VLAM-G Project

VLAM-G developers team
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Outline

• Introduction
• Objectives
• VLAM-G Principles
• VLAM-G Architecture
• VLAM-G & DASII
• VLAM-G Application Examples
• Conclusions
VLAM-G
Virtual Laboratory AMsterdam

A collaborative analysis environment for applied experimental science

Grid and VLAM is about sharing resources:
- physical equipment (remote experimentation)
- Data & Information repositories
Objectives & realization

Methods

• Enable VLAM-G users to define, execute, and monitor their experiments

• Provide to VLAM-G users:
  ✓ location independent experimentation,
  ✓ familiar experimentation environment
  ✓ assistance during their experiments
  ✓ Easy way to bring/port new/existing applications to the Grid

• Developing application prototypes to check ideas and to learn
Objectives & realization

Methods

• Application layer
  ✓ Case studies
  ✓ Provides VLAM-G modules

• Middle layer (Top)
  ✓ Hides the details of the Grid
  ✓ Offers an information management system
VLAM-G Run Time System on DAS-2

- VLAM-G Run Time System Manager
- VLAM-G experiment module
- VLAM-G Graphical User Interface
Job management on DAS-2

Subcluster (e.g. at NIKHEF)

GUI

Node 0

SM

RTSM

Node 1

PBS over Globus

Node 2

VL module 1

VIMCO

Node 3

RTS DB

App. DB

Node N

VL module 5

Other subclusters:

VL module 2

VL module 4

VL module 3
Process Flow Template (PFT)

- Used as a blueprint for a specific type of experiments
- PFT is designed offline by the experts in each scientific domain
- It is the main interface used by the VLAM-G users to perform a specific experimentation in the VLAM-G environment.
- It Guides the user while performing the experiment.
The PFT (cont.)

PFT (GUI)

Compose the experiment (GUI)
Define the context of the experiment (GUI)

Experiment Editor

RTS

VIMCO

Resource A

Expressive MACS EFC

Application databases
Status of the VLAM-G Prototype

- The first Beta-release is almost ready
- This release will contain:
  - A tool to load modules in the VLAM-G database
  - A list of modules that can selected and used
  - C/C++ API to write VLAM-G modules
  - Support for the MACS and DNA array experiments
  - It should be conform to the Globus security
  - It is going to be running on DAS-2
The histogram demo

- This demo is about running jobs on different Grid enabled machines using the VLAM-G environment.

- Two modules:
  - Slider
  - Visualization
Histogram demo
Floating ball experiment

- This experiment is about controlling remote external devices using the VLAM-G environment.
- Two modules:
  - controller
  - Visualization
Floating ball experiment
The MRI scan experiment

- This experiment is about running jobs on different Grid enabled machines using the VLAM-G environment.

- Four modules:
  - MRI scanner
  - Converter to NetCDF
  - Visualization Modules: 2D and 3D
Virtual Lab Amsterdam

RMI Scan Experiment
MACS (Material Analysis of Complex Surfaces)

- Remote experimentation (µ-beam)
- Data storage
- Meta-data analysis (combine data from different sources)
MACS lab Devices

µ-beam

TOF-SIMS

FTIR μscoop

FTMS
What is needed?

• High speed network
• Huge computing power
• Analytical Instruments / Data
  • Micro-beam, FTIR, TOF-SIMS, …
• Capable database, generic data format
• Software ("The glue")
  ➢ The Virtual Laboratory env. “VLAM-G”
Meta-data analysis

Sample

VL database
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Demo3: MACSLab Exp
Conclusions

- VLAM-G: a science portal for exp. analysis
- Workflow support for Bio-informatics, Materials Science and Biomedical Simulation & Visualisation
- Seamless access to distributed resources
- Resource Management: based on Globus
- Content Management: VLAM-G middleware
- Current status: preparing the beta-release of the VLAM-G toolkit.
Where to find about the VLAM-G projects

VLAM-G home page

- http://www.dutchgrid.nl/VLAM-G