

ESGF Dashboard Working Team

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Euro Mediterranean Center on Climate
Change (CMCC)

Marriott Hotel

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is-enes
INFRASTRUCTURE FOR THE EUROPEAN NETWORK
FOR EARTH SYSTEM MODELLING



cmcc
Centro Euro-Mediterraneo
sui Cambiamenti Climatici

Outline

- ❖ *Working Team mandate, leads and members*
- ❖ *Architecture in the large of the system*
- ❖ *Work achieved over the past year – Intro*
 - ❖ *Coarse grain system - Design view*
 - ❖ *Downloads statistics*
 - ❖ *Downloads by Identity Provider*
 - ❖ *Downloads by User activity*
 - ❖ *Fine grain system - Design view*
 - ❖ *Federated and cross-project statistics*
 - ❖ *Project-specific statistics*
- ❖ *Prioritized development and roadmap for the next year*



Working Team mandate, leads and members

❖ *Working Team Acronym*
esgf-dwt (Dashboard Working Team)

❖ *Mandate*
Design and implementation of a distributed and scalable system for (i) monitoring the Earth System Grid Federation and (ii) providing data usage statistics in a comprehensive way and through a simple and intuitive web interface.

❖ *Leader*
Sandro Fiore (until 2014), Paola Nassisi (since 2015)

❖ *Members*
Paola Nassisi, Alessandra Nuzzo, Maria Mirto, Sandro Fiore

❖ *Modules*
esgf-dashboard and esgf-desktop



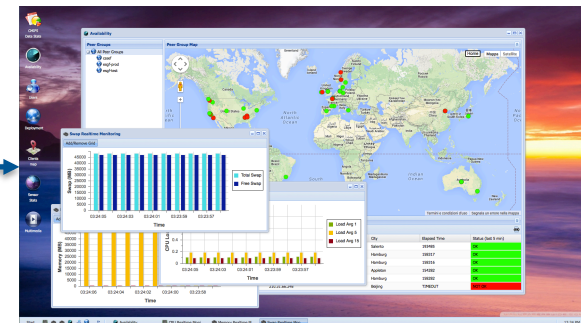
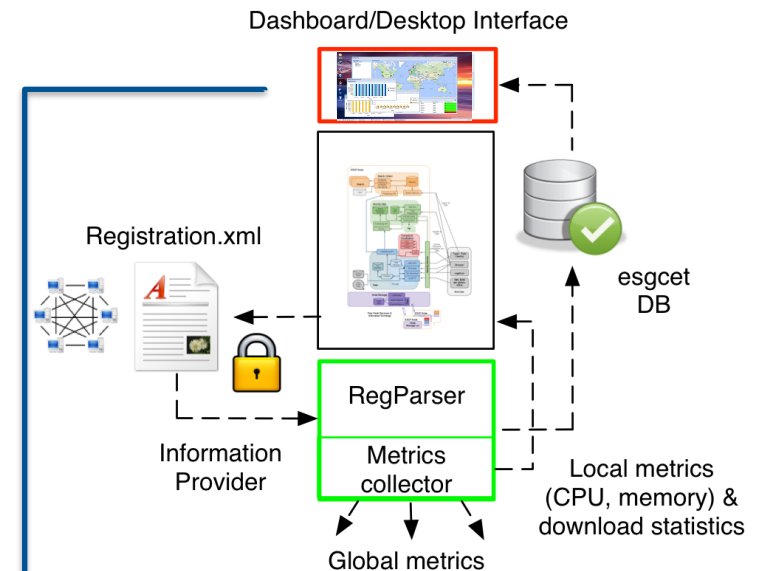
Architecture in the large of the system

The main modules of the monitoring system are, for the ***back-end***:

- ❖ the Information Provider
 - It's responsible for retrieving all the metrics and storing them in the *esgset* catalog and binary files (for long term statistics).
- ❖ the dashboard catalog
 - A system database which stores all the information about hosts, peer-groups, services, users, availability, deployment, etc.
- ❖ the sensors
 - Global and local metric sensors to retrieve and manage information about *node type*, *registered users*, *downloaded data*, *system metrics* both a single site and federation level

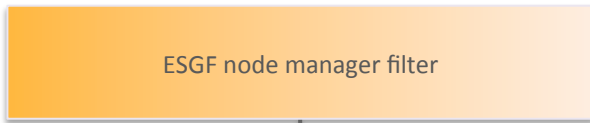
For the ***front-end***:

- ❖ a web-based environment GUI: the ESGF Desktop
 - modular web application relying on a strong adoption of Web 2.0 concepts and providing several views at different granularity levels
- ❖ a set of configuration files



Work achieved over the past year – Coarse grain system Architectural view

ESGF DATA NODE



esgf_node_manager
ESGCET



access_logging table

ID	user_idp	duration	size	timestamp	remoteaddr	...
...
...
...

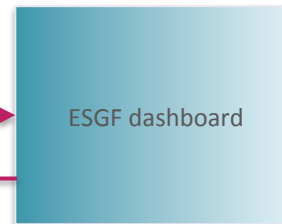


Features:

- Download statistics
- Coarse grain stats
- Clients statistics
- Same view for all projects



Get statistics



Store statistics



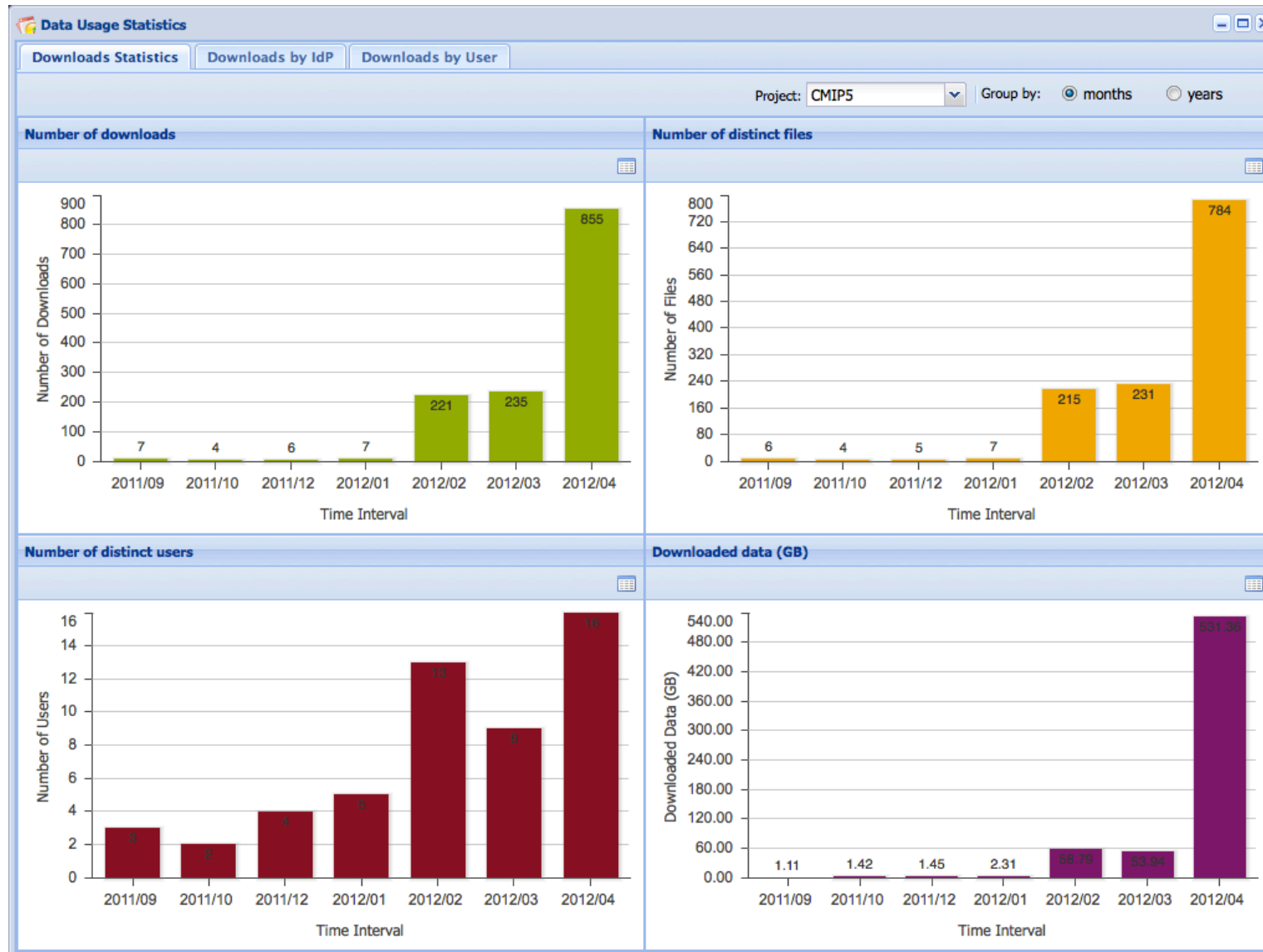
ESGF DESKTOP

Company	Price	Change	% Change	Last Updated
Acryl Grid	211.73	0.00	0.00%	08/01/2014
Arc	525.01	0.42	0.08%	08/01/2014
Alcoa Inc	505.81	0.28	0.05%	08/01/2014
American Express Company	102.55	0.01	0.01%	08/01/2014
American International Group, Inc.	554.13	0.31	0.05%	08/01/2014
AT&T Inc.	331.81	-0.48	-0.15%	08/01/2014
Banking Co.	376.43	0.00	0.00%	08/01/2014
Casepiller Inc.	867.27	0.02	0.00%	08/01/2014
Clorox Inc.	549.37	0.02	0.00%	08/01/2014
E.I. du Pont de Nemours and Co.	550.48	0.11	0.02%	08/01/2014
Exxon Mobil Corp	558.10	-0.43	-0.08%	08/01/2014



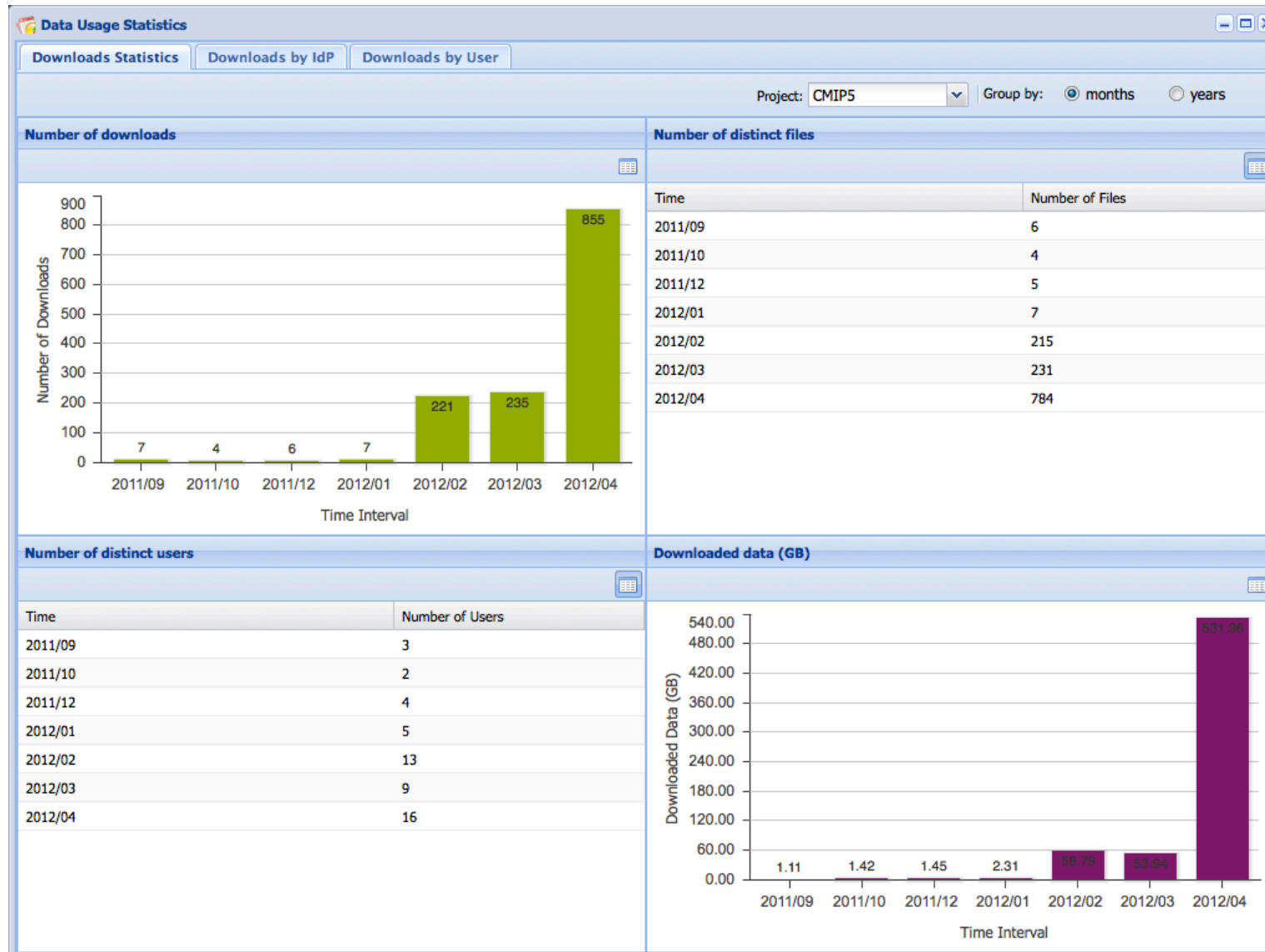
Work achieved over the past year – Coarse grain system

Download statistics (I)



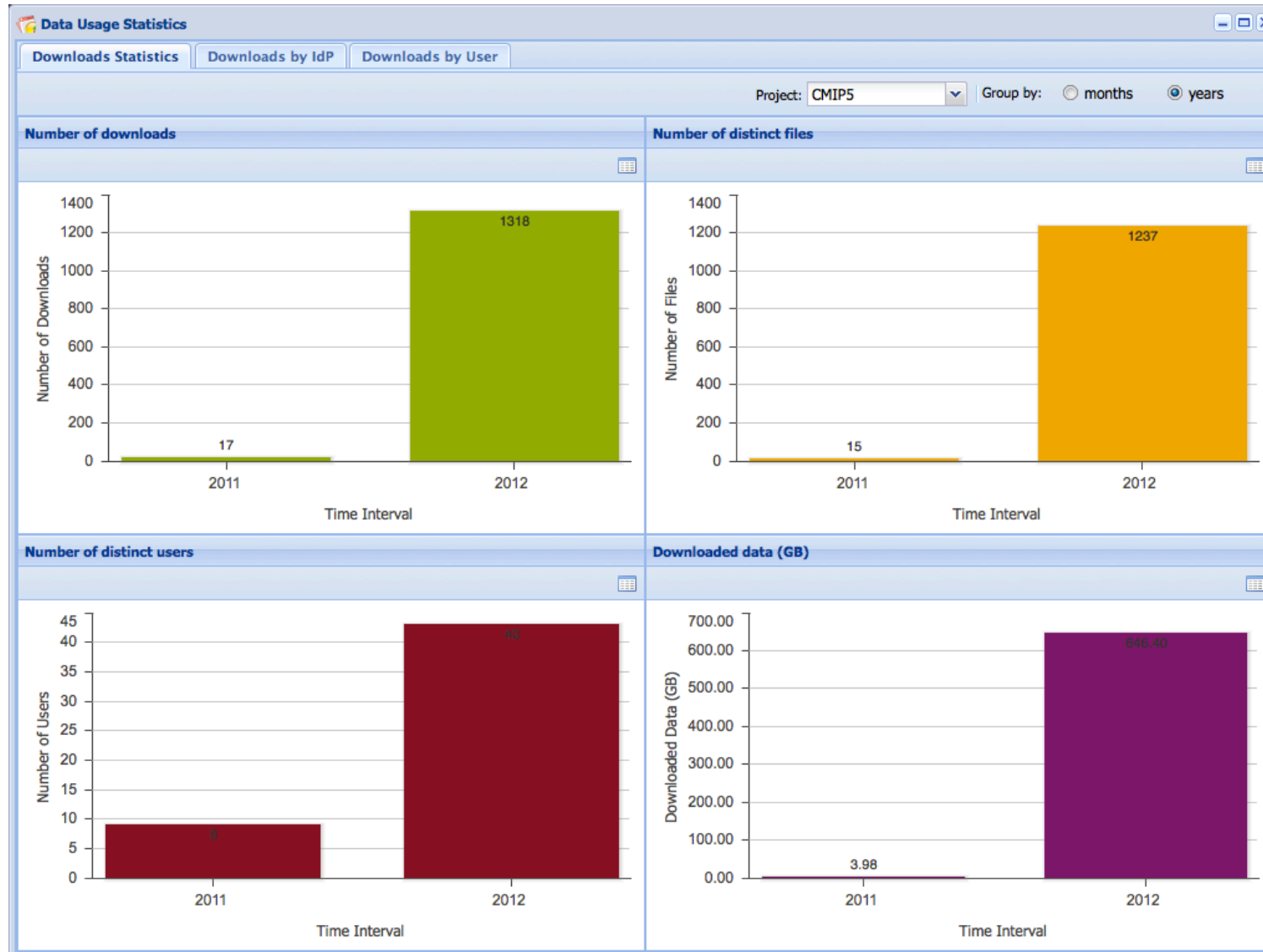
Work achieved over the past year – Coarse grain system

Download statistics (II)



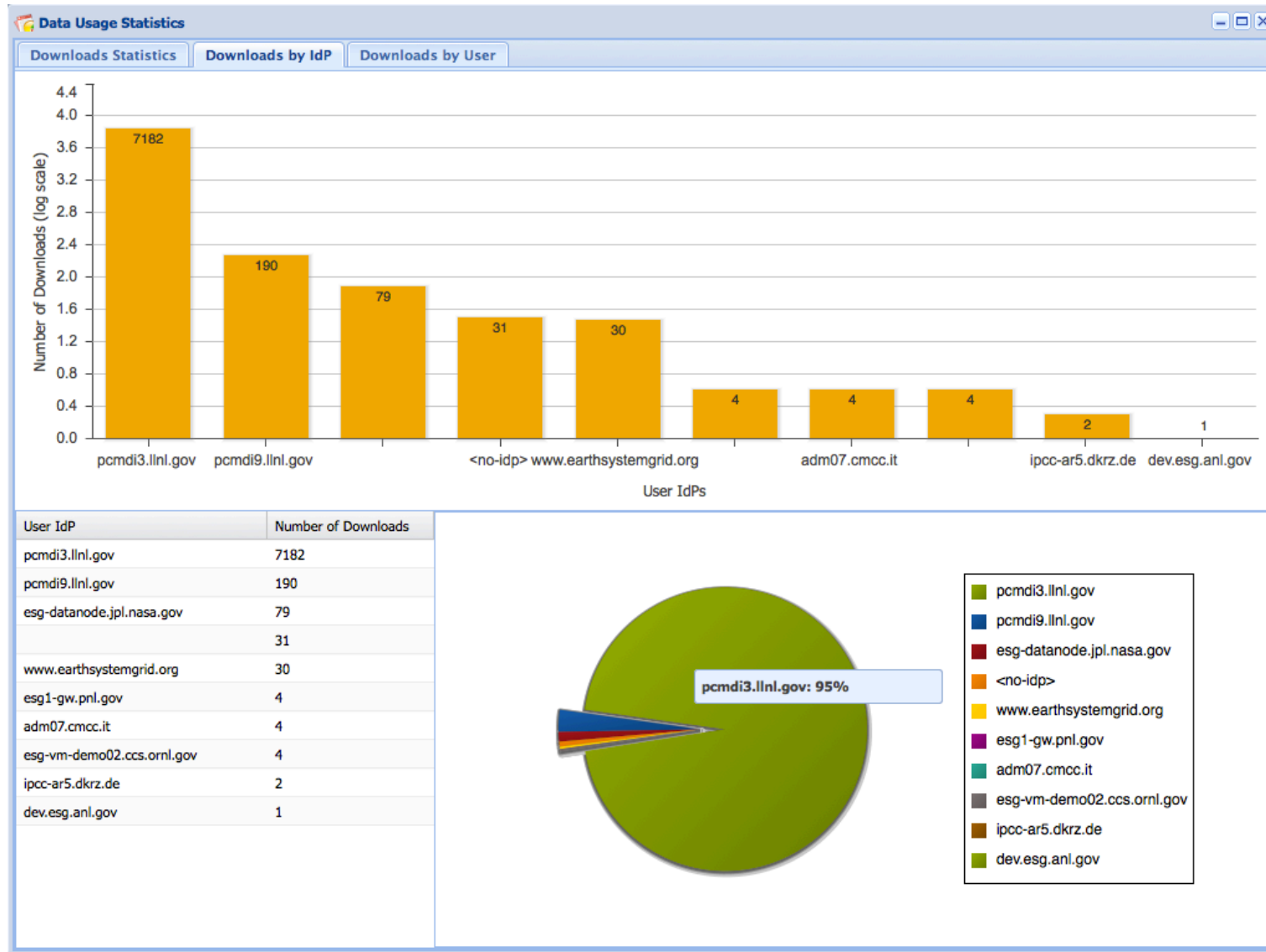
Work achieved over the past year – Coarse grain system

Download statistics (III)



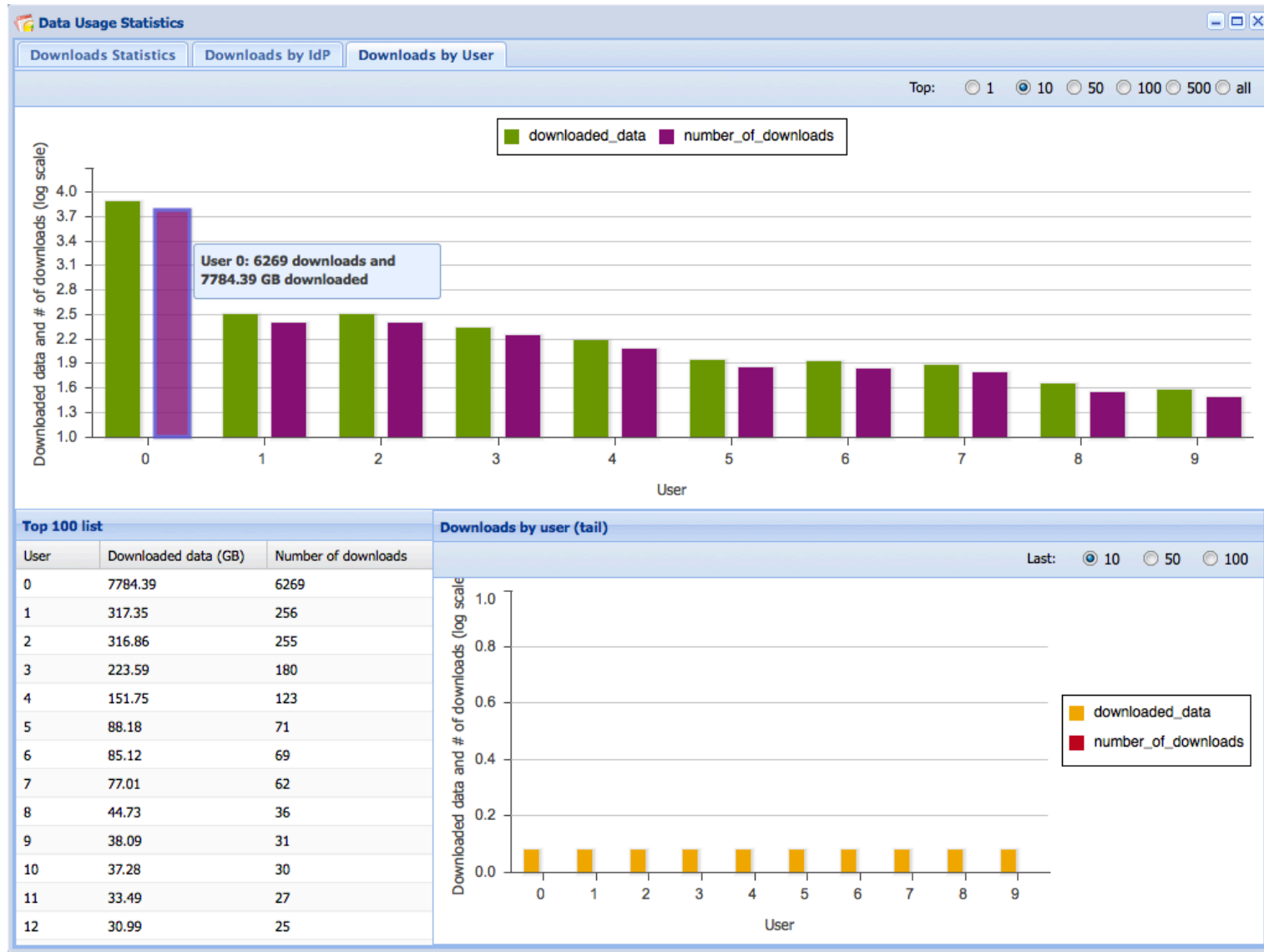
Work achieved over the past year – Coarse grain system

Downloads by Identity Provider



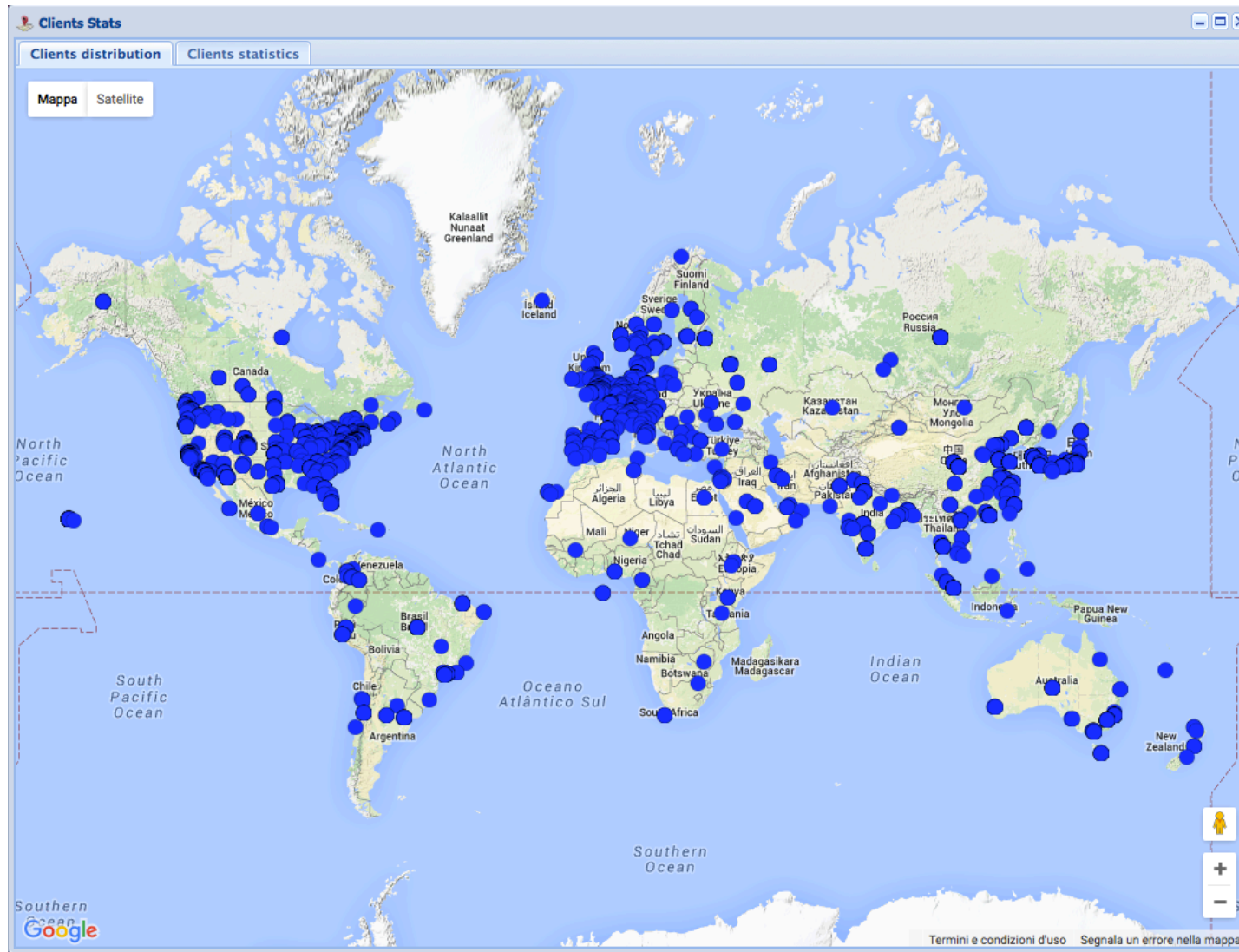
Work achieved over the past year - Coarse grain system

Downloads by User (activity)



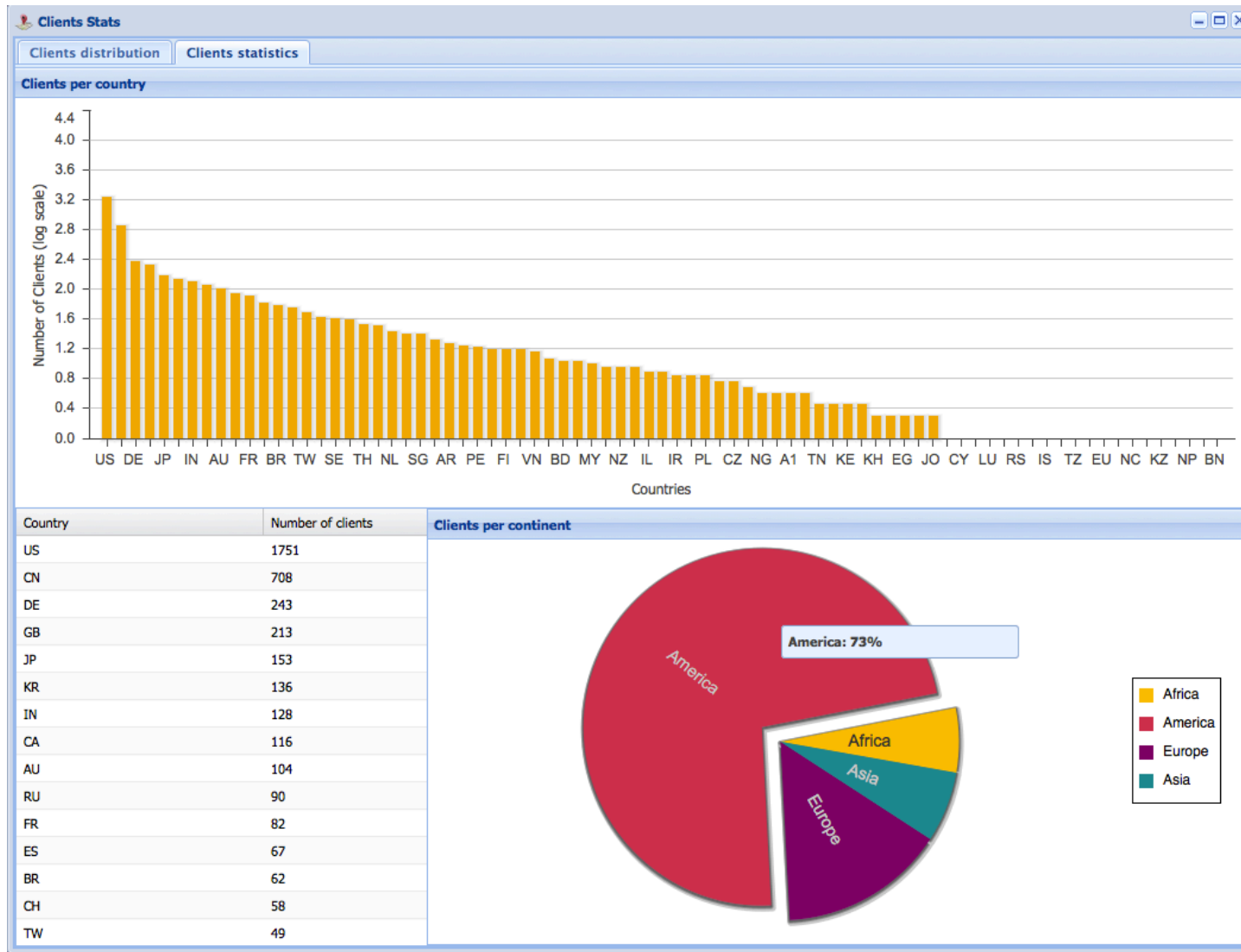
Work achieved over the past year - Coarse grain system

Client distribution



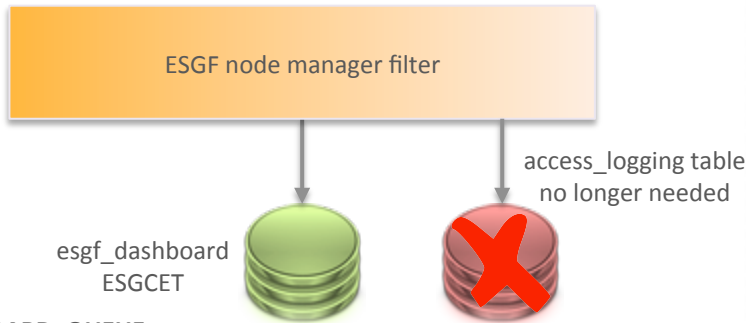
Work achieved over the past year - Coarse grain system

Client statistics



Work achieved over the past year – Fine grain system Architectural view

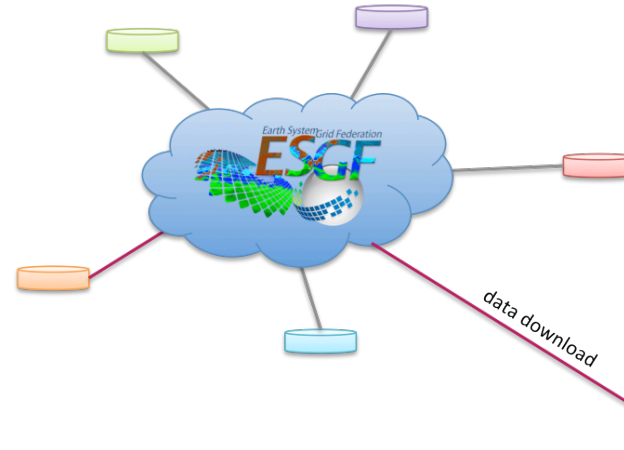
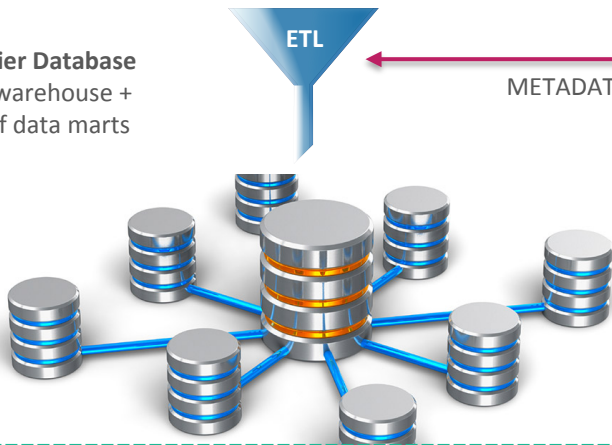
ESGF DATA NODE



DASHBOARD_QUEUE

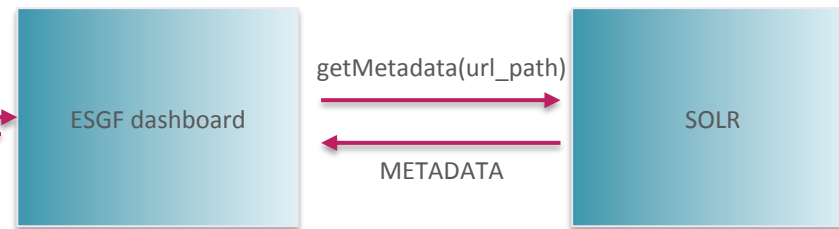
ID	url_path	duration	size	timestamp	success	processed
...
...
...

Multi Tier Database
1 Datawarehouse +
A set of data marts



Features:

- Extended set of statistics
- Fine grain level
- Project specific views
- More scalable design



ESGF DESKTOP

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Acryl Grid	211.73	0.00	0.00%	09/01/2014
Alcoa Inc	505.01	0.42	1.47%	09/01/2014
Altria Group Inc	883.81	0.28	0.34%	09/01/2014
American Express Company	102.55	0.01	0.02%	09/01/2014
American International Group, Inc.	654.13	0.31	0.45%	09/01/2014
AT&T Inc.	331.61	-0.48	-1.54%	09/01/2014
Banking Co.	376.43	0.00	0.71%	09/01/2014
Caseohler Inc.	867.27	0.00	1.39%	09/01/2014
Clorox Inc.	849.37	0.00	0.54%	09/01/2014
E.I. du Pont de Nemours and Co.	550.48	0.01	1.09%	09/01/2014
Exxon Mobil Corp	508.10	-0.43	-0.84%	09/01/2014

Number of Shares

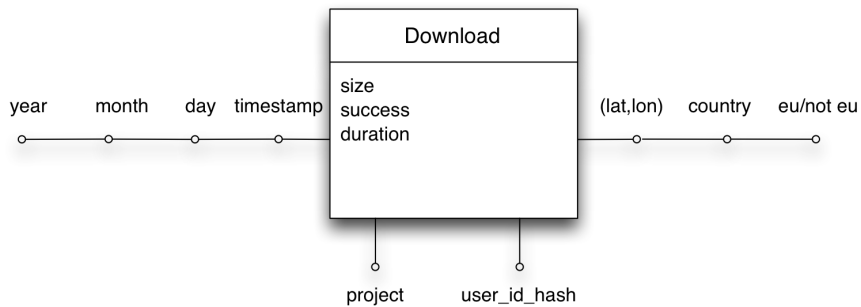
Month of the Year



Work achieved over the past year – Fine grain system Statistics database design at glance

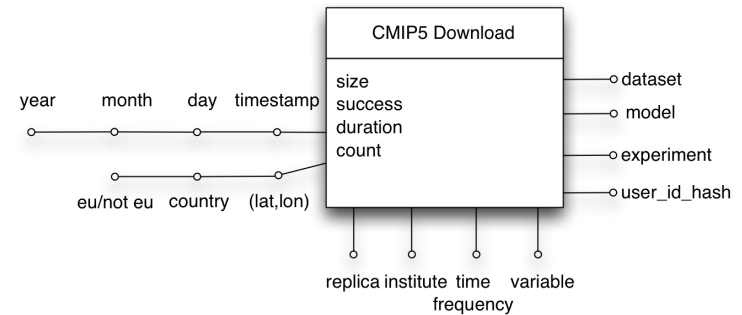
Dimensional Fact Model

Level 1: data warehouse cross project

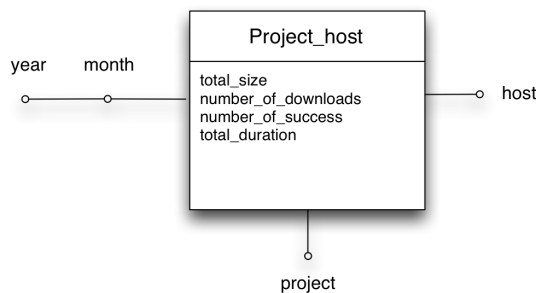


Dimensional Fact Model

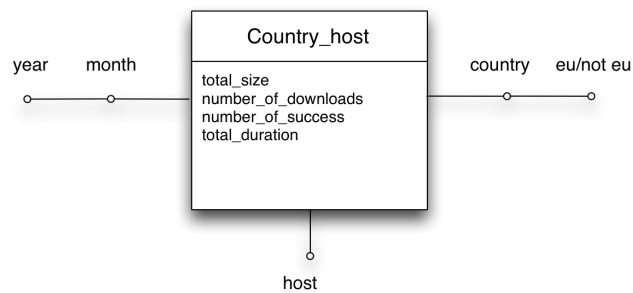
Level 2: data warehouse project specific



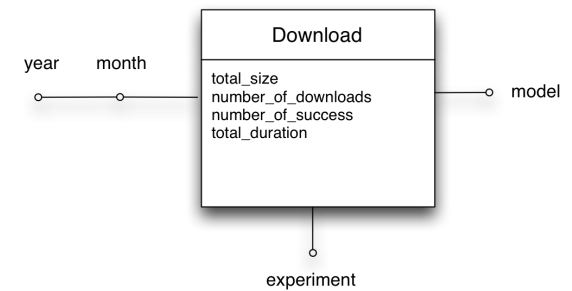
Data mart 1



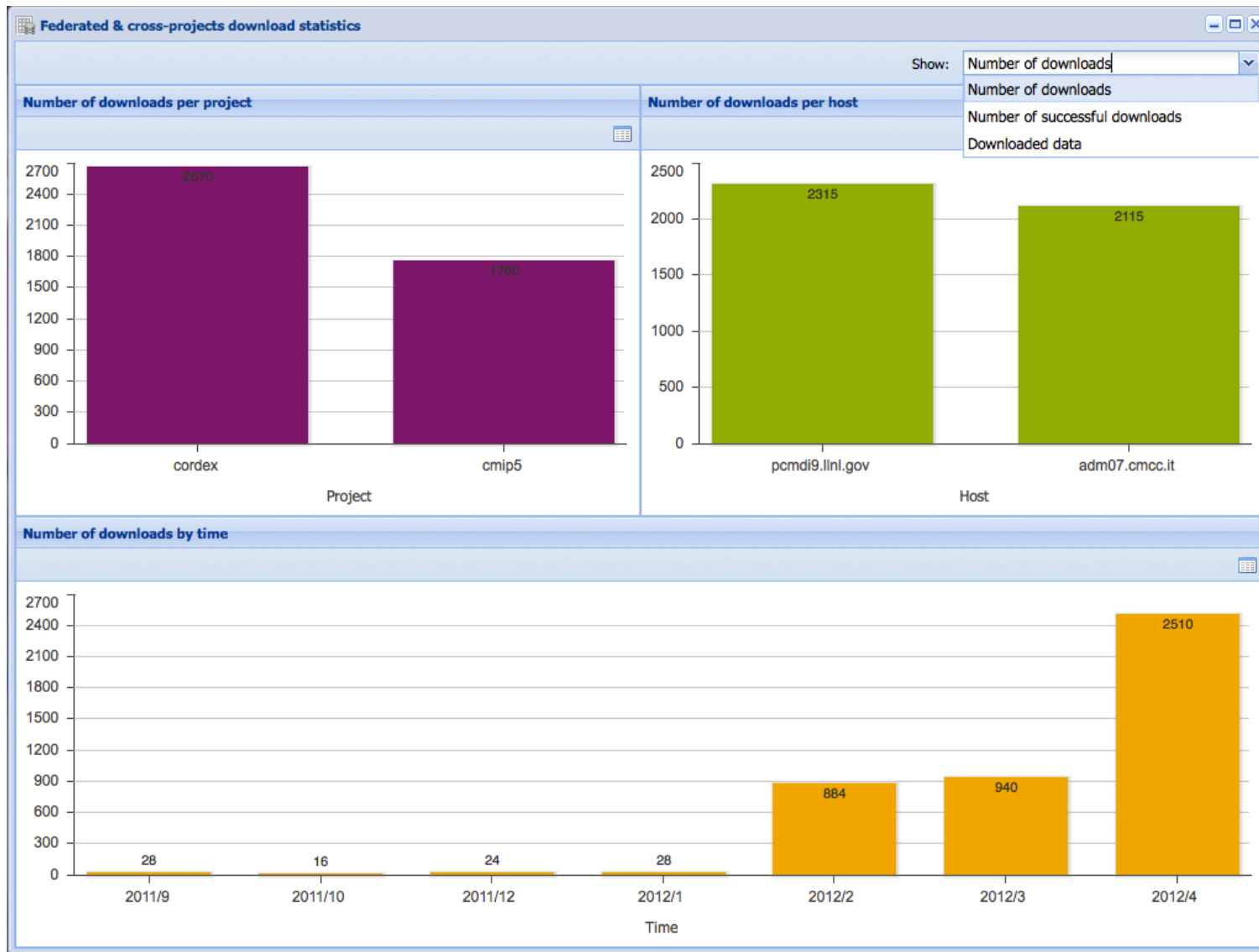
Data mart 2



Data mart 1

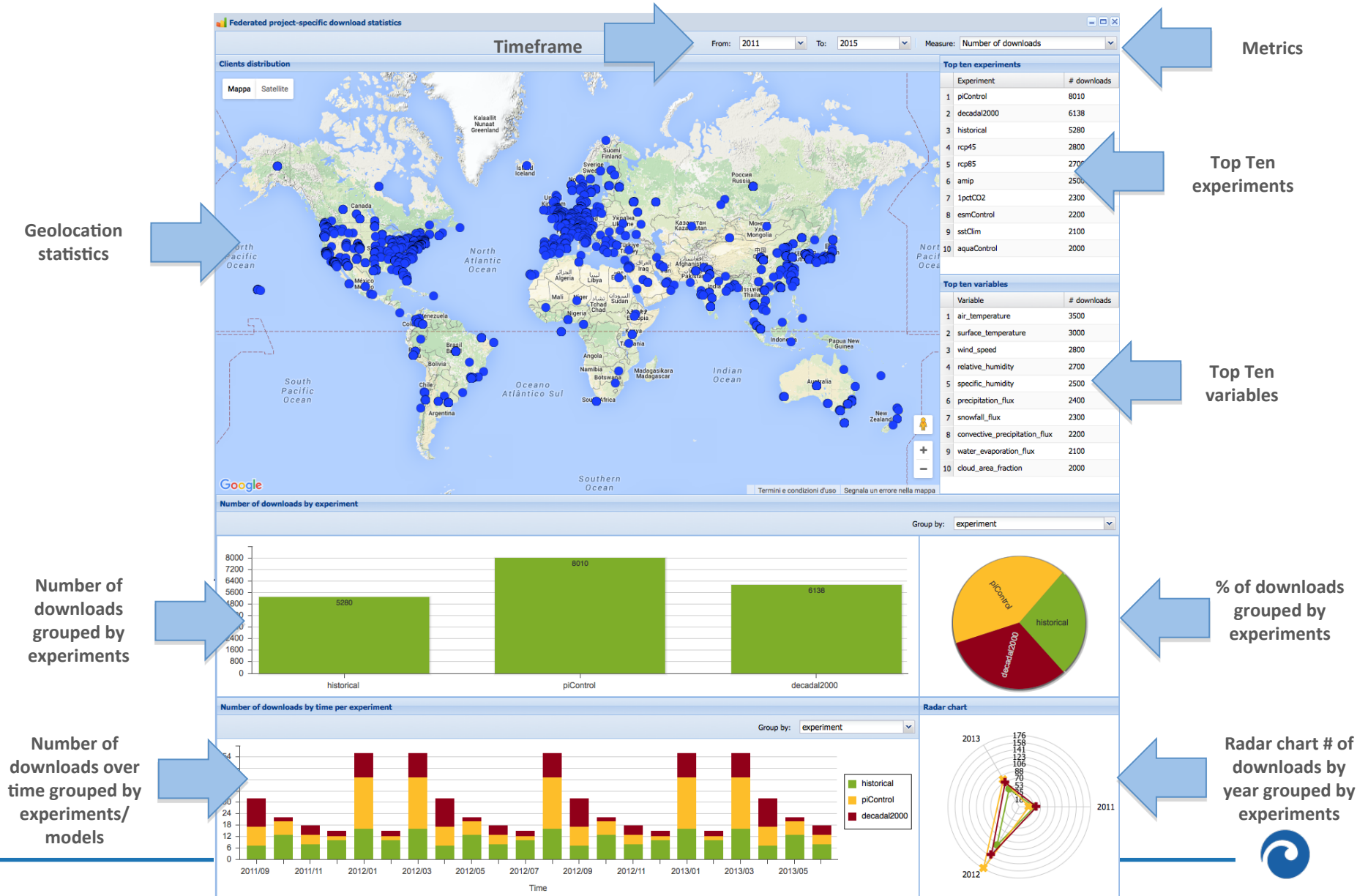


Work achieved over the past year – Fine grain system Federated and cross-project statistics



Work achieved over the past year – Fine grain approach

Project-specific statistics (CMIP5)



Prioritized development and roadmap for the next year

- ❖ *Status of the system and future roadmap for the fine grain system*
 - ❖ *Database back-end design completed*
 - ❖ *Preliminary implementation available*
 - ❖ *Single site & Federated*
 - ❖ *Single and cross-project*
 - ❖ *Search lib in progress to extract project-specific information*
 - ❖ *e.g. obs4MIPS: cf_standard_name, processing level, realm, time frequency, variable, datetime start, datetime stop, etc.*
 - ❖ *New project specific views to be defined in the context of the ESGF-DWT*
 - ❖ *Delivery date: February 2016 for CMIP5, CORDEX, obs4MIPs*
 - ❖ *Ext. deps: link to the esgf-node-manager for gathering federation-level information*
 - ❖ *Stronger link with: node-manager, network and search working teams.*
 - ❖ *REST APIs*
 - ❖ *Single node level – Jan 2016*
 - ❖ *Federation level (March 2016)*
 - ❖ *Extended set of views with geo-location and federation-level statistics by May 2016*
 - ❖ *New front-end presentation layer (Aug 2016 first release, Dec 2016 final release)*



Thank you

