

# LEXOR

## The LCG Executor for ATLAS Production System

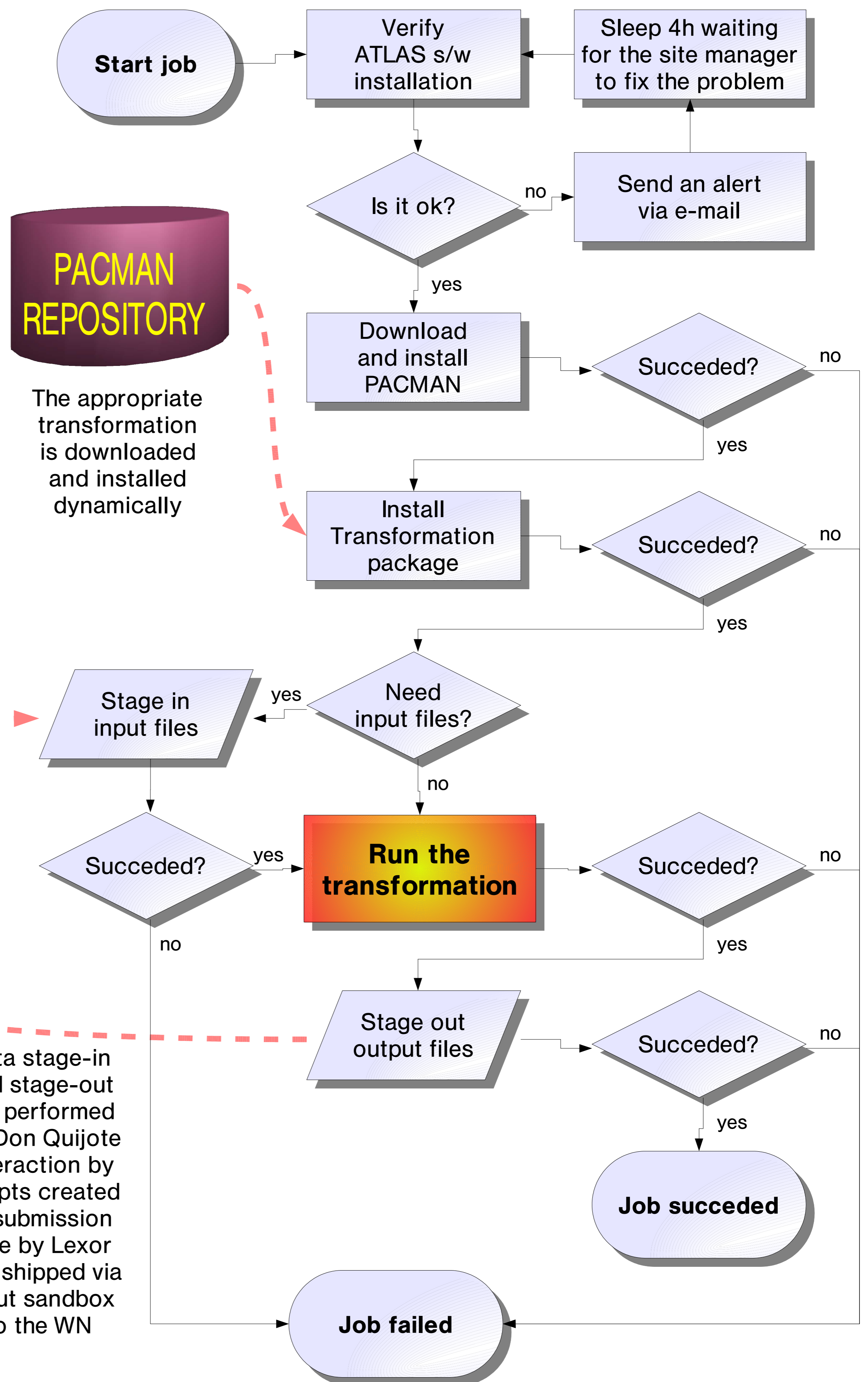
**LEXOR** is the software component used by **ATLAS** LHC experiment during its **DataChallenge 2 – Phase One** to submit jobs to the **LCG-2 Grid**.

**LEXOR** main components are:

- A Python module implementing a *LCG Job* class (which can also be used interactively as an alternative OO User Interface for LCG). By mean of this module, LEXOR is able to manage the whole life cycle of a job in LCG.
- A custom XML DOM parser, translating the XML description of jobs (used by ATLAS in its database) into JDL, the Job Description Language used by LCG.
- A Job Wrapper, performing all the needed operations before and after the actual physic job execution.

The communication with the production supervisor is performed via XML messages over XMPP.

### The job wrapper around a typical ATLAS job



**STORAGE ELEMENT**

**REPLICA CATALOG**

**DON QUIJOTE**

#### More on LEXOR...

**LEXOR homepage:** <http://www.mi.infn.it/rebato/lexor/>  
Find here more info and the code of LEXOR

#### Involved people

**Alessandro De Salvo** <Alessandro.Desalvo@roma1.infn.it>  
Coordinator, ATLAS s/w & Transformation setup

**David Rebatto** <David.Rebatto@mi.infn.it>  
main developer, release coordinator

**Guido Negri** <Guido.Negri@cern.ch>  
developer, main testing

**Luca Vaccarossa** <Luca.Vaccarossa@mi.infn.it>  
LCG interaction, testing

#### Related Projects

**Windmill** <<http://www-hep.uta.edu/windmill/>>  
The supervisor component

**Don Quijote** <<http://mbranco.home.cern.ch/mbranco/cern/donquijote/>>  
The ATLAS data management tool

**Pacman** <<http://physics.bu.edu/youssef/pacman/>>  
The package manager





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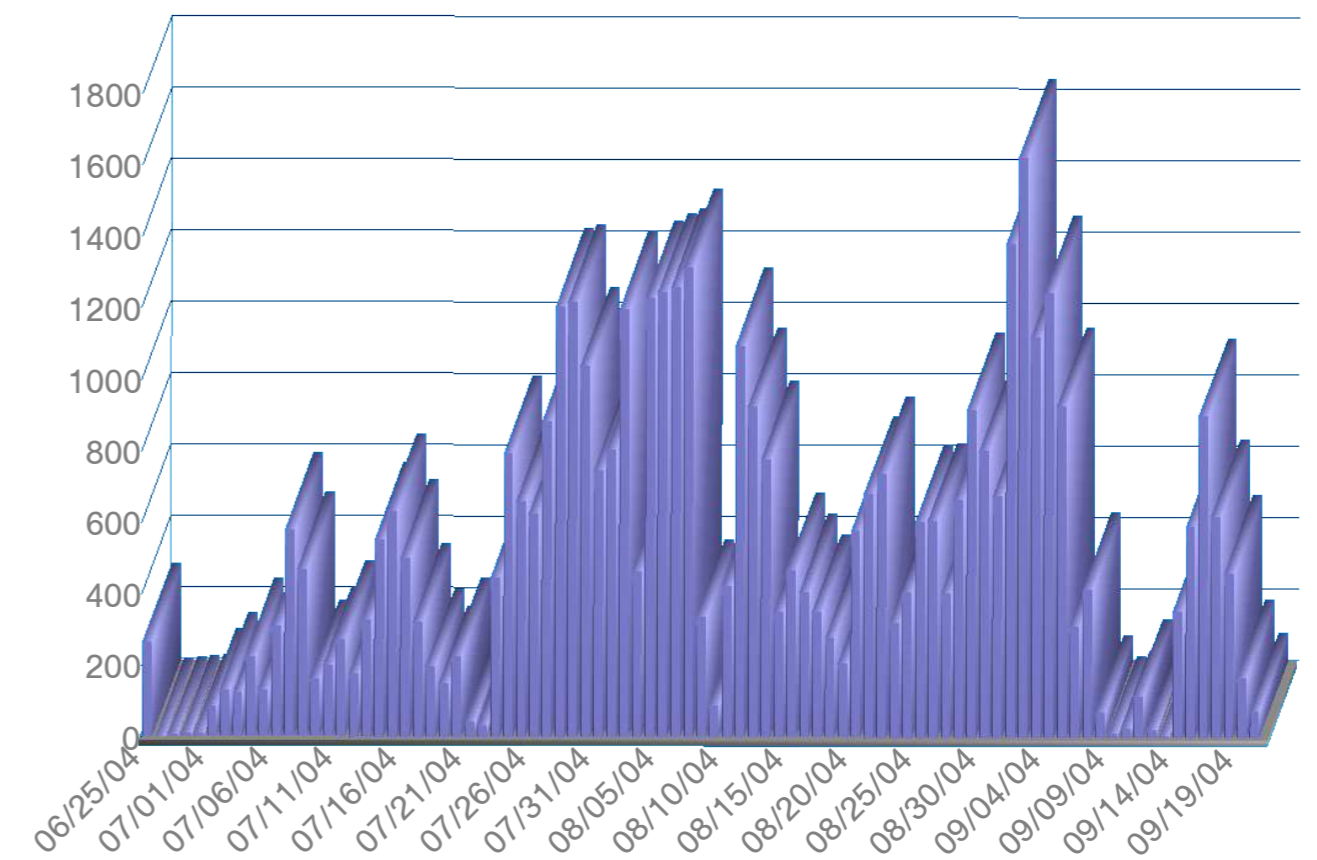
In three months of activity, **LEXOR** has managed more than 100.000 jobs, including **generation, simulation, digitization** and **pile-up**.

More than 30 LCG sites were involved, providing overall about 3.000 CPUs.

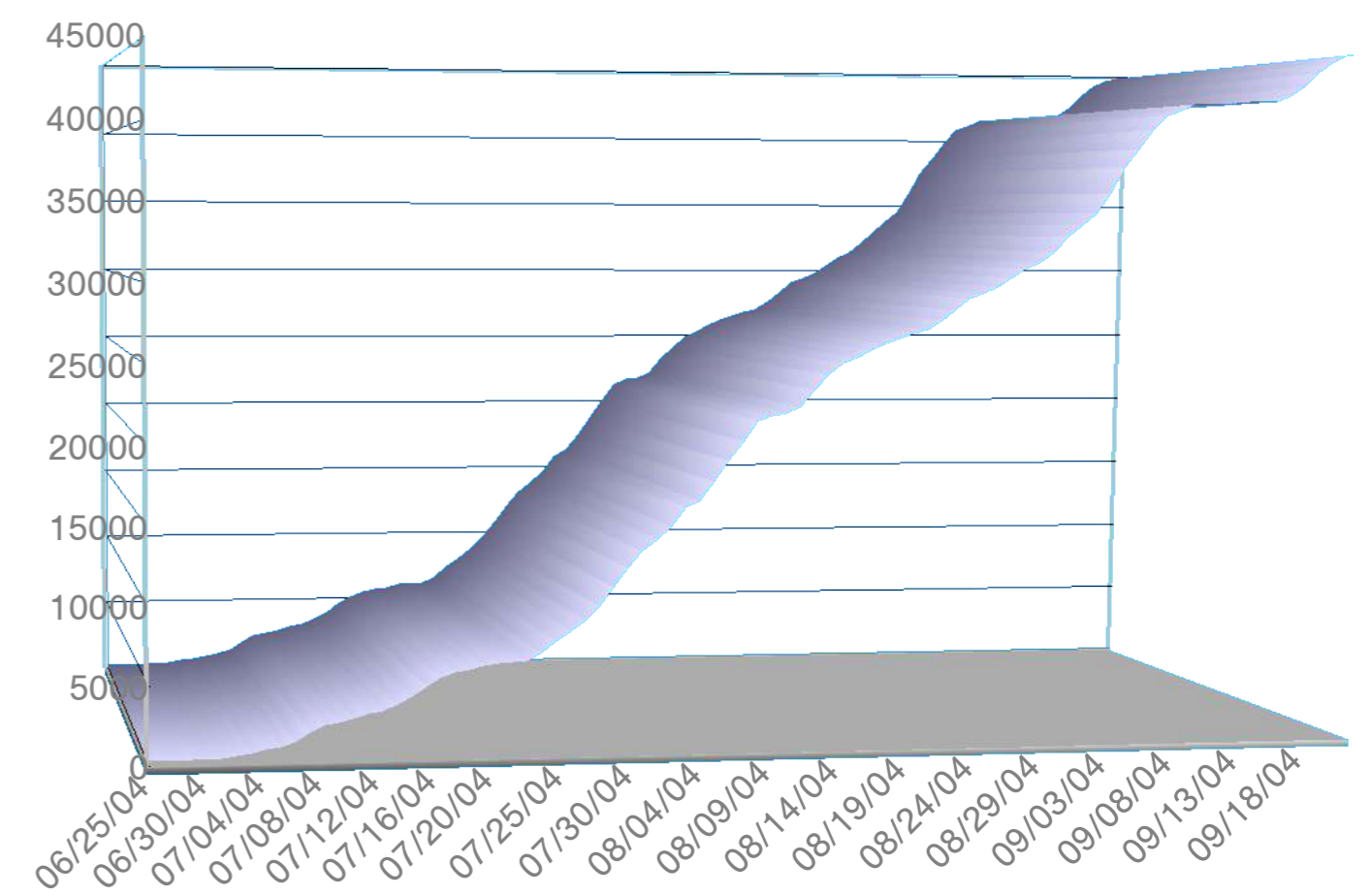
The job management was shared, on average, among six **LEXOR** instances owned by different users, every instance taking care of a maximum of about 800 jobs at a time (this threshold was decided in order to limit the size of the queries issued by supervisors to the central production database).

Troughs in the day by day production plot reflect the various issues encountered during this first phase of the Data Challenge. In fact, thanks to the heavy load we imposed on all the components, we were able to hunt undiscovered bugs in all the components of the production system and in LCG middleware.

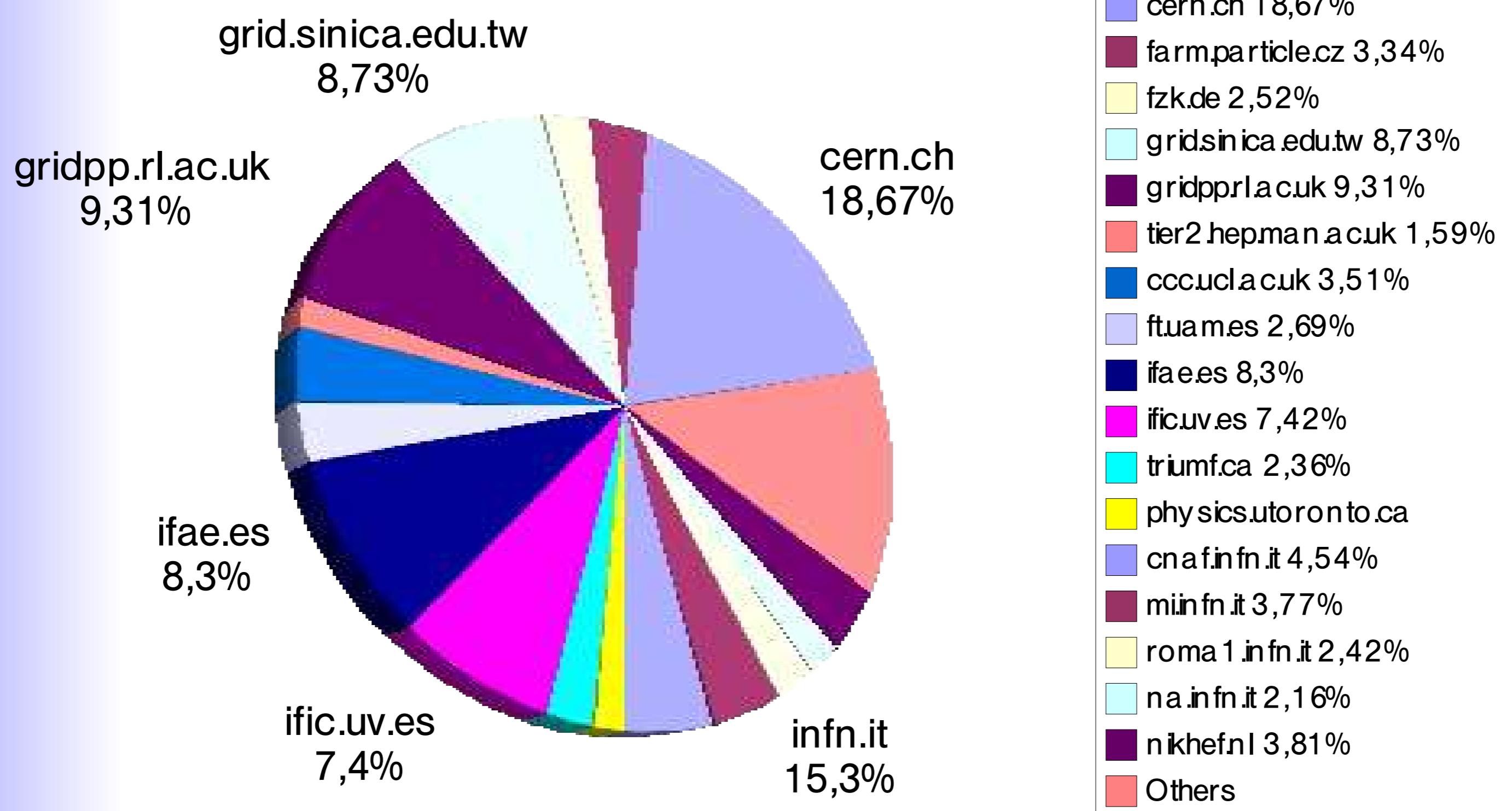
### Statistics on LEXOR usage and activity



Jobs processed every day by LEXOR



Jobs processed by LEXOR during DC2



Job distribution over LCG sites

