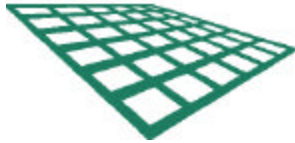


Enterprise
Grid Alliance



Enterprise Grid Computing

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President Enterprise Grid Alliance
and
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Oracle Corporation

1 March 2006

AGENDA

- **Enterprise Grid Computing**
 - Landscape
 - Applications
 - Components
- **Enterprise Grid Alliance (EGA)**
 - Organization & Members
 - Strategy/Approach
- **Barriers to Enterprise Grid Technology Adoption**
- **Alliances**



Grid Computing Landscape

- **Network scale computing leverages**
 - Trend toward network distributed services
 - Network bandwidth
- **Potentially unbounded**
 - Performance + scaling + throughput
 - Inherent resilience
- **Widespread adoption, but...**
 - Academic and scientific workload
 - Compute intensive
- **Growing ecosystem**
 - Product and service providers
 - Standards setting organizations



Enterprise Grid computing

- **In Enterprises**
 - Public or private sector
- **Within and between Enterprise data centers**
 - Not desktop grids
- **Using proven and standard Enterprise components**
 - Networks, application servers, databases, server computers, storage, and management frameworks
- **Within and between Enterprise legal entities**
 - Trusted and secure
 - Not dynamically defined virtual organizations
- **For Enterprise applications**
 - Commercial (ERP, CRM, BI) and Technical (portfolio simulation)
 - Not scientific computing or academic research grids



Enterprise Applications

- **Commercial Enterprise applications**

- N-tier architecture with interactive and batch components
- Examples: ERP, CRM, BI
- Some custom, but mostly packaged
- Grid deployments are in their infancy
- Standards support unknown and needs to be determined

- **Technical Enterprise applications**

- Usually heavily batch oriented, often highly parallel
- Examples: Rendering, portfolio simulation, finite element modeling
- Both custom and packaged
- Some progress on grid solutions for these applications, some standards support



Technical Components

- **Networks**
 - Ethernet, interconnects, routers, load balancers...
- **Application Servers**
 - Execution environments, Web servers, portals, suites...
- **Databases**
 - Relational databases, legacy data, backups...
- **Server computers**
 - SMP, blades, towers, mainframes, OS, cluster frameworks...
- **Storage**
 - Disk subsystems, tape drives, storage networks...
- **Management Frameworks**
 - User interfaces, agents, monitoring, billing, charge back...



Enterprise Grid Alliance (EGA)

- **Vendor neutral consortium**
 - 29 leading vendors and end-users
- **Global participation**
 - HQ in US, regional steering committees in Japan and EMEA
- **Clear mission**
 - Accelerating the deployment of Grids in enterprise data centers
 - Single focus: enterprise data centers
- **Not a traditional standards body**
 - Achieve results through collaboration
 - Create standards as a last resort
- **Pay-to-play level playing field**
 - Open to ALL stakeholders
 - One company one vote
 - Participation-based Royalty Free (RF) Patent Policy



EGA Membership

Board & Sponsor Members



Contributor Members



Associate Members



Enterprise
Grid Alliance



Panel Presentation for W3C - 1 March 2006

Technical Strategy

- **Attack the problem in phases**
 - Begin new phases every 12-18 months
 - No clear cessation of phases, rather an evolutionary continuous extension
- **For each phase**
 - Determine availability of existing technologies and standards
 - Develop proofs of concept, demos
 - Profile solutions
 - Communicate requirements to relevant industry organizations
 - Develop specifications and reference models where needed
- **Three phases**



Phase 1: Core Capability

- **Core Commercial Enterprise applications only**
 - Not technical grid applications
 - Applicable to every Enterprise
 - Validate that basic support is possible now, encourage or develop needed specifications ensuring openness
- **Capability within a single Enterprise only**
 - Not between Enterprises
 - Focus on a data center, but include interaction with other data centers first for availability and then for load balancing and cooperative processing
 - Interoperation between vendors, within a data center



Phase 2: Include and Extend

- **Include support for Technical Grid applications**
 - Enables technical grid processing when commercial applications don't need the resources
 - Off hours capacity encourages development of more technical grid applications
 - Boundary between application types begins to blur
- **Extend multiple data center support to other organizations**
 - Message passing applications such as supply chain, trading applications
 - Web service calls between applications
 - Grids between Enterprises begin to interoperate



Phase 3: Unify and Complete

- **Unify grid computing within and between Enterprises**
 - True cooperative processing, not just message passing
 - Dynamic capacity addition: Virtually extend the data center
 - Final capacity on demand capability delivered
- **Complete support for all Enterprise applications**
 - In all configurations, inside the data center and outsourced to data center providers
 - Complete interoperation between Enterprise grids
 - Final computing-as-a-utility model begins to emerge



EGA Technical Working Groups

- **Reference Model**
 - Common lexicon/taxonomy/model
 - Use cases
- **Security**
 - Requirements exclusive to grids
- **Component Provisioning**
 - Requirements for provisioning (including use cases)
 - Initially focused on servers
- **Data Provisioning**
 - Provisioning and management of data
- **Utility Accounting**
 - Requirements for enabling utility billing and pricing



EGA Marketing Focus

- **Three primary marketing strategies**

- Thought leadership
 - Establish EGA as the authority on Grid computing in enterprise data centers
- Education
 - Raise awareness of Grid and its benefits to enterprises: remove confusion
- Recruitment
 - Increase EGA membership
 - Target leading companies and end users

- **Outreach programs**

- Communication program
 - Promote bi-directional knowledge transfer through engagement with the wider enterprise Grid community
- Participation in key industry events
- Organizational announcements
 - Technology, liaison and membership growth



Barriers to Enterprise Grid Adoption

- **Reluctance to risk mission critical applications**
 - What is Grid?
 - How to apply grid in commercial data centers?
- **Immaturity**
 - Incomplete models
 - Lack of stable standards
 - Shortage of case studies and proven roadmaps
 - Unproven interoperability between vendor products
- **Additional inhibitors**
 - Cultural attitudes toward exclusive ownership of IT assets
 - Trust and accounting model issues
 - Licensing and resource sharing concerns



The Six Areas of Concern

Enterprise users concerns about grid operation and management include:

1. Confusion about what grid is and how it works
2. Cross-vendor interoperability
3. Accounting & billing for CPU and applications usage
4. Security and user authentication
5. Standards
6. Global enterprise grids across international boundaries



1. Confusion about Enterprise Grid Computing

Issues:

- No standard model for component interactions
- Solutions to individual problems lack an overall context
- Not clear how components and interactions create solutions
- Taxonomy and vocabulary not widely agreed to

EGA Solution:

- The EGA Reference Model establishes common terms and model so everyone can communicate clearly and consistently
- Available on EGA web site



2. Cross-vendor interoperability

Issues:

- **No standard provisioning interfaces exist which:**
 - Restricts development of cross-vendor solutions
 - Limits provisioning capabilities within and between data centers
 - Limits moving and copying files across and within storage subsystems

EGA Solutions Underway:

- **Drive standards to:**
 - Enable consistent access to data and storage regardless of the component type or resource provider
 - Enable creation of integrated, cross-vendor grid solutions
- **Standardize interfaces**
 - Minimize investment in tools and skills required to manage a grid infrastructure
- **Problem Statement and Approach for Data and Storage Provisioning - available March 2006**



3. Usage Billing and Accounting

Issues:

- Enterprise grids need standards for resource accounting, however:
 - There is no standard way to collect and report usage information
 - There is no agreement on usage metrics

EGA Solutions Underway:

- Enable pay-per-use metering and chargeback capabilities
- Standardize usage accounting for software and hardware
- Leverage existing utility framework



4. Security and User Authentication

Issues:

- Enterprise grid security is not well understood
- Market Perception - security issues make it difficult to safely deploy grid technology today

EGA Solution:

- Identify security requirements and recommend safe and reliable set of security best practices
- Now available on EGA web site



5. Standards

Issues:

- There is little momentum around a single vendor, technology or standards organization
- Efforts are often duplicated between groups, vendors and users which creates confusion

EGA Solutions Underway:

- Drive standards adoption
- Collaborate with standards-making bodies
- Promote the advancement of grid solutions
- Leverage work from a wide variety of organizations
- Develop and market open, secure, scalable grid solutions



6. Global Enterprise Grids

Issues:

- No one group addressing needs of enterprises operating globally and in specific regions
- Users need standardized implementations in data centers regardless of location
- Need to understand requirements of local governments

EGA Solution:

- **EGA Regional Groups formed to:**
 - **Create global parity in standards**
 - **Promote adoption and development on an international basis**
 - **Create reproducible configurations across multiple data centers lowering cost of operation and management**



Enterprise Grid Alliance Reference Model

- **Industry first**
 - Fills an obvious gap; complementary to the existing body of work
- **Technology agnostic**
 - Makes no assumptions about implementation
 - Avoids need to re-write/re-factor as technologies evolve
- **Vendor neutral**
 - 20 participants from 14 EGA member organizations
- **Catalyst**
 - Reflection of the current understanding of Grid stakeholders
 - Basis for collaboration with other industry bodies to ensure emerging standards meet enterprise requirements
- **Evolution**
 - Validate the model
 - Solicit feedback From GGF, DMTF, SNIA, vendors, SI's and end users



EGA Reference Model

- **Glossary**

- Defines a framework for classifying Grid resources/services together with their relationships and dependencies in a conceptual component architectural setting

- **Model**

- Context for requirements, solutions and comparisons
- Vendor neutral
- Technology/implementation agnostic
- Describes existing data centers
- Does not assume a particular technology roadmap

- **Use cases**

- Set of commercial enterprise community-centric use cases
- Consistent and relevant requirements for partner SDOs and all other enterprise Grid stakeholders

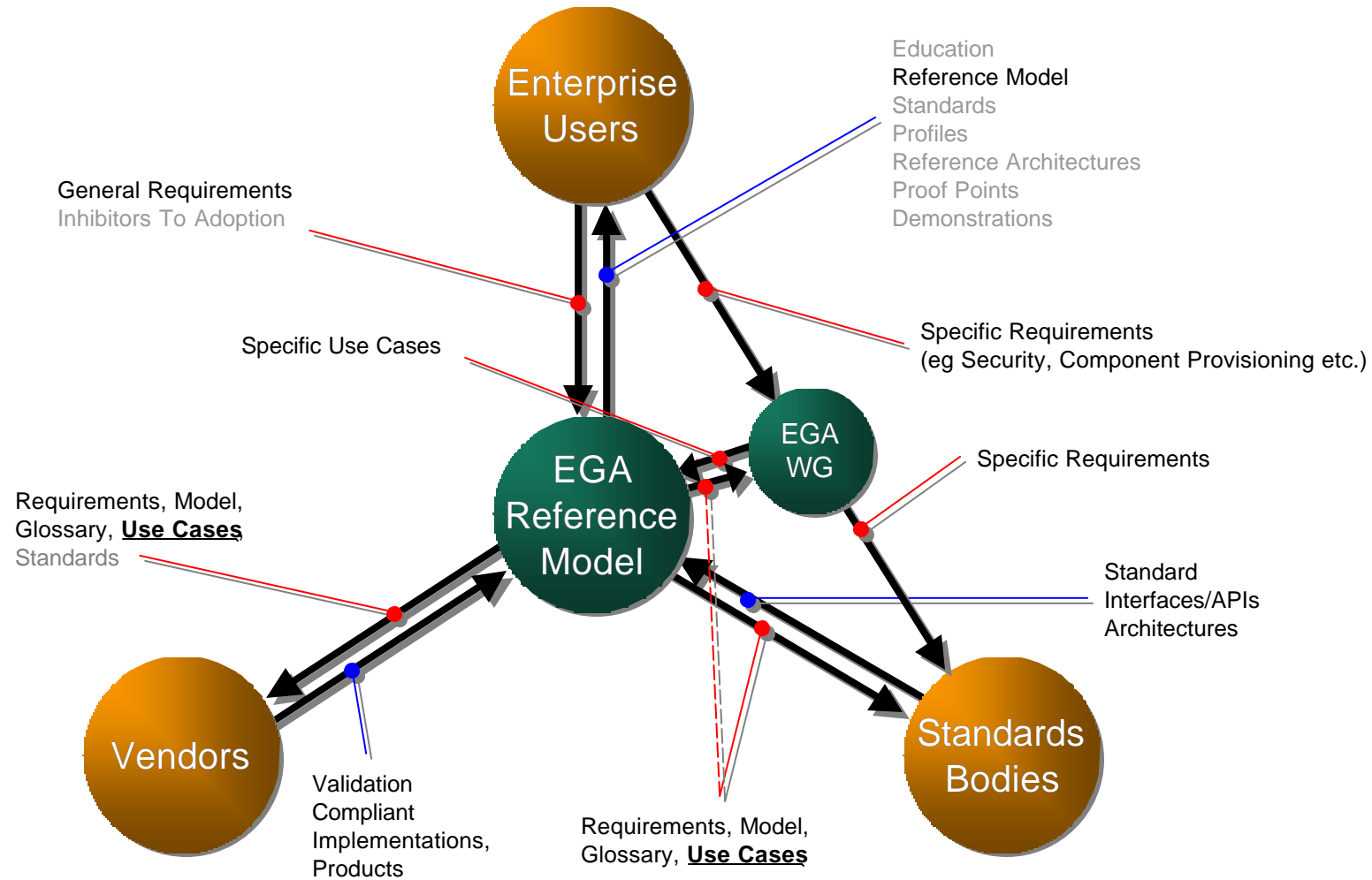


EGA Reference Model

- **Specific**
 - Enterprise data center grids
- **Sharp focus**
 - Provide shared context or framework for describing enterprise Grid customer requirements, technical problems and technical solutions inside and outside EGA
- **Simple**
 - Small set of simple objects, relationships and verbs describe highly complex data centers, their constituent parts and their life cycles
- **Complementary - fills a gap**
 - More focused than GGF's OGSA
 - More abstract than DMTF's CIM



Role of EGA Reference Model



EGA Strategic Relationships

- **Developing strategic relationships**
 - Identify synergies
 - Build a long-term, cooperative foundation
- **DMTF - active engagement/cooperation**
 - Joint work register has been created and approved by EGA and DMTF Boards
 - Public announcement soon
- **SNIA - established relationship**
- **GGF - defining closer relationship**
- **Other relationships - as desired**
 - e.g. GTRC & Grid Consortium Japan



For more information

General Information:

<http://www.gridalliance.org>
help@gridalliance.org

Sign Up to Stay Informed. Join the EGA mail list:

<http://www.gridalliance.org/en/contact>

