



Promoting e-Infrastructures for VRCs in Africa: the e4Africa Project

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www.ei4africa.eu



The e4Africa Project: Overview

(<http://www.ei4africa.eu>)

- An EU/FP7 project funded by the EC (DG CONNECT) under the 'Capacities Programme'
- Spanning 24 months (1st of Nov. 2012 – 31st of Oct. 2014)
- With the aim of:
 - **Boosting** the Research, Technological Development and Innovation (RTDI) potential of African e-Infrastructures
 - **Enhancing** Africa-EU cooperation
 - **Supporting** policy dialogues
- In the framework of the joint Africa-EU Strategic Partnership on
 - Trade, regional integration and infrastructures (JAES Partnership 3)
 - Science, information society and space (JAES Partnership 8)

The eI4Africa Project: Partnership

(<http://www.ei4africa.eu/partners>)

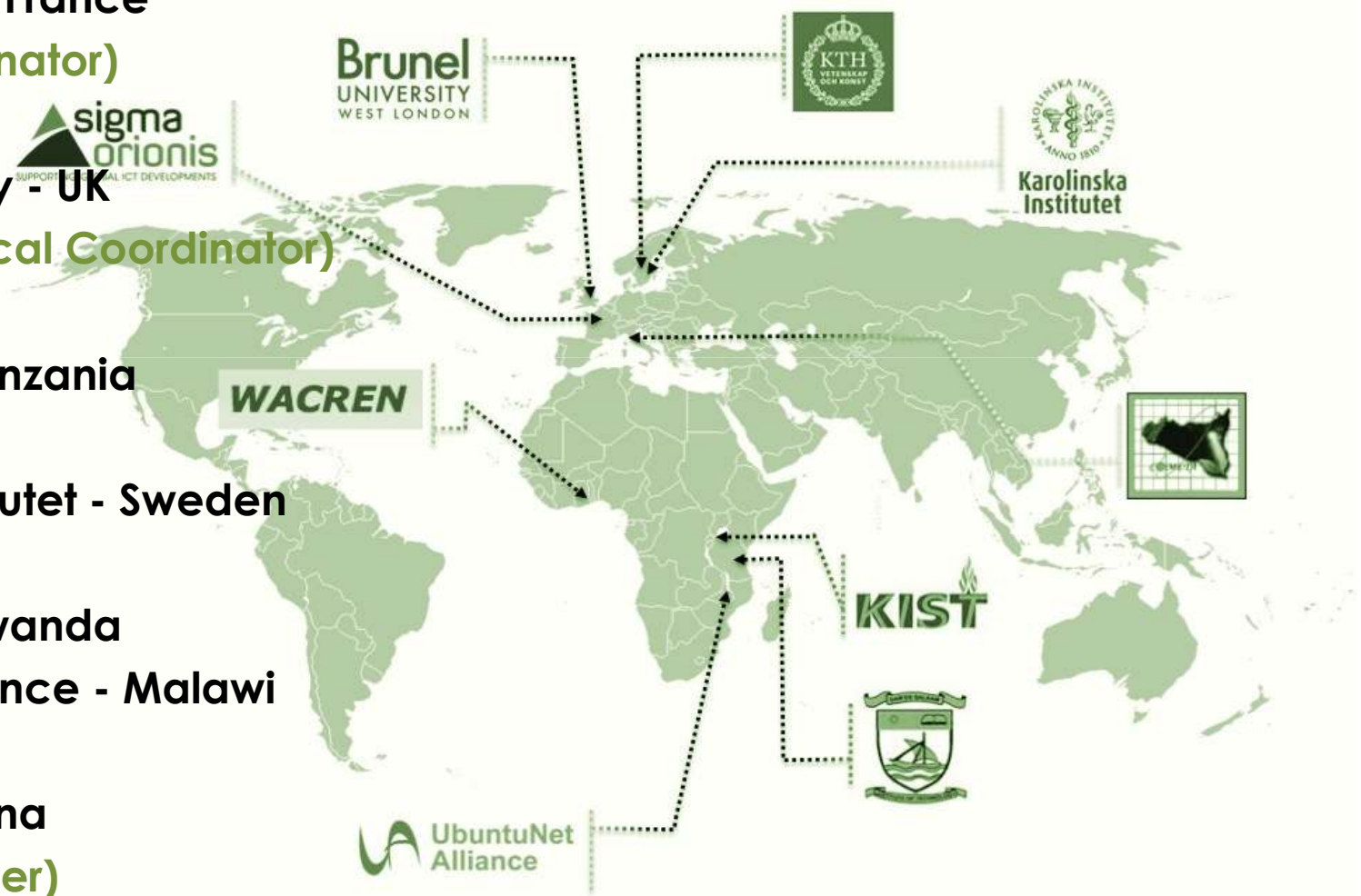


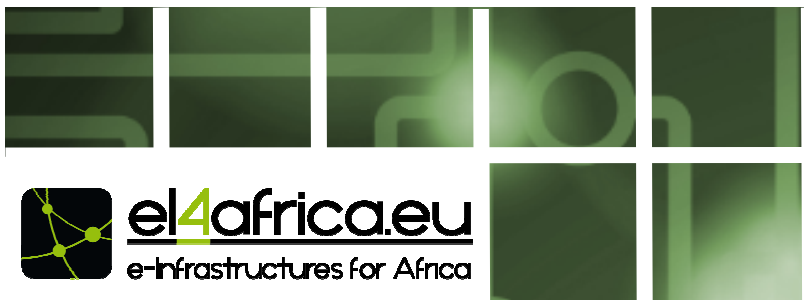
- **Sigma Orionis - France**
(Project Coordinator)

- **Brunel University - UK**
(Project Technical Coordinator)

- **CoelCT/DIT - Tanzania**
- **COMETA - Italy**
- **Karolinska Institutet - Sweden**
- **KTH - Sweden**
- **REHCE/KIST - Rwanda**
- **UbuntuNet Alliance - Malawi**

- **WACREN - Ghana**
(Affiliated partner)





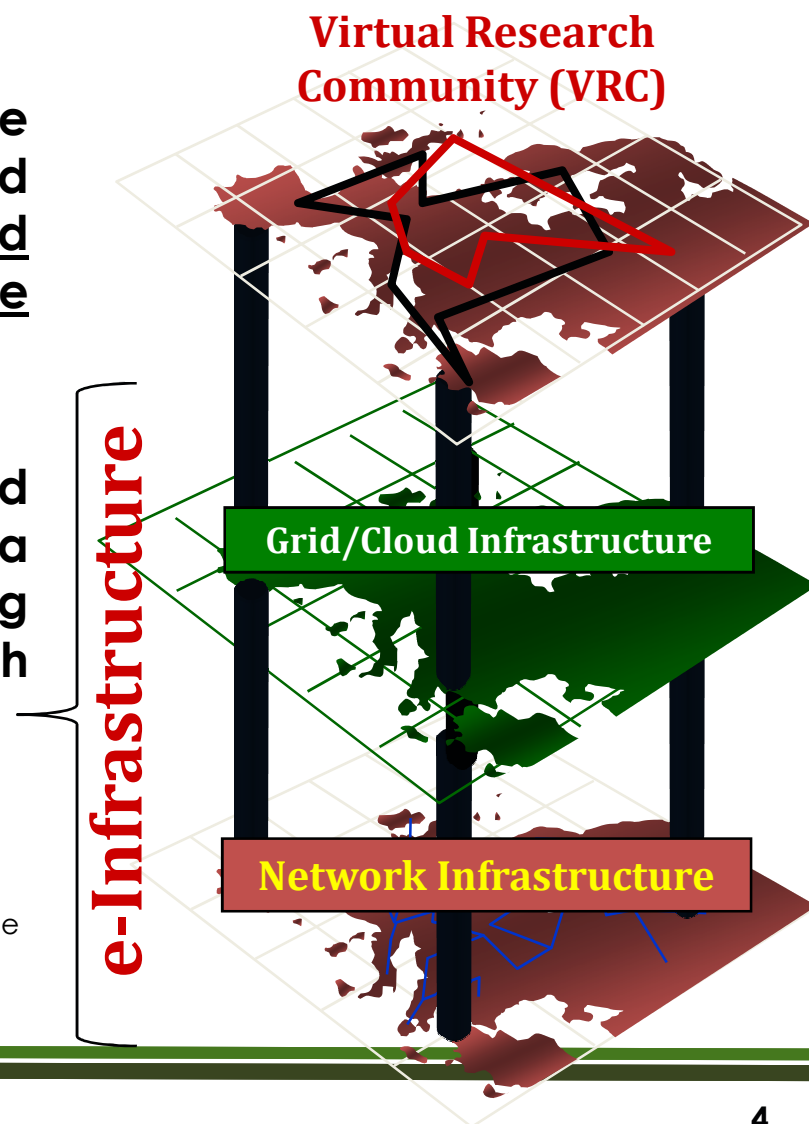
e-Infrastructure

“e’-Infrastructure is an environment where research resources (hardware, software and content) can be readily shared and accessed where necessary to promote better and more effective research.

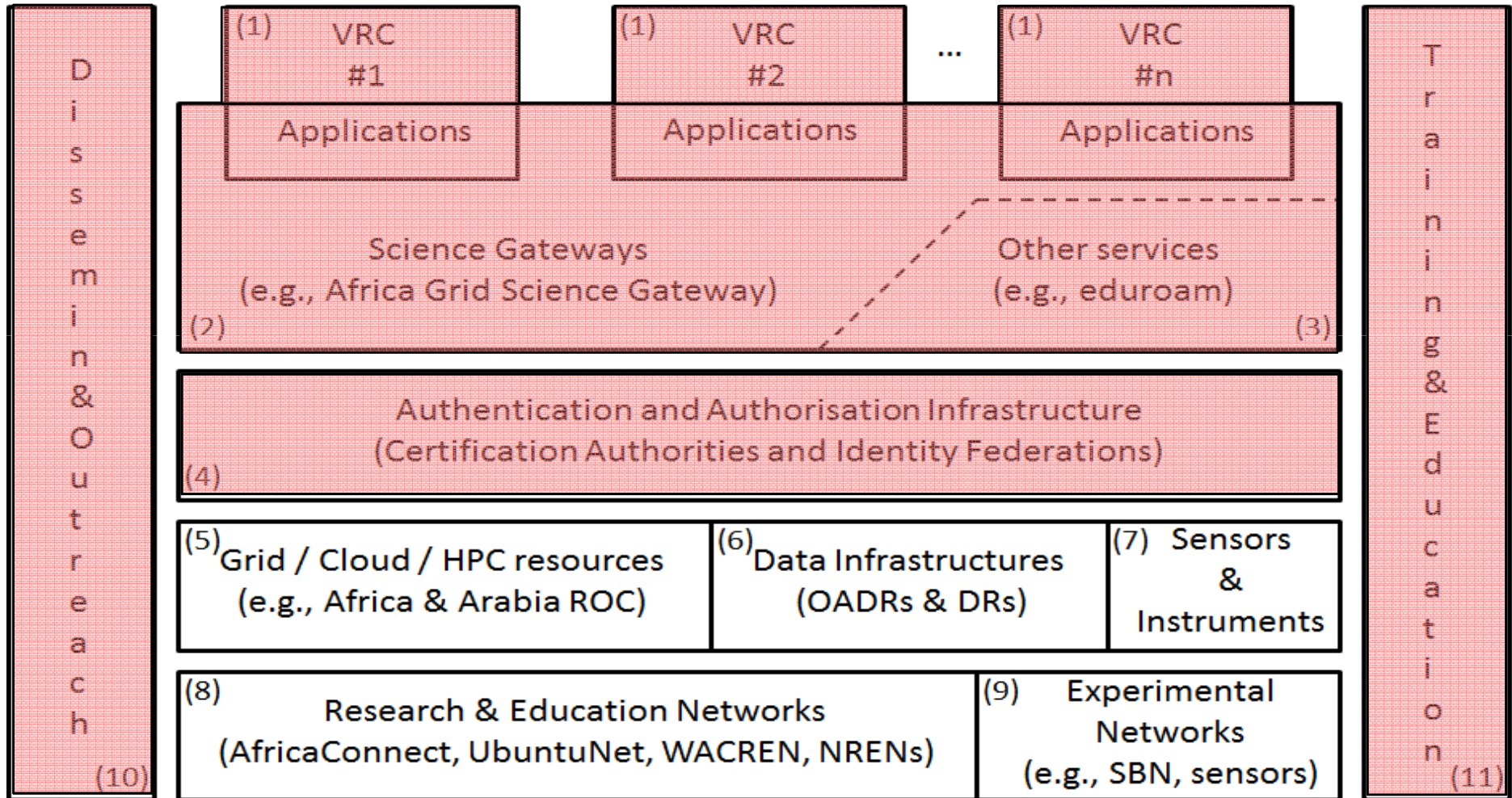
Such environments integrate hard-, soft- and middleware components, networks, data repositories, and all sorts of support enabling virtual research collaborations to flourish globally.” (*)

(*) EC-endorsed definition:

<http://cordis.europa.eu/ictresults/index.cfm?ID=90825§ion=news&tpl=article>



eI4Africa Vision for an African e-Infrastructure in 2020





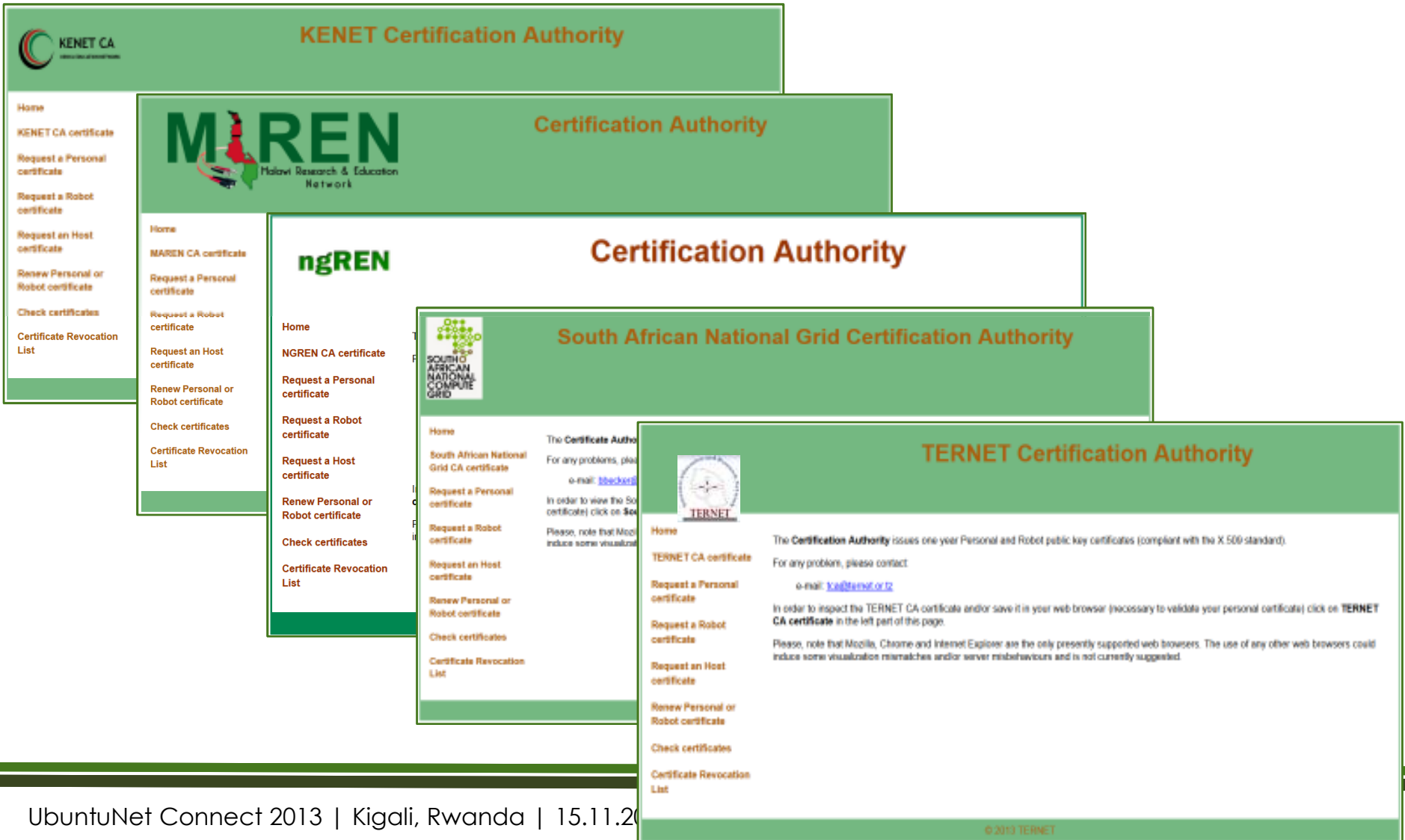
CAs, IdPs/IdFs and Training material (4)

(<https://gilda.ct.infn.it/wikimain>)

- Using e-Infrastructures requires the deployment of **Public Key Infrastructures (PKIs)** in the countries where the organisations owning the computing and storage resources are located.
- COMETA has developed, in the context of el4Africa, a special **training material** including both a **virtual appliance** and an **RPM** to easily install and configure all the services of a CA.
- Both the RPM and the virtual appliance were a clone of the officially accredited INFN CA



Status of CA deployment in Africa (4)





Related dissemination activities (4)



- The deployment of Certificate Authorities have been continuously communicated and advertised, both:
 - within the consortium of partners (via email and e-Newsletter);
 - outside the project via news published on the website:
 - <http://ei4africa.eu/2013/03/01/certification-authorities-and-identity-federations-in-africa/>
 - <http://ei4africa.eu/2013/04/24/ei4africa-boosts-the-deployment-of-public-key-infrastructures-in-africa/>
- In addition, the el4Africa **LinkedIn** group and the **Twitter** account have been used as dissemination channels for promoting these activities.
- The consortium targeted also members and followers of several related groups (e.g. **EuroAfrica-P8**, **iMentors**, **CHAIN-REDS**, **e-ScienceTalk**, etc.).



Status of IdP deployment (4)

- In the recent past, very interesting developments have been carried out by the National Research and Education Networks (NREN) with **Identity Federations (IdF)** to ease the access to network-based services and increase the number of their potential users

An Identity Federation consists of “[...] the agreements, standards, and technologies that make identity and entitlements portable across autonomous domains.”

Burton Group

- COMETA has developed a **special training material** for the installation and the configuration of federated identity services

A screenshot of the GILDA Infrastructure portal. The page features logos for INFN GRID, GILDA (Grid INFN Laboratory for Dissemination Activities), and EPIKH ISI. A navigation menu includes links for Home, Infrastructure, Certification Authority, Virtual Organization, AUP, Grid Demonstrator, Grid Tutor, Members, and Contacts. The main content area is titled "Instructions to create an Identity Federation" and includes a sidebar with a list of links such as "Home", "List of Tutorials", "Request a Tutorial", "Services", "Instructions for Users", "Instructions for Sites", "Training Material", "GILDA Forge", "Grid UI", "Support System", "Projects using GILDA", and "Sponsors". The main text under "Basics" explains that several tools are available to create SAML-based services like Identity Federations (IdFs), Identity Providers (IdPs), and Service Providers (SPs). It mentions that Virtual Appliances (VA) based on Linux and a partially configured version of Shibboleth have been created and made available through the GILDA Services. It also notes that the instructions provided refer to the configuration of these VAs and cannot be used for an installation from scratch of Shibboleth tools. At the bottom, it lists two links: "Instructions to create a multi-federation Discovery Service" and "Instructions to create an Identity Provider".

Status of IdPs deployment in Africa (4)



Home Service Providers About Register Login

About Service Providers Documentation Register Account

Home Service Providers Register Login

Framework agreement under discussion with Comodo to provide a service like TCS in Africa

Tanzania Education and Research Network
"Enable Education & Research Institutions to exploit their full potential"

Home

The TERNET Catch-All Identity Provider is a SAML standard-based service powered by Shibboleth and jointly managed by ITC/EICT and TERNET that allows people to use a single identity when they sign into web-pages and Science Gateways that require user authentication.

This IdP is a member of Grid Identity Proxy (GridP) federation and currently authenticates the users of several Service Providers

If your institute does not have an Identity Provider which forms part of a national or catch-all federation, you can register to the catch-all IdP

If you are interested in either using this IdP to authenticate users of your website(s), or registering it as an Identity Provider of your Identity Federation(s), please contact Damas Makwaba at damas.makwaba@ternet.or.tz

For more information, please see the el4Africa project website.

Brought to you by
TERNET Catch-All Identity Provider

Home

The South African Catch-All Identity Provider is a single identity when they sign into web-pages and Science Gateways that require user authentication.

This IdP is a member of

If your institute does not

If you are interested in e

Bruce Becker at bbecker

For more information, please

Brought to you by

CSIR
meraka



Related dissemination activities (4)



- The deployment of Federated Services have been continuously communicated and advertised, both:
 - within the consortium of partners (via email and e-Newsletter);
 - outside the project via news published on the website:
 - <http://ei4africa.eu/2013/03/01/certification-authorities-and-identity-federations-in-africa/>
 - <http://ei4africa.eu/2013/06/28/kenya-nigeria-south-africa-and-tanzania-nrens-deploy-their-first-identity-provider/>
 - <http://ei4africa.eu/2013/07/17/nigeria-adopts-identity-providers-and-science-gateways-in-grid-dissemination-and-training/>
 - <http://ei4africa.eu/2013/09/13/first-kenya-nigeria-south-africa-and-tanzania-identity-providers-come-online-and-go-in-production-mode/>
- In addition, the el4Africa **LinkedIn** group and the **Twitter** account have been used as dissemination channels for promoting these activities.
- The consortium targeted also members and followers of several related groups (e.g. **EuroAfrica-P8**, **iMentors**, **CHAIN-REDS**, **e-ScienceTalk**, etc.).



The Africa Grid Science Gateway (2)

(<http://sgw.africa-grid.org>)

Connected to the established IdP's

The Africa Grid Science Gateway is a standard-based web 2.0 demonstrative platform to show the lighthouse applications identified by the [el4Africa project](#) and execute them on a worldwide (including Africa) e-Infrastructure.

The access to the Africa Science Gateway requires federated credentials issued by an Identity Provider. If the organisation you belong to has an Identity Provider, click on the "Sign In" link which appears in the top right corner of the page. Otherwise, you can get federated credentials registering to the ["open" Identity Provider](#) which belongs to the [GridP](#) "catch-all" federation.

In order to run an application, select it from the Applications menu above. New applications can also be proposed to be included in the Africa Grid Science Gateway. Interested people just need to fill in this [online survey](#) or to download this [document](#), fill it in and email it to info_AT_el4africa.eu.

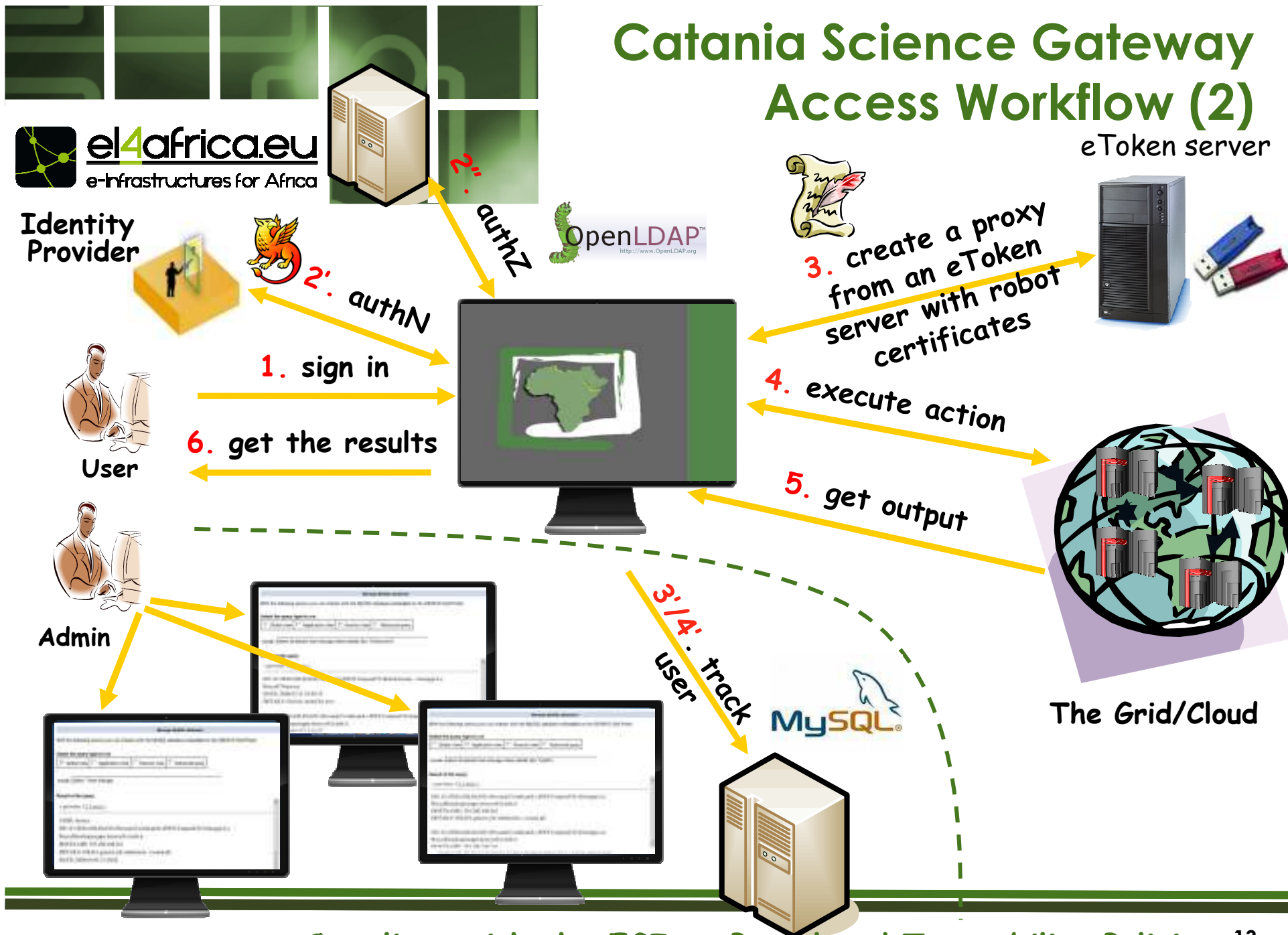
The Africa Grid Science Gateway has been conceived and developed in the context of

el4africa.eu
e-Infrastructures for Africa

Projects, initiatives, organisations, and single individuals wanting to contribute to the development of the Africa Grid Science Gateway both with human and computing/storage resources, or are interested in developing a science gateway for their own community, are welcome to contact sgwadmin_AT_africa-grid.org

- 11 Applications;
- 6 different Scientific Domains;
- 2 applications for digital repositories.

Catania Science Gateway Access Workflow (2)



The Science Gateway architecture (2)



FAST. FLEXIBLE. FREE.

GROMACS

W2 CLUSTAL

ASTRA Project Universidade de Málaga

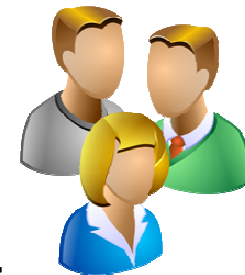
HMMER

MyCloud

e4Africa Science Gateway

LIFERAY Enterprise Open Source For Life

Administrator
Scientist
Cloud-tenant



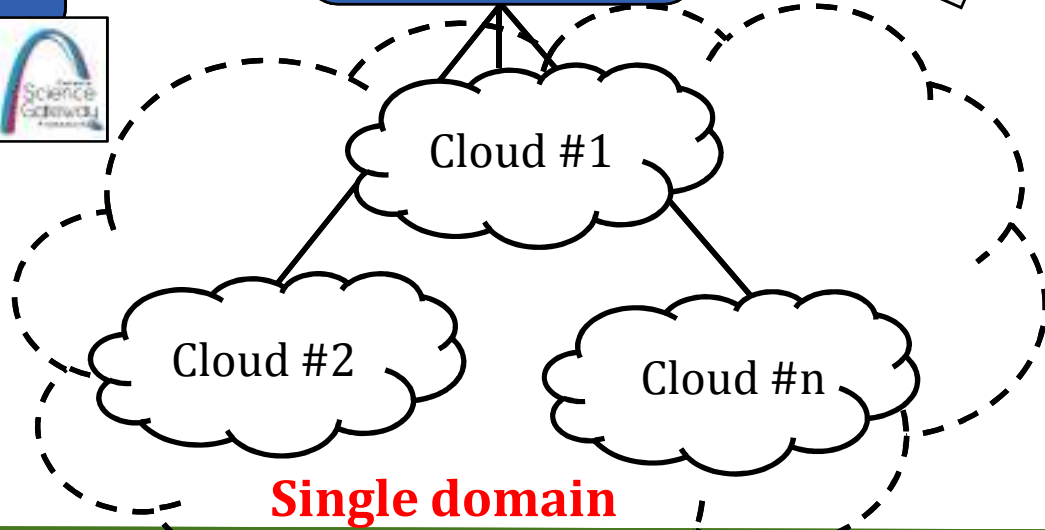
Grid/Cloud Engine (based on SAGA)

CLEVER
 Orchestrator (based on OCCI)

HPC Clusters

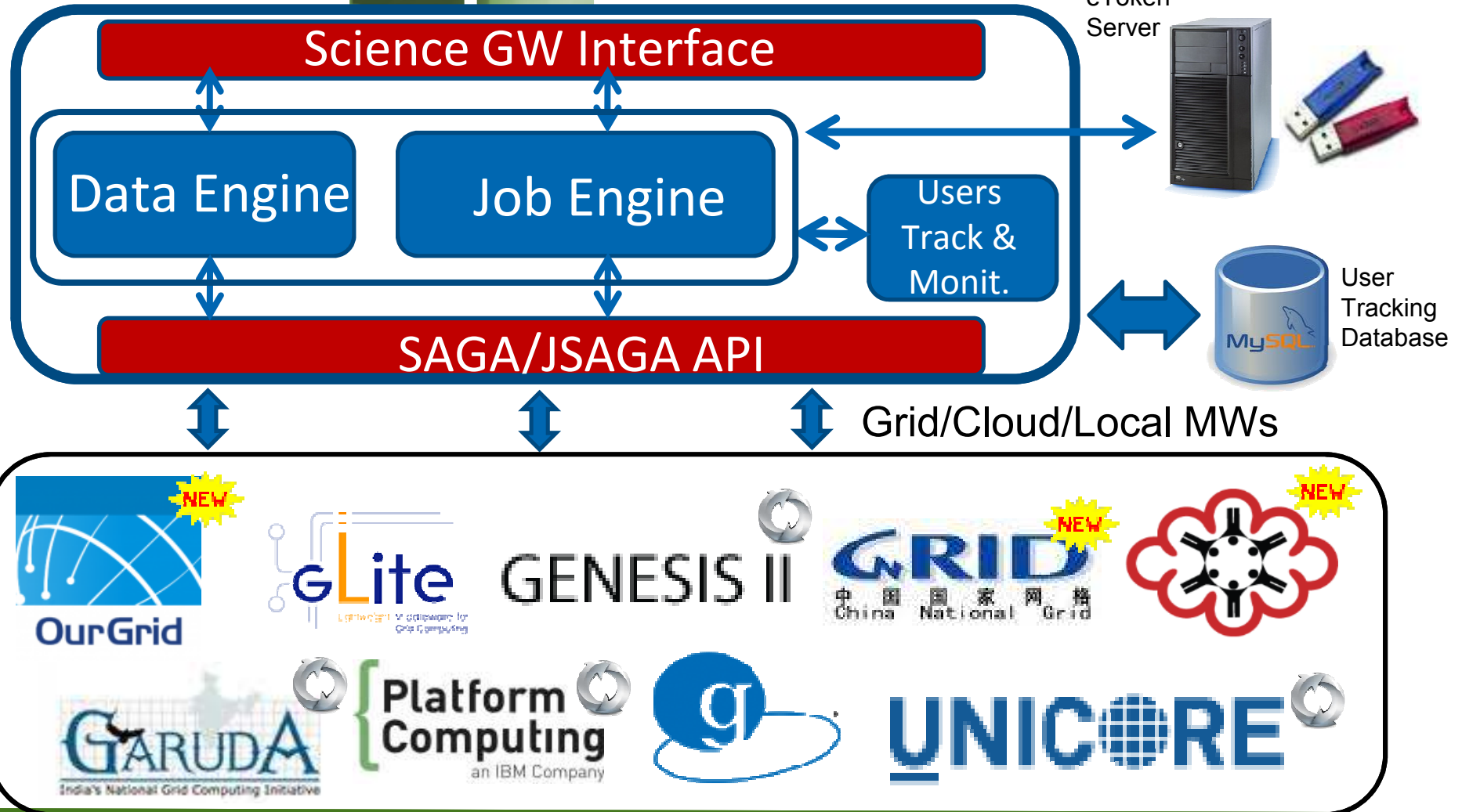
Grids

Clouds



Users belonging to Identity Federations

The Catania Grid & Cloud Engine (2)



VRC Applications (1)



- Several applications have a Africa Grid Science Gateway

Sequences & Options

Please, enter the sequence you want to analyze in the text-area below, OR upload a file

Choose the type of your sequences, between * Protein

Upload your input file (Max 2,5MB) Sfoglia... Nessun file selezionato.

Insert here the sequence to be analyzed *

```
>seq0
FQTWEEFSRAAEKLYLADPMKVRVVLKYRHVDGNLCIKVTDDLVLCLVYRTDQAQDVKKIEKF
>seq1
KYRTWEEFTRAAEKLYQADPMKVRVVLKYRHCDGNLCIKVTDDVVCLLYRTDQAQDVKKIEKFHS
QLMLRLME LKVTDNKECLKFKTDQAQEAQKMEKLNIIFFTLM
>seq2
```

Alignment type * Slow, but accurate Fast, but approximate

ClustalW2

My Workspace MYWORK

- Jobs
- JobsMap
- Data
- Help

MyJobs

Active Jobs

The table below s
Statuses are auto
if you don't see yc
the MyWorkspace
Once your jobs ha
automatically be d

Copy Print

Show 10

Application Name

ClustalW

Showing 1 to 1

First Previous 1 Next Last

Apertura di SequenceAlignmentSimulationStarted_115245.tgz

È stato scelto di aprire:

SequenceAlignmentSimulationStarted_115245.tgz

tipo: Archivio WinRAR (2,3 kB)

da: <http://sgw.africa-grid.org>

Che cosa deve fare Firefox con questo file?

Aprirlo con WinRAR (predefinita)

Salva file

Da ora in avanti esegui questa azione per tutti i file di questo tipo.

OK Annulla

VRC Applications (1)



MERIS Data Repository

MERIS Data Repository

Select the replica to download...

Replicas L3_ENV_MER_A550_m_20091001_GLOB_SI_ESA_9277x9277_-90+90+180+180_0000.jpg

ENVISAT - MERIS
Angstrom alpha coefficient over land and water at 550 nm - Global coverage - 9 km Monthly average - October 2009

Copyright ESA 2006 (Processed by ESRIN G-POD)

Thumbnail view of files:

Thumbnail	FileName	var_long_na...	period
	Meris Level 3 Products		
	ESA EO Products		
	TIFF		
	Aerosol		
	Angstrom		
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	over Land		
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	at 550 nm)		

Training Material (11)



- To promote the Science Gateway paradigm, a web course on “**The Catania Science Gateway Framework**” has been held in July 2013

>>> Web-course summary information

- Home page:

<http://agenda.ct.infn.it/event/catania-sg-course>

- Timetable (direct URL):

<http://agenda.ct.infn.it/conferenceOtherViews.py?view=standard&confid=942>

- Training material page (short URL):

<http://goo.gl/im7YG>

Tuesday, 16 July 2013

14:00 - 16:00

Webinar no. 2

Material:

[Download video recording](#)



[Watch video recording](#)



14:00 **Introduction to portlet development 2h0'**

Speakers: Carla Carrubba (INFN Catania - Italy), Giuseppina Inserra (INFN Catania - Italy)

Material:

[Slides](#)



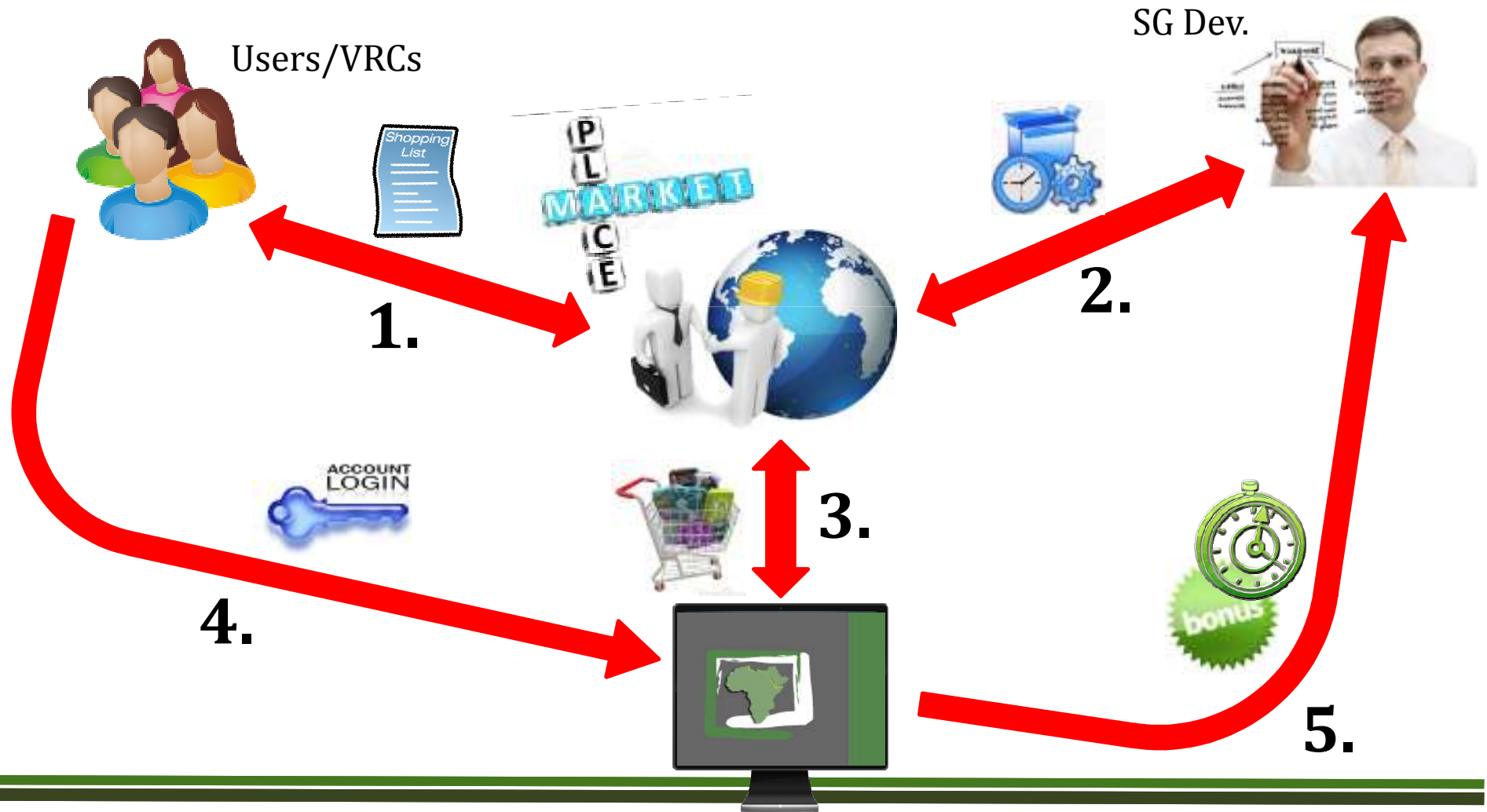
Training Material summary information (11)



■ Available sections:

- [Installation and configuration of the development environment \(NEW!\)](#)
- [Creation of a simple parameterised portlet](#)
- [Creation of a portlet that submits a job](#)
- [Creation of a portlet that submits a special job \(collections, parametric, workflows N1\)](#)
- [Useful links](#)

The Science Gateway Market Place (11)





The Science Gateway Market Place (11)

■ The Catania Science Gateway Market Place:

<http://www.catania-science-gateways.it/market-place>

The screenshot shows the Catania Science Gateway Market Place website. The top navigation bar includes: WELCOME, ABOUT, DOCUMENTS, NEWS, EVENTS, CODE, MARKET PLACE. The main header features the Catania Science Gateway Framework logo and the tagline "To better access e-Infrastructures Worldwide".

The left sidebar contains a vertical menu with the following items: ABOUT, DOCUMENTS, NEWS, EVENTS, CODE, MARKET PLACE. The main content area is titled "Market Place" and includes the following links: List of applications to be ported, Propose an application, Port an application, and List of ported applications. A 3D graphic of a person holding a sign that says "MARKET PLACE" is also visible.

The right sidebar contains the following text:

Market Place

The Catania Science Gateway Market Place is meant as a virtual environment where to match the needs of Virtual Research Communities wanting to integrate their applications in one of the [Catania Science Gateways](#) and the availability of skilled Catania Science Gateway Developers.

If you are a member of a Virtual Research Community and would like to propose an application to be integrated in one of the [Catania Science Gateways](#), fill [this survey](#).

If you are one of the already registered Catania Science Gateway Developers, Sign In (following the link provided at the bottom right of this page) and look one of the applications listed in the table below that are still "to be ported".

If instead, you are not yet registered as a Catania Science Gateway Developers but would like to be, please follow [this link](#).

Applications

Show 10 entries

Acronym	Domain	Institution	Status
LAGOSM	Physics	IAS	to be ported
BioMA Model Layer	High-Energy Physics	CRA	to be ported
CORSIKA	Physics	IAS	to be assigned
Geant4	Physics	IAS	to be assigned
OpenFOAM	Life Sciences	IAS	to be assigned
ROOT	Physics	IAS	to be assigned
SNS	0-5 Hz	Udea	to be assigned
WRF	High-Energy Physics	CaCatulia	to be ported

Showing 1 to 8 of 8 entries



To propose new applications (11)

(<http://www.catania-science-gateways.it/survey>)

The image is a screenshot of a web browser displaying a survey page. The page has a header with a navigation menu: "WELCOME ABOUT DOCUMENTS NEWS EVENTS CODE MARKET PLACE". Below the menu is a banner for the "Catania Science Gateway Framework" with the tagline "To better access e-Infrastructures Worldwide". The main content area is titled "Survey of applications for Science Gateways" and features the LimeSurvey logo. The survey is in English. A security question is displayed: "Security question: 2 + 85 =". Below the question is a "Continue" button. The survey text includes: "Thank you for signing up with the survey of applications for Science Gateways!", "A Science Gateway is a 'community-developed set of tools, applications, and data that is integrated via a portal or a suite of applications, usually in a graphical user interface, that is further customized to meet the needs of a specific community'.", "This survey is directed to single scientists and/or research groups wanting to propose a new application to be included in a Science Gateway and made thus available to the whole reference virtual research community. Applications can be either directly developed by the respondent or already available within the reference community but not yet integrated in any web interface.", "This survey requires just a few minutes to be filled out and you can also [download](#) all the questions before start answering them.", "Should you have any questions before or while filling the survey, please contact sg-licence@ct.infn.it". At the bottom of the survey area are two buttons: "Exit and clear survey" and "Next >>".



To port new applications (11)

- Register as a Catania Science Gateway Developer:
<http://www.catania-science-gateways.it/port-app>

- Sign In and book an application «to be ported»

Application List

Show 10 entries

Search:

Acronym	Institution	Status	Develop
LAGOSIM	UIS	to be ported	
BioM...	High-Energy Physics	CRA	to be ported
	Physics	UIS	to be assigned
	Physics	UIS	to be assigned
OpenFOAM	Life Sciences	UIS	to be assigned
ROOT	Physics	UIS	to be assigned
SNS	0-5 Mb	UdeA	to be assigned
WRF	High-Energy Physics	CeCalcUIa	to be ported

Showing 1 to 8 of 8 entries

Once you are registered you can also port the applications YOU proposed

- Once your booking is accepted, you have 30 days to create the needed portlet(s) for the application (the sooner the better)
 - After that time the access to our VPN will be denied

Related dissemination activities (10)

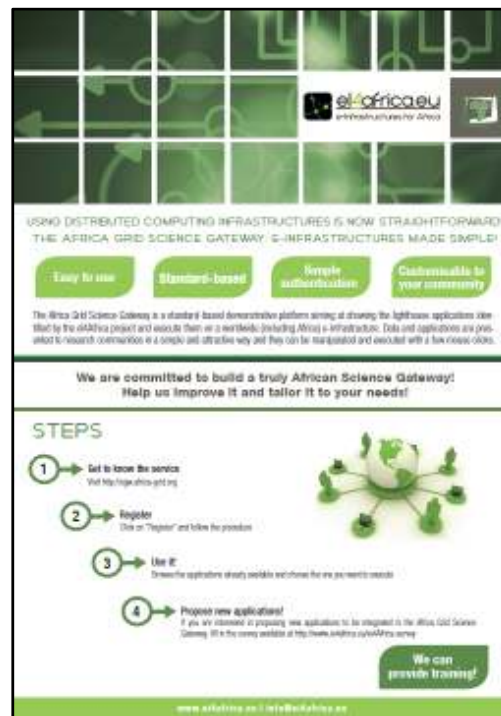


- The activities concerning the Africa Grid Science Gateway has been continuously communicated and advertised, both:
 - within the consortium of partners (via email and e-Newsletter);
 - outside the project via news published on the website:
 - <http://ei4africa.eu/2013/03/20/the-africa-grid-science-gateway-is-online/>
 - <http://ei4africa.eu/2013/06/11/the-africa-grid-science-gateway-joins-edugain/>
 - <http://ei4africa.eu/2013/07/17/nigeria-adopts-identity-providers-and-science-gateways-in-grid-dissemination-and-training/>
 - <http://ei4africa.eu/2013/10/24/the-portfolio-of-applications-of-the-africa-grid-science-gateway-becomes-rich/>
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Related dissemination activities (10)



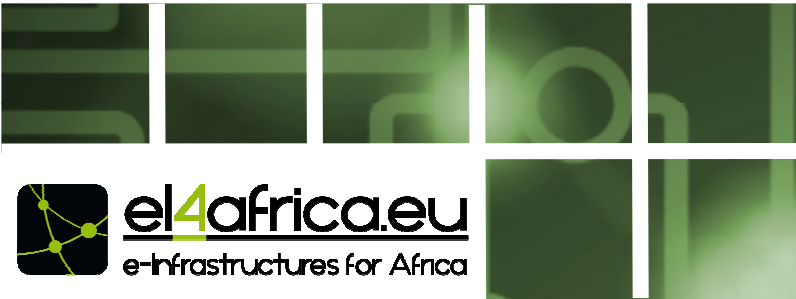
- Presentations given at the:
 - **1st el4Africa Thematic Workshop** held in Lilongwe (Malawi);
 - **IST-Africa 2013 Conference** held in Nairobi (Kenya);
 - **HP/UNESCO Brain Gain Initiative Final Workshop** held in Paris (France).
- A dedicated **brochure** has been produced and distributed at project events



Future plans



- The plans for next year are the following:
 - **Complete** the accreditation procedure of African CAs by IGTF;
 - **Create** new IdP's and Service Providers to be connected to them;
 - **Integrate** in the Africa Grid Science Gateway the local applications identified either by the survey or during the next el4Africa thematic workshops foreseen in Rwanda, Nigeria and Tanzania;
 - **Deploy** additional Science Gateways in the region for the local virtual research communities;
 - **Create** a team of local experts able to integrate new applications in the various Science Gateways (this is key for the long term sustainability of the model).



THANK YOU

GRACIAS
ARIGATO
SHUKURIA
JUSPAXAR
DANKSCHEEN
TASHAKKUR ATU
YAQHANYELAY
SUKSAMA
EKGHMET
MEHRBANI
PALDIES
BOLZIN
MERCY
BIYAN
SHUKRIA
TINGKI
MIMONCHAR
MAKETU

SPASSIBO
SNACHALHYA
NUHUN
CHALTU
WADEEJA
MAITEKA
YOSPAGARATAM
HUI
GHI
HATUR
REOU
SIKOMO
TAVTAPUCH
MEDAWAGSE
MERASTAWHY
GAEJTHO
GOZAIMASHITA
EFCHARISTO
AGUYJE
FAKAUE
KONAPSUMNIDA
SINCO
MAAKE
LAH
MIMONCHAR