Integrating the ETICS Services in the EGEE Grid Infrastructure
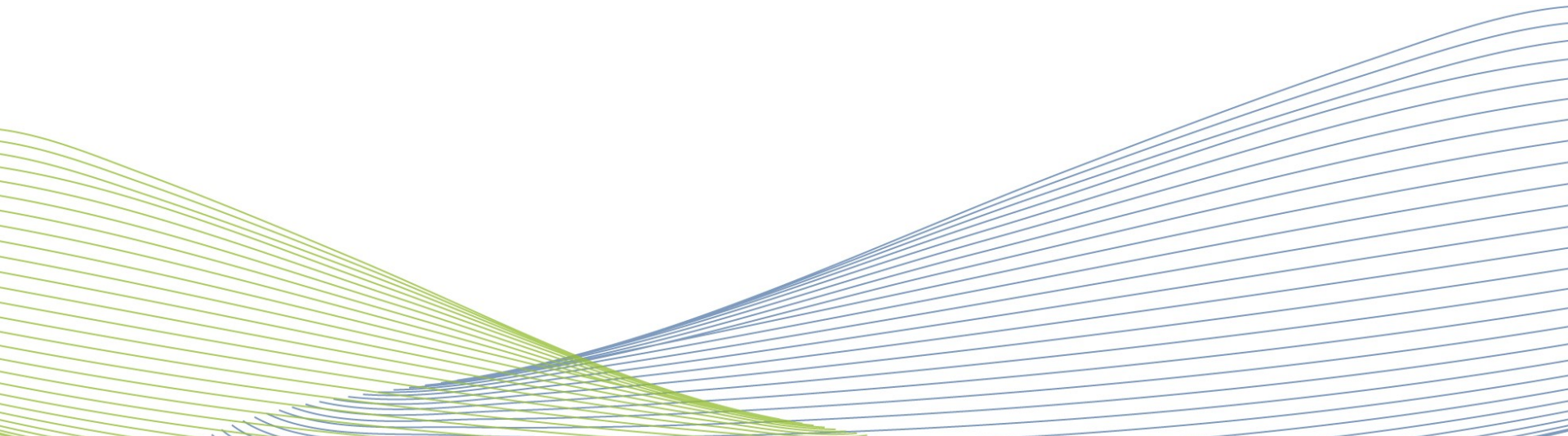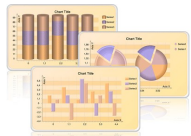
The ETICS System
Features

- Continuous software **build, test** and **QA** verification system
- Easily **extensible** with additional **plugins**
- **Scheduled** or **on-demand** build and test jobs
- **User** computers or **remote** distributed infrastructures
- Built-in **connectors** to distribute build and test jobs on different types of infrastructures from standard job management systems to the grid
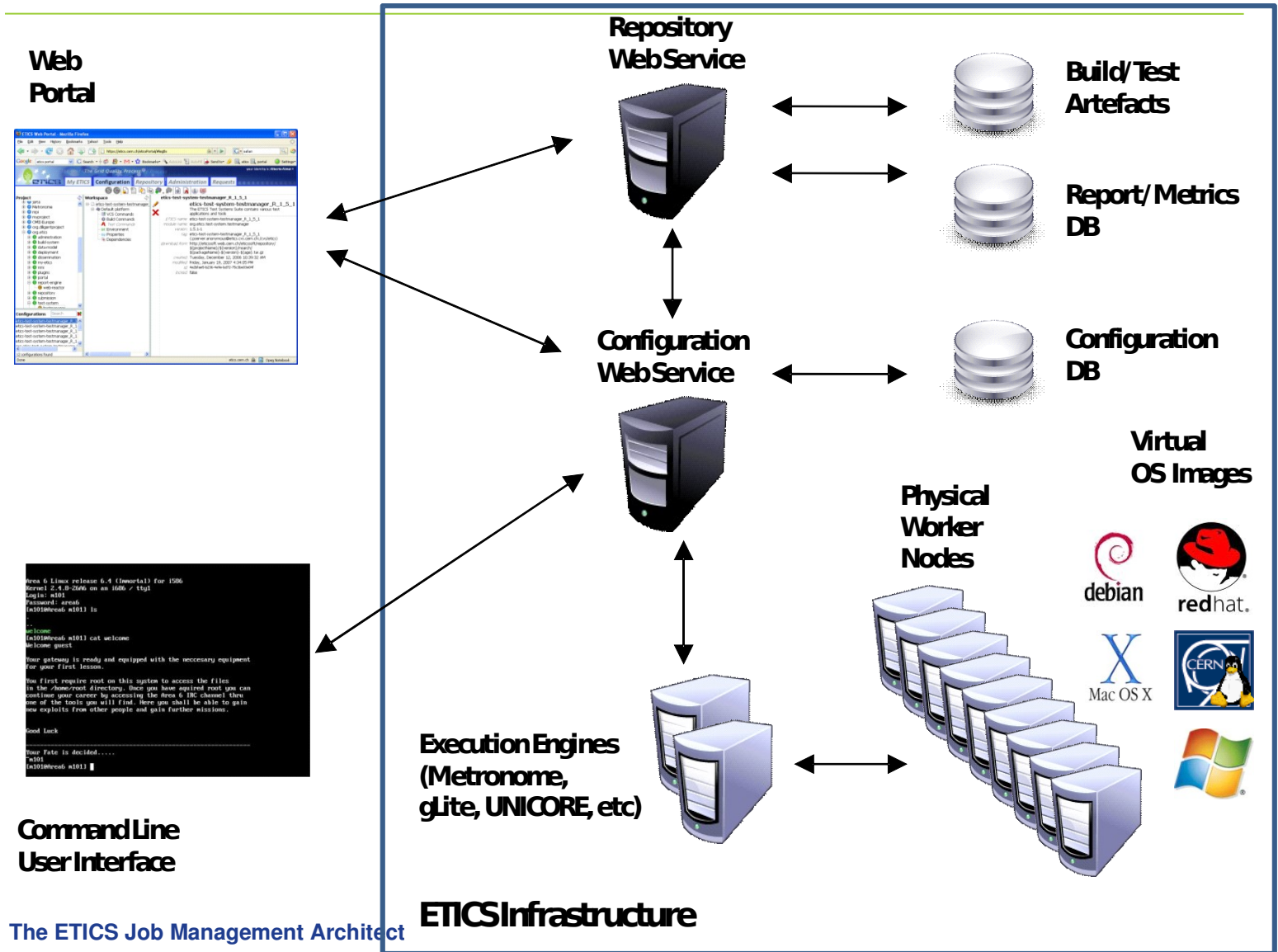- Open **repository** of configuration metadata, packages and build, test and QA reports
- Support for standard **package management** systems like **YUM**
- It's **multi-platform** and **independent** from any specific language, build or test tool

The ETICS System
Architecture

Web Portal

Repository Web Service

Build/Test Artefacts

Report/Metrics DB

Configuration Web Service

Configuration DB

Virtual OS Images

Physical Worker Nodes

Execution Engines (Metronome, gLite, UNICORE, etc)

Command Line User Interface

ETICS Infrastructure

Integrating ETICS in Grid Infrastructures
Problem statement

Software projects maintain a variable-sized pool of machines for the various tasks of software engineering

- Building software releases
- Running continuous builds of the development release
- Testing the software

For a number of reasons (needs of high-availability for release-rush, needs of possibly a lot of different platforms) this machines are likely to have high idle times.

When a software projects happens to have other computing needs, it would great benefit to be able the idle time of their resources for their other computing needs.

Integrating ETICS in Grid Infrastructures
Problem statement

Providing resources for software development tasks is what ETICS does for its customers.

So far the machines on which software is built and tested are owned and managed by the ETICS project, thus eliminating the problem of allocating resources

- Not scalable.
- Not sustainable. Where is gLite going to be build in a year from now?

We are working towards the integration of the ETICS services in grid infrastructures (as EGEE) to solve the sustainability problem and the more general problem of wisely using the resources a projects allocate to software development tasks.

Build/Test Jobs Management in ETICS
Re-engineering the ETICS services

We will separate the part of the ETICS service that handle the job submission so that it can be deployed separately

A submitting interface implemented using Metronome over a Condor pool, gLite over the EGEE infrastructure, and UNICORE over DEISA

- Operations for submit, cancel, getStatus
- Why not a standard interface like BES?
   - ETICS jobs are pretty simple, doesn't really fit the bill

Integrating ETICS in EGEE

This mean that ETICS jobs are executed on the EGEE infrastructure instead that on a Metronome dedicated pool, as it is now

- A typical ETICS job download the code and the dependencies needed to build, then build the code and produce binaries such as rpms or debs, then test the software.

The same will be done also
for other infrastructures like
DEISA
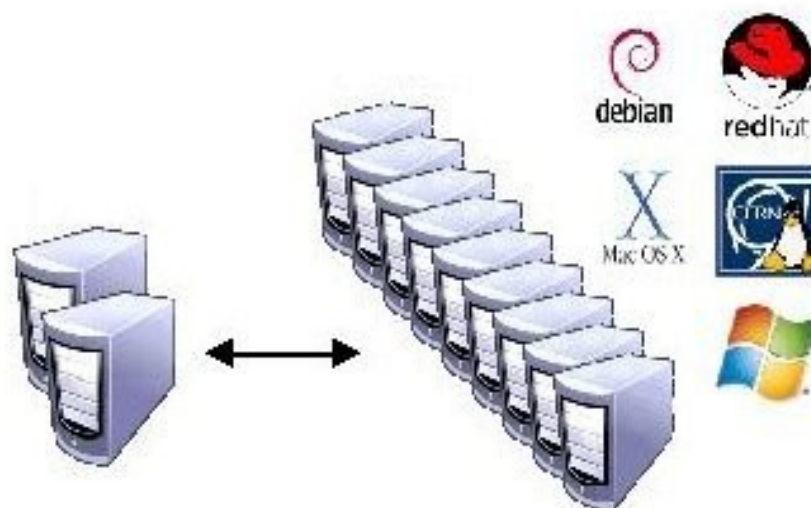
Submitting ETICS Jobs to EGEE
Technical issues

First prototype uses the gLite UI instead of using APIs

- Proof design assumptions without the burden of learning an API

We don't anticipate big issues from moving to using APIs, as gLite is thought to be easily integrated

- The WMS has a WS interface that makes it pretty easy to use
- Jobs are described using an established language as JDL
- The GLUE schema allows for a standard description of resource requirements
- VOMS doesn't a WS interface but a handy multibinding API

Submitting ETICS Jobs to EGEE
Platform selection

ETICS need to specify requirements on how the node where the jobs will be executed will be

- Operating system (Scientific Linux CERN, Scientific Linux, Debian, RH, SuSE)
- Architecture

Information published using the Glue Schema are used to match against suitable nodes

- other.GlueHostOperatingSystemName == "ScientificCERNSLC"
- other.GlueHostArchitecturePlatformType == "i686" ||
  other.GlueHostArchitecturePlatformType == "i586"

The current limitation is that the EGEE infrastructures is only made of Scientific Linux CERN machines.

Submitting ETICS Jobs to EGEE
Resource Provisioning

So far so good, but you need to have access to resources in order to be allowed execution of jobs

We have created an ETICS VO, providing resources to the infrastructures and getting shares. We will use it to be able to allow using the services for those who don't have shares on the infrastructure.

We plan on supporting delegation in order to allow people using their shares on the infrastructure to use the services.

Submitting ETICS Jobs to EGEE
ETICS VO

The ETICS project will have its resources on the EGEE infrastructures and will lend them to projects, willing to use the services, that don't have shares on the infrastructure

- ETICS will manage its internals resource sharing, assigning priority and quotas to its projects according to agreemtn with software projects

Submitting ETICS Jobs to EGEE
Integrating with the current EGEE VOs

Most of the EGEE VOs develop software, and might need to use the ETICS services for their engineering task

- Also gLite, one of the main ETICS project, is associated somehow to a VO, DTEAM

Supporting the accounting of resources used by the ETICS services to VOs will allow VOs

- to choose whether to use their resources for the software engineering
- To move the resources that are dedicated to software engineering to the infrastructures to minimize idle time

Submitting ETICS Jobs to EGEE
Integrating with the current EGEE VOs

Real life example, building the gLite middleware

- The DTEAM VO in EGEE is used by gLite integration and certification for testing
- The DTEAM VO may have developer, integrator, tester, roles (or groups)
- The DTEAM VO assigns shares to those roles, so that importance of the work is reflected
  - This can be done dynamically, so to handle possible bug-fix-release-rush situation
- Developer, integrator and tester submits their jobs and these are executed on the infrastructure according to the policy decided by the VO
  - Can be handled both by using delegation or the ETICS user in the VO

Other submission engines

We are doing a parallel effort of integrating the services in UNICORE based infrastructures

- Means being able to submit jobs to a UNICORE grid

Exploring cloud computing infrastructures as well

- ETICS jobs can be submitted to EC2