PortalsandResourceScheduling atImperialCollege

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Background

- UKRegionale   -ScienceCentre
- Sun'CentreofExcellence'ine   -Science
- ConcentratingonGridMiddleware:
  - PortalInfrastructure
  - MaximisingResourceUtilisation
  - PolicyforResourceSharing
  - ConstructionofImperialCollegeGrid
- Developmentofhigher -levelscheduling&
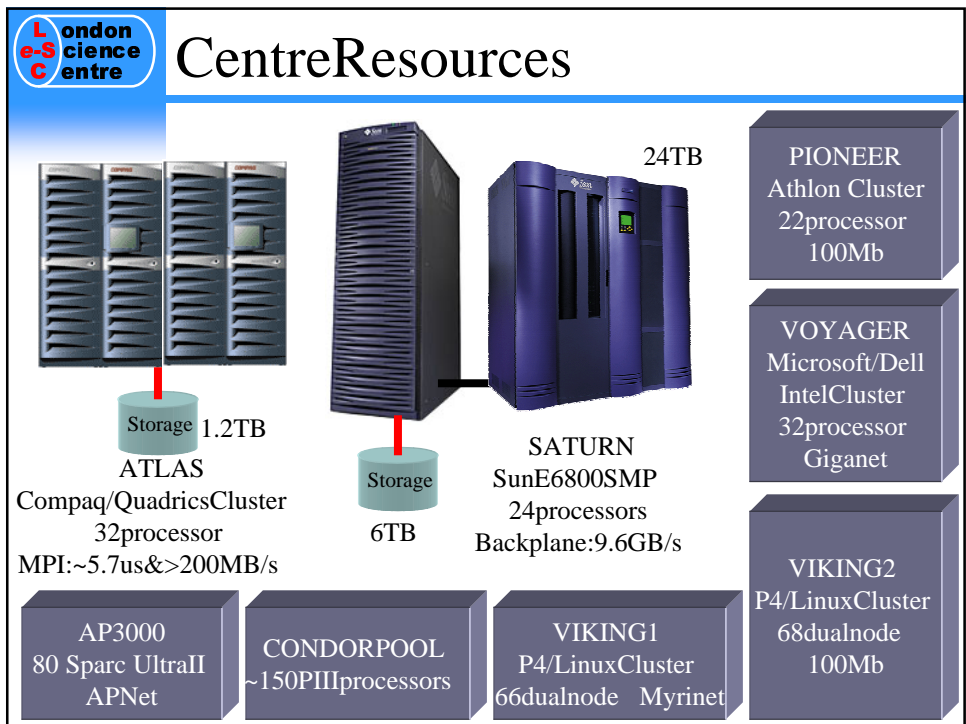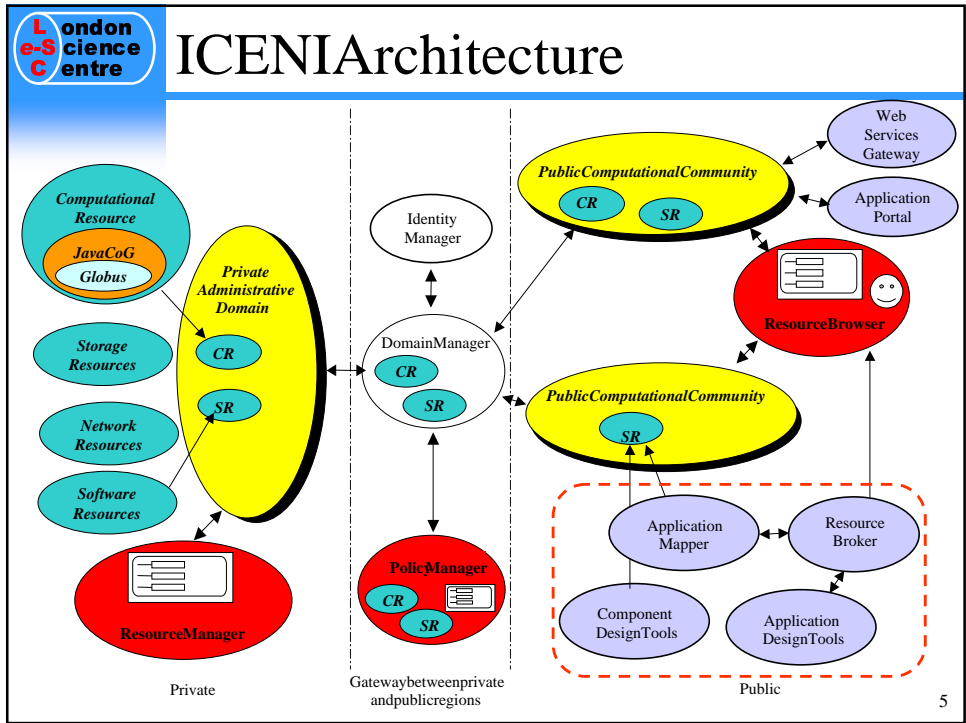 optimisationofresourceutilisation

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Contents

- ICENI – ImperialCollegee -Science NetworkedInfrastructure
- ImperialCollegeGrid
- OGSAto Jini gateway
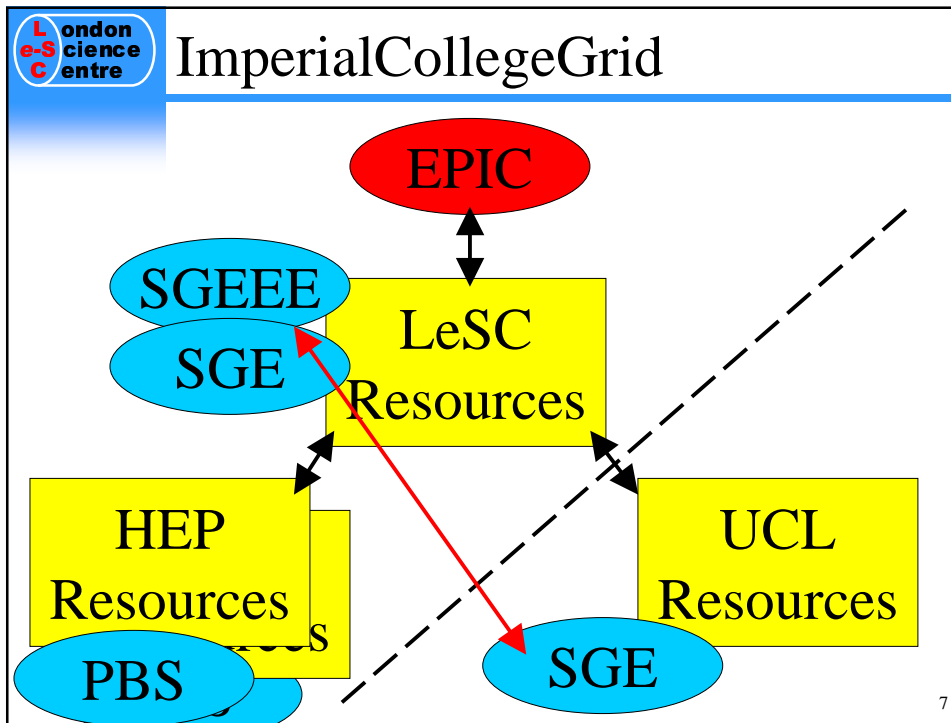- DRMAA-WSInterface
- E-SciencePortalatImperialCollege(EPIC)

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ICENI

The Iceni,underQueen Boudicca, unitedthetribesofSouth -East Englandinarevoltagainstthe occupyingRomanforcesinAD60 .

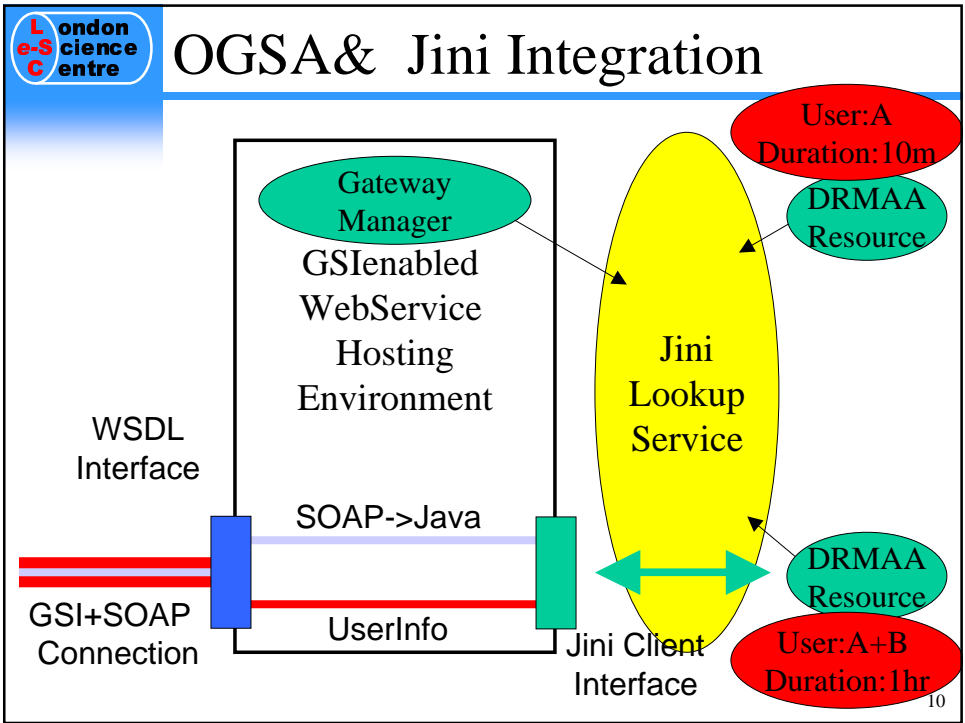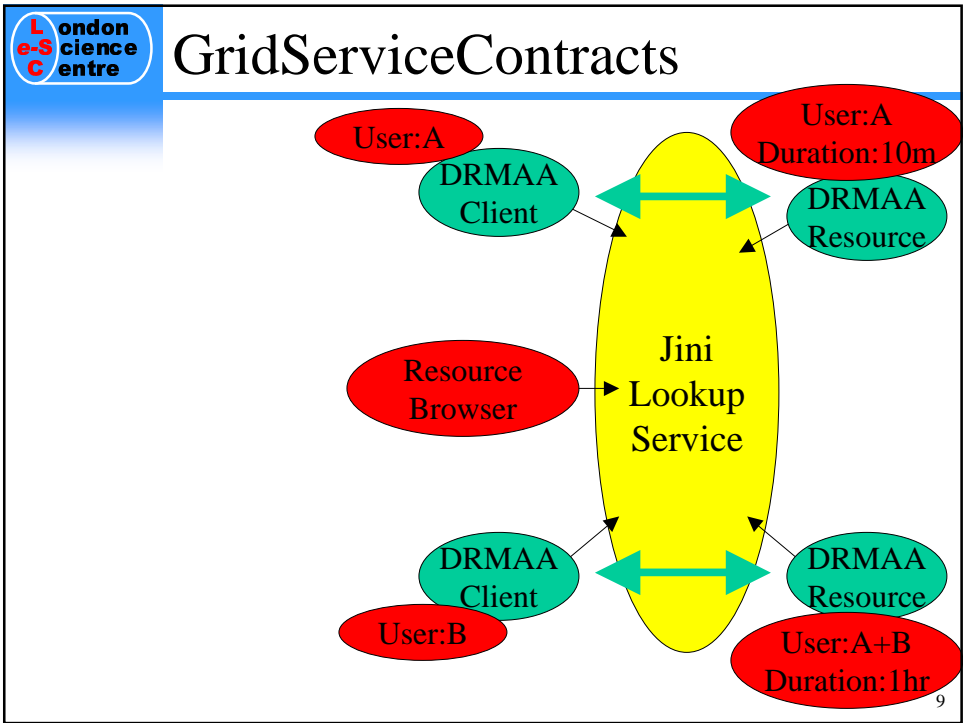- IC e-Science Networked Infrastructure
- Developedby LeSC GridMiddlewareGroup
- CollectandproviderelevantGridmeta -data
- Usetodefineanddevelophigher -levelservices
- Prototypewebserviceprotocols

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ICENIArchitecture

- London e-Science Centre

Web Services Gateway

Application Portal

PublicComputationalCommunity
- CR
- SR

ResourceBrowser

Identity Manager

Computational Resource
- JavaCoG
- Globus

Private Administrative Domain
- CR
- SR

DomainManager
- CR
- SR

PublicComputationalCommunity
- SR

Storage Resources

Network Resources

Software Resources

ResourceManager

PolicManager
- CR
- SR

Application Mapper

Resource Broker

Component DesignTools

Application DesignTools

Private

Gatewaybetweenprivate andpublicregions

Public

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CentreResources

24TB

PIONEER
Athlon Cluster
22processor
100Mb

VOYAGER
Microsoft/Dell
IntelCluster
32processor
Giganet

Storage 1.2TB

ATLAS
Compaq/QuadricsCluster
32processor
MPI:~5.7us&>200MB/s

Storage

SATURN
SunE6800SMP
24processors
Backplane:9.6GB/s

6TB

VIKING2
P4/LinuxCluster
68dualnode
100Mb

AP3000
80 Sparc UltraII
APNet

CONDORPOOL
~150PIIIprocessors

VIKING1
P4/LinuxCluster
66dualnode Myrinet

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ImperialCollegeGrid

OpenGridServicesArchitecture (OGSA)

- Initiatedbythe   Globus teamwithIBM
- Leveragee -commercesoftwarewithine   -science
- Utilisewebserviceprotocolsandtoolbase:
  - UDDI:Universal,Discovery,Device&Integration
  - WSDL:WebServicesDefinitionLanguage
  - SOAP:SimpleObjectAccessProtocol
- RefactorGlobus toolkittousewebservices

GridServiceContracts

OGSA& Jini Integration

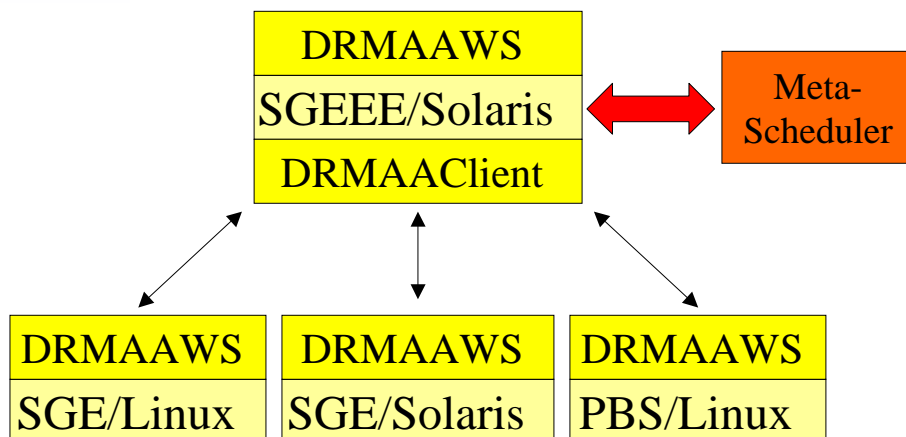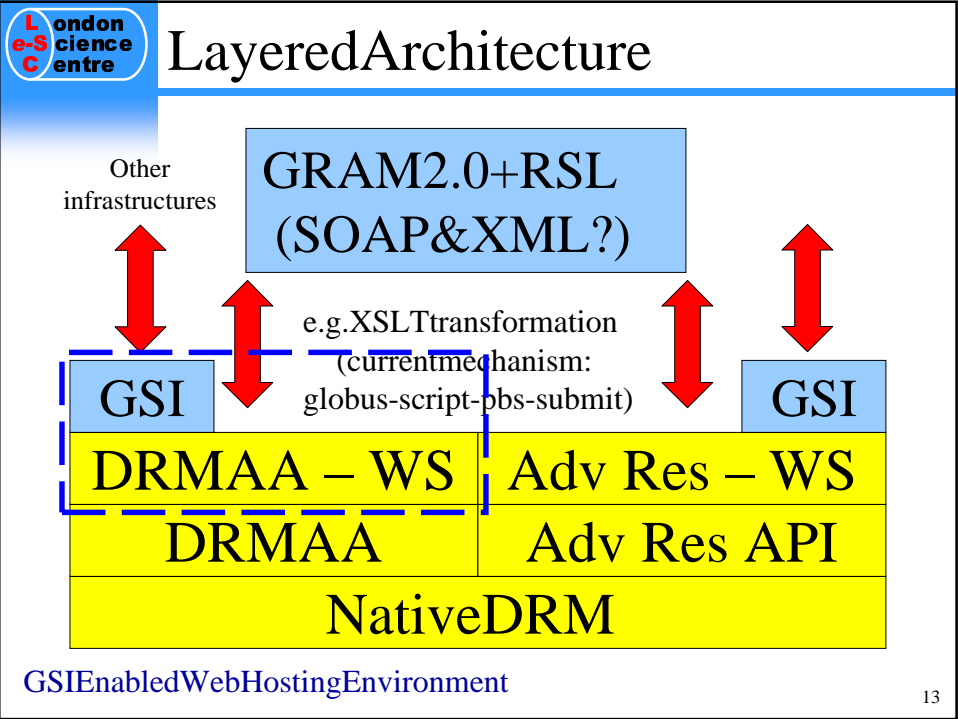# DRMAA-WS

- Standardiselow -levelremoteaccesstoDRM
- Buildoncurrentinterfaceandtrackdevelopments
- ProvidewebservicesaccesstoDRMAAthrough Jini
- EvolvetoprovideXMLSchemalanguage:
  - JobdefinitionML
  - ResourceML
  - PolicyML
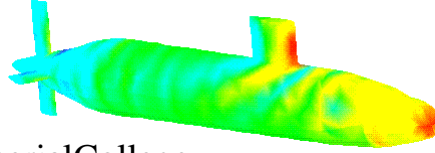 - GRAM2.0/RSL(DirectOGSAservice?)

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Motivation

| DRMAAWS |
| SGEEE/Solaris | ⟷ | Meta-Scheduler |
| DRMAAClient |

| DRMAAWS | DRMAAWS | DRMAAWS |
| SGE/Linux | SGE/Solaris | PBS/Linux |

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LayeredArchitecture

GRAM2.0+RSL (SOAP&XML?)

Other infrastructures

e.g.XSLTtransformation (currentmechanism: globus-script-pbs-submit)

GSI

GSI

DRMAA – WS | Adv Res – WS
DRMAA | Adv Res API
NativeDRM

GSIEnabledWebHostingEnvironment

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EPIC:e -SciencePortalat ImperialCollege

- Collaborative LeSC industrialprojectwith SunMicrosystems
- Developasecureportalinfrastructureto:
  - Accessyourownpersonalenvironment
  - Applicationstosupportday -to-daye -science
  - InteractionwithotherGridinfrastructures
- Allowrolebasedaccesstoresources
  - Anonymous:publicwebpages
  - Students:internalpages,email,computeresources
  - Staff:restrictedpages

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Accessinge -scienceapplications

- SubmarineDesign
  - DrIanMathews,ImperialCollege
  - Parameterexplorationtofindoptimaldesign
- Mesoscale MaterialsAnalysis
  - ProfessorPeter Coveney,QMUL,London
  - RemoteaccesstoLattice   Boltzman simulation(LB3D)
- TechnicalComputePortal
  - Wolfgang Gentzsch &DanFraser(SunMicrosystems)
  - WebbasedaccesstoSun'sGridEngine

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uPortal 1.x(Replaced2.x)

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Wherenext…

- DRMAA-WS
  - IntegratewithDRMAAasitdevelops
  - Linktohigher -levelschedulers
- Portal
  - IntegrationofGSIwithin uPortal
  - IntegrateTCPwithDRMAAwebservices

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  - http://www.lesc.ic.ac.uk/
  - http://epic.lesc.ic.ac.uk/
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TheGridMiddlewareGroup

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