Middleware: A recap

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What is middleware?

- "In its most general sense, **middleware is computer software that provides services to software applications beyond those available from the operating system**. Middleware can be described as "software glue".[1] Thus middleware is not obviously part of an operating system, not a database management system, and neither is it part of one software application. *Middleware makes it easier for software developers to perform communication and input/output, so they can focus on the specific purpose of their application."*, source: Wikipedia.

Why do we want middleware?

- Production resources are islands.

  - Each one has their own OS platform, account system, software execution, scheduling and monitoring environments.

- Yet few people live on these islands.

  - Usually only the sysadmins...

- Yet most people want to use one or more islands.

Why middleware (cont'd)

- To bridge gaps between platforms, e.g. for:
  - Convenient remote access.
  - File transfers.
  - Application execution.
  - Application monitoring.
  - Distributed computing.
- To bridge gaps between applications.
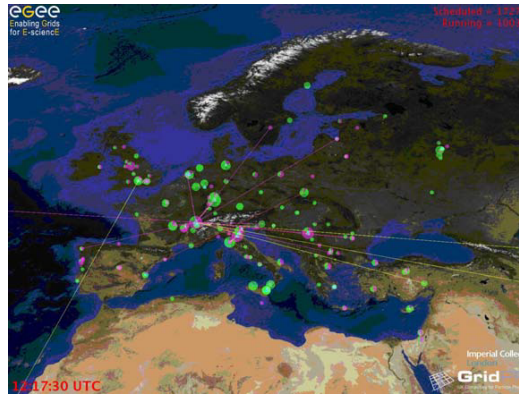
What matters in middleware?

- Provides new capabilities.
- Easy to deploy/install.
- Easy to use.
- Fast
- Stable
- Secure/safe.

Examples of middleware

- CORBA.

- Globus Toolkit, UNICORE.

- The Steam platform.

- In MAPPER: QosCosGrid, AHE, MUSCLE, MPWide.

- But also, for example, OpenMPI.

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