



# Energy Efficient Large Scale Experimental Distributed Systems

*Leaders: Laurent Lefevre (RESO), Jean-Marc Menaud (ASCOLA)*

This working group focuses on energy aware software approaches able to reduce the energy consumption needed for high performance computing and networking operations in large scale distributed systems (datacenters, Grids and Clouds).

# Energy Efficient Large Scale Experimental Distributed Systems

- **Energy aspects have been taken into account since a long time in wireless distributed systems (ad-hoc networks, sensor ...)**
  - .... but few research on fully connected equipments.

**Efficient realistic alternatives to support high performance computing and networking usage in current and next generation large-scale distributed systems**

## Working on

Hardware

Hardware

*Standardisation*

Software

*How monitor system resources*

Scale

*centralized, distributed, multi-site*

GUI

*...*

## Working on

Hardware

Hardware

*Standardisation*

Software

*How monitor system resources*

Scale

*centralized, distributed, multi-site*

GUI

*...*

- **as an input of ...**

## Working on

Components	<i>Middleware, schedulers ...</i>
Algorithm	<i>Decentralized ...</i>
Scale	<i>Centralized, distributed, multi-site</i>
Transparent	<i>?</i>

## Working on

Components	<i>Middleware, schedulers ...</i>
Algorithm	<i>Decentralized ...</i>
Scale	<i>Centralized, distributed, multi-site</i>
Transparent	<i>?</i>

- **as an input of ...**

# Energy aware software architecture able to autonomously react to energy related context change

Application

## Working on

Adaptation *Components, services ...*

Degradation *SLA ...*

Autonomic *programmable*

Transparent *?*

## Application

## Working on

Adaptation *Components, services ...*

Degradation *SLA ...*

Autonomic *programmable*

Transparent *?*

- **as an input of ...**



# Energy aware software architecture able to autonomously react to energy related context change

Application

## Working on

Adaptation *Components, services ...*

Degradation *SLA ...*

Autonomic *programmable*

Transparent *?*

## Application

### Working on

Adaptation *Components, services ...*

Degradation *SLA ...*

Autonomic *programmable*

Transparent *?*

- **as an input of ...**

# .... Developers and Users

# RoadMap

- **JTE «Aspects énergétiques du calcul» : 13/01/2011**
- **JTE «Energie dans les centres de données» : Juin/2011**
  
- **SLA Energy / Cloud**
- **TLB**
- **Algo**
  
- **Infrastructure/probe**