



Enabling Grids for E-science

## Session 2c: Special Jobs & Information System

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*EGEE Users' Forum (CERN)*

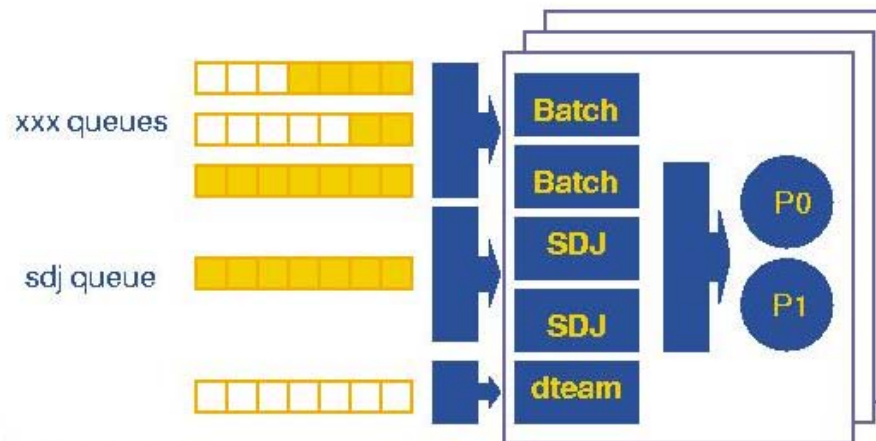
*March 3, 2006*

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- **Scheduling interactive jobs**
  - C. Germain-Renaud
- **Real time computing for financial applications**
  - R. Di Meo
- **Efficient job handling in the grid**
  - J. Moscicki
- **Grid-enabled remote instrumentation with distributed control and computation**
  - L. Dickens
- **Grid computing and online games**
  - A. del Castillo San Félix
- **User applications of R-GMA**
  - S. Fisher

- **Applications**
  - GPS@
  - gPTM3D
- **QoS requirements:**
  - Low-latency scheduling, execution
  - High, peak CPU usage
- **Other solutions don't work:**
  - Priorities: doesn't work in "full" grid
  - Reservation: can't/won't plan work in advance



- Virtual processors  
np= 5
- Reservation: one per machine  
`SRCFG[11] TASKCOUNT=1 #multiplicative factor`  
`SRCFG[11] RESOURCES=PROCS:2 #nb of VP for the reservation`  
`SRCFG[11] CLASSLIST=sdj`

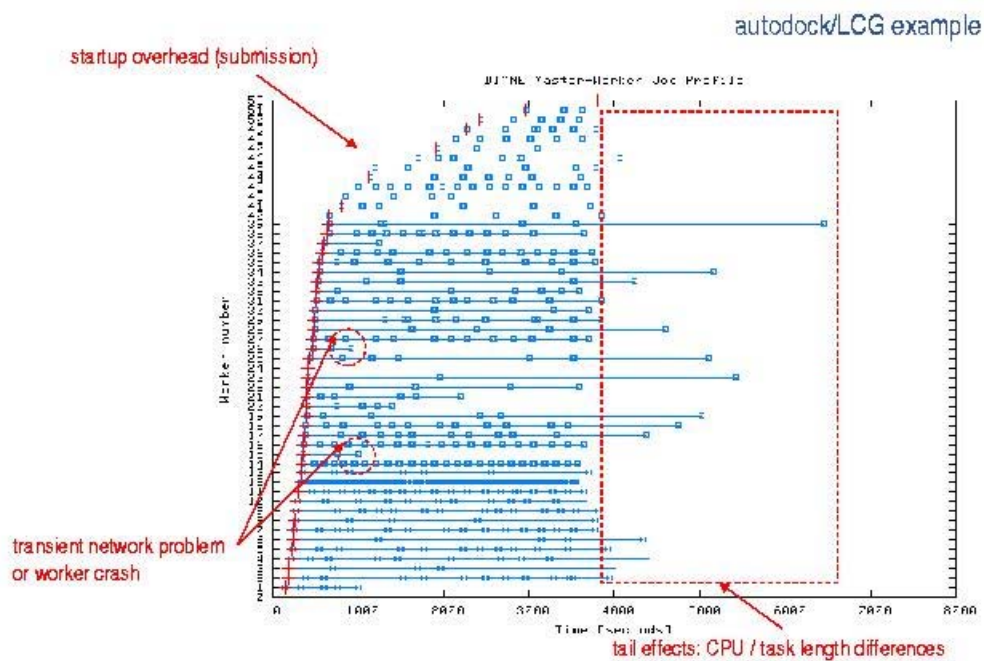
- **Application**
  - High-priority, repetitive financial calculations
  - Near-interactive response
- **Reservations**
  - Start jobs well in advance need.
- **Inter-agent communication (gridhostutil)**
  - Need to communicate between agents
  - Uses direct connections when possible
  - Uses interface as bridge when not

- **Distributed Analysis Environment – DIANE R&D**
  - started at CERN 2001, prototyping phase
  - applications:
    - Atlas Athena AOD analysis
    - Geant 4
      - *simulation: medical physics, space science*
      - *production: release validation*
        - Wed, 01 March 06: A.Ribon: [49] Experiences on Grid production for Geant4
    - **BLAST, Autodock:** bioinformatics applications
      - *Wed, 01 March 06: WU, Ying-Ta [53] Using Grid Computation to Accelerate Structure-based Design Against Influenza A Neuraminidases*
    - **ITU frequency planning**
      - *Wed, 01 March 06: A.Manara [34] International Telecommunication Union Regional Radio Conference and the EGEE grid*
    - demos: distributed ray tracing (image rendering with povray)

- Lightweight
- Flexible policies
- Monitoring



## Anatomy of a DIANE job

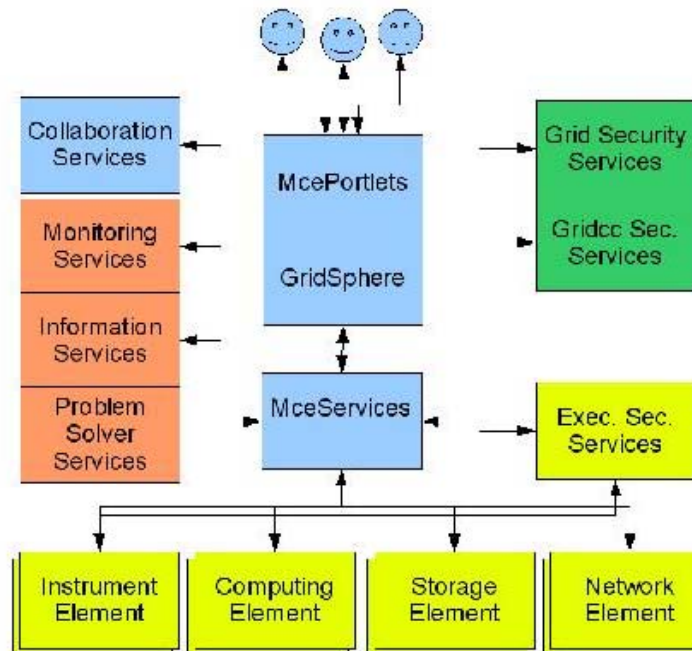


- **Control of scientific instruments via grid**
  - Real-time response: “faster” security
  - Reservation of resources
  - Co-allocation of different resources
  
- **Collaborative aspects**
  - Virtual Control Room
  - Chat, shared desktop, ...





## VCR architecture

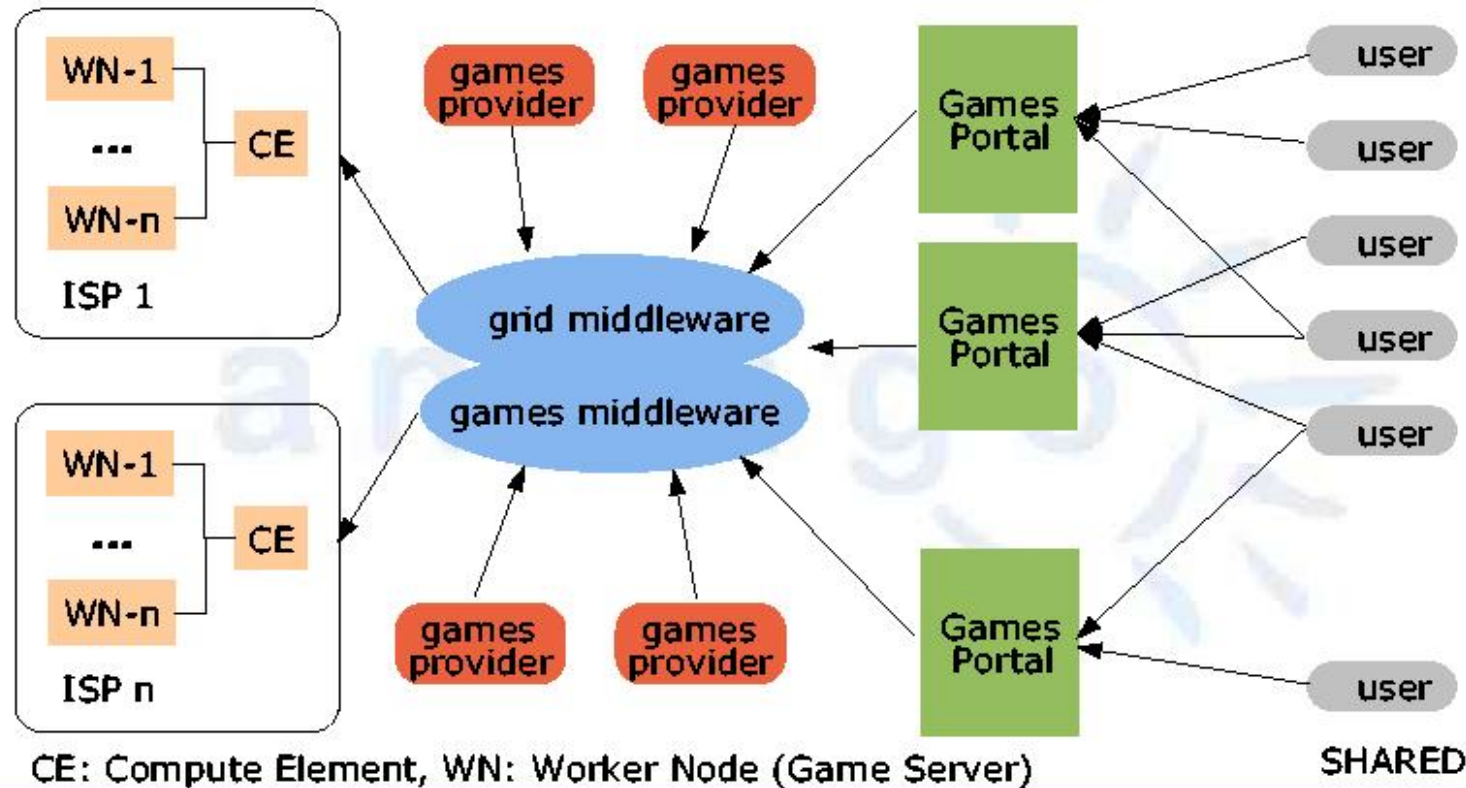





- Existing, production gaming system.
- Low-latency scheduling
- Dynamic service discovery
- Portal technologies



## Andago Games + Grid Middleware

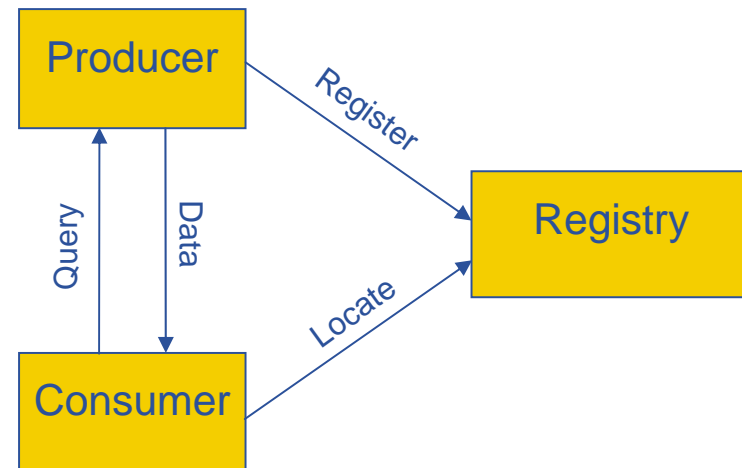


- **Deployed, stable service for monitoring.**

- GridFTP
- Job monitoring
- Network performance
- Intrusion detection
- Application monitoring

- **Direct use by applications**

- Job monitoring through JDL
- Instrumentation of code
- Through standard logging interfaces



- **Job agent/task**
  - Recurring pattern
  - Collaboration may reduce effort for future applications
  - Wide range of disciplines
  - Each discipline brings slightly different requirements
- **Grid as a platform**
  - Control of scientific instruments: reservations, real-time
  - Organizational framework for distributed systems: gaming
- **Information System**
  - Application-level monitoring of jobs on the grid
  - Overall monitoring

- **Short Deadline Jobs**
  - C. Germain-Renaud
- **MPI**
  - C. Loomis
- **Job Priorities**
  - D. Liko