

Methodology for Virtual Organisation Design and Management

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Outline

- Background and Motivation
- The Methodology
 - Definition of VO
 - Creation of Abstract VO
 - Creation of Solid VO
 - Maintenance
- VO Design System
- Summary



Background and Motivation

- K-Wf Grid



- Knowledge-based workflow
- Automatic application building
- Semantic level for VO Management
- Limited support for VO design in current grid middleware (no semantics)
- We do not want to change current procedures, but want to aid in fulfilling them.



Motivation

- Growing grid size
- More resources
- Selection of appropriate resources
 - VO specific requirements
 - Difficult
 - Time consuming



What is...

- Virtual Organisation



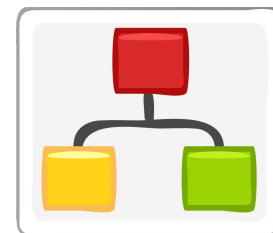
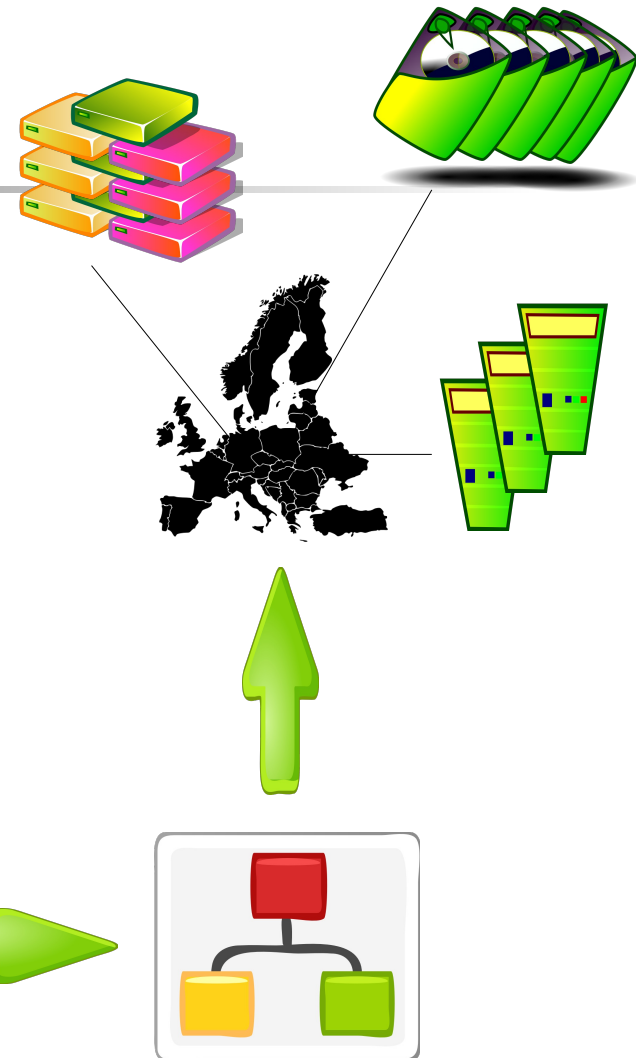
- Temporary consortium of partners from different organisations established to fulfil a value adding task.

- Source Network

- Set of organisation which are wiling to take a part in new VO and are prepared to do it.
 - Policy,law, agreement
 - Compatible resources (common middleware)

The Methodology

- Definition of VO
- Creation of abstract VO
- Creation of solid VO
- Maintenance





Definition of VO

- Interaction with an expert
 - Can not be automated
 - Expert can be helped
- Purpose of VO
- Requirements and constraints
- **VO description in form of ontology**





Definition of VO

- Requirements and constraints
 - Computational power - memory / processor
 - Storage capacity
 - Availability
 - Access policy (security, costs)
 - Time constraints
 - Available software/possibility of new software installation
 - Specific resources - scientific equipment (radio telescope, sensors, spectroscope)

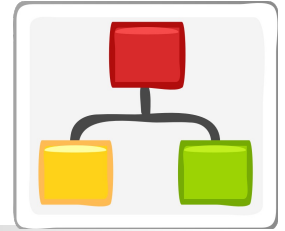
Definition of VO



- Exact requirements
 - Definition \sim abstract VO
- Application/algorithm, input data size, time constraints, etc.
 - Need to use knowledge to derive abstract VO

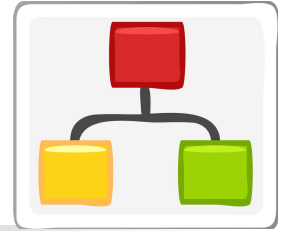


Abstract VO



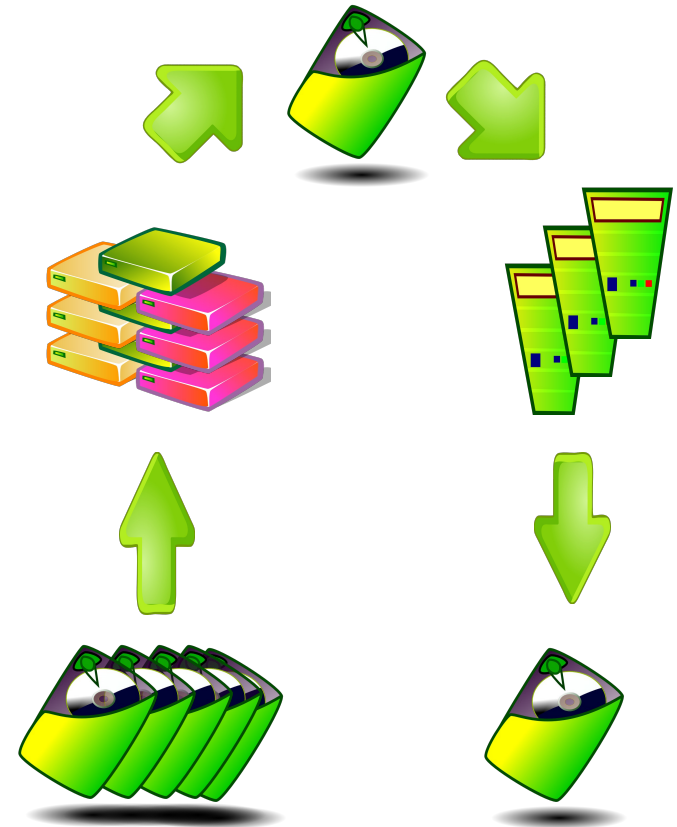
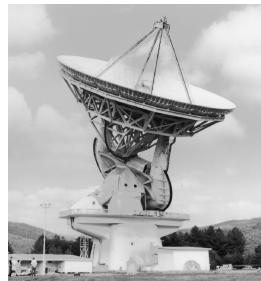
- Recipe, how to create VO
- Consists of resource types and their amount which is needed to fulfil VO requirements
- Derived from VO definition and available resources types
- Does not aim to any specific instance of resource (site), unless specific site is required

Abstract VO



■ Workflow

- Part of abstract VO
- “resources dependencies”
- Derived from application or algorithm





Solid VO

- Selection of real resources instances
 - Knowledge based
 - Site's descriptions (nodes, storage, policy, etc.)
 - Statistics (usage, availability)
 - Scheduled events (challenges)
 - Other VOs activity
 - Long term resource usage planing
- Workflow => DAG Jobs



VO Management

- Maintain VO ability to stands it's duty
 - VO targeted SFT
 - Site availability
 - Storage capacity
 - Applications Tests
 - Replace unavailable resources
 - Add new resources



VO Design System

- Knowledge base
 - Grid infrastructure
 - Feedback from previous VO
- Grid integration
 - Proxy services to information systems
- Integrated Development Environment
 - VO designer – Expert



Summary



- Bigger Grids
 - more difficult management,
 - more time for (not so) basic tasks.
- The methodology for VO...
- Knowledge based systems
- There always is Expert
 - Some tasks can not be automated (yet)
- We do not want to change existing procedures, but want to help in VO management task.



Thank You!

Now it is time for discussion.

Comments and suggestions:

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