

GRID Standardization GCM and ProActive Ref. Implementation

Sophia Antipolis, December 6th

Denis Caromel, et al.

<http://ProActive.ObjectWeb.org>

OASIS Team

INRIA -- CNRS - I3S -- Univ. of Nice Sophia-Antipolis, IUF



European Commission World Class Standards



ProActive
Programming, Composing, Deploying on the Grid



GridCOMP
Effective Components for the Grids



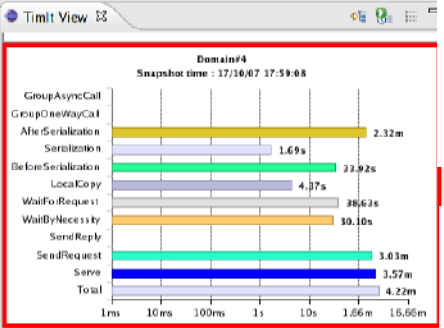
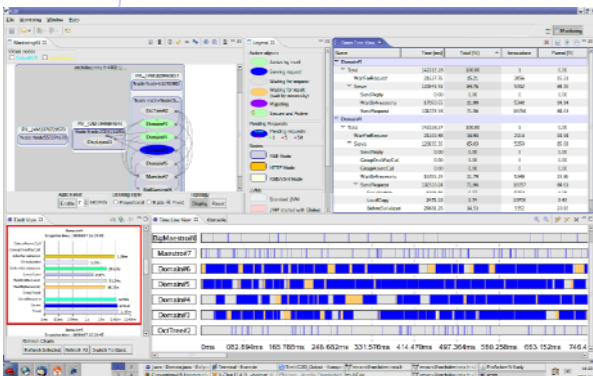
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Overview



Applications

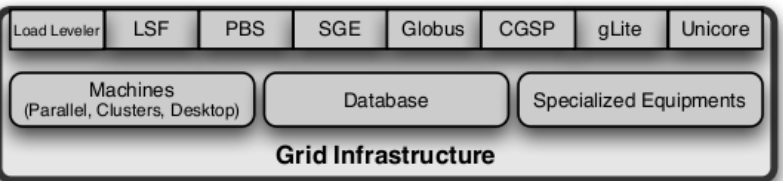
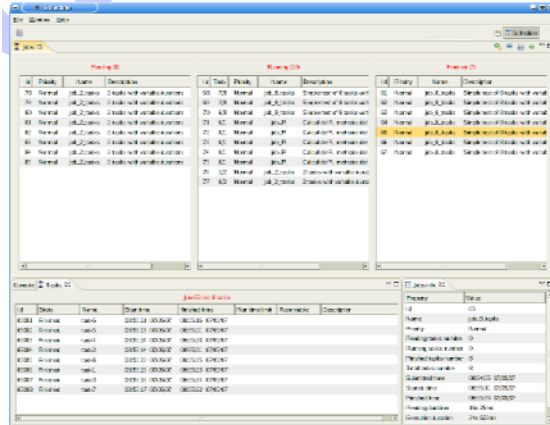
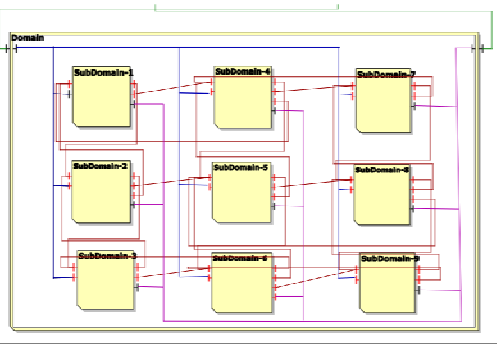
Developer Tools & Eclipse IDE Plugins

Programming & Composing

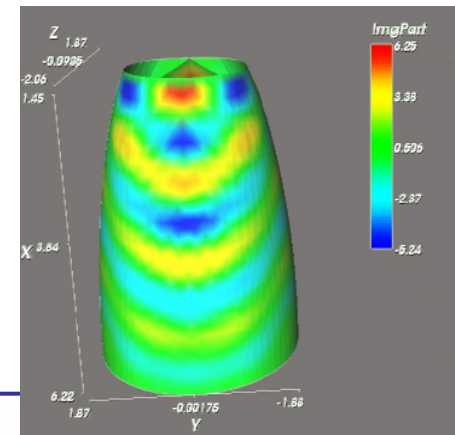
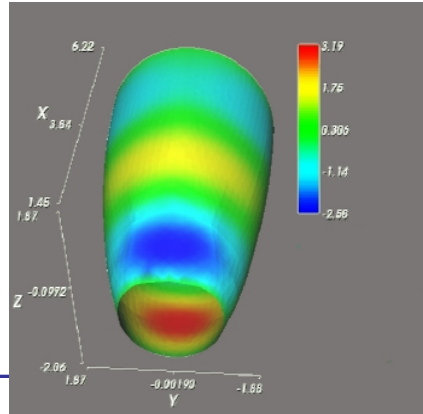
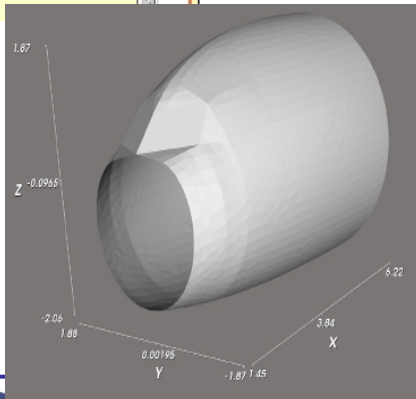
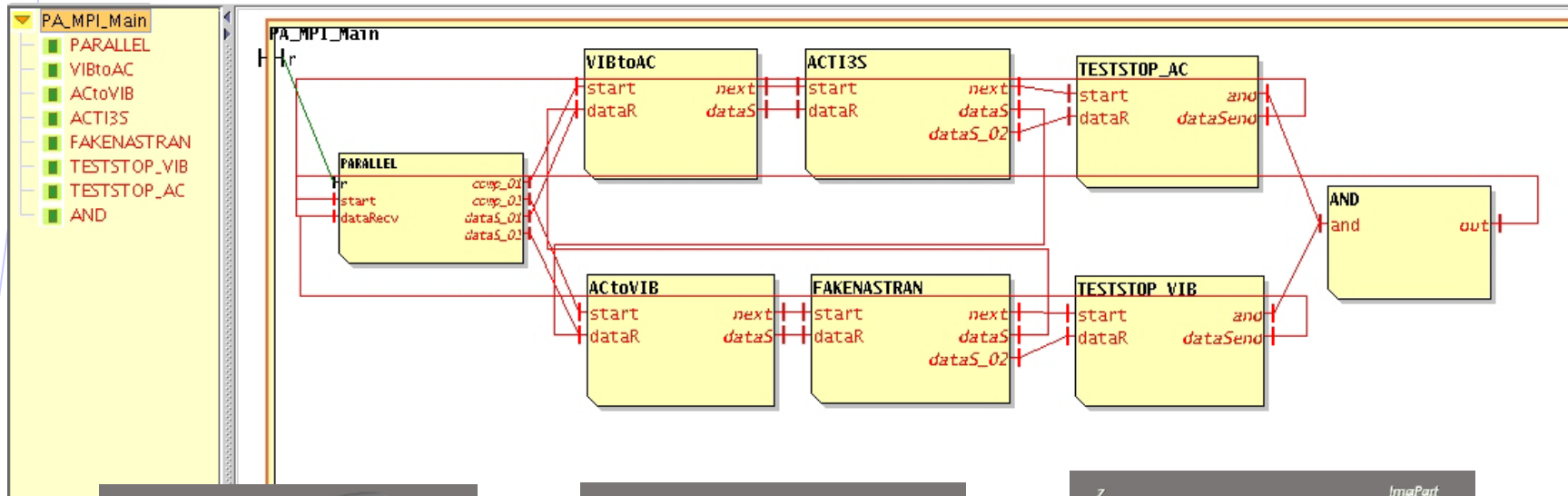
Deployment & Virtualization

Services

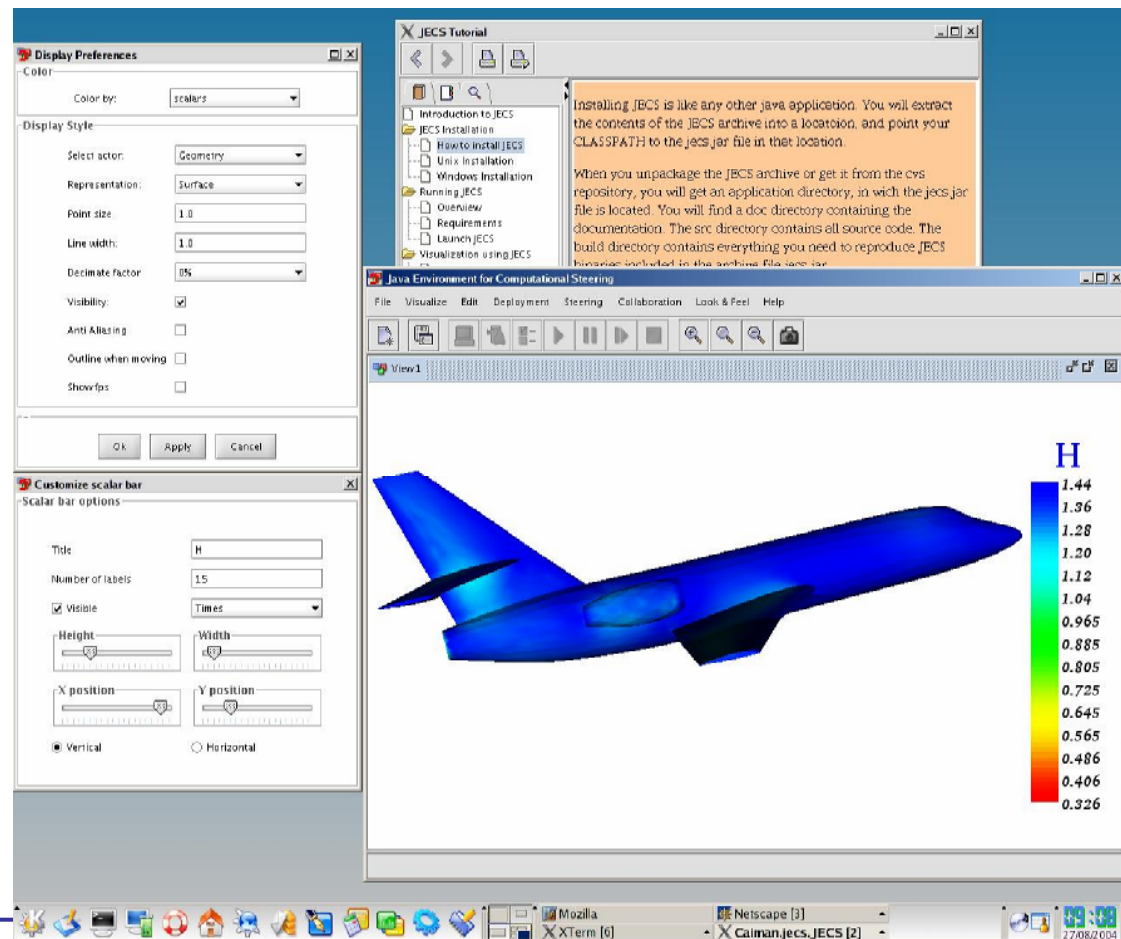
GCM: Grid Component Model

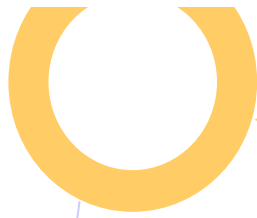


Code Coupling : Vibro Acoustic (courtesy of EADS)



JECS : 3D Electromagnetism Radar Reflection on Planes

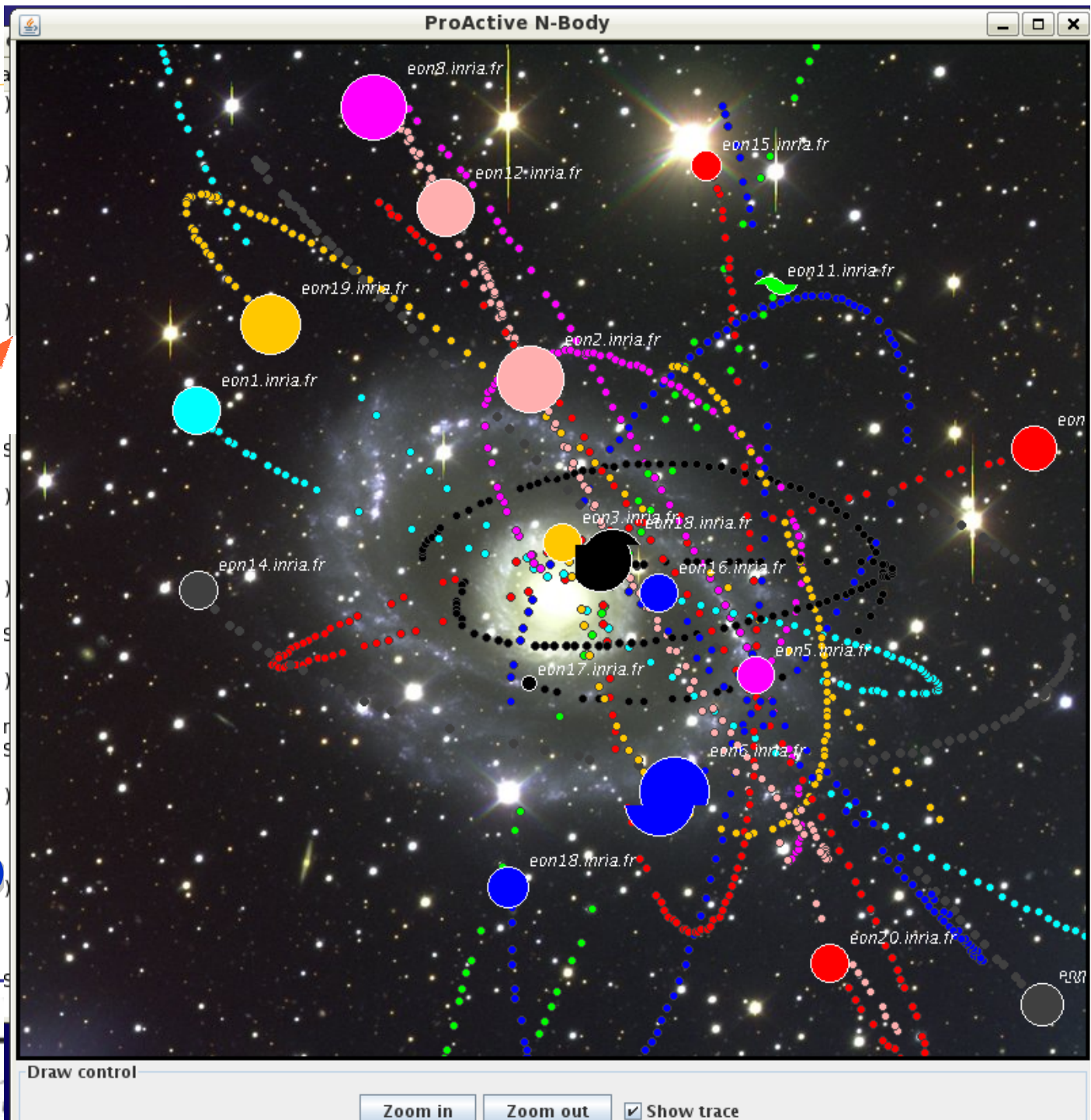




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Demo
Upstairs
V. Cavé
B. Amédéo



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IC2D

File Monitoring Window Help

TimIt View

OctTree#4
Last Refresh : 12/5/07 6:31:44 PM

Domain#9
Last Refresh : 12/5/07 6:31:44 PM

Refresh Charts
Refresh Selected Refresh All Switch to Det

Timer Tree View

Name	Time [ms]
OctTree#4	
Total	254866.92
Serve	5461.83
org.objectweb.pro	0.00
UserComputati	0.00
SendRequest	0.00
LocalCopy	0.00
BeforeSeriali	0.00
Serialization	0.00
AfterSerializ	0.00
SendReply	0.00
WaitByNecessi	0.00
GroupOneWayC	0.00
GroupAsync Call	0.00
org.objectweb.pro	0.00
UserComputati	0.00
SendRequest	0.00

Monitoring#1

Virtual nodes
 DefaultVM Workers

Auto Reset Enable 7 seconds Drawing style Proportional Ratio Fixed Topology Display Reset

Legend

Active objects

- Active by itself
- Serving request
- Waiting for request
- Waiting for result (wait by necessity)
- Migrating
- Secure and Active

Pending Requests

Pending requests : +1 +5 +50

Nodes

- RMI Node
- HTTP Node
- RMI/SSH Node

JVMs

- Standard JVM
- JVM started with Globus

Hosts

- Standard Host

Not Responding

- Active Object
- JVM

Console Time Line View

GCM Origin

- **GCM: Grid Component Model**
 - ⇒ **GCM** Being defined in the NoE CoreGRID (42 institutions)
 - ⇒ Open Source **ObjectWeb ProActive** implements a preliminary version of GCM
 - ⇒ Autonomic Features
 - ⇒ Service Oriented: **NESSI-Grid** (Services come to life from Cp)
- **ETSI 3 GRID Plugtets**
- **GridCOMP EU project:**
 - ⇒ **GCM** as a first specification
 - ⇒ *Further assess and refine GCM*
- **EchoGrid EU project:**
 - ⇒ **Asses GCM** in 2007, 2008 Grid Plugtests



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GCM planned parts:

Work Item

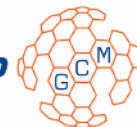
- **GCM Interoperability Deployment**

- **GCM Application Description**

Work Item to come

- **GCM Fractal ADL**
(Architecture Description Language)

- **GCM Management (Java, C, WSDL API)**



Scope of GCM Interoperability Deployment

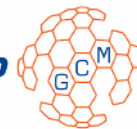
- **Describing Application, Components and Deployment in a Standard manner**
- **To be used as building blocks for Grid applications.**
- **To be used for Virtualization**
- **Targeting different frameworks:**
 - ⇒ **Grid, Clusters, SMP Parallel machines, Servers, Multi-Cores**
- **XML based**



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ETSI GRID Plugtest

2004, 2005, 2006, 2007



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ETSI Grid Plugtests, 04, 05, 06, 07

Amsterdam
Belfast
Fribourg
Grenoble
Lille

Manchester
Melbourne
Merida
Metz
Bombay

Nancy
Napoli
Nice
Metz
Paris

Pise
Rennes
Santiago
San Diego
Beijing



2007: N-Queens - 6 TEAMS

- “ACT” - Beihang University – China
- “BUPT N-Queens” – China
- “OutPUT N-Queens” – POZNAN – Poland
- “KAAPI-MOAIS” – France
- “Grid-TU” - Tsinghua University - China
- “ChinaGRID-TU” - Tsinghua University – China



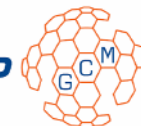
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Interoperability achieved with this technology : ETSI Grid Plugtests, 04, 05, 06, 07

- **Between 20 to 40 sites around the world:**

- ⇒ 2006: 4130 cores
- ⇒ Total power: ~ 1700 GFlops (100 Giga Flops in 04)
- ⇒ 2007: about 7 000 cores

- **Highly heterogeneous :**

- ⇒ **Machines:** IBM, SGI, Sun, Bull, Mac
- ⇒ **OS:** Linux, Windows, Solaris, MacOS, SGI Irix
- ⇒ **JVMs:** Sun, SGI, BEA
- ⇒ **Protocols:** ssh, rsh, sshGSI, rcp, scp, Unicore, Globus Gram
- ⇒ **Job Schedulers:** PBS, LSF, Sun Grid Engine, Oar, Prun, EGEE gLite, NorduGrid, Globus, IBM Load Leveler

Recently added: CGSP China Grid



Grid Plugtests IV 2007: Result Analysis

- **Nb. Of Workers:**

- ⇒ 3 888 by ACT, Beihang University (BUAA), China

- ⇒ 3 654 by MOAIS, Grenoble, Fr.

→ **Compared to last year: x2**

- **Nb. of Solutions:**

- ⇒ N=23 + 6 times N=22, MOAIS, Grenoble, Fr.

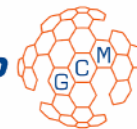
- ⇒ N=22 + N=21 + 6 times N=20, BUPT

→ **Compared to last year: x6.5**

(2006: N=22 in 50mn on 2193 workers)

Keeping (or even improving) Moore's Law:

⇒ **x2 in middleware (Nb. Nodes) x2 Solution Quality**



Grid Plugtests V -- 2008

- **Agreed dates:**

⇒ **Monday October 20th to Friday 24th, 2008**

- **Location:**

⇒ **Sophia Antipolis, French Riviera, France,**

⇒ **ETSI / INRIA**

→ **Technical Committee On GRID, ETSI**
Laurent Vreck



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DEMO

- **GCM – ProActive**
- **In the lobby !**



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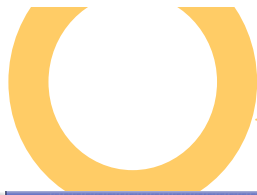
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IC2D



The screenshot displays the IC2D monitoring application interface. The main window is titled 'Monitoring#1' and contains several panels:

- Virtual nodes:** A diagram showing a network topology with nodes like 'PA_JVM1820960857', 'Node Node-632703901', 'Node matrixNode15...', 'OctTree#2', 'Domain#3', 'Domain#4', 'Domain#5', 'Domain#6', 'Maestro#7', and 'BioMaestro#8'. It also shows 'PA_JVM1370729570' and 'Node Node-557274178' connected to 'Node Node-2003411204' and 'Displayer#1'.
- Legend:** A list of active objects and pending requests with corresponding color-coded icons. Active objects include 'Active by itself' (green), 'Serving request' (blue), 'Waiting for request' (grey), 'Waiting for result (wait by necessity)' (orange), 'Migrating' (purple), and 'Secure and Active' (light green). Pending requests are shown as blue circles with numbers 1, 5, and 50. Nodes are categorized as 'RMI Node' (grey), 'HTTP Node' (yellow), and 'RMI/SSH Node' (light yellow). JVMs are categorized as 'Standard JVM' (light blue) and 'JVM started with Globus' (pink).
- Timer Tree View:** A table showing performance metrics for different domains.

Name	Time [ms]	Total [%]	Invocations	Parent [%]
Domain#5				
Total	142212.28	100.00	1	0.00
WaitForRequest	21627.76	15.21	2056	15.21
Serve	120543.91	84.76	5352	84.76
SendReply	0.00	0.00	0	0.00
WaitByNecessity	17050.55	11.99	5340	14.14
SendRequest	101773.58	71.56	16054	84.43
Domain#4				
Total	142228.27	100.00	1	0.00
WaitForRequest	21249.88	14.94	2114	14.94
Serve	120936.36	85.03	5353	85.03
SendReply	0.00	0.00	0	0.00
GroupOneWayCall	0.00	0.00	0	0.00
GroupAsyncCall	0.00	0.00	0	0.00
WaitByNecessity	16765.29	11.79	5348	13.86
SendRequest	102320.24	71.94	16057	84.61
Serialization	1101.80	0.77	5357	1.08
LocalCopy	2471.16	1.74	10705	2.42
BeforeSerializati	20631.26	14.51	5352	20.16
- Time Line View:** A console window showing a timeline for various components: 'BigMaestro#8', 'Maestro#7', 'Domain#6', 'Domain#5', 'Domain#4', 'Domain#3', and 'OctTree#2'. The timeline shows activity bars for each component over time, with a scale from 0ms to 746.4ms.
- Timer View:** A bar chart showing performance metrics for 'Domain#4' and 'Domain#5'. The chart includes categories like 'GroupAsyncCall', 'GroupOneWayCall', 'AfterSerialization', 'Serialization', 'BeforeSerialization', 'LocalCopy', 'WaitForRequest', 'WaitByNecessity', 'SendReply', 'SendRequest', 'Serve', and 'Total'. The x-axis represents time in milliseconds on a logarithmic scale.



Scheduler: User Interface

The screenshot displays the Scheduler application interface. It features three main panels for job status: Pending (8), Running (10), and Finished (7). Each panel contains a table with columns for Id, Priority, Name, and Description. The Running panel includes an additional 'Task' column. A console window at the bottom shows detailed task information for Job 65, including state, name, start/finished times, and run time limit. A 'Jobs info' panel on the right provides summary statistics for the selected job.

Id	Priority	Name	Description
78	Normal	job_2_tasks	2 tasks with variable durations
79	Normal	job_2_tasks	2 tasks with variable durations
80	Normal	job_2_tasks	2 tasks with variable durations
81	Normal	job_2_tasks	2 tasks with variable durations
82	Normal	job_2_tasks	2 tasks with variable durations
83	Normal	job_2_tasks	2 tasks with variable durations
84	Normal	job_2_tasks	2 tasks with variable durations
85	Normal	job_2_tasks	2 tasks with variable durations

Id	Task	Priority	Name	Description
68	7/8	Normal	job_8_tasks	Simple test of 8 tasks with
69	7/8	Normal	job_8_tasks	Simple test of 8 tasks with
70	6/8	Normal	job_8_tasks	Simple test of 8 tasks with
71	0/1	Normal	job_PI	Calcul de Pi, methode de l
72	0/1	Normal	job_PI	Calcul de Pi, methode de l
73	0/1	Normal	job_PI	Calcul de Pi, methode de l
74	0/1	Normal	job_PI	Calcul de Pi, methode de l
75	0/1	Normal	job_PI	Calcul de Pi, methode de l
76	1/2	Normal	job_2_tasks	2 tasks with variable durat
77	0/2	Normal	job_2_tasks	2 tasks with variable durat

Id	Priority	Name	Description
61	Normal	job_8_tasks	Simple test of 8 tasks with variat
62	Normal	job_8_tasks	Simple test of 8 tasks with variat
63	Normal	job_8_tasks	Simple test of 8 tasks with variat
64	Normal	job_8_tasks	Simple test of 8 tasks with variat
65	Normal	job_8_tasks	Simple test of 8 tasks with variat
66	Normal	job_8_tasks	Simple test of 8 tasks with variat
67	Normal	job_8_tasks	Simple test of 8 tasks with variat

Id	State	Name	Start time	finished time	Run time limit	Reunnable	Description
65001	Finished	task6	08:55:11 07/05/07	08:55:16 07/05/07			
65002	Finished	task5	08:55:13 07/05/07	08:55:21 07/05/07			
65003	Finished	task4	08:55:14 07/05/07	08:55:20 07/05/07			
65004	Finished	task2	08:55:14 07/05/07	08:55:21 07/05/07			
65005	Finished	task8	08:55:15 07/05/07	08:55:35 07/05/07			
65006	Finished	task1	08:55:15 07/05/07	08:55:23 07/05/07			
65007	Finished	task3	08:55:16 07/05/07	08:55:24 07/05/07			
65008	Finished	task7	08:55:17 07/05/07	08:55:22 07/05/07			

Property	Value
Id	65
Name	job_8_tasks
Priority	Normal
Pending tasks number	0
Running tasks number	0
Finished tasks number	8
Total tasks number	8
Submitted time	08:54:55 07/05/07
Started time	08:55:11 07/05/07
Finished time	08:55:35 07/05/07
Pending duration	16s 25ms
Execution duration	24s 622ms



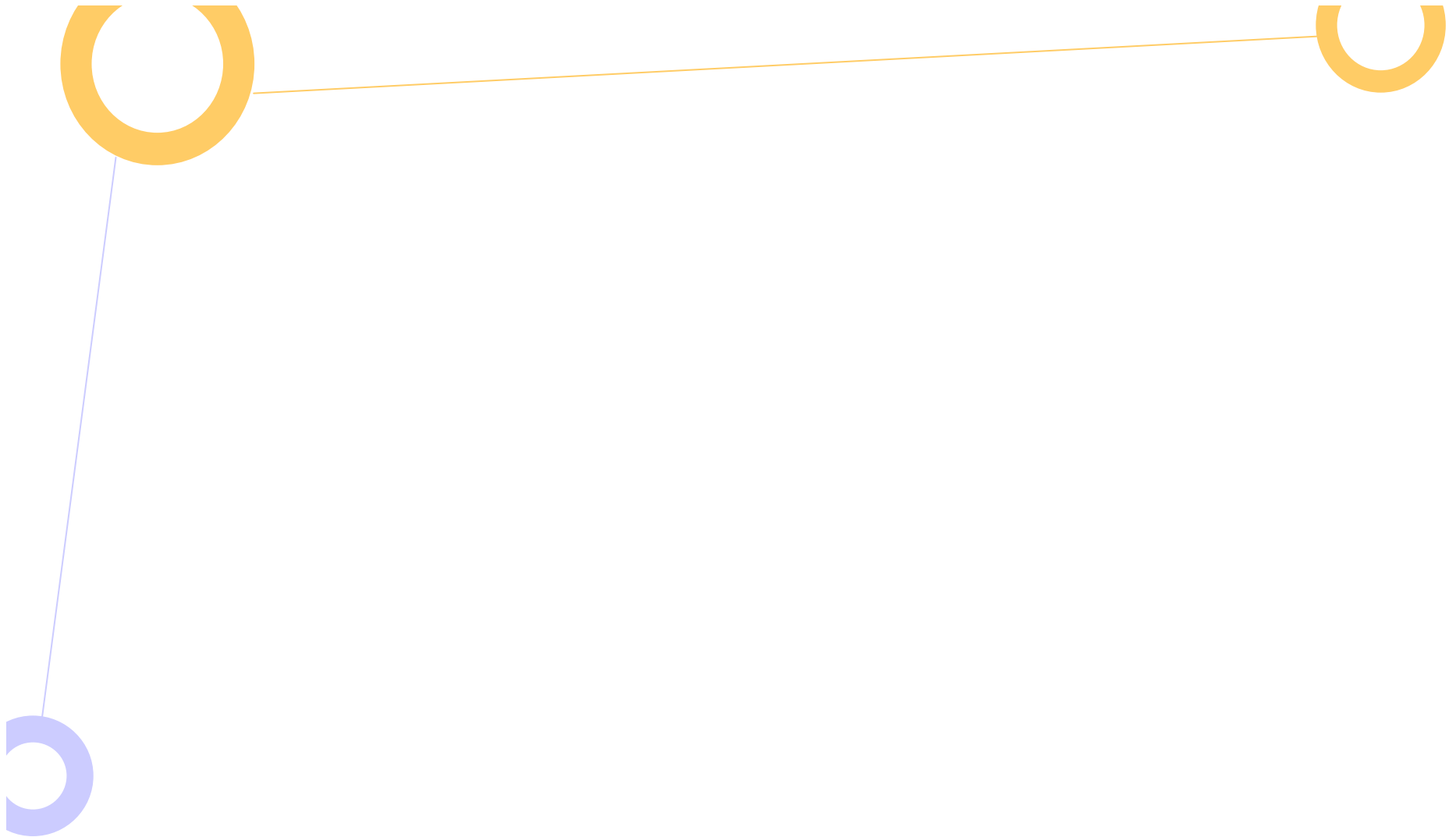
Scheduler: Resource Manager Interface

The screenshot displays the Scheduler Resource Manager Interface. The main window shows a grid of nodes and their associated JVMs. The interface is divided into several sections:

- Administration:** Contains buttons for Connection, Creation, and Shutdown.
- Legend:** Defines the visual representation of Hosts (Standard Host), JVMs (Standard JVM), and Nodes (Available Node, Busy Node, Down Node).
- Node Summary:** Total Node = 14, Free Node = 6, Busy Node = 8, Absent Node = 0.
- Node Grid:** A grid of nodes, each containing a JVM. The nodes are grouped by descriptor and name.
- Console:** Shows the output of the InfrastructureManager, including the messages: "08:42:39 => Connect to an existing Infrastructure Manager" and "08:42:54 => Load and Deploy a file descriptor".

The nodes and their JVMs are as follows:

Descriptor	Node Name	JVM Name	Status
Demo_descriptor248002.xml	galpage.inria.fr	SchedulerDemo2VN5...	Busy
	gaudi.inria.fr	SchedulerDemo2VN1...	Busy
	macyavel.inria.fr	SchedulerDemo2VN1...	Available
	pollux.inria.fr	SchedulerDemo2VN1...	Available
Demo_descriptor348003.xml	apple.inria.fr	MachineSupVN19519...	Available
	cheypa.inria.fr	MachineSupVN91433...	Busy
	maledie.inria.fr	MachineSupVN86610...	Busy
	schubby.inria.fr	MachineSupVN20873...	Available
	trinidad.inria.fr	MachineSupVN14049...	Available
Demo_descriptor48001.xml	hajjoura.inria.fr	SchedulerDemo1VN1...	Busy
	lo.inria.fr	SchedulerDemo1VN2...	Available
	naruto.inria.fr	SchedulerDemo1VN8...	Busy
	petawawa.inria.fr	SchedulerDemo1VN1...	Busy
	pincoya.inria.fr	SchedulerDemo1VN1...	Busy



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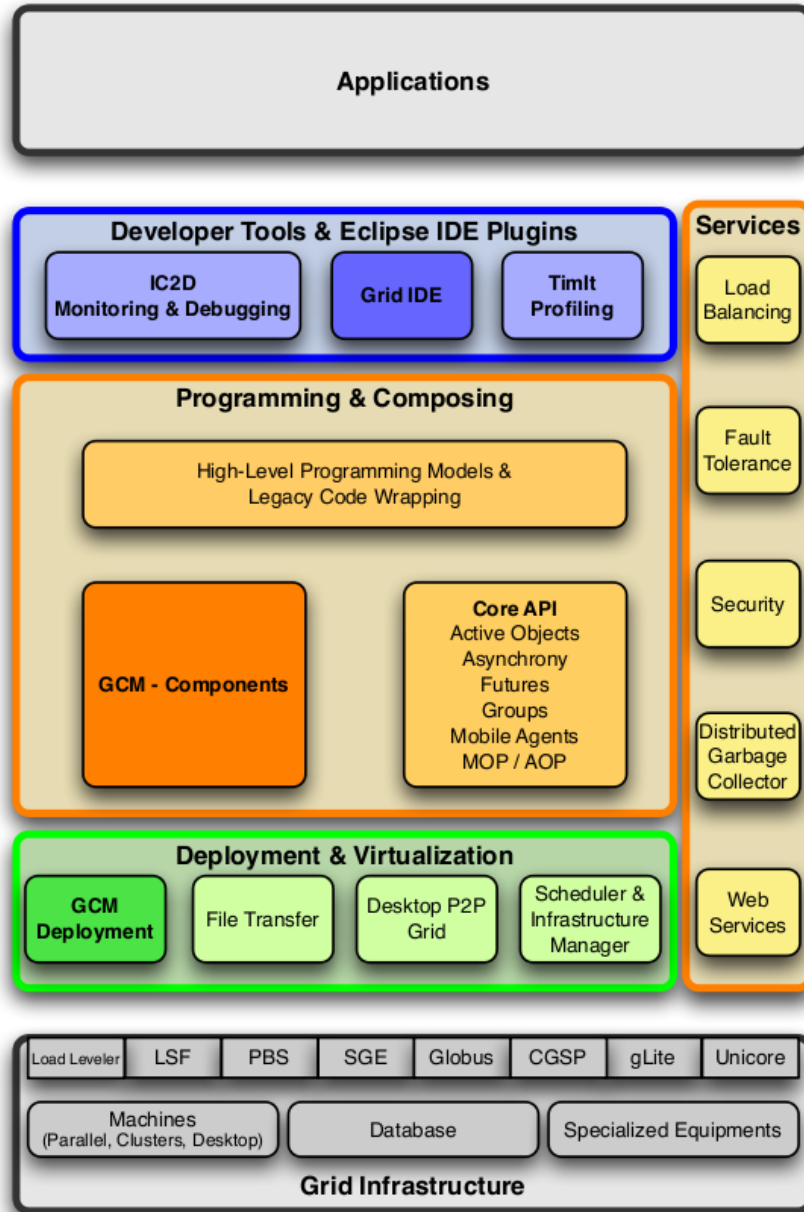


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ProActive Parallel Suite (1)





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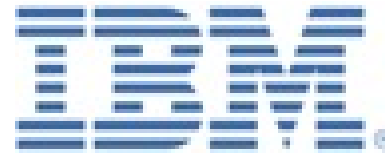
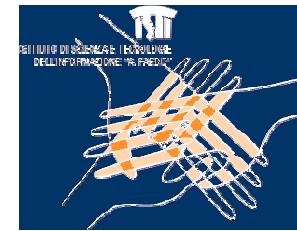


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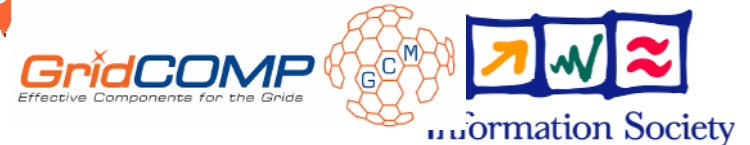


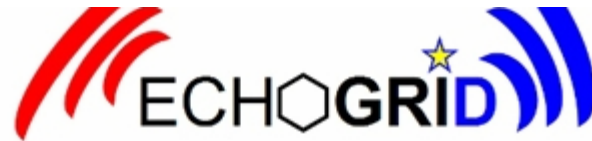
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GridCOMP Partners



THE UNIVERSITY OF
MELBOURNE





Partners



ERCIM - GEIE ERCIM



National Technical University of Athens - ICCS/NTUA



ATOS Origin SAE - ATOS



Engineering Ingegneria Informatica S.p.A. - ENG



THALES



Beihang University - BUAA



Institute of Computing Technology, Chinese Academy of Sciences - ICT



Computer Network Information Center, Chinese Academy of Sciences - CNIC



National University of Defence Technology - NUDT

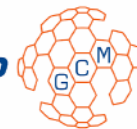


Huawei Technologies Co.,Ltd - HUW



GCM Technical Structure

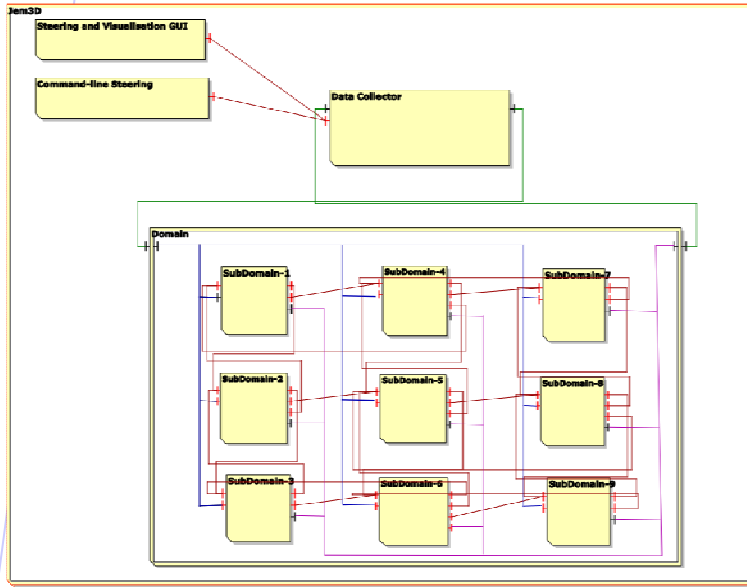
1. Component Specification as an XML schema or DTD
2. Run-Time API defined in several languages
C, Java
3. Packaging described as an XML schema
4. Information for Deployment
(Virtual Nodes, ... Variables, File Transfer, ...)



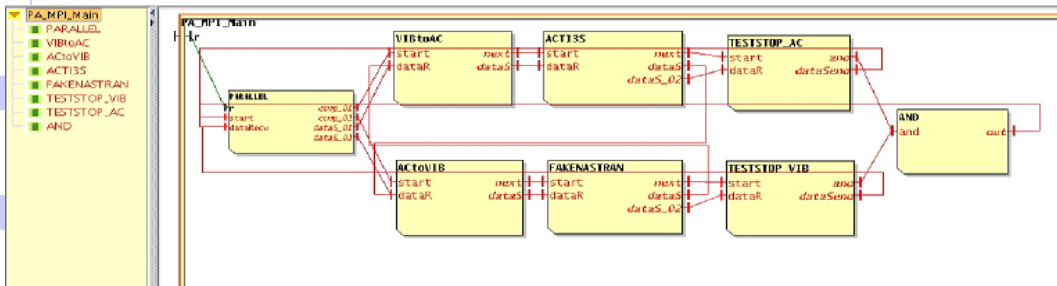
Status of GCM in ProActive

- **Improved implementation:**
 - ⇒ ADL schema, API, Multicast, Gathercast, VN Deploy etc.
 - ⇒ Autonomicity (Unipi)
 - ⇒ Component GUI (prototype Westminster)
- **Distributed components for various applications:**
 - ⇒ Numerical, Legacy, ...
- **On-going experiments:**
 - ⇒ up to 300+ CPUs

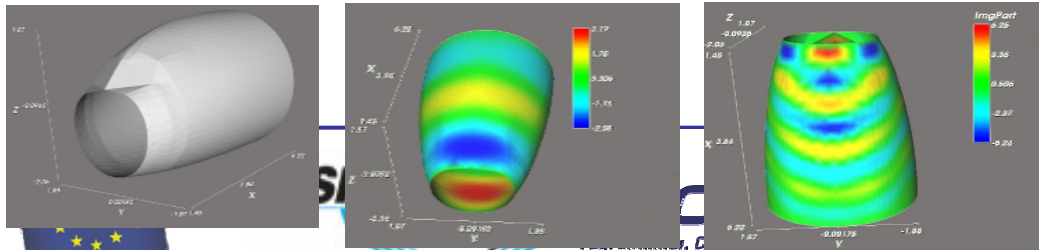
Current GCM experiments in ProActive



- **JEM3D: 3D electromagnetic application:**
a single Cp on 300+ CPUs on Grid



- **Vibro-Acoustic application with EADS (legacy MPI coupling)**



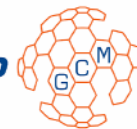
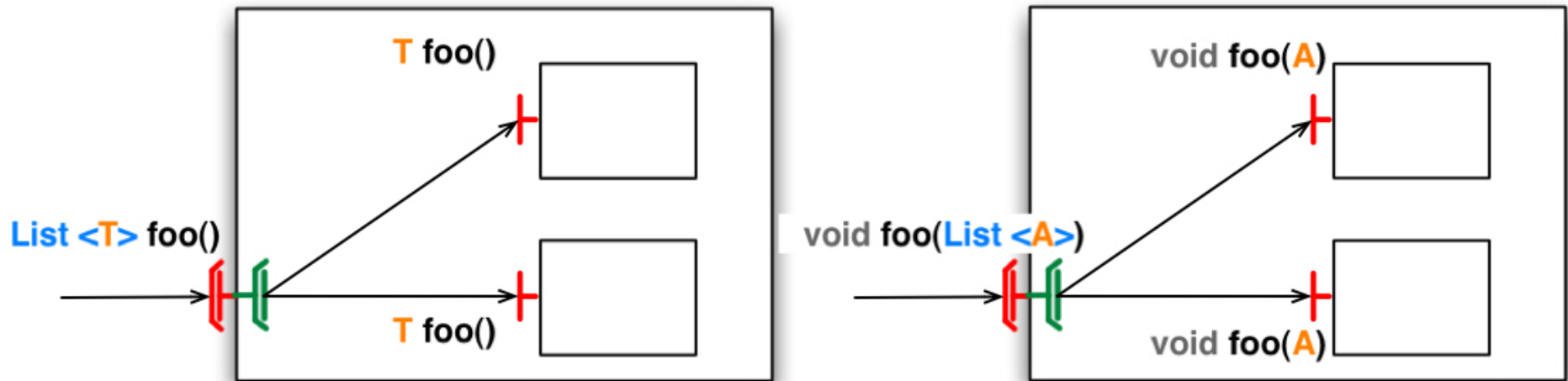
On-going experiments

- **GridSystems:**
 - ⇒ Wing design (Numerical, parameter sweeping)
 - ⇒ EDR processing (Telecom)
- **ATOS:**
 - ⇒ PL/SQL wrapping and acceleration
- **IBM:**
 - ⇒ Real-Time Fingerprint recognition
- **China Tsinghua:**
 - ⇒ MPI wrapping, Deployment, Autonomicity



Multicast interfaces

- ⇒ Results as lists of results
- ⇒ Invocation parameters may also be distributed from lists



Gathercast interfaces

Transform

*a list of invocations into
a single invocation*

- **Synchronization of incoming invocations**
 - ⇒ ~ “join” invocations
 - ⇒ Timeout / Drop policy
 - ⇒ Bidirectional Bindings (callers ⇔ callee)
- **Data gathering**

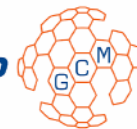
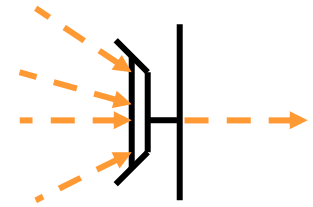
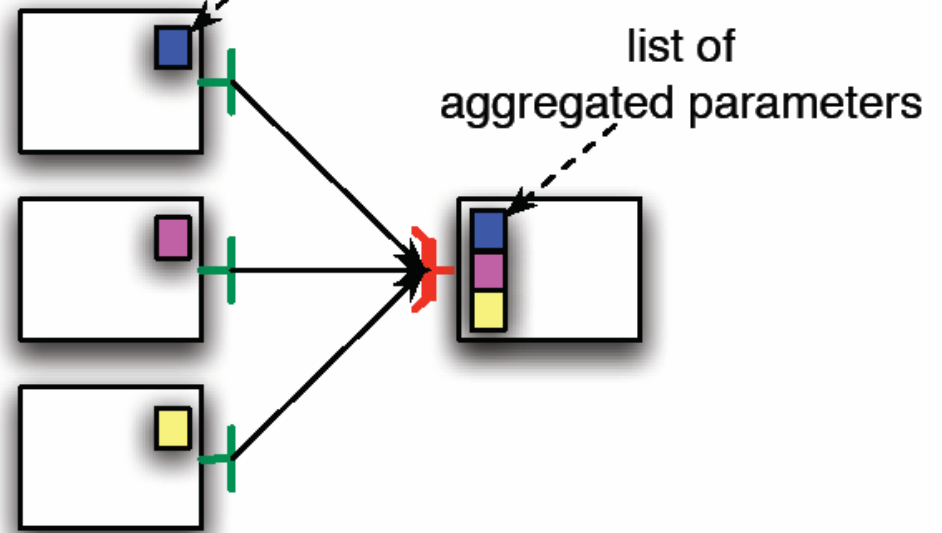
Aggregation of parameters into lists

• Result:

Redistribution of results

Redistribution function

invocation parameter



Update on ProActive and GCM

- **Recent versions:**

⇒ **June 2006: ProActive V 3.1 : first GCM version**

⇒ **November 2006: ProActive V 3.2 Beta**

⇒ **January 2007: ProActive V 3.2
(After PlugTests' Learning)**

⇒ **April 2007: ProActive 3.2.1**



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Update on ProActive and GCM (2)

⇒ New features in 3.2 release (January 2007):

- Conformance tests for Fractal, towards conformance tests for GCM
- IC2D Eclipse Plugin
- **Timlt** (Hierarchical, Visual)
- Skeleton (improved, with File Transfer, Documentation)
- gLite EGEE deployment updated
- Support for Java 1.5 Generics:
 - ⇒ Active Objects can be instantiated from Generic Classes
 - ⇒ Some Warnings removed
- Improvements in OSGi integration
- Prototype TTools for UML modeling of GCM components (TBC)



What's new in April 3.2.1 1/2

- **JMX support**

- ⇒ Java Management Extensions, a standard
- ⇒ ProActive/GCM JMX connector i.e. remotely accessible JVM, Active Objects, Components
- ⇒ Towards component Monitoring, Steering, ...
- ⇒ Easier separation between GCM implementations and tools (IDE, ...)

- **New ProActive/GCM source layout**

- ⇒ Clear separation between ProActive core library including GCM implementation and additional ProActive features
- ⇒ Ease development of new features (WP2 and WP3)



What's new in April 3.2.1 2/2

- **Initial experiments on NF components:**
 - Composite-Membrane Component
 - ⇒ **Allow Components in the membrane as controllers**
- **Upgrade of GCM deployment**
 - ⇒ **Rewriting deployment descriptor parser**
 - ⇒ **At the same time of GCM standardization (TC Grid WI 1)**
- **Legacy Code Wrapping and Interoperability**
 - ⇒ **First specification proposed by Tsinghua University**
 - ⇒ **GCM proposed API and ADL extension (see video)**



Improvements and Fixes 1/2

- **Bug Fixes:**

- ⇒ **Multicast parameter dispatching**

- Correct multicast parameter dispatching with Round Robin mode
- Customization of multicast parameters dispatch
 - ⇒ Quick fix made, a rewrite is needed to complete support of customization (end of summer)

- ⇒ **Controller**

- Multicast: support **interceptor** with the `bindFcMulticast` method
- Binding: `getFcInterfaces()` method return the right interfaces according to Fractal specifications

- ⇒ **Example *Helloworld* works with the ProActive/GCM jar!**



Improvements and Fixes 1/2

- **Pending improvement/fix**

- ⇒ **Some Multicast results with Round Robin dispatch mode could be missing**

- ⇒ **Multicast aggregation result**

- Add an annotation allowing aggregation between List<T> and T results
- Needed in case of multicast and simple interface connected to a same Multicast interface

- ⇒ **Multicast interface and Virtual Node cardinality**

- Give a way to create (using ADL) as many components as nodes in a virtual node and connect them to a multicast interface.



Work Item number:
DTS/GRID-0004

GCM: Grid Component Model
GCM Interoperability Deployment

Manchester, May 11 2007

ETSI TC GRID Meeting # 3



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GridCOMP
Effective Components for the Grids



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Potential GCM parts could include:

Work Item

- **GCM Interoperability Deployment**
- **GCM Application Description**
- **GCM Fractal ADL**
(Architecture Description Language)
- **GCM Management (Java, C, WSDL API)**



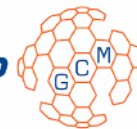
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Scope of GCM Interoperability Deployment

- **Describing Components and Deployment in a Standard manner**
- **To be used as building blocks for Grid applications.**
- **Targeting different Grid frameworks.**
- **XML based**



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ETSI Grid Plugtests:

2004, 2005, 2006

Technology successfully tested in 3 event!



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ETSI Grid Plugtests, 04, 05, 06

Amsterdam
Belfast
Fribourg
Grenoble
Lille

Manchester
Melbourne
Merida
Metz
Bombay

Nancy
Napoli
Nice
Metz
Paris

Pise
Rennes
Santiago
San Diego
Beijing



ETSI Work schedule: Progress milestone

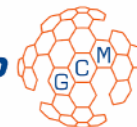
- **Date of creation of Work Item:**
 - ⇒ 11-may-2007
- **Date Work Item adopted by Technical Body:**
 - ⇒ 11-may-2007
- **Start of work date:**
 - ⇒ 11-may-2007
- **ToC and Scope:**
 - ⇒ 11-june-2007
- **Stable Draft:**
 - ⇒ 11-sep-2007
- **WG approval: Technical Body approval:**
 - ⇒ oct-2007, Right after 4th ETSI GRID PlugTests in Beijing
(co-organized by EchoGrid project)



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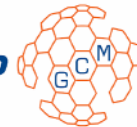
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Upcoming Version

- **Current GCM ProActive version always accessible:**
 - ⇒ SVN repository from ProActive page
- **Next Stable release: end of July – Sept. 2007**
 - ⇒ Stable Cp. In membrane
 - ⇒ New improved deployment (XML)
 - ⇒ IC2D: JMX integration, Step/Step debug
- **Should integrate with:**
 - ⇒ Composition IDE (Westminster)
 - ⇒ Autonomic framework (Unipi)
 - ⇒ InnerGrid (Fura) GridSystems



Monitoring View

Job Monitoring View

The screenshot displays the Eclipse SDK Monitoring View, which is divided into two main sections: the Monitoring View and the Job Monitoring View.

Monitoring View: This section shows a graph of virtual nodes and their interactions. The nodes include:

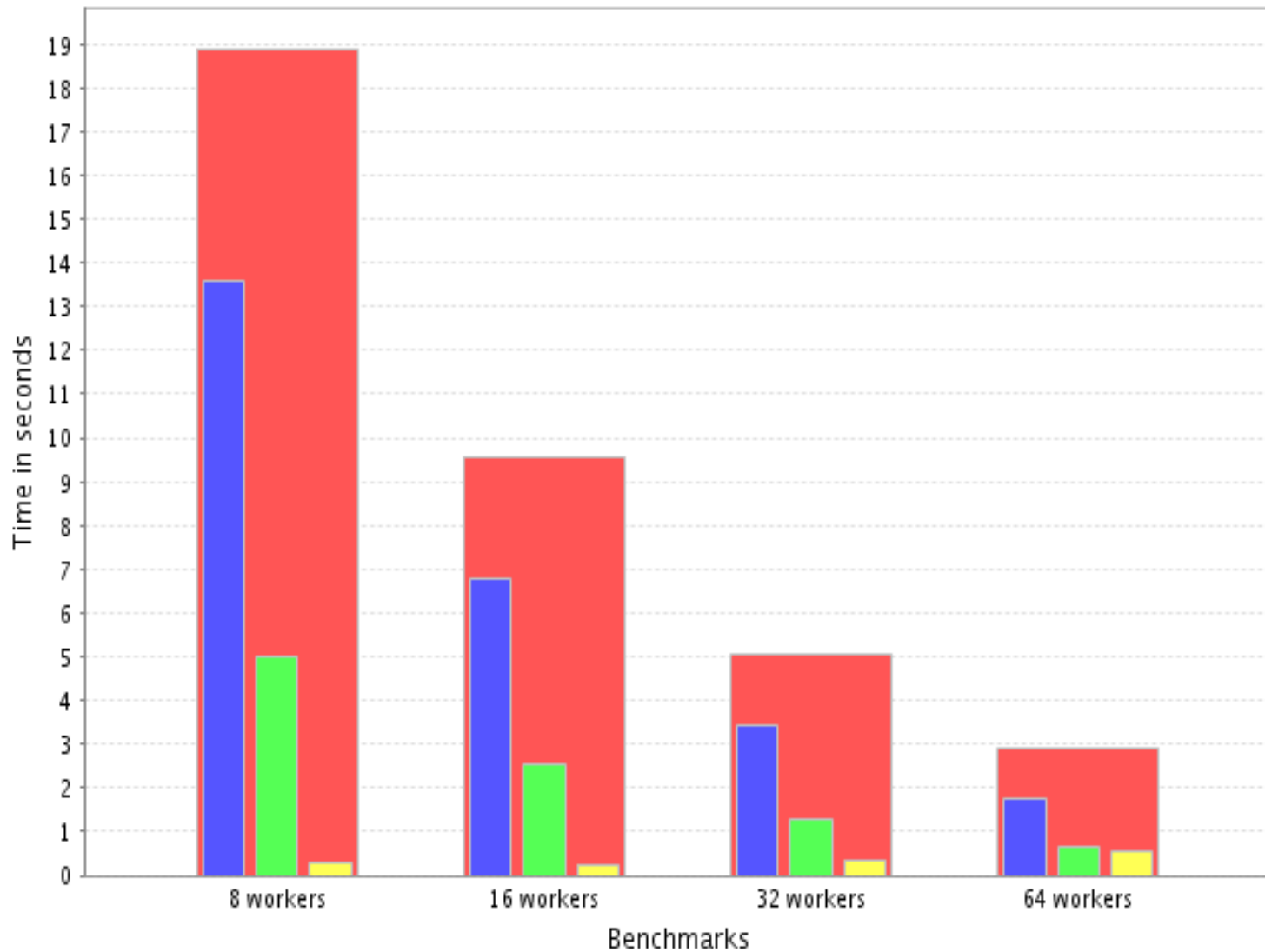
- Virtual nodes: Renderer, DefaultVN, Dispatcher, User.
- Job: PA_JVM1357457629_be...
- Node: Node Node60562498...
- Objects: Dinner_layout#2, Table#3, Philosophers#4, Philosophers#5, Philosophers#6, Philosophers#7, Philosophers#8.
- Job: PA_JVM-436155261_be...
- Node: Node Renderer-127...
- Job: PA_JVM-1672076495_b...
- Node: Node Dispatcher-5...
- Job: PA_JVM-294719007_be...
- Node: Node User-16026445...
- Job: PA_JVM-1631909824_b...
- Node: Node Renderer-1307...
- Node: C3D Rendering...
- Node: C3D Dispatche...
- Node: C3D User#13
- Node: C3D Rendering...

At the bottom of the Monitoring View, there are options for Display topology, Proportional, Ratio, Filaire, a **Reset Topology** button, and Monitoring enable.

Job Monitoring View: This section shows a tree view of the job monitoring data. The tree structure is as follows:

- DefaultVN (JOB-1357457629) (expanded)
 - bebta.inra.fr:1099:OS un... (expanded)
 - PA_JVM1357457629_... (expanded)
 - Node Node6056249... (expanded)
 - DinnerLayout#2 (red circle)
 - Table#3 (JOB-13... (red circle)
 - Philosopher#4 (JOB-... (red circle)
 - Philosopher#5 (JOB-... (red circle)
 - Philosopher#6 (JOB-... (red circle)
 - Philosopher#7 (JOB-... (red circle)
 - Philosopher#8 (JOB-... (red circle)
- sidonie.inra.fr:1099:OS u... (expanded)
 - Dispatcher (JOB--167207649... (expanded)
- User (JOB--294719007) (expanded)
- bebta.inra.fr:1099:OS un... (expanded)
 - PA_JVM-294719007_I... (expanded)
 - Node User1602644... (expanded)
 - C3DUser#13 (JOB-... (red circle)
- Renderer (JOB--1672076495) (expanded)
- bebta.inra.fr:1099:OS un... (expanded)
 - PA_JVM-1631909824_... (expanded)

EP class B Benchmark on 8 16 32 64



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Towards Integrated GCM/ProActive Debug

Debug - Hello.java - Eclipse SDK

File Edit Source Refactor Navigate Search Project Run Window Help

Java Browser Team Sync... Debug SVN Repo... Java

Debug Navigator Hierarchy

Variables Breakpoints Expressions

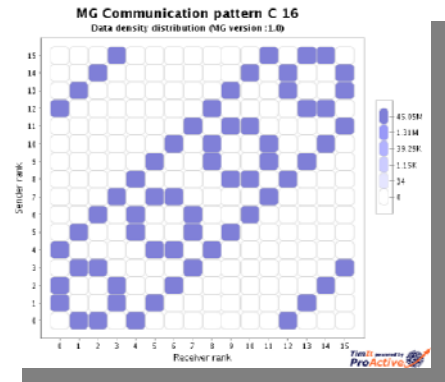
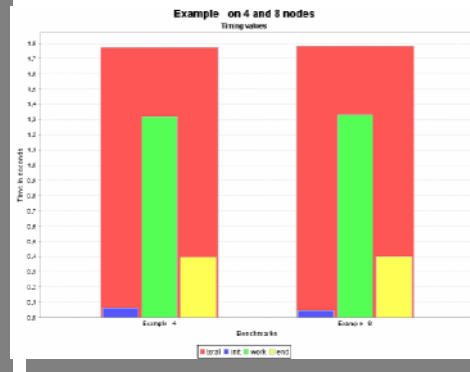
Name	Value
args	String[] (id=33)
descriptorPad	ProActiveDescriptorImpl (id=36)
vnode	VirtualNodeImpl (id=39)
nodes	Node[] (id=51)
hello	_StubHello (id=30)

```

// Creates an active instance of class HelloOZ on the local node
Hello hello = (Hello) ProActive.newActive(Hello.class.getName(), // the class to deploy
null, // the arguments to pass to the constructor, here none
nodes[0]); // which jvn should be used to hold the Active Object

// get and display a value
StringMutableWrapper received = hello.sayHello(); // possibly remote call
logger.info("On " + getHostName() + ", a message was received: " +
received); // potential wait-by-necessity
descriptorPad.killAll(true);
ProActive.exitSuccess();
    
```

Console: Hello (1) [Java Application] /usr/java/jdk1.5.0_10/bin/java (2 avr. 07 19:37:32)



Monitoring

Virtual nodes

Workers DefaultVN

Legend Job Monitoring

DefaultVN (JOB-1721682953)

- paravida.inria.fr:1099:Linux
 - PA_JVM1721682953_puravida
 - Node Node1136409086(JOB-1721682953)
 - Displayer#4(JOB-1721682953)
- Workers (JOB-1721682953)
 - amda.inria.fr:1099:Linux
 - PA_JVM-496050114_amda.inr
 - Node Workers-1716986043(JOB-1721682953)
 - maledie.inria.fr:1099:Linux
 - PA_JVM-1644030784_maledie.inr
 - Node Workers-495046456(JOB-1721682953)
 - Domain#2(JOB-1721682953)
 - orchidee.inria.fr:1099:Linux
 - PA_JVM1009160601_orchidee.inr
 - Node Workers-113432579(JOB-1721682953)
 - Domain#1(JOB-1721682953)
 - meje.inria.fr:1099:Linux
 - PA_JVM435920536_meje.inr
 - Node Workers-852192344(JOB-1721682953)
 - Domain#5(JOB-1721682953)
 - paravida.inria.fr:1099:Linux
 - PA_JVM1721682953_puravida
 - Node Workers-1993(JOB-1721682953)
 - Maestro#3
 - Node Node1136409086(JOB-1721682953)
 - Displayer#4

Auto Reset: Enable 7 seconds

Drawing style: Proportional Ratio Fixed

Topology: Display Reset

Console: log4j: INFO - //puravida.inria.fr/SpyListenerNode successfully bound in registry at //puravida.inria.fr:1099:Linux