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Cracow GRID Workshop 2005

# **The GRID – Embedded Interactive Jobs Invocation**

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November 20-23, 2005

Cracow, Poland

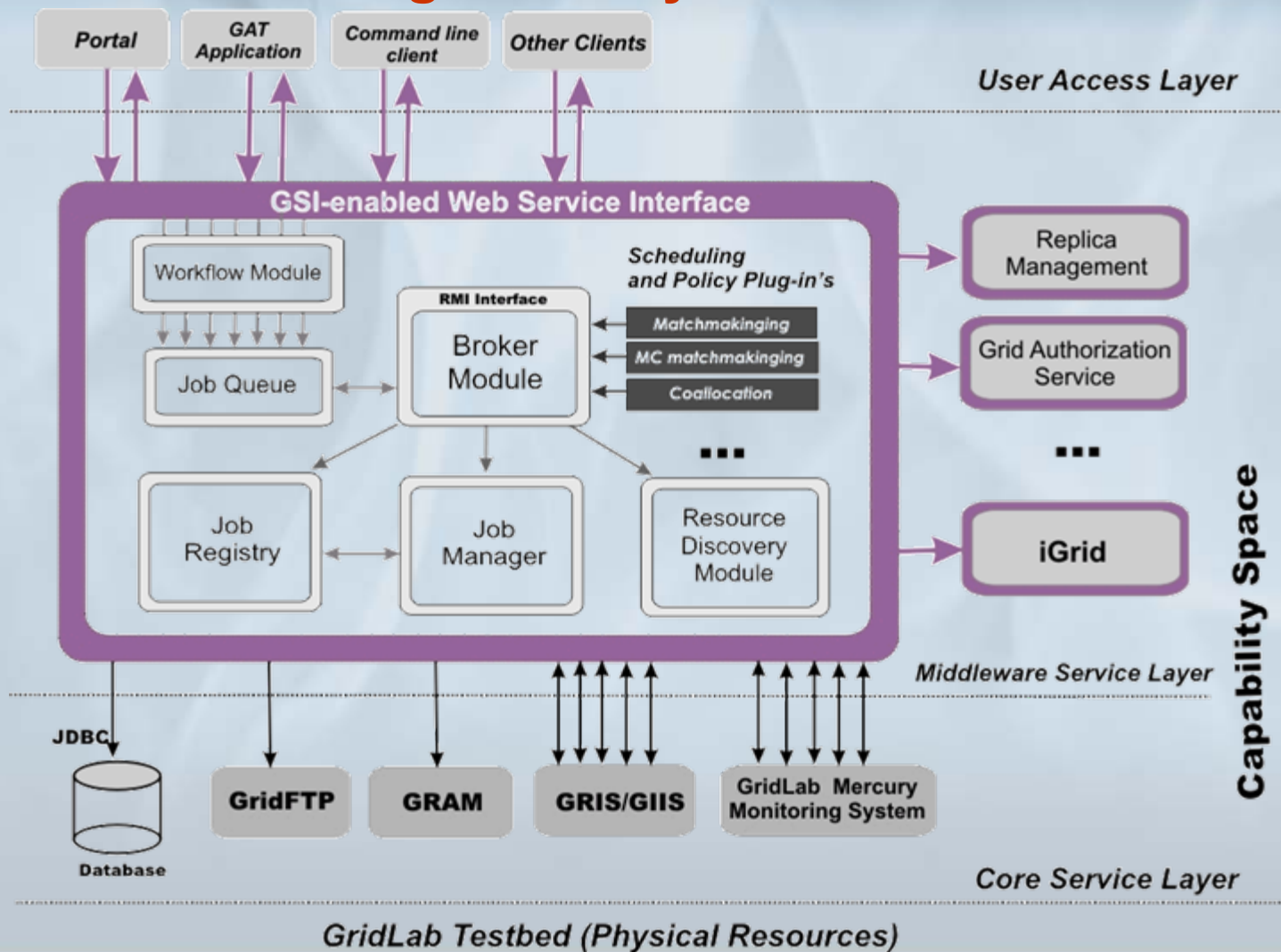
## Agenda

- ◆ Task types in the GRID environment
- ◆ Grid Resource Management System
- ◆ Interactive Job description
- ◆ Aspects of interactive tasks invocation
- ◆ Summary

## **Task types in GRID environment**

- ◆ **regular (batch) task**
- ◆ **interactive / visualization task**
  - + **performed in real time by the users**
  - + **scheduling is required (time slot, work hours, user preferences)**

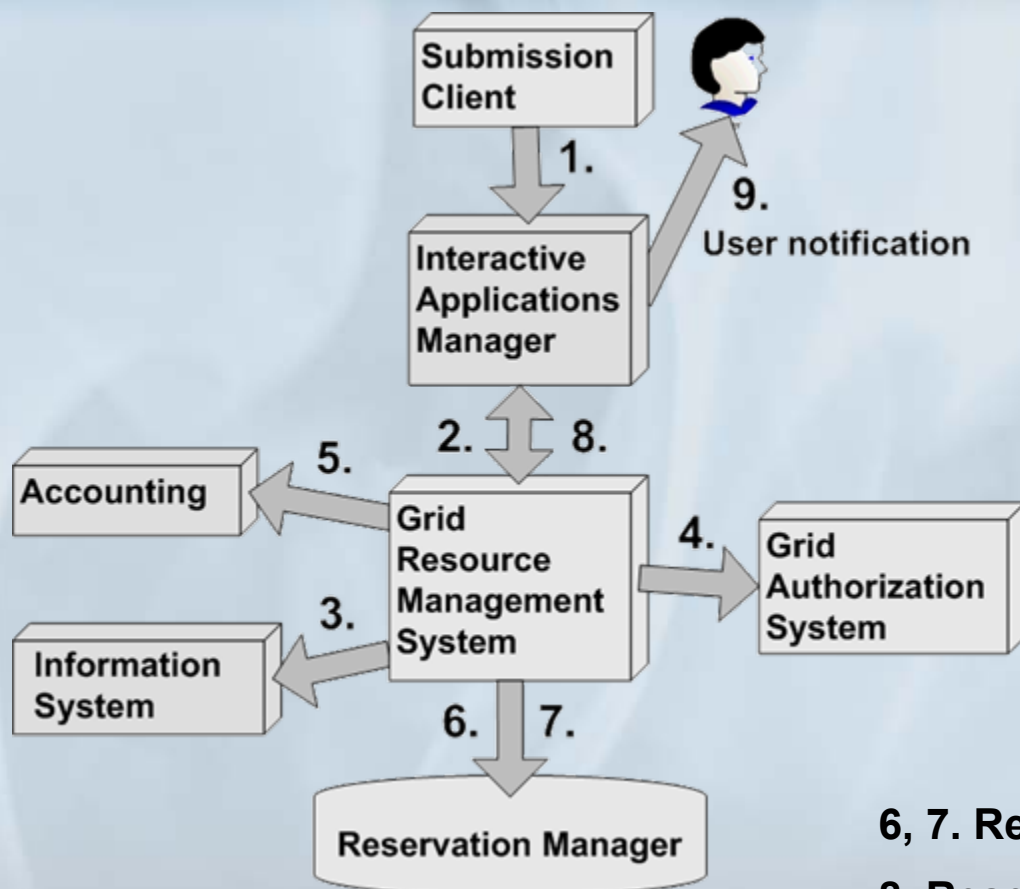
## Grid Resource Management System



## Interactive job description

```
<grmsjob appid = "interactive_example">
  <simplejob>
    <resource>
      <applications>
        <application instanceCount="1">VNC</application>
      </applications>
    </resource>
    <executable type="single" count="1">
      <file name="exec-file" type="in">
        <url>file:///${HOME}/interactive_test/interactive_exec</url>
      </file>
      <arguments>
        <value>500</value>
      </arguments>
      <stdout>
        <url>gsiftp://violet.man.poznan.pl/~/tests/app_test_out</url>
      </stdout>
    </executable>
    <executionTime>
      <timeSlot>
        <slotStart>10:30:00</slotStart>
        <slotEnd>13:15:00</slotEnd>
      </timeSlot>
      <execDuration>POYOMODT2H20MOS</execDuration>
      <timePeriod>
        <periodStart>2005-05-01T00:00:00-00:00</periodStart>
        <periodDuration>POYOM10DTHOMOS</periodDuration>
      <excluding>
        <weekDay>Saturday</weekDay>
        <weekDay>Sunday</weekDay>
      </excluding>
    </timePeriod>
  </executionTime>
</simplejob>
</grmsjob>
```

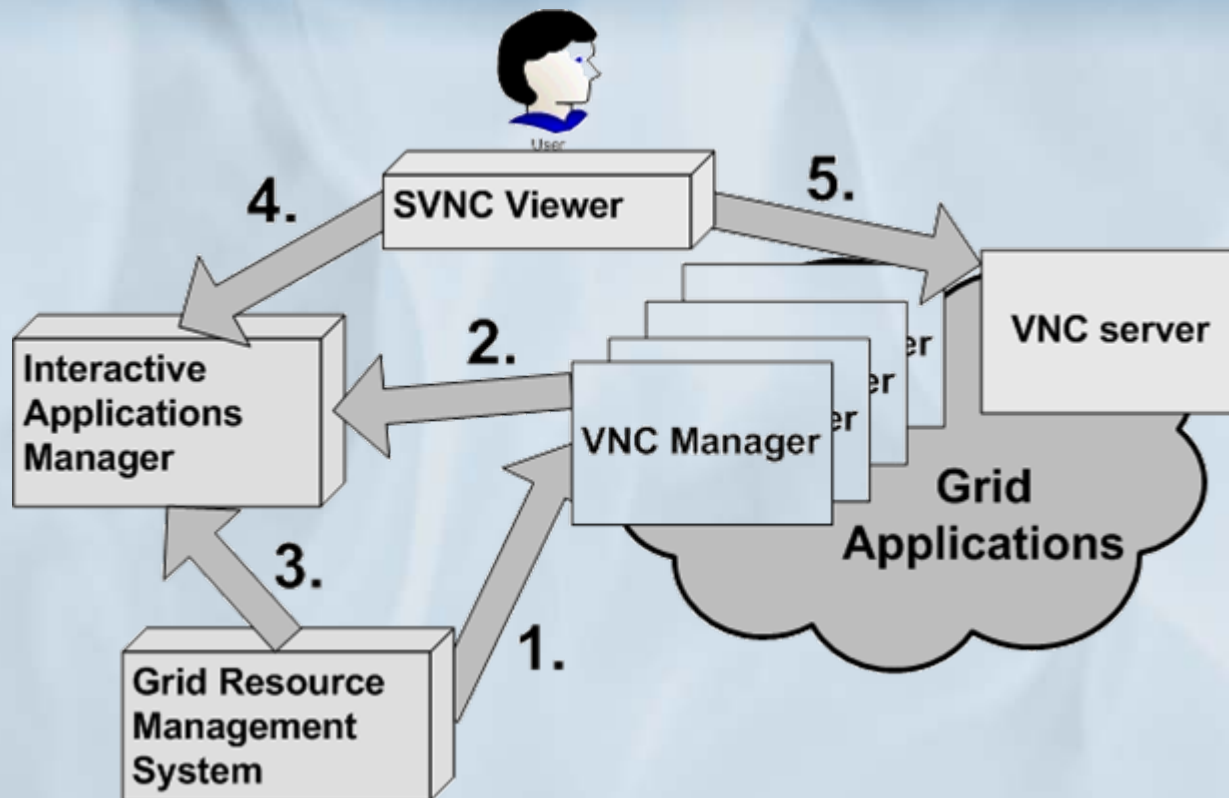
## Interactive tasks: Task submission



1. Job is sent to IAM module
2. Job is sent to GRMS, IAM registers for notification
3. Resources discovery through IS
- 4, 5. Checking user privileges and accounting system

- 6, 7. Reservation is made
8. Reservation decision is sent to IAM
9. User is informed about the schedule

## Interactive task: Establishing a secure connection



1. GRMS runs the scheduled job

3. IAM is informed of status change (notification)

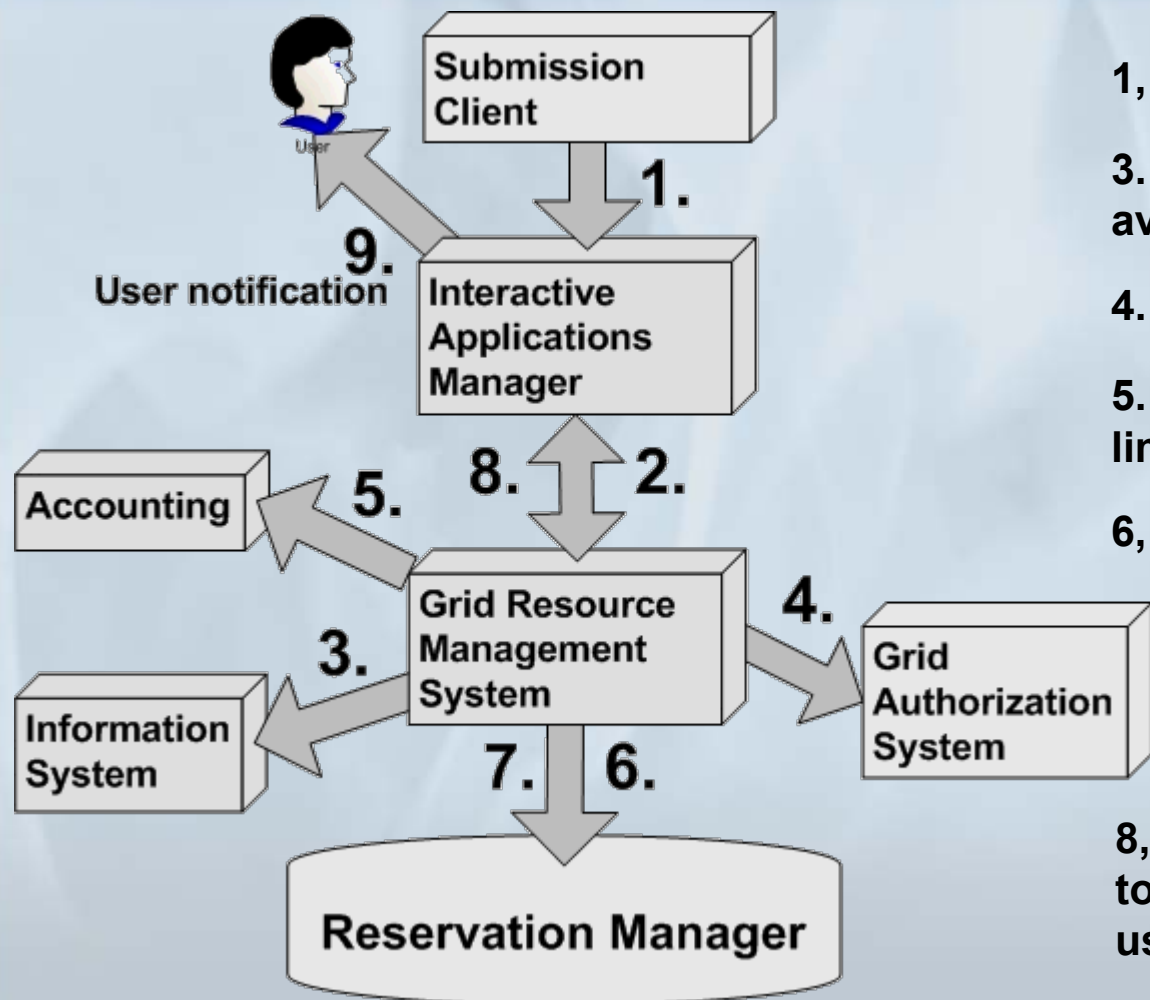
2. Session details (password, port) returned to IAM

4. User starts SVNC Viewer

5. Secure connection is established



## Interactive tasks: Prolonging the VNC session



1, 2. User request

3. GRMS checks machine availability

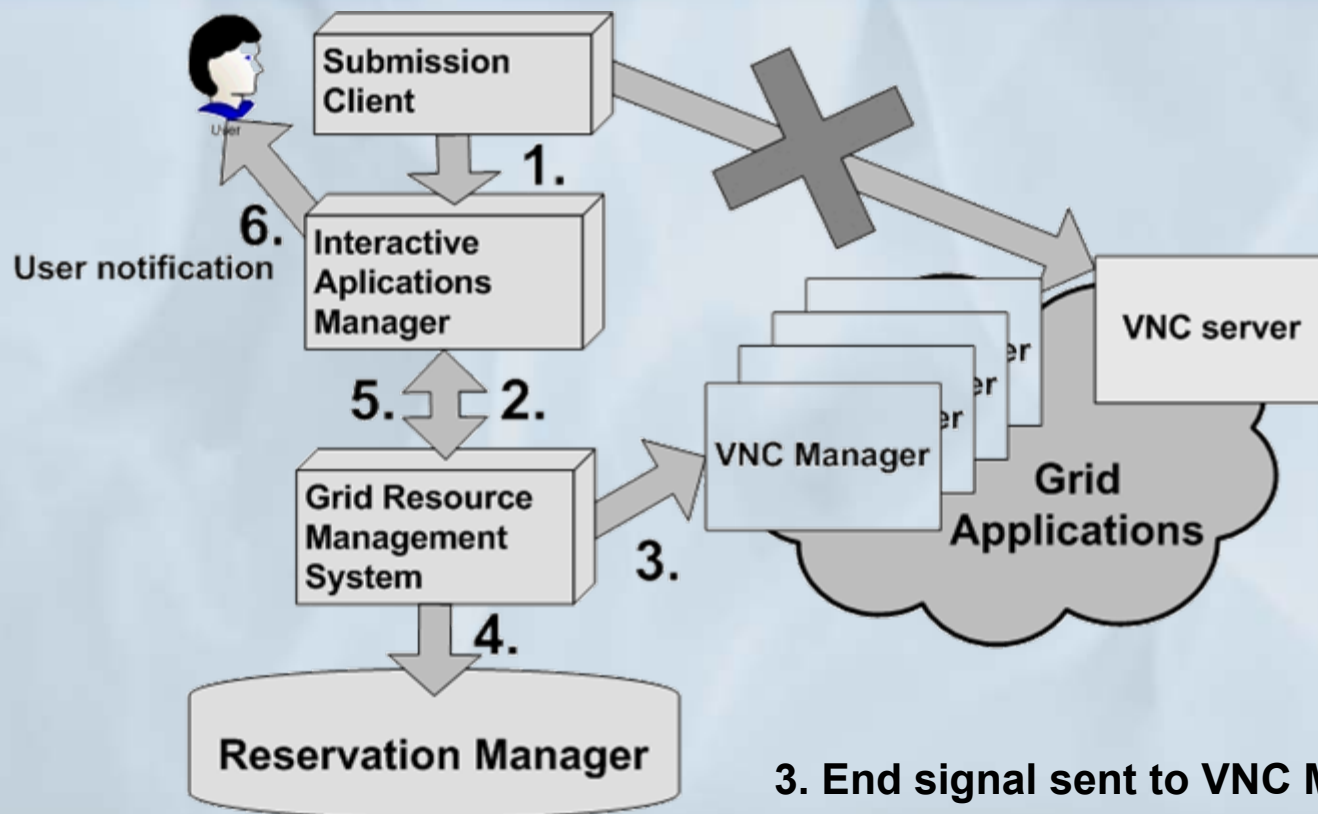
4. GRMS validates user privileges

5. GRMS checks user accounting limits

6, 7. VNC session reservation

8, 9. The reservation result is sent to IAM and then forwarded to the user

## Interactive tasks: Ending the VNC session by the user

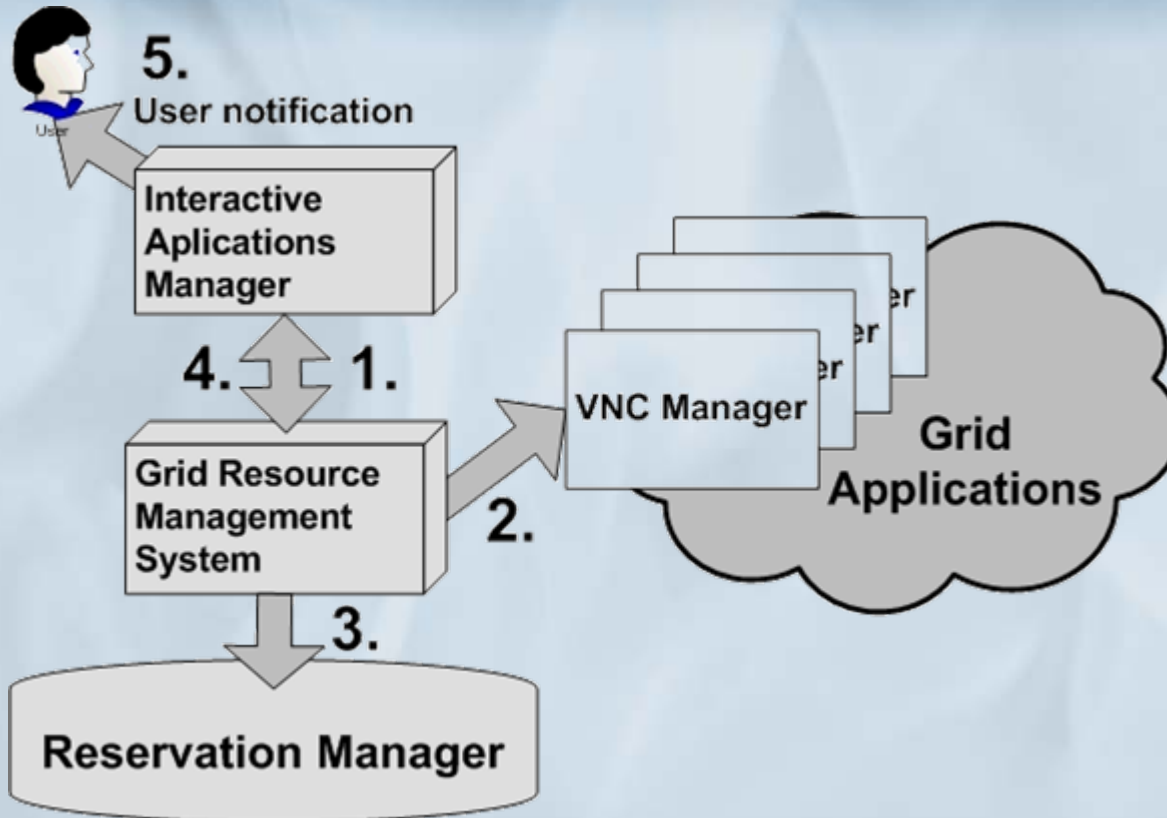


1, 2. Request to end session forwarded to GRMS

3. End signal sent to VNC Manager

4. GRMS updates the RM

5, 6. The result is forwarded to IAM and the user

**Interactive tasks: Ending the VNC session by the system**

1, 2. GRMS sends end signal to VNC Manager

3. GRMS updates RM

4, 5. The result is forwarded to IAM and the user

## Summary

- ◆ Invocation of user-interactive tasks can be divided into the following main steps:
  - ✦ Task submission
  - ✦ VNC session scheduling
  - ✦ Establishing secure connection
  - ✦ Ending the VNC session
- ◆ Solution available for many applications
- ◆ Idea implemented in the Virtual Laboratory System



<http://vlab.psnc.pl/>

<http://gridlab.org/>

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