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Xtremweb-HEP :
A securized and
inter-connected
Desktop Grid

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XTREMWEB-HEP

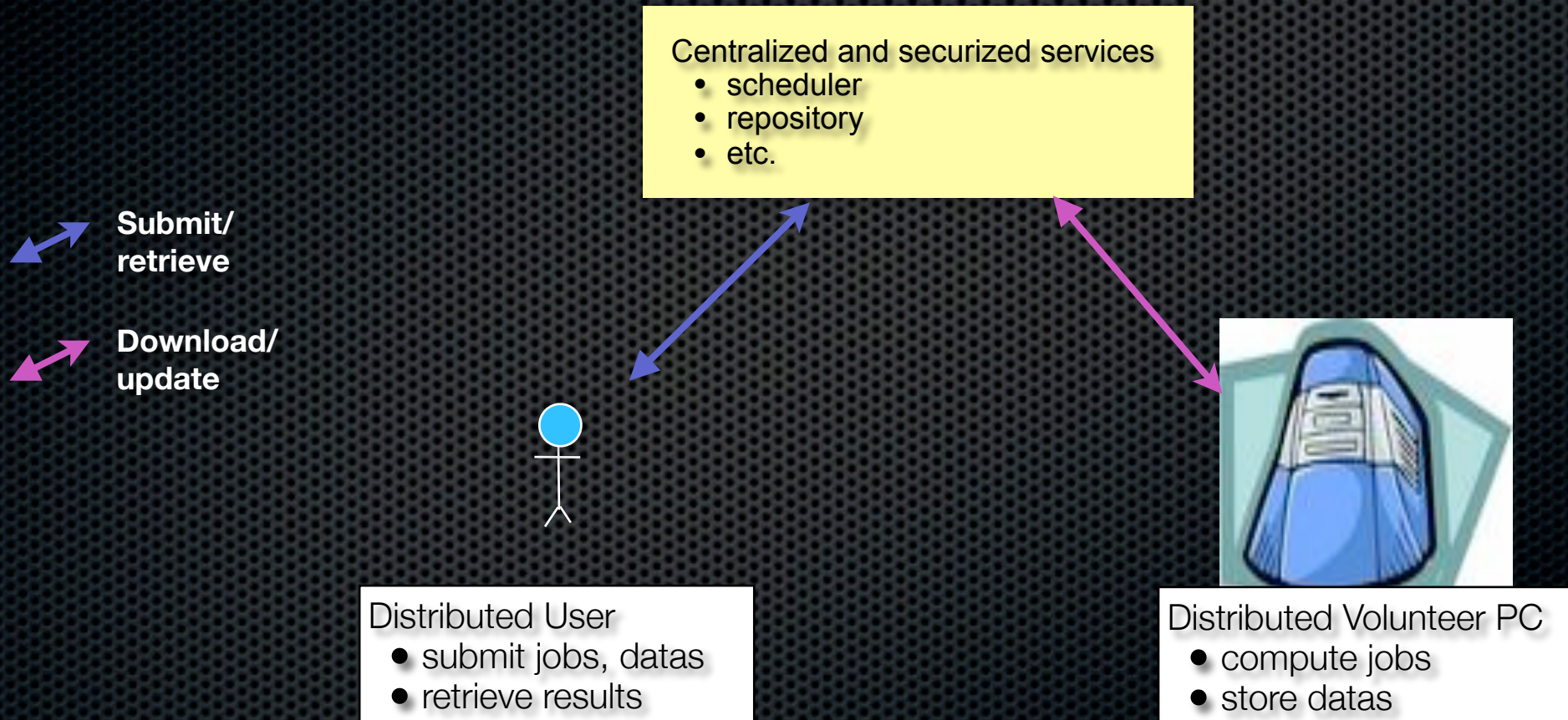
- Introduction
- Deployment
- Inter grids connection
- Applications
- Conclusion



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VOLUNTEER COMPUTING

A three tier architecture using idle time CPU provided by volunteers.



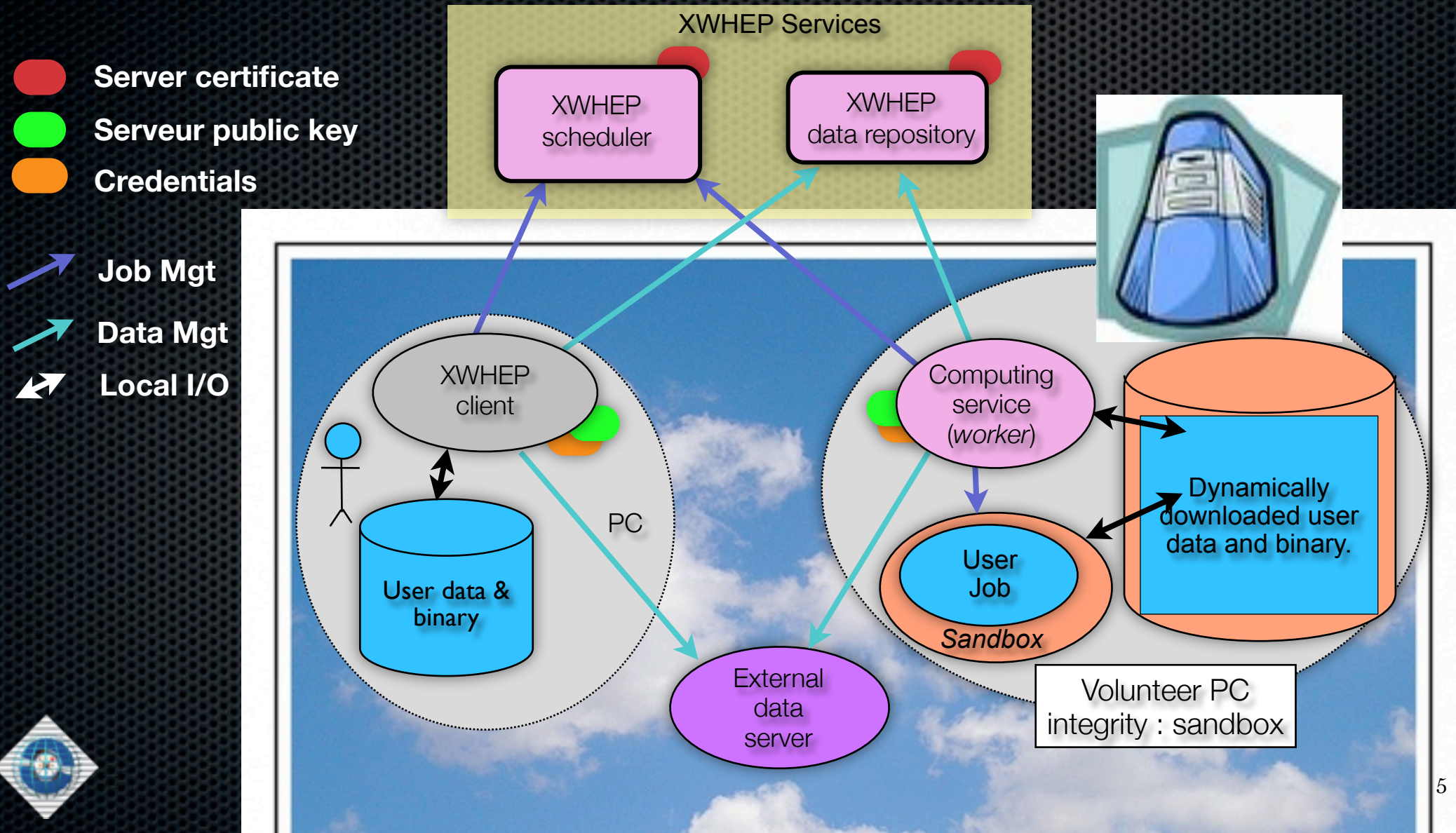
VOLUNTEER COMPUTING

	Volunteer cluster	Desktop Grid		
	Condor	Boinc	XWHEP	XtremWeb
volunteer ressources	✓		✓	
multi OSes	✓		✓	
type	cluster	desktop grid		
deployment	per domain	global		
firewall bypassing	✗		✓	
shared FS	✓		✗	
authentication	delegated	included		
authorization	delegated	✗	✓	✗
X509	✗	✗	✓	✗
data	✓	✓	✓	✗
multi users	✓	✗	✓	✓
multi applications	✓	✗	✓	✓
volunteer experience	✓	✓	✗	✗
large deployment	✓	✓	✗	✗



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A three tiers architecture, securized and bypassing firewalls



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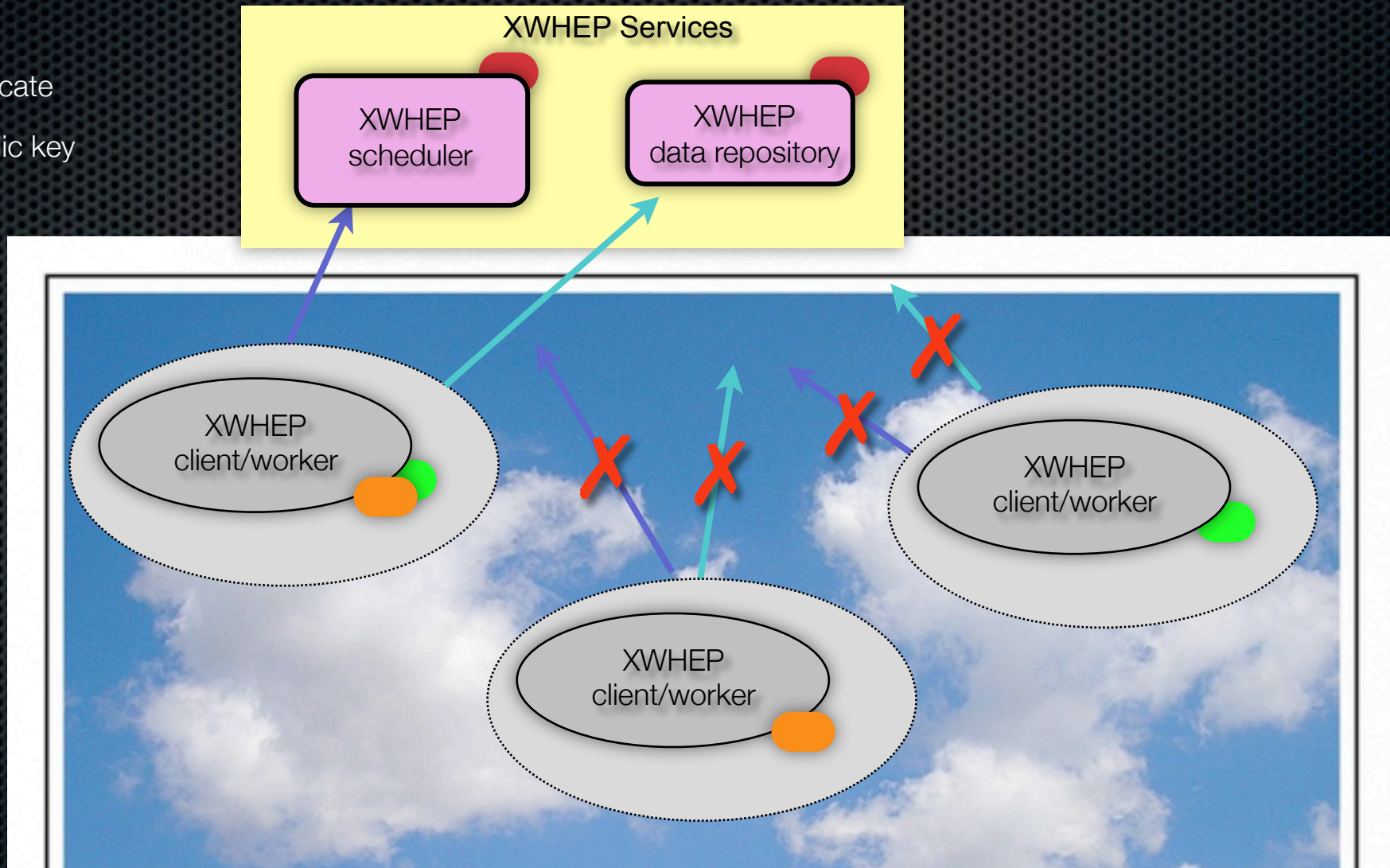


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AUTHENTICATION

Distributed parts connect using services public key and must present valid credentials

- Server certificate
- Server public key
- Credentials
- Job Mgt
- Data Mgt



AUTHORIZATION

XWHEP Services

XWHEP scheduler

XWHEP data repository

Private

Group

Public app

Public workers

Group workers

Private workers

Public job

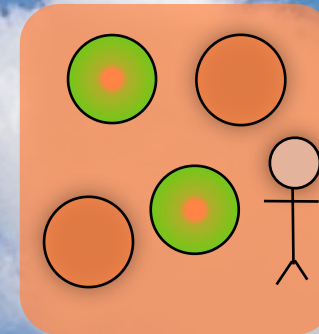
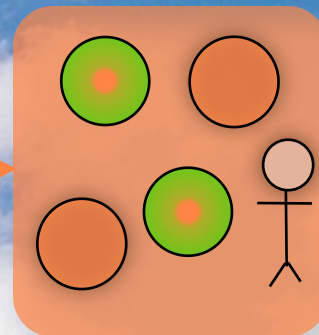
Group job

Private job

Public worker can execute public jobs of all users (and public jobs only)

Group worker can execute public and group jobs of all users of its group (and its group only)

Private worker can execute all jobs of its owner (and its owner only)



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PILOT JOBS

Pilot Jobs is a way to use a Grid infrastructure to deploy end user jobs with an external scheduler (i.e. a scheduler which is not part of the infrastructure itself).

XtremWeb and Condor teams have introduced this as “Glide-in” in “XtremWeb & Condor : sharing resources between Internet connected Condor pools.”

O. Lodygensky, G. Fedak, F. Cappello, V. Neri, M. Livny, D. Thain
CCGRID 2003, Tokyo, JAPAN; May 12-15, 2003.

EGEE experiments use Pilot Jobs

LHCb *Dirac*
CMS *Glide-in*
ATLAS *Panda*
ALICE

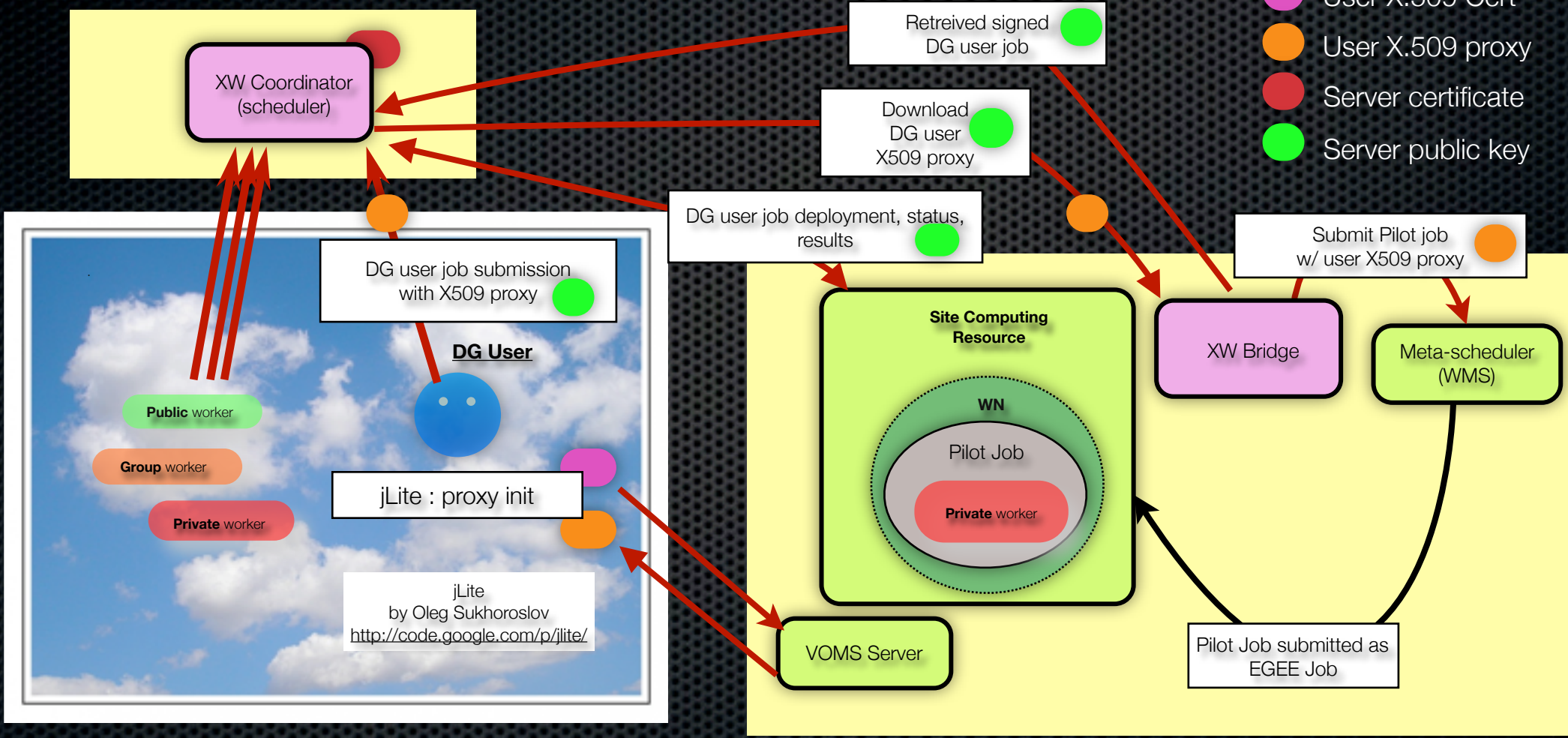
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PILOT JOBS

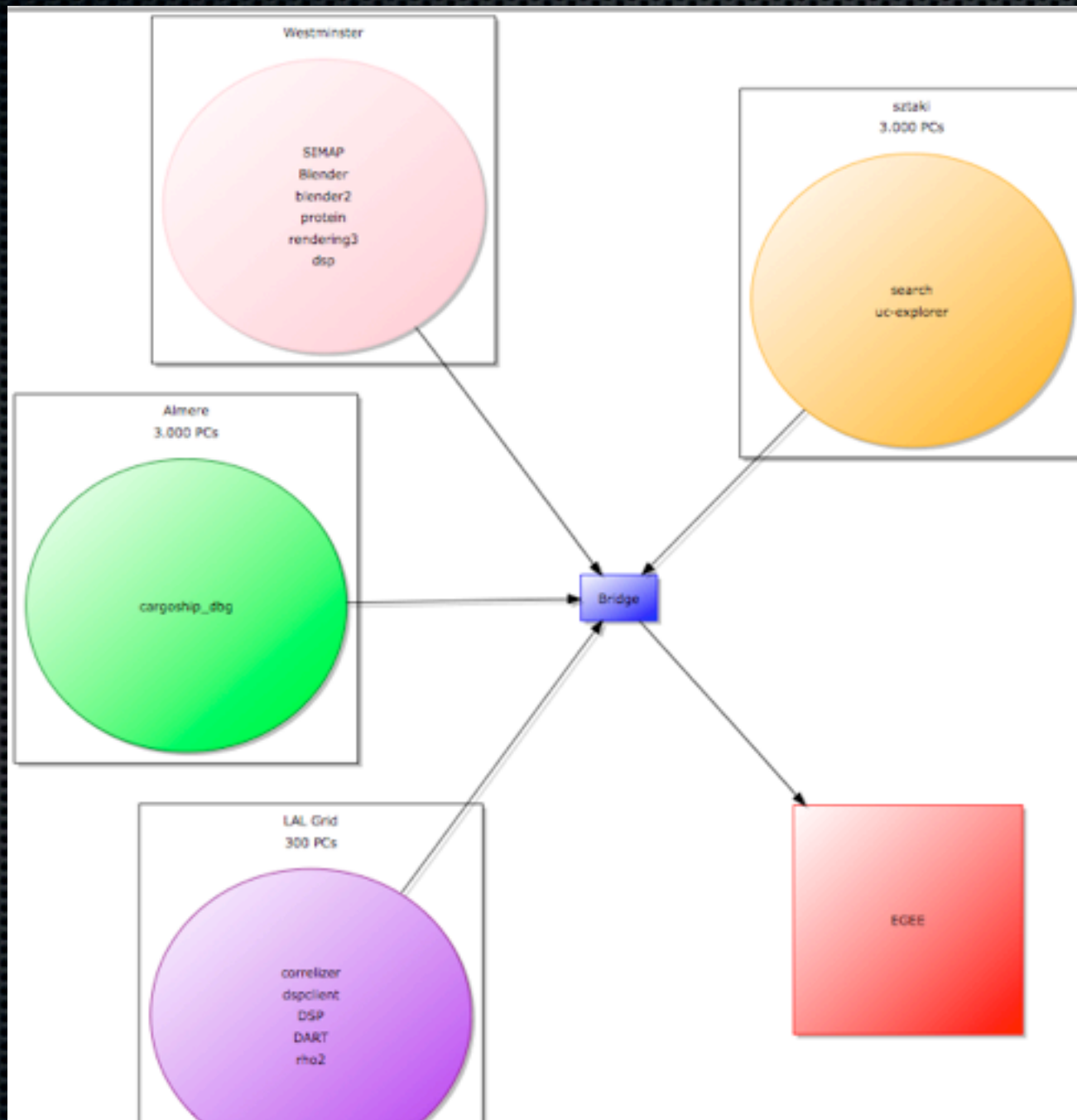
Security, monitoring and logging are the main issues in Pilot Jobs. (<http://edms.cern.ch/document/855383>)

- User X.509 Cert
- User X.509 proxy
- Server certificate
- Server public key



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PILOT JOBS



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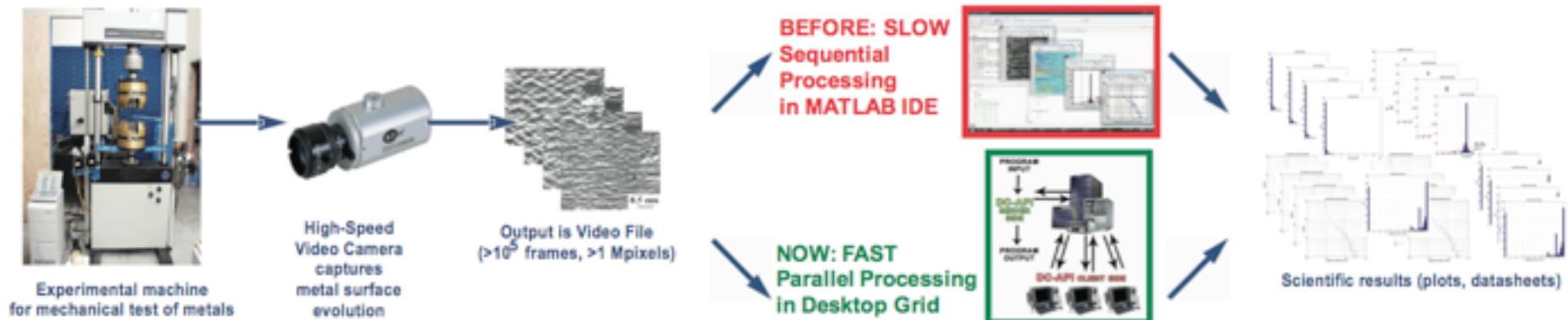
APPLICATIONS

Porting Multiparametric MATLAB Application for Image and Video Processing to Desktop Grid for High-Performance Distributed Computing

Yuri Gordienko, Institut de Physique du Metal - Kiev - Ukraine

2. Typical Experimental Workflows: **Sequential** and **Parallel** at **BOINC** and **XtremWeb** DG platforms

MultiscaleVideoP with 4GL MATLAB-code was successfully ported and tested on BOINC-based local DG at IMP with Windows-workers[2] and on XtremWeb DG [4] at LAL with Linux-workers; now the work is going on delivering it to EGEE through EDGeS XtremWeb->EGEE Bridge [5].



The main achievement: applicability and feasibility of integration of typical scientific application coded in 4GL environments with DCI on the basis of Desktop Grid for high-performance distributed computing were proved, tested and demonstrated.

The further increase of performance is possible by delivering 4GL-based applications to global computing resources of EGEE on the basis of XtremWeb desktop grid platform [4] and EDGeS XtremWeb->EGEE Bridge [5].

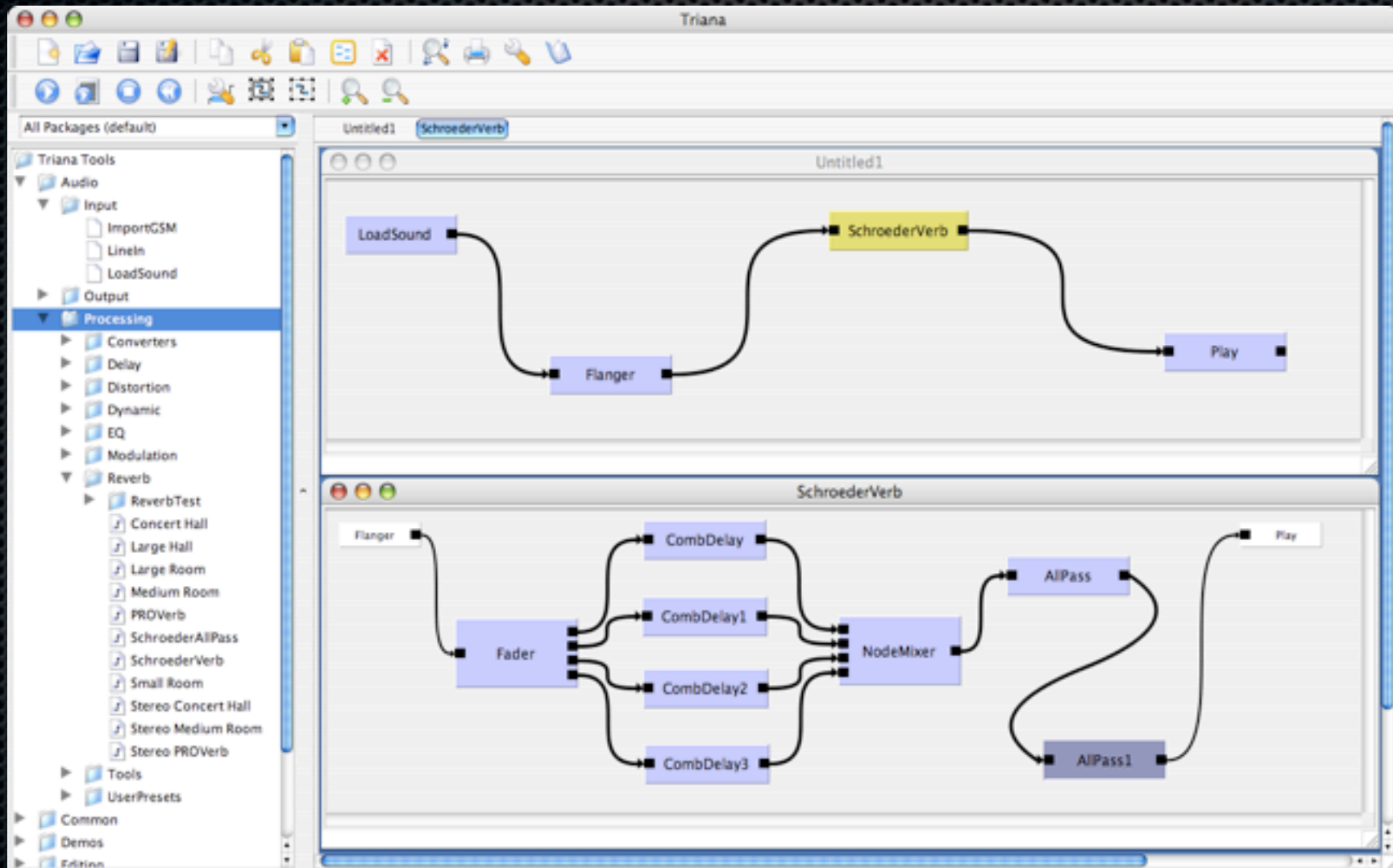


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APPLICATIONS

DART: A Framework for Distributed Audio Analysis and Music Information Retrieval

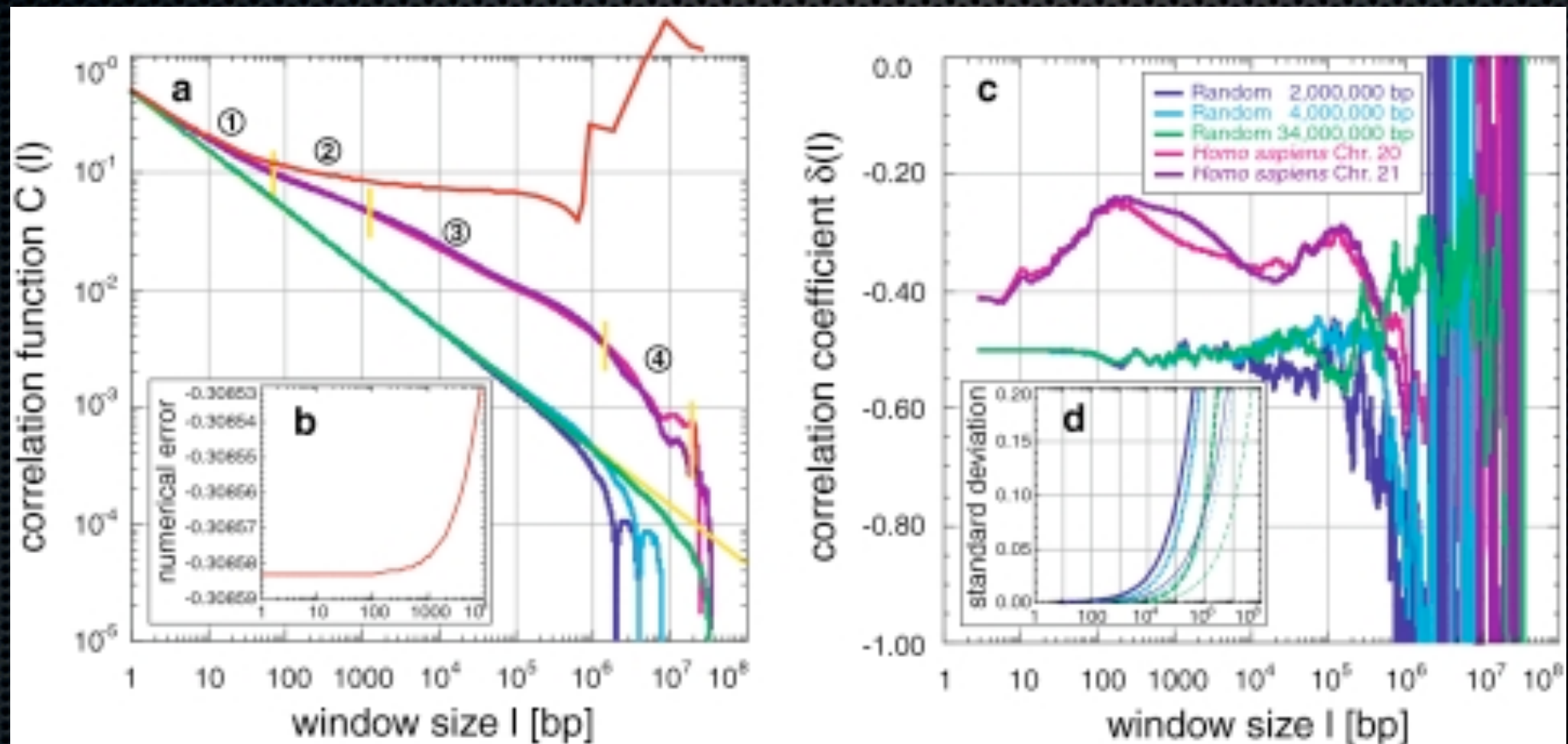
Eddie Al-Shakarchi, Cardiff University - UK



APPLICATIONS

DNA Correlation Applications

A. Abuseiris, Erasmus - NL



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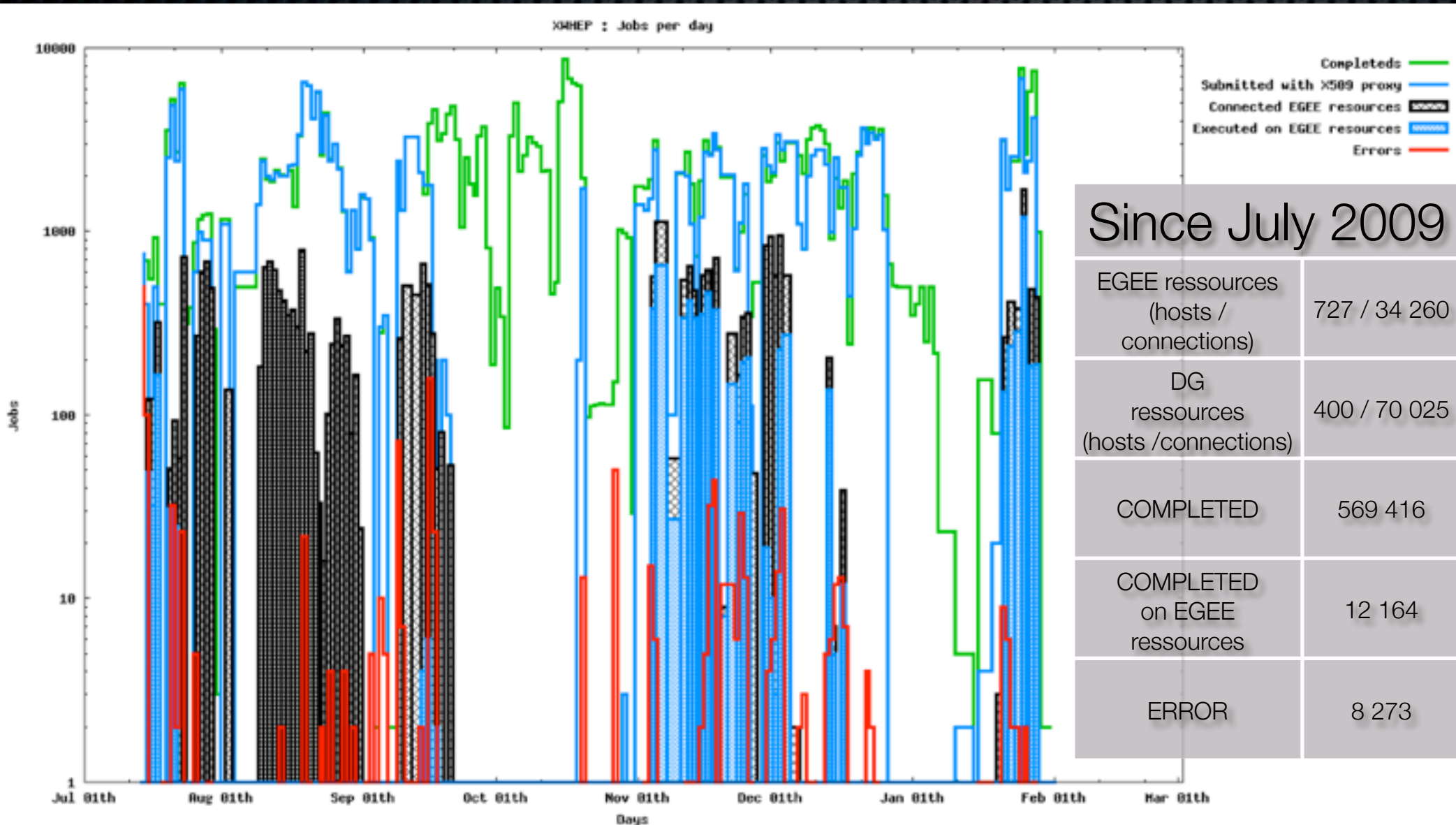
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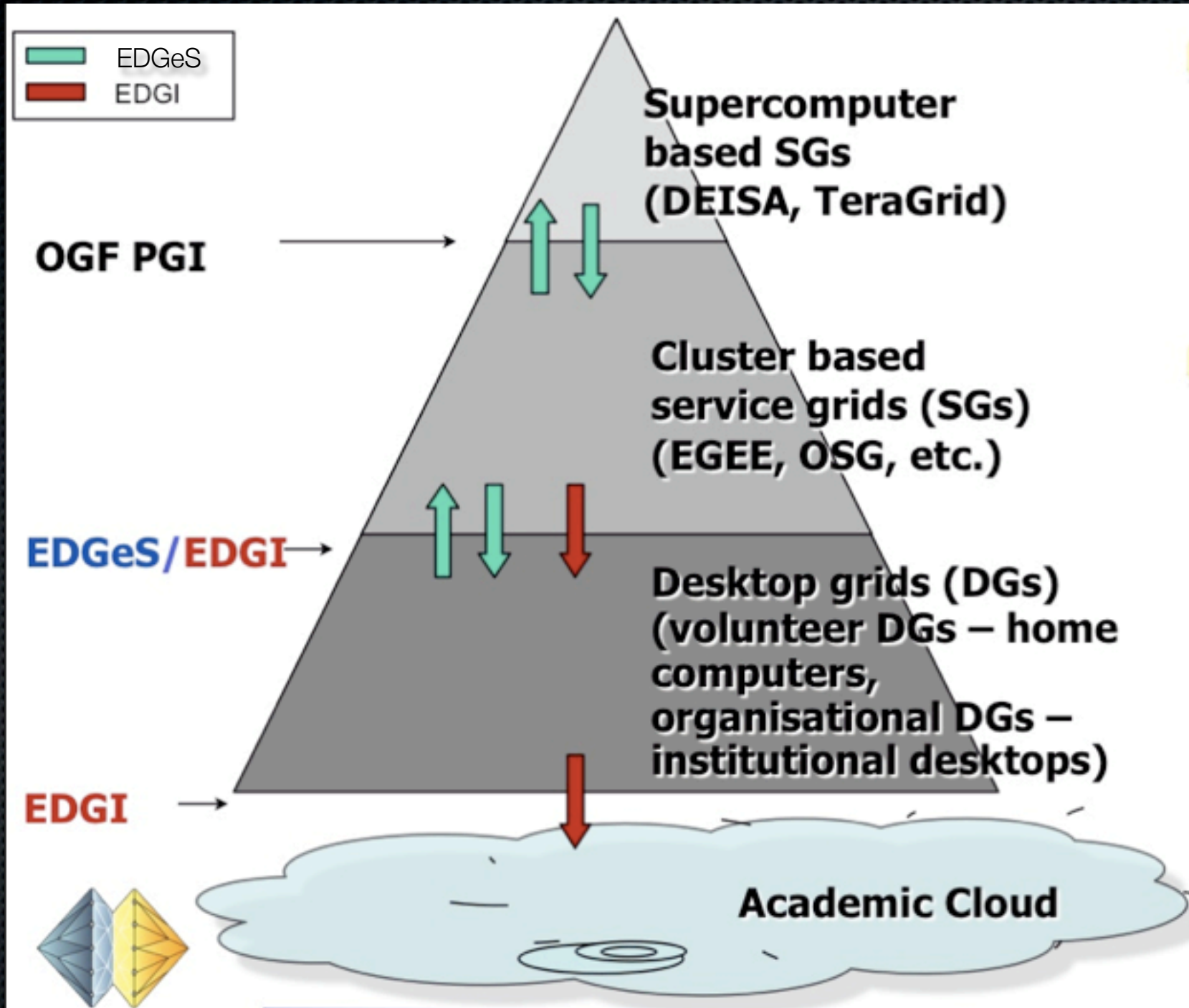
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CONCLUSIONS



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CONCLUSIONS



WEB SITES

<http://www.xtremweb-hep.org/spip.php?article30>

<http://www.Iri.fr/PoleGrid/GridUps/>



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