

Provisioning for Dynamic Instantiation of
Community Services
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Provisioning for Dynamic Instantiation of Community Services

Provisioning Approaches

Provenance in Agent-Mediated Healthcare Systems

Provenance Life Cycle

Example Project

What is Gained

Problems to Overcome

Combining the Power of Taverna and caGrid

What is Taverna

What is caGrid

Example Workflow

Provisioning for Dynamic Instantiation of Community Services

Provisioning Approaches

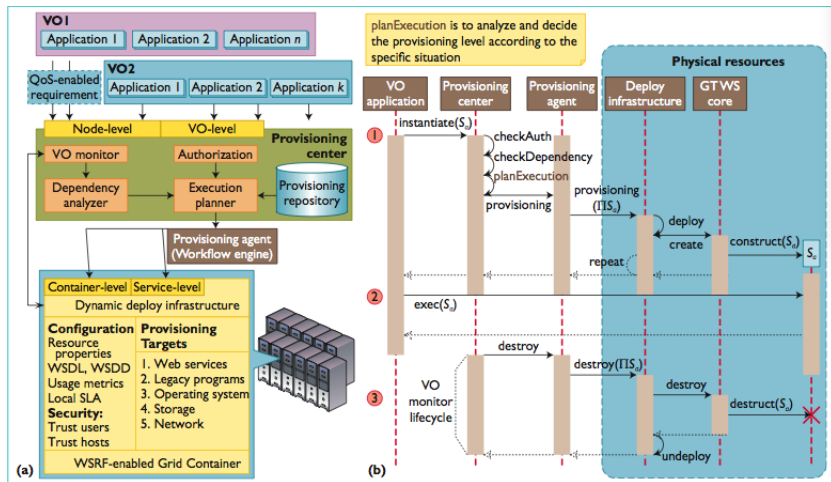
Provisioning for Dynamic Instantiation of Community Services

- ▶ Service-level - When a service is deployed or undeployed no other service in the container is effected.
- ▶ Container-level - requires reloading entire container, bring all services down.
- ▶ Node-level - provides a dependency map for the provisioning center. Thus allowing dynamic allocation of resources according to a propagation policy.
- ▶ VO-level - Provide infrastructure for service instantiation to other VOs, along with security and consistency.

Provisioning Approaches

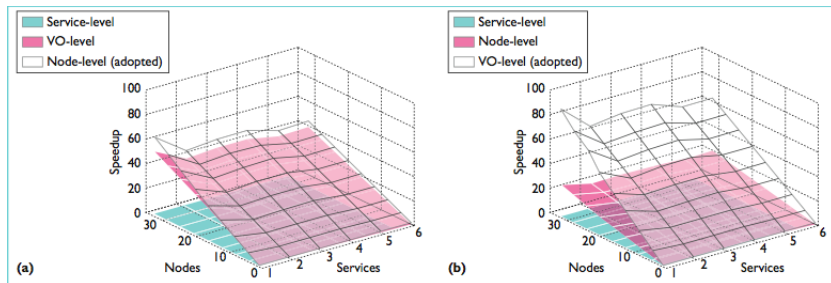
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System Architecture



Speedup

(a) HUST-VO only, (b) two VOs



Provenance Life Cycle

Provenance: Place of origin or earliest known history. "Lineage"

4 Phases of Life Cycle

- ▶ Actors create p-assertions that represent their involvement in computation.
- ▶ Store the p-assertions in a provenance store.
- ▶ Allow users or applications to query results in the provenance store.
- ▶ Users manage the provenance store and its contents, subscriptions, and location of content.

Goal: To keep an audit trail for records and optimization.

Adapt OTMA for provenance awareness

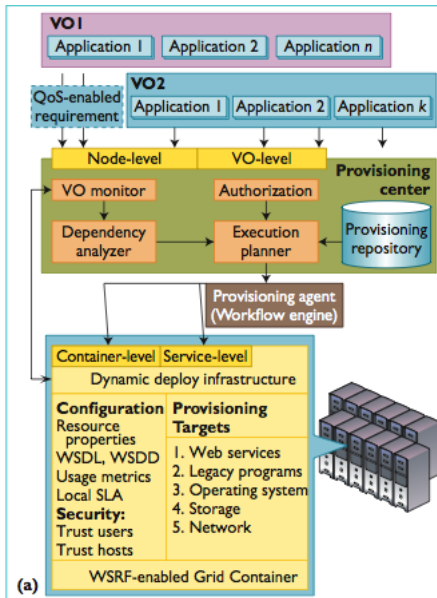
OTMA: Organ Transplant Management Application

Provide assertions to link events carried out by separate agents and services.

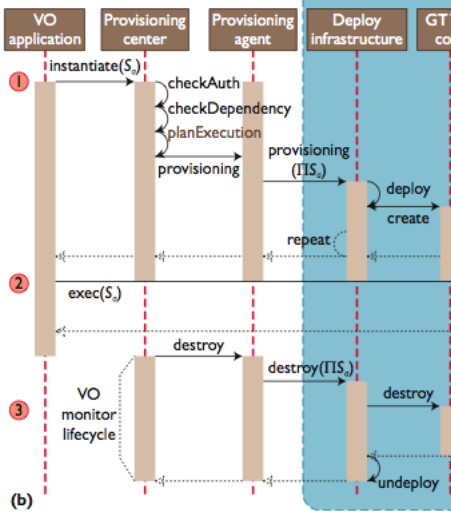
- ▶ Types of p-assertions used:
 - ▶ interaction - Actor asserts the contents of the message.
 - ▶ relationship - Actor documents how they obtained the message.
 - ▶ actor state - communication between 2 actors (doctors)

- ▶ Prior treatments are transparent to doctors.
- ▶ Prior conditions are known so health of organs can be assessed.

- ▶ Security and Privacy
- ▶ Linking 2 doctors without referrals and patient cooperation.



planExecution is to analyze and decide the provisioning level according to the specific situation



What is Taverna?

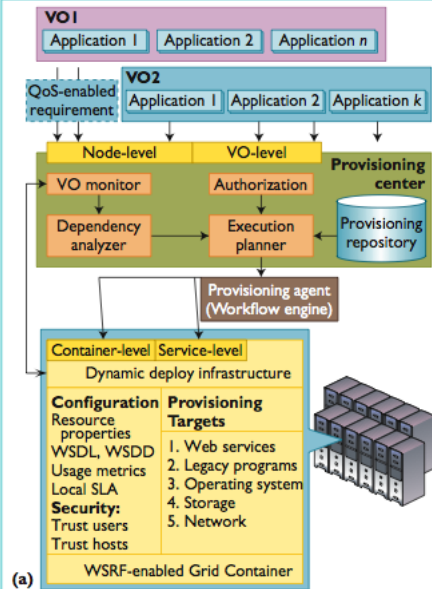
- ▶ Scientific workflow workbench for designing and executing workflows for *my*Grid.
- ▶ <http://taverna.sourceforge.net/>

What is caGrid?

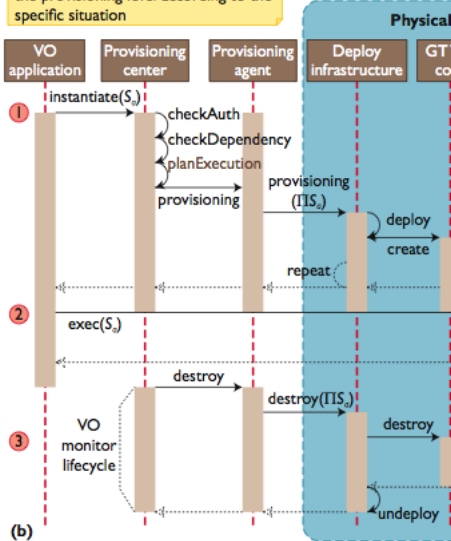
- ▶ A collection of Services hosted by different universities/organizations.
- ▶ Designed to provide different tools for research.
- ▶ Message passing via SOAP
- ▶ Created by US National Cancer Institute's Biomedical Information Grid program

Example Service: Analyze an array representing gene expression levels. i.e. *microarray*

Example Workflow



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Websites

<http://www.mygrid.org.uk/>
<http://taverna.sourceforge.net/>

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