(UFSC)

A Framework for Processes Submission and Monitoring from Mobile Devices to Grid Configurations Utilizing Resource Matching

Alexandre Parra Carneiro Silva

Vinicius da Cunha Martins Borges

Mario Antonio Ribeiro Dantas

{parra,cunha, mario@inf.ufsc.br}

Guide

- Introduction
- Related Works
- Concepts
- Framework
- Case Study
- Conclusions
- Future Works

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Introduction (1/2)

- Limitations of mobile devices impose great difficulties to provide to users an option for solve complex problems (Mobile Grid);
- The majority of researches only allow submission and monitoring of a task per time from device;
- Moreover, there is necessity to select grid resources for applications execution;
- It is difficult to establish agreements on used terms to characterize resources and requests (Resource Matching based Ontology).

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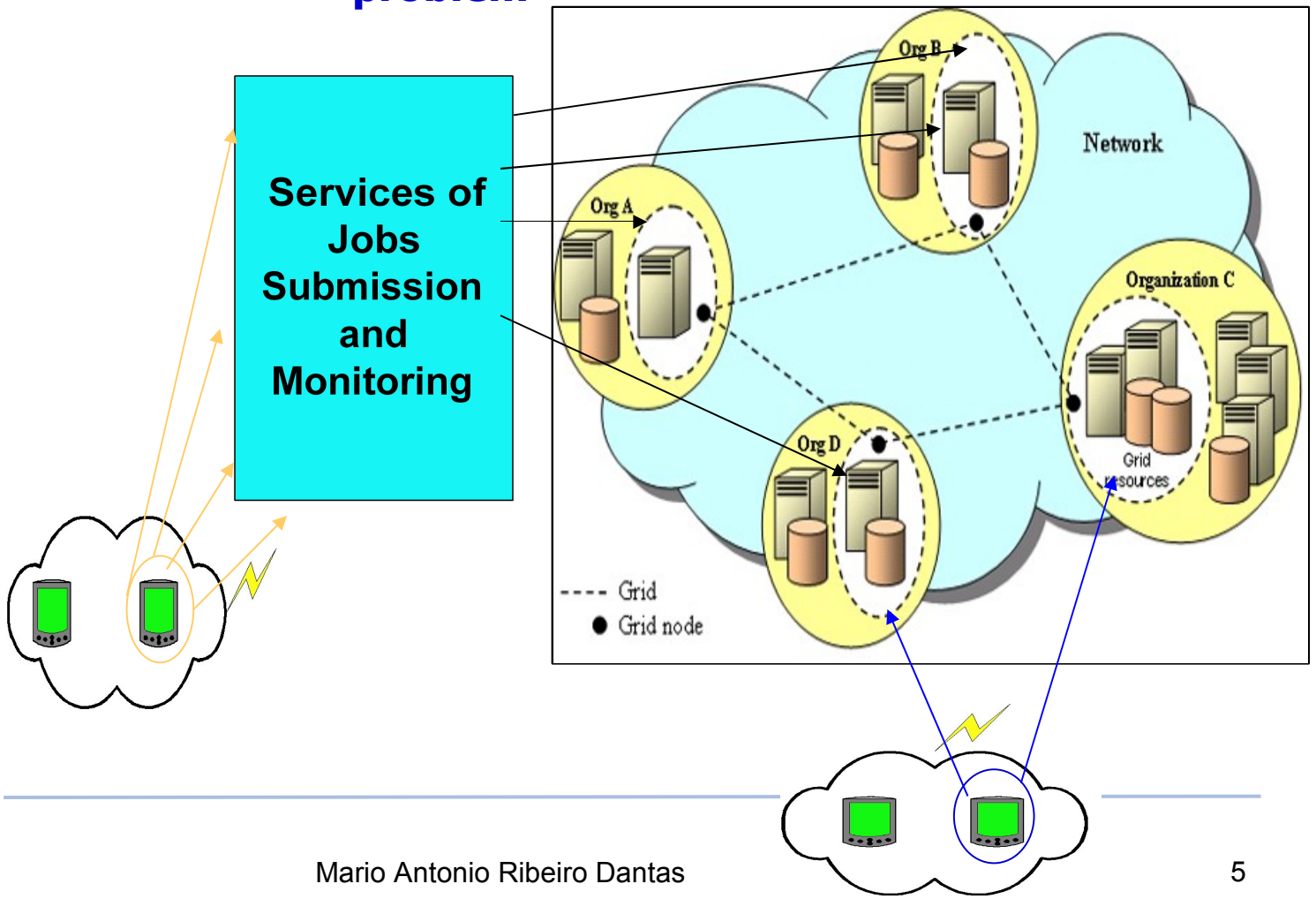
Introduction (2/2)

4 Jobs for resolution problem



Guide

- Introduction
- Related Works
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Related Works

	Resource Matching (Ontology)	Workflow
Shi et al. 2006	NO	NO
Sajjad et al. 2005	NO	NO
Grabowski et al. 2006	NO	NO
Brooke and Parkin 2005	NO	Yes

Guide

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- Related Works
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Concepts

- Workflow:
  - represent a **execution flow** which data are passed between some tasks obeying rules previously defined.
- Ontology:
  - Ontology can be expressed as a **formal** and explicit specification from a **shared concept**.

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Guide

- Introduction
- Related Works
- Concepts
- Framework
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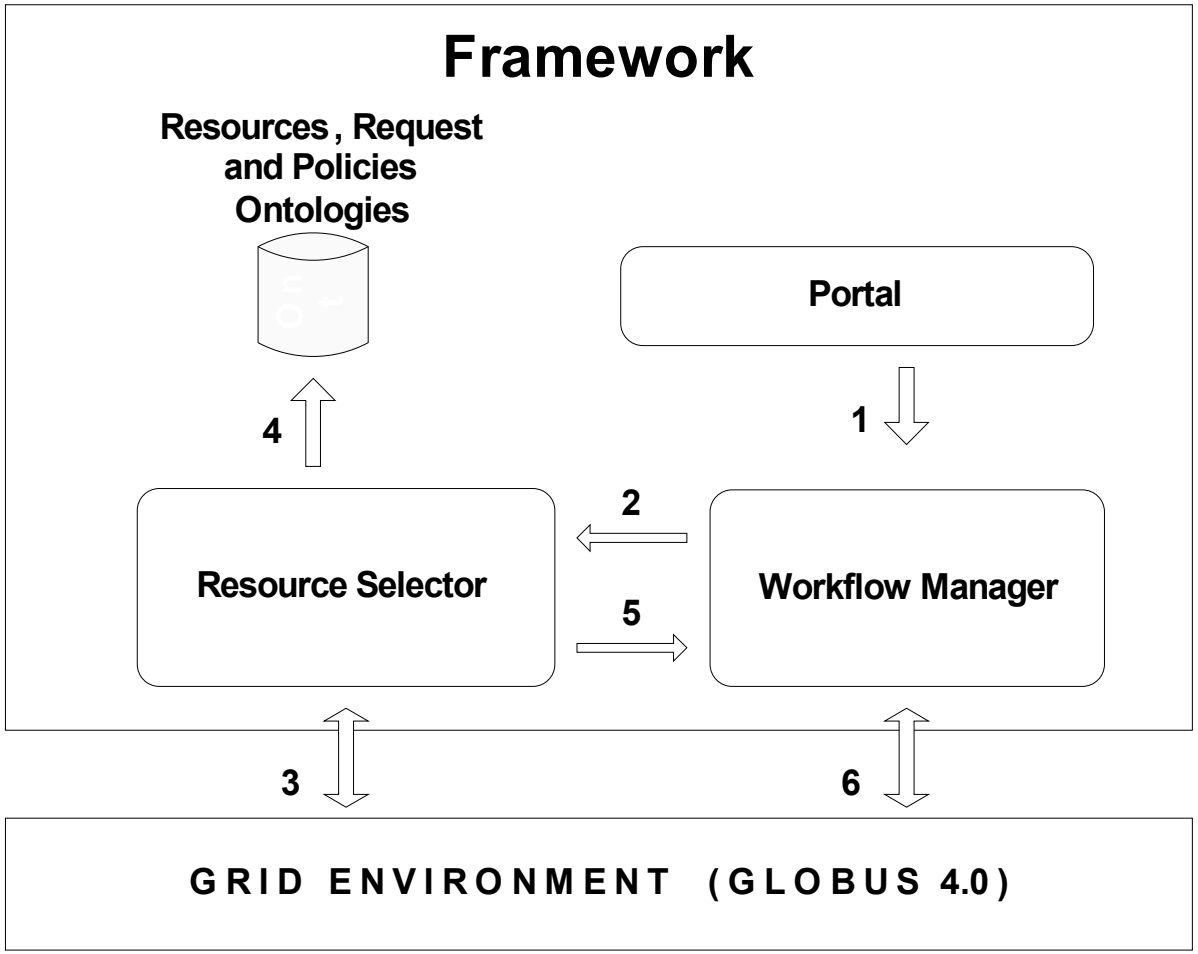
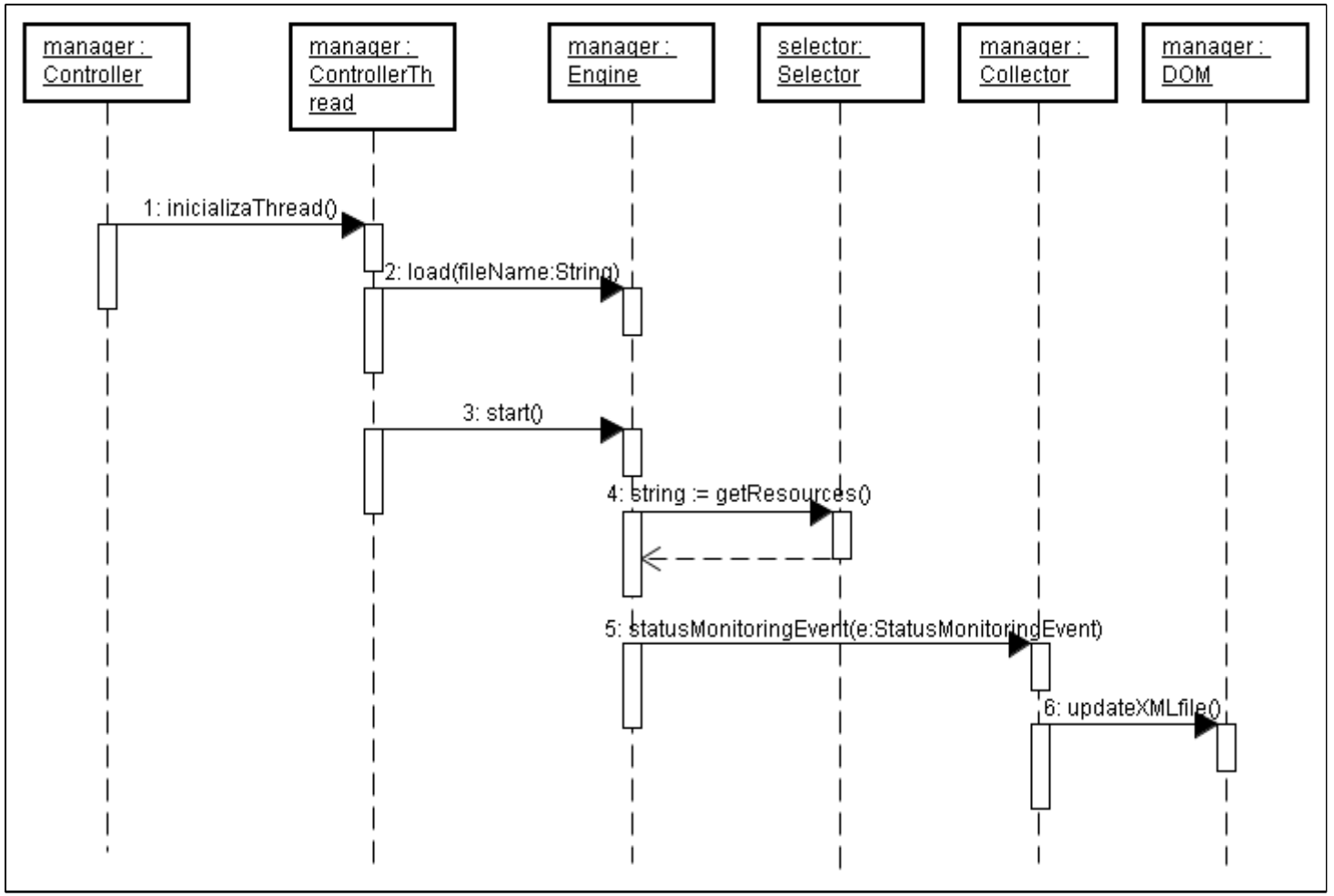
Framework (1/6)



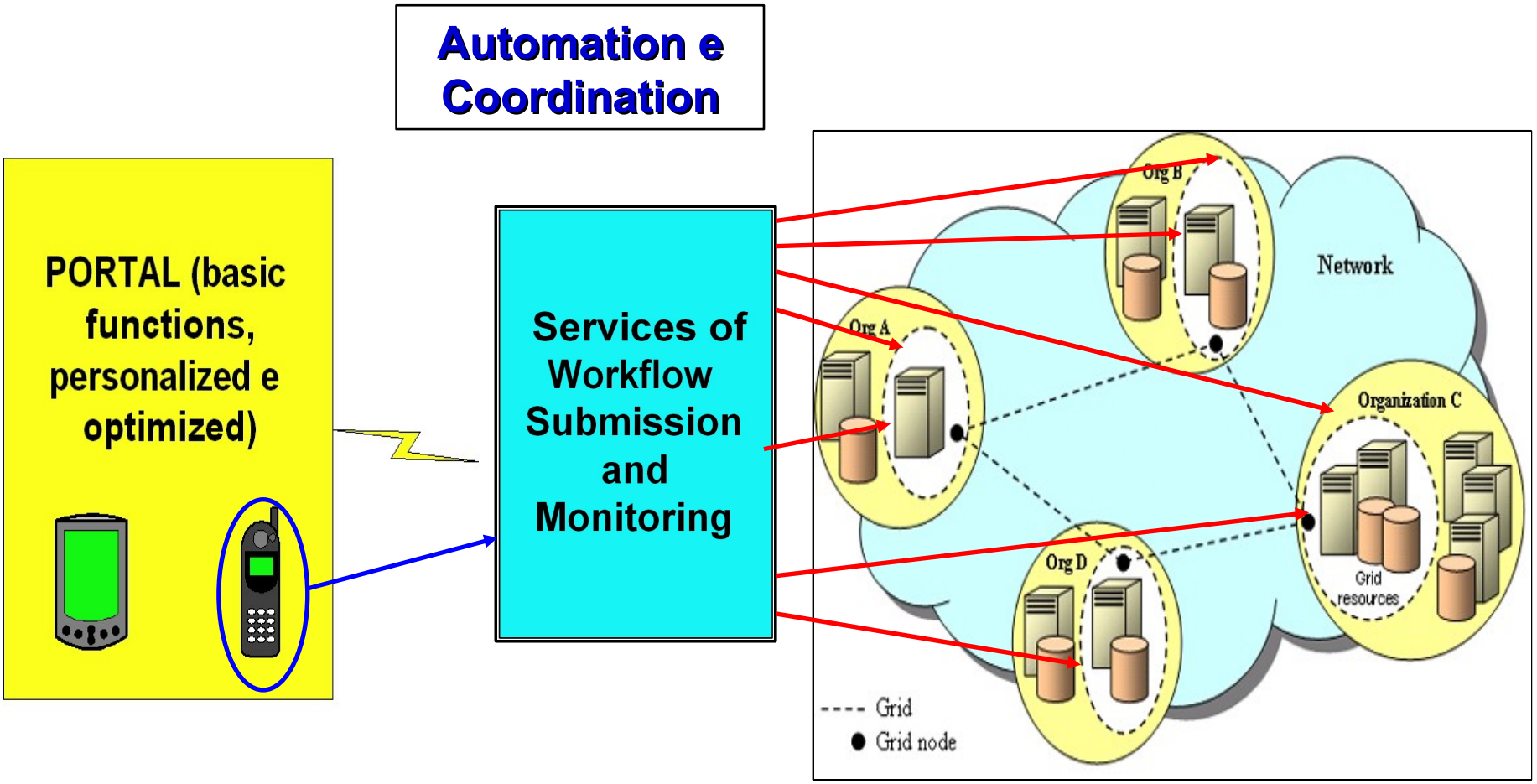
Framework – Portal (2/6)

Application Monitoring Interface

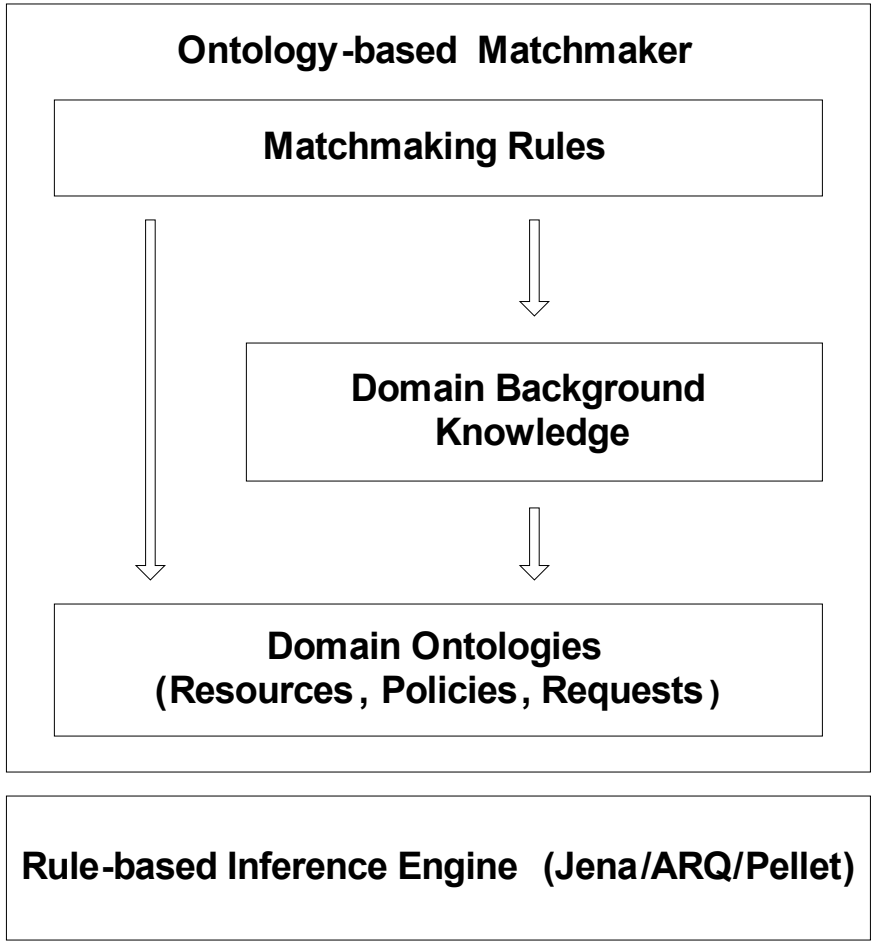
Framework – Workflow Manager (3/6)



Framework (4/6)



Framework – Resource Selector (5/6)



Framework – Resource Selector (6/6)

- Characteristics:
  - Flexible and extensible;
  - Resource Matching;
  - Checking information consistency;
  - Asymmetric description.

Guide

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Case Study

Requirements	T1	T2	T3	T4
Job_Request.request_id	query_T1	query_T2	query_T3	query_T4
Job_Request.owner	vinicius	vinicius	vinicius	vinicius
Job_Request.decrescent_order	total_main_memory	-	processor_capacity	processor_capacity
Job_Request.number_resources_return	= 1	= 1	= 1	= 1
Job_Request.Mem.total_main_memory	>= 1024 MB	-	-	-
Job_Request.Proc.processor_capacity	-	-	>= 3000 MHz	>= 3000 MHz
Job_Request.software_id	S1	S2	S3	S4
Job_Request.database_id	-	-	-	-

Requirements	T5	T6	T7
Job_Request.request_id	query_T5	query_T6	query_T7
Job_Request.owner	vinicius	vinicius	vinicius
Job_Request.decrescent_order	-	total_main_memory	processor_capacity
Job_Request.number_resources_return	= 1	= 1	= 1
Job_Request.Mem.total_main_memory	-	>= 2048 MB	-
Job_Request.Proc.processor_capacity	-	-	>= 3000 MHz
Job_Request.software_id	S5	S6	S7
Job_Request.database_id	-	DB1	DB2

Description of resources requests of workflow tasks

Case Study

Computer System Characteristics	Resource (a)	Resource (b)	Resource (c)	Resource (d)
USC.address_ip	140.68.107.10	150.162.56.12	147.160.50.37	140.68.87.50
USC.authorized_account	vinicius; parra	mario; vinicius	vinicius	vinicius; parra; mario
USC.Memory.total_main_memory_size	16384.0 MB	1018.4 MB	768.0 MB	3062.0 MB
USC.Processor.processor_speed	2400 MHz	400 MHz	3200 MHz	3000 MHz
USC.Software.software_id	S1, S5, S6	S2, S3, S5, S6	S1, S3, S4	S2, S7
USC.DataBase.database_id	DB1, DB2	-	-	DB2
Selections Results	T1 and T6	T2 and T5	T3 and T4	T7

Grid resources that attend workflow tasks

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Conclusions

- The framework provides a more **coordinated** and **automated** form for executing applications in the mobile grid;
- It also allows a **flexible, extensible, transparency** way to select several shared resources (such as, programs and databases).

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Future Works

- SSL (*Secure Socket Layer*);
- It submits several other empirical tests the Resource Selector with the objective to analyze its **scalability** and **performance**.

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Questions !?

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