

# DIRAC for EGI user communities

On Behalf of EGI

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- **EGI: *Advanced Computing for Research***
- DIRAC4EGI / EGI Workload Manager
  - Presentation
  - Feedback from some user communities
    - WeNMR
    - EISCAT\_3D
    - Virgo
- EGI Check-In
  - Presentation
  - Integration of DIRAC4EGI with Check-In
- Next steps

## Africa-Arabia, Asia and Pacific region, China, Europe, India North and South America, Ukraine



**Europe**  
(mainly)



**China:**  
Institute of HEP,  
Chinese Academy of  
Sciences



**Africa and Arabia:** Council  
for Scientific and Industrial  
Research, South Africa



**Latin America:**  
Universidade  
Federal do Rio de  
Janeiro



**India:**  
Centre for Development  
of Advanced Computing



**Australia:**  
Nectar Research  
Cloud



**USA**

Open Science Grid



**compute** | **calcul**  
canada | canada

**Canada**

- Countries: 21 NGIs
- EIRO: CERN
- EGI Foundation



# The EGI Federation today



260+ HTC providers  
20 Cloud providers

> 890,000 CPU cores  
650 PB storage

1.7 Million jobs/day

+3 Billion CPU hours/year



- Leverages national e-Infrastructure investments
- Opens access to national infrastructures and services
- Supports international user groups
- Integrates community, private and/or public infrastructures into a scalable data/computing platform for research
- Uses federated identities, authentication and authorization
- Ensures interoperability of scientific applications and data across multiple providers bringing distributed computing to data
- Providing access of full members to new projects won by EGI Foundation – funding, demands for resources etc. via linked 3<sup>rd</sup> party funding model

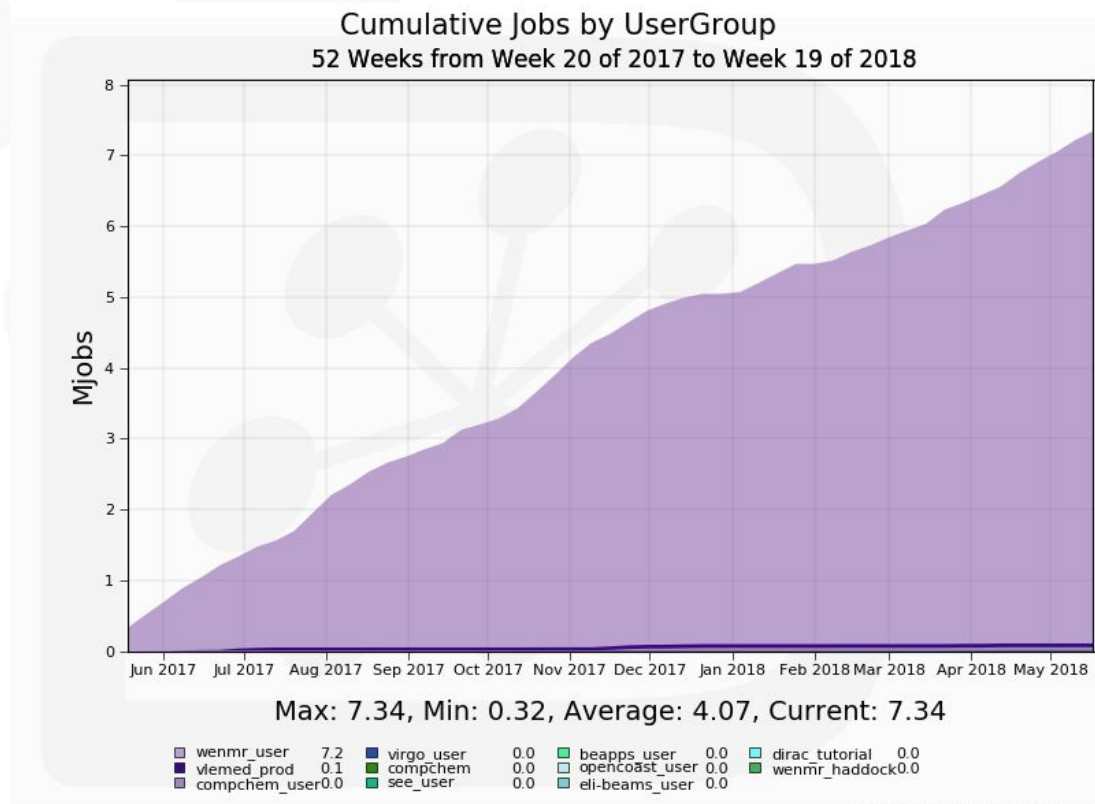


# DIRAC4EGI: an EGI service for user communities

- **What is DIRAC4EGI / EGI Workload Manager?**
  - EGI-sponsored **central service** for **user communities**
    - **Multi VO instance**
    - Operated by **IN2P3** on **CYFRONET** resources
- **Why?**
  - **gLite WMS** decommissioned
  - EGI suggested VOs to **move to DIRAC**
    - **Best alternative Workload Management System**
    - **Simple transition:** features very **similar** to **WMS**
  - Looking for solution(s) to cover “full research lifecycle”
    - From data management to analysis, sharing and publication of results with DOI (FAIR principles)

# DIRAC4EGI: an EGI service for user communities

- 21 VOs: **WeNMR**, CTA, VIRGO, EISCAT\_3D, ELI, km3net.org, see, OpenCoast, SLGC,...
- 426 users



Generated on 2018-05-23 14:59:40 UTC



- **WeNMR**

- **Worldwide e**-infrastructure for **Nuclear Magnetic Resonance Spectroscopy** and **Structural biology**
- <https://www.wenmr.eu/>
- **User- friendly** access to **Grid** and **GPGPU** via **portals**
- **JDLs** to describe jobs
- **Docker containers** for “packaging” applications
- **INDIGO udocker** to “run” containers on grid resources



# Feedback from user communities: WeNMR

- Integrating **DIRAC4EGI** in Science Gateways for **Workload management** (supported by **EOSC-hub**)
  - Replacing **gLite/WMS**: **dirac-wms-\*** instead of **glite-wms-\*** CLI
    - Only **minimal changes** to JDLs where **required**
  - **Most** of the application **portals** have been **ported**
- On-going work
  - **Application-specific accounting** on the **EGI** accounting portal
    - Distinguishing applications using **one group per application**
  - **Submission** to **24-** and **40-cores VMs** on **EGI FedCloud**
  - **2 apps** still calling **CE** due to specific **JDL attributes** for **GPGPU**

- **EISCAT\_3D**
  - New generation of ionospheric and atmospheric radar
    - In the auroral zone in the Fenno-Scandinavian Arctic
  - Obtained 80M euro for construction
  - Kick-off Sep 2017
  - EISCAT-3D Competence Center (in EGI-Engage and EOSC-Hub)



- **EISCAT\_3D** adopted `dirac.egi.eu` suite
  - Specific EISCAT-3D web frontend based on the DIRAC web framework
  - Connection to DIRAC backend to support distributed computing
  - Necessary third party systems integrated in DIRAC backend (storage, auth, cloud, grid...)

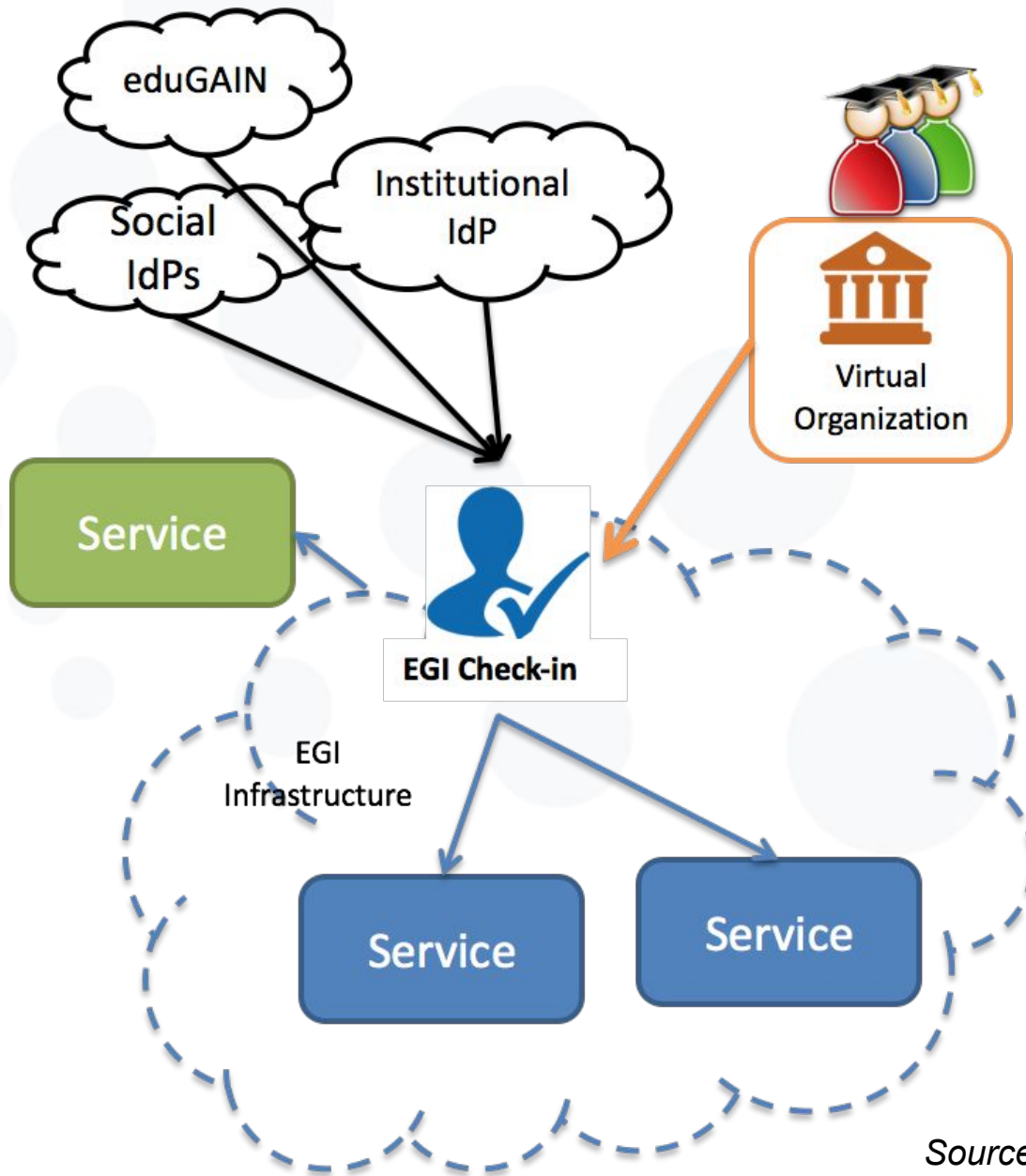
- **VIRGO** - <http://www.virgo-gw.eu/>
  - An **ESFRI RI** in the **ASTERICS** cluster project
  - **Observation of gravitational waves**
  - **Evaluating DIRAC for**
    - **Workload Management**
      - CNAF, Nikhef and CNRS, extending to other sites
    - **File cataloguing**
      - Testing with dedicated instance at CNAF
      - Millions of record have been pushed
        - => **no problem** for the time being
    - **Data transfer**
      - **Rucio** is also being evaluated

- **EGI Check-In**

- EGI-sponsored **AAI service** with long-term support
- For **user communities** and **service providers**
- Enabling **central authentication** and **SSO**
  - For **web** and **non-web** services
  - Using **eduGAIN**, **institutional** and **social** media **IdPs**
    - Access to more than 2000 institutes
    - Central or community-owned **Attributes Authorities**
    - Different **Level of Assurance**
- **Polyglot**
  - SAML 2.0, OpenID Connect, OAuth 2.0, X509
    - Credential translation (**TTS**)
- Following **AARC** Blueprint Architecture: **IdP Proxy** model







Source: Nicolas Liampotis GRNET

# Integration of DIRAC with EGI Check-In

- Authentication through great amount of IdPs
- Lowering barrier to entry
  - No requirement on good old X509-based UX
- Plan
  - **1st**: Integrate DIRAC4EGI web interface
    - DIRAC4EGI moved to nginx as reverse proxy
    - Nginx conf to get OIDC token
    - MasterPortal / RCAuth Online CA as X509 TTS
    - Expected in the coming weeks/months
  - **2nd**: Using DIRAC CLI with Check-In
    - To be assessed and discussed

- Finalizing Check-In integration
- Testing file cataloguing / Data Management features
  - Starting in the context of Virgo
- Evaluation of possible DIRAC and Rucio interaction to offer an attractive fully integrated solution reusing knowledge from big experiments
  - Workload Management
  - File cataloguing
  - Data transfers
  - Easy-to-use automatic rules-based DDM

# Thank you for your attention.

*Questions?*



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