EGA Reference Model: Laying the Foundation for standardized Grid Computing in the Enterprise

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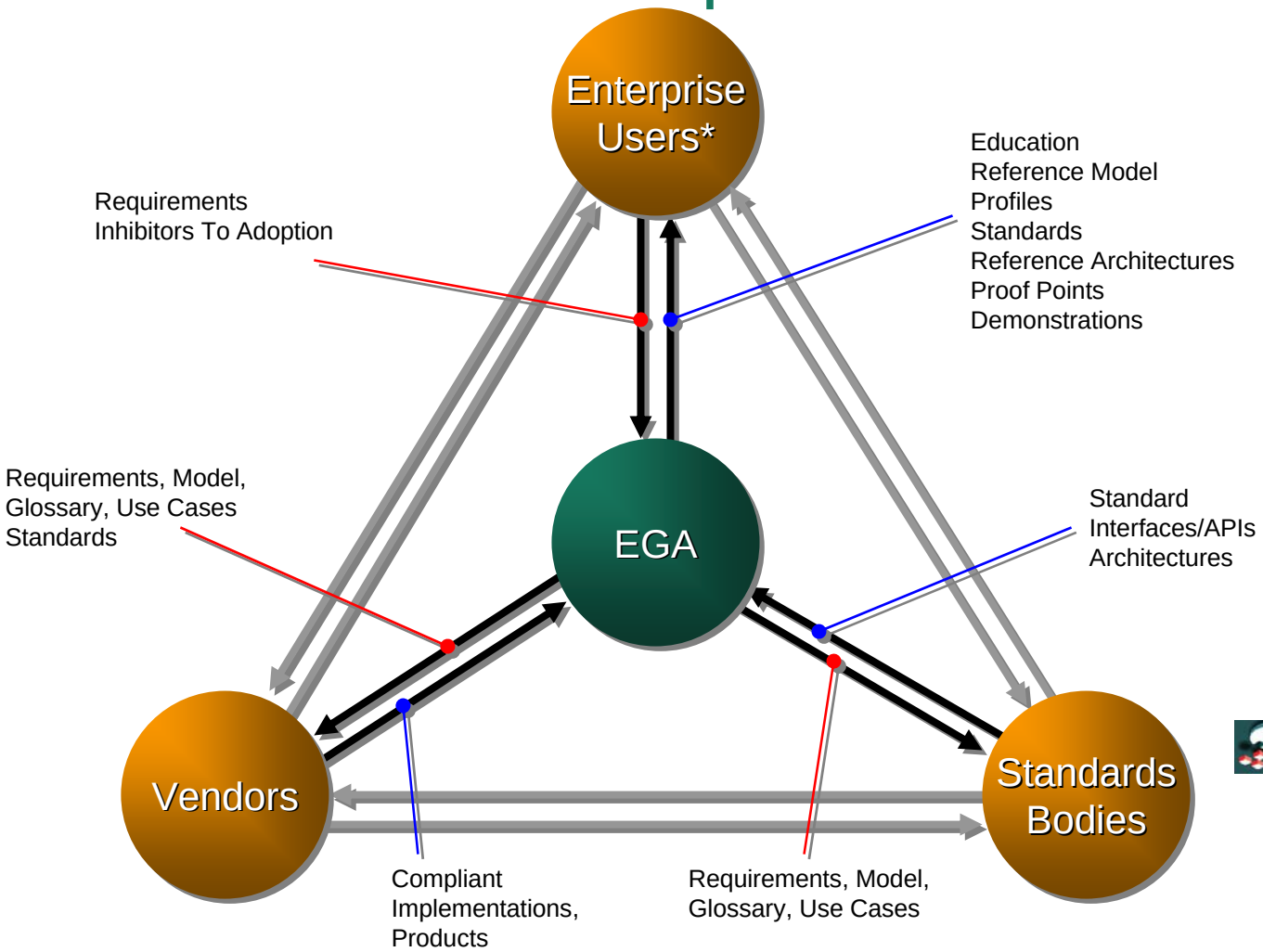
Enterprise Grid Computing Landscape

- Different priorities than traditional Grid community
  - All about guarantees and not just best efforts
  - Mission critical applications
- Commercial and technical workload, inc. ALL of
  - Traditional mixed workload, transactional (OLTP) and batch
  - Data warehousing
  - Web services and service oriented architectures
  - Compute and I/O intensive
- Key benefits - economies of scale
  - Better performance, scaling, throughput and resilience
  - Greater efficiency and agility
- Widespread evaluation/pilots
  - Benefits and value starting to be recognized
  - Leading edge users seeking competitive advantage

Barriers to Enterprise Grid Adoption

- Reluctance to risk mission critical applications
- Confusion
  - 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

EGA Role as Requirements Definer



Enterprise users
- ***Commercial end users***
- ***Public sector end users***
- ***Systems integrators***
- ***Solutions providers***

EGA Technical Program

- Reference Model
  - Providing a common context, glossary and taxonomy
  - Mapping onto other standard architectures and information models
  - Use cases to frame requirements
  - v1.0 released May 2005 (see later)
  - V2 will be released around the end of the year
- Data Provisioning WG
  - Chartered with identifying the requirements of data provisioning in Enterprise Grids resulting in the development of usage scenarios, requirements and functional specifications.
  - Initial focus: simple bulk operations, with subsequent focus on incremental and fine-grained data operations.

EGA Technical Focus

- Component Provisioning
  - Mainly focused in provisioning of compute resources
  - Provisioning use cases and requirements
  - Work is on-going
- Grid Security
  - Completed the 1.0 version of the “Enterprise Grid Security Requirements” document.
  - Focus will now be on real world solutions that can satisfy these grid security requirements
  - Issues and resolutions and use cases

EGA Technical Focus

- Utility Accounting
  - Focusing on tracking and measuring the grid for usage accounting, system management and capacity planning
  - Using existing models and measurements as much as possible
  - Building on top of reference model to define requirements for utility accounting
  - Currently exploring requirements.

EGA 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

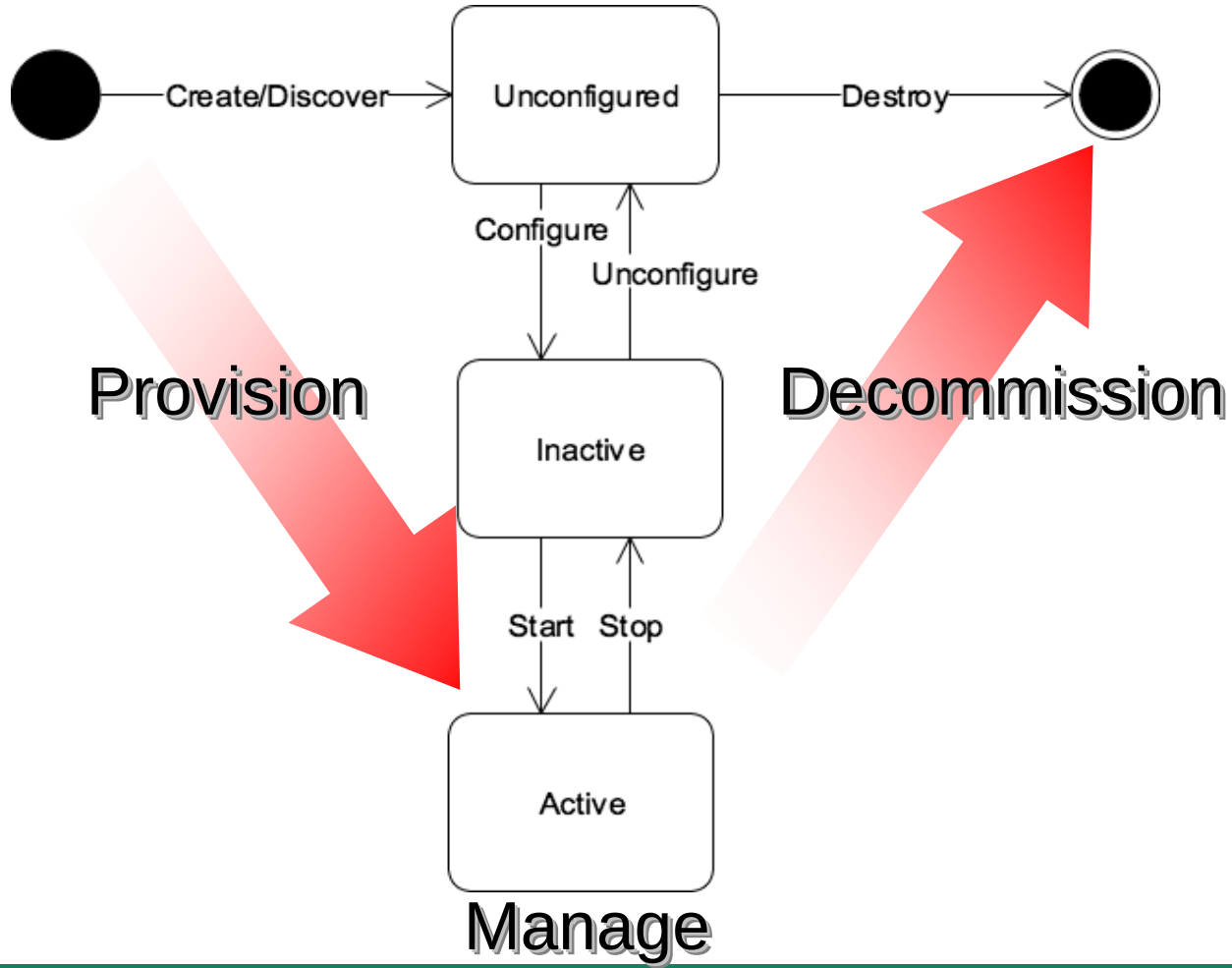
EGA Reference Model

- 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

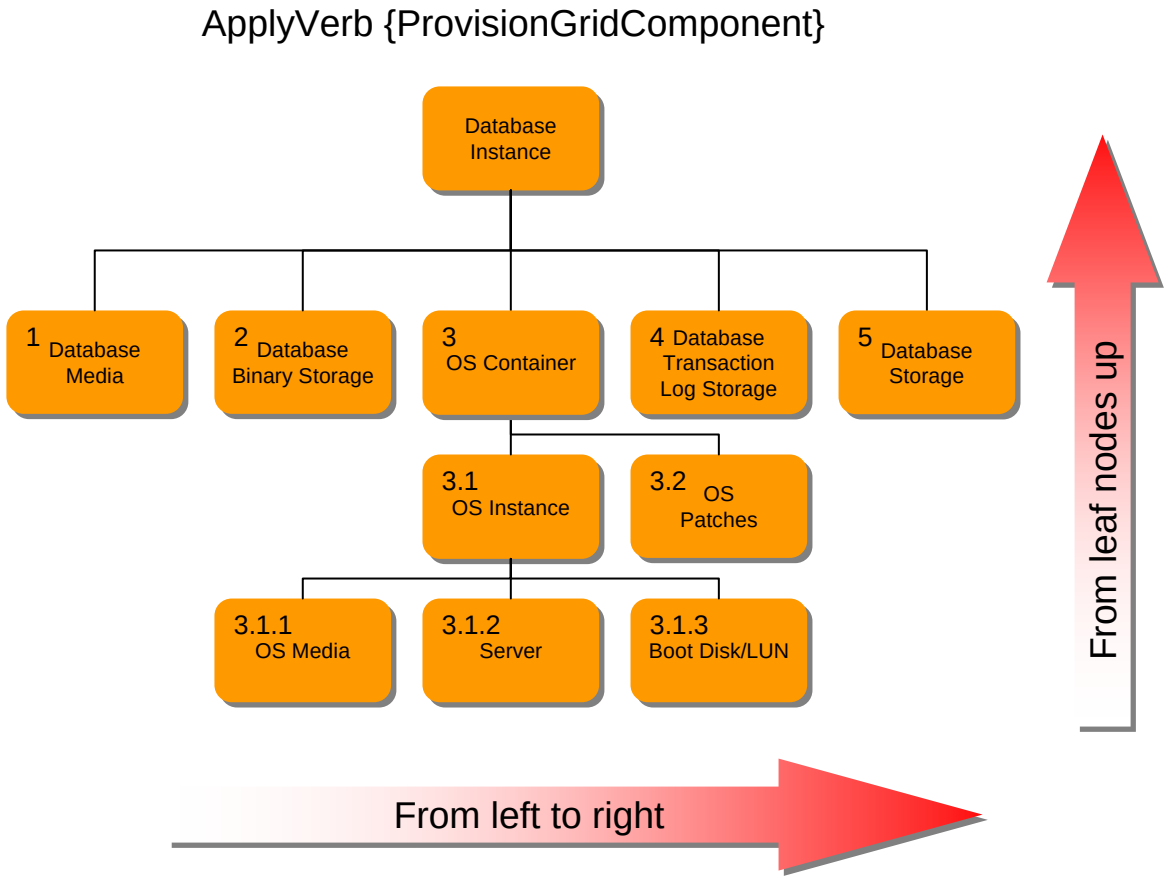
EGA Reference Model: Glossary

- An *enterprise Grid* is a collection of interconnected (networked) *Grid components* under the control of a *Grid Management Entity* (GME)
- Grid component - A super class of object including everything that is managed in an enterprise Grid
  - Physical: servers, disks, switches, etc.
  - Logical: services, applications, operating systems, load balancing software, tiers of services, etc.
- Grid management entity - the logical aggregation that managed the enterprise Grid
  - People
  - Process
  - Technology

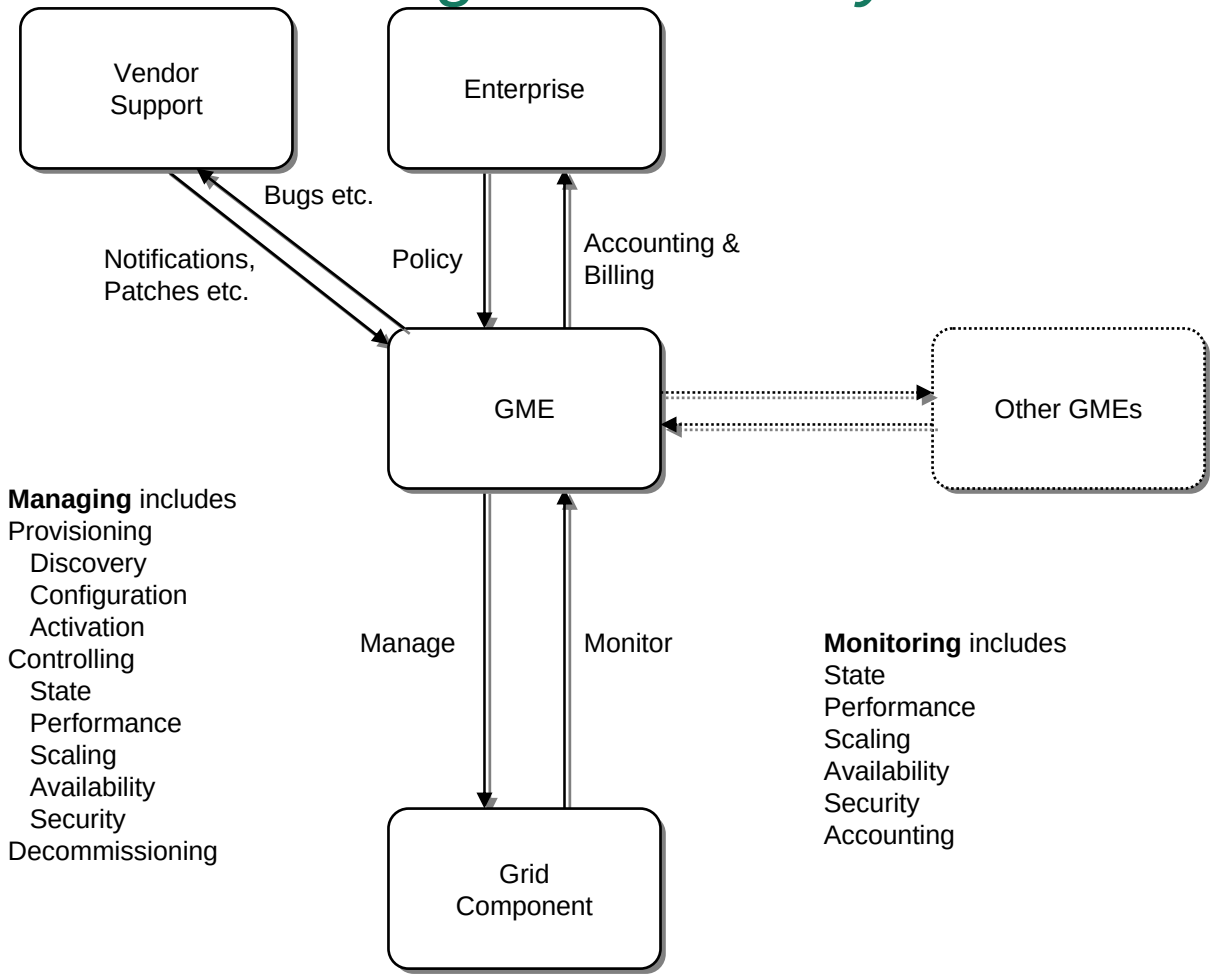
EGA Reference Model:
Grid Component Life Cycle



Provisioning By Walking The DAG



EGA Reference Model:
Role of Grid Management Entity



Scenarios & Use Cases

- Scenario
  - The storyboard, e.g. line of biz VP walks into IT VP's office and says "I need this new service deployed"
- Use Case
  - Enumerated set of steps required to realize the scenario
  - Sequence diagrams (UML)
  - Detailed
  - Leverage EGA reference model
  - Describes today's process (NOT the desired state) so as to identify major pain points and their context
  - Goal
    - *Automate process by replacing actors with software/services*
    - *Identifies appropriate services and their functionality*

2nd EGA Technical Announcement

- Enterprise Grid Security Requirements v1.0 document was launched WW in July
- The second technical deliverable to be introduced to the public
- Document Covers Enterprise Grid Security:
  - Threats/Risks
  - Use cases
  - Requirements

Enterprise Grid Security

- Why are we talking about security?
  - Often a barrier to adoption for new enabling technologies
  - Should not be an afterthought
- Focus on unique aspects of enterprise grid
  - Lots of existing material for general enterprise security
  - Different than traditional grid community focus
- Key characteristics
  - Sharing
  - Grid Management Entity (GME)
  - Grid component lifecycle

Enterprise Grid Security: Threats & Risks

- Access control attacks
- Defeating audit and accounting
- Denial of Service (DoS)
- Malicious code/malware
- Object reuse
- Masquerading attacks
- Sniffers
- Physical security
- Social engineering

Enterprise Grid Security: Requirements

- Confidentiality, Integrity, Availability
  - GME, grid components, applications/services
- Identification
  - GME, grid components, applications/services
- Authentication, Authorization, Auditing
- Separation of duties, least privilege
  - Ex: “grid admin”
- Defense in depth
  - Preserved, even if it’s logically (ex: DMZ)
- Fail secure
  - More important with frequent reprovisioning

Enterprise Grid Security: Requirements

- Grid Lifecycle Security
  - Secure packaging
  - Secure update
  - Secure archival
  - Secure reuse
- Interoperable security
- Secure isolation
  - Physical, electrical, logical
- Trust relationships
  - GME, grid components, applications/services, users, admins

EGA Going Forward

- Release Reference Model & Use Cases documents Dec 2005
  - Develop use cases further
  - Engage with end users for input, validation & participation
  - Drive requirements into SDOs and vendors
- Releases from other working groups - ongoing
- Grow the market
  - reference implementations and architectures to demonstrate technologies
  - Spread the word…

Q & A Feedback Session

Moderator: Paul Richie EGA Executive Director

For More Information

General Information & Membership:

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