



Job Submission

EGEE-NAREGI

Interoperability Meeting

March 20th – 22nd, 2006

CERN, Geneva (Switzerland)

NAREGI WP1

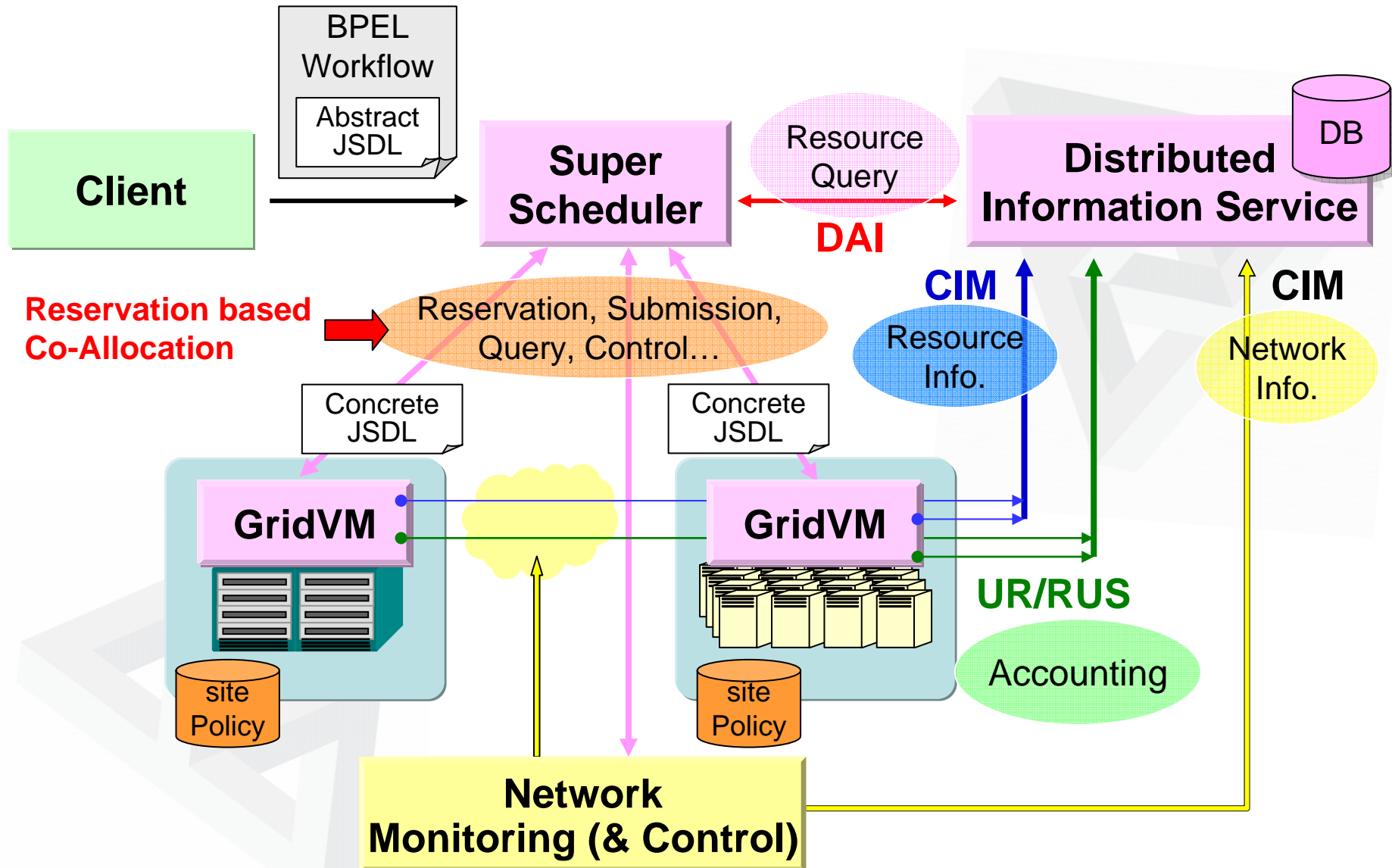
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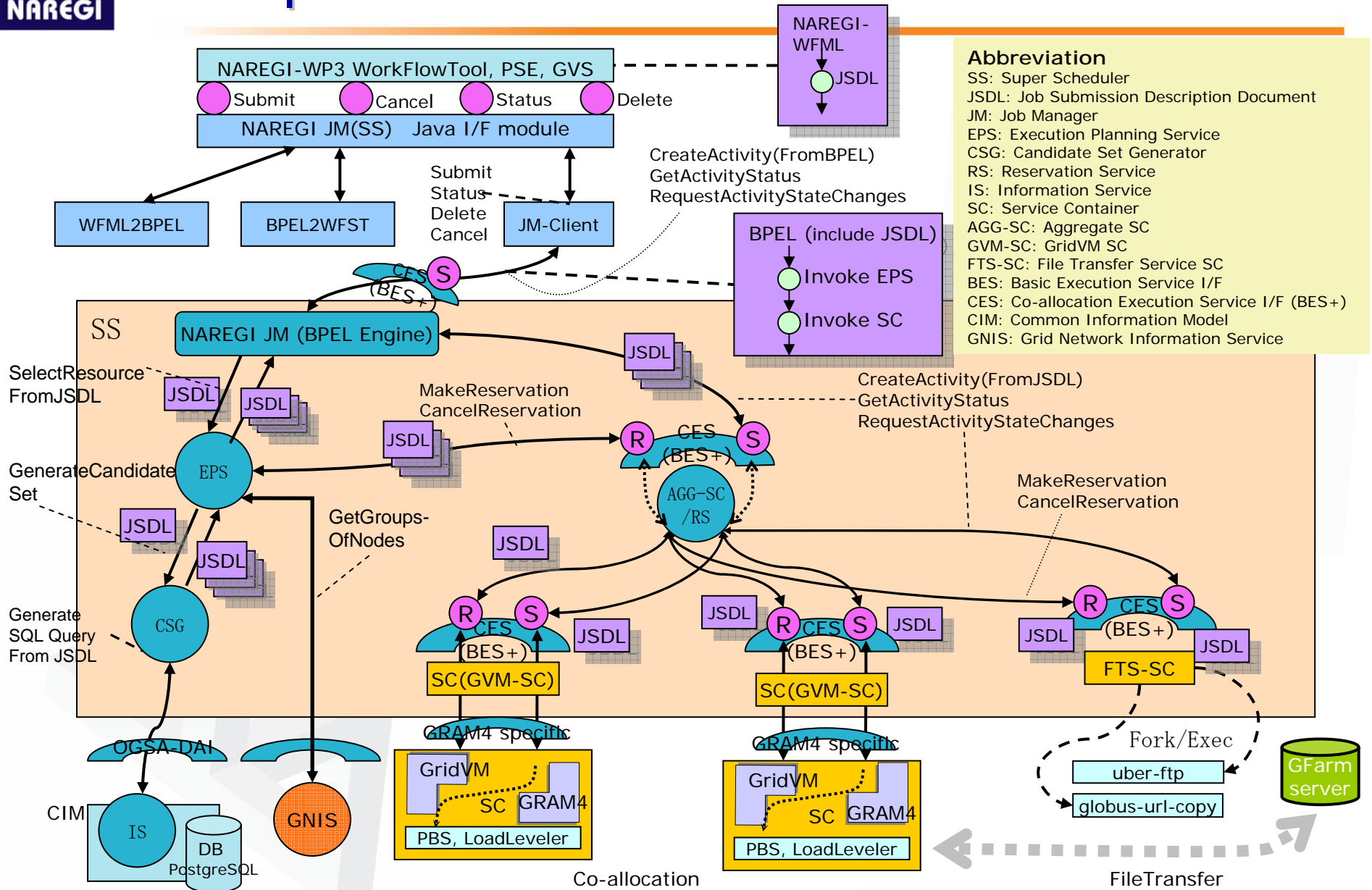
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NAREGI Job Submission Overview



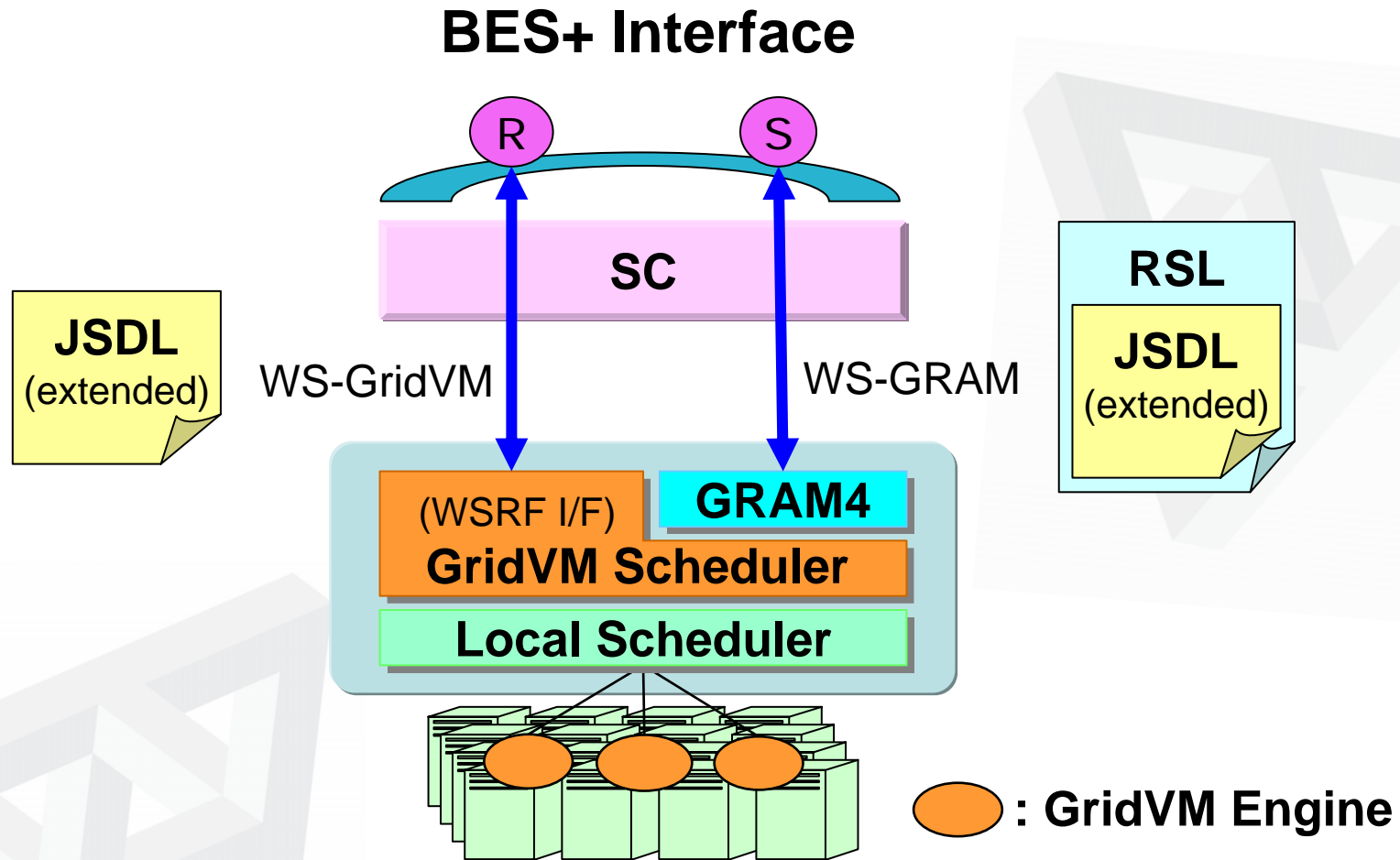
Super Scheduler Internal Architecture



Abbreviation

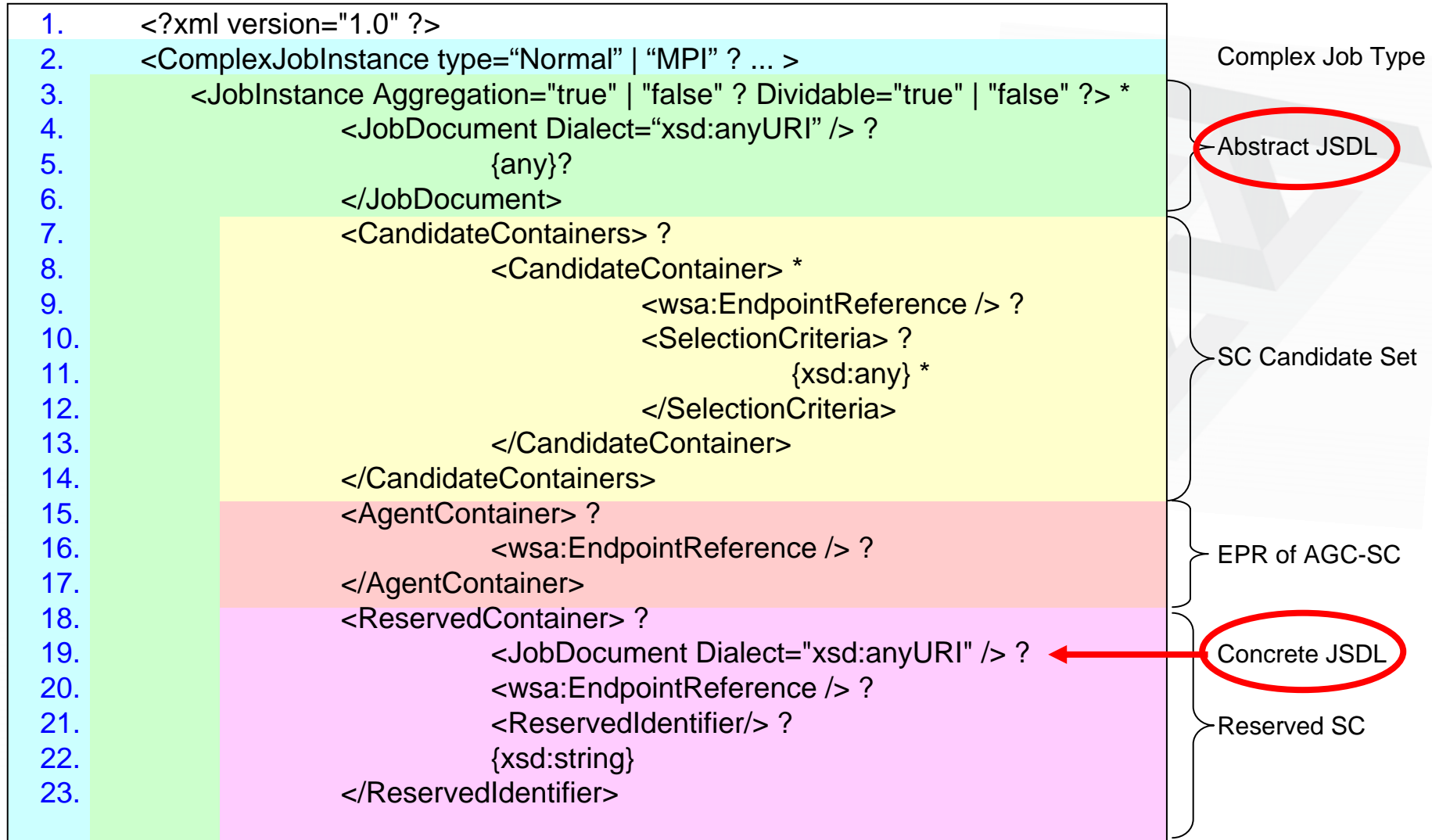
- SS: Super Scheduler
- JSDL: Job Submission Description Document
- JM: Job Manager
- EPS: Execution Planning Service
- CSG: Candidate Set Generator
- RS: Reservation Service
- IS: Information Service
- SC: Service Container
- AGG-SC: Aggregate SC
- GVM-SC: GridVM SC
- FTS-SC: File Transfer Service SC
- BES: Basic Execution Service I/F
- CES: Co-allocation Execution Service I/F (BES+)
- CIM: Common Information Model
- GNIS: Grid Network Information Service

GridVM Internal Architecture



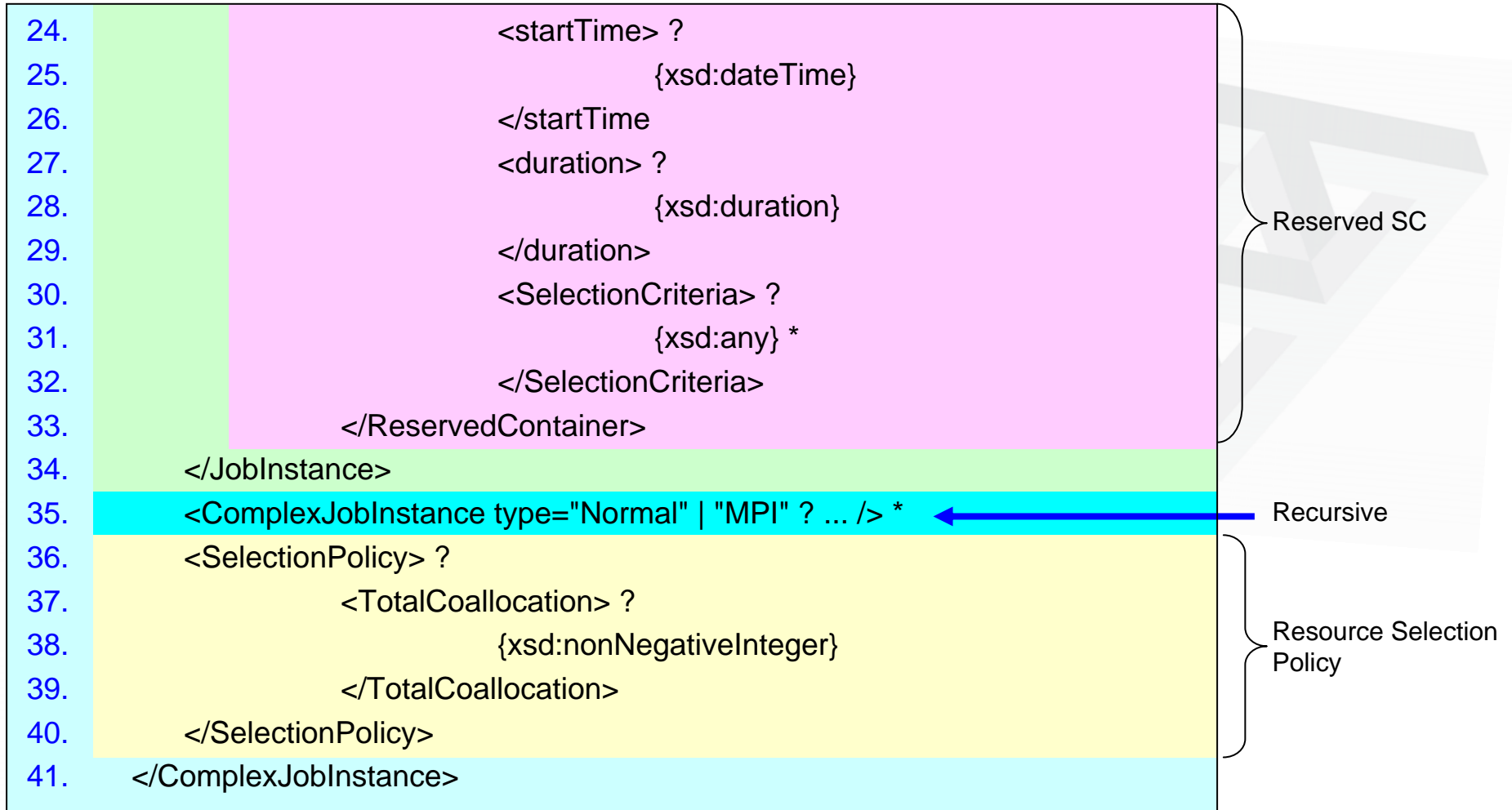
Interfaces of GridVM and all services in Super Scheduler use WSRF 2.1

NAREGI Job Document





NAREGI Job Document (continued)





NAREGI JSDL Extensions

- Extensions for MPI Job (Application Element)

```
<naregi:MPIApplicationSpecific>
```

```
  <naregi:MPIType>xsd:string</naregi:MPIType>
```

```
  <naregi:TotalTasks>xsd:positiveInteger<naregi:TotalTasks> ?
```

```
  <naregi:TasksPerHost>xsd:positiveInteger<naregi:TasksPerHost> ?
```

```
  <naregi:HelperCommand>xsd:string</naregi:HelperCommand> ?
```

```
  <naregi:HelperCommandArg>
```

```
    xsd:normalizedString
```

```
  </naregi:HelperCommandArg> *
```

```
<!-- ParallelSites -->
```

```
<naregi:AssociateJobs>
```

```
  <naregi:AssociateJob>
```

```
    <naregi:HostName>xsd:string</naregi:HostName> 1..1
```

```
  </naregi:AssociateJob> +
```

```
</naregi:AssociateJobs> ?
```

```
<naregi:MPIApplicationSpecific>
```




NAREGI JSDL Extensions (Continued)

- Extensions for Check Pointable Job (Application Element)
`<naregi:CheckPointableApplication>`
 `<naregi:CheckPointInterval>xsd:duration</naregi:CheckPointInterval>`
`</naregi:CheckPointableApplication> ?`
- Extensions for Job Control
`<naregi:JobInstance>`
 `<naregi:AssociateJobID>xsd:string</naregi:AssociateJobID> ?`
 `<naregi:VirtualOrganization>xsd:string</naregi:VirtualOrganization> ?`
 `<naregi:ResourceReservation>`
 `<naregi:ReservationTime duration="xsd:duration">`
 `xsd:dateTime`
 `</naregi:ReservationTime> 1..1`
 `</naregi:ResourceReservation> ?`
`</naregi:JobInstance>`



Super Scheduler Interface

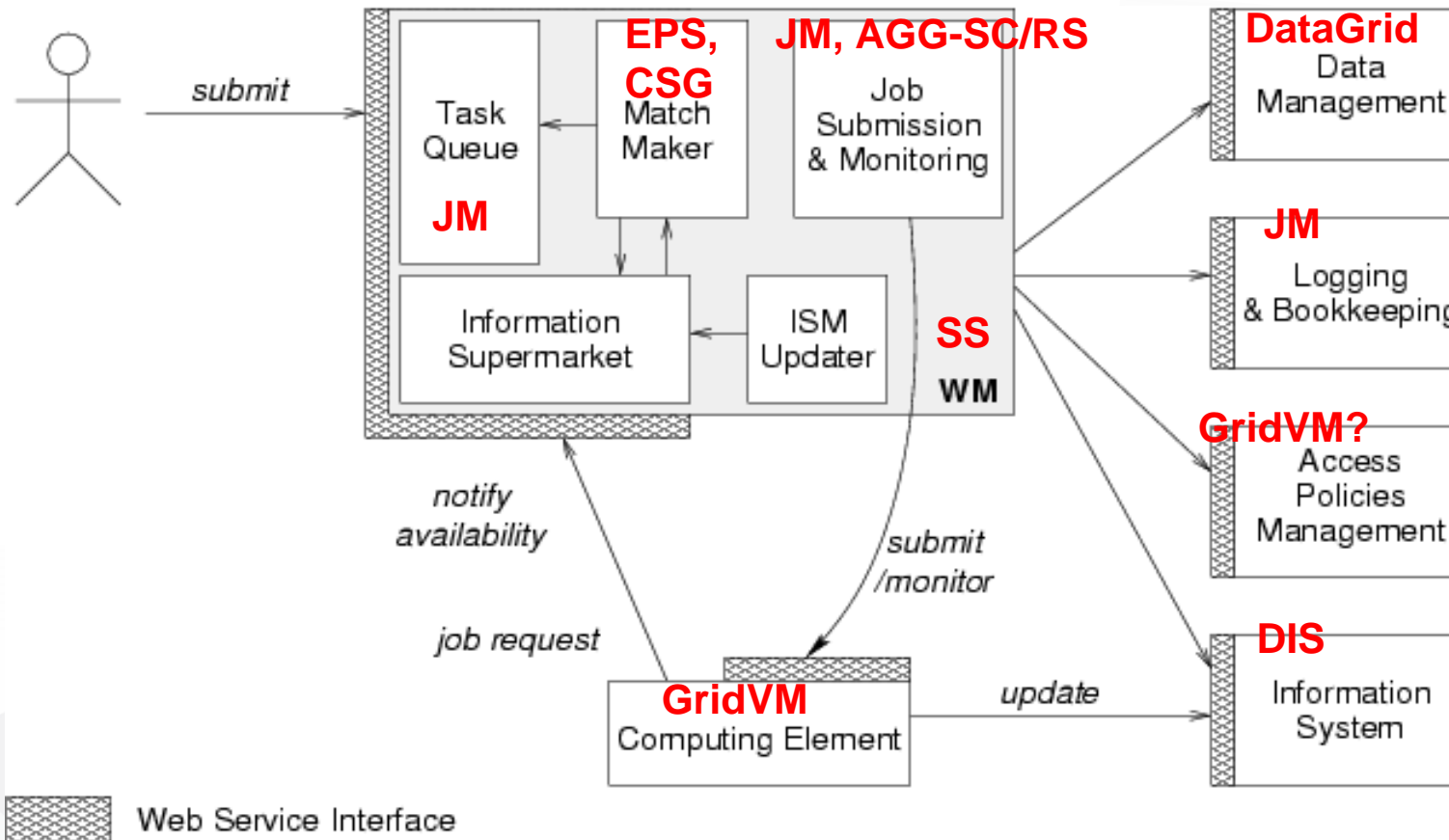
- GridVM and WS-GRAM don't accept any operation from any users except Super Scheduler
- Interface of Super Scheduler is WSRF based
 - MakeReservation
 - CommitReservation
 - GetResourceProperty
 - Destroy
 - Notify
 - Subscribeand few more portTypes



Super Scheduler Interface

- SS accepts BPEL workflow with JSDL for job submission. In the current implementation, the BPEL workflow have to be written based on SS internal services workflow
- SS client also support workflow, however the workflow specification is proprietary (NAREGI-WF)

WMS and SS Functional Mapping



Since, interface of each module in WSM and SS are quite different, this figure is just a functional mapping.



CE vs. GridVM

CE, GridVM comparison			CE	GridVM
User			End User WMS	SS
Location			Computing Resource	Computing Resource
Function	Job	push	✓	✓
	Submission	pull	✓	
	Job Control		✓	✓
	Advanced Reservation			✓
	Accounting		✓	✓
Resource Infor- mation	for push model		Stored in IS Used by MM	Stored in IS Used by SS
	for pull model		In "CE availability message"	



WMS vs. SS

WMS, SS comparison		WMS	SS
User		Any user	Clients which supports SS client lib
Location		Dedicated server in general	Dedicated server in general
Function	Simple Job	✓	
	Workflow Job	EGEE JDL to DAGMAN	BPEL, NAREGI-WF
	Complex Job	✓	✓
	Coallocation Job		✓
	Brokering	✓	✓
	Advanced Rsv.		✓
	Job Description	JDL	NAREGI JSDL