Hemera
INRIA Large Wingspan Project
Kickoff Meeting – Paris

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Agenda

- 10:00 – 10:10 Héméra Overview [C. Perez]
- 10:10 – 10:20 Aladdin & Héméra [F. Desprez & D. Margery]
- 10:20 – 12:20 Overviews of the 7 challenges
- 12:20 – 12:30 Discussion, collaborations, special needs

- 12:30 – 14:00 Lunch

- 14:00 – 16:00 Overview of the 8 working groups
- 16:00 – 16:10 Discussion, collaborations, special needs
- 16:10 – 16:30 Administrative discussion (organization, budget 2011, …)
- 16:30 – 17:00 General discussion

Overview of Hemera

- Goals
  - Demonstrate **ambitious up-scaling** techniques for large scale distributed computing by carrying out **several dimensioning experiments** on the Grid'5000 infrastructure
  - **Animate** the scientific community around Grid'5000
  - **Enlarge** the Grid'5000 community by helping newcomers to make use of Grid'5000
- Open to everyone (not only INRIA)

Organizing the (French) Community

- No structured community to exchange around Grid5000
- GDR ASR
  - Broader scope than Grid5000
  - C. Perez invited to be a member of the scientific committee
- Production Grid
  - Join call research grid/production grid
  - Handled by Aladdin

Hemera: Organization

- A direction committee
  - Aladdin comdir + C. Perez
  - Defines research directions around the Grid5000 testbed
  - Select & evaluate scientific challenges
  - Evaluate the working groups
- Scientific challenges
- Working groups
  - Identified set of teams dealing with scientific challenges

Hemera: Initial Participant List

- ACADIE - Assistance à la Certification d'Applications DIstribuées et Embarquées
- ALGORILLE - Algorithms for the Grid
- APO - Algorithmes Parallèles et Optimisation
- ASAP - As Scalable As Possible: foundations of large scale dynamic distributed systems
- ASCOLA - Aspect and composition languages
- ASTRE - Architecture, Systèmes, Temps-Réel, Embarqués
- CEPAGE - Chercher et Essaimer dans les Plates-formes A Grande Echelle
- DOLPHIN - Parallel Cooperative Multi-criteria Optimization
- GRAAL - Algorithms and Scheduling for Distributed Heterogeneous Platforms.
- GRAND-LARGE - Global parallel and distributed computing
- ICPS - Scientific Parallel Computing and Imaging
- KERDATA - Cloud and Grid Storage for Very Large Distributed Data
- OASIS - Active objects, semantics, Internet and security.
- MAESTRO - Models for the performance analysis and the control of networks
- MESCAL - Middleware efficiently scalable
- MINC - MIcro et Nanosystèmes pour les Communications sans fils
- MRS – Modélisation et contrôle des Réseaux et Signaux
- MYRIADS - Design and Implementation of Autonomous Distributed Systems
- REGAL - Large-Scale Distributed Systems and Applications
- RESO - Protocols and Software for Very High-Performance Network
- RUNTIME - Efficient runtime systems for parallel architectures
- SAGE - Simulations and Algorithms on Grids for Environment

Hemera: Scientific challenges

- What
  - A large-scale experiment on Grid5000
- Organization
  - Manage by two leaders
- Responsible of
  - Writing a challenge as well as the associated research themes
  - Gathering a community of researchers interested by the challenge

Initial List of Challenges

- Network
  - Traffic Awareness
- System
  - Robustness of Large Systems in Presence of High Churn
  - Energy Profiling of Large Scale Applications
- Programming Paradigm
  - Large Scale Computing for Combinatorial Optimization Problems
  - Scalable Distributed Processing Using the MapReduce Paradigm
- Domain Specific
  - Multi-parametric Intensive Stochastic Simulations for Hydrogeology
  - Thinking GRID for Electromagnetic Simulation of Oversized Structures

2010 View of Participants and Challenges

	COPs	P2P-Ch	MapRed	Hydro	Electro	Energy	Traffic
ALCADIE							
ALGORILLE							
APO							
ASAP		X					
ASCOLA						X	
ASTREE					X	X	
CEPAGE		X	X				
DOLPHIN	X						
GRAAL			X	X			
GRAND-LARGE							
ICPS	X						
KERDATA			X	X			
MAESTRO							X
MESCAL							
MINC					X		
MRS					X		
MYRIADS						X	
OASIS							
REGAL		X					
RESO						X	X
RUNTIME							
SAGE				X			

Hemera: Working Groups

- What
  - A group of people
- Organization
  - Manage by two leaders
- Responsible of
  - Leading the working group and its community
  - Organizing workshops
  - Potentially proposing the organization of schools

Initial List of Working Groups

- Transparent, safe and efficient large scale computing
  - Stéphane Genaud (ICPS), Fabrice Huet (OASIS)
- Energy Efficient Large Scale Experimental Distributed Systems
  - Laurent Lefèvre (RESO), Jean-Marc Menaud (ASCOLA)
- Bring Grids Power to Internet-Users thanks to Virtualization Technologies
  - Adrien Lèbre (ASCOLA), Yvon Jégou (MYRIADS)
- Efficient exploitation of highly heterogeneous and hierarchical large-scale systems
  - Olivier Beaumont (CEPAGE), Frédéric Vivien (GRAAL)
- Efficient management of very large volumes of information for data-intensive applications
  - Gabriel Antoniu (KERDATA), Jean-Marc Pierson (ASTRE)
- Completing challenging experiments on Grid'5000
  - Lucas Nussbaum (ALGORILLE), Olivier Richard (MESCAL)
- Modeling Large Scale Systems and Validating their Simulators
  - Martin Quinson (ALGORILLE), Arnaud Legrand (MESCAL)
- Network metrology and traffic characterization
  - Paulo Gonçalves (RESO)