Co-ordination & Harmonisation of Advanced e-Infrastructures for Research and Education Data Sharing

Introduction: the CHAIN-REDS project

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Outline

› General Information on CHAIN-REDS
› The Vision and the Actions
› Use cases
› Challenges and solutions
› Conclusions
General Information

- Research Infrastructures – Support Action - Grant Agreement n. 306819
- Total Costs of € 2.3 M - Max. EC contribution: € 1.52 M
- Start date: 1 December 2012 - Duration: 30 Months
- Partners:
  - INFN (IT) – Coordinator
  - CIEMAT (ES) – WP4 Leader
  - GRNET (GR) – WP3 Leader
  - CESNET (CZ) – WP5 Leader
  - UBUNTUNET (MW) – Africa
  - CLARA (UR) – Latin America
  - IHEP (CN) – China
  - ASREN (DE) – Arab States
  - SIGMA ORIONIS (FR) – WP2 Leader
  - C-DAC (IN) – India

Regional Grid infrastructures

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The Vision

Promote scientific collaboration across different e-Infrastructures established and operated in various continents

e-Infrastructures support wide geographically distributed communities

Define a path towards a global e-Infrastructure ecosystem

Promote the progress of interoperability among different regional e-Infrastructures

Allow VRCs and even single researchers to access and efficiently use worldwide distributed resources

Grids and networks allow the access of many researchers to scientific resources (laboratories and data)

5) Provide proof-of-principle use cases for Data sharing across continents

- Data Accessibility, Reproducibility, and Trustworthiness (DART) challenge
- Of interest to EUDAT Workflow WG
- Several videos already available

Interoperations

Africa & Arab States; Latin America; China; Asia Pacific

India
Baseline example for cloud federation: EGI Federated Cloud Task Force
- OCCI and CDMI standards as a prerequisite for cloud federation
- Orchestration system, based on CLEVER, linking several Cloud providers

Cloud federation demo
- As an application accessible by the CHAIN-REDS Science Gateway

The Knowledge Base of e-Infrastructures has been extended to open access data document and (recently) educational repositories

(http://www.chain-project.eu/knowledge-base)
Countries where CHAIN-REDS has supported the deployment of federated services

Science Gateway and Standards: SAGA, OCCI, CDMI
Data Accessibility, Reproducibility, and Trustworthiness

Use cases

- APHRC (Africa)
  - Societal health and well-being domain
- LAGO (LA)
  - Astroparticle domain
  - DART based
- GROMACS (India)
  - Molecular dynamics domain
- ABINIT (Arab region)
  - \textit{Ab initio} calculations on quantum chemistry and Physics of materials domains
- TreeThreader (China)
  - Life processes at the molecular level
Challenges & Solutions

- Make Data Repository Open and Accessible following the standards and exposing them in the Knowledge Base
- Make Access to Applications and Services easy using the Science Gateway approach
- Identify Users by means of Identity Federations and help the integration of Service Providers
- Identify Data using Persistent Identifiers

Coordination & Harmonisation

e-Infrastructures cover several levels and technologies (Network, Cloud, Identity Federations, Science Gateways) and require Inter-Regional Coordination and Harmonisation
Final Conference in Brussels

- Date: 31 March 2015
- Venue: Hotel Bloom, Brussels
- Special session on Use Cases
- International panel discussion on cooperation
- Agenda available soon on the Web site

Conclusions

- CHAIN-REDS Vision has been implemented in a series of actions to promote coordinated activities among regional e-Infrastructures
- Interoperation, Science Gateways, Identity Federations and standards are promoted to support intercontinental VRCs activities
- Successful demos have been deployed for Federated Clouds and DART
- Five Use Cases are supported to show the successful implementation of the project's vision
- The project is currently filling the gap of stable Inter-regional Coordination: a Plan will be proposed in the final part of the activity
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Thank you!

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