# e-IRG white paper 2014

e.valente, garr

# e-Infrastructure

*The term **e-Infrastructure** refers to the research environment in which all researchers, whether working in the context of their home institutions or in national or multinational scientific initiatives, have shared access to unique or distributed scientific facilities (including data, instruments, computing and communications), regardless of their type and location in the world.*

# e-IRG

## *e-IRG, the e-Infrastructures Reflection Group*

The main objective of the e-Infrastructure initiative is to support the creation of a political, technological and administrative framework for an easy and cost-effective shared use of distributed electronic resources across Europe.

Particular attention is directed towards computing, storage, and networking.

# The e-Infrastructure Reflection Group

Founded in 2003 to *provide strategic advice and guidance on the development of a European e-infrastructure for science and research.*

- Delegates appointed by (and report to) ministries – represents nations (EU member states and associated states + EC)

- Vision: *An open e-Infrastructure enabling flexible cooperation and optimal use of all electronically available resources*

# e-IRG

The e-Infrastructure Reflection Group was founded to define and recommend best practices for the pan-European electronic infrastructure efforts.

It consists of official government delegates from all the EU countries. The italian representatives are:

enzo.valente@garr.it  and
giuseppe.depietro@na.icar.cnr.it

The e-IRG produces white papers, roadmaps and recommendations, and analyses the future foundations of the European Knowledge Society.  See www.e-irg.eu

# The e-Infrastructure Reflection Group

- Roadmap
  - Analyses the future of European e-Infrastructure
- White Papers
  - Concrete recommendations on strategic issues
  - White Paper 2014: Best e-Infrastructure practices for large-scale RIs. Will provide recommendations for ESFRI roadmap 2016 proposers and support for evaluation of such proposals
- Task Forces and Working Groups
  - "Quick response" on urgent issues, focused work
  - Recent Task Force on Legal Issues – results need to be followed up

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# e-IRG as advisory body

Recent e-IRG achievements

- White Paper 2013: *e-Infrastructure Commons* recommendation
  - Implementation
- Coordination with ESFRI
  - Structures for collaboration and first results

The role of e-IRG as advisory body

- Relations to the EC, the member states and other stakeholders

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# e-Infrastructure

*e-Infrastructure* as discussed by e-IRG includes

- Networks/Connectivity
- Computing (HPC, distributed computing,…)
- **Data**
- Tools and services

Note the wide scope: e-Infrastructure supports research (all types) and other research infrastructures (all types)

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# The current European e-Infrastructure landscape

- Networks                DANTE, Terena, GEANT
- Computing              PRACE, EGI
- Data            All above, EUDAT, OpenAIRE
                    (in different ways)
- Tools and Services All above (different T&S)

- Disciplinary e-Infrastructures (e.g. in ESFRI projects)
  - Sometimes coordinated with the general e-Infrastructures above at international and/or national level

# e-IRG, ESFRI and the EC

The e-Infrastructure Reflection Group works in close cooperation and coordination with the ESFRI Committee

(see this morning Giorgio Rossi presentation)

Depending on RI's and Projects requirements, e-IRG tries to harmonize the fullfilment of scientific collaborations needs, also giving EC the necessary input for defining the Work Programs.

(see this morning Cristina Messa presentation)

# the e-IRG White Paper

e-IRG produces regularly a
**"White Paper on e-Infrastructures"**

the latest publications are
*e-IRG Task Force Report on Legal Issues* and
*e-IRG White Paper 2013*

The current and previous
e-IRG White Papers can be found in
*http://www.e-irg.eu/publications.html*

# the e-IRG White Paper 2014

**e-IRG White Paper 2014**

v1.2, 6 Nov 2014

**Best Practices for the use of e-infrastructures by large-scale research infrastructures**

In preparation...

# e-IRG White Paper 2014 Table of contents

e-Infrastructures at national and European level have almost developed jointly and are strongly linked together.

However each national e-infrastructure has its own rules, policies and access procedures.

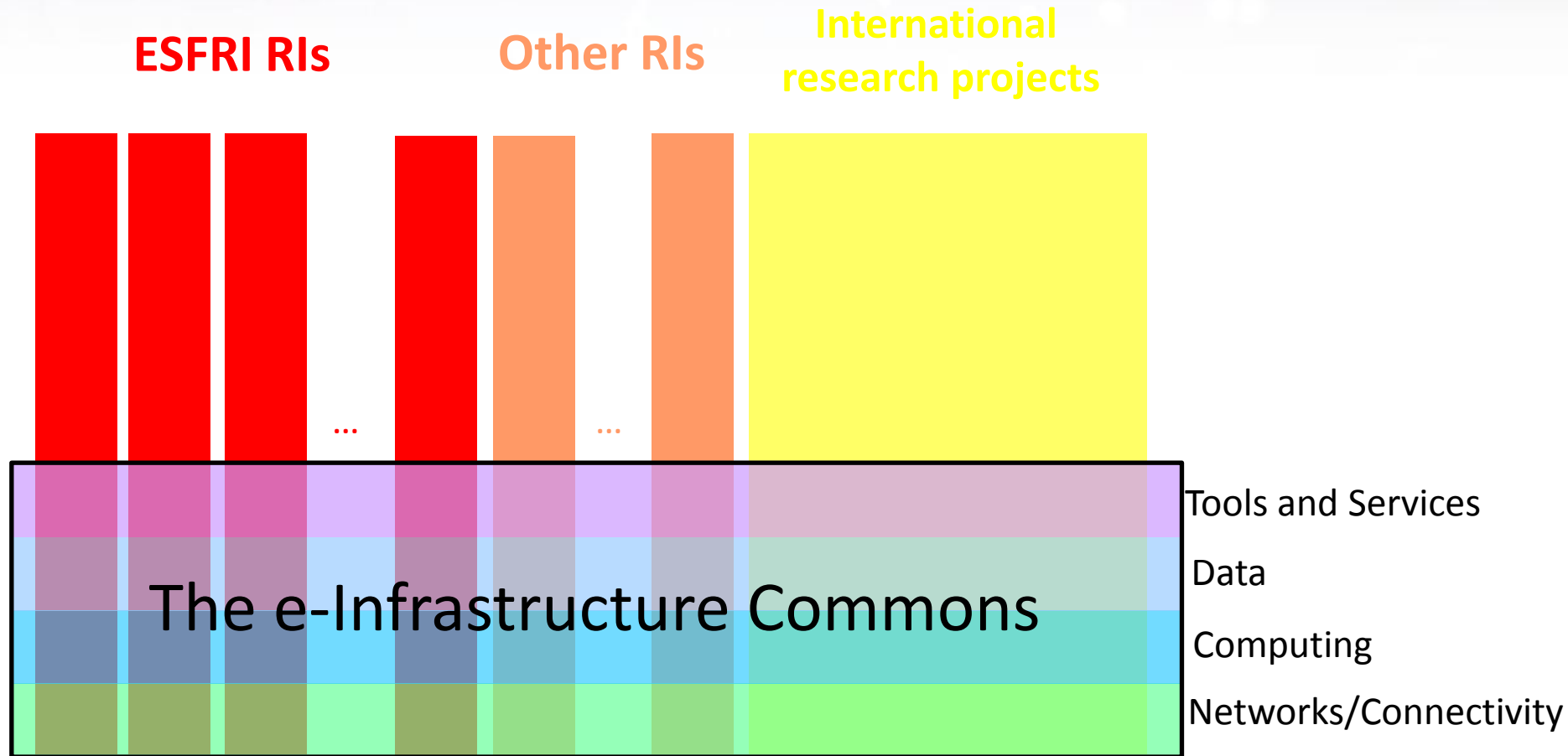The corresponding European infrastructure may suffer from a lack of uniformity in these national regulations.

e-IRG uses the metaphor of the Commons for the e-Infrastructure resources, which among others refer to networking, computing, storage, data and software, along with digital tools and collaboration opportunities.

*A range of e-infrastructure services for large-scale research infrastructures.*

In the e-IRG Roadmap 2013, e-IRG outlines Europe's need for a single "e-Infrastructure Commons" for knowledge, innovation and science.

**ESFRI RIs**

**Other RIs**

**International research projects**

...

...

The e-Infrastructure Commons

Tools and Services

Data

Computing

Networks/Connectivity

## 3.1. Networking services

Connectivity

GÉANT, the pan-European Research and Education Network, ensures stable network connections from Iceland to Cyprus.

In fact GÉANT interconnects all Europe's National Research and Education Networks (NRENs)

And the networking does not stop at the European borders…

# e-IRG White Paper 2014

## 3.2. Computing services

Computing and Data Processing

Not just HPC, not just Centres of Excellence,
but...
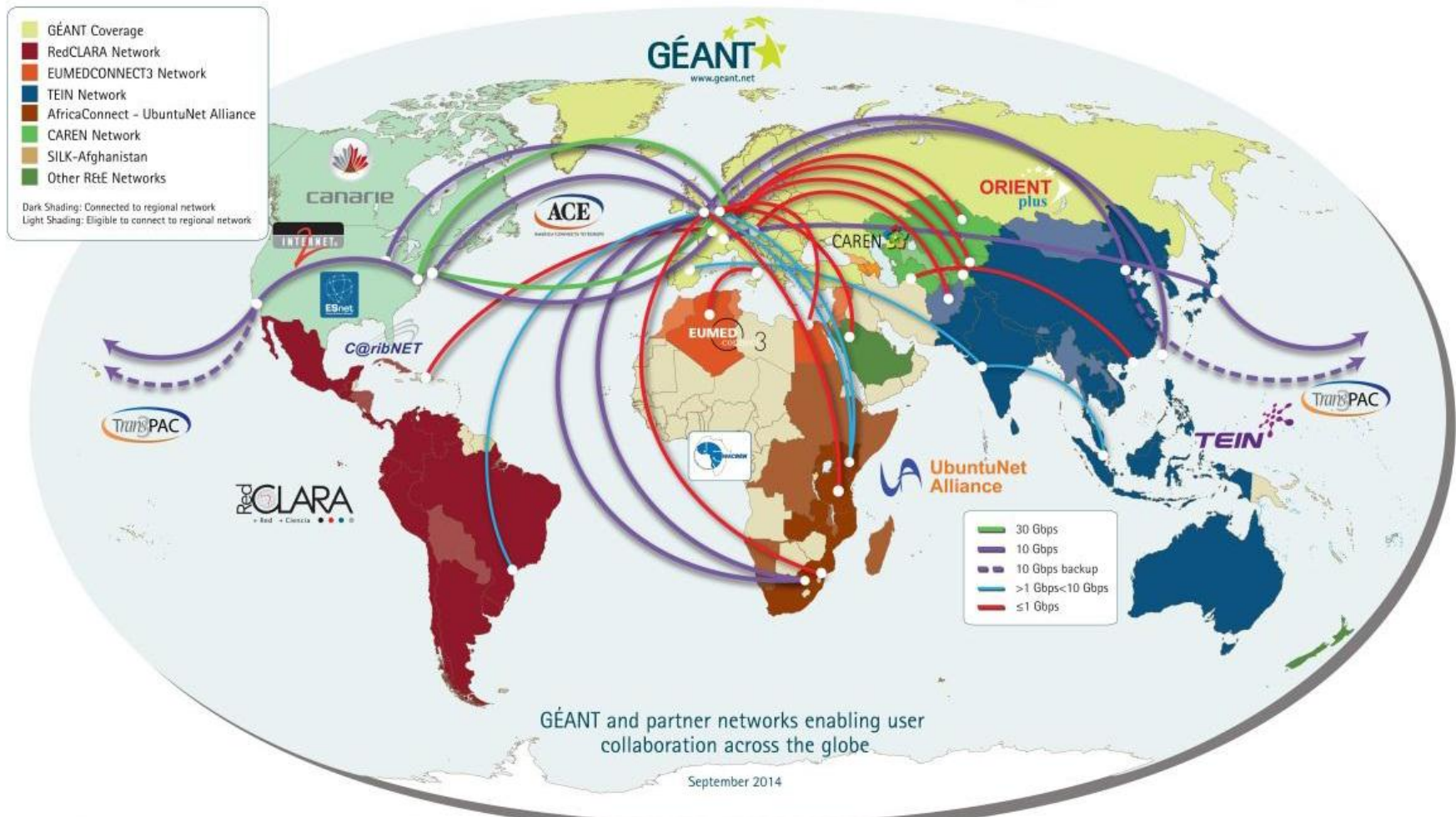...High throughput Computing and Storage System

Then: which infrastructure?
...this is a very tough topic...

[Input required from users]

# Global Research and Education Network



At the Heart of Global Research and Education Networking

GÉANT
www.geant.net

GÉANT Coverage
RedCLARA Network
EUMEDCONNECT3 Network
TEIN Network
AfricaConnect – UbuntuNet Alliance
CAREN Network
SILK-Afghanistan
Other REtE Networks

Dark Shading: Connected to regional network
Light Shading: Eligible to connect to regional network

30 Gbps
10 Gbps
10 Gbps backup
>1 Gbps<10 Gbps
≤1 Gbps

GÉANT and partner networks enabling user collaboration across the globe

September 2014

connect • communicate • collaborate

## 3.3. Data services

[input to be gathered from diverse sources]

Some communities have the internal expertise to manage the data produced in their experiments and activities and do not need any special help (see High Energy Physics, for instance)

Some other have not the critical mass of programmers, engineers, technicians, analists, etc, in order to provide the needed tools for managing their data.

The White Paper 2014 will give further proposals on this theme, in addition tot hose in the White Paper 2013.

How to achieve the Open Access and solve legal issues to guarantee the Intellectual Property Rights.

International federated identity for the research and education is mandatory to allow secure and shared access to data

Definition of recommendations on authentication and authorisation best practices that are suitable for the digital cultural heritage. (together with Geant)
(see basically the Valentino Cavalli presentation)

[to be gathered from diverse sources]

# European HPC

- European HPC is an essential element of the e-Infrastructures Commons
  - European researchers and research efforts need access to grand-scale HPC resources
- PRACE-1,2,… is the natural way to implement this
- But …
  - actors do not share the same goals and expectations -> it is difficult to agree on funding streams and governance
  - e-Infrastructures, including HPC, and other research infrastructures do not form a fully integrated European research infrastructure landscape

- The issues should be resolved, and e-IRG is willing to contribute to the work

# However…

… even today, researchers are often confused by the complex e-Infrastructure landscape

- insufficient coordination, collaboration, and integration of e-Infrastructures  services
  - lack of clear interfaces between "horizontal" and "topical" efforts
- lack of visibility of "horizontal" e-Infrastructure services
  - lack of integration of national and European efforts
- lack of models for integration with commercial providers
  - some legal issues not resolved
- lack of business models for sustainability
- lack of coherence from many user communities

# e-IRG White Paper 2014
## 4. Best practices for data management

A range of e-infrastructure services for large-scale research infrastructures and best practices for their use

input from RDA Rome Workshop

(December 11-12, Rome, Hotel Plaza)

**Indicators for contributing to the e-infrastructure commons:**

It could happen that requirements from RI's are so that they are not served by any existing e-infrastructure service.

Proposals for introducing new services, interoperable with the existing environments, will be given.

# e-IRG and the Cultural Heritage

Cultural Heritage, Arts and Humanities, together with other disciplines like Health, are considered among the most demanding activities in the timeframe of Horizon2020.

**the e-IRG White Paper 2014 editorial committee** is engaged in gathering more info in order to respond to the specific needs of the cultural heritage community, (see also the presentations in this session).

# Coordination with ESFRI - actions taken

- ESFRI observer in e-IRG and *vice versa*

- ESFRI has invited e-IRG representatives to be members of the ESFRI SWGs and Implementation Group
  - Input to the ESFRI Roadmap 2016 proposal format
  - Provide section on e-Infrastructures and data management in the ESFRI Roadmap 2016 Landscape Analysis
  - Participation in scientific evaluation of ESFRI Roadmap 2016 proposals

- e-IRG has formed an *Overarching WG* with the e-IRG reps. in ESFRI WGs
  - Provides a common platform for e-Infrastructure discussions and evaluation of ESFRI Roadmap 2016 proposals
  - Assigned as editorial board of next e-IRG White Paper: Best e-Infrastructure Practices for large-scale RIs

- e-IRG organised an open workshop in Rome November 10-11
  - Discussions between ESFRI projects and horizontal e-Infrastructures

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# e-IRG White Paper 2014

**e-IRG Overarching Working Group** is the Editorial Board in charge for preparing the
**e-IRG White Paper 2014**

The group is coordinated by
Rosette Vandenbroucke (BELSPO, BE)
**rosette.vandenbroucke@gmail.com**

The White Paper will be ready by February 2015