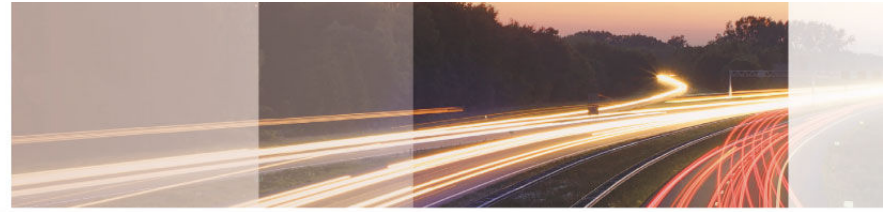


GARR

The Italian Academic & Research Network



www.garr.it

Distributed Computing Services on top of a Research and Education Network: GARR

Federico Ruggieri

Ubuntunet Connect 2013 – Kigali, Rwanda



GARR in a nutshell

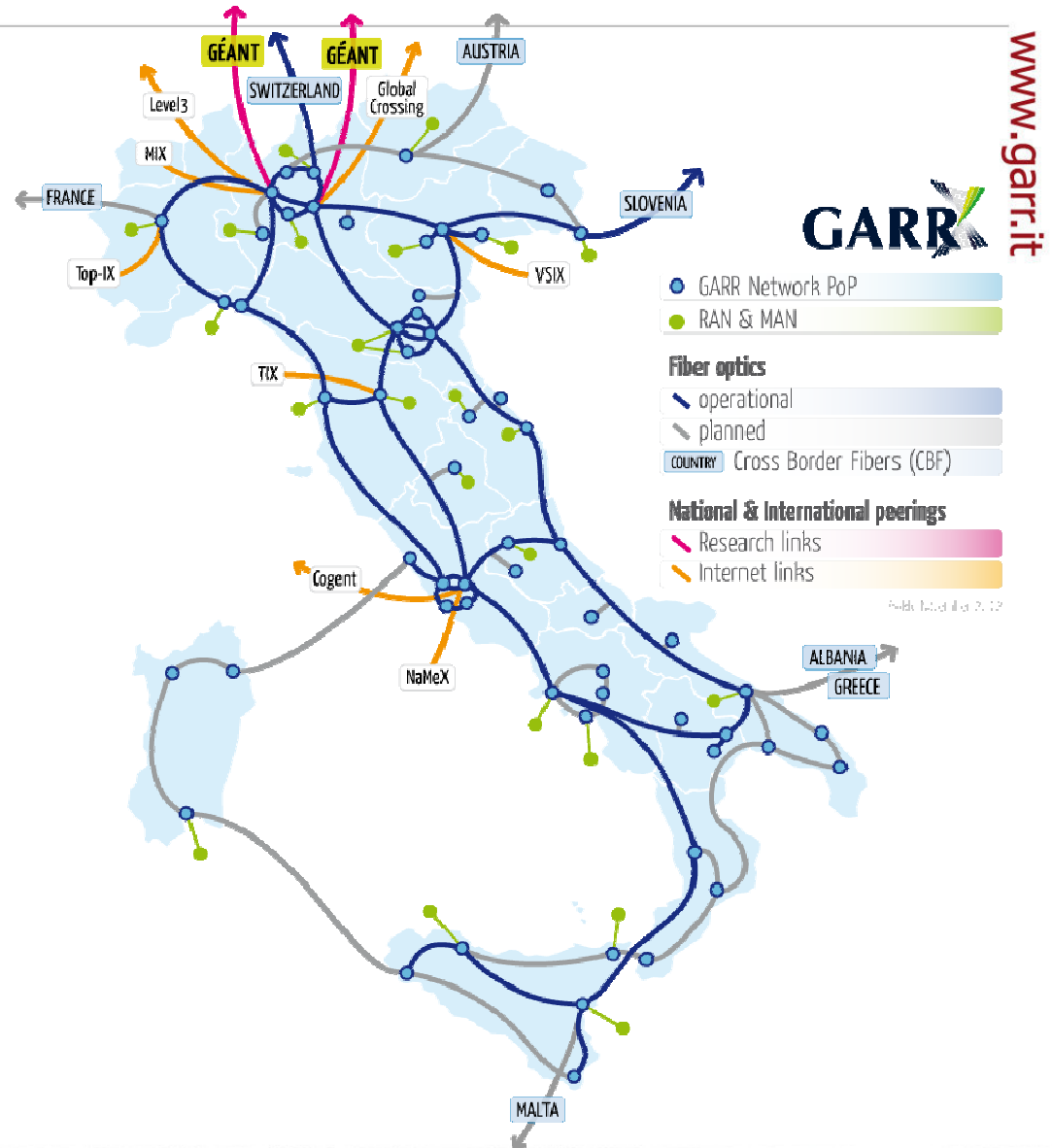
- Italian R&E Network
- Providing:
 - High-bandwidth transparent symmetric connectivity
 - Advanced services
 - E-Infrastructure supportto the Italian Scientific, Academic, Education and Cultural community
- Non-for-profit association founded by CNR, ENEA, INFN and Fondazione Crui (on behalf of Italian Universities) under the aegis of the Ministry of Education & Research



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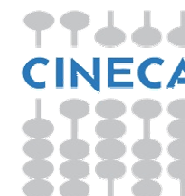
The network

- More than 8.500 km of GARR owned fibers
 - ~**6.500** Km of backbone
 - ~**2.000** Km of access links
- Over **500 user sites** interconnected
- 433 Gbps** aggregated access capacity
- 100 Gbps** IP capacity to GÉANT (**yes: 100!**)
- Cross border fibers with ARNES, SWITCH and UoM.
- Several 10G e2e provided by GÉANT



The user community/1

- Founding members: CNR, INFN, ENEA + Fondazione CRUI representing ~90 public and private universities in Italy.
- Other connected organizations: scientific institutes, laboratories, observatories & other facilities, supercomputing centers, research hospitals, Cultural institutions, libraries, museums and schools.
- Special projects with Ministry of Health, Ministry of Cultural Heritage and Ministry of Education & Research.



Ministero della Salute



Ministero dell'Istruzione,
dell'Università e della Ricerca



MiUR - AFAM



ISPRA
Istituto Superiore per la Protezione
e la Ricerca Ambientale

The user community/2

- GARR community is the whole R&E world

GÉANT At the Heart of Global Research Networking



connect • communicate • collaborate
GÉANT is co-funded by the European Commission within its 7th R&D Framework Programme.
This document has been produced with the financial assistance of the European Union. The contents of this document are the sole responsibility of GÉANT and are under no circumstances to be regarded as reflecting the position of the European Union.

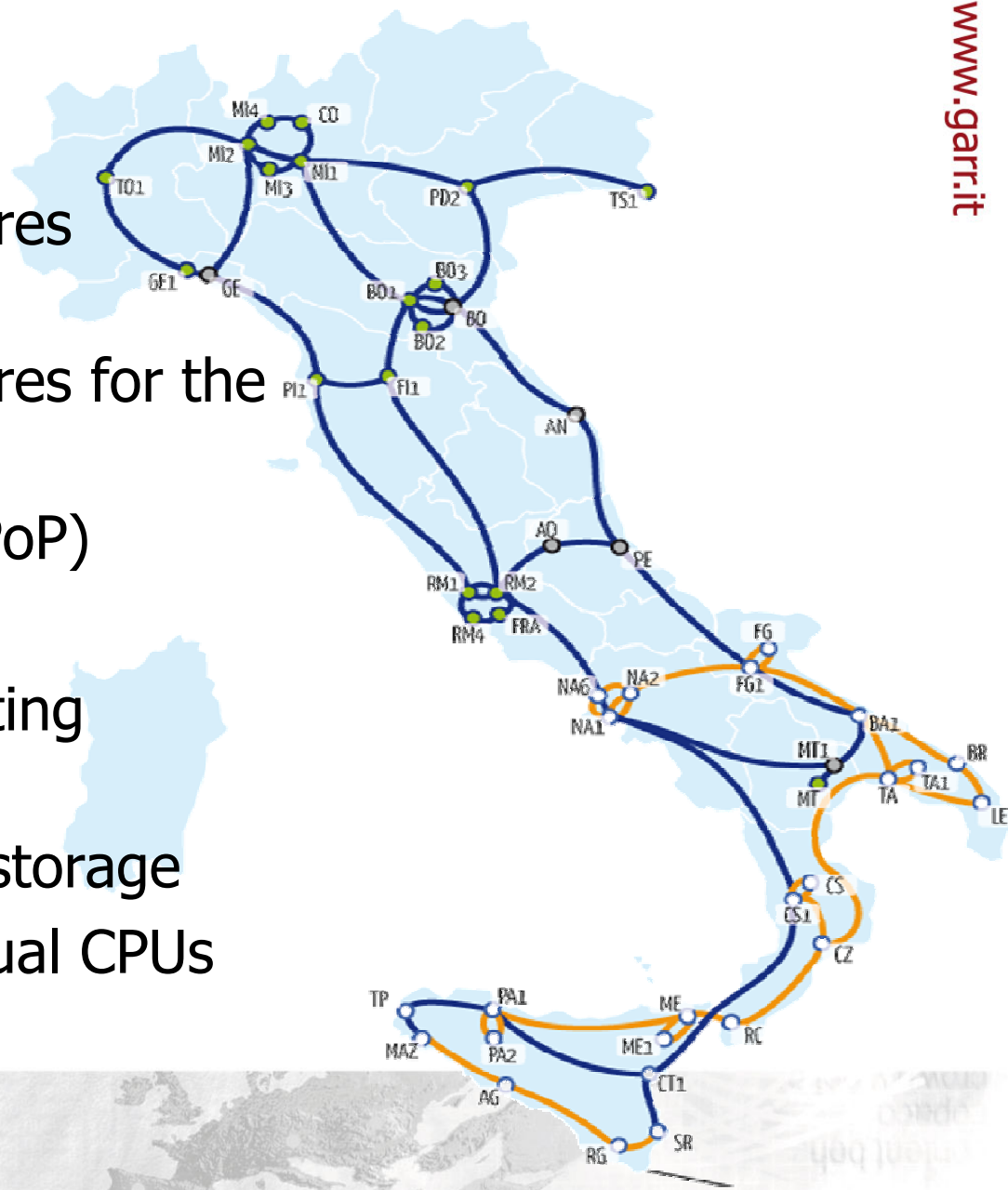


Our Activities

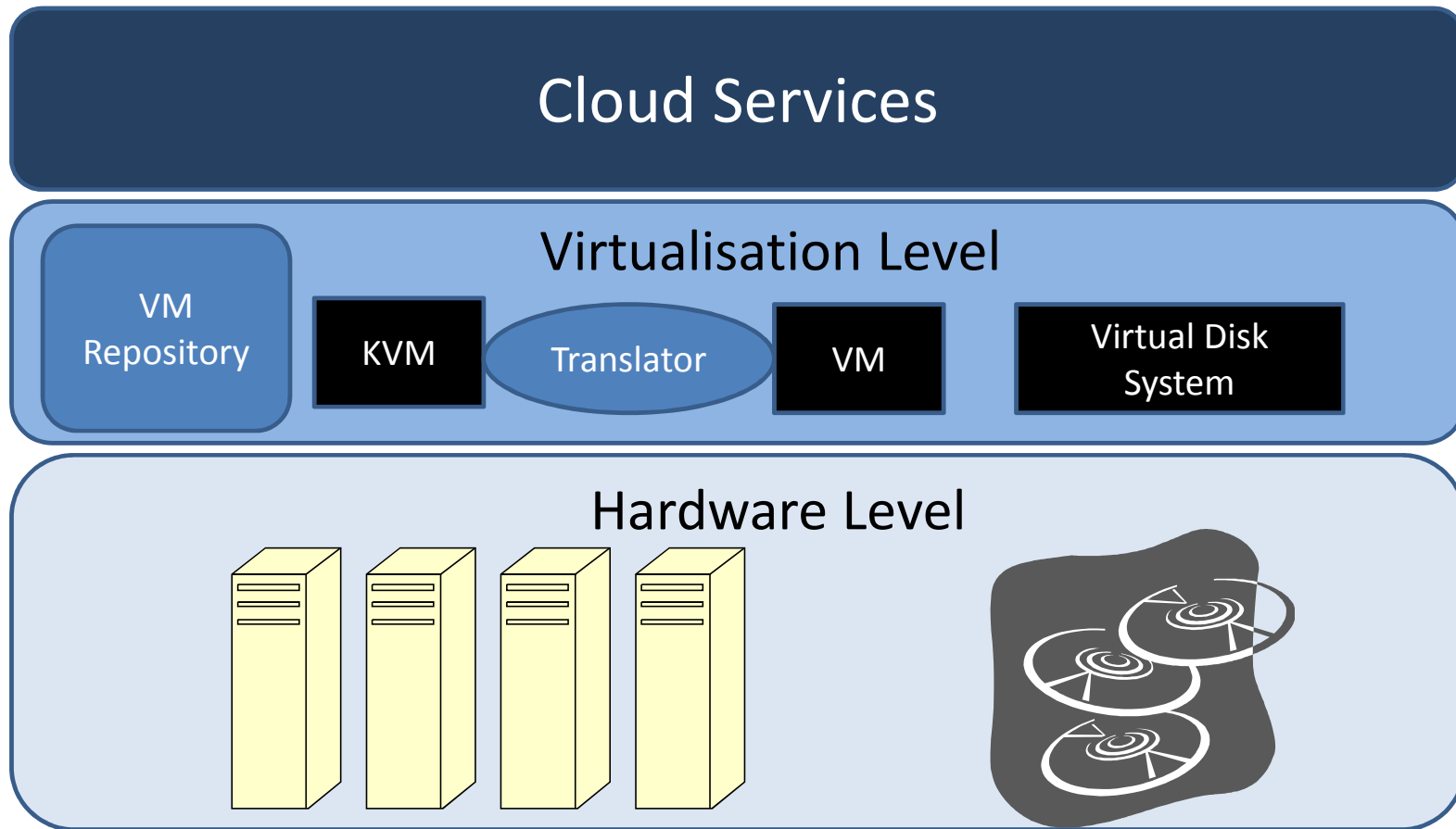
- Planning & operation of the ultra-broadband network infrastructure
- Tailored support to users
- Provision of advanced ICT services
- Participation in international projects (connectivity, R&D, support to e-Infrastructures and communities)
- Training on advanced network/ICT topics (IPv6)
- Communication and dissemination on Network/ICT topics
- **E-Infrastructure coordination (computing, storage)**

GARR-X Progress

- Started on 1 July 2013
- About 3.900 km new fibres backbone
- About 2.200 km new fibres for the access of users
- 24 Points of Presence (PoP)
- Up to 100 Gbps links
- New Distributed Computing Infrastructure with:
 - More than 6 PB disk storage
 - More than 6.000 Virtual CPUs

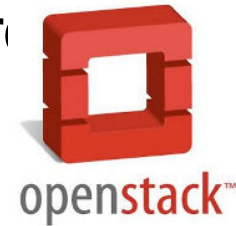


Cloud infrastructure



Cloud Middleware

- **OpenStack** - a cloud operating system that controls large pools of compute, storage, and networking resources.



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- **Puppet** - open source software for configuring and managing the infrastructure.
- We are also considering:
- **CLEVER** is a cloud middleware fully designed at the University of Messina, Italy.



- **OKEANOS** is a comprehensive cloud middleware with web graphic interfaces for users and cloud tenant.



- **Open Cloud Computing Interface** (OCCI) to interact with other federated clouds.



- **Cloud Data Management Interface** (CDMI) to create, retrieve, update and delete data elements from the Cloud.

A few examples of services

- **Software Mirror** - With 240 TB distributed on two different network nodes, GARR mirror ensures a more efficient software distribution, including the popular open source software of Sourceforge.net.
 - Sourceforge.net is hosted by GARR in Italy
- **File Sender** – a service to send very large files in a secure and easy way. Files are uploaded on a temporary storage, from where they can be downloaded by the intended recipients for
 - Send and receive REALLY large files
- **Cloud services** - Currently offered in a pilot mode to a selected segment of the community, they include: **GARRbox**, a personal storage and file sharing tool with high standards of data security, confidentiality and protection and **IdP in the cloud** (see details in the following slides)
 - Your data remain “here” within the community

The logo for Sourceforge, featuring the word "SOURCE" in black and "forge" in white on a blue rectangular background.The text "FILESENDER" in a bold, black, sans-serif font.

IDP in the Cloud

Policy Recommendations	Action Required	Main Stakeholders
Lower the adoption entry level of existing infrastructures for new users and providers and support communities to benefit from existing AAls.	Consider ways to offer ready-to-use solutions that hide technical complexity from the users.	eduGAIN, EGI, EUDAT, national identity federations

From AAA study

Goal of the project:

- Make easy the deployment and management of the identity providers, minimizing the activities and the complexity for home organizations.

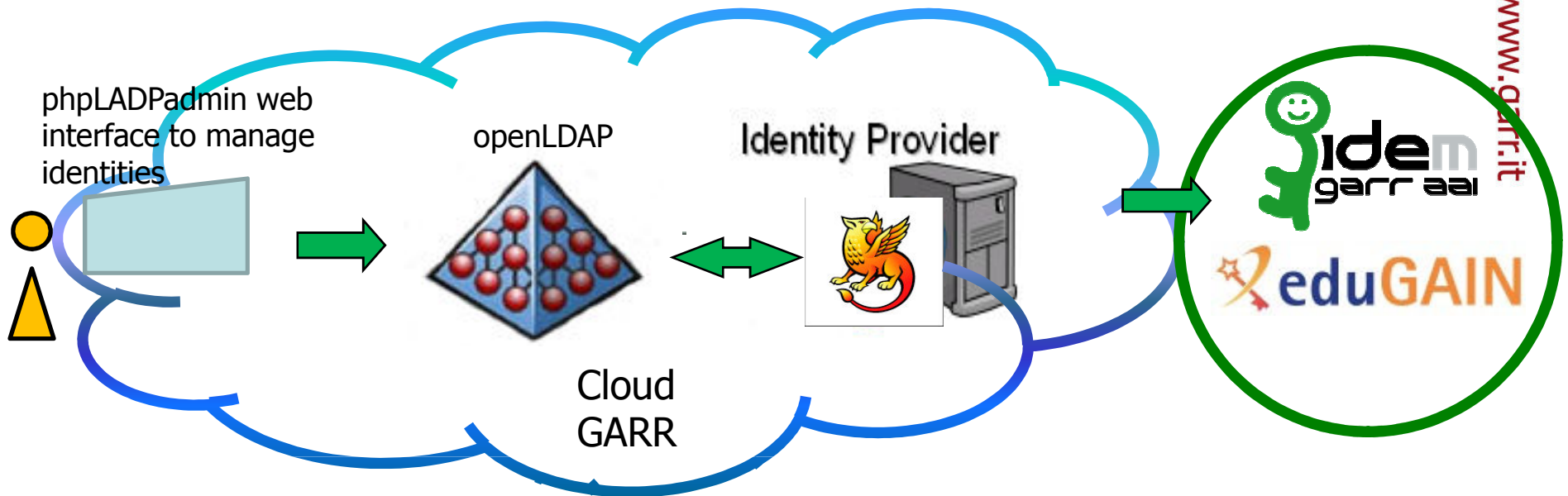
GARR provides:

- IDP as a Service
 - IDM as a Service
- => IDP in the Cloud

The solution: not only technological

- Agreement between Ministry of Health, 57 Organizations (research hospitals and health institutes), and GARR
- Ready to use IDM and IDP platform, hiding tech complexity
- Platform is designed to satisfy IDEM and eduGAIN policy requirements

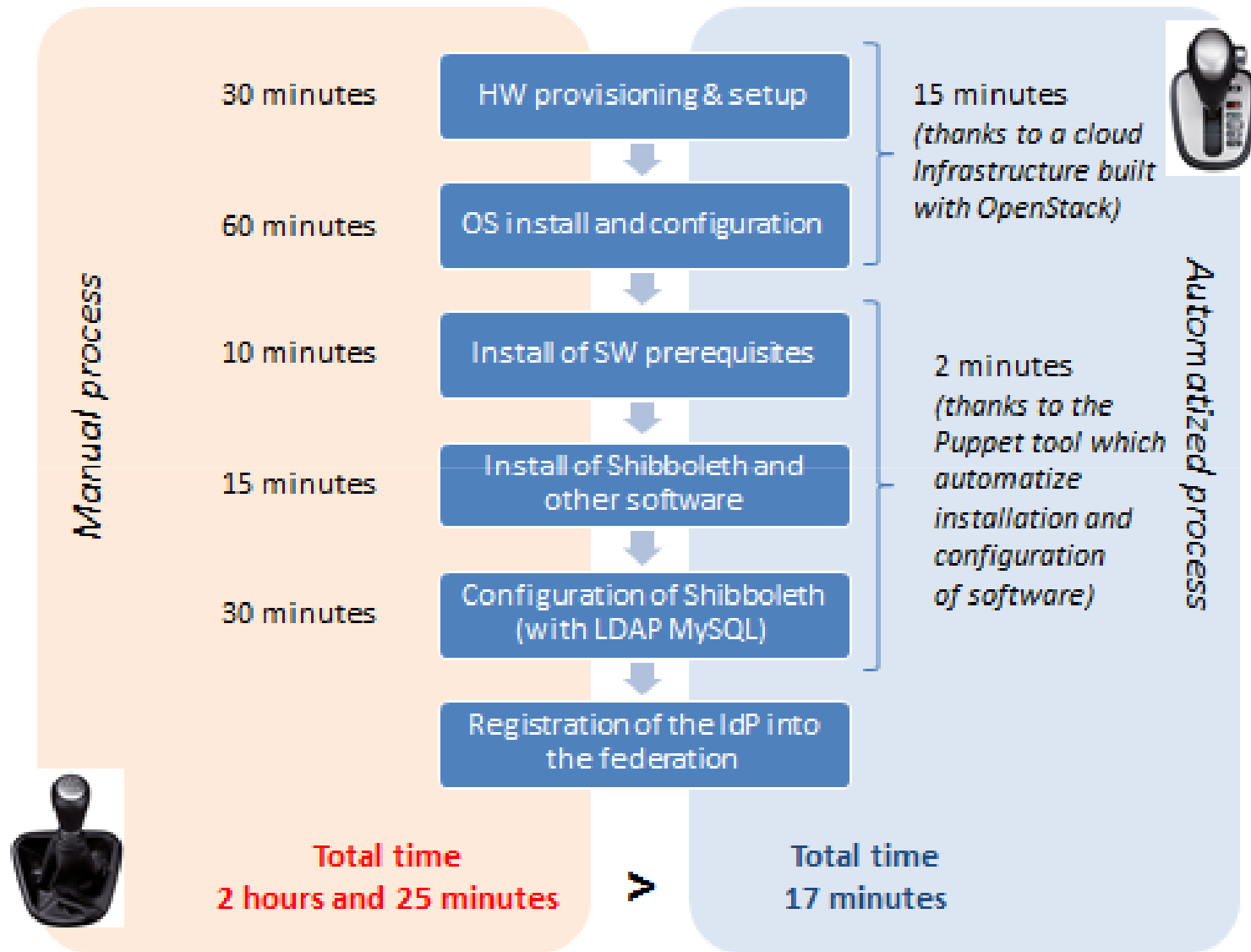
The technological solution for the platform:




The VM includes:

- Shibboleth IDP
- uApprove
- Custom login page
- Apache2
- OpenLDAP
- phpLDAPadmin
- MySQL
- iptables
- rsyslog
- Nagios
- Collectd

Optimisation in provisioning



Tutoring the Organization on a simplified joining procedure in order to:

- Fill and Sign the «Member Accession Form»
- Fill and Sign the «IDP Registration Request»
- Provide info for entity Metadata (logo, descriptions, ...)
- Fill and sign DOPAU (Identity Management Practice Statement (IMPS) i.e. something about LoA declaration)
- Ready also for:
- Conformant to REFEDS Discovery Guide 

Other projects that could be interested

Garr is ready to offer «IDP in the Cloud» to:
ELCIRA project and CHAIN-REDS project



Acknowledgements

This work has been possible thanks to the following persons at GARR:

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- And many others

More Information?

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