# TELEHVEM

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# TeleHVEM Project



**Virtual Laboratory**

**SSL –based  Security**

Remote control

Data management

Image processing

*Control*

*Store*

*Mgmt*

*Upload/download*

*Processing*

**HVEM**

**Data Grid**
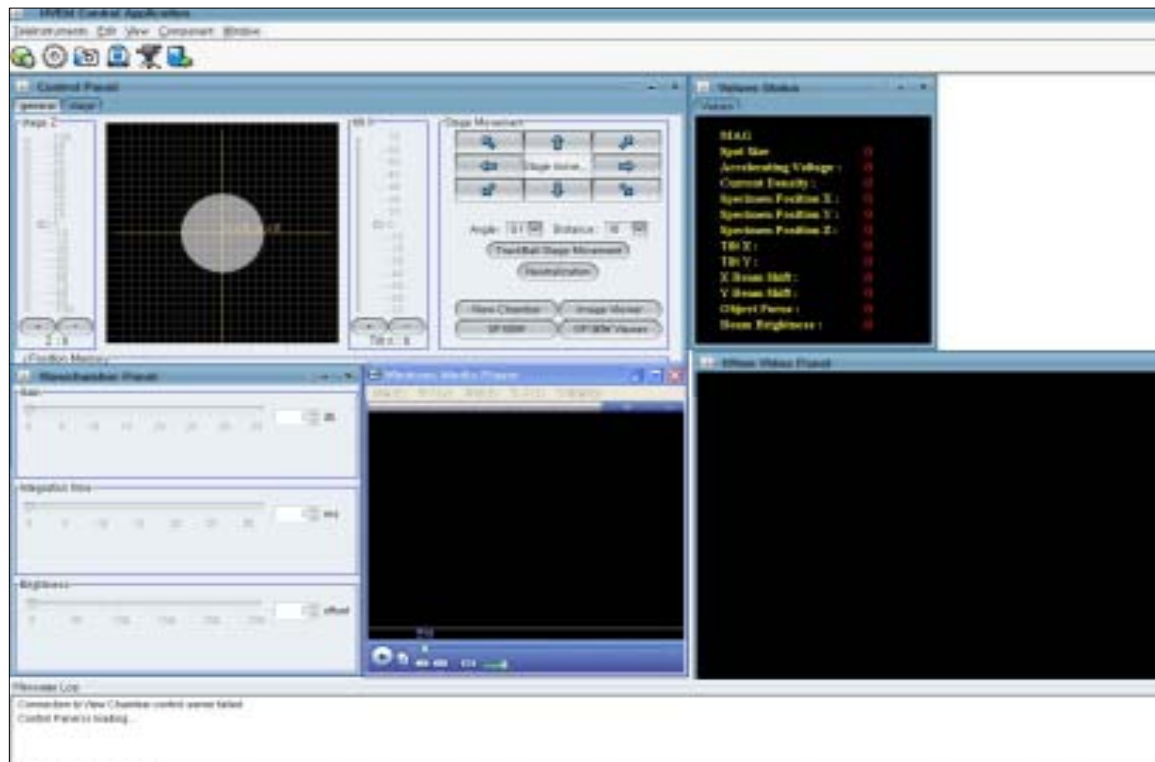
**Computational Grid**
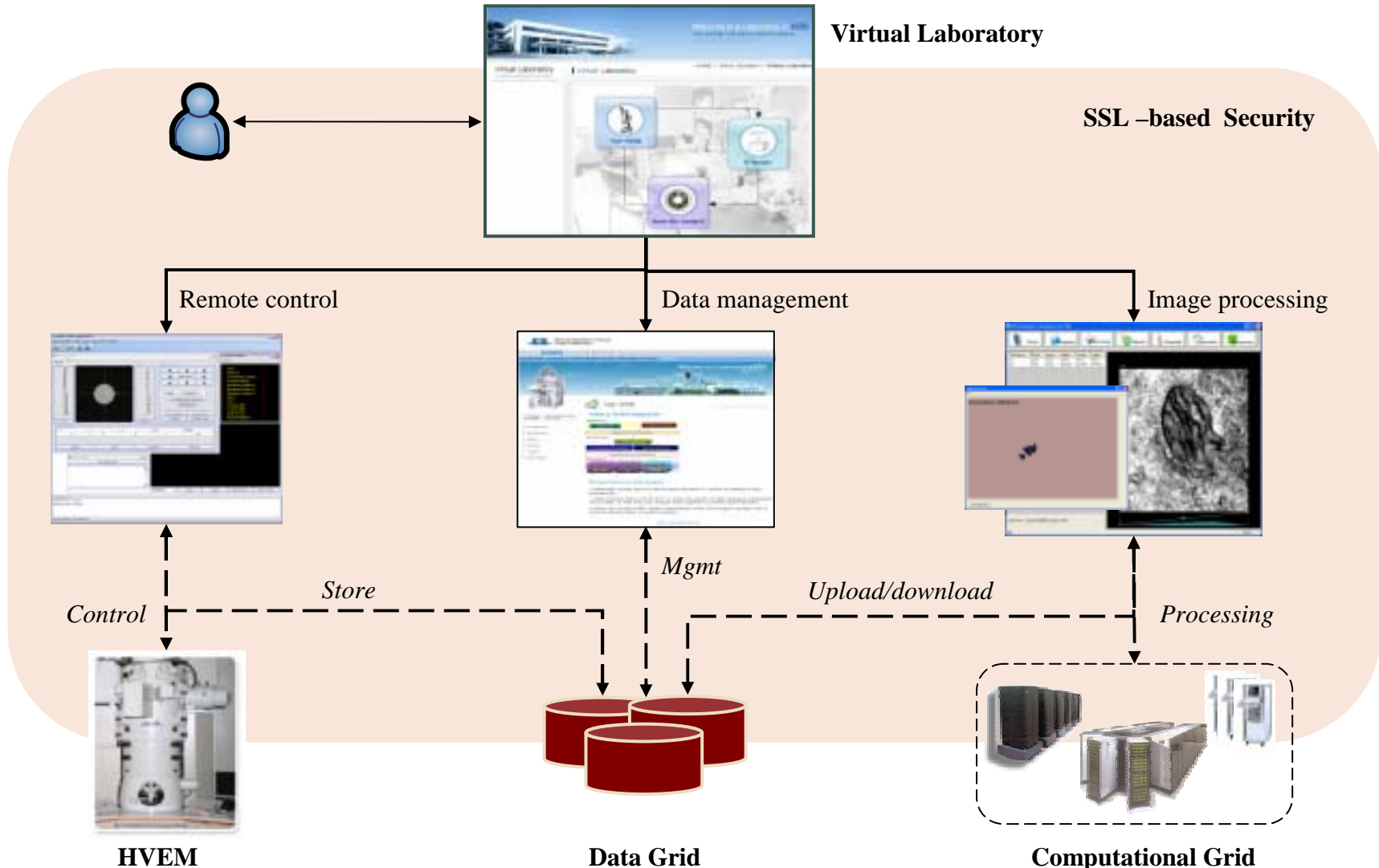
# TeleHVEM Portal

- Virtual Laboratory
    - Providing Tele-HVEM, G-Render, and DataGrid Service
    - Easy access and comfortability
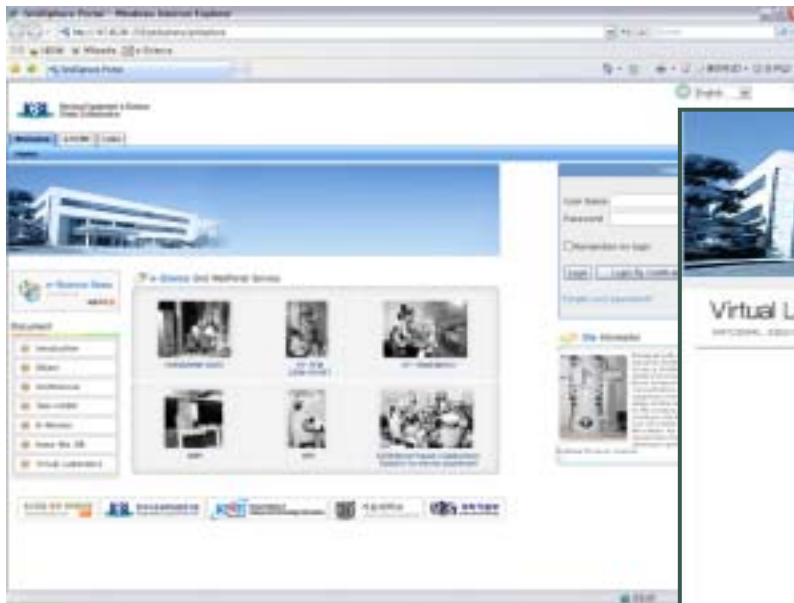
# HVEM Remote Controller

- Goniometer Control
- Live video streaming
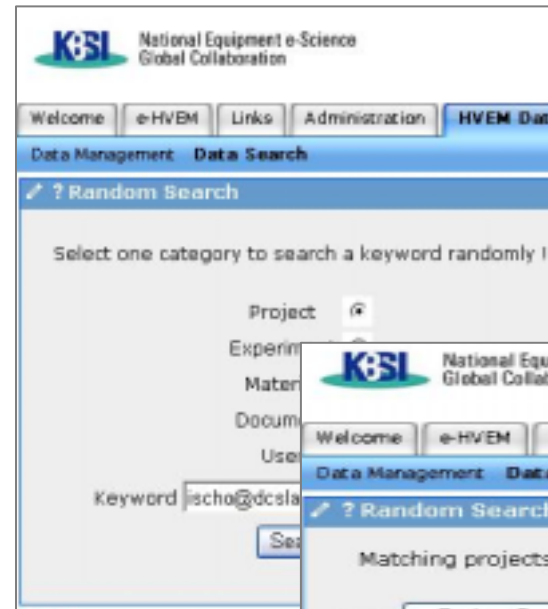- View Chamber Camera Control
  - HD Live Video streaming

# Data Grid

- Management and View for Experimental Data

# G-Render

- Grid-based Image Processing System
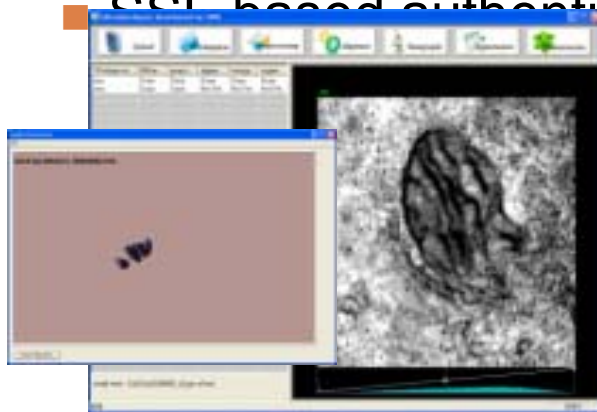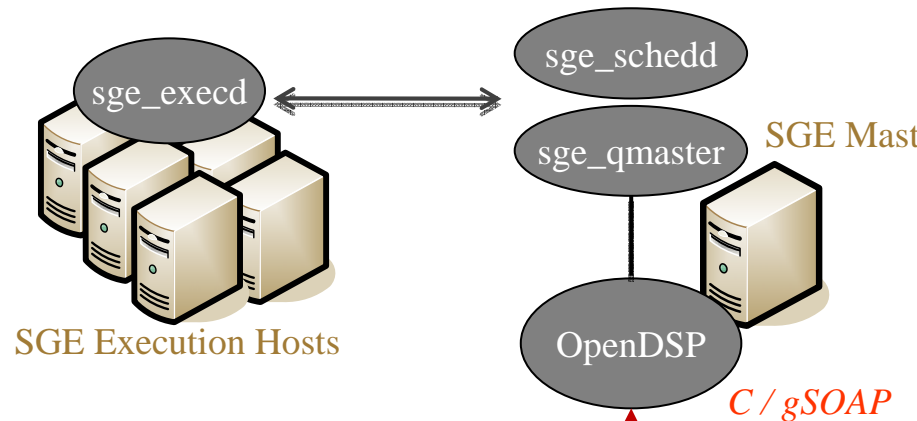  - Server system
    - Sun Grid Engine (SGE)
      - For computational Grid
    - OpenDSP
      - DRMAA Web Service
  - Client
    - Various image processing features
    - SSL-based authentication



sge_execd

sge_schedd

sge_qmaster

**SGE Master**

OpenDSP

**SGE Execution Hosts**

*C / gSOAP*

| GRender GUI | GRender Agent | gSOAP stubs |
|---|---|---|
| *MFC* | *MFC (C++) dll* | *C library* |
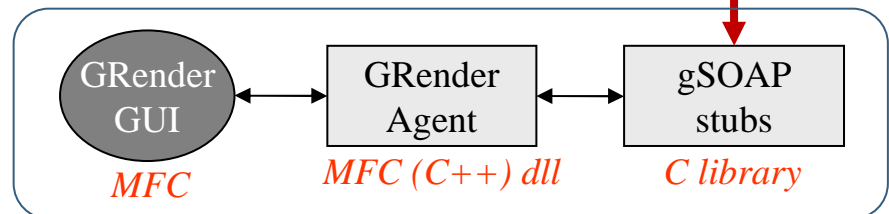
# HVEM Security Framework

- Web-based Authorization Management System
  - Implemented an users / services management system based on the Globus CAS
- Certificate-based login interface
  - Implemented a login interface by Java applets



3. Send encrypted capabilites (represented as String)

AuthService

2. Query capabilities

1. Login

HVEM Web Portal

5. Access resources with the proxy

4. Create a proxy certificate with the encrypted string

Grid Services(e.g. GTCP, RT

6. Check whether the access compl with the local authorization policy
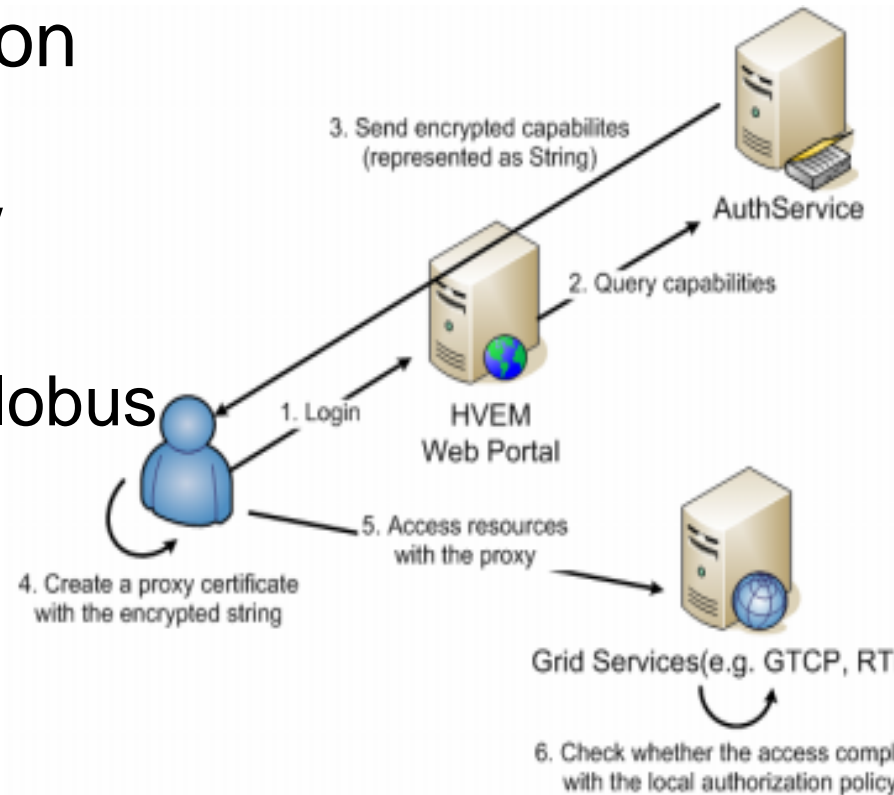
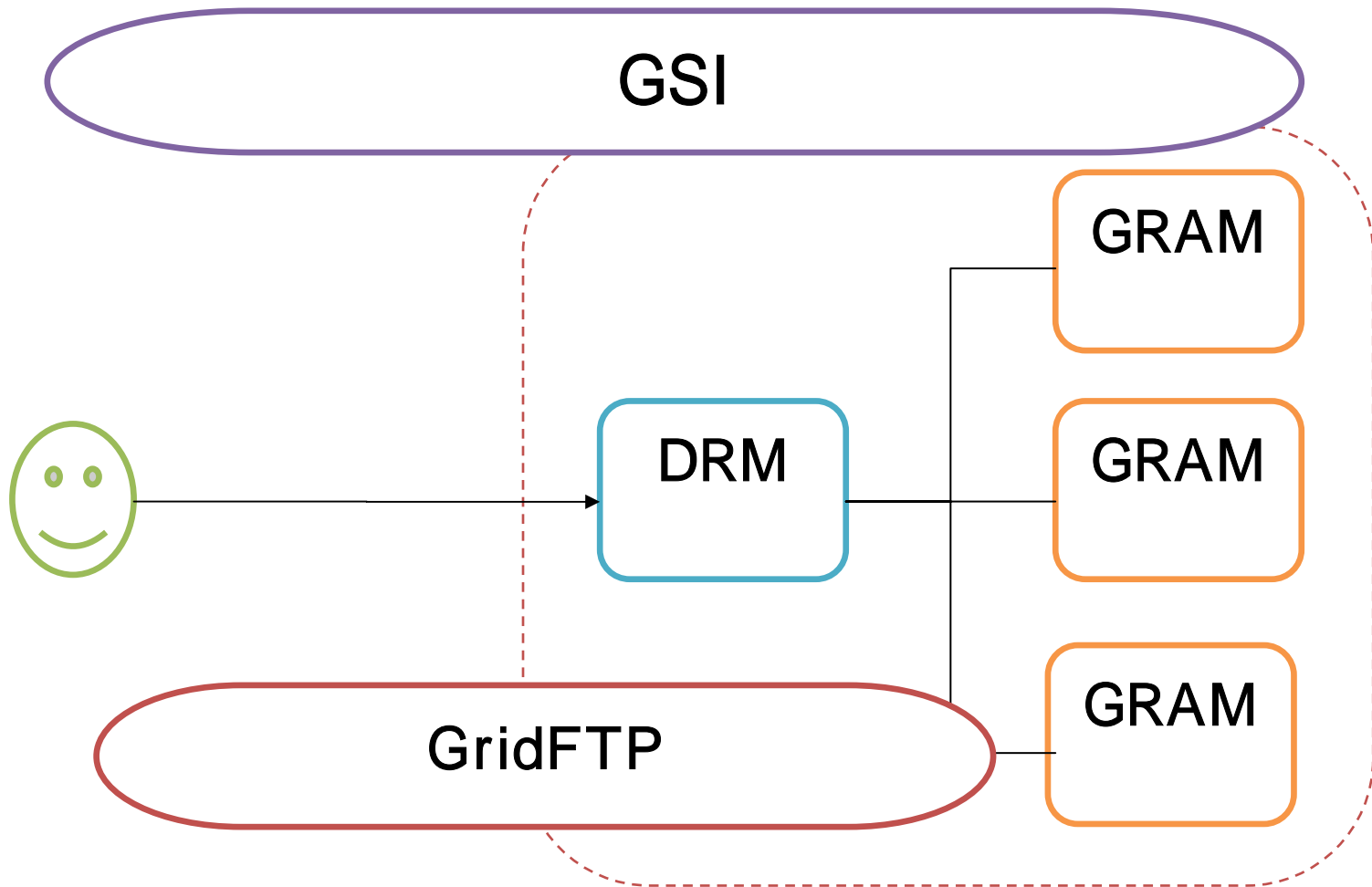# TeleHVEM Testbed

- Machine Configuration
  - dsp
    - Image processing of G-Render
  - srb
    - Managing shared data
  - gridws
    - Remote control of HVEM
  - video
    - Streaming DM video
  - viewchamber
    - Streaming ViewChamber video
  - e-science
    - Web portal
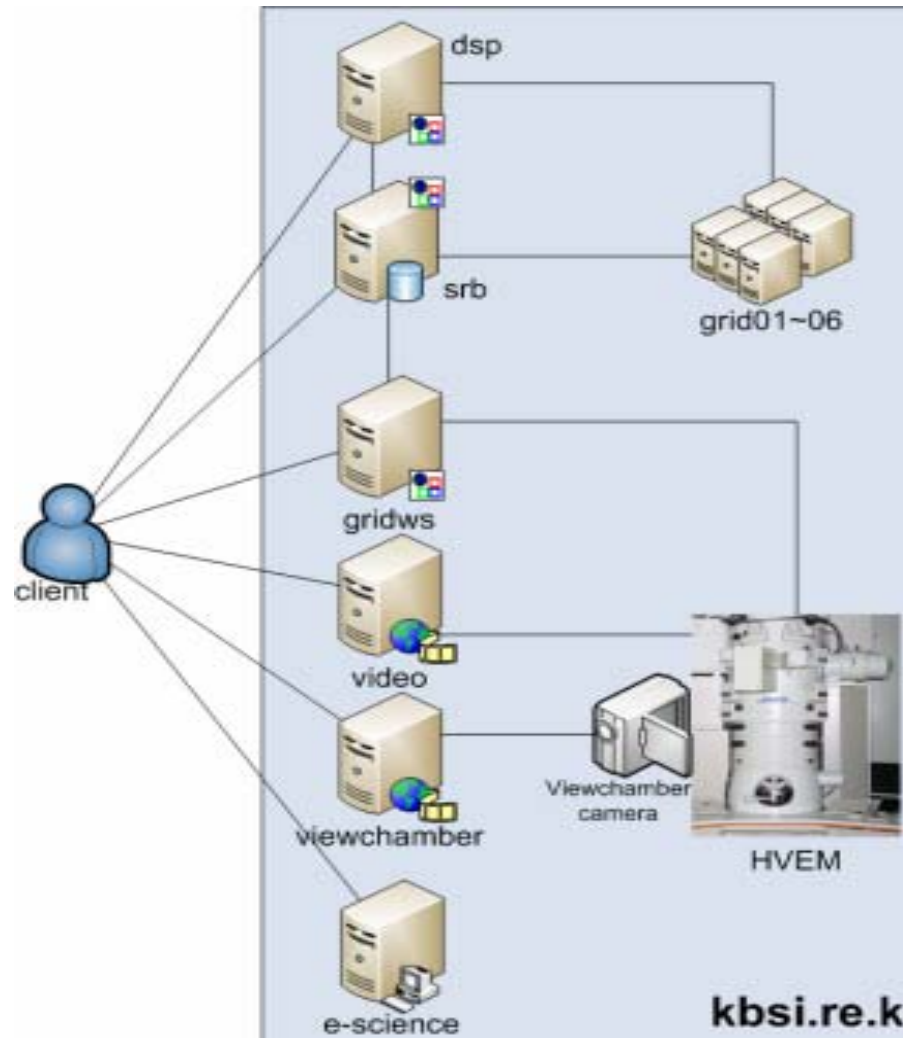
# Issues with G-Render

# Problems

- The Client
  - MFC application
- The Server
  - Some MFC code

- No Globus Toolkit
- No gSOAP Toolkit
- No WSRF.Net

# Our Solution

OpenDSP + SUNGrid Engine

- Server side
  - Suppors DRM and GRAM
  - File transfer using DIME
  - Windows NFS not so stable
- Client side
  - Can generate stub from WSOP using gSOAP
  - No GSI.
  - Supports SSL certificate