The ImpECt Experience

Diligent

A DIgital Library
Infrastructure on Grid
ENabled Technology

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Earth Science, What's behind the scene..

- ES Communities usually operate over widespread geographic scales
  - Scientific collaborations do not take advantage of shared spaces, resources and knowledge
  - Usually very strict time constraints
- Existing infrastructures consist of operational tools and systems which often do not interface with the ones of other institutions
  - Large international initiatives adopt a number of different systems, applications and services that must interface to exchange and process information
  - Evident fragmentation of services
  - Enormous problems of interoperability either at services and data level increased by lack of standards, common agreements and computing/storage resources availability

Earth Science, What's behind the scene..

- One of the most urgent need consists in the lack of standards and interoperability

- It currently prevents the exploitation of high level services to enable data sharing and thematic applications handling over distributed infrastructures. Key issues remain:
  - ➔ improved access to information at all levels
  - ➔ enabled interoperability among different systems, either at services and data level
  - ➔ availability of resource sharing mechanisms and collaborative working spaces

Earth Science in the Grid Context

- Widespread geographic scale communities, global to regional to local
  - ➔Distributed infrastructures
- EO satellites provide constant 24-hour surveillance of the Earth, regardless of atmospheric conditions
  - ➔Store huge amounts of data (TB) processed at different levels in the form of catalogues, data-sets, collections
- Disaster management, Ground Segment facilities, User Services activities
  - ➔Run computational demanding processes on-demand. Application example is the monitoring of environmental changes on global scale

Why ImpECt ?

- Addresses Environment monitoring activities, societal benefit areas like ecosystems and biodiversity
- Thought to show the challenges and the benefits for ES in working on a Grid platform
- Bases on a typical peculiar ES application: to build and maintain *live documents* (environmental reports)
  - ➔Usually huge, complex structured, based on processing and analysis of large amount of information, periodically revised, kept up to date, published
  - ➔Usually composed and maintained by scientists and working groups spread worldwide

ImpECt @ Diligent : Main Features

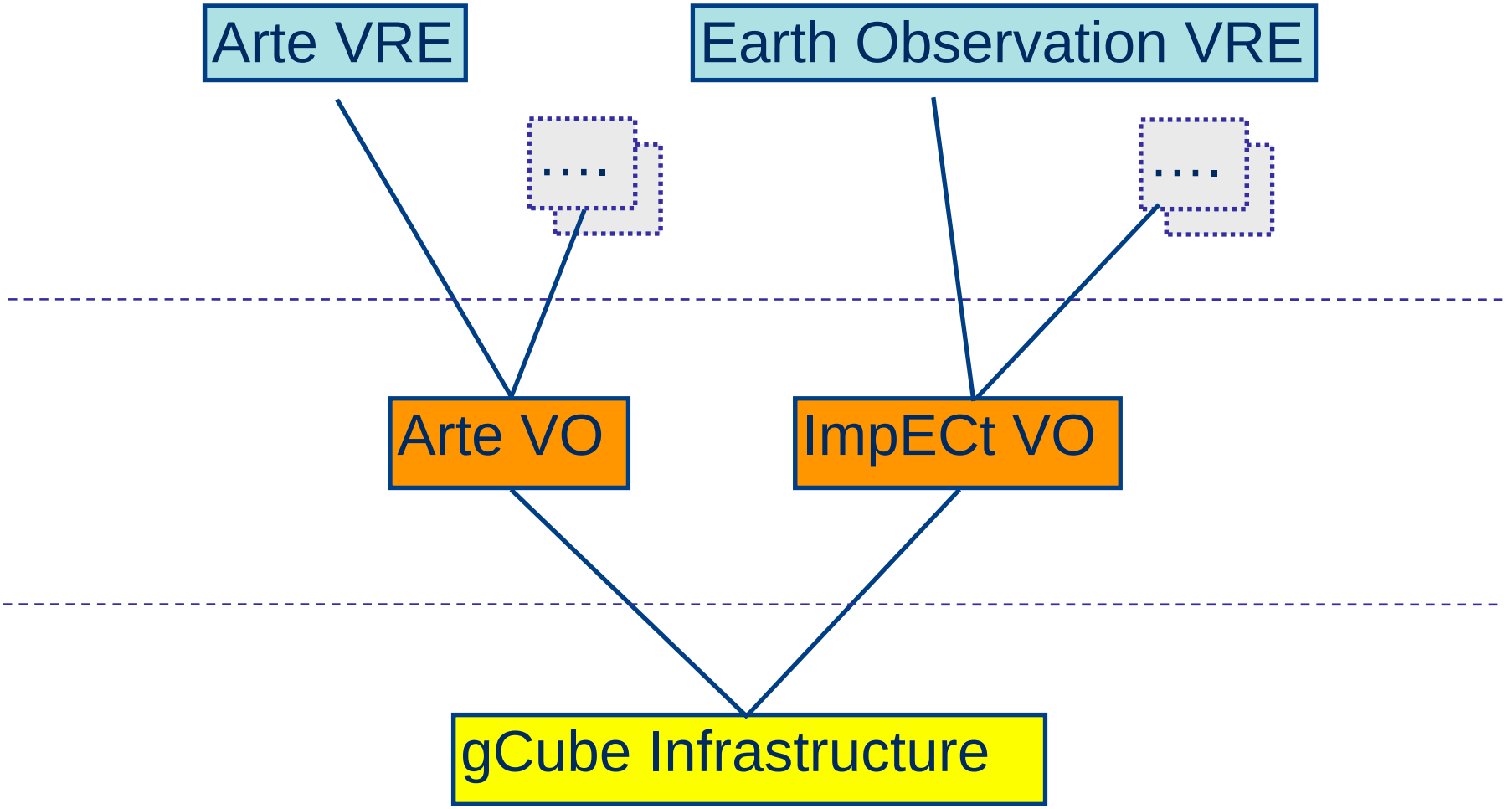
- Exploits large infrastructure including EGEE PPS sites
- Accessible via dedicated web portal
- Content organized in collections, harvested from a number of data providers (ESA, FAO, EEA, MTS et al.)
- Editable metadata descriptions available in different schemas and standards
- Cross-collections and geospatial search
- Content annotation
- On-demand services composition and Grid task submission
- Persistent user area to store reports, query result sets, processes outputs
- Reports composition and document templates definition
- Integration with e-learning platform

Where is it going ?

- Broaden the harvesting of content
- Integrating other third-party services and tools
- Ontology based mechanism for services description and query execution
- Convergence towards standardization activities carried on in EO
- Bridging with other EU projects on data preservation and digital repositories in the ES domain

All big challenges ..yet on-the-road (D4Science) !

Demo Overview



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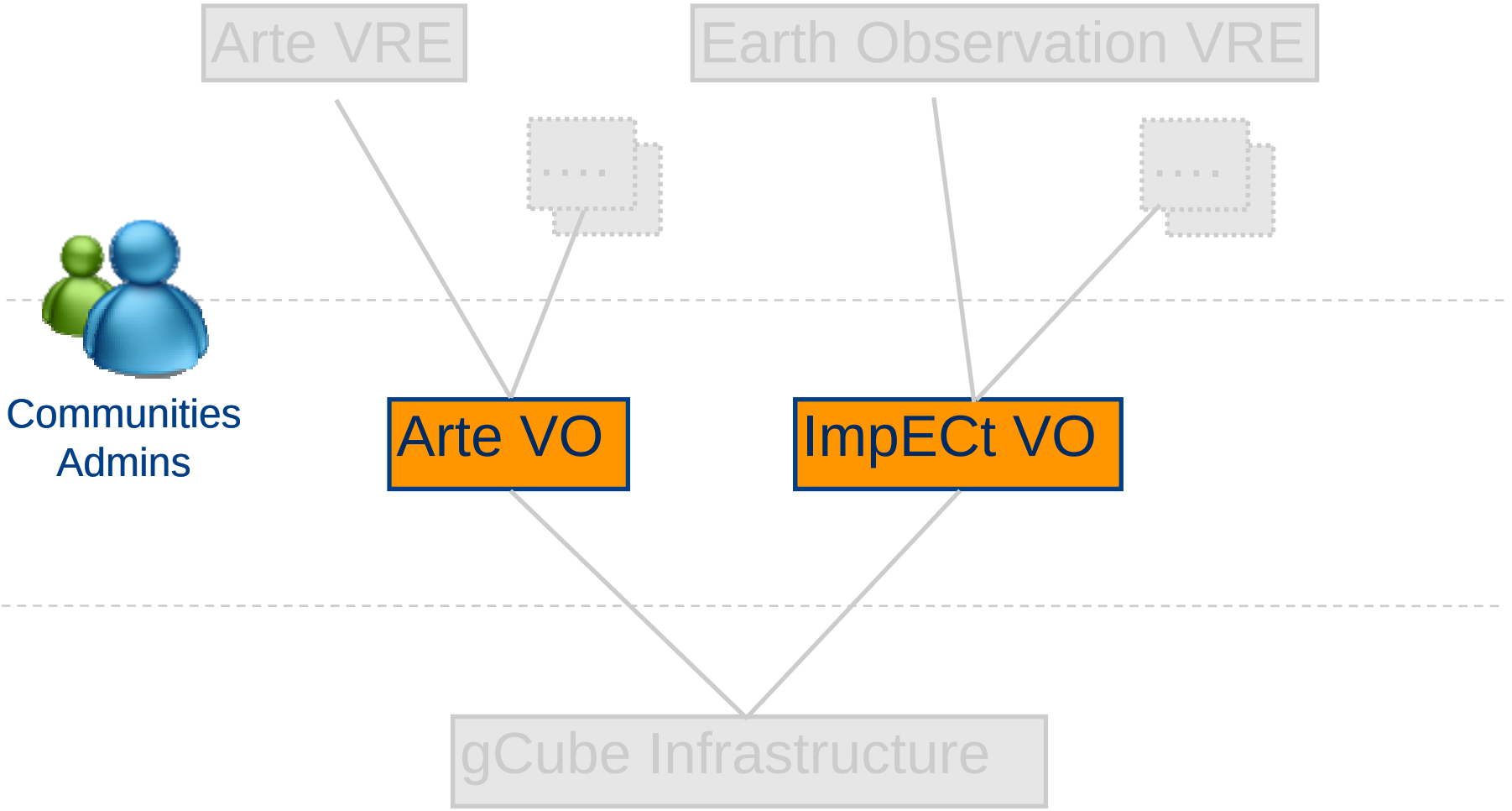
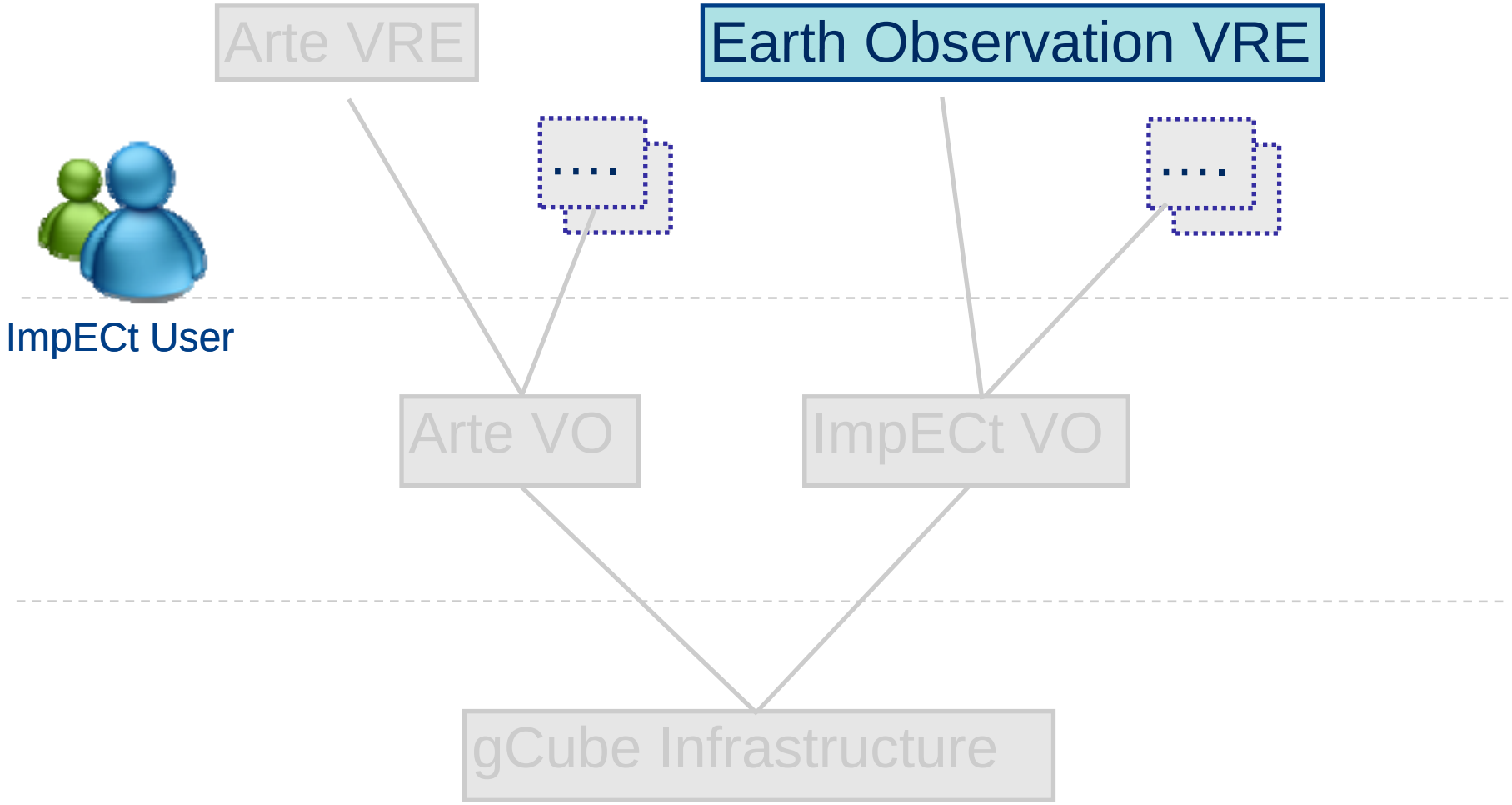


- Manage the users associated with each VO
- Manage the resources available for each VO
  - DHN registration and approval
- Remote deployment of services

Demo Overview



Earth Observation Collections

- Environment Documents:
  - Set of collections containing different types of documents grouped in sub-collections and referring to the environment's status. Environmental documents and scientific reports on the Mediterranean area distributed by a number of international organizations
  - FAO, EEA, MTS reports

- Earth Maps and Graphics:
  - Set of collections containing a number of Earth observation images and maps.
  - Earth Images, GeoNetwork maps, Chlorophyll Distribution, Vegetarian index

- Analyse environment data of a defined geographical area filtered by textual terms by:
  - generating complex reports
  - annotating relevant results
  - create online courses based on that content

Links

- Diligent Project:
  - http://www.diligentproject.org
- gCube System:
  - http://www.gcube-system.org
- Email:
  - info@diligentproject.org

- Reports example
  - http://reports.eea.europa.eu/
- ESA/ESRIN GRID
  - http://eogrid.esrin.esa.int/