# Grid and Applications (Industrial Session)

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**Summary**

In a nutshell, Grid technology is about virtualizing resources, and Web Service technology is about virtualizing components. When taking a closer look at the underpinnings of both technologies, many areas of potential synergies can be identified. Some of these areas are pointed out by Ian Foster: He sketches the Open Grid Services Architecture (OGSA), which is a blueprint of a Grid environment based on Web Service technology.

The success of multi-institutional computing endeavours like the analysis of the LHC particle physics data at CERN, the calculation of more precise climate models, or the rational drug design in pharmaceutical companies depend to a large extent on the ability to organize the storage and fast access of large amounts of data in the Grid. Alexander Reinefeld presents a framework for the management of geographically distributed data addressing three key questions: How many replicas are needed in the Grid to guarantee a given file's availability? How can distributed replicas be synchronized efficiently? How can reliable data services be organized autonomously without human intervention? Most of the work on this framework has been done in the course of the European Union projects DataGrid, GridLab, and FlowGrid.

To date Grid middleware has focused principally on the basic issues of storage, computation and resource management needed to make a global scientific community's information and tools accessible. However, from an e-Science viewpoint, the purpose of the Grid is to deliver a collaborative and supportive environment that allows geographically distributed scientists to achieve research goals more effectively. Such an environment is likely to hide many aspects of a Grid middleware, and to exploit both generic and application-specific service discovery, invocation and composition. Norman Paton focuses on higher level grid services, indicating how Grids might affect the working environments of e-Scientists, and illustrates such higher-level services in the context of the myGrid project.

The talks given at the sessions are:
1. Ian Foster (Argonne National Laboratory, IL) "Open Grid Services Architecture"
2. Alexander Reinefeld (Zuse Institute, Berlin) "Distributed Data Management in the Grid"
3. Norman Paton (Univ. of Manchester, UK): "Grid Services for e-Science"