



GISELA

NGI / LGI INFRASTRUCTURE SERVICE ASSESSMENT OF THE 1ST YEAR

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Abstract: This document contains an assessment of the work carried out by the Work Package 4 “*NGI-LGI Infrastructure Services*” during the first project-year. Main achievements, current issues and plans for the next reporting period are presented.



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1. INTRODUCTION

1.1. PURPOSE OF THE DOCUMENT

This deliverable presents the evolution of the GISELA infrastructure during the first project-year. It covers the pledged Success Thresholds and Milestones for the referred period, while also providing extra useful information, such as the infrastructure usage.

For a comprehensive view of the Project and of the GISELA Consortium, the Description of Work (DoW)¹ and the Consortium Agreement (CoA)² should be consulted.

1.2. DOCUMENT ORGANISATION

An executive summary is provided in Section 2. Then, the Work Package achievements are detailed in Section 3, where a thorough analysis of WP4 success thresholds is made (Section 3.1), and other activities are explained in Section 3.2. The table of WP4 human resources follows up in Section 4, and sections 5 and 6 present, respectively, the deviations from the original plan and the foreseen actions for the next reporting period. Finally, some conclusions are shown in Section 7.

1.3. APPLICATION AREA

The target audience for this document is:

- The members of the Project;
- The European Commission Services;
- The Project Reviewers;
- The External Advisory Committee (EAC);
- The general public.

1.4. DOCUMENT AMENDMENT PROCEDURE

Amendments to this document can be requested by any Project Member to the Project Coordinator, via the Project Office (hlp-gisela@hlpdeveloppement.fr).

1.5. GLOSSARY

CA	Certification Authority
CoA	Consortium Agreement
DoW	Description of Work
EAC	External Advisory Committee

¹ <http://documents.gisela-grid.eu/record/32?ln=en>

² Consortium Agreement (CoA) available upon request to the GISELA Project Office (hlp-gisela@hlpdeveloppement.fr)

EGI	European Grid Initiative
EMI	European Middleware Initiative
GGUS	Global Grid User Support
gLite	Lightweight middleware for Grid Computing
GOC	Grid Operation Centre (Regional Operations, GISELA context)
GSC	Grid Support Centre (Central Operations, GISELA context)
HLP	HLP Développement SAS (France)
IGALC	IGALC - Iniciativa de Grid de America Latina – Caribe - Regional Operating Centre (www.igalc.org)
LAC	Latina America and the Caribbean
MoU	Memorandum of Understanding
NGI	National Grid Initiative
OurGrid	Opportunistic Grid Middleware (www.ourgrid.org)
RA	Registration Authority
RC	Resource Centre
ROC-LA	LA Regional Operating Centre (www.roc-la.org)
TAGPMA	The Americas Grid Policy Management Authority
VO	Virtual Organisation
VRC	Virtual Research Community
WP	Work package
WP1	Administrative and Technical management of the Project
WP2	Dissemination and Outreach
WP3	User Communities Support
WP4	NGI / LGI Infrastructure Services
WP5	Network Resource Provision
WP6	Infrastructure and Applications-oriented Services for User Communities
XGUS	Customizable version of GGUS

2. EXECUTIVE SUMMARY

The GISELA project began with part of its infrastructure already in place, the task of WP4 being to expand it and to improve its functionality. As important was the duty of WP4 to migrate the operations control to the Grid Support Centre (GSC) and the Grid Operation Centres (GOC), with the ultimate goal of providing the means for the e-Infrastructure long-term sustainable operation in the Latin American region.

This document provides a status report of the WP4 achievements during the first project-year with respect to the committed success thresholds:

- Number of implemented GSC;
- Number of implemented GOC;
- Average ticket resolution time;
- Average Resource Centre availability;
- Number of cores integrated.

With the exception of the last one, all of the metrics were met. Regarding the *Number of cores integrated*, 10% are missing to reach the pledged threshold in due time. This has motivated actions to revert this situation for the next reporting period.

This deliverable also dwells on other important results such as the contribution of the project to the VRC support. With more than 2.6 million Normalized CPU hours, the gLite part of the infrastructure represents a welcome contribution to the end-users, always tight on resources. On the other hand, the OurGrid resources could see a more intense usage.

Another activity worth of notice is one of the tasks attributed to the GOC in Colombia: studies to better allocate resources to VOs. They may help boosting the infrastructure efficiency, as better understanding is gained concerning the load profile of each community.

3. ACHIEVEMENTS

3.1. SUCCESS THRESHOLDS

The progress of WP4 is to be measured by five success thresholds. Table 1 enumerates them, as well as the status at the end of the first project-year. More details are given through Sections 3.1.1 to 3.1.5.

Table 1: Success Thresholds for WP4

Quality Metric	Year 1	Status
Number of implemented GSC	1	1
Number of implemented GOCs	≥ 1	2
Number of cores integrated	> 2000	1794
Average ticket resolution time	≤ 3 weeks	< 1 week
Average Resource Centre availability	$\geq 60\%$	87%

3.1.1. Grid Support Centre (GSC)

The GSC is the GISELA central base of support. Currently, it is located at UFRJ (Brazil) and it performs the following activities, as pledged in the DoW:

- Deploying and operating core grid services needed to interconnect all the GOCs and RCs in the infrastructure;
- Coordinating the middleware deployment and support;
- Providing support to Resource Centre administrators;
- Coordinating the GOCs operation;
- Routing and following up trouble tickets;
- Coordinating the recovery from security incidents, making sure that proper solutions are quickly applied;
- Coordinating the interoperation efforts among the several grid infrastructures operated by LGI and with grid infrastructures operated by other Regional and Global partners;
- Defining best practices, operation procedures and operation requirements;
- Anticipating the growth of the infrastructure;
- Operating the VO management for prod.vo.eu-eela.eu VO;
- Keeping close contact with the VRC demands, in collaboration with WP3, in order to gather requirements for new services, as well as advertising the current services to the community.

Table 2 shows the central services that compose the GSC, indispensable for the grid operations. The amount of resources devoted to them (see Table 2) is estimated to be close to 60 CPU cores.

Table 2: The GISELA Central Services

Institution	Core Service	Instances	Scope
UFCG	Discovery Service	1	OurGrid
	Status Service	1	OurGrid
	Statistics Service	1	OurGrid
	Workload Management System	2	prod.vo.eu-eela.eu VO
	Proxy Server	1	prod.vo.eu-eela.eu VO
	Logical File Catalog	1	prod.vo.eu-eela.eu VO
	Logging and Bookkeeping	1	prod.vo.eu-eela.eu VO
	Top-Level BDII	1	prod.vo.eu-eela.eu VO
	User Interface	2	prod.vo.eu-eela.eu VO
	AMGA Server	1	prod.vo.eu-eela.eu VO
UFRJ	Management System	1	prod.vo.eu-eela.eu VO
	Monitoring System	1	prod.vo.eu-eela.eu VO
	Central Storage Element for Monitoring	1	prod.vo.eu-eela.eu VO and IGALC
	Top-Level BDII	2	IGALC
	Monitoring System	1	IGALC
	Workload Management System	1	IGALC
	OS and gLite repositories	1	IGALC
	DIRAC server	1	prod.vo.eu-eela.eu VO
CETA-CIEMAT	Web server	1	IGALC
	User Interface	1	prod.vo.eu-eela.eu VO
	Management System	1	prod.vo.eu-eela.eu VO

3.1.1.1. Coordinating the resource allocation and brokering for global VOs

This activity requires a certain amount of investigation on how many VOs should be supported by each site, and has been delegated to the Colombian GOC. Work is ongoing for all supported VRCs VOs, including the prod.vo.eu-eela.eu VO.

3.1.1.2. Operation of a global accounting repository to keep track of grid resources usage.

GISELA profits from the synergy with EGI in this activity (thanks to the already signed MoUs between GISELA and EGI-InSPIRE³ and between UFRJ, on behalf of GISELA partners, and EGI.eu⁴), as the EGI global accounting repository and portal are open to the GISELA RCs to publish their statistics of use.

3.1.1.3. Maintaining and operating a central ticketing system, operations portal and knowledge database.

Again, GISELA profits from the synergy with EGI in this task, using the ticketing system and operations portal provided by EGI. A knowledge database however, is constantly updated at the IGALC website.

3.1.1.4. Deployment and operation of an Authentication Service, including a catchall CA and as many RAs as needed.

The Authentication Service is already in place and operated by third-party entities, relieving GISELA from the need to run it. Even so, GISELA is represented in the TAGPMA, so that it always participates on any decisions.

3.1.2. Grid Operation Centre (GOC)

The GOCs are regional instances of the GSC, with a reduced number of attributions and a regional mandate only. There are two GOCs currently in place, one in Mexico and another in Colombia. The activities performed at each of those are as follows:

- Integration of new Resource Centres without any intervention from the GSC;
- Check that gLite Resource Centres in production follow EGI policies for security incident handling;
- Check that gLite Resource Centres in production publish their accounting data on EGI global accounting repository;
- Operation control of the country Resource Centres by the GOC operation teams, which amongst other tasks follow-up problems via trouble tickets, support administrators and care of prompt error detection;
- Provision of a set of central services. The remaining ones are either shared between different GOCs (IGALC and ROC-LA) or provided by the GSC.

Both Mexico and Colombia count with a national Certification Authority and Registration Authorities are created as needed. A rather important fact for the long-term sustainability of the LA e-Infrastructure is that Colombia has recently launched an NGI that counts on 20 participant Universities. Therefore, it is expected that financial sustainability will be guaranteed and more Resource Centres in Colombia will join the grid in the following couple of years.

3.1.3. Number of cores integrated

Partners federating resources with GISELA have done it via two different middlewares: gLite and OurGrid. Table 3 and Table 4 depict the status of both components of the infrastructure at the time of this writing (August 2011). The combined resources sum up to 1794 (1530 gLite + 264 OurGrid) CPU

³ <http://documents.gisela-grid.eu/record/171?ln=en>

⁴ <http://documents.gisela-grid.eu/record/170?ln=en>

cores, about 200 cores short of the minimum threshold. The difference between pledged and actually integrated resources is discussed in Section 5.

Table 3: gLite Resources

Resource Centre	CPU Cores	Storage (TBs)	Status
CEFET-RJ	24	0	Certification
CIEMAT-TIC	90	35	Production
EELA-UNLP	17	0.6	Production
ICN-UNAM	170	16	Production
IN2P3-CPPM	388	0	Production
INFN-CATANIA	100	14	Production
UFRJ-IF	355	11	Production
ULA-MERIDA	53	1	Production
UMinho-CP	16	0.1	Production
Uniandes	176	0.5	Production
UIS-BUCARAMANGA	26	1	Certification
UFCG-LSD	10	1	Production
UTP-PANAMA	15	0	Certification
UPorto	90	1	Production
Total	1530	81.2	

Table 4: OurGrid Resources

Resource Centre	CPU Cores	Status
LCC2	74	Production
AESA	36	Production
LCC1	78	Production
LSD	76	Production
Total	264	

In addition to the resources pledged in the DoW, good cooperation with other institutions – partners of previous projects – have yielded extra resources to the catchall VO, prod.vo.eu-eela.eu. Table 5 enumerates these resources. Although they do not contribute to the *Number of cores integrated*, the resources shown here are certainly an invaluable contribution to the end-users and illustrate the basic interest on Grids.

Table 5: Other gLite Resource Centres accepting the prod.vo.eu-eela.eu VO

Resource Centre	CPU Cores	Status
CERN-PROD	2000	Production
csTCDie	800	Production
EELA-UTFSM	44	Production
IEETA	10	Production
UNICAN	200	Production
Total	0	

It is worth noting that the numbers in Table 5 have to be considered with care. Although some are quite large, one should always keep in mind that large sites support a broad range of VOs, which increases the load, consequently reducing the amount of resources available to each VO. The difference between the actually available resources and the theoretical values (the one displayed in the tables) ranges from very little to a couple of orders of magnitude. Section 3.2 provides detailed accounting information that should provide good insight into the actual contribution of the Resource Centres to the GISELA-supported VRCs.

3.1.4. Resource Centre availability

Most Resource Centres regularly comply with the expected Availability threshold, as it can be seen in Table 6 and Table 7. The adopted gLite operation procedures require that, unless satisfactory justification is provided, Resource Centres failing the thresholds for three consecutive months be suspended from the infrastructure to ensure the quality of the resources for the end-user. The site must undergo the certification process again in order to regain its production status. These procedures are GISELA and EGI standards, meaning that even the Resource Centres that are not directly operated by GISELA (via IGALC) are subject to them. The same does not apply to OurGrid, due to its opportunistic nature. Nevertheless, the availability of the OurGrid peers is in line with the gLite counterpart.

Table 6: gLite Resource Centre Availability

Resource Centre	Sep 2010	Oct 2010	Nov 2010	Dec 2010	Jan 2011	Feb 2011	Mar 2011	Apr 2011	May 2011	Jun 2011	Jul 2011	Avg
CEFET-RJ	94%	58%	24%	97%	96%	82%	95%	28%	49%	26%	N/A	65%
CIEMAT-TIC	100%	95%	100%	99%	100%	96%	91%	93%	96%	97%	95%	97%
EELA-UNLP	76%	95%	88%	94%	94%	98%	81%	75%	0%	33%	72%	73%
ICN-UNAM	57%	75%	87%	79%	71%	65%	97%	72%	100%	53%	87%	77%
INFN-CATANIA	98%	27%	86%	99%	100%	68%	57%	94%	97%	87%	47%	78%
UFRJ-IF	99%	92%	79%	93%	98%	99%	83%	77%	57%	77%	86%	85%
ULA-MERIDA	93%	74%	73%	91%	79%	50%	22%	53%	32%	57%	N/A	61%
UMinho-CP	97%	99%	80%	100%	95%	99%	100%	98%	98%	96%	96%	96%
UNIANDES	86%	100%	100%	79%	55%	75%	75%	74%	61%	58%	75%	76%
UPorto	93%	76%	15%	100%	92%	100%	100%	100%	100%	100%	95%	88%
OVERALL AVERAGE												80%

Table 7: OurGrid Resource Centre Availability

Resource Centre	Sep 2010	Oct 2010	Nov 2010	Dec 2010	Jan 2011	Feb 2011	Mar 2011	Apr 2011	May 2011	Jun 2011	Jul 2011	Avg
LCC2	78%	95%	99%	100%	98%	100%	100%	91%	98%	100%	100%	96%
AESA	85%	97%	85%	100%	75%	95%	100%	99%	98%	100%	100%	94%
LCC1	78%	97%	85%	100%	82%	76%	100%	100%	98%	100%	100%	92%
LSD	80%	92%	80%	100%	100%	100%	100%	99%	97%	100%	100%	95%
OVERALL AVERAGE												94%

3.1.5. Average ticket resolution time

Table 8 shows the relevant tickets for the *Average ticket resolution time* success threshold. Since the ticket system is maintained by EGI, not all of the tickets are relevant to this threshold. The following were taken into account:

- Tickets for IGALC Resource Centres, the ones directly operated by GISELA;
- Tickets for the prod.vo.eu-eela.eu VO support unit, regardless of the Resource Centre, as is it the VO operated by GISELA.

Table 8: Average ticket resolution time

	Sep 2010	Oct 2010	Nov 2010	Dec 2010	Jan 2011	Feb 2011	Mar 2011	Apr 2011	May 2011	Jun 2011	Jul 2011	Avg
Ticket count	4	10	11	10	8	14	9	6	12	21	9	10
Average Resolution time (days)	3.5	2.4	4.18	5.3	8.13	8.36	5.22	4	8.75	4.52	3.89	5.30

3.2. INFRASTRUCTURE USAGE

3.2.1. gLite

Figure 1 and Figure 2 depict the contribution of the GISELA gLite resources to the supported VRC VOs. Numbers in this section were computed according to the calculation method defined in the first WP4 Project Deliverable, D4.1⁵. This means that the graphs may not reflect the entire Resource Centre contribution to the VRCs, but only the contribution of the informed fraction in each site. The units in Figure 1 and Figure 2 are CPU hours, normalized using SPECint2000.

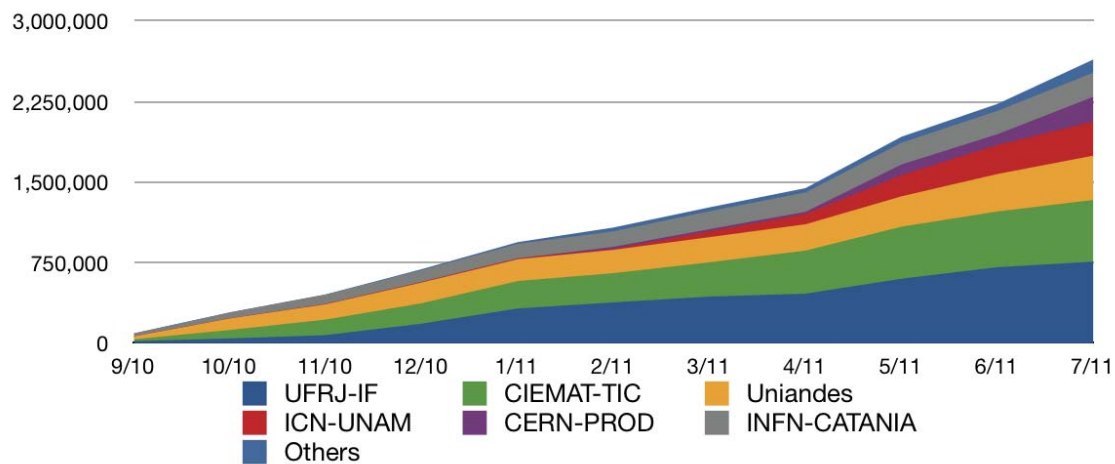


Figure 1: Accumulated Load per RC

⁵ <http://documents.gisela-grid.eu/record/84?ln=en>

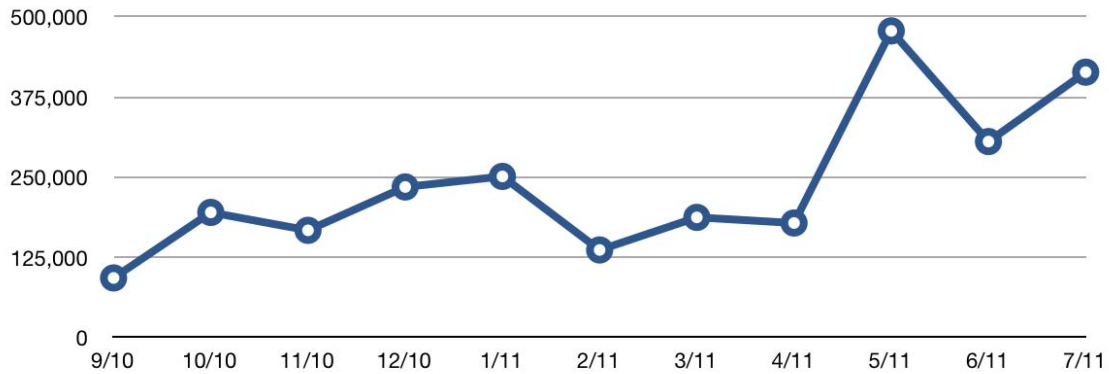


Figure 2: Monthly Load

One clearly sees that the contribution increases significantly in May 2011. This is due to a general increase of the usage of the supported VOs. As more VRCs are supported and as new applications start to profit from the Grid, the more this contribution is expected to rise.

Figure 3 shows the accumulated load per RC at the end of July 2011. It is worth noting that more than half of the normalized CPU hours have been provided by Resource Centres in LA: UFRJ-IF (Brazil), UNIANDES (Colombia) and ICN-UNAM (Mexico) account for 57% of the contribution to the VRCs.

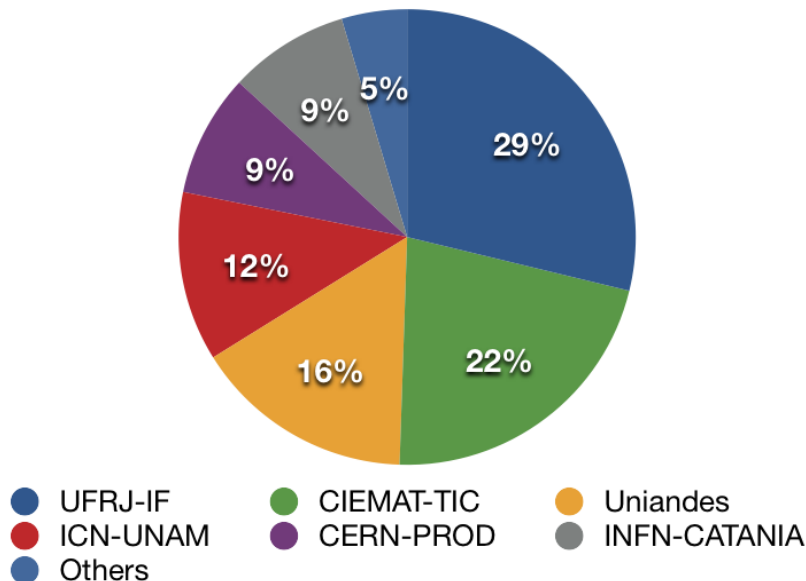


Figure 3: Contribution per RC (Sep/2010 - Jul/2011)

3.2.1.1. VO Allocation task

To maximise the usage of the infrastructure, while at the same time guaranteeing that each VRC needs are fulfilled by the Resource Centres supporting their VOs is no trivial task. The Colombian GOC has been charged of this task, and a preliminary new VO mapping scheme into the RCs is already available, ready to be tested.

Deciding which VOs to configure at which RCs involves analysing the number of VOs supported at each site, the amount of resources used by those VOs, as well as the pledged amount of resources from the RCs and their hardware processor speeds. These numbers make it possible to assign a weight to each VO and RC. A solver is then applied to minimise the variance of:

- The ratio between CPUs and accepted VOs at a given RC – in order to seek a fair allocation according to the capacity of each site;
- The available processing capacity to look for a similar processing capacity for each VO.

The described procedure makes it possible to develop a VO × RC allocation that improves the load balance among the RCs.

3.2.2. OurGrid

Figure 4 depicts the utilisation of the OurGrid resources in GISELA. There is room to accommodate more users on this side of the infrastructure, since the idle time is orders of magnitude higher than the actual usage. The measurement unit in Figure 4 is CPU hours.

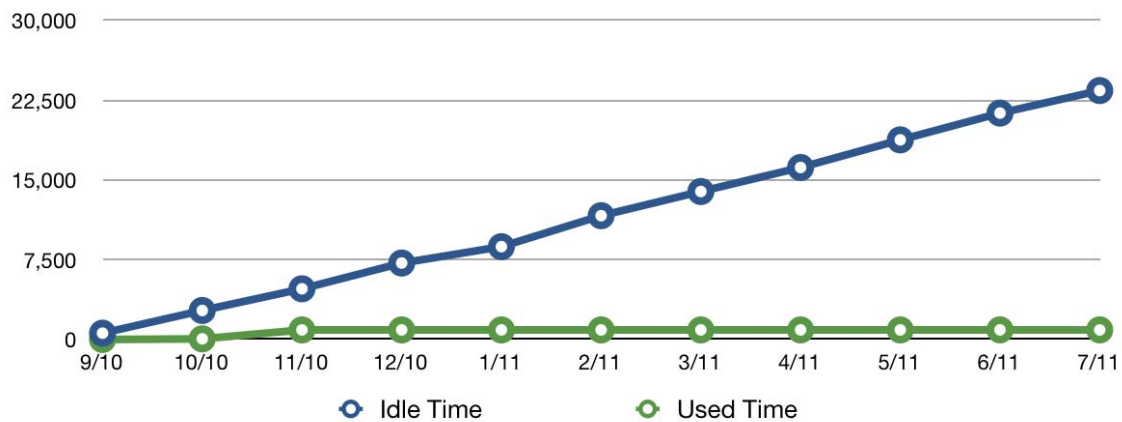


Figure 4: OurGrid accumulated usage

4. HUMAN EFFORT

The current human resources allocated to WP4 are listed in Table 9. Data have been extracted from the GISELA Timesheets system.

Table 9: WP4 Human Resources

Name	Role	Partner
Jhoanna Serpa	CEDIA site administrator	CEDIA
Querube Urriola	CIDETYS site administrator	CIDETYS
Antonio Rubio	CIEMAT-TIC site administrator	CIEMAT
Andres Barbieri	CA Operator	INNOVA-T
Daniel Bellomo	UNRC site administrator	INNOVA-T
Fernando Lopez	EELA-UNLP site administrator	INNOVA-T
Joaquín Bogado	EELA-UNLP site administrator	INNOVA-T
Lia Molinari	Partner Representative	INNOVA-T
Matias Banchoff	CA Operator	INNOVA-T
Sérgio Afonso	UPorto site administrator	U. Porto
Antonio Rodrigues	LSD-UFCG site administrator	UFCG
Heitor de Melo	LSD-UFCG site administrator	UFCG
Allan Gomes	Core services administrator	UFRJ
Antonio Guia	UFRJ-IF site administrator	UFRJ
Bruno Azevedo	CEFET-RJ site administrator	UFRJ
Gabriel Almeida de Oliveira	UFRJ GSC staff	UFRJ
Leonardo Paula	UFRJ-IF site administrator	UFRJ
Mariana Sampaio	UFRJ GSC staff	UFRJ
Ramon Diacovo	WP4 Manager TWP4.1 and TWP4.2 Task Leader	UFRJ
Vinicius Ferrão	UFRJ GSC staff	UFRJ
Gilberto Diaz	ULA-MERIDA site administrator	ULA
Abelardo Rodriguez	Peyote-Grid site administrator	UNAM

Name	Role	Partner
Carmen Heras	UNISON-GRID site administrator	UNAM
Jerome Verleyen	GRID-UNAM site administrator	UNAM
Jesus Cruz Guzman	CLARA Transition Team	UNAM
Jorge Luis Chacon Velasco	UIS representative	UNAM
Rene Luna-Garcia	IPN-GRID site administrator	UNAM
Andres Holguin	UNIANDES site administrator	UNIANDES
Antonio Lobo	UIS-BUCARAMANGA site administrator	UNIANDES
Artur Oviedo	Uniandes site administrator	UNIANDES
Daniel Burbano	Uniandes site administrator	UNIANDES
Harold Enrique Castro Barrera	WP4 Deputy Manager TWP4.3 Task Leader	UNIANDES
Juan Carlos Escobar	UIS site administrator	UNIANDES

5. OPEN ISSUES AND / OR DEVIATIONS FROM THE WORK PLAN

The following issues have been identified during the current reporting period.

5.1. LESS RESOURCES INTEGRATED THAN FORESEEN

As discussed in Section 3.1.3, the amount of CPU cores integrated during the first year is below the planned one. Unresponsiveness and lack of timely hardware commitment from some partner institutions are the main reasons of the unfortunate situation.

Table 10 depicts the status of the resources, as compared to the original pledge from the DoW. The first column shows the partner name and the amount of CPU cores it pledged to the project. The next 5 columns give the classification of Resource Centres into the following status categories:

- *Production*: Resource Centres that are already integrated and able to run end-user jobs;
- *Certification*: Resource Centres that have already deploying the middleware, and are currently solving installation problems and conducting tests prior to being accepted as *Production* sites;
- *Early Deployment*: Resource Centres where the administrators are currently deploying grid middleware, obtaining certificates and gaining a better understanding of both the technical and political aspects of the infrastructure;
- *Hardware Acquisition*: Resource Centres currently acquiring the hardware that will be federated in GISELA;
- *Unresponsive*: Resource Centres whose administrators have been providing a below-standard responsiveness level to the Technical Board messages and requests.

Finally, the *Unaccounted for* column contains the resources that were pledged in the DoW, but never confirmed by the corresponding partner institution, despite many requests. Ideally, resources should move from the right to the left of the table over the next reporting period.

Table 10: Resources Status (CPU cores)

Partner & Pledge	Production	Certification	Early Deployment	Hardware Acquisition	Unresponsive	Unaccounted for
CEDIA 100 CPUs				CEDIA (96)		4
CIDETYS 100 CPUs		UTP-PANAMA (15)		CIDETYS (24)		76
CIEMAT 100 CPUs	CIEMAT-TIC (90)		CETA-CIEMAT (112)			
CNRS/IPGP 40 CPUs	IN2P3-CPPM (388)					
CUBA 50 CPUs			CUBAENERGIA (60)			

Partner & Pledge	Production	Certification	Early Deployment	Hardware Acquisition	Unresponsive	Unaccounted for
INFN 100 CPUs	INFN-CATANIA (100)				HIBA (8)	
					UBA (8)	
					UNLAM (N/A)	
INNOVA-RED 130 CPUs	UNLP (17)		UNRC (16)			70
					UNS (16c)	
					UNSL (N/A)	
					PUCP (N/A)	
					URP (N/A)	
					IPEN (N/A)	
					UNMSM (N/A)	
RAAP 110 CPUs						110
					UNALM (N/A)	
					UNI (N/A)	
					UPCH (N/A)	
UdelaR 100 CPUs			UdelaR (96)			4
UFCG 450 CPUs	UFCG-LSD (10)					138
	LCC2 (74)					
	AESA (36)					
	LCC1 (78)					

Partner & Pledge	Production	Certification	Early Deployment	Hardware Acquisition	Unresponsive	Unaccounted for
	LSD (76)					
UFRJ 762 CPUs		CEFET-RJ (24)				
	UFRJ-IF (355c)			UFRJ-IF (528)		
ULA 120 CPUs	ULA-MERIDA (53)					67
					CICESE-GRID (16)	
UNAM 198 CPUs	ICN-UNAM (170)		ITESM-CEM (16)			
			GRID-UNAM (10)			
			UNISON-GRID (20)			
UNIANDES 200 CPUs	UNIANDES (176)	UIS-BUCARAMANGA (26)				
UPORTO 100 CPUs	UPorto (90)					
	UMinho (16)					
TOTAL 2660 CPUs	1729	65	330	648	48	469

5.2. MILESTONE MS2 DELAYED

According to the DoW, the Milestone MS2 “Assessment of the GISELA e-Infrastructure set up” should have been attained on Project Month 6 but, by then, there was one service missing from the WP4 portfolio.

Indeed, it has been informally agreed on Project M01, during the EGI Technical Forum 2010 that XGUS, a customisable version of the EGI ticket system, would be available for sister projects such as GISELA. However, the signature of an Infrastructure Provider MoU was necessary prior to making the system available. As the process of elaborating, agreeing, signing and approving such document was slightly longer than expected, it has led to a delay in this milestone.

With the MoU signed, XGUS has been made available and the WP4 part of MS2 has now been achieved.

It is worth noticing that, even when GISELA was not profiting from XGUS, issues on the infrastructure were being handled using alternative methods:

- Problems with gLite sites and the prod.vo.eu-eela.eu VO have been handled via GGUS. Although not customisable, the standard EGI ticket system is fully capable of handling this task;
- OurGrid support and end-user support were handled via a mailing list that had been advertised at the GISELA website. As the bulk of the requests came via GGUS, the mailing list only had one or two active requests at any given time, which made this approach viable.

6. PLANS FOR THE NEXT REPORTING PERIOD

For the second project year, WP4 plans to keep working on a number of fronts.

6.1. LONG-TERM SUSTAINABILITY

WP4 shall provide, smoothly and as transparently to the end-user as possible, full support to CLARA on the process of handing over the accumulated knowledge and operations. CLARA has yet to define which NREN(s) / NGI(s) shall be responsible for the different tasks, but WP4 will be ready for when it happens.

6.2. OPERATIONS

WP4 shall continue to work on the operation of the Resource Centres, aiming at an ever-improving end-user experience.

The VO allocation is to be improved, as the method developed (see Section 3.2.1.1) is applied on the Resource Centres. It is expected that the overall efficiency of the infrastructure – in terms of potential usage per VRC – to be greatly improved by this.

6.3. RESOURCES INTEGRATION

In order to reach the *Number of integrated CPU cores* success threshold at the end of the next reporting period, the efforts to make the resources at the institutions available will be intensified, as well as efforts into making the integration process faster, as many sites take more than desired to go from the *Early Deployment* status to *Production* (see Table 10).

The unresponsiveness issue attributed to some of the RCs has been escalated to the project management, which already took appropriate actions in order to solve it.

6.4. SYNERGY WITH OTHER INITIATIVES

Encouragement of Resource Centres to help with the deployment of new EMI middleware versions will be carried on, helping to improve the new and existing functionalities of the grid middlewares.

Bilateral collaborations will also be attempted with different initiatives in order to enlarge the prod.vo.eu-eela.eu VO support, as well as to extend GISELA support to different VRCs.

7. CONCLUSIONS

WP4 is on tracks, having provided satisfactory outcomes during the first project-year. Despite the insufficient partner commitment concerning the amount of integrated resources, all of the other fronts have yielded results according to expectations.

The GSC has proven itself able to handle the role of catchall GOC during the initial phase of the project, and is now adequately performing the tasks assigned to it.

The two deployed GOCs, in Mexico and Colombia, are gradually absorbing the tasks as specified in the DoW. The new NGI in Colombia has helped much in speeding up the process there, although the Mexican GOC is also functioning well within expectations, even with no NGI yet established.

As for the infrastructure itself, the already integrated Resource Centres have been providing non-negligible amounts of computing power to the supported VRCs, with timely responses to requests, compatible with worldwide standards.