

EGEE-III

ROD model description

Document identifier: EGEE-III-SA1-971628-RODmodel-v1.1.doc

Date: **14.11.2008**

Activity: SA1

Document status: **Released 1.1**

Document link: <https://edms.cern.ch/document/971628/1.1>

Copyright notice:

Copyright © Members of the EGEE-III Collaboration, 2008.

See www.eu-egee.org for details on the copyright holders.

EGEE-III ("Enabling Grids for E-science-III") is a project co-funded by the European Commission as an Integrated Infrastructure Initiative within the 7th Framework Programme. EGEE-III began in May 2008 and will run for 2 years.

For more information on EGEE-III, its partners and contributors please see www.eu-egee.org

You are permitted to copy and distribute, for non-profit purposes, verbatim copies of this document containing this copyright notice. This includes the right to copy this document in whole or in part, but without modification, into other documents if you attach the following reference to the copied elements: "Copyright © Members of the EGEE-III Collaboration 2008. See www.eu-egee.org for details".

Using this document in a way and/or for purposes not foreseen in the paragraph above, requires the prior written permission of the copyright holders.

The information contained in this document represents the views of the copyright holders as of the date such views are published.

THE INFORMATION CONTAINED IN THIS DOCUMENT IS PROVIDED BY THE COPYRIGHT HOLDERS "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED. IN NO EVENT SHALL THE MEMBERS OF THE EGEE-III COLLABORATION, INCLUDING THE COPYRIGHT HOLDERS, OR THE EUROPEAN COMMISSION BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THE INFORMATION CONTAINED IN THIS DOCUMENT, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

Trademarks: EGEE and gLite are registered trademarks held by CERN on behalf of the EGEE collaboration. All rights reserved"

Document Log

Issue	Date	Comment	Author/Partner
1_1	14.11.2008		CE – Marcin Radecki CE – Małgorzata Krakowian FR – Helene Cordier NE – Vera Hansper

Document Change Record

Issue	Item	Reason for Change

Table of contents

1. GLOSSARY.....	4
2. ASSUMPTIONS FOR THE NEW OPERATIONS MODEL.....	5
3. RECOMMENDATIONS TO FEDERATIONS IN EGEE-III AND MODEL OVERVIEW.....	7
4. ACTORS ROLES AND DUTIES.....	9
4.1. SITES.....	9
4.2. 1 ST LINE SUPPORT	10
4.3. ROD DUTIES	10
4.4. C-COD DUTIES	11
5. WORKFLOW, INCLUDING EMERGENCY PROCEDURES.....	13
5.1. 1 ST LINE SUPPORT	13
5.2. ROD	13
5.3. C-COD.....	14
5.4. HANDLING CORE/URGENT FAILURES	14
6. OPERATIONS MODEL: USE CASE.....	15
7. TRANSITION PERIOD – UNTIL END OF EGEE-III.....	16

1. GLOSSARY

Incident: an incident is a combination of one or more of the following alarms: gstat failure, network connectivity alarm, regular SAM alarm.

Regional Support: Regional support encompasses both ROD and 1st line support. ROD handles tickets on a regional or federation level and reports to C-COD. 1st line support operates on a site basis, and is overseen by ROD. (Note: Regional support is a combination of EGEE WBS task 1.2.3 “1st line support for operations problems” and the regional part of task 1.2.1 “Grid operator on duty”.)

2. ASSUMPTIONS FOR THE NEW OPERATIONS MODEL

A1

We suggest using the same dashboard provided by the operations portal for site, 1st line support, ROD, and C-COD teams. Under consideration is that ROD/1st line will have the same (or similar) access to tools even though the regional support might be split between 2 teams.

The difference in roles will be taken into account through authorization settings in the dashboard. The most important aspect of this is that it will take into account the obligations and workflow of the regional support (ROD+1st line support) with regards to the project. Within the regions, amendments can be done within the scope of each team, but with regards to the project, ROD will be held responsible for applying and following procedures.

That means that we need 2 roles in the GOC DB and federations would then be able to refine the actions as defined in the dashboard -- via preferences per federations. If there is only one team in a federation then ROD does the default work and takes over the 1st line support job/role or at least makes the lack of it “transparent” to the project.

A2

Use of GGUS for opening tickets to sites by ROD - A prototype of the dashboard will not implement integration with regional helpdesks.

A3

At the beginning of the change over to new operational procedures, ROD will copy the escalation procedure from regular COD. The last step, which is “take the case to political instances” will mean escalation to C-COD. Later, when federations have found a way to operate smoothly with some “efficiency” we can relax this recommendation – maybe we have to fix some metrics such as when a federation is available 90% of the time for 3 months, then they are free to adapt their internal organization provided they inform the ROD community. There is a need for an ROD metric and a body (e.g. C-COD) which will decide whether the relaxation for a given region can be applied. This will be done later, based on experience gained from running the new model. Apart from that we need to define **what** cases shall be escalated to C-COD, examples of that are:

- 30-day-old tickets which have not been solved
- tickets with an “expiration date” which passed 3 days ago
- incidents older than 72 hours which do not have a ticket assigned to them

All the above mentioned deadlines and times shall be implemented as easily configurable values to allow federations to adapt them if needed, and must be agreed to with C-COD.

A4

The two systems (old and new) will co-exist as all federations will not switch to the regional structure simultaneously. C-COD duties will be obligatory and will be provided by the federations who join the regional ROD model. Federations starting the ROD model will be allowed to quit regular COD shifts. The regular COD shifts run by the remaining federations will continue until the “transition period” is complete i.e somebody (possibly C-COD?) will establish from the **ROD metrics** that the workload on C-COD is at a minimal level and that operations are in a stable state. When all federations have switched, the planning of this operation will need to be revised.

A5

Mandatory/optional options are to be defined with respect to the project. i.e. we cannot impose a way of handling these options internally on regions. We can only set recommendations that seem reasonable as proposed by those federations in the pilot phase, pole1 and validated by the ROC managers. As an example, we will provide flexibility in the definitions and tasks of regional support within the region (as in A1), and we could also think of regional support as being cross-regional.

However, C-COD are not supposed to do the catch-all regional support unless decided at a political level and must then be properly staffed by the community at that time.

3. RECOMMENDATIONS TO FEDERATIONS IN EGEE-III AND MODEL OVERVIEW

The goal of the new model is to organize COD shifts in a way that each region provides a regional COD team (called *ROD*) that looks after tickets at sites *in their region only* (instead of all grid sites). This is a forerunner for the future organization of NGIs and also improves service quality as the ROD team is closer to sites and therefore knows the region specifics and can give a more detailed response to problems.

Apart from the *ROD* team who operates mainly at a procedural level there is a *1st line support* team who operates at a technical level. It is expected that there is cooperation between ROD and *1st line support*, and this can be organized internally in each ROC. For example, they can be run as two separate teams or be the same one. The responsibility for the *1st line support* team may differ in each ROC. The ROC determines how the work of the *1st line support* team is organized in conjunction with the ROD team. Suggestions for several modes of operation of *1st line support* are:

- **minimal** – there is *almost no* *1st line support*, all responsibility for solving problems is left on sites and responsibilities for the project that are not implemented will be taken over by ROD
- **passive** - they react only when a request for support comes from a site
- **pro-active** – they react on requests, look at results and receive notifications from monitors and they contact sites when there is a suspicion of a problem, suggesting solutions.

An outstanding issue of COD regionalization is **knowledge sharing** which, if overlooked, can result in a set of regional initiatives without any easy mechanism to collect and share experience at the project level.

It is desirable that knowledge of how to solve particular operational problems will be built during the process of supporting sites. This knowledge, or knowledge base, shall be available to anyone who uses or administers grid resources. The *technical layer*, or the *1st line support team* is the logical source of the knowledge base as they have the greatest expertise and are closest to solving operational issues. The form of this knowledge base could be a wiki for instance.

We suggest two options for building up the knowledge base:

- **implicit** – where the knowledge is built as a side-effect of the support process, e.g. when it can be derived from trouble tickets
- **explicit** – where the knowledge must be written by someone in the form of a recipe e.g. a wiki

For the implicit option, however, a bit of attention must be paid to write the details of the solution into the ticket body. The explicit solution requires a dedicated effort. In the model below a simple model is proposed. This does not require any change in the GGUS system as it uses current COD tickets that are created if a problem at a site appears. Site and *1st line support* teams put the information into the ticket and the ROD team verifies that it is descriptive enough.

Each ROC has the freedom to organize its own *1st line support*, but some activities have to be covered regardless with respect to the project.

In general there are 5 activities that need to be covered in the new model:

Activity Name	Run by who	Comments
Handling tickets	ROD	-
Creating tickets	ROD	-
Handling incidents	1st line support or ROD	-
Support for sites	1st line support or ROD	Can be done in <i>minimal</i> , <i>passive</i> or <i>pro-active</i> mode
Knowledge sharing	Site, 1st line support or ROD	If <i>minimal</i> mode chosen, then must be done by sites and/or ROD

4. ACTORS ROLES AND DUTIES

This section describes the actors who interact with each other in the model.

- Site administrators – team responsible for providing site services at the agreed level.
- 1st-line support – team responsible for supporting the site administrators to solve operational problems. The team is provided by each ROC and requires technical skills for their work. Organization and even a presence of the team is optional.
- ROD – team responsible for keeping the process of solving problems according to agreed procedures i.e. problems are recorded properly, progress according to specified time lines and necessary information is available to all parties. The team is provided by each ROC and requires procedural knowledge on the process (rather than technical skills) for their work.
- C-COD – small team (2-3 persons) responsible for coordination of RODs, provided on a global layer.

The main assumption in this model is that all teams are acting on a **day-to-day basis**, which means that there is at least one person who can provide a service each day. Currently, the organization of 1st line support teams looks different in each ROC and thus the procedures can differ across federations, even to a point where *no* 1st line support activity is provided. The remaining part of this section introduces the actors, their responsibilities and links between them.

4.1. SITES

Sites are responsible for providing site services at an agreed level, thus their main task is to make sure site problems are solved efficiently.

Communication with:

1st line support – An *on-line* and *off-line* mode of communication shall be provided. On-line mode increases the efficiency of solving problems and an off-line mode is needed when 1st line support is not currently available (i.e., at lunch). This could be done through a “notes” mechanism in the operations dashboard.

ROD and C-COD – from the site's point of view communication with these teams is based on answering GGUS tickets which have been created by ROD and are assigned to the site directly.

Duties of sites	Requirements
Receive and react on incident notifications	Mandatory subscription to notifications
Send a “request for help” to 1st line support	Optional, depending on 1 st line support mode
cooperate with 1st line support according to ROC rules	Optional
Modify helpdesk/GGUS tickets up to a “solved by site” state (inclusively).	Optional: provide/verify the solution in cooperation with the 1st line support team
Provide information into the “site notepad”	Mandatory
Create entries for the knowledge base	Optional
Create tickets to C-COD for core or urgent matters	Optional: submitted through ROD for validation

(Definitions in the “Requirements” column: Mandatory – must be covered by site administrator teams, Optional – the federation decides how to implement this.)

4.2. 1ST LINE SUPPORT

The team is provided at a ROC layer to support site administrators with incidents regarding deployment or maintenance of grid services. Main duties are mandatory during the first 24h after the appearance of an incident. However, it is worth noting that 1st line support should still assist sites even when the **24h grace period has passed**.

Communication with:

Site administrators – In the *pro-active* option the 1st line team can initiate communication with site admins using the “site contact” e-mail address registered in the GOC DB or some *on-line* means (if supported). Usually 1st line support receives requests either through the ticketing system or mailing list or even through instant messenger services, depending on the critical level of the problem and ROC organization. Solutions for *non-trivial* problems which are not site-specific shall be recorded in a public place to allow expertise sharing with Grid users and administrators.

ROD – communication with ROD is done through a regional dashboard where 1st line support can fill the “site notepad” field, thus passing the problem details to ROD.

Duties of 1 st line support	Requirements
Receive incident notification from sites in the scope	Mandatory
Respond to site support requests	Optional – present in “ <i>passive</i> ” mode
Contact a site for incidents which are not being tackled	Optional – present in “ <i>pro-active</i> ” mode
Assists a site in solving incidents	Mandatory
Pass information to the ROD team through the dashboard “incident note” or a dedicated zone in the site notepad	Mandatory
Handle incidents younger than 24h	Mandatory
View incidents older than 24h	Optional
Modify any GGUS ticket body up to the “solved by site” status	Mandatory
Close incidents for “solved problems”	Mandatory
Create entries for the knowledge base	Mandatory
Create tickets to C-COD for core or urgent matters	Optional: submitted through ROD for validation

(Definitions in the “Requirements” column: Mandatory – must be covered by either 1st line support or ROD team, Optional – the federation decides how to implement this.)

4.3. ROD DUTIES

An ROD team is provided by each ROC. It is responsible for handling operational tickets for sites in their respective region. It is proposed that ROD has authority over 1st line support duties, which means that if some duties are not covered by 1st line then they shall be done by ROD. This is reflected in ROD duties marked as Mandatory with a “(if not handled by 1st line)” remark.

Communication with:

1st line support – ROD reads the “site notepad” field written by 1st line support in their

section of the regional dashboard. If there is a need for an additional explanation it can be done through e-mail or an instant messenger service.

C-COD – an interface with C-COD allows ROD to escalate tickets manually in the dashboard. This includes a validation of the context of the incident into the ticket body that is to be exported to C-COD.

Duties of ROD	Requirements
Receive incident notification from sites in the scope	Mandatory (if not handled by 1 st line)
Handle incidents younger than 24h	Mandatory (if not handled by 1 st line)
View incidents older than 24h	Mandatory
Escalate tickets to C-COD if necessary: assignment to C-COD SU and validation of the ROD dedicated zone in the site notepad to be exported in the GGUS ticket.	Mandatory
Propagate actions from C-COD down to sites	Mandatory
Modify any GGUS tickets body up to the "solved by site" status	Mandatory
Close incidents for "solved problems"	Mandatory
Create entries for the knowledge base	Mandatory
Handle the final state of the incident: i.e "closed by ROD" once the ROD- has verified that the solution provided at the "solved by site" level is correct and appropriately documented.	Mandatory
Put the site in SD for urgent matters	Optional
Create tickets to C-COD for core or urgent matters	Mandatory

(Definitions in the "Requirements" column: Mandatory – must be covered by either 1st line support or ROD team, Optional – the federation decides how to implement this.)

4.4. C-COD DUTIES

This is a team provided at a global layer for coordination of all RODs and overall coordination of COD services in the long run. Its duties are meant to be kept minimal and are to be refined during the transition period to assess the workload that is indispensable at the "central level".

It is expected that all ROD teams will be part of a forum where C-COD could rapidly and efficiently reach all federations in case of specific technical announcements from the project or technical follow-up of specific issues, emergency or central service problems, new critical tests and other information that may be useful for seamless operations in the region.

Communication with:

ROD – it could be done by submitting a ticket to a ROC Support Unit or an ROD mailing list.

other – C-COD will communicate with other units like OCC, Operations Meeting, developers, ROC Managers, etc. Part of the communication will be done through GGUS tickets and the C-COD dashboard where some tickets that require C-COD attention are presented.

Duties of C-COD	Requirements
Looks into their dashboard for escalated tickets	Mandatory
Deal with GGUS tickets assigned to the COD SU	Mandatory
Watch Operations Meeting actions list for COD assigned actions	Mandatory
Take part in Operations Meetings raising issues and reporting progress if needed	Mandatory
Communicate with all ROD or a given ROD	Mandatory – through mailing list/ tickets
Look into global ROD metrics	Mandatory
Follow-up core matters with the ROD community	Mandatory
Make recommendations to the knowledge sharing organization (e.g. structure), ensuring convergence of regional contributions	Mandatory
Upgrade the Operations Procedure Manual in conjunction with the ROD community	Mandatory
Put a site in SD in agreement with its corresponding ROD for security matters or for critical problems for the operation of infrastructure*	Mandatory
Create tickets to ROD(s) for core or urgent matters	Mandatory

* Clarification: This action which takes place only if ROD has not set a Scheduled Downtime for a site. Used in case of emergency or lack of response.

5. WORKFLOW, INCLUDING EMERGENCY PROCEDURES

These are procedures for the operation of specific teams

5.1. 1ST LINE SUPPORT

The main responsibility of the 1st line support team is to make sure that operational problems are being solved at a site. Normally sites shall initiate communication with 1st line support, but sometimes 1st line support may need to initiate it (in case of a very urgent problem or when a site does not seem to be aware of the problem). For that purpose, 1st line support receives notifications about site failures via e-mail, on their dashboard, or other. 1st line support has a specified time to solve problems with sites until a ticket is created. Currently this time is **24h, if** a working day, which means that the incident “age” does not increase during weekends, or public holidays. The age of the incident is bound to the site timezone, which must be taken into account by the relevant tools.

When this deadline has come to an end, 1st line support shall fill the “site notepad” field in the dashboard with information that the ROD team can read and validate as additional info into the GGUS ticket, when created. Thus, this info shall contain the following data:

- Summary of the problem as seen by 1st line support
- Steps taken and those still needed to solve the problem with a tentative timeline if possible
- Any information that may be helpful for opening a ticket for this problem, particularly if no ticket needs to be opened as the problem has disappeared or will disappear with next SAM test .

When the problem is solved at the site then 1st line support closes the incident. The condition for that is an “OK” status of the last monitoring result. The 1st line support may use an “on-demand” test submission to accelerate and verify that the proper status appears. This way they may improve on the site availability/reliability data.

For the sake of knowledge sharing, details on how the incident was solved shall be put into the ticket body by the 1st line support or site administrator. If there is a wiki page dedicated for that purpose in the region, the solution can be recorded there.

5.2. ROD

The main responsibility of ROD is dealing with tickets for sites in the region. This includes making sure that the tickets are opened and handled properly. ROD assigns tickets directly to sites. ROD looks into their dashboard which shows incidents which have lasted longer than 24h and were not closed by 1st line support. In this case a ticket shall be opened. In special cases the ROD may wait a bit longer with opening a ticket if there is a hope that the problem will disappear within the next 6 hours.

- ROD is responsible for verifying that tickets set to the “Solved by site” state by sites are solved. Even though the site solves the ticket, ROD, as a ticket originator, checks that the ticket was properly solved i.e. that the site status in monitoring is correct and the provided solution is comprehensive so that the ticket can later serve as a reference for others if the problem re-appears again. The final status is then “closed by ROD”.
- ROD is also responsible for notifying security related issues to the OSCT duty contact, so these two bodies shall be in touch during their daily work and means for that shall be established.

5.3. C-COD

Central COD is responsible for the overall performance of the regionalized COD service and thus they take care of the convergence of regional teams by overseeing and coordinating their work. Another duty is representing all RODs at a managerial level and the coordination of subjects affecting all RODs like knowledge sharing and ROD metrics. Particularly, C-COD deals with tickets escalated from RODs regarding non-responding sites, which will be suspended. C-COD forwards such cases to the Operations Meeting where a general announcement is made and the decision is taken. If the decision is to suspend then it is forwarded to the ROD for execution.

Another responsibility of C-COD is to make recommendations about the criticality of tests used in monitoring to ensure that the results are credible as well as how the criticality of tests influences the workload of RODs.

5.4. HANDLING CORE/URGENT FAILURES

For urgent failures we want the *responsible entity* to *react* immediately and we also want the case to be recorded, if it is not possible to fix it immediately, for others to give feedback on the status.

Types of urgent failures:

- With a site → try to contact them via on-line means and if that fails raise a ticket immediately.
- With middleware, monitoring → raise a GGUS ticket to C-COD (after ROD validation) who assigns it afterwards and if it affects other regions e-mail to an all ROD mailing list with the ticket ID. ROD in the relevant regions propagates this to their sites. C-COD investigates, communicates and coordinates up to the end of the incident. If incidents are representative of a potential problem, then they reassign the ticket to the appropriate SU and follow-up the issue till the problem is solved.

Another case of an urgent problem is a security related issue, where ROD needs to inform the OSCT on duty contact.

6. OPERATIONS MODEL: USE CASE

Example of handling a problem (with minimum requirements of the GGUS system):

1. Monday 7 P.M. A site fails the Replica Management test. An immediate, automatic notification is sent to the site and a new incident also appears in the 1st line support dashboard. The incident “age” begins as Monday is a working day.
2. Tuesday morning 8 A.M. The site administrator reads the notification and decides to ask 1st line support for assistance. As the 1st line support is not yet reachable via on-line communication (instant messenger, e.g. jabber etc.) the site administrator decides to submit a “request for support” ticket in the *site notepad* within the “site dashboard” as the region does not have a regional helpdesk.
3. Tuesday 9 A.M. The 1st line support on-duty reads the incident notification and looks into the “site notepad” where a request for help is standing. He/she contacts the site admin via instant messenger service and suggests advice. After a long investigation, at 4 P.M., the solution is at hand, however it requires a site reconfiguration which will be done tomorrow. At the end of the working day the 1st line supporter writes in “site notepad” about that incident, including the status and the plan to run a site reconfiguration tomorrow morning.
4. Tuesday afternoon 7 P.M. The incident is 24h old and appears in the ROD dashboard.
5. Wednesday 8 A.M. The ROD looks into the dashboard, finds the “24h-old” incident and reads the “site notepad”, decides not to wait any longer and opens a ticket, assigns it to the site; the “site notepad” **is exported** into the ticket body after validation.
6. Wednesday 8. A.M. At the same time, the site admin runs the site reconfiguration and the next SAM test at Wed 9 A.M. shows OK for the site.
7. Wednesday 9.30 A.M. The site admin contacts the 1st line support on-duty that the problem is cleared. The 1st line support then **solves** the GGUS ticket. The ticket is then waiting for verification.
8. When the problem is solved the site inserts the problem solution into the ticket for the sake of sharing this experience with others.
9. ROD verifies if the site is stable enough and if the solution description is suitable for the knowledge base (clear, all details etc.). It then **closes** the GGUS ticket when both conditions are fulfilled. (Remark about the current model: makes the use of “quarantine” useless. If the site is not stable (or unresponsive) then it receives a recommendation to go to SD; the ROD can also go over the escalation procedure and decide to directly escalate the problem to C-COD. **The escalation procedure can be as usual except that step 3 is now “assigned to C-COD”.** (comment: what is meant by *as usual* and which *step 3*?) Other changes in the ticket's state are : “solved by ROC” is now “solved by site”, “solved “ is now “closed by ROD”.)

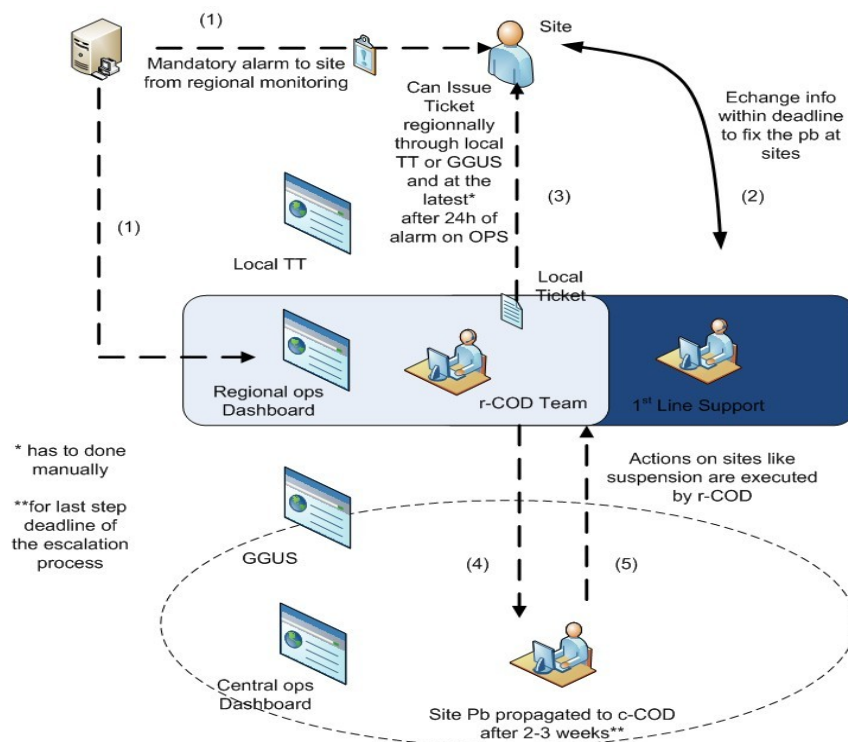


Figure 1: New model diagram

7. TRANSITION PERIOD – UNTIL END OF EGEE-III

The migration from regular COD to the ROD model will be done incrementally (?), by transferring a group of federations to the new model in conjunction with reducing the number of regions covered by regular COD. The planning is based on the readiness of tools, procedures and the proof of concept. Initially we plan to involve 4 federations which already have well established 1st line support activity, namely AP, CE, NE and SWE, then, based on experience and ROD ROC metrics, 3 or 4 more will be involved in the next transfer.

The roadmap for migration to the new model foresees that the dashboard prototype will be delivered to the federation during COD-18, December 2008. After one month of testing, on the 1st January 2009, the first 4 federations (AP, CE, NE, SWE) will start operations in the new model. Then, after 4 months (COD-19, April 2009) we will go to the next group of federations to transfer, and lastly, before the end of 2009 (EGEE'09), the remaining federations will join. The number and composition of federations will be established during the COD-18 meeting.

We expect that there may be some alignment in procedures and tools required based on the experience from running a new model, especially in the first round which may require some time to be implemented.

We need to validate this model at a federation level, then extend it to a country level and then it can be assessed if it is ready to be implemented in an EGI/NGI model.