Global Grid Forum (GGF)

Charlie Catlett
Chair, Global Grid Forum
Senior Fellow, Argonne National Laboratory
Executive Director, TeraGrid Project
catlett@mcs.anl.gov

January 2002

A GGF primer for people who already groc grids…

Context

- **“Grid Computing” has much in common with major industrial thrusts**
  - Business-to-business, Peer-to-peer, Application Service Providers, Internet Computing…
- **Distinguished primarily by more sophisticated sharing modalities**
  - E.g., “run program X at site Y subject to community policy P, providing access to data at Z according to policy Q”
  - Secondarily by unique demands of advanced & high-performance systems

GGF Objectives

- **An Open Process for Development of Standards**
  - Grid “Recommendations” process modeled after Internet Standards Process (IETF)
  - Persistent, Reviewed Document Series (similar to RFC series) initiated October 2001
- **A Forum for Information Exchange**
  - Experiences, patterns, structures
  - Useful even if every application & Grid were completely separate and not interoperable…but ideally will result in interoperability!
- **A Regular Gathering to Encourage Shared Effort**
  - In code development: libraries, tools…
  - Via resource sharing: shared Grids
  - In infrastructure: consensus standards

GGF Groups

- **Working Groups**
  - Tightly focused on development of a specification or set of related specifications
    - Protocol, API, etc.
  - Finite set of objectives and schedule of milestones

Groups are approved and evaluated by a GGF Steering Group (GFSG) based on *written charters*. Among the criteria for group formation:

- Is this work better done (or already being done) elsewhere, e.g. IETF, W3C?
- Are the leaders involved and/or in touch with relevant efforts elsewhere?

- **Research Groups**
  - More exploratory than Working Groups
  - Focused on understanding requirements, taxonomies, models, methods for solving a particular set of related problems
  - May be open-ended but with a definite set of objectives and milestones to drive progress

Current GGF Groups

AREA	Working Groups	Research Groups
Grid Information Services	• Grid Object Specification • Grid Notification Framework • Metacomputing Directory Services	• Relational Database Information Services
Scheduling and Resource Management	• Advanced Reservation • Scheduling Dictionary • Scheduler Attributes	
Security	• Grid Security Infrastructure • Grid Certificate Policy	
Performance	• Grid Performance Monitoring Architecture	
Architectures	• JINI • NPI Architecture	• Grid Protocol Architecture • Accounting Models
Data	• GridFTP	• Data Replication
Applications, Programming Models, and User Environments		• Applications • Grid User Services • Grid Computing Env. • Adv Programming Models • Adv Collaboration Env

Proposed GGF Groups

AREA	Working Groups	Research Groups
Scheduling and Resource Management	• Scheduling Command Line API • Distributed Resource Mgmt Applic API • Grid Resource Management Protocol	•Scheduling Optimization
Performance	• Network Monitoring/Measurement • Sensor Management • Grid Event Service	
Architectures	• Open Grid Services Architecture	• Grid Economies
Data	• Archiving Command Line API • Persistent Archives	• DataGrid Schema • Application Metadata • Network Storage
Area TBD…	•Open Source Software Licensing •Cluster Standardization	• High-Performance Networks for Grids

Group Formation process is 3-steps:

(1) Develop a Charter,
(2) Hold a BOF at a GGF meeting for community input
(3) Steering Group approval (review of proposed charter, BOF results)

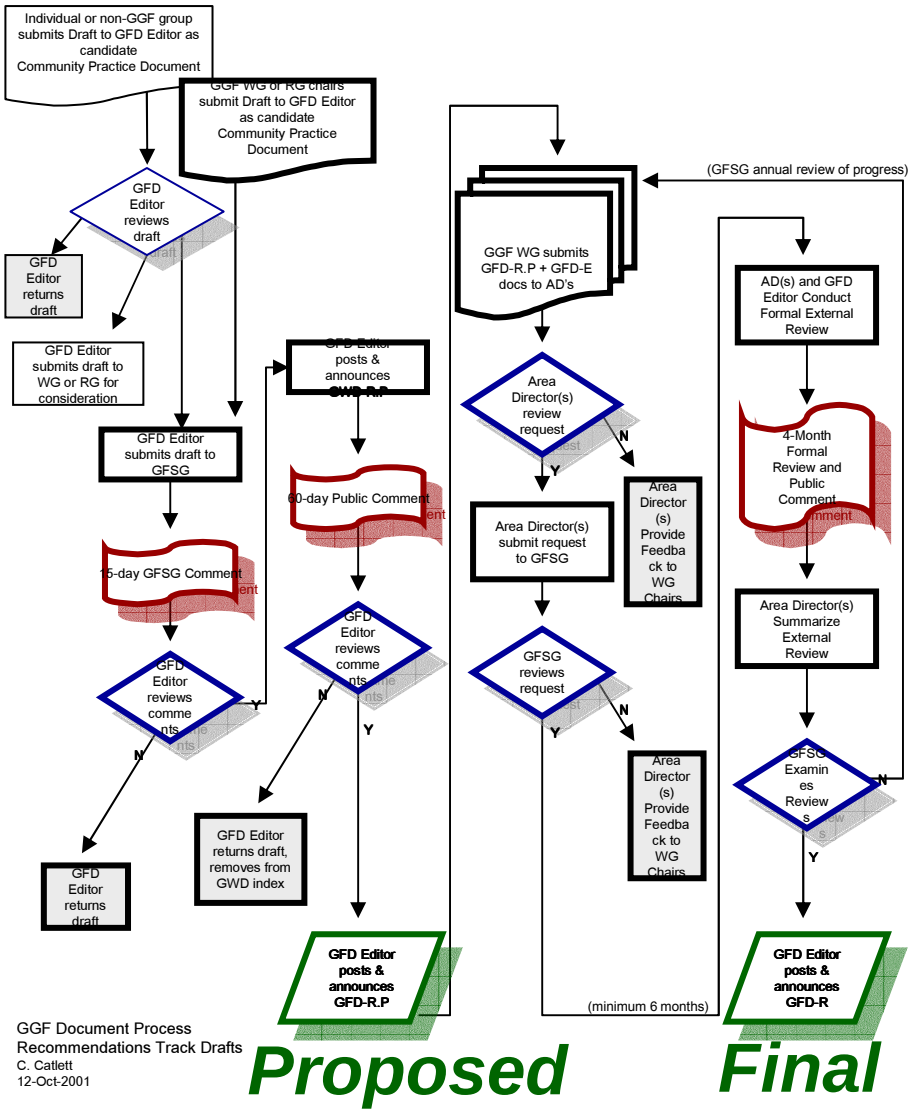
Examples of Work in Progress

- **Grid Information Systems**
  - Grid Information Services for Distributed Resource Sharing: Specification of Metacomputing Directory Service (MDS)
    - An LDAP-based resource directory service with specific protocols for query (Grid Resource Information Protocol) and update (Grid Resource Registration Protocol)
  - Grid Object Specification (GOS): A Data Definition Language for Grid Information Services
    - Data Definition Language for use in MDS. Generic, can be translated into e.g. LDAP RFC2256 or SQL syntax
- **Scheduling and Resource Management**
  - Ten Actions when Superscheduling
    - Base set of steps required to implement “scheduler of schedulers”
  - Scheduler Attributes
    - Minimum set of (commonly defined) attributes necessary for a local resource scheduler to communicate with and interoperate with other local schedulers and superschedulers
  - Advanced Reservation API
    - Difficult with single resource, very difficult within superscheduling context

Grid Standards

- **GGF Document Series Modeled after RFC Series**
  - Informational or Experimental
    - Objective: To inform of relevant/interesting work
    - Example: “Survey of Directory Services security models”
  - Community Practice
    - Objective: To document commonly agreed-upon approaches, methods, etc. (often non-technical)
    - Example: “GGF Document Process”
  - Recommendations Track
    - Objective: To document a technical standard
    - Example: “Grid Object Specification”
      - Technical specification, allows for building interoperable systems
      - Does not declare an “exclusive” solution- may be multiple standards, just as FTP (an Internet standard) is not the exclusive data transfer protocol for the Internet

Recommendations Track Documents



- **Objectives**
  - To document a particular technical specification or a particular set of guidelines for the application of a technical specification.
  - To guide interoperability and promote standard approaches.
  - Does not necessarily imply exclusivity
- **Process**
  - 15d GFSG Review
  - 60d Public Comment
  - ≥6 month experience in field
  - ≥2 interoperable implementations
  - 4 month formal external review
- **Review**
  - Relevance, intellectual and technical quality
  - Evidence of wide applicability and practice

Getting Involved

- **Participate in a GGF Meeting**
  - 3x/year, typically 300- 400 people
    - February 17-20, 2002 in Toronto
    - July 21-24, 2002 in Edinburgh (with HPDC)
    - October 15-17, 2002 in Chicago
- **Join a working group or research group**
  - Electronic participation via mailing lists (see www.gridforum.org)
- **Contact a Steering Group member**
  - Charlie Catlett, Ruth Aydt, Andrew Chien, Ian Foster, Andrew Grimshaw, Marty Humphrey, Bill Johnston, Domenico LaForenza, Satoshi Matsuoka, Jarek Nabrzyski, Jenny Schopf, Steve Tuecke, Satoshi Sekiguchi