



rijksuniversiteit
groningen

22-10-2012

Grid

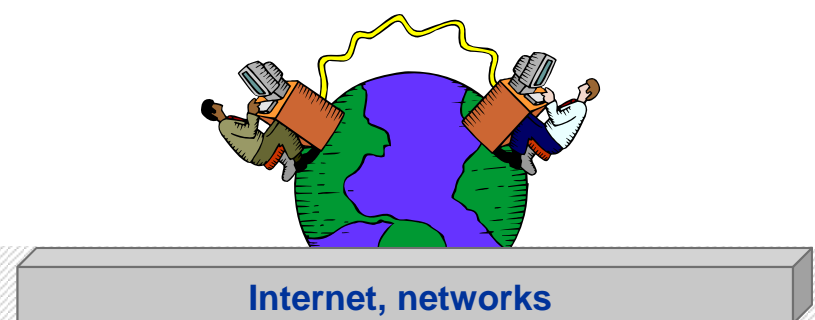
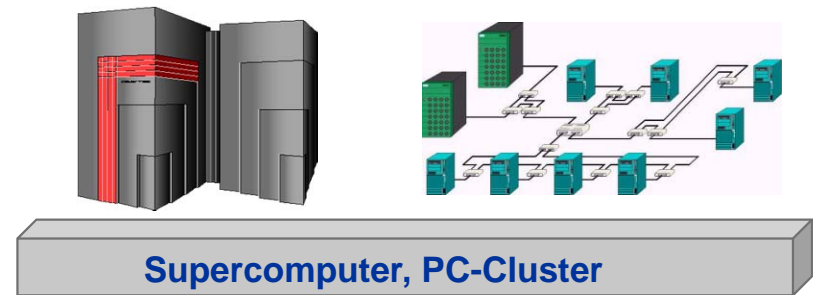
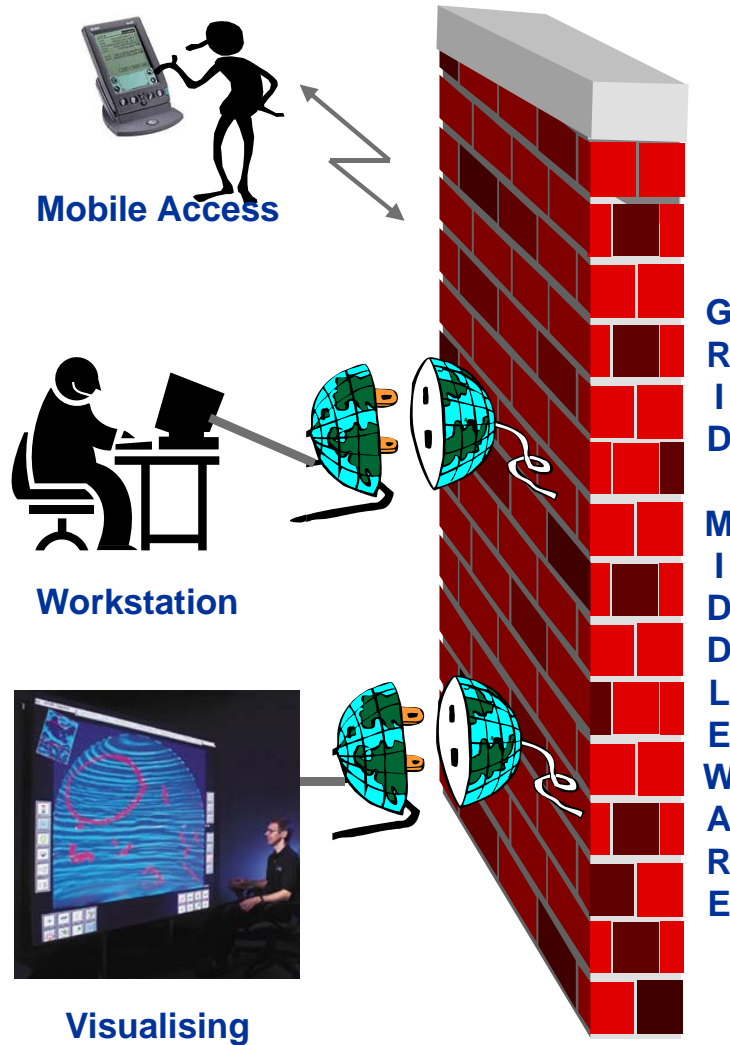
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- › Collaborative research that is made possible by the sharing across the Internet of resources (data, instruments, computation, people’s expertise...)
 - Crosses organisational boundaries
 - Often very compute intensive
 - Often very data intensive
 - Sometimes large-scale collaboration

- › Examples
 - Life sciences
 - High energy physics
 - Climate research
 - Astronomy





Grid	Cloud	Big Data
<p>Sharing resources and Data</p> <ul style="list-style-type: none">• Open standards• Sharing <p>Current implementation:</p> <ul style="list-style-type: none">• Collection of compute clusters and storage• Batch scheduled	<p>Running services elsewhere</p> <ul style="list-style-type: none">• Complete OS (IaaS)• Your applications (PaaS)• Your tasks (SaaS) <p>Current implementation (for science):</p> <ul style="list-style-type: none">• On demand computer capacity	<p>Handling massive amounts of data</p> <ul style="list-style-type: none">• Keep data close to the CPU <p>Current implementation:</p> <ul style="list-style-type: none">• Close coupled storage and computing

In principle the Grid is a PaaS solution that could transform into IaaS, where data can be stored close to the CPUs.



- > Currently 58 node Grid cluster
 - 928 cores for computing
4 GB memory each
 - 10 GbE interconnect
 - Will be connected to
Target storage platform
- > Financed by Big Grid





- > BigGrid
- > National project funded with 29M€
 - Hardware
 - Application support
- > Partners:
 - NCF
 - NBIC
 - Nikhef
- > Several hosting partners
 - Including RUG
- > Coupled to European/worldwide Grid
- > Available for scientists in the Netherlands





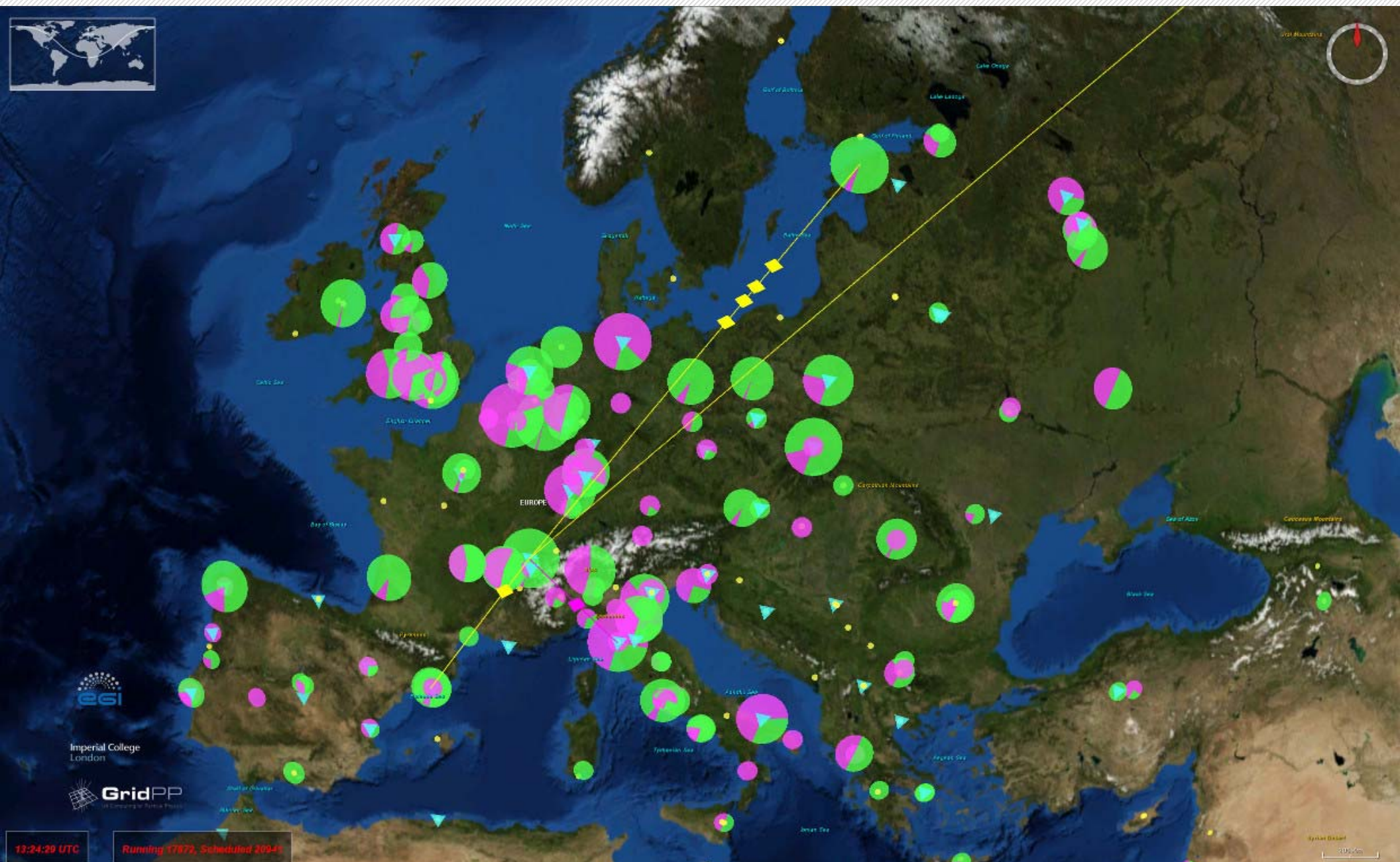
- > 4 general sites
 - SARA, Amsterdam
 - Nikhef, Amsterdam
 - RUG, Groningen
 - Philips, Eindhoven
- > several Life science Grid sites
- > > 10000 cores
- > > 5 PB disk storage
- > > 6 PB tape storage

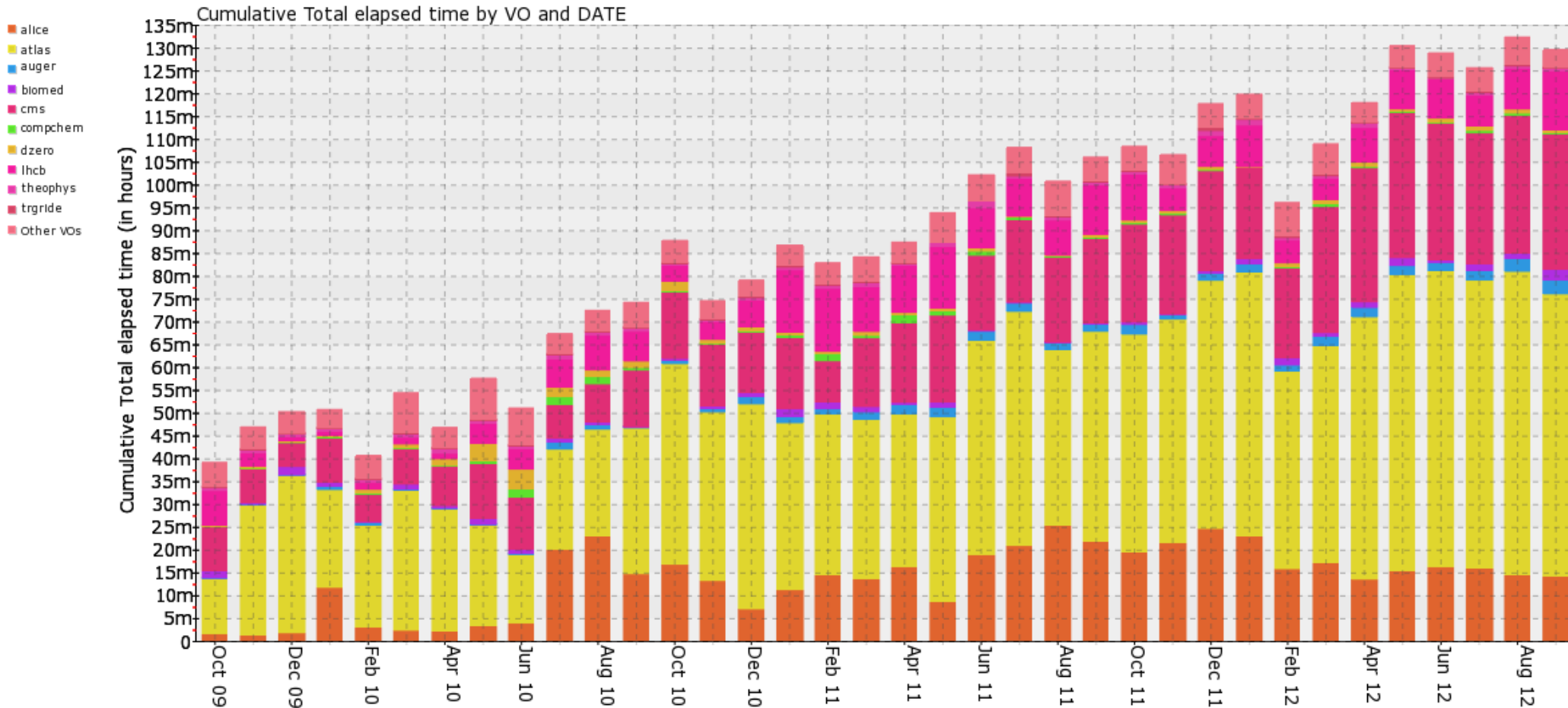




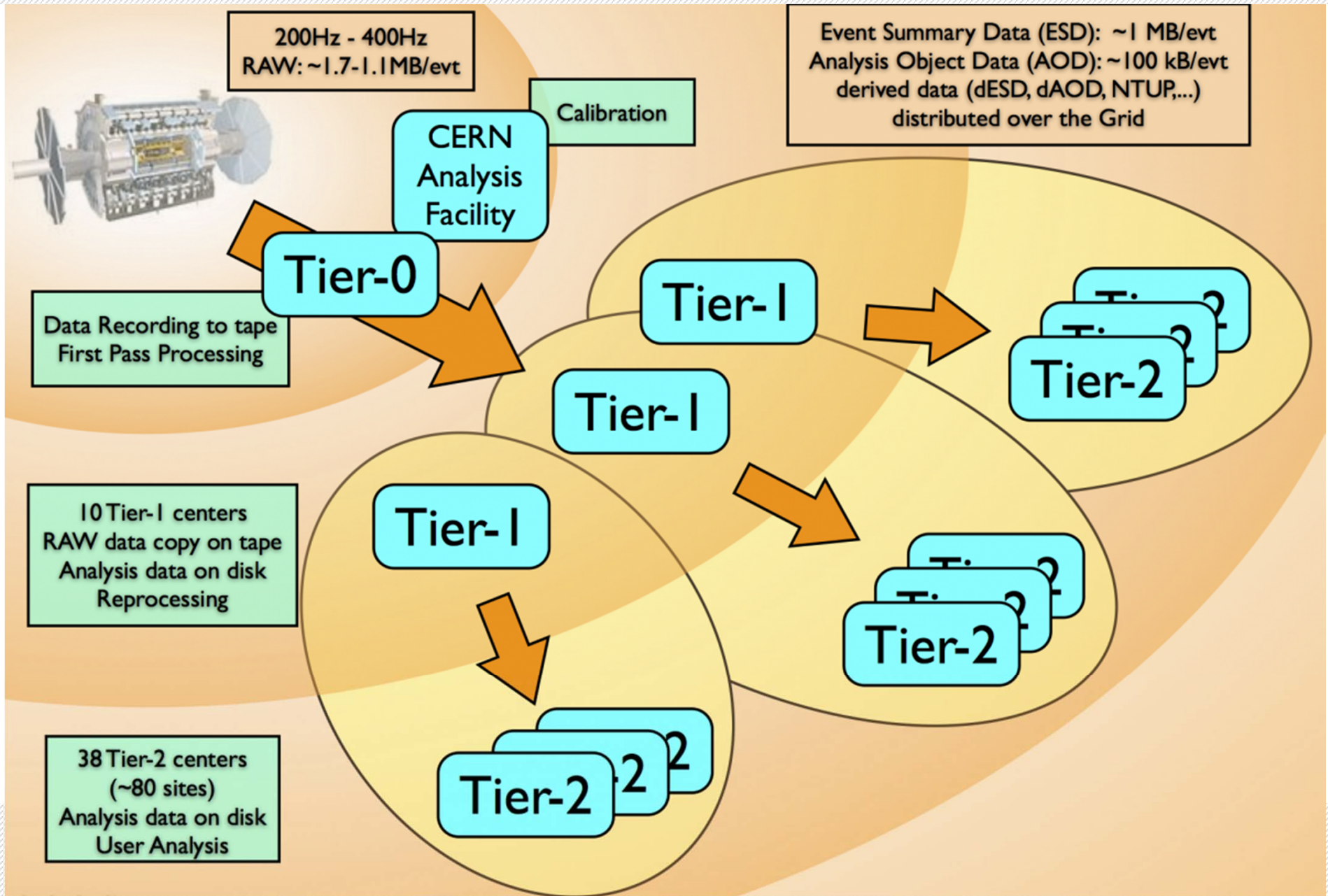
- > Managing European part of worldwide Grid infrastructure
- > > 200 sites
- > Collaboration between National Grid initiatives like Big Grid
- > Operations
- > Deployment of standard Middleware







130m hours/month > 180k cores continuously





- › Software to provide the standard interfaces
 - Computing (CREAM)
 - Storage (SRM)
 - Information system (BDII)
 - Authentication & Authorisation (X509, VOMS)
- › Middleware initiatives
 - European Datagrid (EDG) (2002-2004)
 - EGEE (gLite) (2004-2010)
 - EMI (2010-2013)
 - Other flavours:
 - Unicore, ARC, OSG, ...

