



E-science grid facility for
Europe and **L**atin **A**merica

Developing e-Infrastructure services for e-Science applications: the EELA-2 experience

Diego Scardaci
INFN Catania (Italy)

Roberto Barbera
INFN Catania (Italy)

Francisco Brasileiro
*Universidade Federal de
Campina Grande (Brazil)*

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- **The EELA-2 Project:**
 - Applications deployed in the EELA-2 infrastructure;
 - Distribution of EELA-2 Applications per Scientific Domain, Continent and Country.
- **e-Infrastructure services for e-Science applications - the EELA-2 experience:**
 - Increasing the reach of e-Infrastructure;
 - Increasing the usability of e-Infrastructure;
- **Software Repository;**
- **Reference.**

EELA-2 (I³ project under FP7)

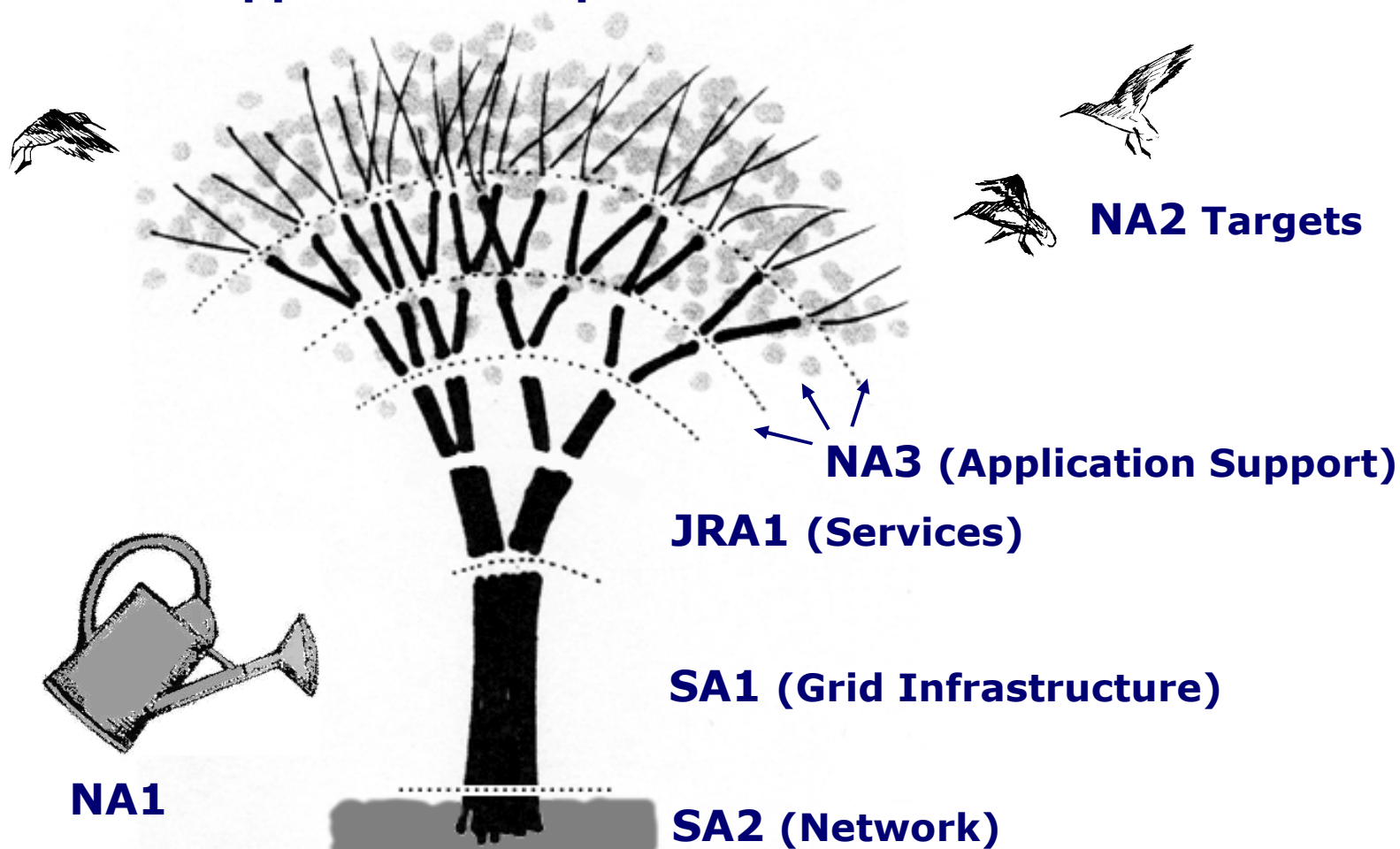
- Provide an empowered **Grid Facility** with versatile services fulfilling application requirements
- Ensure **production quality services**
- Ensure the **long term sustainability** of the e-Infrastructure beyond the term of the project
- Still **Expand** the current EELA e-Infrastructure
- Look for **new communities** outside academia (Industry and Business)



E-science grid facility for
Europe and Latin America



Applications in production





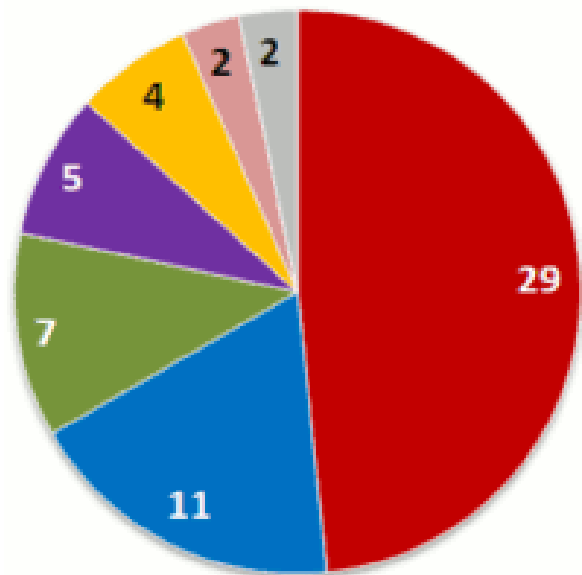
Applications deployed on EELA-2 infrastructure

Application	Scientific Domain	Country
AERMOD	Environmental Sciences	Cuba
AeroVANT	Engineering	Argentina
Aiuri	AI / Optimization	Brazil
BiG (Blast)	Genomics	Spain
BioMD	Life Sciences	Brazil
bioNMF	Life Sciences	Spain
BRAMS	Earth Sciences	Brazil
C/CATT-BRAMS	Earth Sciences	Chile / Brazil
CAM	Weather and Climate	Spain
CardioGrid Portal	Life Sciences	Argentina
CATIVIC	Chemistry	Venezuela
Cinefilia	AI / Optimization	Italy / Brazil
CIS - Classification of Satellite Images with neural networks	Earth Sciences	Ecuador
CROSS-Fire	Civil Protection	Portugal
DicomGrid	Life Sciences	Brazil
Dist-SOM-PORTRAIT	Life Sciences	Brazil
DistBlast	Genomics	Brazil
DKEsG	Physics	Spain
DRI/Mammogrid	Life Sciences	Spain
eIMRT	Life Sciences	Spain
FAFNER2	Physics	Spain
fMRI	Life Sciences	Portugal
G-HMMER	Genomics	Colombia
G-InterProScan	Genomics	Colombia
GAMOS	Life Sciences	Spain
gCSMT	Earth Sciences	France



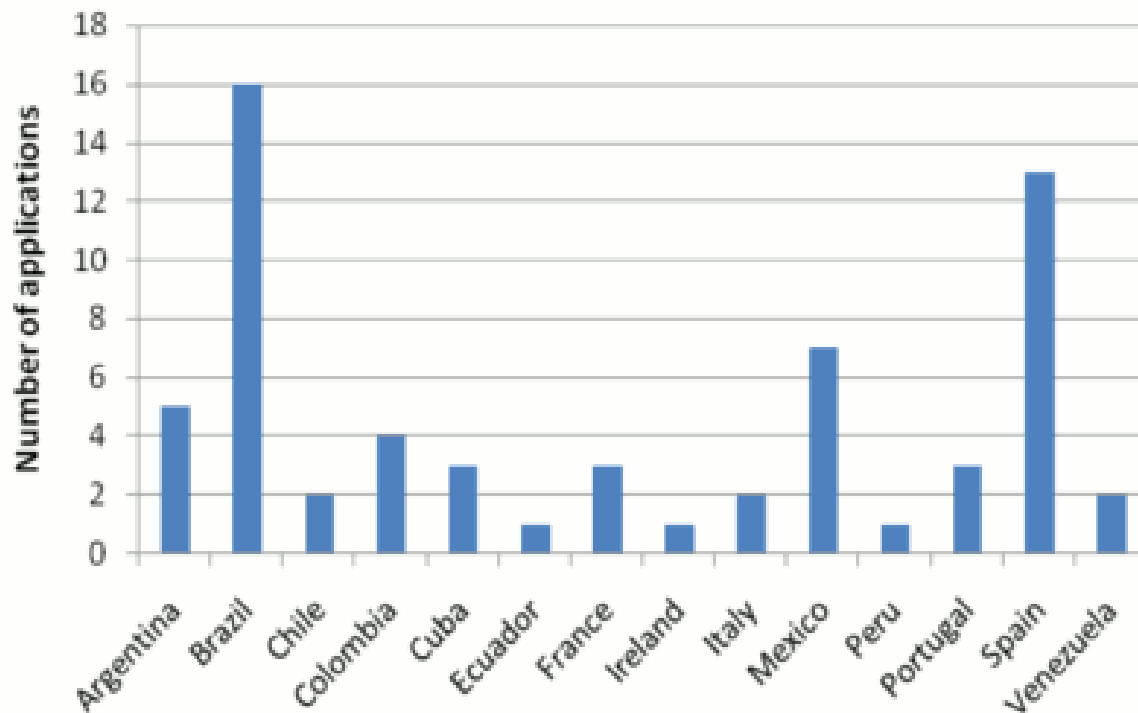
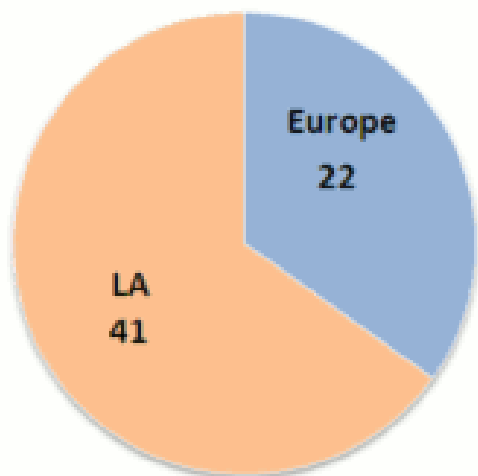
Applications deployed on EELA-2 infrastructure

Application	Scientific Domain	Country
GenecodisGrid	Genomics	Spain
GrEMBOSS	Life Sciences	Mexico
Grid Bio Portal	Life Sciences	Spain
GRIP - Grid Image Processing for Biomedical Diagnosis	Life Sciences	Chile
GROMACS	Chemistry	Brazil
gRREEMM	Engineering	Cuba
gSATyrus	AI / Optimization	Brazil
Heart Simulator	Life Sciences	Brazil
HeMoLab	Life Sciences	Brazil
Industry@Grid	Engineering	Brazil
Integra-EPI	Life Sciences	Brazil
InvCell	Life Sciences	Brazil
LEMDistFE	Remote instrumentation	Mexico
MAVs-Study	Engineering	Argentina
META-Dock	Genomics	Mexico
Phylogenetics	Life Sciences	Spain
PhyloGrid	Life Sciences	Spain
PILP	AI / Optimization	Portugal
Portal de Porticos	Engineering	Venezuela
ProtozoaDB	Life Sciences	Brazil
PSAUPMP	Engineering	Mexico
SATCA	Weather and Climate	Mexico
Seismic Sensor	Earth Sciences	Mexico
SEMUM3D	Earth Sciences	France
WAM	Weather and Climate	Ireland
WRF	Weather and Climate	Spain



Scientific Domain

- Life Sciences
- Earth Sciences
- Engineering
- HEP
- Computer Science and Mathematics
- Computational Chemistry
- Others





e-Infrastructure services for e-Science applications: the EELA-2 experience

- Increase the **REACH** of the infrastructure.
- Increase the **USE** of the infrastructure.



- **Facilitate the installation and the management of the grid infrastructure:**
 - **more sites** belonging to the grid infrastructure, with more resources being shared;
 - **more users** being served;
 - more **diverse range of applications** being supported.
- **EELA-2 Services:**
 - Adoption of **OurGrid** allowed non-dedicated resources to be added to the infrastructure;
 - **Grid2Win**: porting of the gLite Middleware to the Microsoft Windows platform to **allow Windows Applications to use the infrastructure**.



Operations**centre**



opportunistic grid powered by

OurGrid

Summary	
Server time	27/03/10 11:15
Peers connected	6
Consumers connected	2
Machines on grid	272
....Idle machines	8
....Machines in use	87
....Unavailable machines	177

Online peers overview

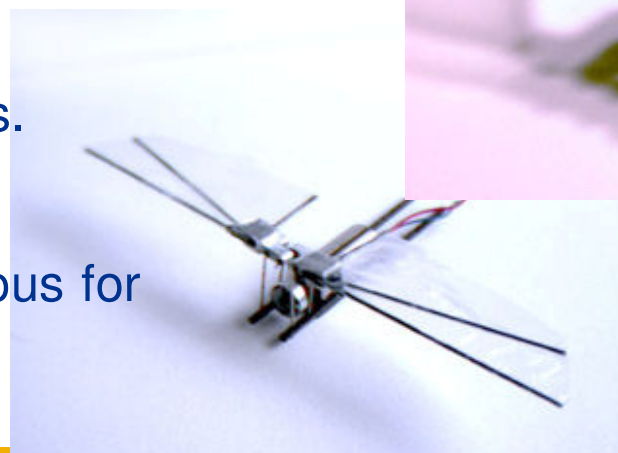
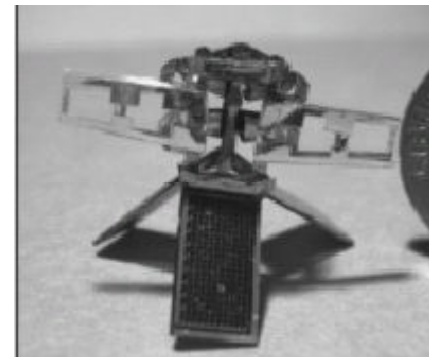
Peer name	Version	Logged Users	Local Workers					Remote Workers
			Total	Idle	Running local jobs	Running remote jobs	Unavailable	
LSD at UFCC	4.2.0-build2010	0	66	0	0	11	55	0
LCC1 at UFCC	4.2.0-build2010	0	80	0	0	16	64	0
3g-bridge at EELA	4.2.0-build2010	1	10	0	0	10	0	0
Portal at UFCC	4.2.0-build2010	1	0	0	0	0	0	0
LCC at UFCC	4.2.0-build2010	0	80	8	0	50	22	0
aesa.pb.gov.br	4.2.0-build2010	0	36	0	0	0	36	0

Definition of micro-air-vehicle (performance requirements):

- Maximum dimension of 15 cm;
- Flight at low velocity;
- Endurance: 20 to 30 minutes;
- Lightweight (< 100 g);
- High maneuverability.

APPLICATIONS:

- Atmospheric studies.
- Fire detection.
- Inspections of collapsed buildings.
- Hazardous Spill Monitoring.
- Inspections in places too dangerous for humans.
- Planetary exploration.





Gridify a Windows Application – The MAVs-Study Use Case (2/2)

MAVs-Study on the GRID

JDL

```
Type = "Job";
JobType = "Normal";
Executable = "uvlmRF";
StdOutput = "uvlmRF.out";
StdError = "uvlmRF.err";
InputSandbox =
{"uvlm.exe", "uvlmRF", "CONFIG.DAT", "LS.DAT", "
RotationAngle.DAT", "StrokeDevi
ation.DAT", "StrokePosition.DAT"};
OutputSandbox = {"uvlmRF.err", "uvlmRF.out"};
RetryCount = 0;
ShallowRetryCount=0;
```

Start Script

```
# Environment variables
export PROD=prod.vo.eu-eela.eu
export LFC_HOST=lfc.eela.ufrj.br
export
LCG_GFAL_INFOSYS=bdii.eela.ufrj.
br:2170
export PATH=$PATH:.
# Execution
date
chmod u+x uvlm
uvlm
# Storage
date
FILE=results03-00.tar.gz
/bin/tar -czf $FILE *.DAT *.Dat
*.TEC std.out std.err
lcg-cr --vo $PROD -1
lfn:/grid/prod.vo.eu-
eela.eu/MAVs-Study/test03/$FILE
-d lnx097.eela.if.ufrj.br
file:$PWD/$FILE
# End
date
```



- **Addition of services that can ease the tasks of:**
 - developing and deploying new applications;
 - installing, managing and deploying the core infrastructure.
- **EELA-2 Services:**
 - **GSAF**: a Java Object Oriented Framework designed to access and manage Data Grid via APIs;
 - **OPeNDAP Meta-Finder**: a tool to search geographical information data sets available at the Web through OPeNDAP servers;
 - **Secure Storage**: a service providing users with a set of tools to store in a secure way and in an encrypted format confidential data on the grid storage elements.;
 - **Watchdog**: a tool allowing users to watch the status of a running job tracing the evolution of produced files;
 - **lcg-rec-***: tools allowing users to perform recursive grid file operations such as copies and deletion;
 - **Dirac**: an alternative to overcome an infrastructure limitation of not having many CEs able to support MPICH2 jobs;



Applications using JRA1 application-oriented services

Service	Application using it	Use description
Digital Archives (GSAF)	gRREEMM	Provide gRREEMM with a Java interface towards the gLite Data Management System.
Secure Storage	CardioGrid Portal, HeMoLab, Seismic Sensor, AeroVANT	Applications use this service to manage their confidential data in a secure way inside the grid infrastructure.
Tagging	BRAMS and other SegHidro applications	Help in searching shared data among researchers working on water resources management
Workflow	BRAMS and other SegHidro applications	Several SegHidro applications use it implement their workflow, starting from the water precipitation prediction provided by BRAMS
Watchdog	CROSS-Fire, InterproScan/HMMER, HeMoLab, AeroVANT, BioMD, Cinefilia	Several applications use it to monitor their long running jobs.
Lcg-rec	CROSS-Fire, META-Dock	CROSS-Fire and META-Dock use it to interact in a easier way with the LCG File Catalog.
DIRAC	BioMD, PSAUPMP	Easy their execution in sites with different MPI 'flavours'.



EELA-2 Software Repository

Gforge: Welcome

Address Book Saved Tabs iPhone Info Dict Bookmarks Grid Doc RA TOBEREAD Wordle - Create

Home My Page Project Tree Code Snippets Project Openings

INFN Catania Forge is a software development service provided to developers involved in **GILDA** and **EELA-2** projects. It provides a set of tools for Source Code development, Software Release management and to facilitate the collaboration among developers belonging to different organizations

Site Feedback and Participation

In order to get the most out of Gforge, you'll need to [register as a site user](#). This will allow you to participate fully in all we have to offer. You may of course browse the site without registering, but will not have access to participate fully.

Set Up Your Own Project

[Register as a site user](#), then [Login](#) and finally, [Register Your Project](#).

Thanks... and enjoy the site.

Latest News

Grid2Win with gLite 3.1
Dario Russo - 2008-05-20 09:30 - Grid2Win
Grid2Win using gLite 3.1 now released. please check our svn tree and the soon-to-be-added package files!!
(1 Comment) [\[Read More/Comment\]](#)

Secure Storage Service
Diego Scardaci - 2008-05-20 09:29 - Secure Storage Service
Secure Storage is now available for EELA-2 developers
(0 Comment) [\[Read More/Comment\]](#)

[\[News archive\]](#)

Gforge Statistics

Hosted Projects: **12**
Registered Users: **16**

Top Project Downloads

- (174) [Grid2Win](#)
- (64) [GSAF](#)
- (14) [SAGE](#)
- (10) [sight-on-sage](#)
- (7) [Secure Storage Service](#)
- (7) [watchdog](#)

[More](#)

Highest Ranked Users

- 1 - (2.6211) [Dario Russo](#)
- 2 - (2.0969) [Local GForge Admin](#)

[\[More \]](#)

Most Active This Week

- (100.0%) [Site News Admin](#)
- (66.7%) [GSAF](#)
- (33.3%) [Grid2Win](#)

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Recently Registered Projects

- (11/29) [Gustav](#)
- (09/29) [sight-on-sage](#)
- (09/29) [watchdog](#)
- (09/29) [SAGE](#)
- (09/16) [OurGrid-EELA](#)
- (06/06) [GSAF](#)
- (05/21) [gLite4win](#)
- (05/20) [Secure Storage Service](#)
- (05/19) [Grid2Win](#)
- (05/19) [Site Admin](#)

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Pointers for more Information

- EELA-2 web site
 - <https://www.eu-eela.eu/>
- JRA1 Wiki Site
 - Contains descriptions and links for each JRA1 service
 - <https://grid.ct.infn.it/twiki/bin/view/EELA2/JRA1Services>
- EELA-Forge Site
 - All released software
 - <https://forge.eu-eela.eu/>
- Contact us at
 - Francisco Brasileiro (fubica@dsc.ufcg.edu.br)
 - Diego Scardaci (diego.scardaci@ct.infn.it)

