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

Oleg Lodygensky
Laboratoire de l'Accélérateur Linéaire

Grille Paris Sud



XTREMWEB-HEP

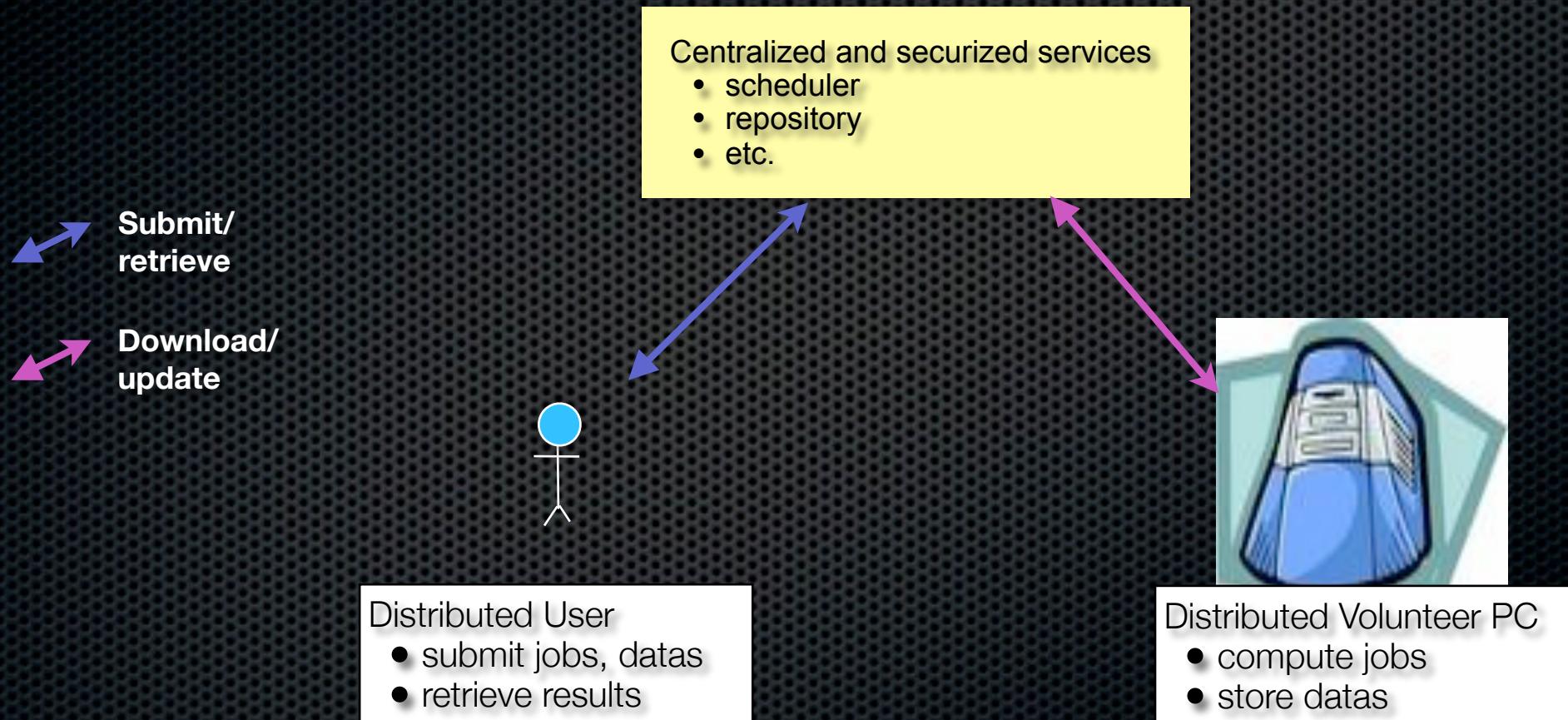
- Introduction
- Deployment
- Inter grids connection
- Applications
- Conclusion



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VOLUNTEER COMPUTING

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



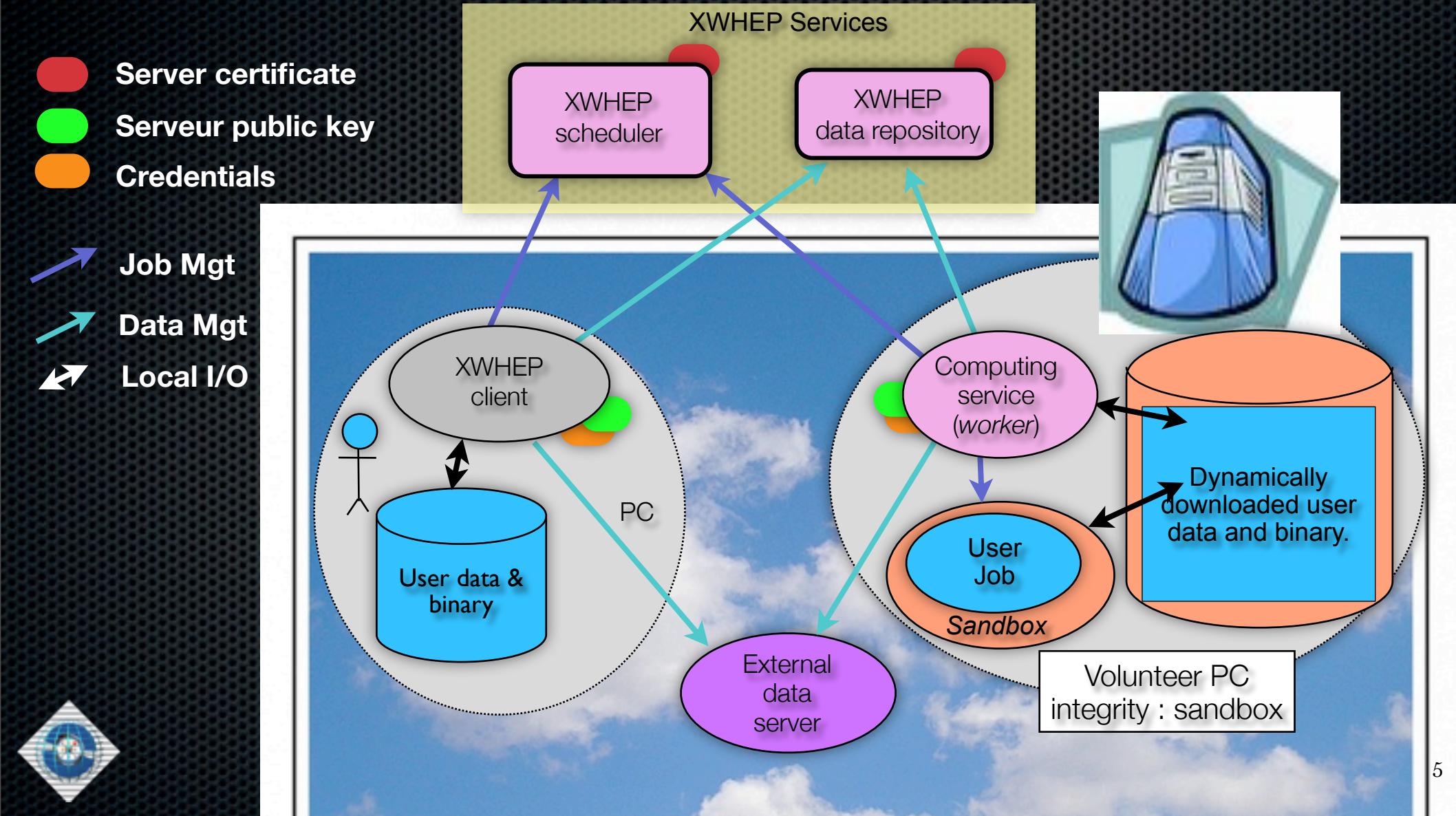
VOLUNTEER COMPUTING

	Volunteer cluster	Desktop Grid				
	Condor	Boinc	XWHEP	<i>XtremWeb</i>	OurGrid	
volunteer ressources	✓			✓		
multi OSes	✓			✓		
type	cluster			desktop grid		
deployment	per domain			global		
firewall bypassing	✗			✓		
shared FS	✓			✗		
authentication	delegated			included		
authorization	delegated	✗	✓	✗	✓	
X509	✗	✗	✓	✗	✓	
Sandbox	?	?	✓	✓	✓	✓✓
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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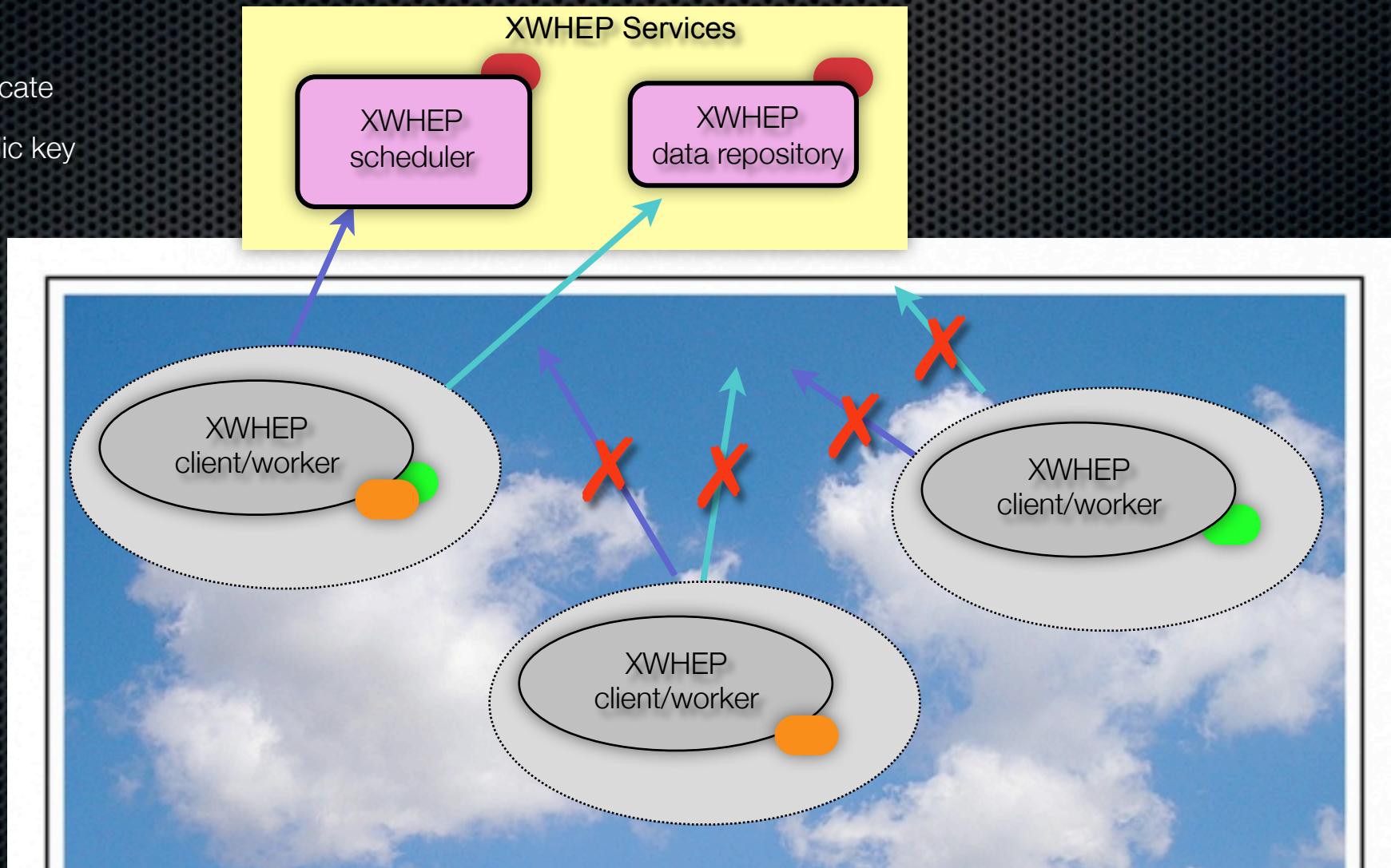
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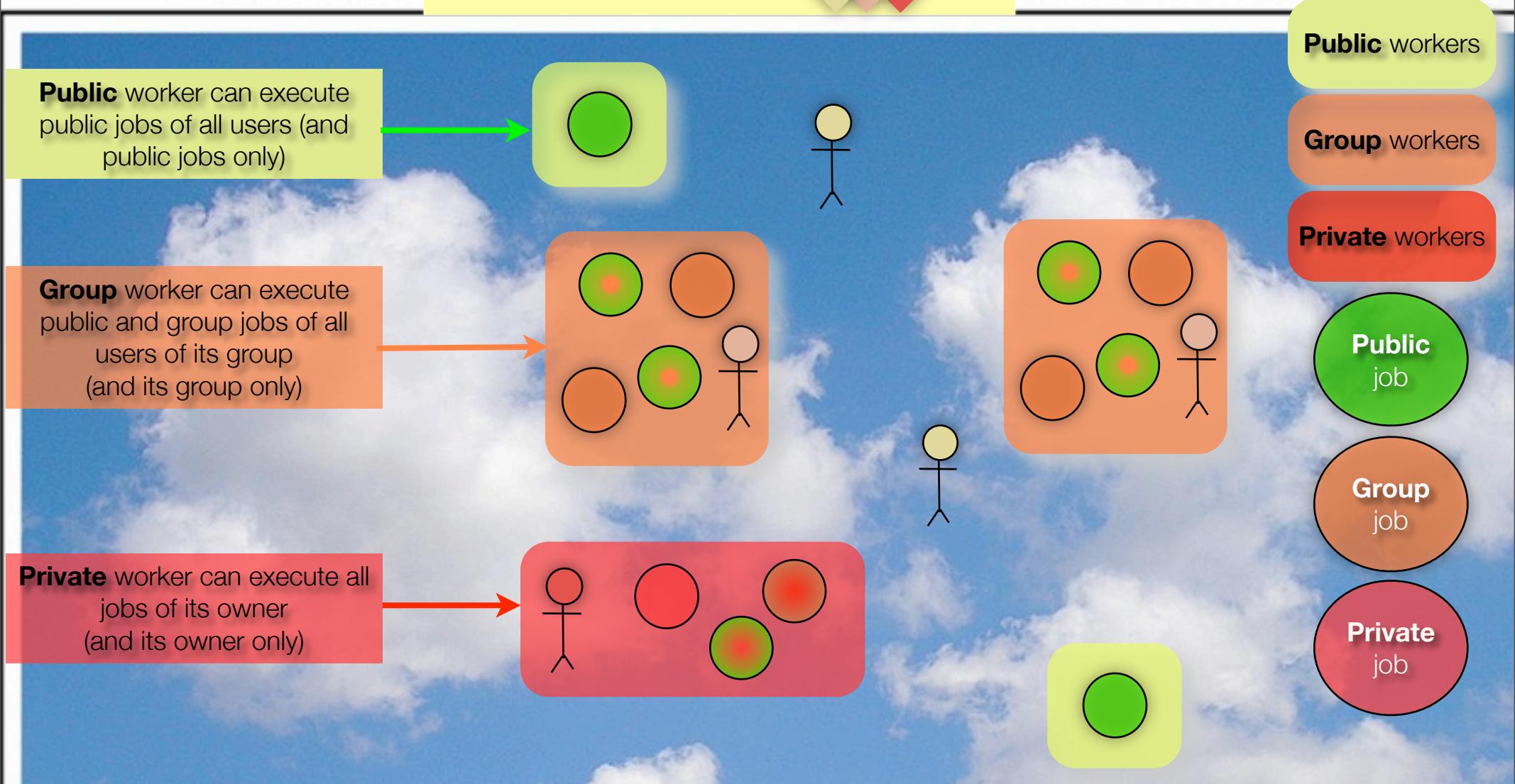
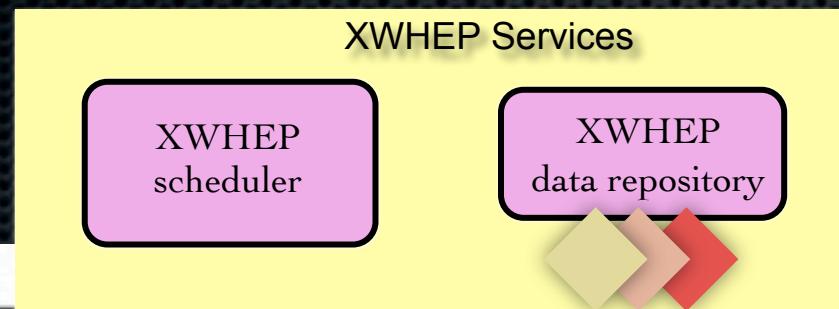
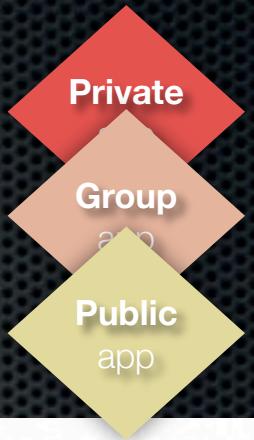
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AUTHENTICATION

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



AUTHORIZATION



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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

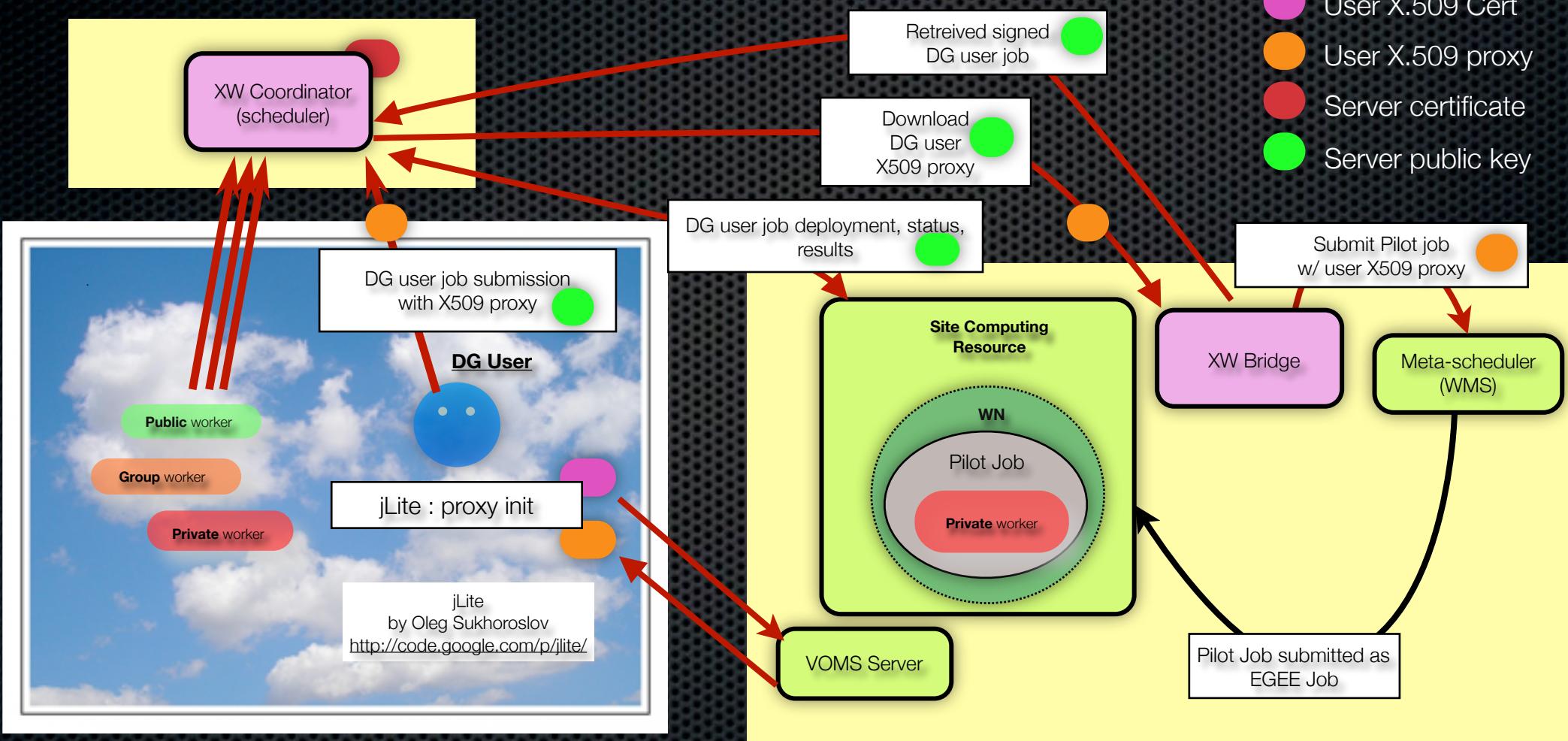
LHCb *Dirac*
CMS *Glide-in*
ATLAS *Panda*
ALICE

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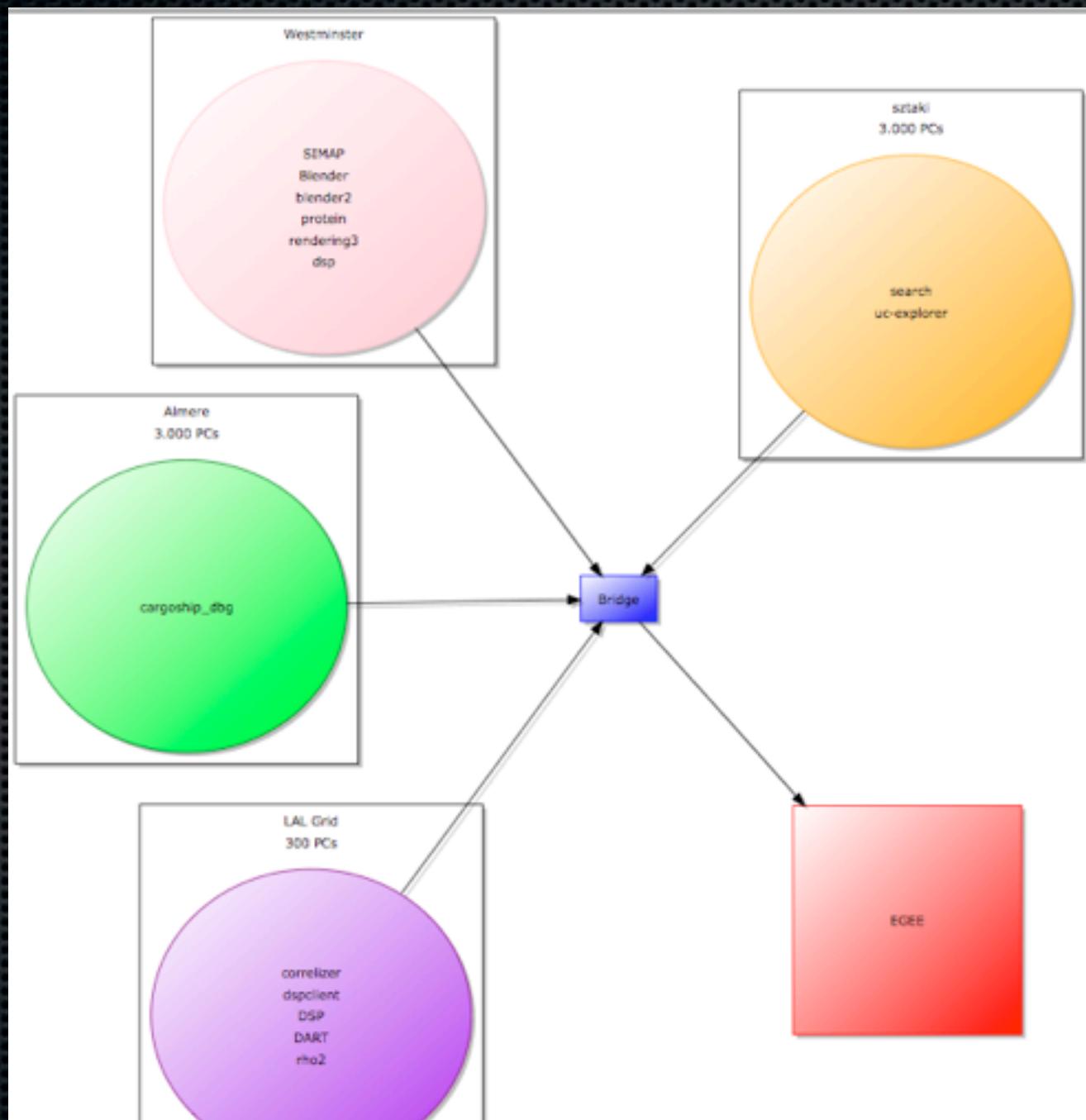
PILOT JOBS

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



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PILOT JOBS



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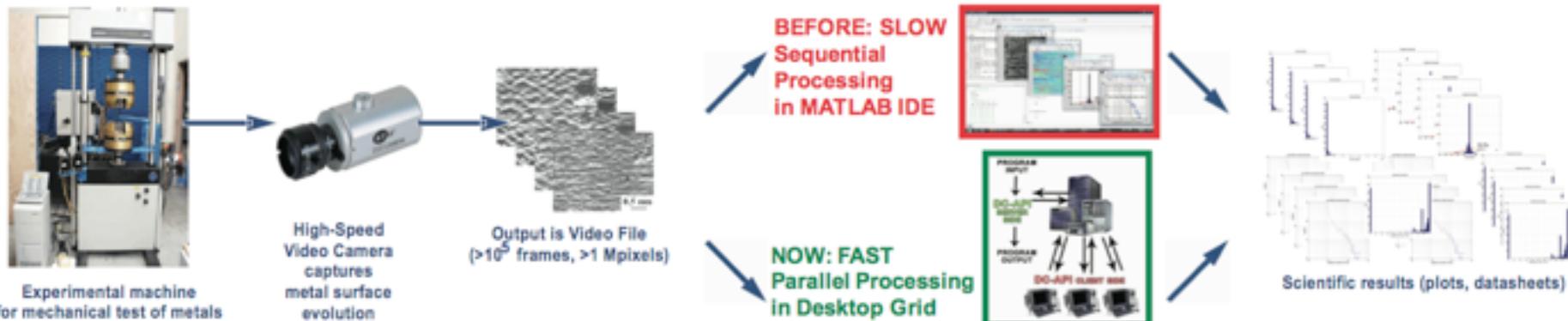
APPLICATIONS

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].

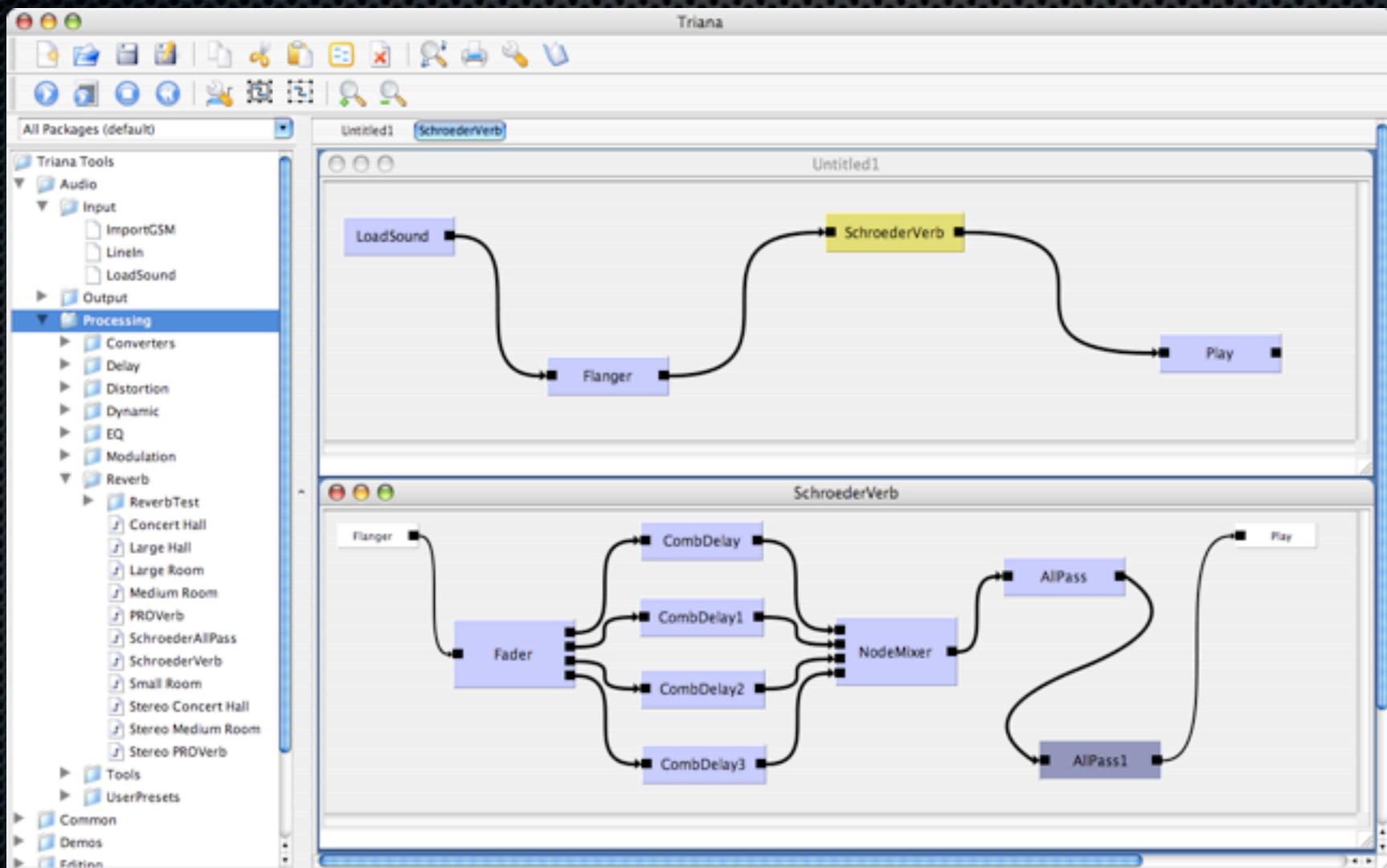


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APPLICATIONS

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

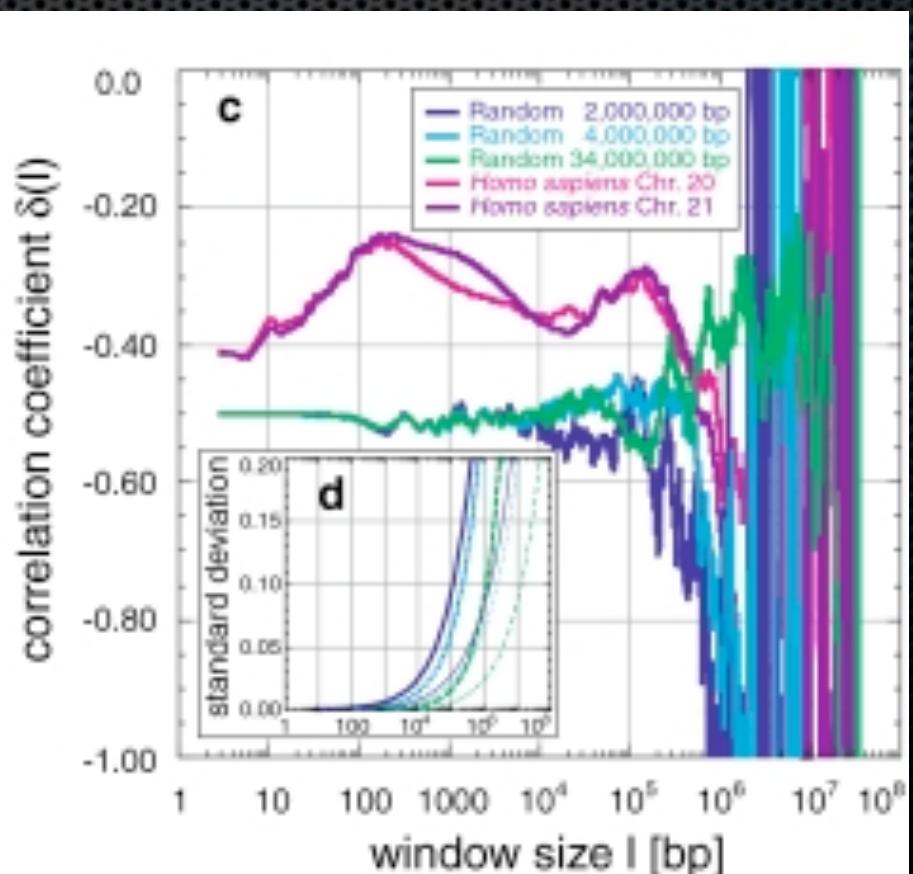
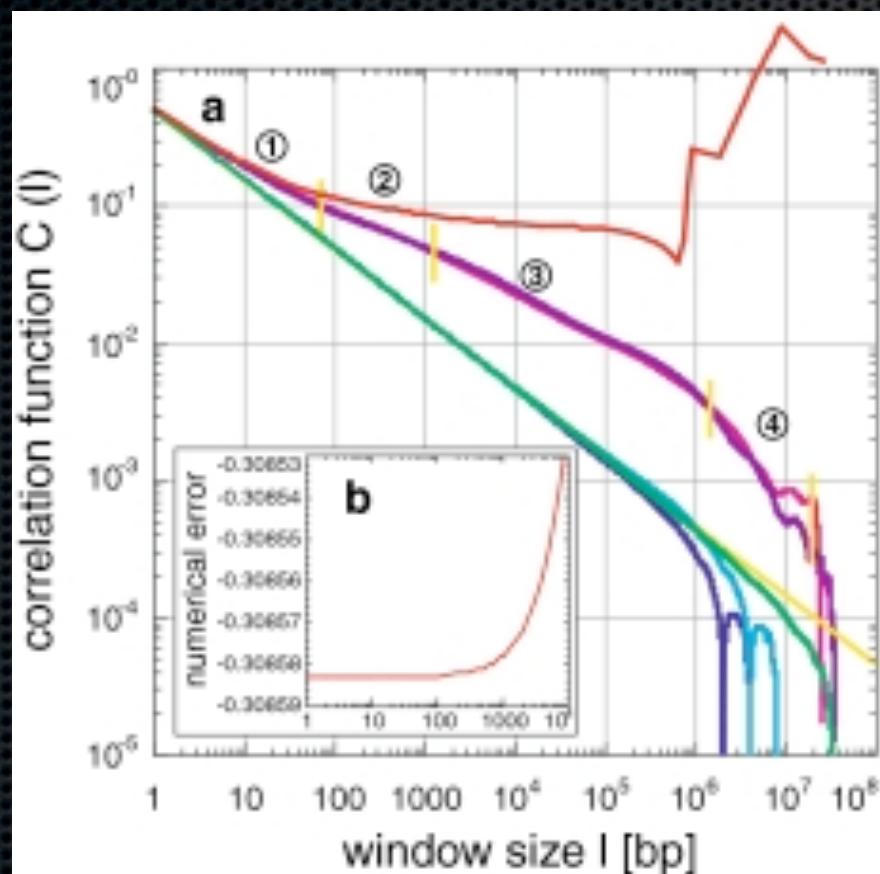
Eddie Al-Shakarchi, Cardiff University - UK



APPLICATIONS

DNA Correlation Applications

A. Abuseiris, Erasmus - NL



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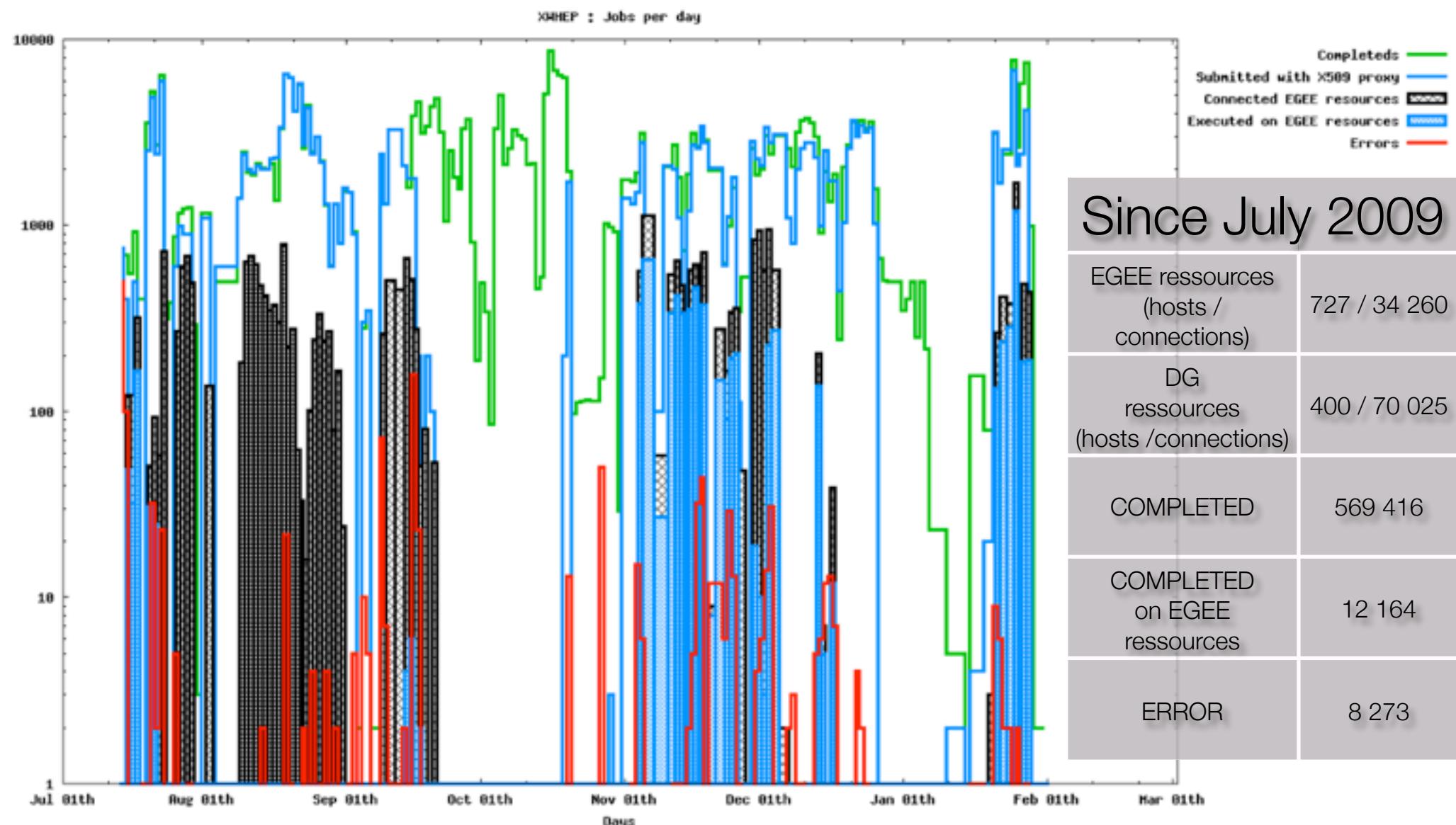
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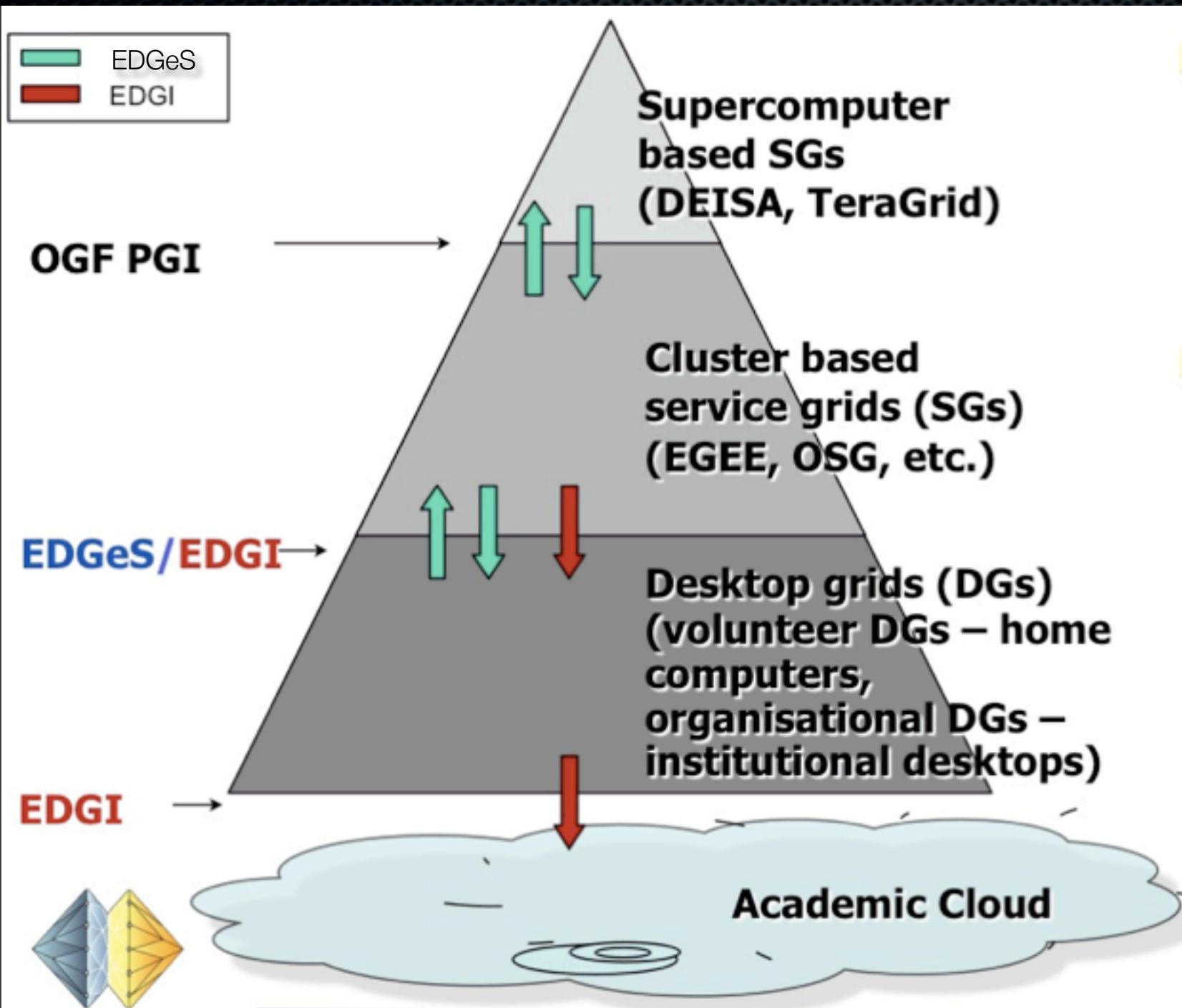
CONCLUSIONS



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CONCLUSIONS



WEB SITES

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

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



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