

## Foreword

Welcome to the 3rd edition of  
the CHAIN-REDS bi-annual Newsletter!

Dear Readers,

Welcome to the May 2014 edition of the CHAIN-REDS newsletter. In this new edition you will find the latest developments and outcomes of the CHAIN-REDS project.

Let me, however, highlight the relevant contribution that the project is providing, in various forms, to tutorials and advanced knowledge dissemination. Mark your calendar for the key events where CHAIN-REDS outcomes will be presented: the first one will be held in May (the Joint CHAIN-REDS/ELCIRA workshop on Identity Management to take place in Cancun, Mexico, in the framework of TICAL2014) and two others will happen in June (the "CHAIN-REDS School for Application Porting to Science Gateways" in Catania, Italy, organized by CHAIN-REDS and the "Clouds for Research and Education workshop" in Rome, organized by ASREN in collaboration with EUMEDCONNECT3, CHAIN-REDS and IT-Synergy). All these events aim to promote activities that are key in the CHAIN-REDS program: Identity Federations, Science Gateways and Cloud computing for Research and Education.

The project is currently selecting and supporting applications and services of interest for the regions addressed by CHAIN-REDS. The outcome will be a series of success stories that will be the main topics of the next editions of the newsletter.



**Federico Ruggieri**  
CHAIN-REDS  
Project Coordinator

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### About CHAIN-REDS

## CHAIN-REDS partnership



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## The DART Challenge

By **Rafael Mayo Garcia**  
CIEMAT, Spain

In the last six months, the CHAIN-REDS project has implemented the challenge named **Data Accessibility, Reproducibility and Trustworthiness (DART)** that provides proof-of-principle use-cases for data sharing across the continents. DART is a complete workflow of services built from several CHAIN-REDS tools, i.e. the Knowledge Base and the Semantic Search Engine for searching and finding documents and datasets, the Science Gateway for unattendedly submitting jobs to Grid and Cloud infrastructure, Identity Federation for accessing the previously mentioned Science Gateway, and Persistent Identifiers for uniquely assigning identifiers to digital objects.

The vision of DART is that of a researcher of a given scientific domain finding publications he/she is interested in and being automatically redirected to the data used to produce those papers and to the applications used to produce those data. Or, alternatively and simply, access raw data of interest that can be used, if required, as an input of an application. In this scenario, the datasets are found by means of a Semantic Search Engine and lately used as input into an application ran on the CHAIN-REDS Science Gateway (SG), which is accessible through an Identity Federation. Both input and output produced in the experiment can be identified by Persistent Identifiers (PID).

The researcher can thus access the data and the corresponding application in order to either reproduce and extend the results of a given study

or start a new investigation. The new data (and the new paper if any) are stored on the Data Infrastructure with an assigned PID and can be easily found, thus generating a new cycle.

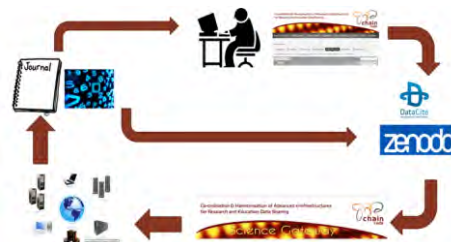
To this date, the DART Challenge provides proof-of-principle use-cases for Data sharing across the continents with different Virtual Research Communities (VRCs).

Several actions have been undertaken in order to disseminate the DART workflow:

- Presentation at the EGI Community Forum 2014 (May 2014, Helsinki, Finland);
- Videos of the demo (the first introductory one was distributed to several collaborative projects – EUDAT, agINFRA, EarthServer, DCH-RP, etc. – a second more detailed one will be soon available on the project website).

In concrete terms, a work on integrating the CHAIN-REDS demo to the Virtual Research Communities (VRCs) particularities (datasets, codes, etc.) has been recently undertaken with several communities such as the Latin American Giant Observatory (LAGO).

Besides the DART workflow's extension to more use-cases, other future plans include the automatic assignment of PIDs and the integration of workflow repositories or engines into the Science Gateway.



## WRF available on CHAIN-REDS Science Gateway

By **Riccardo Bruno and Giuseppe La Rocca**  
INFN, Italy

The Weather Research and Forecasting (WRF) model is a widely used meso-scale numerical



weather prediction system designed to serve both atmospheric research and operational forecasting needs. WRF has a large worldwide community counting more than 20,000 users in 130 countries. It has been specifically designed to be the state-of-the-art atmospheric simulation system being portable and running efficiently on available parallel computing platforms.

Although WRF can be executed in many different environments ranging from the single core inside a stand-alone machine up to the most sophisticated HPC platforms, there are no solutions yet to match the e-Science paradigm where software, data and users are “linked” together by the network as components of distributed computing infrastructures. The topmost component of the typical e-Science model consists of Science Gateways, defined as community-developed sets of tools, applications and data collections that normally are integrated via a portal to get access to a distributed infrastructure. One of the many available Science Gateway solutions is the [Catania Science Gateway Framework](#) (CSGF) whose most descriptive keywords are: interoperability and standard adoption.

The interoperability allows any user to exploit many available distributed infrastructures seamlessly, while the support of standards such as SAGA and SAML guarantees the technological sustainability of deployed applications. Thus a proof of concept WRF application, has been deployed in two different CSGF implementations, the first serving the CHAIN-REDS project and the second the [el4Africa](#) project.

The current portal application executes a simulation referred to a specific region in Africa executing WRF on various kinds of Grid/Cloud distributed computing infrastructures.

The output of the simulation consists of three different sets of data:

### 1 - WRF output raw data

- Generated WRF files: wrfout, wrfst, wrfbdy and namelist.output

### 2 - WRF image data extraction

- Series of GIF images generated by a data extraction script

### 3 - WRF output NetCDF 4D Variables images

- Series of GIF images representing almost all the available
- NetCDF' 4D variables present in the WRF output file
- An animated GIF is also generated from each GIF frame

The current outcomes of this Proof of Concept are:

1. Introduce new simulations and design more complex GUIs for parametric executions of WRF;
2. Save produced data into grid/cloud storage and enrich it with corresponding Metadata;
3. Foster new collaborations in Africa and in other regions of the world around the use of WRF on distributed infrastructures.



## CHAIN-REDS enables the establishment of the MoU between EGI.eu and IHEP-China

By Ognjen Prnjat  
GRNET, Greece

EGI.eu has recently signed a Memorandum of Understanding (MoU) with the Chinese Academy of Sciences' Institute of High Energy Physics (IHEP). The purpose of this MoU is to define a framework of collaboration between EGI.eu and IHEP as a representative of the Chinese Grid community, which is important in building a truly worldwide infrastructure with long-lasting relationships in place.

EGI.eu has the mission to create and maintain a pan-European Grid Infrastructure in order to guarantee the long-term availability of a generic e-Infrastructure for all European research communities and their international collaborators. IHEP is now one of EGI.eu's major partners in Asia and this recent agreement reinforces EGI.eu's goal to be "a hub for global e-science initiatives" as explained by Yannick Legré, EGI.eu's managing director.

IHEP, founded in 1973, is the leading high-energy physics laboratory in China. IHEP has a long history of collaboration in leading-edge research with IT divisions of international labs like CERN, Japan's High Energy Accelerator Research Organization, KEK and SLAC, the U.S. National Accelerator Laboratory in California. IHEP operates the Regional Operation Centre for the Grid in China, supported by the CHAIN-REDS project. The recent agreement with EGI.eu represents for IHEP the foundation for a long-term sustainable relationship of China with the European grid.

The MoU provides the necessary administrative envelope for the operation of the Regional Operation Centre for the grid infrastructure in China, the CHINA-ROC. CHINA-ROC coordinates member institutes within China to access and collaborate with the European grid. The collaboration in terms of operations includes security provisions, operational services, policies and procedures as well as the interfaces needed to ensure seamless and interoperable access to resources.

CHAIN-REDS played a central role in the MoU not just administratively but also by supporting the actual technical actions that facilitate such a long-term agreement that ensures the connection between the European researchers and resources with their counterparts in China. On behalf of the [CHAIN-REDS project](#), Kostas Koumantaros and Ognjen Prnjat took the opportunity to express their satisfaction and acknowledge strong involvement from both the Chinese and European sides in providing the administrative and technical framework for this long-term sustainable inter-continental relationship.

These collaboration efforts are a proof of CHAIN-REDS's commitment to ensuring sustainability of standard developments in order to secure a continuation of the e-Infrastructure services beyond the project duration. By empowering the Grid ROCs both technically and administratively for coordination with key actors of Grid e-Infrastructures - EGI - CHAIN-REDS is steadily achieving its goal. "We hope to the same kind of agreement between EGI and Africa&Arabia very soon", states Ognjen Prnjat of CHAIN-REDS project.



## Strong presence of CHAIN-REDS at ICRI2014

By Ognjen Prnjat  
GRNET, Greece

The CHAIN-REDS project was strongly represented ([GRNET](#), [INFN](#), [Sigma Orionis](#)) at the second International Conference on Research Infrastructures (ICRI) that took place on April 2-4, 2014 in Athens, Greece. The ICRI conference typically gathers key policy makers from the European Commission, European governments, as well as key representatives of e-Infrastructure research and education communities. This audience is increasingly joined by corresponding high-level delegates and experts from across the globe, including Africa, China, Latin America, India, etc.

During the event, in a dedicated exhibition area (a shared booth with the [ELCIRA](#) project) CHAIN-REDS presented project-related videos, demonstrations and materials. Visitors of the booth have been able to witness live job executions on heterogeneous Distributed Computing Infrastructures by means of standard-based Science Gateways supporting federated identity authentication. Visitors could navigate across data infrastructures consisting of thousands of Open Access Document Repositories and Data Repositories, with the possibility to do semantic searches on tens of millions of records and to correlate scientific papers with the data sets used to write them.



On the 2<sup>nd</sup> of April (as a satellite event of ICRI2014), CHAIN-REDS strongly contributed to and facilitated the training session on Data Infrastructures, focusing on the EU-funded [EUDAT](#) project's data services and their relationship with CHAIN-REDS offerings.

The training event focused on data services available to European, Greek and global scientists. It presented various services developed by the EUDAT Project, as well as the CHAIN-REDS/GRNET persistent identifiers service. The persistent identifiers were presented in the context of the Greek PID service operated by the Greek Research and Technology Network ([GRNET](#)) and made available to all world regions via the CHAIN-REDS project, in the context of intercontinental Virtual Research Communities.

This joint training is the first of a series of activities that CHAIN-REDS and EUDAT projects are undertaking in common, as part of a Memorandum of Understanding signed between the two initiatives in January 2014. Both initiatives have a common interest in a close cooperation in order to achieve their respective objectives and promote the adoption of consolidated standards in the e-Infrastructures for Research and Education, with the ultimate aim of widening the opportunities of data sharing across different e-Infrastructures and continents.

ICRI2014 provided an excellent background for the joint training, because of the global relevance of the forum and its high-level international audience including policy and decision makers.



## Joint CHAIN-REDS / ELCIRA Workshop on Identity Management May 28-29, 2014 – Cancun, Mexico

By **Anthony Dupont**  
Sigma Orionis, France

A workshop on Identity Management will be held at the [Krystal Hotel](#) in Cancun, Mexico, on May 28-29, 2014. This workshop - jointly organised by the [CHAIN-REDS](#) and [ELCIRA](#) EU-funded projects under the aegis of the European Commission (EC, DG CONNECT) - is organised in co-location with the [TICAL2014 Conference](#) that will take place at the Cancun Centre.

This new CHAIN-REDS workshop will give participants a comprehensive overview of Identity Management and will focus on the existing solutions based on the Federations of Identity Providers promoted by the eduGAIN initiative.

The workshop will present the opportunities offered by such approach in terms of easiness of access to distributed resources and services. The presentations will address the technical aspects of the implementation of Identity Providers (IdP) and Service Providers. Specific talks of the workshop will also show examples and current state of the art activities with an introduction to the Persistent Identifier (PID) system. The workshop is of particular interest for Managers and Technical persons of Computing Centres and National Research and Education Networks that want to investigate the opportunities of installing IdP systems and offering Services to Federated IdPs.

This CHAIN-REDS event is the fifth of a series of thematic workshops organised on different continents with the aim of fostering direct interaction between experts and key stakeholders in the field in order to harness the vast opportunities offered by e-Infrastructures and related services for social-economic growth.

This workshop is organised by [RedCLARA](#) with the support of [Sigma Orionis](#) and all CHAIN-REDS and ELCIRA project partners.

[Discover the Agenda & Register!](#)

The joint Workshop will be held in colocation with the TICAL 2014 Conference. The Fourth Conference on Information and Communication Technology Directors from Higher Education Institutions, TICAL 2014, will be held between 26 and 28 of May at the Cancun Center.

It aims at providing a collaborative space to enhance the work and the role of the Information and Communication Technologies (ICT) Directors of the universities of the region.

For more information about TICAL2014, please visit the [REDCLARA](#) website.



## CHAIN-REDS School for Application Porting to Science Gateways June 9-20, 2014 – Catania, Italy

By Roberto Barbera  
INFN, Italy

The CHAIN-REDS project is happy to announce the [School for Application Porting to Science Gateways](#) to be held at the Department of Physics and Astronomy of the University of Catania, in Catania, Italy, on June 9-20, 2014.

The aim of the School is to increase the number of scientific applications running on the e-Infrastructures addressed by CHAIN-REDS and integrated in Science Gateways deployed in the regions targeted by the project.

To fulfill the goal of this school, the program, based both on lectures and hands-on practices, will cover in-depth the main topics of the Catania Science Gateways Framework and will provide the know-how to integrate applications in Science Gateways implemented with that framework.

Applications to be integrated during the school in the Science Gateways deployed in the regions addressed by CHAIN-REDS can be proposed either as **Grid Applications** (i.e., as software to be remotely installed at Grid sites) or as **Cloud Applications** (i.e., as software included in a Virtual Machine that can be deployed at sites belonging both to the CHAIN-REDS cloud testbed and to the EGI Federated Cloud).

In order to maximize the didactic impact and effectiveness, the number of applications to be ported will be limited to 13-15.

The deadline to propose applications is the **31<sup>st</sup> of May 2014**.

The event is in technical sponsorship with the IEEE TSCS Technical Area on Science Gateways.

The [IEEE Technical Committee on Scalable Computing](#) (TCSC) is an international forum within the [IEEE](#) and [IEEE Computer Society](#) fostering research and education in scalable computing.

The Technical Area on Science Gateways aims at improving the state of research and education in scalable computing through the following goals:

- Sponsoring upcoming and prominent conferences and workshops in the scope of science gateways;
- Outreach to various researchers within the context of science gateways;
- Providing information about projects and publications on science gateways.



## Clouds for Research and Education Workshop June 24-26, 2014 – Rome, Italy

By **Yousef Torman**  
ASREN, Jordan



**ASREN** (the Arab States Research and Education Network) in cooperation with **IT Synergy** (Egypt), **GARR Consortium** (Italy), **EUMEDCONNECT3** project (UK), and **CHAIN-REDS project** (Italy) are organising the Clouds for Research and Education Workshop. It will take place at the GARR Consortium Premises in Rome, Italy, on June 24-26, 2014.



The main objectives of the workshop are the following:

- Identify and explore the latest business and technology trends in Cloud Computing;
- Understand the difference between Proprietary and Open Standard based Cloud Solution;
- Understand the importance of Open Standards and Interoperability;
- Assess the potential of Open Source applied to Cloud Computing and explore its Business Model;
- Deep Dive into Cloud Computing through labs and practical experience.

The workshop is designed for managers and professionals working for National Research and Education Networks (NRENs), who need to understand the potential of Cloud Computing and its underlying technology in order to be able to assess its impact into their respective NRENs.

This workshop will satisfy the need of these targeted participants by providing them with both the necessary business information about cloud computing and the cloud technical essentials that are the starting point for the professional cloud level and certifications. Moreover, the workshop will satisfy the interest of the CHAIN-REDS project in creating cloud infrastructures in harmonization with other cloud installations and cloud services provided at the regional level in Europe and in other regions.

The workshop will be followed by the EUMEDCONNECT3 – ASREN meeting on May 27, 2014. This meeting will address issues related to the progress and the recent developments in the e-Infrastructures in the region. The meeting will include a roundtable session to be led by CHAIN-REDS project with focus on Clouds vision and planning. This session taking place in the framework of the Rome workshop is the third of this type promoted by the CHAIN-REDS project, after the roundtable session organised as part of e-Science 2013 in Beijing and the recent [roundtable on Cloud technology](#) held on May 20, 2014 as part of the EGI Technical Forum in Helsinki.

This series of technical meetings form a coherent set of roundtables on the federation of clouds, as part of CHAIN-REDS strategy for Research and Education. They also translate the efforts constantly made by the project to reach its major milestones and fully comply with the requirements outlined in the work programme.





### EGI launches the Federated Cloud. CHAIN-REDS acknowledged



The European Grid Infrastructure (EGI) announced at the EGI Community Forum 2014 in Helsinki the launch of the Federated Cloud service and acknowledged the collaboration with CHAIN-REDS. [More...](#)

### CHAIN-REDS featured in « EU Research on the World Stage »

Top Stories

The digest dedicated to International Cooperation, named "EU Research on the World Stage", recently published by the European Commission, acknowledges the CHAIN-REDS project outcomes. [More...](#)

### New version of the Semantic Search Engine released



A new version of the CHAIN-REDS Semantic Search Engine has been released. Two new functionalities have been added. The first one is the possibility to refine the search by keywords: author, subject, type. [More...](#)

### CHAIN-REDS acknowledged at the EGU Assembly 2014



CHAIN-REDS work on the promotion on the standard-based interoperability between grids, clouds and HPC clusters in Africa has been acknowledged at the 2014 Assembly of the European Geosciences Union. [More...](#)

### CHAIN-REDS data services featured on Semanticweb



CHAIN-REDS Knowledge Base and Semantic Search Engine are featured on Semanticweb.com, a known and reputed blog in the domain. Read the full article from the CHAIN-REDS website. [More...](#)

### 4th eI4Africa workshop in Dar es Salaam on June 3<sup>rd</sup>, 2014



The 4<sup>th</sup> eI4Africa Thematic Workshop is taking place on June 3<sup>rd</sup>, 2014, in Dar es Salaam, Tanzania. The workshop is organised under the aegis of the European Commission and in co-location with the TTA Conference2014. [More...](#)

### Open IRG Workshop in Athens, Greece on June 9-10, 2014



The next e-Infrastructure Reflection Group Workshop (e-IRG) will take place in Athens, Greece from Monday 9<sup>th</sup> (9am) until Tuesday 10<sup>th</sup> of June (1pm). It is hosted by the General Secretariat for Research and Technology. [More...](#)

[More news and events...](#)



CHAIN-REDS is a FP7 project co-funded by the European Commission (DG CONNECT) aiming at promoting and supporting technological and scientific collaboration across different e-Infrastructures established and operated in various continents, in order to define a path towards a global e-Infrastructure ecosystem that will allow Virtual Research Communities (VRCs), research groups and even single researchers to access and efficiently use worldwide distributed resources (i.e., computing, storage, data, services, tools, applications).

## Objectives

- Extend and consolidate the international cooperation of Europe with other regions of the world in the domain of e-Infrastructures for R&E, thus reinforcing the scientific collaboration and broadening the impact of the European Research Area
- Promote, coordinate and support the effort of a critical mass of non-European e-Infrastructures for R&E to collaborate with Europe by addressing interoperability and interoperation of Grids and other DCIs such as potential upcoming Cloud federations and HPC centres
- Study the opportunities of data sharing across different e-Infrastructures and continents thus widening the scope of the existing CHAIN Knowledge Base to Data Infrastructures and Cloud implementations
- Promote trust-building towards open Scientific Data infrastructures across the world regions, including organisational, operational and technical aspects
- Demonstrate the relevance of intercontinental cooperation in several scientific data fields addressing existing and emerging Virtual Research Communities (e.g. Earth Science, Climate Change, Genomics, etc.) and propose pragmatic approaches that could impact the everyday work of the single researcher, even if not structured in the framework of a Virtual Research Community
- Provide guidance and recommendations for roadmaps for long-term global collaboration in e-Infrastructures and harmonisation of existing policies. These are envisaged to act as input to policy and decision-making mechanism, harmonised with the European Digital Agenda and Horizon 2020

## Join CHAIN-REDS on Facebook and Twitter!



Join the [CHAIN Science Gateway Community](#) on Facebook and follow [@ChainREDS](#) on Twitter to stay updated on CHAIN-REDS activities and events and promote your project / initiative to the community!

