Foreword

The services that make up a Grid environment provide a distributed infrastructure for dynamic resource sharing and problem solving across multiple organizational boundaries, which effectively provides a virtualized wide-area distributed system. Overall, the Grid is about resource sharing, which includes computers, storage, networks, and other devices. Sharing is always conditional and based on factors such as trust, institutional policies, negotiation, and potentially how payment should be considered. The Grid concepts and ideas have now moved away from the world of joining high-performance computing (HPC) systems together to more generalized systems based on a service-oriented architecture that can provide infrastructure for a range of applications. The Grid infrastructure provides support for coordinated problem solving, which is beyond a simple client/server paradigm. Here we may be interested in combinations of distributed data analysis, computation, and collaboration. The Grid also includes dynamic, multi-institutional virtual organizations; these overlay and advance classical organizational structures, and may be large or small, static or dynamic.

A diverse range of applications are now being executed on the Grid. At one end of the spectrum are simple applications that may use a client/server paradigm, and at the other end of the spectrum, increasingly complex applications are being developed and executed. An example is workflows that may need to use a sophisticated distributed pipeline of services to fulfill their needs. Popular applications include HPC-based grand challenge problems that are computation ally or data intensive and high-throughput ones that need to spawn hundreds of thousands of tasks in parameter sweeps. Newer applications include those that enable collaboration between distributed partners. This type of application can provide both collaborative support and facilitate decision management for shared projects.

Foreseeing future trends in technologies is an almost impossible task. Since its conception in the mid-1990s, the components and technologies that make up the Grid have changed radically, and even today they are still evolving, with “Cloud Computing” becoming a pervasive contender for the same space. This book brings together a collection of papers from researchers who are exploring the technologies that enable virtual organizations for a range of purposes, but most importantly, they are implementing ideas that further the means of undertaking collaborative processes. Overall, the work discussed in this book provides an interesting compilation that will allow readers to understand the state of the art of Grid Technology for Maximizing Collaborative Decision Management and Support: Advancing Effective Virtual Organizations.

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