

# Self-Organising Grid Resource Management

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Objectives<sup>1</sup>:

To develop Load distribution and load balancing algorithms for GRID platforms

- Based on small-worlds overly networks
- With robust, self-healing operations
- Validate the development through simulation
- Criteria being: scalability, robustness, low overheads
- Develop statistical models for Grid application loading (arrival, size, duration etc)
- Develop an implementation plan for application on actual Grid platforms

Summary<sup>2</sup>:

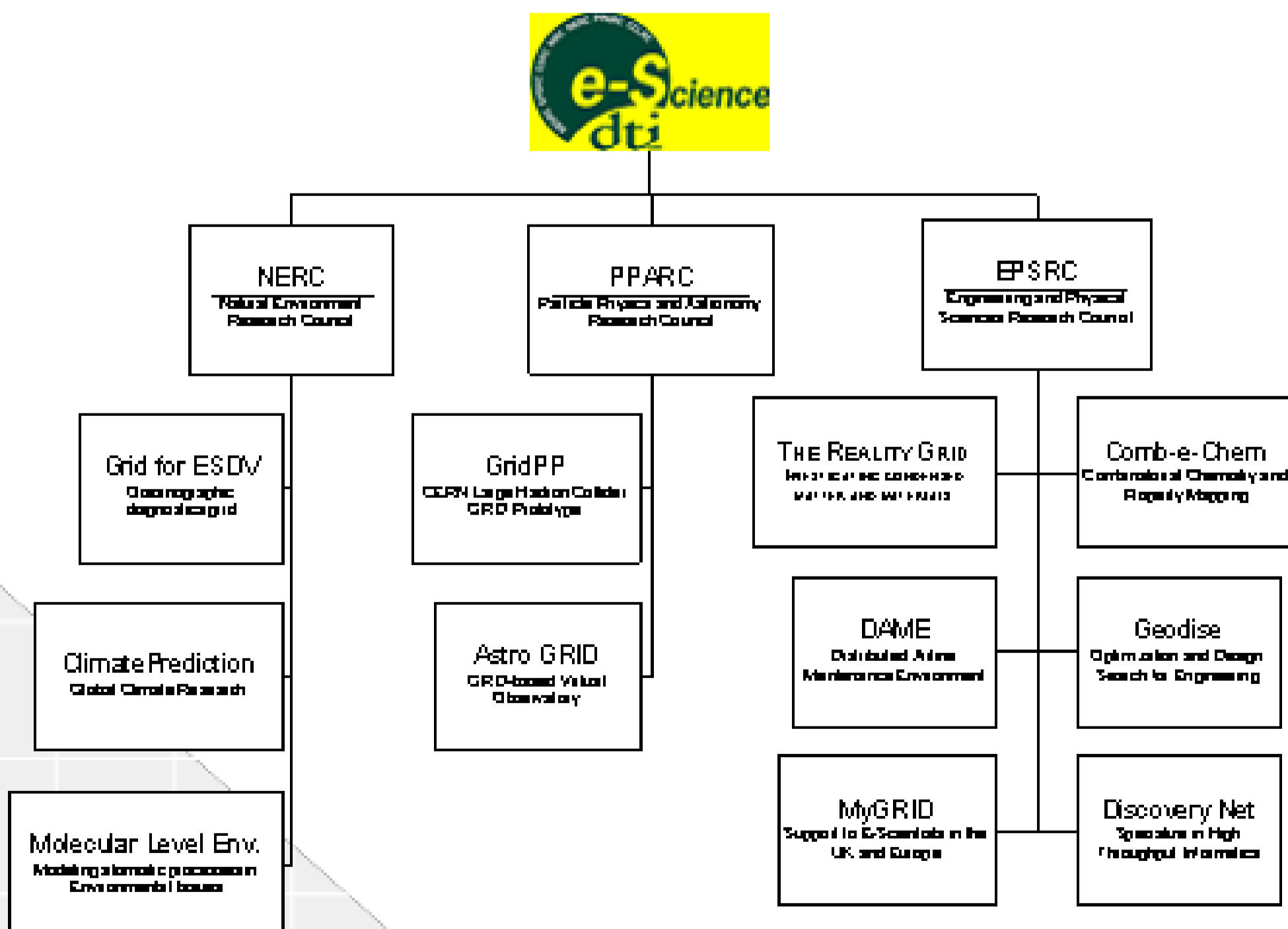
This proposal aims to develop techniques for distributed resource management for Grid networks as a contribution to the development of a network-wide service architecture. Requirements of this development are that it is suitable for use in a commercial environment; so that it should be robust and scalable.

The design to be developed will be a peer-to-peer system with nodes being interconnected by small-worlds like overlay networks, through which resource discovery and job allocation will be made. The network topologies will be developed dynamically so as to make the system robust. Some account of security and service discovery will be incorporated into the system - since these two factors represent the key constraints on which nodes may be used to run which tasks.

The methodology will be to develop the algorithms and protocols in a simulation environment, with close relationships to other workers concerned with implementation issue on actual platforms. Apart from the load management algorithms, a key input to this work will be the development of appropriate statistical demand and load models - which will be derived from other Grid application related projects.

**Grid is a type of parallel and distributed system that enables the sharing, selection, and aggregation of resources distributed across "multiple" administrative domains based on their (resources) availability, capability, performance, cost, and users' quality-of-service requirements<sup>3</sup>.**

GRID Projects Roadmap



Grid Resource Management Example

