGUS interface to the different local regional ticketing systems in order to guarantee scalability: in the future only web

services and grid messaging for interfacing with Nagios and GOCDDB will be supported. The e-mail interface will be deprecated and local ticketing systems are and will be encouraged to move to a web service interface. New local ticketing systems will not be able to interface using e-mail.

The emerging interface, using GridMessaging, is currently under investigation, and could become the standard in the future also for all communications with local ticketing systems.

### **3.2 Main concerns and issues**

The main concern in the area of operations support is to continue providing support while enlarging the number of support units under operations. Technically the number of support units is the main issue here, but we think this is under control.

The other concern is that increasing the number of operations units to roughly four times the number currently present today will require and need changes in the coordination tasks. Issues and concerns on escalation and coordination are described below.

### **3.3 Recommendations**

All operations units should leave e-mail interfaces and move to web services as soon as possible.

## **4 Middleware support**

### **4.1 Options**

The user support concerning middleware problems has been done on a best effort basis in EGEE III.

To avoid this situation after the end of EGEE III it is important to identify which are the active parties in providing support for the middleware. Most likely it will be a joint effort shared by

- the Product Teams
- the different Consortia
- UMD
- the Middleware Unit within EGI

#### **4.1.1. gLite**

The middleware known as 'gLite' is the middleware produced by the various EGEE projects. After the end of EGEE III it will be developed and maintained by the gLite consortium.

The support for the gLite middleware is currently done with middleware SU inside GGUS. These SU are second level of support inside the GGUS system. As such they benefit from a first triage by the TPM, who also try to add to the ticket as much information as possible and open bugs directly in the savannah system if the problem is identified as a bug.

The plans for the gLite middleware support are under discussion. What is understood so far is that the product teams will provide the effort for maintenance and support themselves. But it is not clear if the effort mentioned covers also GGUS or only the other channels (savannah and mailing lists mainly) used so far.

#### **4.1.2. UNICORE**

UNICORE support is realised through the tools provided by SourceForge.net, which is also used as the UNICORE code repository. Source forge provides a bug/feature tracker and a support mailing list.

In D-Grid, where UNICORE is one of the supported middleware stacks, a UNICORE support unit exists within the D-Grid help desk system. UNICORE issues are assigned to this support unit and tickets are updated in the D-Grid help desk by UNICORE developers.

#### **4.1.3. ARC**

The modus operandi for ARC support today is that all ARC related issues goes to the NDGF/NE-ROC collaboration from where they are addressed. Not many ARC issues take that route as ARC users/sites are used to another support mechanism: the nordugrid-discuss mailinglist, where they usually get help to solve their problem from other users.

However the ARC consortium is aware that this method might not scale in EGI, and we might see ARC issues discovered by users not aware of the nordugrid-discuss mailinglist etc.

Forming an ARC support unit from the NDGF/NE-ROC staff together with some of the ARC developers might be the right way forward in EGI. NDGF can coordinate this as they have people registered in and looking into GGUS all the time already, but this has to be discussed further also with the NE-ROC team and some of the ARC developers not directly related to NDGF.

#### **4.1.4. Other components**

##### *dCache*

dCACHE has SUs that works on tickets in GGUS and the D-Grid Helpdesk

##### *Castor*

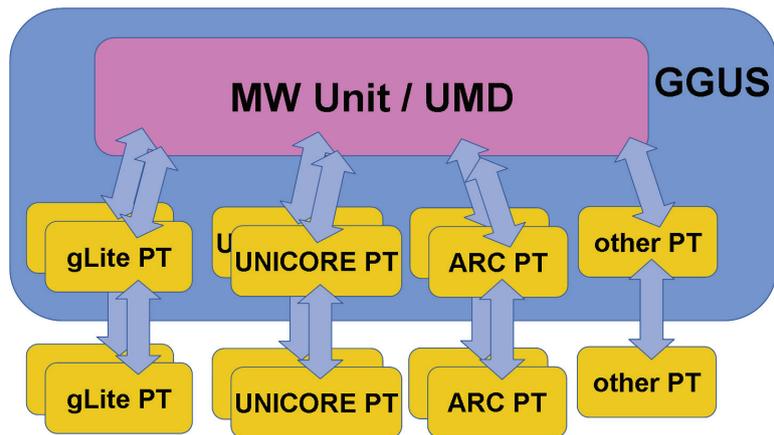
Castor has an SU that works on ticket from GGUS that are sent directly to the relevant support unit inside the CERN ticketing system (not the ROC CERN ticketing system).

## **4.2 Main concerns and issues**

Up to now we do not perceive a general agreement within EGI who this is supposed to be organised.

## **4.3 Recommendations**

We think that a model similar to the one in place currently in EGEE should be adopted in EGI as well. For each of the product teams there should be a SU in GGUS, which will enable the Middleware unit to keep track of problems that occur without have to set up a tool itself. The Middleware providers signalled willingness to work in this fashion.



## 5 User Communities

### 5.1 Options

There are no current plans to change the model on the user community support. So far VOs seem happy and have not requested any changes to the way VO support is provided via GGUS (DUS SU etc.). The procedure to include new VOs is defined and so far has scaled up to few hundreds of VOs currently supported via GGUS.

### 5.2 Main concerns and issues

Judging from the feedback we got (not officially) from EGI the discussion has not reached a point where tool are being discussed. We have to make sure to be involved once these discussions start.

### 5.3 Recommendations

We recommend not changing things that have proven to be useful in the past and try to adapt these solutions as smoothly as possible to the EGI model.

## 6 GGUS coordination

### 6.1 Options

The way the coordination of the user support task has been set-up in EGEE (USAG, Shopping list, etc.) has been very successful and should therefore be continued in a similar fashion also in EGI.

See also Appendix A.1.

### 6.2 Main concerns and issues

We believe that this task could be under-staffed.

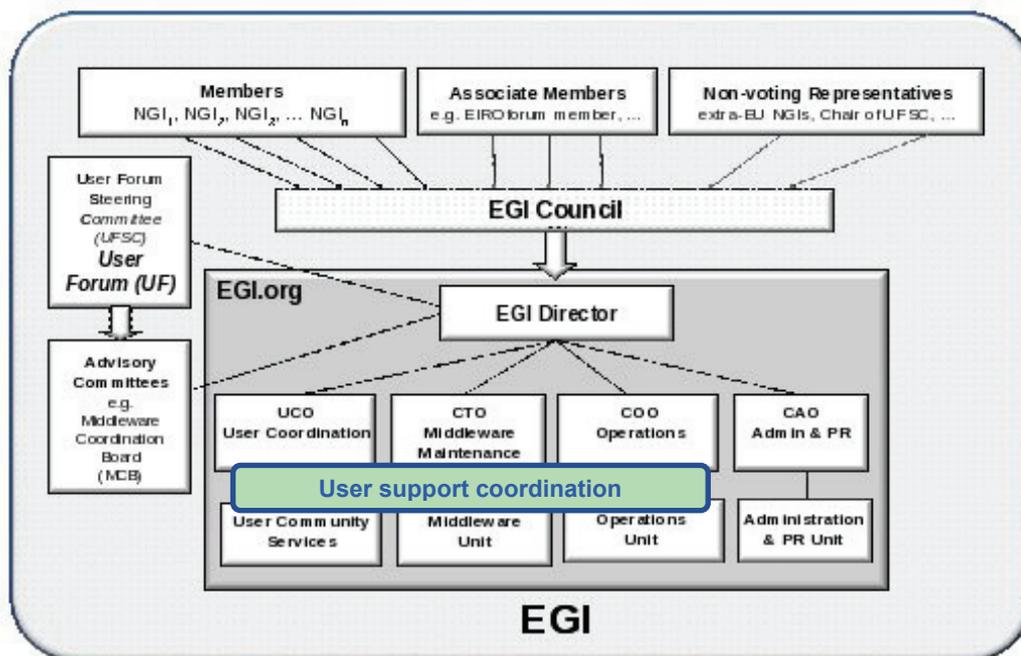
### 6.3 Recommendations

The coordination should either be in EGI or an international task that someone can take on, on behalf of the community.

The coordination should be done jointly between the EGI Operations Unit (responsible of and representing the operational support units (NGIs and operations tools, security, TPMs, some of the third level units), the EGI middleware unit (responsible of and representing the middleware, and release units, some of the third

level units) and the User Communities (VO support units). It is the only way in which GGUS can guarantee to take into account all the needs of the different communities it serves. And also it can guarantee the users that their problems will be addressed in a timely manner.

The various parties represented should have a way to enforce actions on the SUs. In order to define what the duties of each SU are it is probably envisageable to define SLAs between GGUS and the various SUs. There should probably be various categories of SLAs, depending on the level of support (first, second or third), and also on the nature of the support (it should be acceptable for middleware tickets that are bugs to have a long resolution time).



## 6.4 Escalation

### 6.4.1. Escalation procedures

The escalation procedure can be either triggered by a user or by a member of USAG.

The escalation of a ticket by a user is achieved by clicking on a button of the ticket itself. It has three steps:

- the first level of the escalation is a reminder to the SU themselves
- the second level is the involvement of the TPM who will try to intervene to solve the ticket or in any case watch the ticket closely
- the third level involves contacting GGUS and a representatives from the VOs and a representative from the ROCs.

There is also another way to identify tickets that need attention, which is the escalation report. Escalation reports are a way for each of the different bodies

involved to identify tickets that require actions. The escalation reports are produced weekly, every Monday afternoon and available from the GGUS homepage.

### 6.4.2. Escalation bodies

An escalation body should be foreseen to which tickets could be escalated. It should also have a proactive role in identifying tickets left unattended for several days if not weeks.

Coordination would involve the reporting of the escalation in various bodies for the tickets that are left unsolved and reported in the 'Escalation reports". And also there should be a body as the third level escalation report (currently GGUS+SA1+VOs) to pick up unhappy users and carry their complaints forward, addressing the issue with the relevant parties.

The escalation body should have a way to force the SU concerned to act on a ticket. To achieve this the escalation body should have representatives from the various communities that provide the support activity, i.e. operations, middleware and user communities. Middleware tickets should be escalated to the EGI MU or to the UMD, or to the relevant software provider/consortium, operation tickets should be escalated to the EGI OU, and VO tickets should be escalated to the EGI UCO.

## 6.5 Clarification of roles

The EGI\_DS document provides these figures for GGUS user support.

Maintenance and development	2 FTE
Triage	2 FTE
Requirement gathering	0.5 FTE

GGUS is going to be asked to communicate with SA3 and JRA1 on prioritization of bugs.

There is no effort foreseen for coordination in the above figures.

## A APPENDIX: Summary of the current model

### A.1 GGUS management

The support model in EGEE can be captioned "regional support with central coordination". This model is sustained by a help desk system consisting of a central platform, which is developed and maintained at the Steinbuch Centre for Computing of the Karlsruhe Institute of Technology **Fehler! Verweisquelle konnte nicht gefunden werden.**, integrated with several satellite systems that have a regional or thematic focus. A clearly defined support process, involving all the parties needed for a project-wide support service, is of the utmost importance for such a distributed effort. The bodies and the tool involved in the user support management process are described in this section.

### **A.1.1.USAG**

Organised and chaired by the Operations Coordination Centre (OCC), the User Support Advisory Group (USAG) in EGEE III is composed of the VO managers (or their representatives) and representatives from the other activities using GGUS. Its role is to advise GGUS on development directions both for the tools and the processes. **Fehler! Verweisquelle konnte nicht gefunden werden.**

The USAG mandate is to:

- Examine requirements from all relevant parties, VOs, Regional Operations Centres (ROCs) and resource centres, identify common points and differences and see how they influence the grid support processes and tools.
- Consolidate all requirements taking into consideration the needs and operational procedures of ROCs and resource centres.
- Advise on the consequent evolution of GGUS, which is the core system of the grid support effort.
- Report on the development, testing and deployment plan for new GGUS features compared to the recommended evolution.
- Make known to the appropriate forums - VOs, ROCs, sites and all other Support Units (SUs) - the suggested GGUS system evolution and the procedures that need to be updated accordingly.
- Define the expectations from all SUs via Operational Level Agreements (OLAs), get acceptance by the SUs and leave OLA enforcement to the management partners involved.

USAG meetings take place monthly, usually on the last Thursday of the month. Participation from all ROCs is important via representatives authorised to comment on their ROC's agreement and commitment to USAG decisions and recommendations. Other participants are the GGUS developers, the OCC via the USAG chairperson, NA4, VOs and resource centres (in agreement with their ROC). The meeting themes are agreed by the USAG members, published on the agenda, analysed and carried forward, when necessary, documented and available from our records index. Most of the themes concern the technical development of GGUS leading to new functionality and requiring understanding, agreement, testing and awareness by all partners involved.

All the development activities and functionalities described in sections 4 and 5 of this paper have been thoroughly discussed and approved by USAG, before they have been implemented and rolled out.

In addition to new technical development, the USAG meeting is also the forum for a continuous assessment of GGUS according to EGEE milestone document MSA1.6. The weekly escalation reports and the periodic metrics reports, both available from the GGUS homepage, are used for this continuous evaluation of the quality of user support. The identification of weak areas leads to commonly accepted technical or procedural changes. This explains the importance of regular participation both from customers (VOs) and service providers. Discovering needs and requirements in USAG meetings helps to build mutual trust.

### **A.1.2.Shopping list**

All GGUS improvement requests are recorded in a dedicated savannah tracker. Their grouping depends on the expected month of completion and release, which in turn, is a factor of the tickets' urgency and the development effort required. Using savannah

to record requests and their progress proved to be valuable as it constitutes a reference for information collection and reporting.

The GGUS developers and deployers evaluate the effort required, clarify technical details and organise information and dissemination of the new functionality during a dedicated weekly meeting. All features made available with a given release are published in the release notes linked from the GGUS homepage. All historical information on previous releases is also available from the same web location. Clarifications and priorities are discussed at the USAG and WLCG meetings as required.

### A.1.3. Release cycle

The monthly releases of the GGUS portal take place, in most cases, on the last Wednesday of the month. When the technical changes planned within a given release affect the interaction with local ticketing systems, the release is classified 'Major' and cross-country testing takes place for a number of weeks prior to the release.

All release dates and contact references are widely publicised to all GGUS support staff and users, using the EGEE broadcast tool. News on the GGUS homepage and a permanent link to release notes and savannah references are available for consultation at any time. Information dissemination is done via regular reporting to the daily WLCG meeting, the weekly EGEE-OSG-WLCG operations meeting, the monthly USAG and the GDB every few months.

## A.2 GGUS Standard workflow

The central GGUS system acts both as a single entry point for the users and as an interconnecting body for the various regional support systems (Figure 1). Changes or updates happening to a ticket in any of the help desk systems connected to GGUS are automatically propagated to the GGUS system. Hence a user can follow the current status of their ticket in the GGUS system alone.

The central GGUS system is connected with several regional systems belonging and operated by the ROCs, the VOs, other Grid infrastructures and Middleware providers. Each of these regional systems maintains its full independence from the central system.

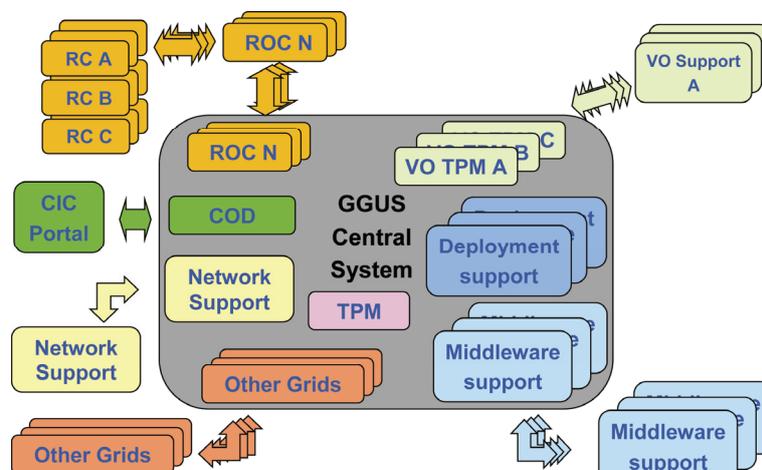
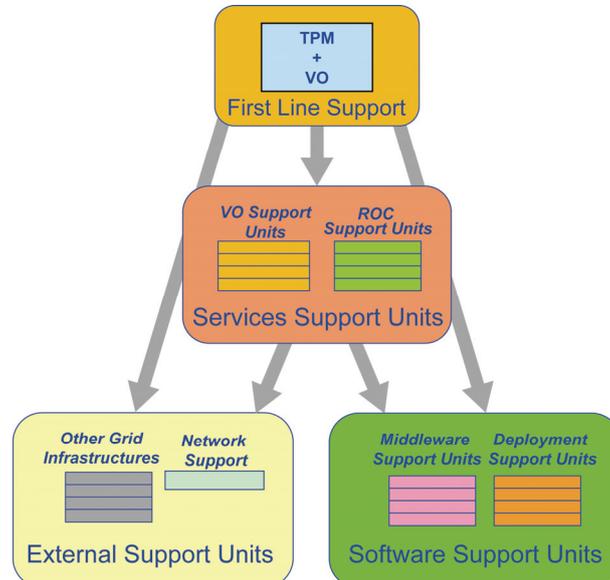


Figure 1. GGUS, central system and satellites

Until the beginning of EGEE III the ticket workflow has been implemented using a three level support structure. Each ticket, submitted either via e-mail or via the web

interface, would be initially assigned to the Ticket Process Manager (TPM), which constituted the first line support. It could then be assigned to one of the Service Support Units, which constitute the second level support, or, in exceptional cases, directly to the Expert Support Units, which constitute the third level line of support (see also Figure 2).



**Figure 2.** Schematic view of the GGUS standard workflow

### **A.2.1.TPM**

The TPM unit is in fact staffed by several teams, rotating across the different ROCs, with two ROCs on duty on any given week. The TPM unit has several responsibilities: finding a solution to simple tickets, gathering as much information as possible from the user concerning the problem at hand before the ticket is assigned to another unit, and reassigning the ticket to another unit if a ticket is reassigned back to the TPM. It also plays a fundamental role in the escalation procedure when a user deems that a ticket has not been adequately handled: in this case they are the second level of escalation. When a ticket is escalated to the TPMs the TPM unit is asked to follow the particular ticket in question more closely to ensure that the SU to which the ticket is assigned addresses the problem in a timely and adequate manner.

### **A.2.2.Services support**

The Service SUs are the second line support of the GGUS system. They are typically operated by ROCs, VOs, or other grid infrastructures and provide support for questions concerning resource centres belonging to their region or middleware directly provided by the VOs.

### **A.2.3.Expert support**

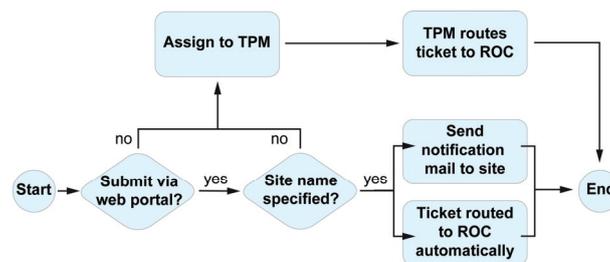
The Expert SUs are the third line support of the GGUS system. They are typically operated by ROCs or middleware providers and furnish support for questions concerning operations that cannot be answered by the service units or problems related to the middleware itself. If the problem concerning the middleware proves to be a bug, then a bug report is opened with the support system of the middleware in question.

### A.3 WLCG specific workflows

The largest user group utilising of the EGEE grid infrastructure are the WLCG VOs, each corresponding to one LHC experiment. Due to the LHC reaching its start-up phase, the requirements for the quality of service and of support provided by EGEE for the WLCG VOs grew. To satisfy the needs of the LHC community in the area of user and operations support several new workflows and mechanisms had to be implemented. In this section we describe these workflows and their use cases.

#### A.3.1. Direct user ticket notification to resource centres

The basis of the workflows described in this section is the direct notification of user tickets to computing centres providing resources to the WLCG VOs. The standard ticket workflow (as described in section 3) foresees all tickets being triaged, assigned or possibly solved by the first line support (the TPM). As the LHC VOs do their own first line support and only grid experts from the VOs submit tickets through GGUS to the EGEE infrastructure it was considered to be envisageable to let these users assign tickets directly to the concerned resource centre, as they could be trusted to be able to properly judge the problems and submit tickets that could only be solved by the resource centre directly.



**Figure 3.** Direct ticket assignment workflow.

To be able to keep the standard management procedures in place and also to keep the independence of the various ROC ticketing systems it was important to still involve the ROCs in this process. Therefore the workflow for the direct assignment was implemented by assigning the ticket to the ROC the resource centre is affiliated to and simultaneously sending a notification email to the resource centre itself. The resource centre is aware of the ticket and can start working on the problem immediately. At the same time the ROC is informed about all the steps that are taken and retains the responsibility for the all the tickets in its region, as in the standard workflow. A schematic view of the workflow for the direct assignment can be seen in **Figure 3**. The contact information for the resource centres is retrieved automated from EGEE's GOCDDB.

Following the success of the direct assignment mechanism within the WLCG community this feature has been opened to all users submitting tickets to GGUS and so far no misuse or major problems have been encountered.

#### A.3.2. Team tickets

In the standard ticket workflow within GGUS every ticket is owned by the user who submitted it. This means that only the submitter and members of the support staff are able to modify the ticket. This workflow does not cover the WLCG use case of experiment shifts that are carried out by a large group of members of the collaboration. The team ticket mechanism enables a hand-over of tickets between these experiment shifters. One shifter could, for example, shortly before the end of

his shift, submit a ticket which during the next shift has to be updated. This mechanism was enabled by sharing the ownership of the ticket between all members of the VO participating in each of the shifts.

This implied a deviation from the flat hierarchy in the access rights management of GGUS which previously only distinguished between user and support staff. Special roles had to be implemented for the several different shift teams of the LHC experiments. Currently the user credentials and their roles are stored in the GGUS user database. When accessing the GGUS web portal the user authenticates with his certificate enabling the matching of his credentials with the user database.

When submitting a “team ticket” the shifter can decide which workflow he wants the ticket to take: the standard workflow with ticket triage by the TPM or the direct routing to the ROC and notification to the resource centre.

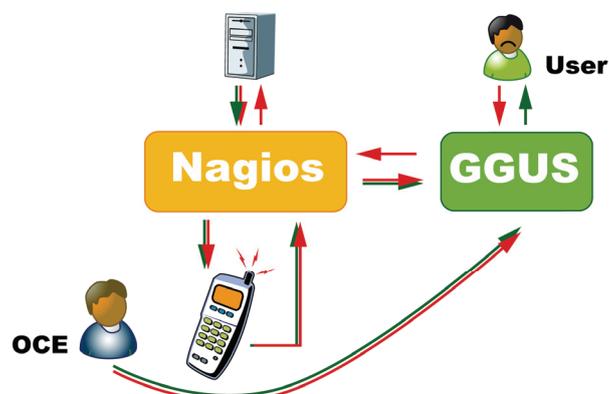
### A.3.3. Alarm tickets

In the WLCG computing model the Tier-1 centres have special roles and requirements to fulfill. For example they have to provide 24x7 support for specific services defined in the Memorandum of Understanding (MoU). To enable the LHC VOs to make the Tier-1 centres aware of problems outside of office hours an alarm ticket mechanism was introduced in GGUS.

Using the same mechanism as for the shift teams the authorised alarmers are stored in the GGUS user database. The number of alarmers for each experiment is restricted to four or five people trusted by the VO managers. This serves as a guarantee that this alarm feature is only used after a thorough evaluation of the problem. GGUS will then sign the alarm ticket with a GGUS certificate to prove the authenticity of the alarm tickets.

Alarm tickets can only be opened against Tier-1 centres and will use the direct assignment mechanism to make sure that there is no delay in delivering alarm ticket information to the centre. The Tier-1 centres have to ensure that the information about the ticket is propagated to the experts. During office hours the local standard procedures can be used whereas outside of office hours a mechanism has to be introduced to inform the on-call engineers about the issue.

For instance, at GridKa, the German Tier-1 centre, this is done via a web services interface between the ticket system and the local monitoring system based on Nagios. The workflow for the alarm ticket mechanism at GridKa is shown in **Figure 4**.



**Figure 4.** Simplified view of the alarm ticket mechanism (GridKa example).