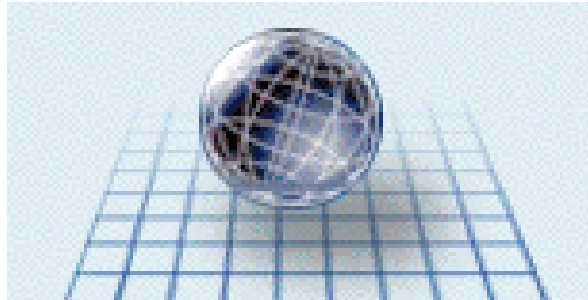


Open Grid Services Architecture: Framework for commercial grids

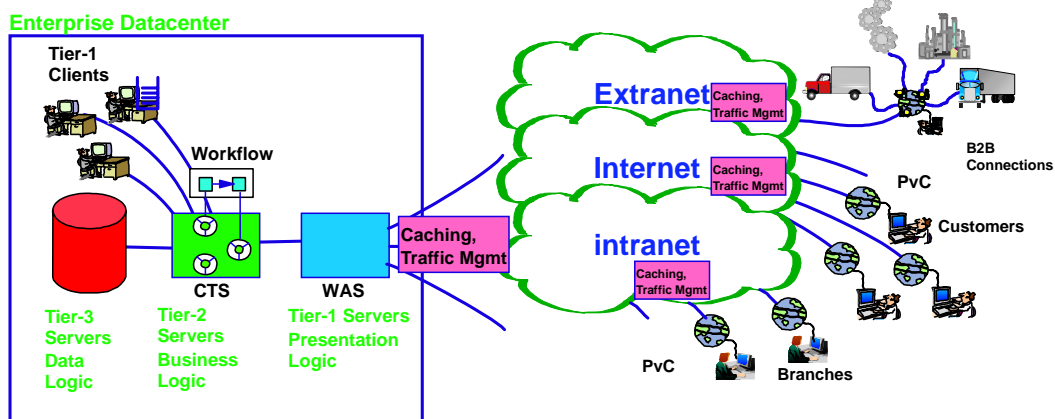


Jeff Nick, IBM Fellow
Director, Advanced Systems Architecture
jnick@us.ibm.com
6.17.02

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Enterprise e-Business transformation: Inside view

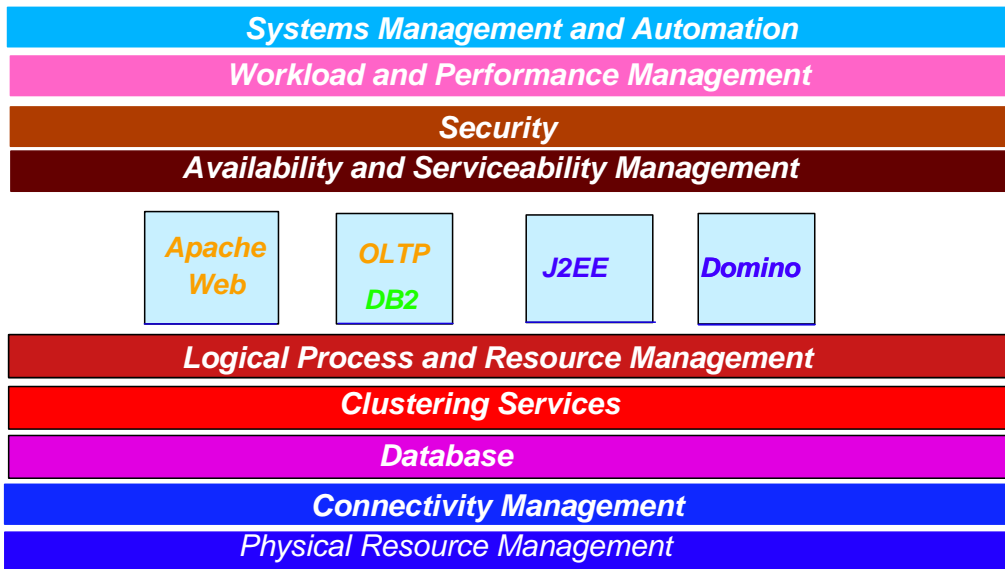
De-composition of monolithic systems
 Re-integration of distributed compute resources



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Traditional System Model

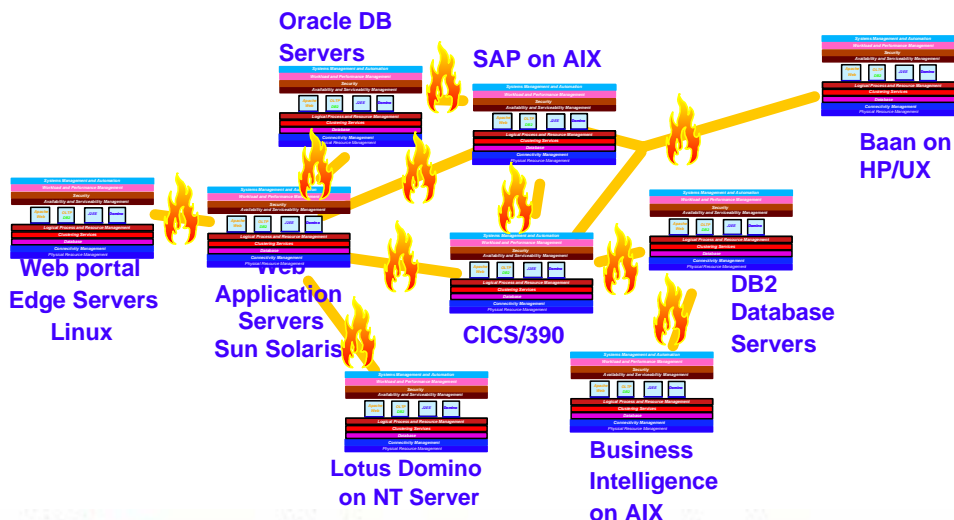
QoS delivered through Vertical Integration



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Enterprise Infrastructure Turmoil

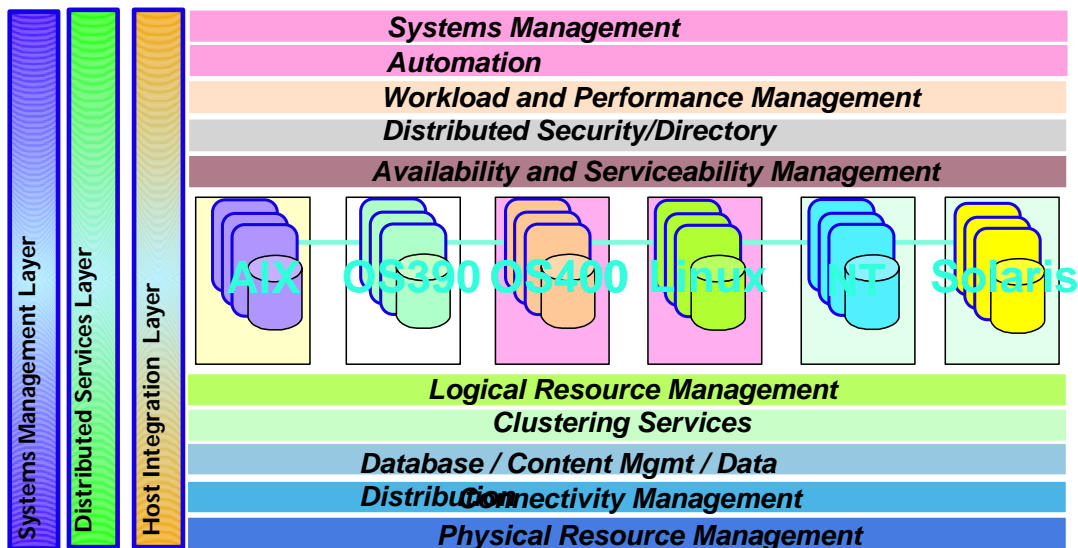
*hundreds of distributed servers...
...Islands of computing resource...
End to End QoS is fractured*



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Needed: cross-platform system Infrastructure

Horizontal QoS Integration across Distributed Systems



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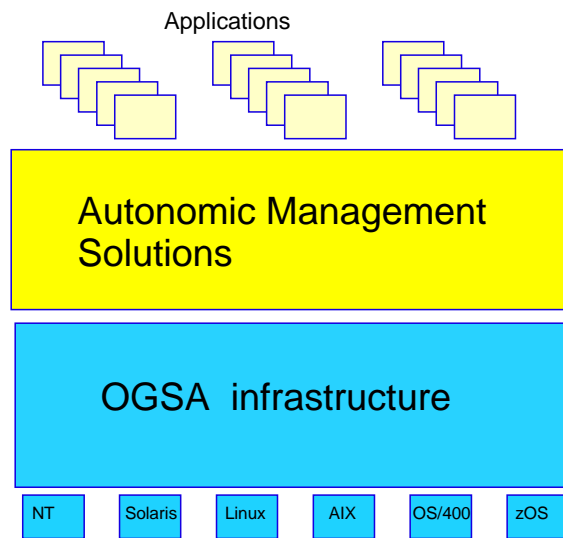
Open Grid Services Architecture Objectives

- ▲ Distributed Resource Management across heterogeneous platforms
- ▲ Seamless QoS delivery
- ▲ Common Base for Autonomic Management Solutions
- ▲ Common infrastructure building blocks to avoid "stovepipe solution towers"
- ▲ Open and Published Interfaces
- ▲ Industry-standard integration technologies
 - web services, soap, xml...
- ▲ Seamless integration with existing IT resources

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OGSA infrastructure focus areas

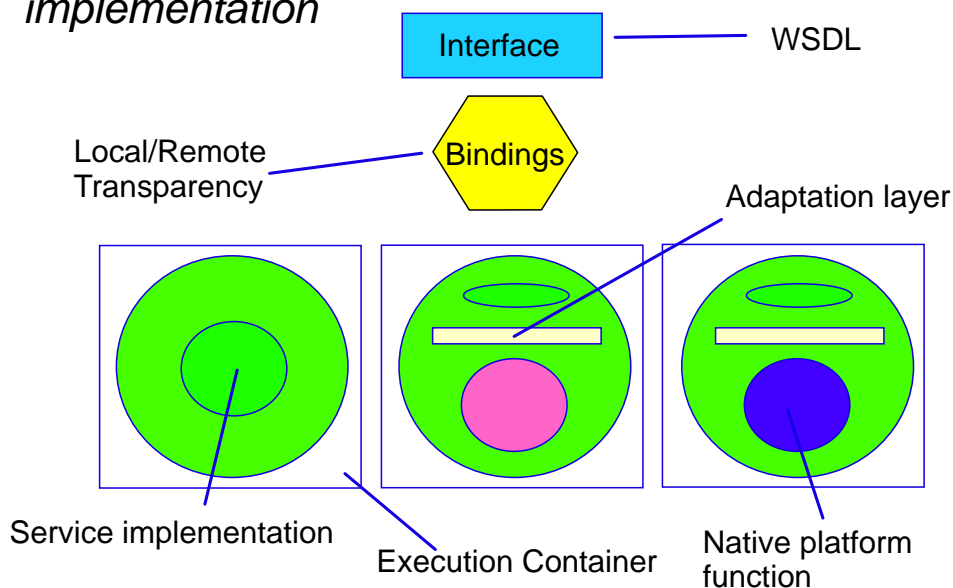
- ▶ Resource discovery and management
- ▶ Common Resource instrumentation
- ▶ Profile based policies
- ▶ Metadata mapping on repositories
- ▶ Authentication
- ▶ Access Control
- ▶ Credentials Delegation
- ▶ Contexts and context propagation
- ▶ Performance Management
- ▶ Event notification
- ▶ Cluster Services
- ▶ Logging, Trace, Debug



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Services model

Separate interface from access and implementation



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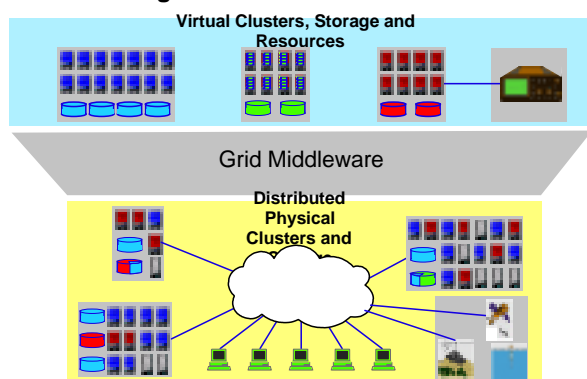
OGSA Service Model

- Web services are not OGSA services!
- All OGSA services adhere to specified service interfaces and behaviors (some required and some optional)
 - Factory, registry, discovery, lifecycle, query service data, notification, reliable invocation
- A robust abstract services component model, where resources are rendered as services and are composable
- Reliable and secure preservation of distributed state
- Supports dynamic late-binding and creation of distributed resource groups

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The Grid

Grid computing initiatives will drive standards and software which will enable robust resource sharing and collaboration over the Internet.



- Grid computing links servers, clients and storage from across the Internet to form virtual server and storage pools which may be dynamically allocated.
- Today's Grid software is focused on physical hardware allocation for high performance computing and collaboration, but will evolve to support an e-utility environment for most workload types.
- The potential is to extend Grid middleware to seamlessly integrate distributed compute resources with existing IT infrastructures for Commercial Grids.

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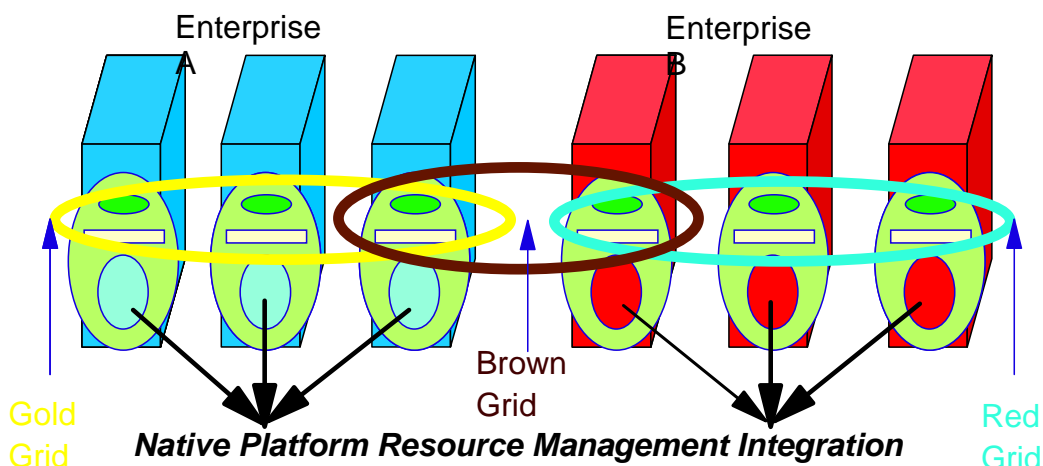
A Common Problem: Distributed Computing

- ▲ Web services, eLiza and Grid efforts try to solve similar problems in different realms:
 - Defining an open distributed computing platform.
 - Assuring interoperability.
 - Dealing with heterogeneous platforms, protocols and applications.
- ▲ GRID is currently focused on Scientific & Technical Computing across organizational boundaries
 - ▲ Distributed Resource Sharing is the key
- ▲ Web Services initial focus on application integration
- ▲ eLiza focused on commercial IT system infrastructures:
 - ▲ Here, sharing resources is not the issue: Managing them is!
 - ▲ Sharing function is not the issue: Building solutions on top is!

Commercial Grids via OGSA

"Differences are fundamentally ones of organizational configuration, isolation and policy control, not architectural"

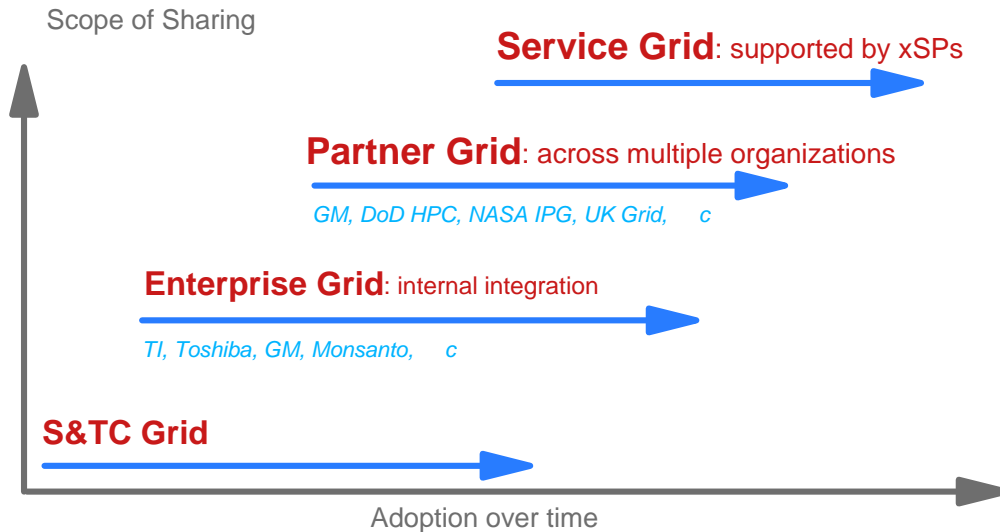
Common Resource Management Services
Local/Remote Transparency



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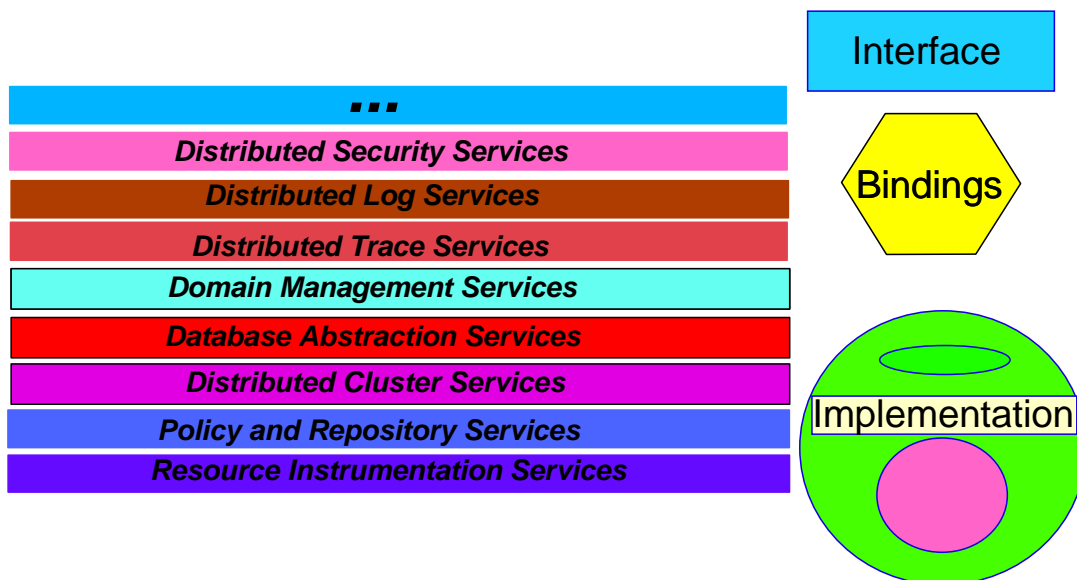
Grid Evolution

Grid: Transparent, secure and coordinated computing resource sharing across sites - a "cluster of clusters"



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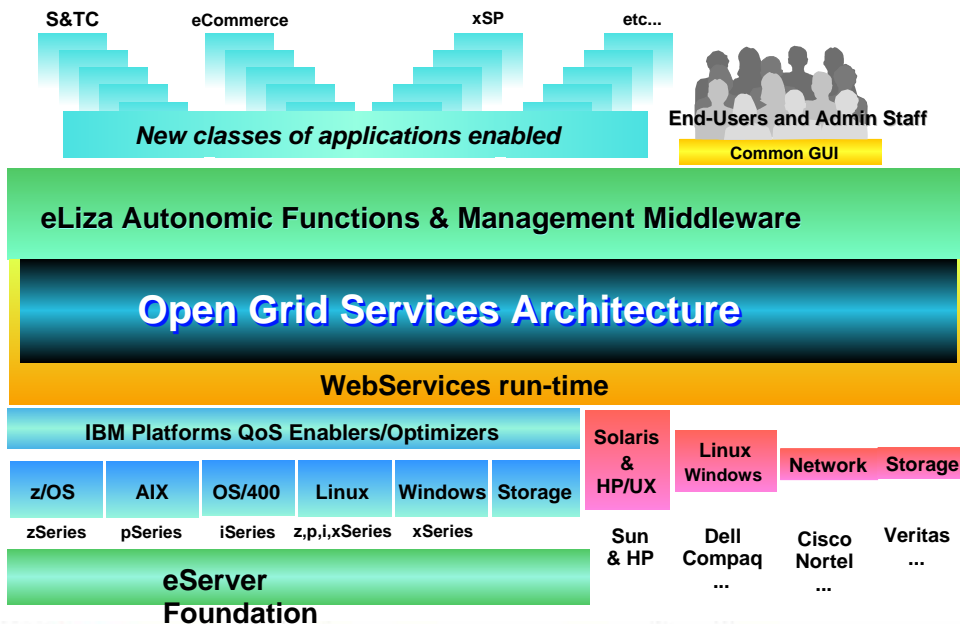
OGSA Common QoS Functions



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Architecture Framework

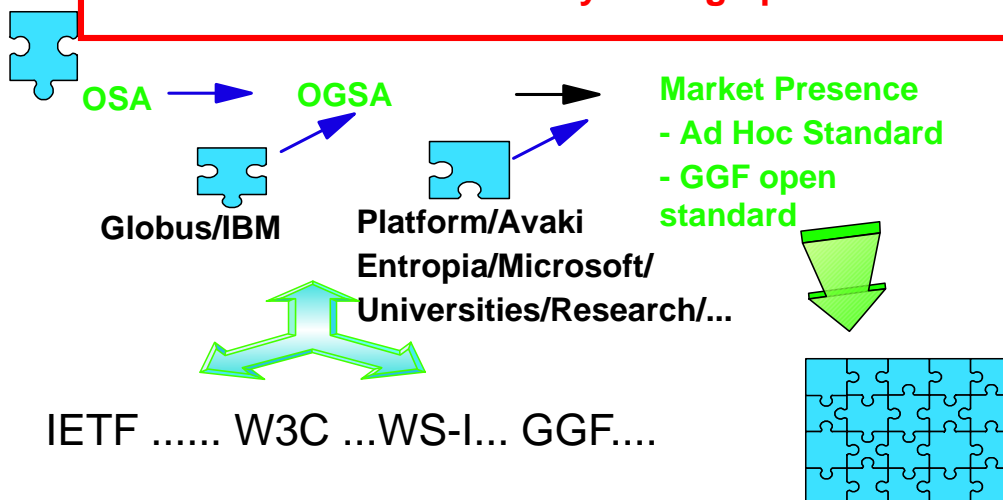
<http://www.globus.org/research/papers/ogsa.pdf>



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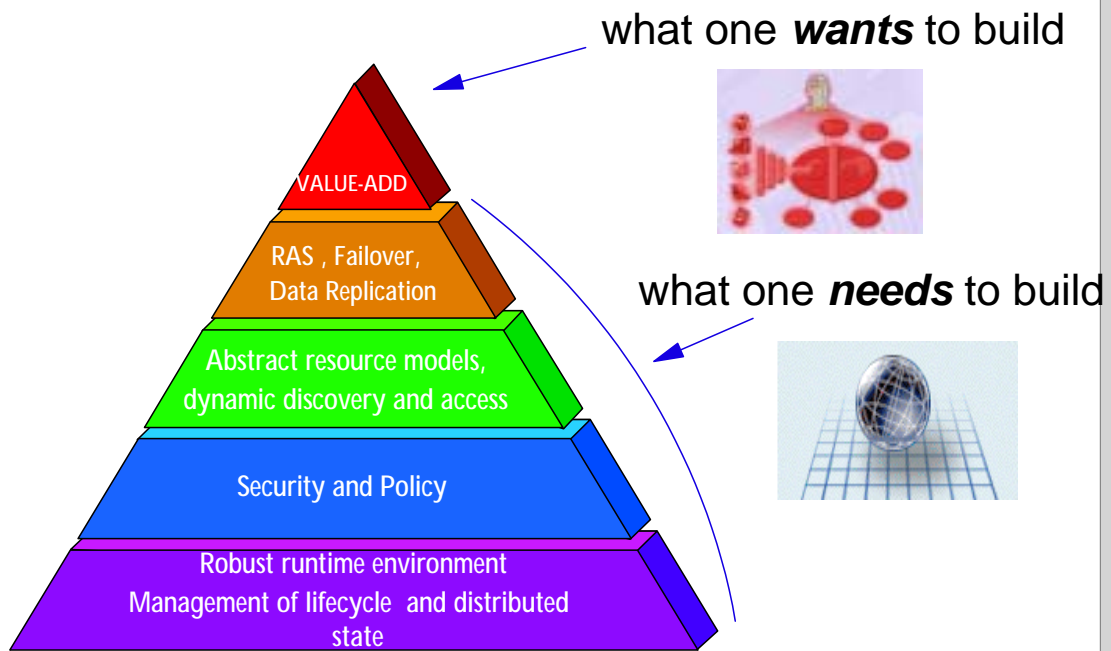
Path to Open Collaboration

**Work with standards bodies to define the distributed services needed...
...Accelerate delivery through partners**



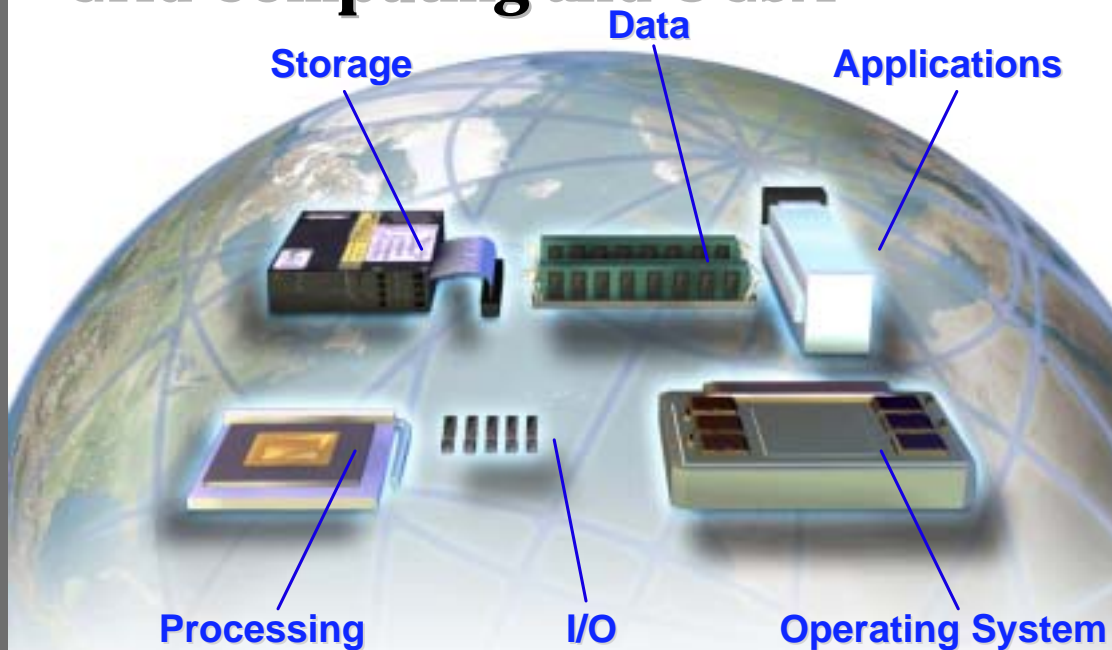
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OGSA value proposition



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Grid Computing and OGSA



*One virtual, distributed computing platform,
'limitless' global resources*