Information System for Distributed e-Infrastructures

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Distributed e-infrastructures consist of a large number of heterogeneous resources, primarily computing, but also storage, databases and other services. Information systems are needed to expose such resources to each other and to the users.

Our group works on defining and implementing the latest information system standard, GLUE2, in services that are part of the Advanced Resource Connector (ARC) – the software that is used to enable several e-Science infrastructures.

Information system is the backbone of any kind of a distributed grid system. NorduGrid ARC was one of the first middlewares that came with a reliable and comprehensive information system architecture. This solution, initially inspired by an LDAP-based approach of Globus, has been used as a distributed dynamic database for grid resource discovery and monitoring in research infrastructures for many years. Although the original ARC information system came with a custom information schema, the standard GLUE2 model is being broadly endorsed by middleware developers now. ARC contributed to the GLUE2 development, and is among the first to implement it. Ongoing new developments targeting further convergence and harmonization of otherwise different grid information systems are also in progress.

Challenges being addressed:
- GLUE2 schema renderings are still evolving, no common agreement exists
- Different infrastructures use different renderings, tailored to their requirements
  - Traditional approach in some infrastructures: logically group resources into administrative site, assuming same geographic location of such resource
  - Approach used in Nordic countries: geographically distributed resources, site has different meaning
- We develop a rendering that would accommodate all requirements