Tackling job priorities problem in AliEn using Grid economy approach

4 AliEn

Artem Harutyunyan

hartem@mail.cern.ch

Presented by: Predrag Buncic
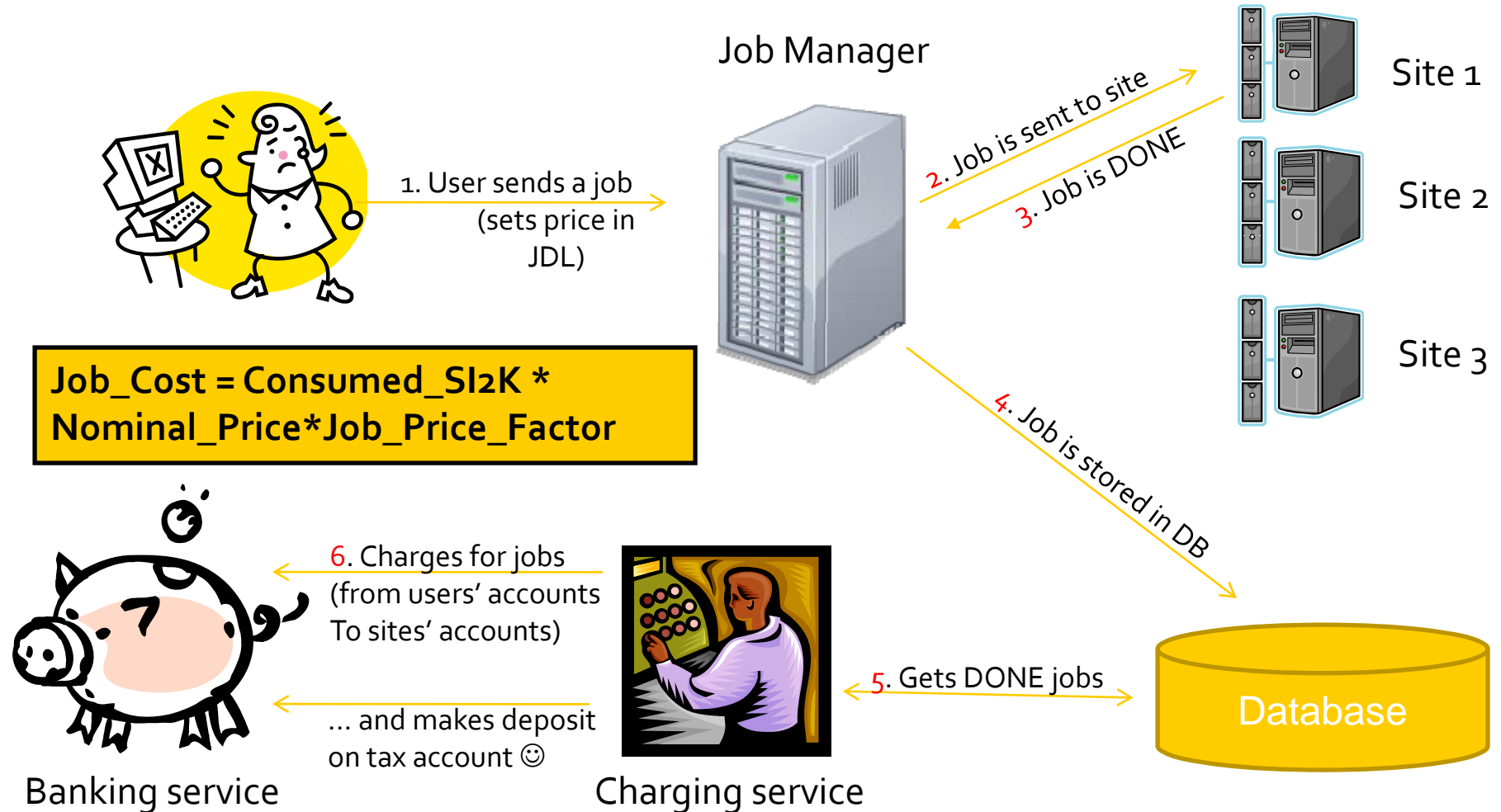
predrag.buncic@cern.ch

Motivation

- Jobs in the Task Queue are ordered based on the following criteria
  - Production jobs have low priority (20/100)
  - First user job gets priority 100
  - For each subsequent the job priority is reduced by 1

- Introducing Grid economy model
  - Users are members of teams and have to pay for Grid resources (alions, AliEn currency)
  - Jobs with higher price get higher priority
  - Credits are distributed to teams by PWG but teams can also earn money by providing resources

- Benefits
  - Users gain the control over the priorities of their jobs
  - Teams are motivated to provide more resources
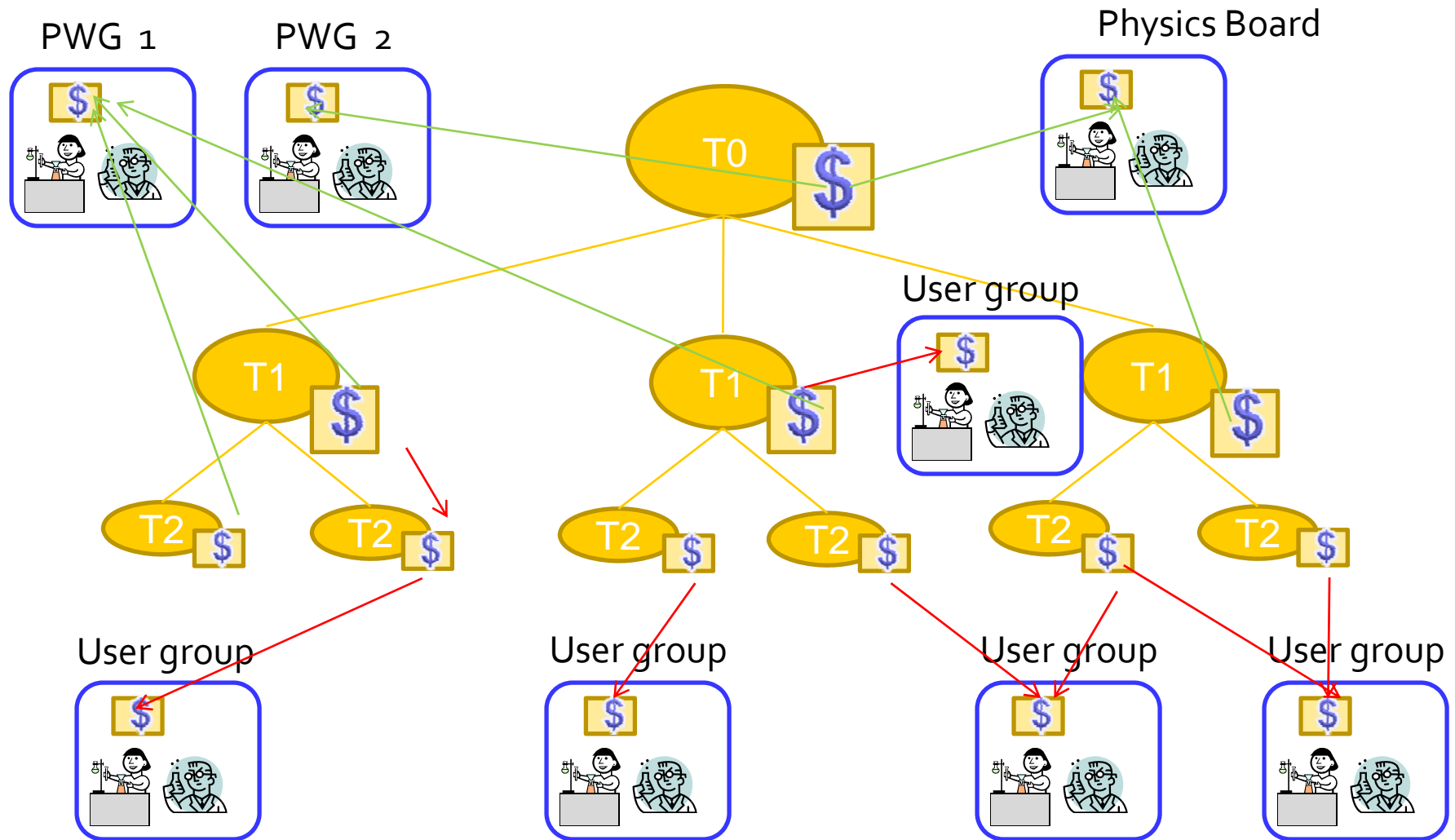 - Users are aware of the cost of using Grid resources

Grid Economy

Job_Cost = Consumed_SI2K * Nominal_Price*Job_Price_Factor

Job Manager

1. User sends a job (sets price in JDL)

2. Job is sent to site

3. Job is DONE

4. Job is stored in DB

Site 1

Site 2

Site 3

6. Charges for jobs (from users' accounts To sites' accounts)

... and makes deposit on tax account ☺

5. Gets DONE jobs

Database

Banking service

Charging service

Money Flow

PWG 1   PWG 2   Physics Board

T0

User group

T1   T1   T1

T2   T2   T2   T2   T2   T2

User group   User group   User group   User group

Gold allocation manager

- AliEn Bank based on Gold allocation manager
  - http://www.clusterresources.com/pages/products/gold-allocation-manager.php

- To execute bank command (e.g. account balance checking) from AliEn shell user has to type:
  - # gold <command> [options]

- For the description of commands and their options please refer to Gold user's manual:

  http://www.clusterresources.com/products/gold/docs/userguide.pdf

Conclusions

- The banking system:
  - Is implemented as an optional add-on to AliEn
  - Provides an additional degree of freedom for the improvement of job scheduling
  - Provides users with control over job priorities based on simple and understandable economy model

- Many thanks to:
  - Pablo Saiz, Catalin Cirstoiu and Costin Grigoras