The D4Science Infrastructure and its Open Science Way

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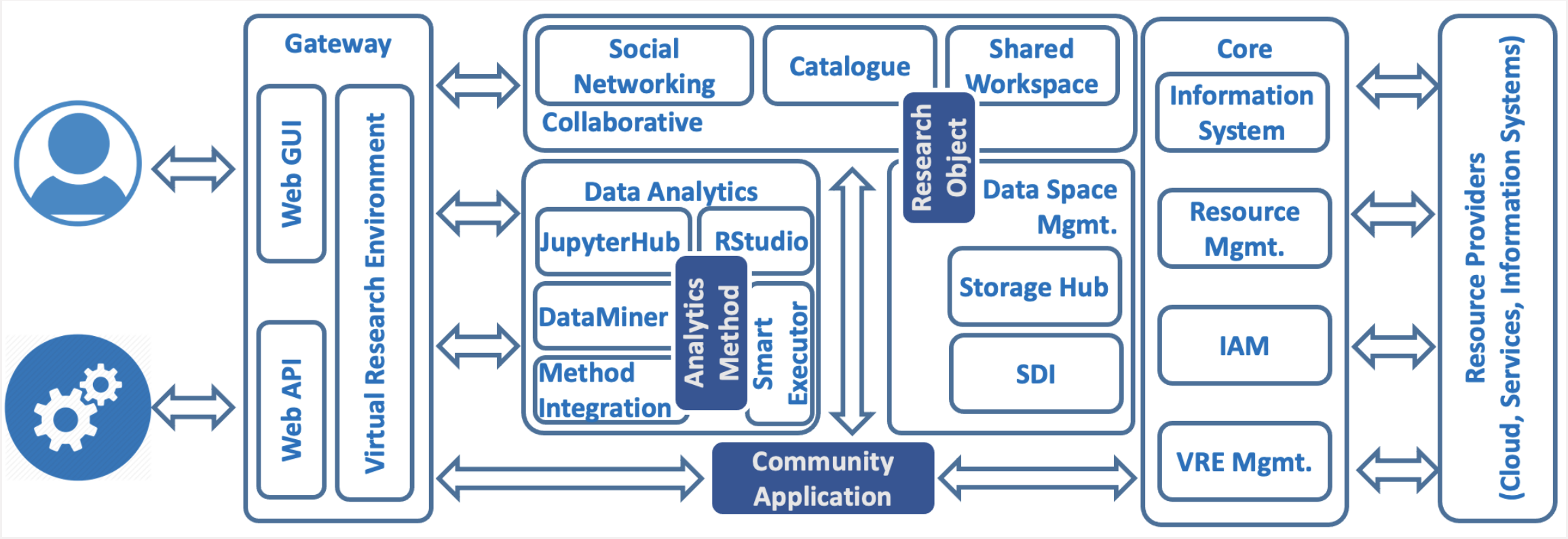
GenOA Week 2024

ID Card

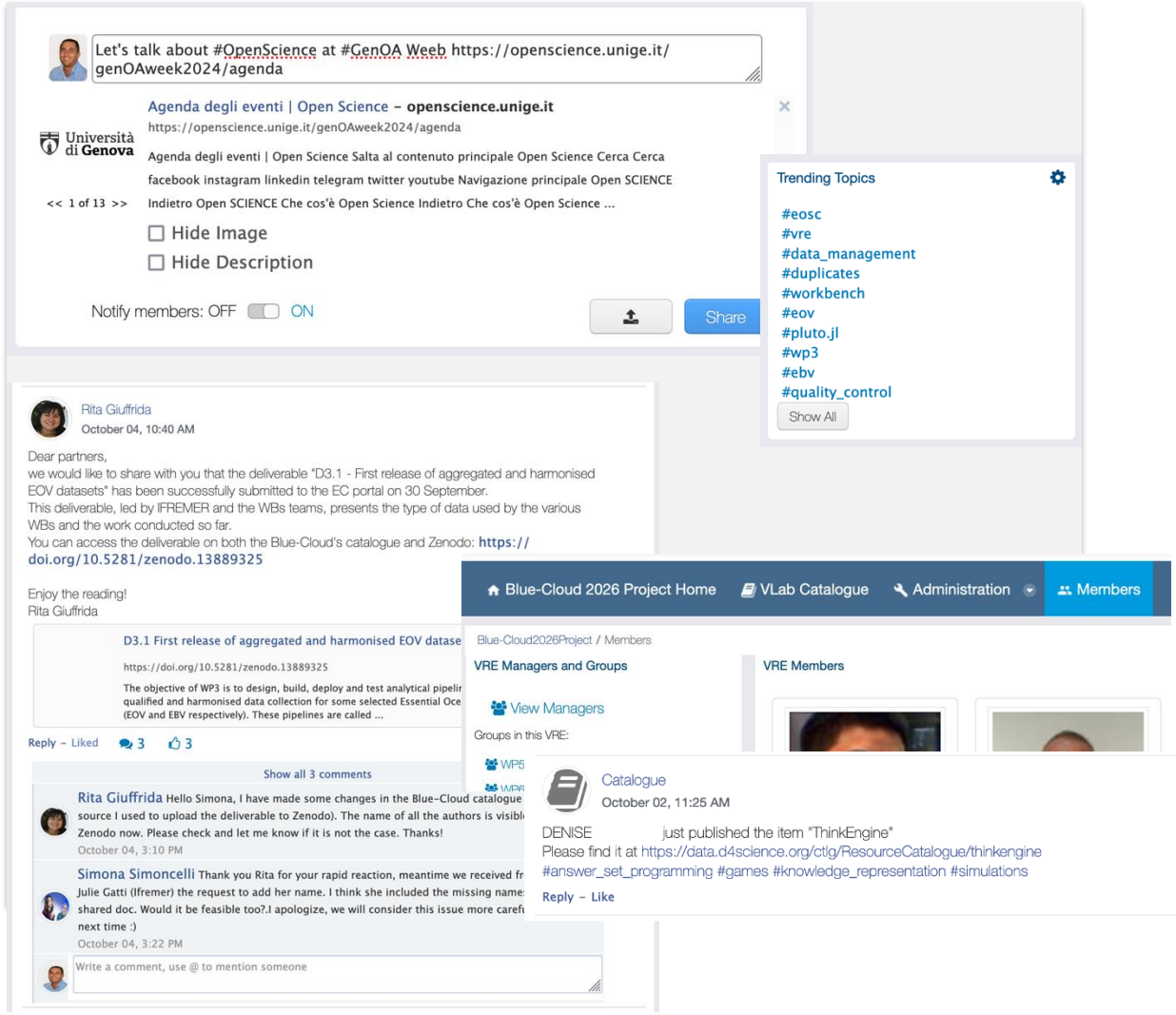
- An infrastructure built by using the **system-of-systems** approach to enact the **co-creation of Virtual Research Environments** offering a **rich array of services** and promoting **collaborative open science** practices
- Developed since 2005
- Supported by **several projects** and **communities of practices**

Architecture



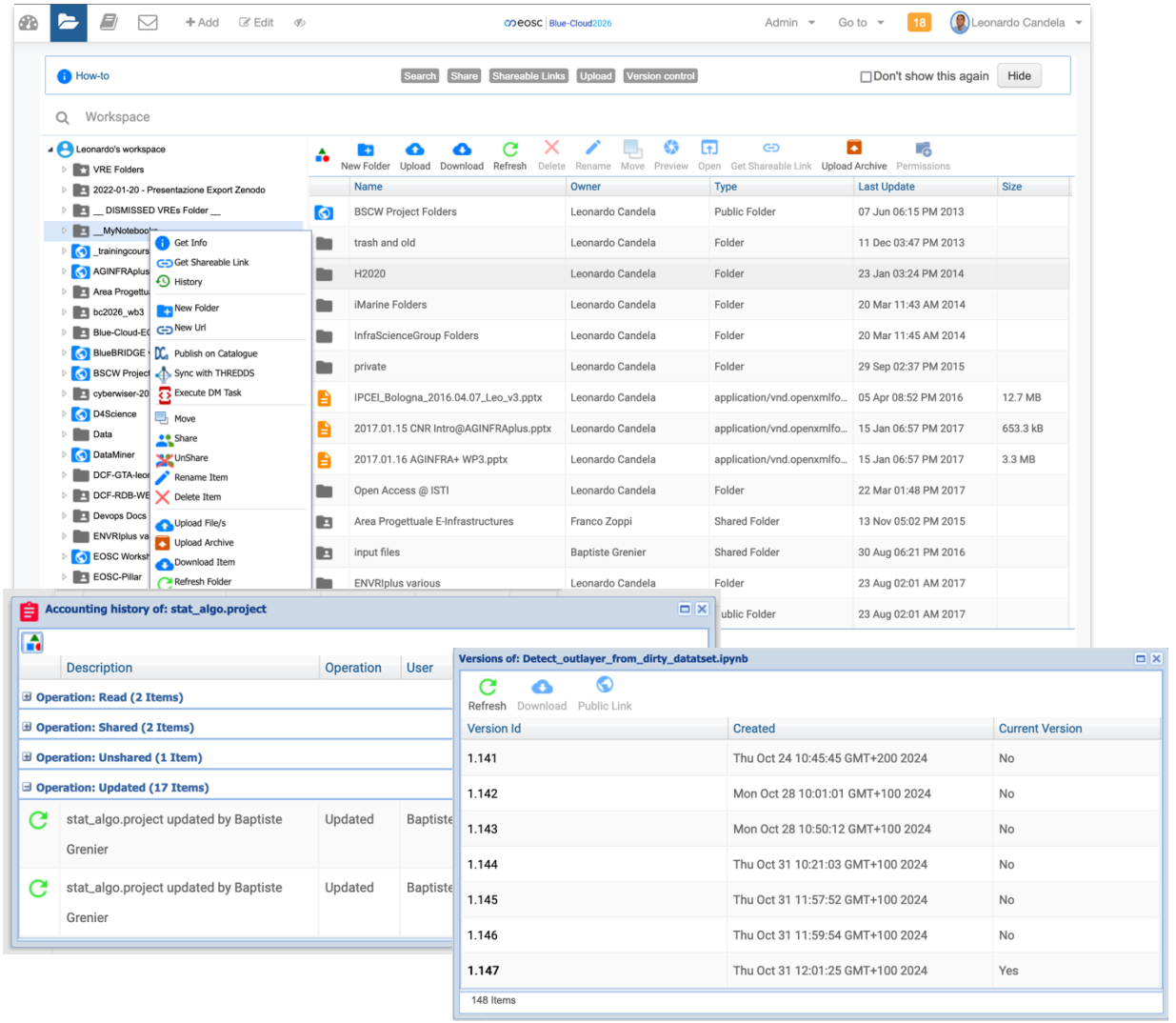
Communication

- Social Networking platform
  - Post and replies
  - Mentions & hashtags
  - Members and groups
  - User and Application posts
  - Custom notifications



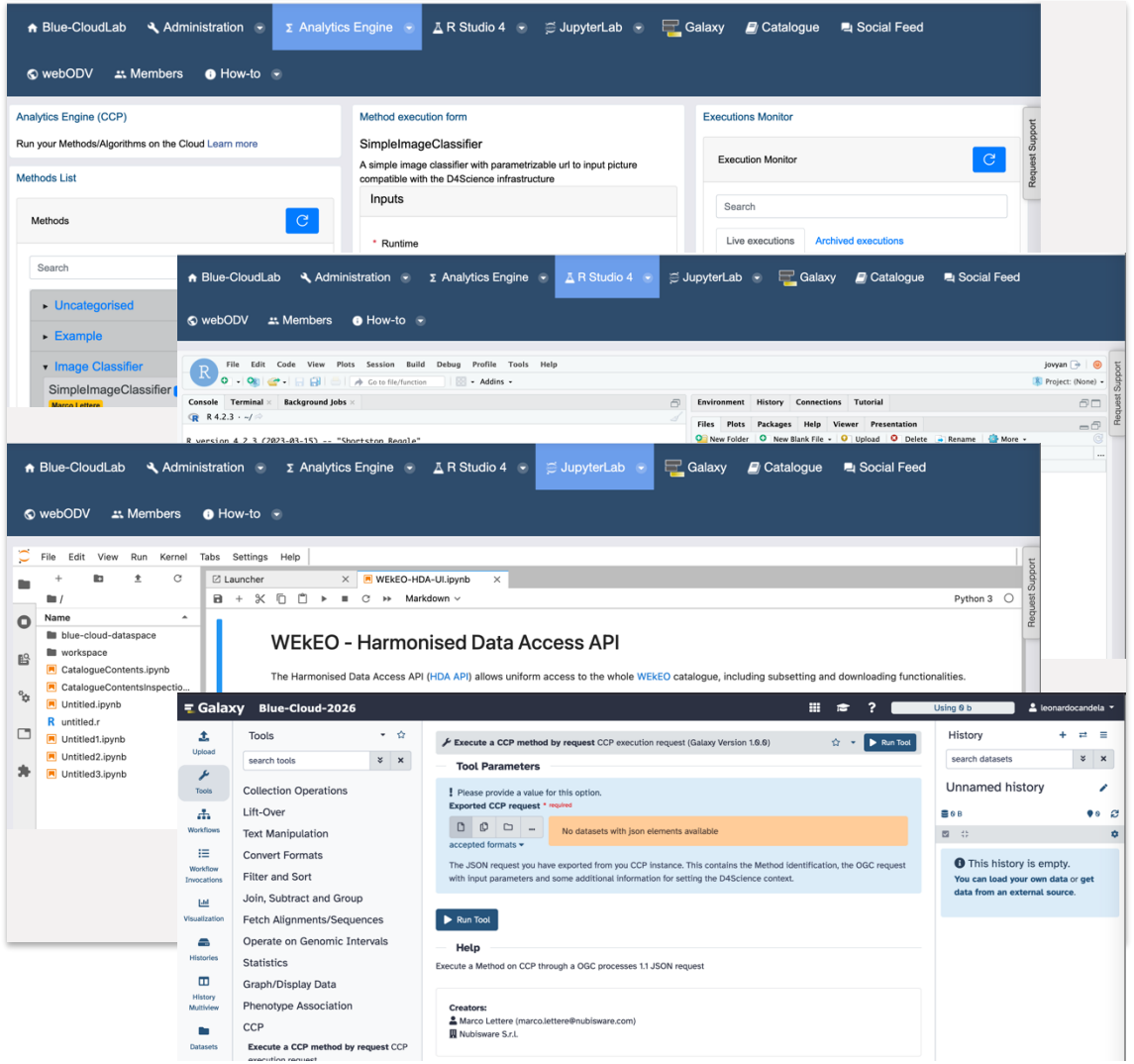
Data Management and Sharing

- Shared workspace …
  - VRE Folders
  - Private area with fine-grained sharing options
  - Per VRE view
  - History and Versioning
- … integrated with applications



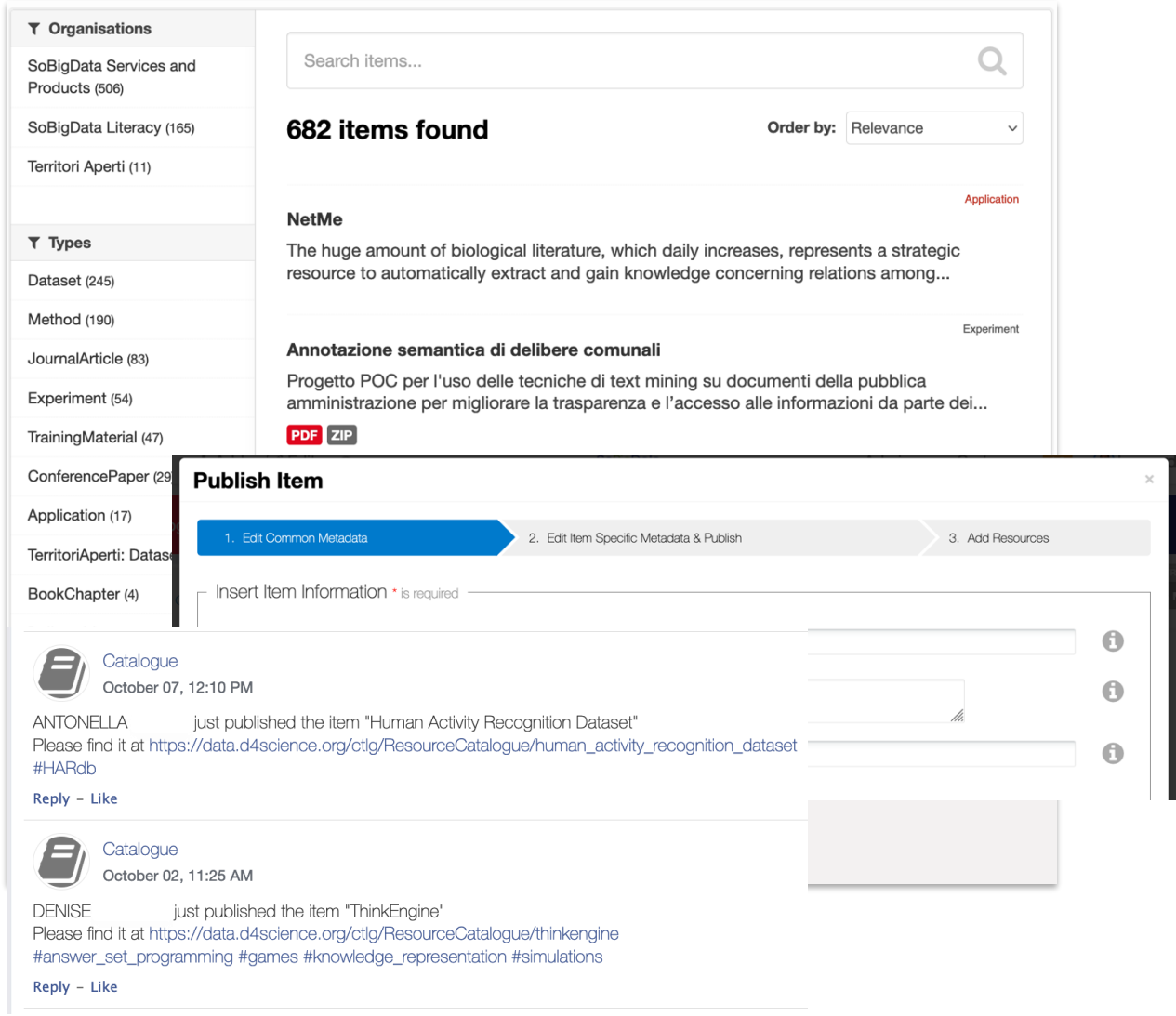
Data Analytics

- Many platforms …
  - DataMiner & CCP
    - Executable methods for humans and bots (OGC WPS & Processes)
    - Reproducibility-ready
  - Jupyter Lab & RStudio & Galaxy
- … common patterns
  - Community-driven customization
  - Workspace for data, code, «computations» and results
  - Catalogue for publishing

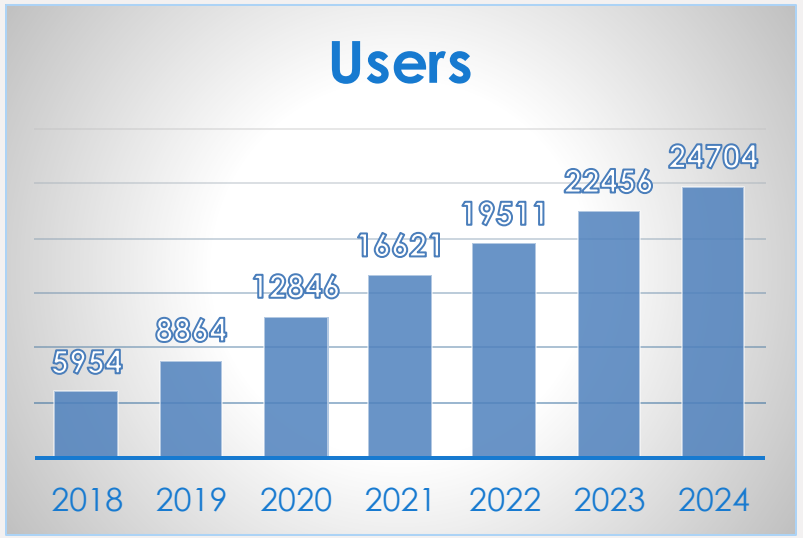


Publishing by a Catalogue

- Publishing almost **any research products** …
  - Community-defined type-specific metadata
  - Open-ended
  - Custom workflow
- … by making it **FAIR**
  - PURL per item
  - Rich metadata
  - Human and machine-oriented exploitation (gCat REST API, DCAT, OAI-PMH)



Key Performance Indicators



24 Gateways

217 Active VREs

GEMex · Virtual Lab · RISIS Gateway · SOBIGDATA RESEARCH INFRASTRUCTURE · eosc | Blue-Cloud2026 · PerformFISH Gateway

ARIADNE Gateway plus · AGINFRA Gateway · eosc | FAIR-EASE · FOSSR VRE · MOVING · D4SCIENCE

D4GNA DATASET PER IL GEOPORTALE NAZIONALE PER L'ARCHEOLOGIA · marine Gateway · SerGen Gateway Covid19 · I·Gene · EOSC-Pillar GATEWAY · HDN Gateway Hypermedia Dante Network

TERRITORI APERTI GATEWAY · desira · NAVIGATOR · OpenAIRE | Tools · ITINERIS · PARTHENOS Gateway

Lesson learned

- VRE-as-a-Service is key for many communities of practice
- Co-creation and openness are key for community uptake
- There is «no one-size fits all» solution for Open Science

D4SCIENCE

THANKS FOR YOUR ATTENTION

www.d4science.org

L. Candela, D. Castelli and P. Pagano. **The D4Science Experience on Virtual Research Environment Development**. *Computing in Science & Engineering*, vol. 25, no. 2, pp. 12-19, March-April 2023, doi:10.1109/MCSE.2023.3290433

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