

OGF36

Hyatt Regency Chicago
Chicago, IL USA
October 8-10, 2012

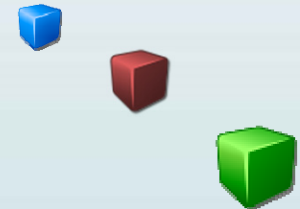
[OGF36 Schedule is available here](#)



Status Reviews and Plans

Production Grid Infrastructure (PGI) - WG

Morris Riedel et al.
Juelich Supercomputing Centre
PGI Co-Chair

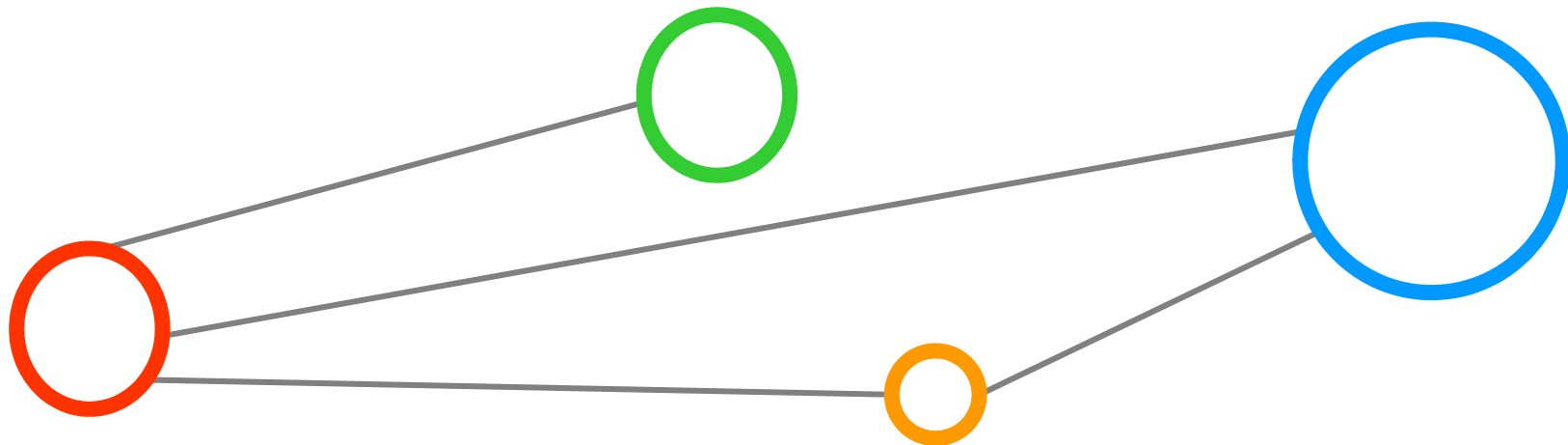


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Outline

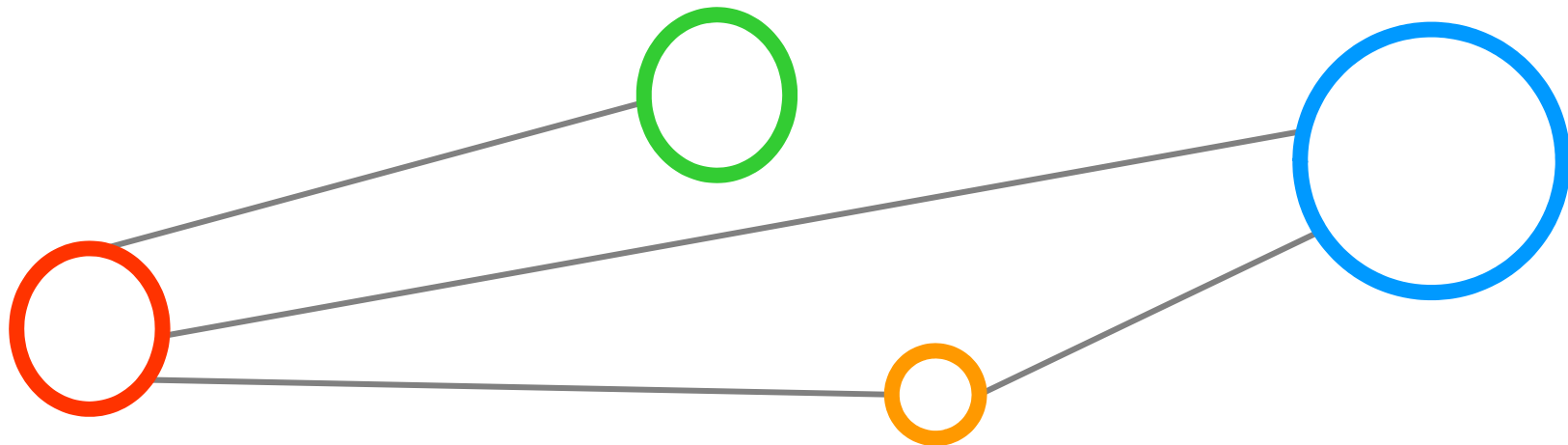


Outline

- PGI Status Checks
 - Documents, RedMine, Plans, etc.
- Activities around Execution Interfaces
 - EMI-ES, BES Profiles, towards BES2.0
- Activities around GLUE2 and profiles
 - GLUE2 XML rendering, security profiles
- AOB
 - GIN Session,...



PGI Status Checks



Done: Existing Documents

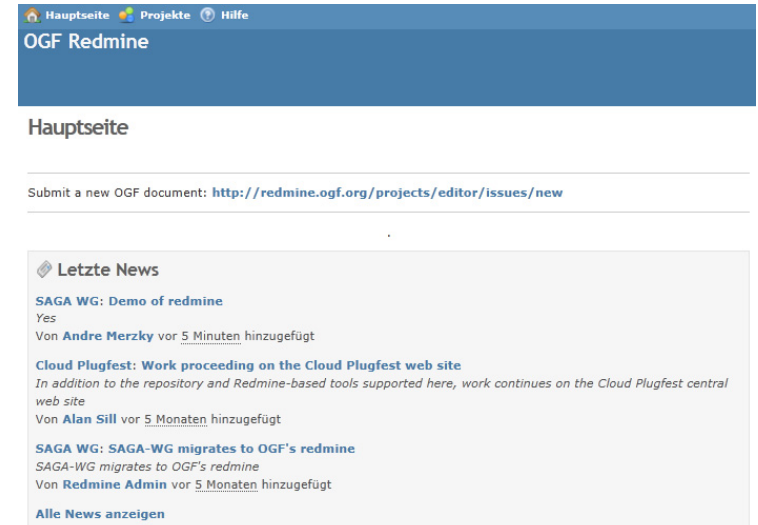


- [GFD180] OGF-Production Grid Infrastructure: Use Case Collection, Version 1.0
 - <http://www.ogf.org/documents/GFD.180.pdf>
- [GFD181] OGF-Production Grid Infrastructure: Glossary of Acronyms and Terms, Version 1.0
 - <http://www.ogf.org/documents/GFD.181.pdf>

RedMine Transfer



- OGF moved away from GridForge
 - RedMine is new
 - <http://redmine.ogf.org>
 - Initial material transferred
- Derived Task Activities:
 - Identify material that can be removed
 - Transfer rest of 'approved' material
 - Update plans and charter documents



Register: PGI Members!



The screenshot shows a web browser window with the URL <http://redmine.ogf.org/account/register>. The page has a blue header with navigation links: [Hauptseite](#), [Projekte](#), and [Hilfe](#). Below the header, the text "OGF Redmine" is displayed. The main heading is "Registrieren oder mit OpenID anmelden". The registration form includes the following fields:

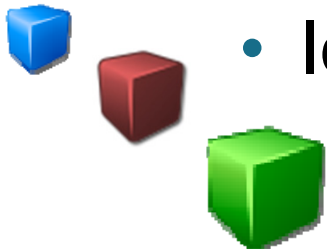
- Mitgliedsname *
- Kennwort * (with a note: "Muss mindestens 4 Zeichen lang sein.")
- Bestätigung *
- Vorname *
- Nachname *
- E-Mail *
- Sprache (dropdown menu, currently set to "English")
- OpenID-URL

Below the form is a CAPTCHA section with the text "inasmuch" and "ypoti". It includes a prompt "Geben Sie die 2 Wörter ein:" and a text input field. To the right of the input field are three CAPTCHA logos: "reCAPTCHA", "reCAPTCHA", and "reCAPTCHA". An "OK" button is located at the bottom left of the CAPTCHA section.

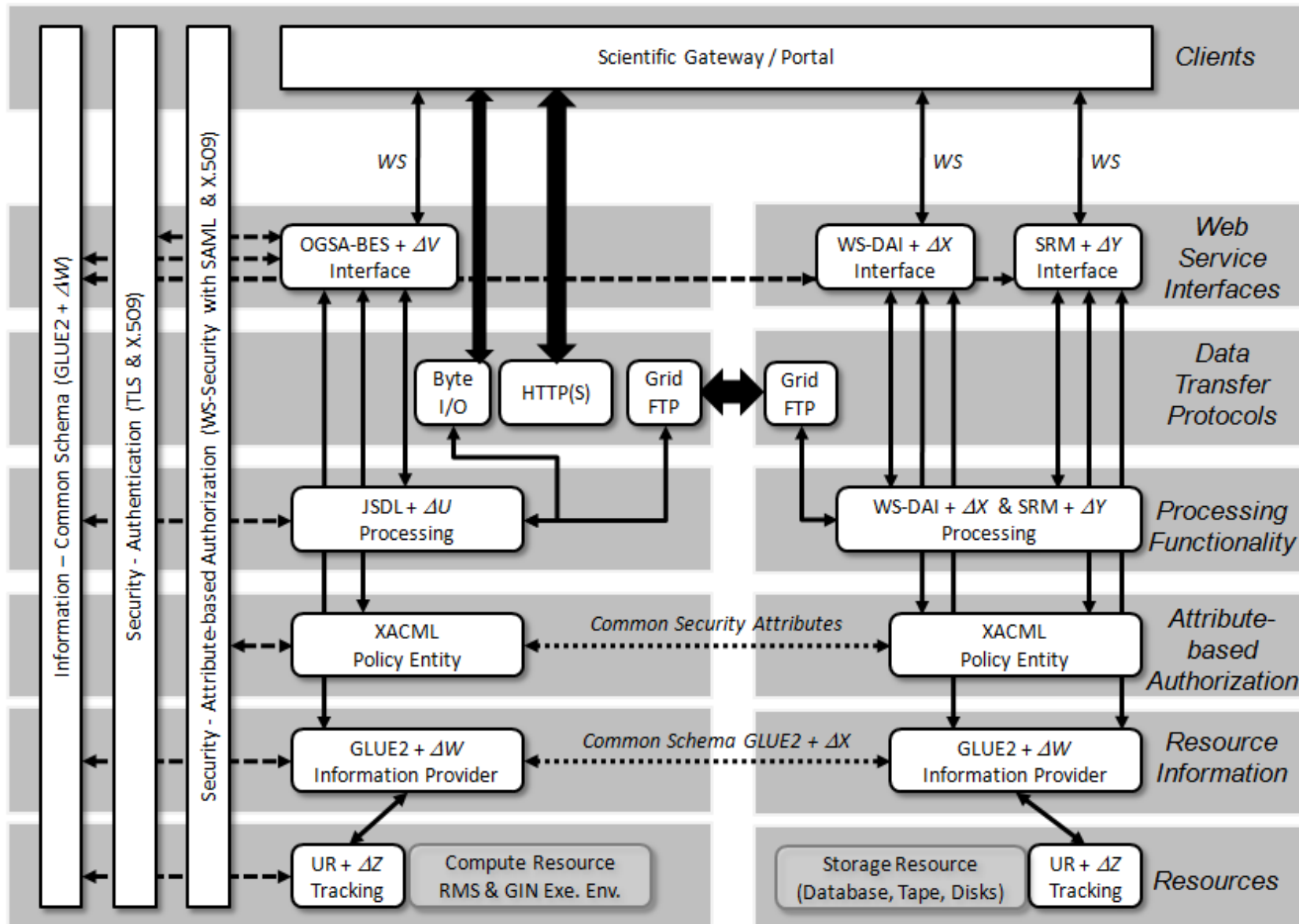
Plans: Experiences in Standards



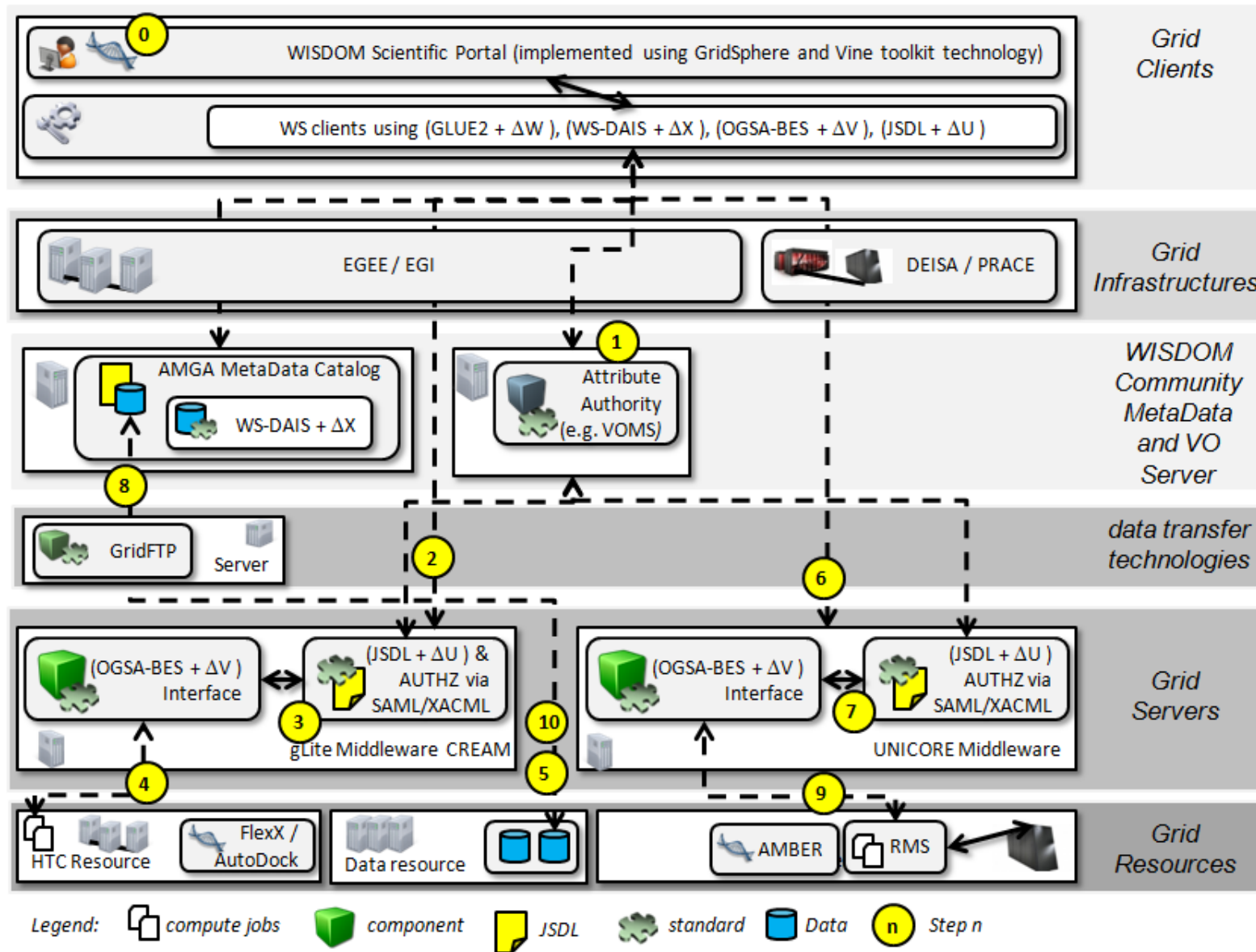
- Continue to bring experiences into OGF
 - ‘Major mission of PGI’ → lessons learned!
 - Document/share know-how from infrastructures
- Contribute to new emerging specifications
 - BES2.0 et al. & profiles
 - Consistent information with GLUE2 et al.
 - Attribute-based security XACML&SAML et al.
 - Identity delegation gets uptake → new group!



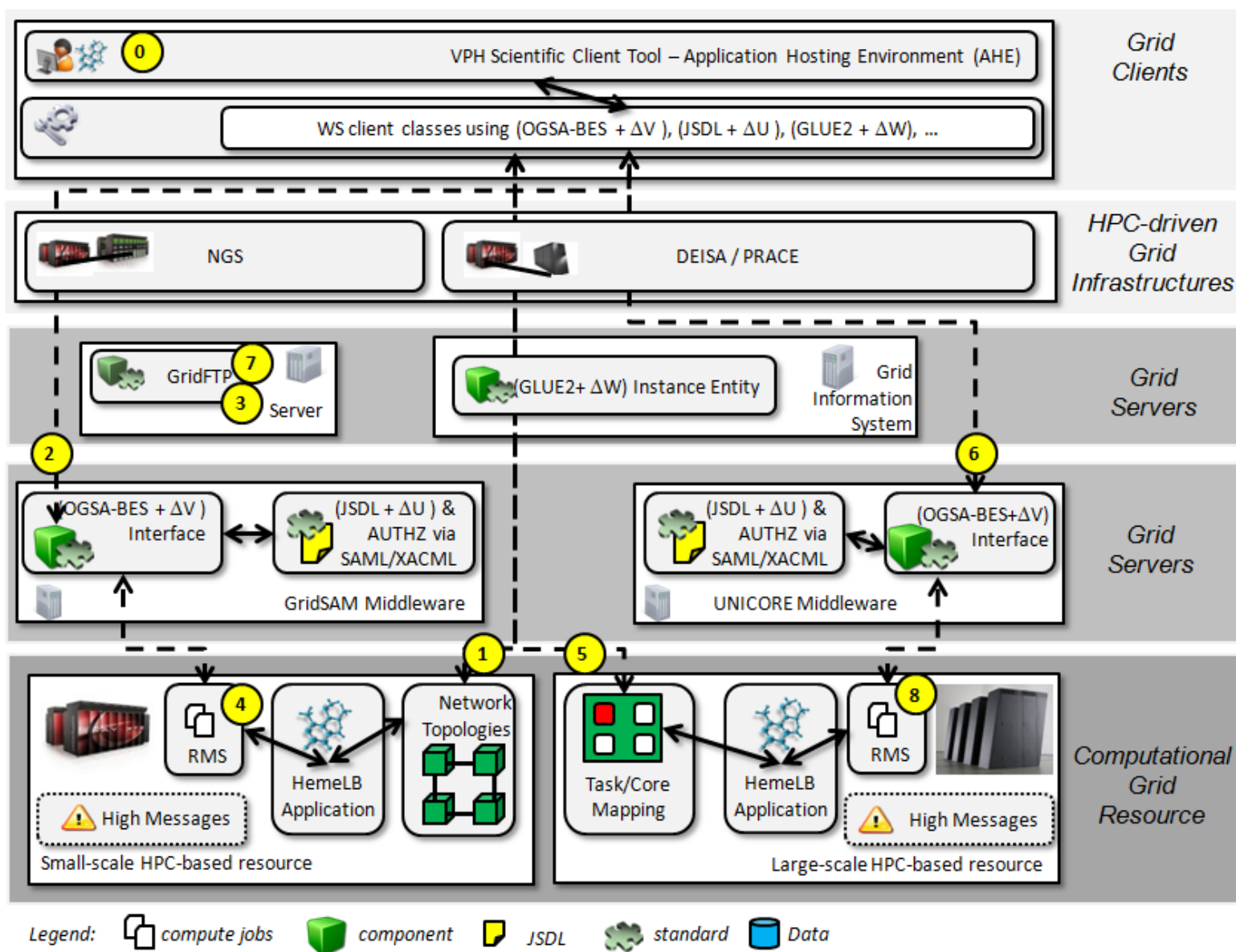
Plans: PGI Reference Model



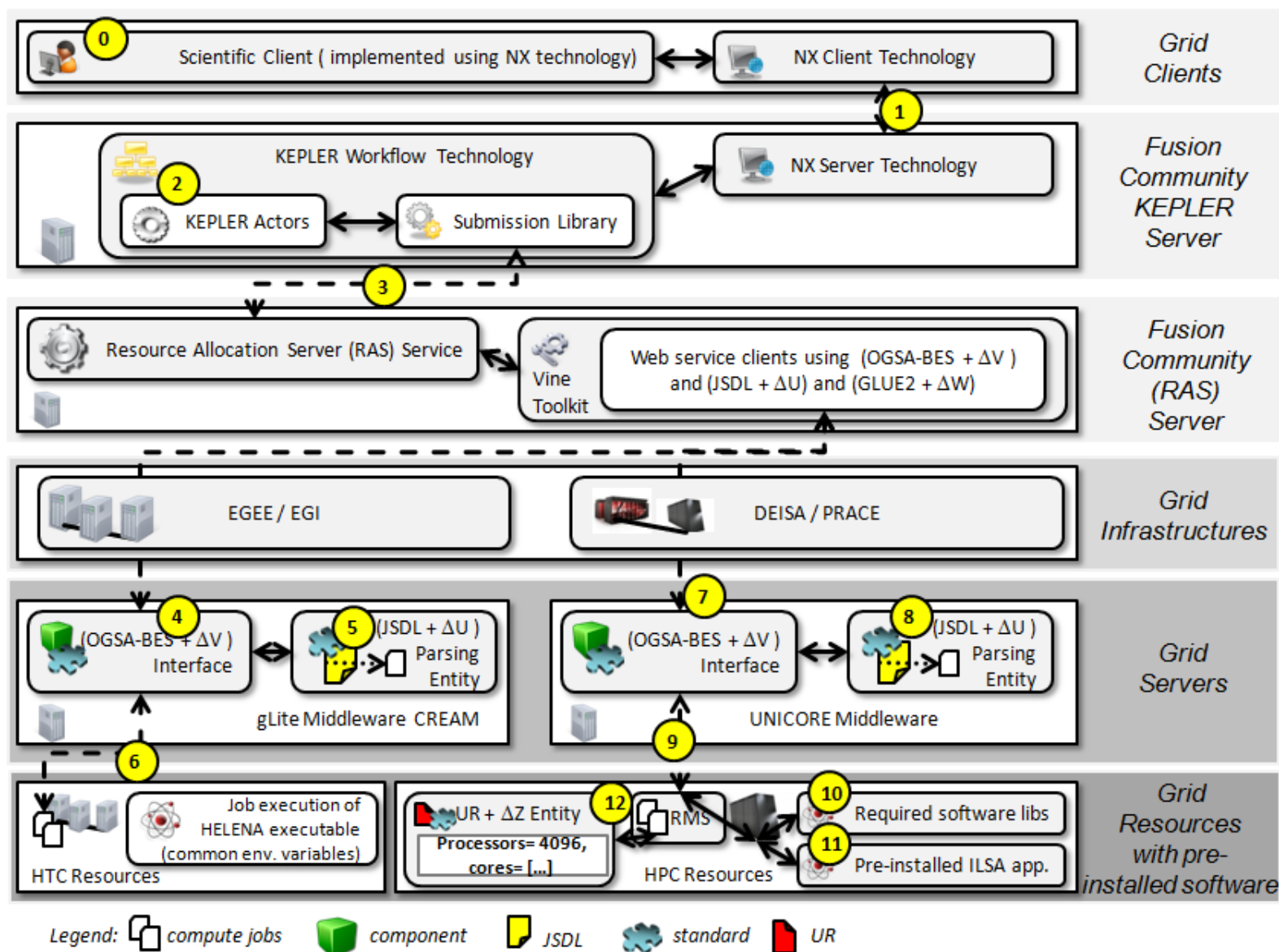
Application Driver: bio-informatics



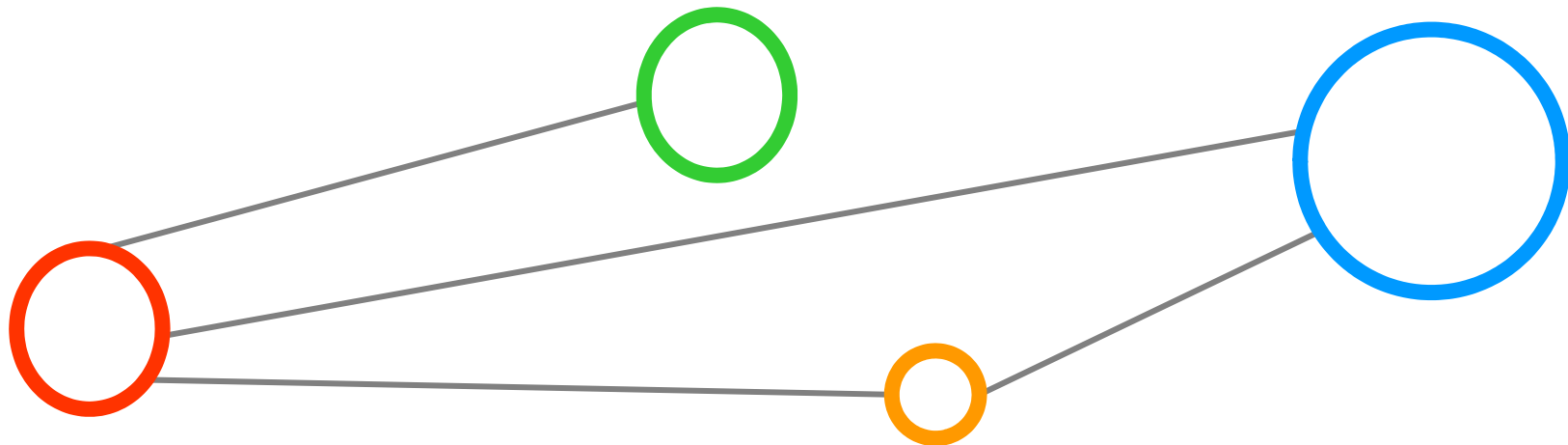
Application Driver: e-Health



Application Driver: Fusion



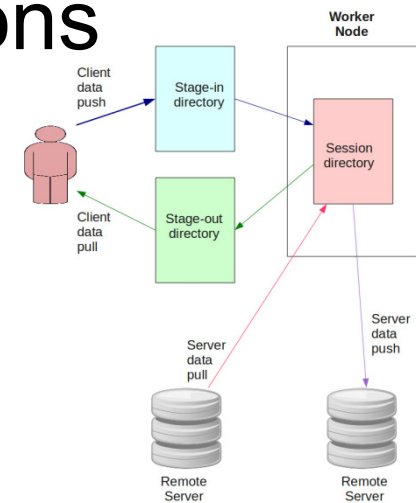
Activities Execution Interfaces



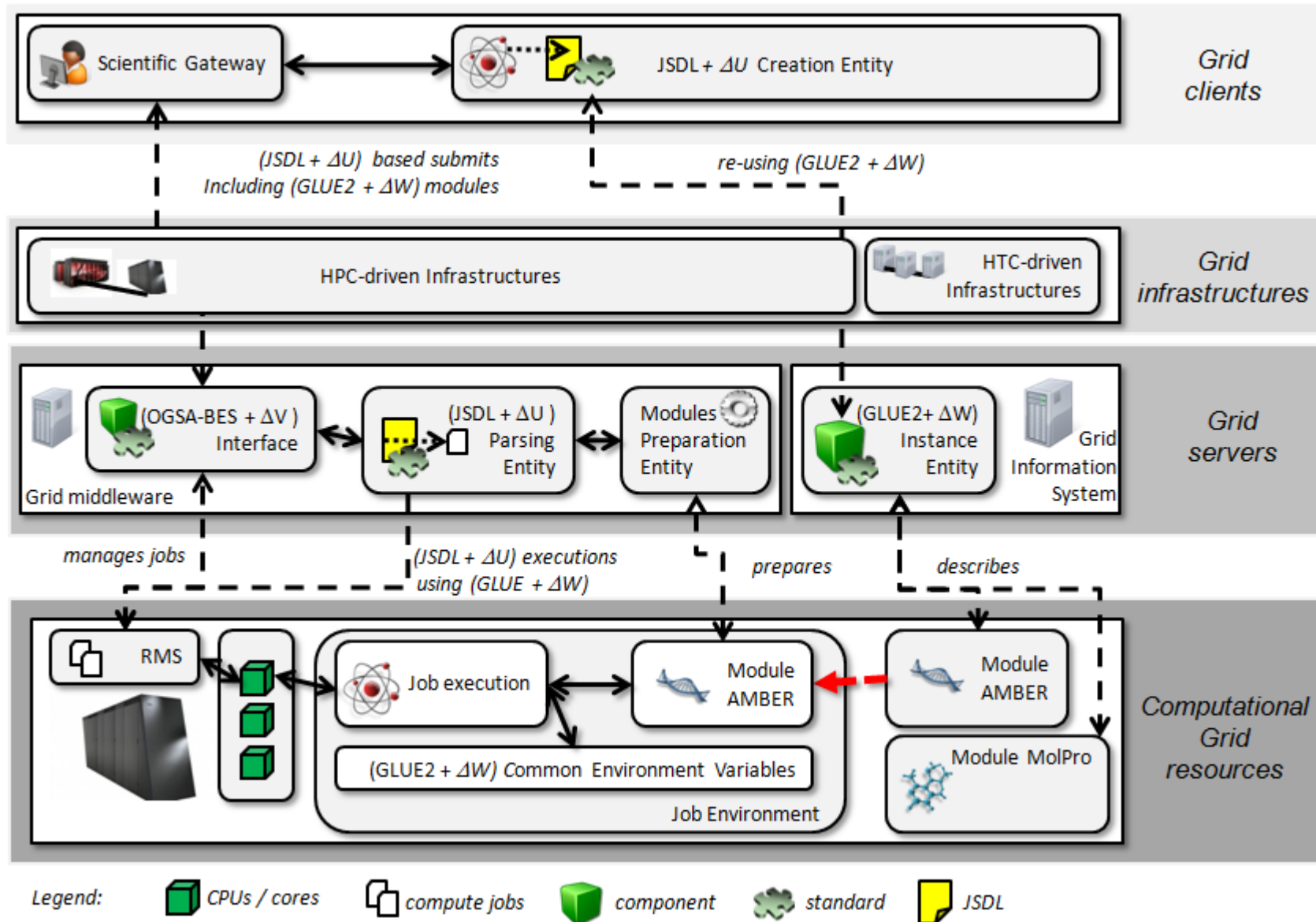
Several PGI Material Available



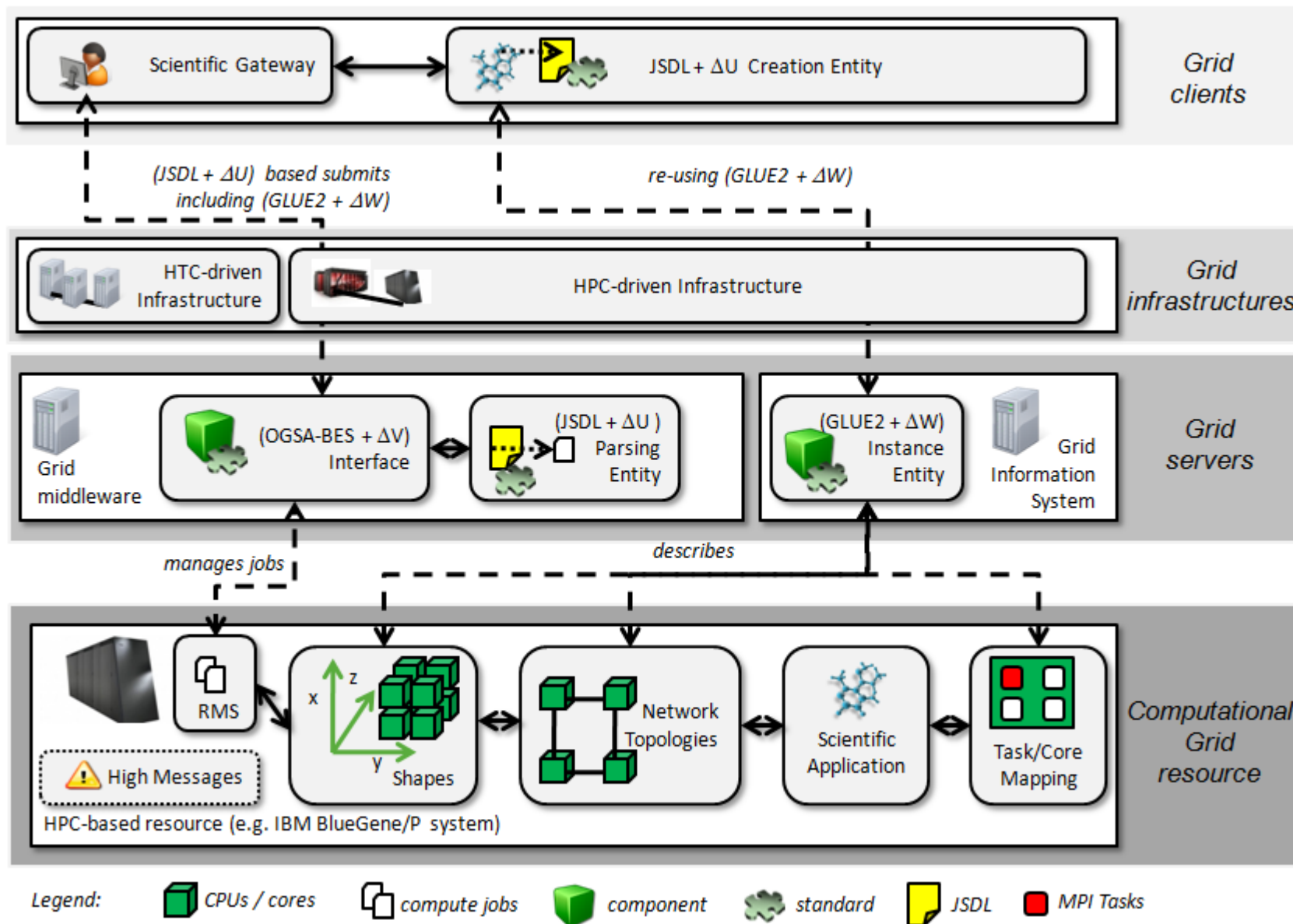
- Concepts derived from applications
 - Improving HPC, e-Science applications, data staging, etc.
- EMI-ES information document
 - Implements many those concepts
 - <https://forge.ogf.org/sf/go/doc16442?nav=1>
- BES, UR takes PGI work in account...
 - New Two Profiles standardizing the concepts
 - E.g. access to working directory, etc.



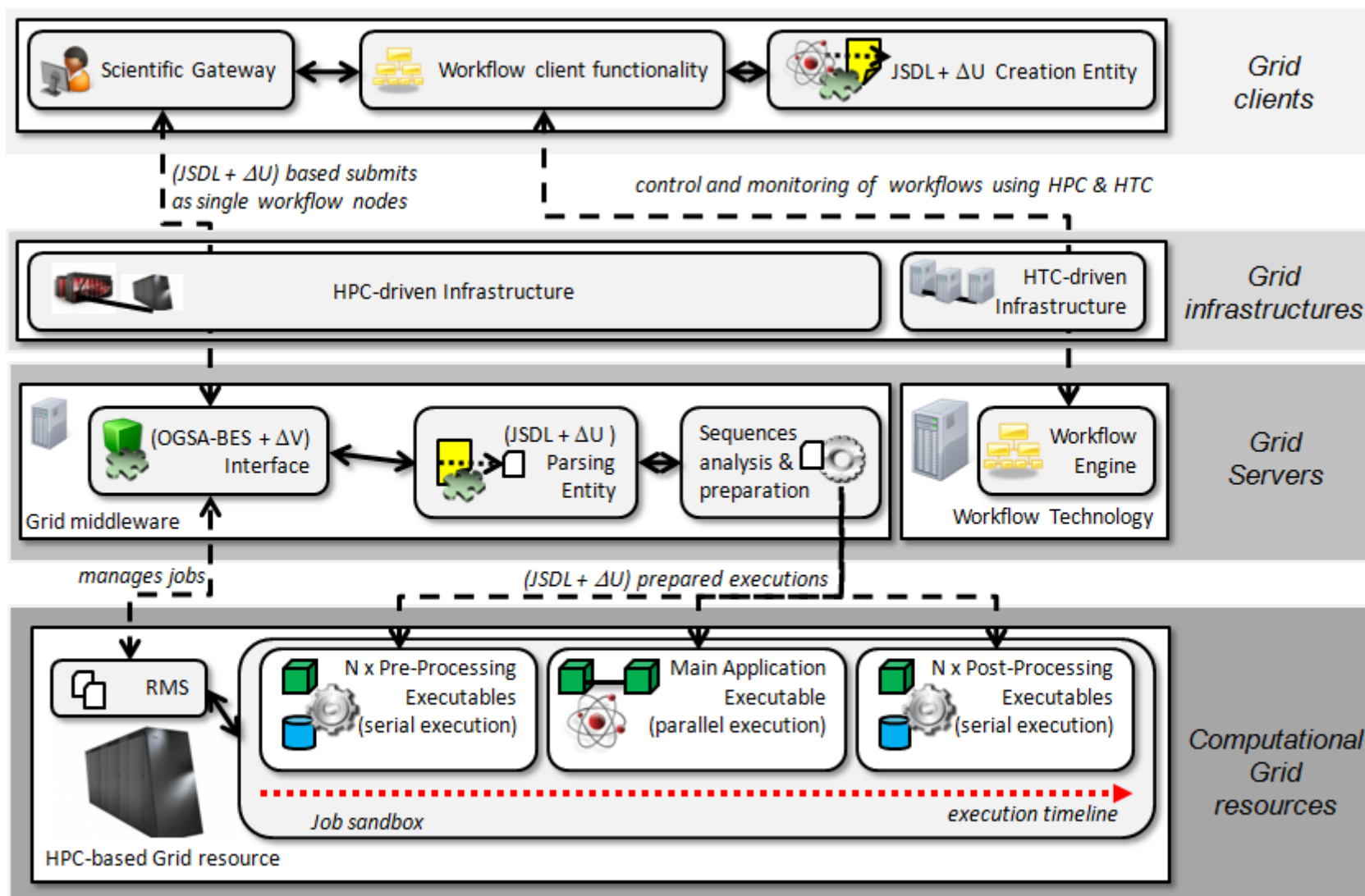
Concept: Application Support



Concept: HPC Extensions



Concept: Sequence Support



Legend:



CPUs / cores



compute jobs



component



standard

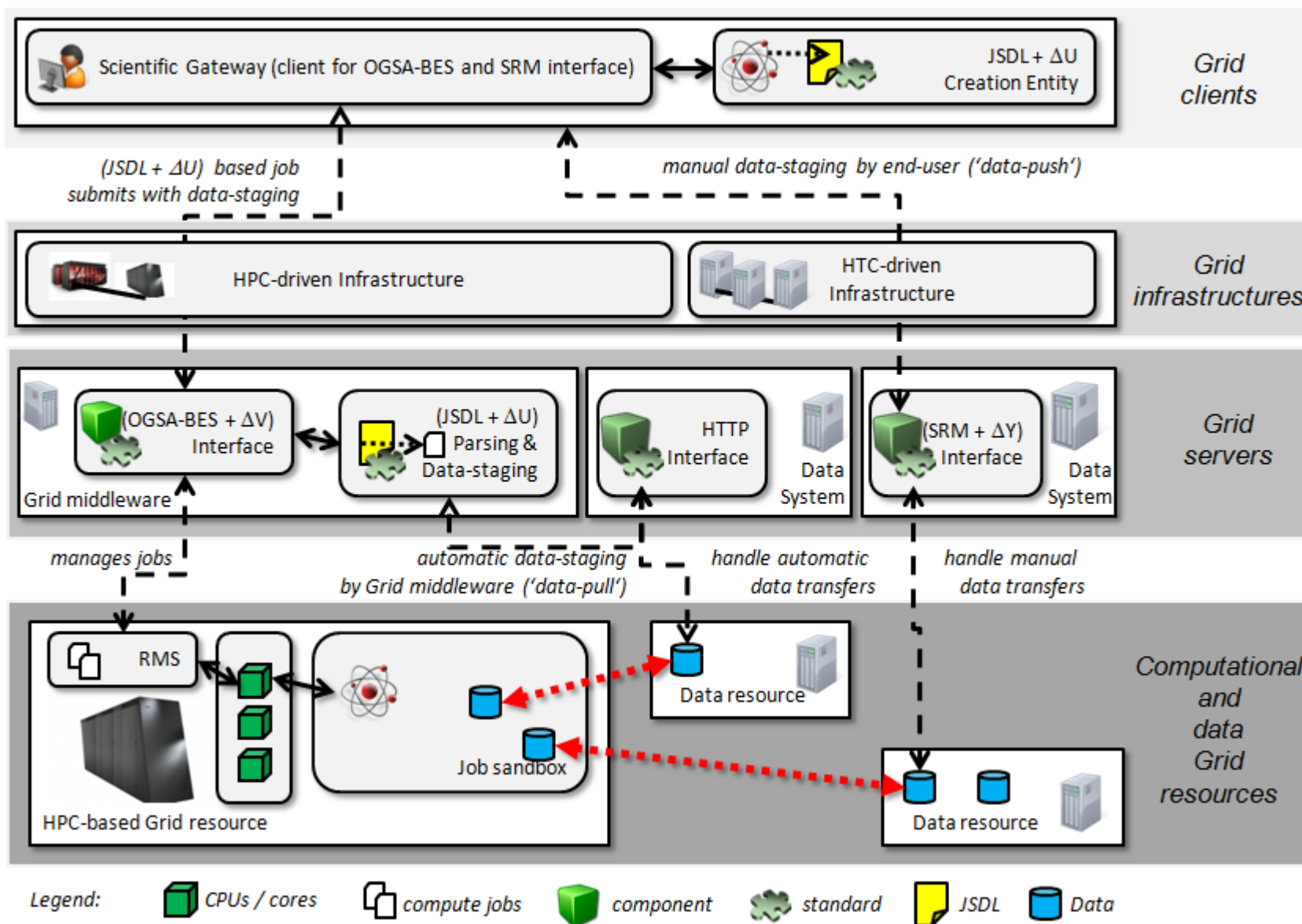


JSDL

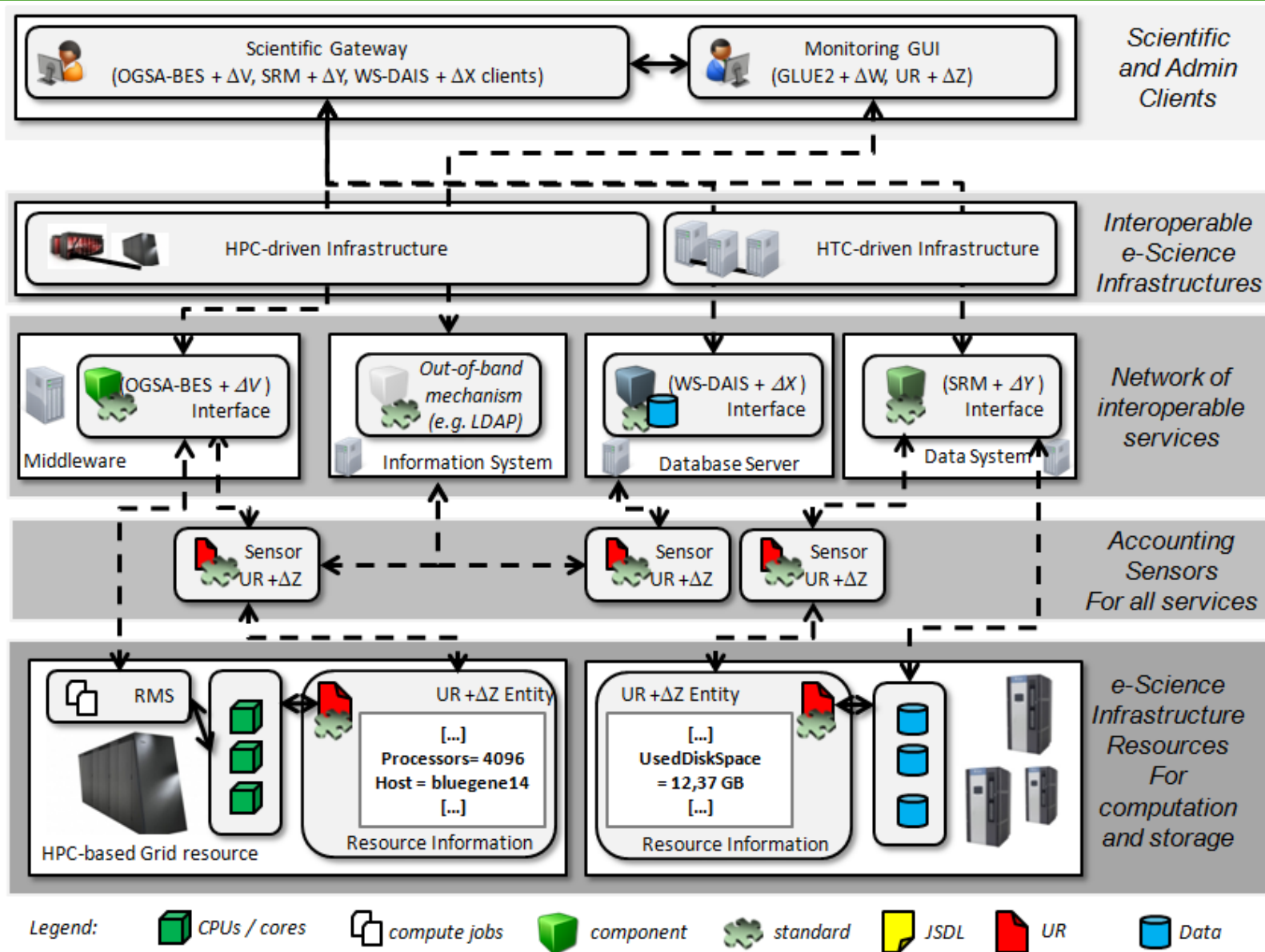


Data

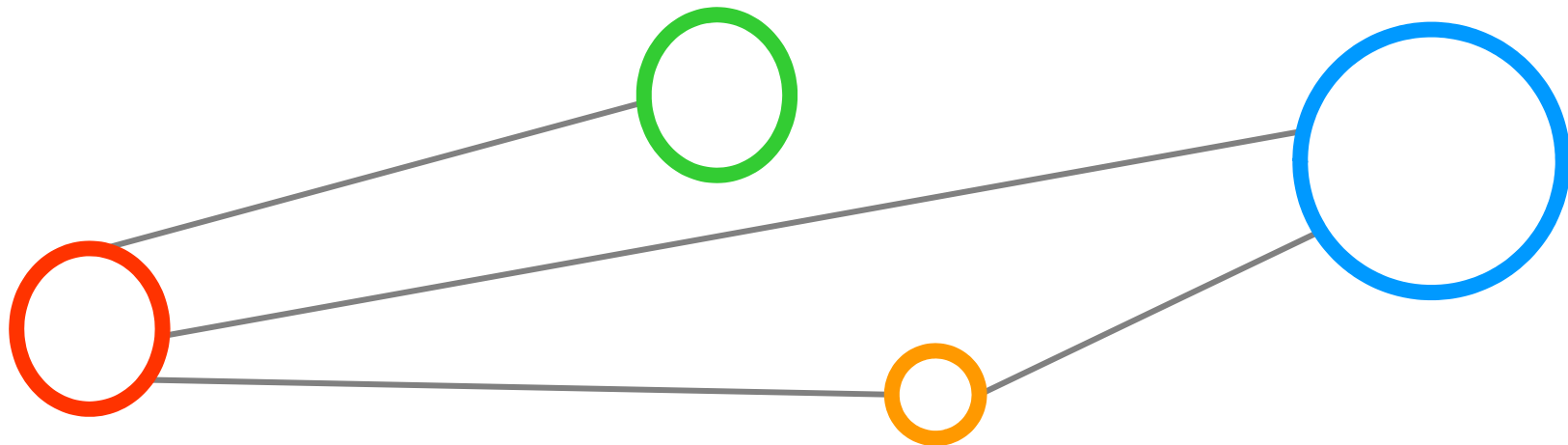
Concept: Directory Access



Concept: Improve Records



Activities GLUE2 and Profiles



The GLUE2 Case...



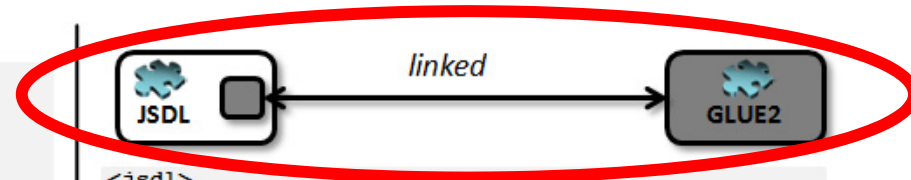
- Strong adoption (in EU, also US...)
- PGI builds on GLUE2
- XML rendering not available
 - But it seems progress is made?!
 - Hiarchical vs. flat rendering settled...
- PGI members could thus do:
 - Contribute to GLUE2 experience document
 - Work on security profiles while waiting

PGI builds on or extends GLUE2



```
<glue2>
  . . .
  <glue2:ComputingEndpoint>
    . . .
    <glue2dy:HighMessage>
      /home1 and /home2 have moved to a new
      GPFS home file system that affects
      every user: /homec"
    <glue2dy:HighMessage>
      . . .
  </glue2:ComputingEndpoint>
  . . .
  <glue2:ComputingManager>
    . . .
    <glue2:NetworkInfo>
      torus
    </glue2:NetworkInfo>
    . . .
    <glue2dy:Shape>
      <glue2dy:DimX> 1 </glue2dy:DimX>
      <glue2dy:DimY> 1 </glue2dy:DimY>
      <glue2dy:DimZ> 2 </glue2dy:DimZ>
    </glue2dy:Shape>
    . . .
    <glue2dy:MPITaskCoreMapping>
      <glue2dy:OwnMap>TXYZ</glue2dy:OwnMap>
      . . .
      <glue2dy:TaskMap>TXYZ</glue2dy:TaskMap>
      <glue2dy:TaskMap>XYZT</glue2dy:TaskMap>
      . . .
    </glue2dy:MPITaskCoreMapping>
  </glue2:ComputingManager>
  . . .
</glue2>
```

(i) Listing: Example of GLUE2 + ΔY instance supporting large-scale HPC resources



```
<jSDL>
  . . .
  <jSDL:JobSpecification>
    . . .
    <jSDL:JobIdentification> ...
    . . .
    <jSDL:Resources>
      . . .
      <glue2:NetworkInfo>
        torus
      </glue2:NetworkInfo>
      . . .
      <glue2dy:Shape>
        <glue2dy:DimX> 1 </glue2dy:DimX>
        <glue2dy:DimY> 1 </glue2dy:DimY>
        <glue2dy:DimZ> 2 </glue2dy:DimZ>
      </glue2dy:Shape>
      . . .
      <glue2dy:MPITaskCoreMapping>
        <glue2dy:MPIRank>0000</glue2dy:MPIRank>
        <glue2dy:MPIRank>1000</glue2dy:MPIRank>
        . . .
      </glue2dy:MPITaskCoreMapping>
    </jSDL:Resources>
    . . .
    <jSDL:DataStaging> ...
    . . .
  </jSDL:JobSpecification>
  . . .
</jSDL>
```

(ii) Listing: Example of JSDL + ΔX instance re-using several GLUE2 + ΔY elements for job description

GLUE2 XML Rendering Re-use



```
<glue2>
  . . .
  <glue2:ComputingEndpoint>
    . . .
  </glue2:ComputingEndpoint>

  <glue2:ComputingManager>
    . . .
  </glue2:ComputingManager>

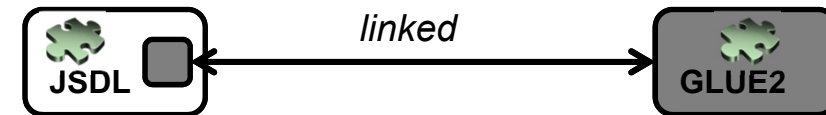
  // relevant material available in the
  JSDL / GLUE2 document - just transfer
  elements here

  <glue2:ComputingService.Name>
  <glue2:ComputingEndpoint.Name>
  <glue2:ComputingShare.Name>

  <glue2:ExecutionEnvironment.OSFamily>
  <glue2:ExecutionEnvironment.OSName>
  <glue2:ExecutionEnvironment.OSVersion>

</glue2>
```

XML Rendering Issue



```
<jSDL>
  . . .
  <jSDL:JobSpecification>

  <jSDL:Resources>
    . . .
    // relevant material available in the JSDL /
    GLUE2 document - just transfer elements here

  <jSDL:HostName>

  . . .
  <jSDL:OperatingSystemName>

  . . .
  <jSDL:OperatingSystemVersion>

  </jSDL:Resources>

  </jSDL:JobSpecification>
  . . .
</jSDL>
```


Security Profiles



- PGI brings back lessons learned from:
 - Information → GLUE2 and re-use of it
 - Execution → Towards BES2.0
 - Security → Use of SAML and XACML
- Several PGI members use SAML&XACML
 - EMI has XACML & SAML profiles as input
 - UoVirginia uses SAML in GENESIS
 - SAML and federated identity wave...

EMI Inputs: Security Profiles



- Security in EMI drives many activities
 - Identity delegation, attribute-based authZ
- Common SAML Attribute Profile
 - Implemented in EMI
 - <https://twiki.cern.ch/twiki/bin/view/EMI/EmiJra1T4SAML>
- Common XACML AuthZ Profile
 - Implemented in EMI, generally, CEs, etc.
 - <https://twiki.cern.ch/twiki/bin/view/EMI/EmiJra1T4XACML>

EMI Inputs: SAML Example (1)



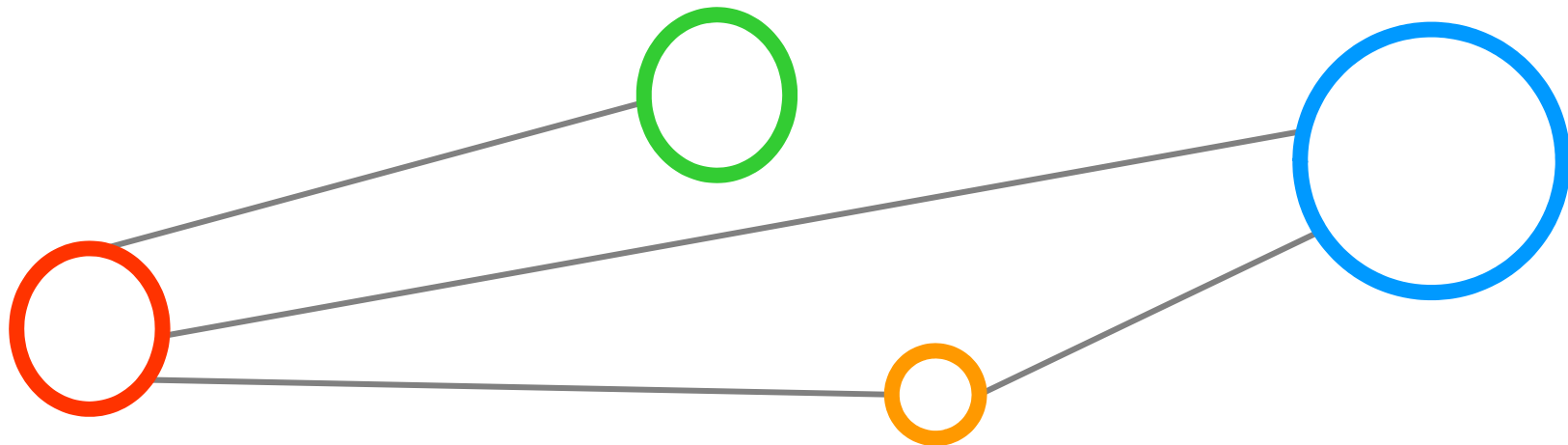
```
<?xml version="1.0" encoding="UTF-8"?>
- <Response xmlns="urn:oasis:names:tc:SAML:2.0:protocol" Version="2.0" IssueInstant="2011-02-20T09:40:34.262Z" InResponseTo="163bbd5d-c727-4569-898e-d7d3aac700c8"
ID="_448abe4b-e691-410a-a3ae-4f1309f09935" xmlns:saml2p="urn:oasis:names:tc:SAML:2.0:protocol">
  <saml2:Issuer Format="urn:oasis:names:tc:SAML:1.1:nameid-format:X509SubjectName" xmlns:saml2="urn:oasis:names:tc:SAML:2.0:assertion">CN=localhost,OU=Voms-
Admin testing,O=Voms-Admin,ST=Test,C=IT</saml2:Issuer>
- <Status>
  <StatusCode Value="urn:oasis:names:tc:SAML:2.0:status:Success"/>
</Status>
- <saml2:Assertion Version="2.0" IssueInstant="2011-02-20T09:40:34.223Z" ID="_38761df9-55a3-4dca-8351-f883777c19f8"
xmlns:saml2="urn:oasis:names:tc:SAML:2.0:assertion" xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
  <saml2:Issuer Format="urn:oasis:names:tc:SAML:1.1:nameid-format:X509SubjectName">CN=localhost,OU=Voms-Admin testing,O=Voms-
Admin,ST=Test,C=IT</saml2:Issuer>
- <ds:Signature xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
  - <ds:SignedInfo>
    <ds:CanonicalizationMethod Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#">
    <ds:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    - <ds:Reference URI="#_38761df9-55a3-4dca-8351-f883777c19f8">
      - <ds:Transforms>
        <ds:Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature"/>
        - <ds:Transform Algorithm="http://www.w3.org/2001/10/xml-exc-c14n#">
          <ec:InclusiveNamespaces PrefixList="ds saml2 xs" xmlns:ec="http://www.w3.org/2001/10/xml-exc-c14n#">
          </ds:Transform>
        </ds:Transforms>
        <ds:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
        <ds:DigestValue>ZrPOp6PSnxDWvHq6OZD4f/0Max8=</ds:DigestValue>
      </ds:Reference>
    </ds:SignedInfo>
    <ds:SignatureValue> .... </ds:SignatureValue>
  - <ds:KeyInfo>
    - <ds:X509Data>
      <ds:X509Certificate>...</ds:X509Certificate>
    </ds:X509Data>
    </ds:KeyInfo>
  </ds:Signature>
```

EMI Inputs: SAML Example (2)



```
- <saml2:Subject>
  <saml2:NameID Format="urn:oasis:names:tc:SAML:1.1:nameid-format:X509SubjectName">CN=Andrea Ceccanti,L=CNAF,OU=Personal
    Certificate,O=INFN,C=IT</saml2:NameID>
  - <saml2:SubjectConfirmation Method="urn:oasis:names:tc:SAML:2.0:cm:holder-of-key">
    - <saml2:SubjectConfirmationData>
      - <ds:KeyInfo xmlns:ds="http://www.w3.org/2000/09/xmldsig#">
        - <ds:X509Data>
          <ds:X509Certificate>...</ds:X509Certificate>
        </ds:X509Data>
      </ds:KeyInfo>
    </saml2:SubjectConfirmationData>
  </saml2:SubjectConfirmation>
</saml2:Subject>
<saml2:Conditions NotOnOrAfter="2011-02-20T21:40:34.233Z" NotBefore="2011-02-20T09:40:34.233Z"/>
- <saml2:AttributeStatement>
  - <saml2:Attribute NameFormat="urn:oasis:names:tc:SAML:2.0:attrname-format:uri" Name="http://dcsec.org/saml/attribute/virtual-organization">
    <saml2:AttributeValue xsi:type="dcsec:vo" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">mysql</saml2:AttributeValue>
  </saml2:Attribute>
  - <saml2:Attribute NameFormat="urn:oasis:names:tc:SAML:2.0:attrname-format:uri" Name="http://dcsec.org/saml/attribute/group">
    <saml2:AttributeValue xsi:type="dcsec:group" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">/mysql</saml2:AttributeValue>
    <saml2:AttributeValue xsi:type="dcsec:group" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">/mysql/g2</saml2:AttributeValue>
  </saml2:Attribute>
  - <saml2:Attribute NameFormat="urn:oasis:names:tc:SAML:2.0:attrname-format:uri" Name="http://dcsec.org/saml/attribute/group/primary">
    <saml2:AttributeValue xsi:type="dcsec:group" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">/mysql</saml2:AttributeValue>
  </saml2:Attribute>
  - <saml2:Attribute NameFormat="urn:oasis:names:tc:SAML:2.0:attrname-format:uri" Name="http://dcsec.org/saml/attribute/role">
    <saml2:AttributeValue xsi:type="dcsec:role" dcsec:scope="/mysql" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">VO-
      Admin</saml2:AttributeValue>
  </saml2:Attribute>
  - <saml2:Attribute NameFormat="urn:oasis:names:tc:SAML:2.0:attrname-format:uri" Name="http://dcsec.org/saml/attribute/role/primary">
    <saml2:AttributeValue xsi:type="dcsec:role" dcsec:scope="/mysql" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">VO-
      Admin</saml2:AttributeValue>
  </saml2:Attribute>
  - <saml2:Attribute NameFormat="urn:oasis:names:tc:SAML:2.0:attrname-format:uri" Name="http://authz-interop.org/xacml/subject/voms-fqan">
    <saml2:AttributeValue xsi:type="xs:string" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:xs="http://www.w3.org/2001/XMLSchema">/mysql/Role=VO-Admin</saml2:AttributeValue>
    <saml2:AttributeValue xsi:type="xs:string" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:xs="http://www.w3.org/2001/XMLSchema">/mysql</saml2:AttributeValue>
    <saml2:AttributeValue xsi:type="xs:string" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance"
      xmlns:xs="http://www.w3.org/2001/XMLSchema">/mysql/g2</saml2:AttributeValue>
  </saml2:Attribute>
</saml2:AttributeStatement>
</saml2:Assertion>
</Response>
```

AOB



GIN Session Hint



- PGI is a spin-off group from GIN
 - PGI experience is often derived from GIN
- Session here at OGF36
 - Wednesday, 8:30, Room Columbian
 - S.Crouch, G. Andronico: Interoperability demos
 - JSDL Parameter Sweep use in e-Science (Sonja Holl, bio-informatics work-flows)
 - Supercomputing demonstrations



- GLUE2 specification issues
 - Will be discussed in GLUE2 OGF36 sessions
- EGI GLUE2 Aspects...
 - LDAP?
- SAGA & RNS and the PGI Ref Model
 - TBD

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