

Grid Consortium Memorial Symposium GridWorld Expo 2005

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President



Publisher



Producer



Grid Computing In Business & Commerce

GridWorld Expo 2005

- ◆ Popular Definition of Grids in the Business World
- ◆ Grid Evolution
- ◆ Grid Ecosystem – Broader, Commercial View
- ◆ Principle Drivers
- ◆ Inhibitors
- ◆ Revenue & Verticals
- ◆ Who's Gridding
- ◆ Closing Comments

Grid Computing in Business & Commerce



GRIDtoday Europe – Commercial Grids
Worldwide VIP Summits

- ◆ Tony Hey – UK e-Science Core Program
- ◆ J.S. Hurley – Boeing
- ◆ Earl Joseph – IDC
- ◆ Charlie Catlett – TeraGrid/GGF
- ◆ Barry Childe – Toronto Dominion
- ◆ Keith Gray – British Petroleum
- ◆ Executives from Sun, Intel, IBM, DataSynapse
- ◆ And others...

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NO-A Rule:

If You Ask 9 People to Define a Grid...

You Will Get 9 Different Definitions!

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- ◆ Three Amigos (*the three friends*):
Foster, Kesselman, Tuecke



Grid = An Infrastructure that;

1. Coordinates resources that are
NOT subject to centralized control
2. Uses standard, OPEN, general purpose
protocols and interfaces
3. Delivers non-trivial qualities of service

Most in Agreement – With at Least 1 Out of 3 Points

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Popular “World of Business” Definition;

- You get it what you want, when you want it (Utility)
 1. Coordinates resources that are NOT subject to centralized control
- Without concern for the infrastructure
 2. Uses standard, OPEN, general purpose protocols and interfaces
- Maximum Compute Power, Within Budget
 3. Delivers non-trivial qualities of service

Definitions Not as Important as -- Solve My Problem, NOW!

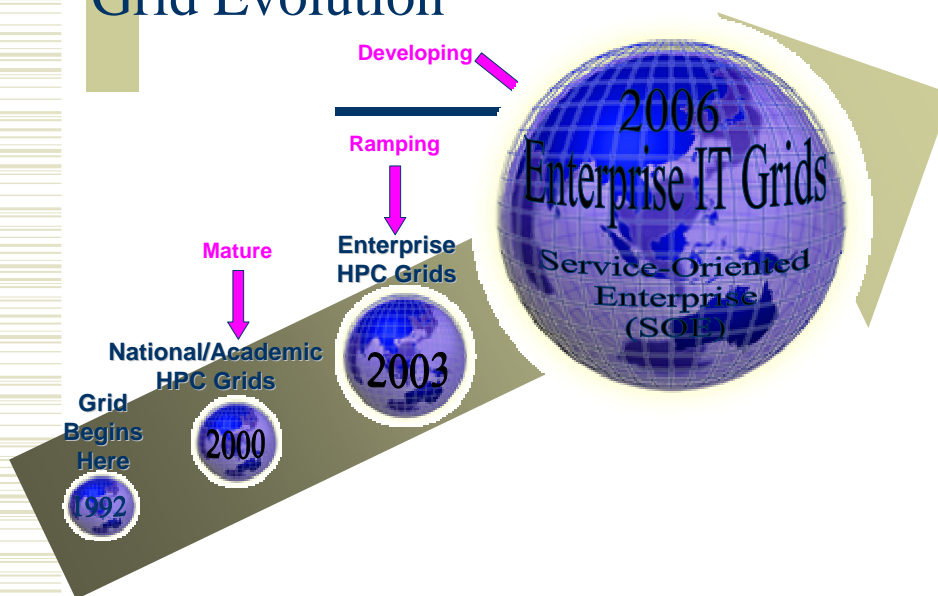
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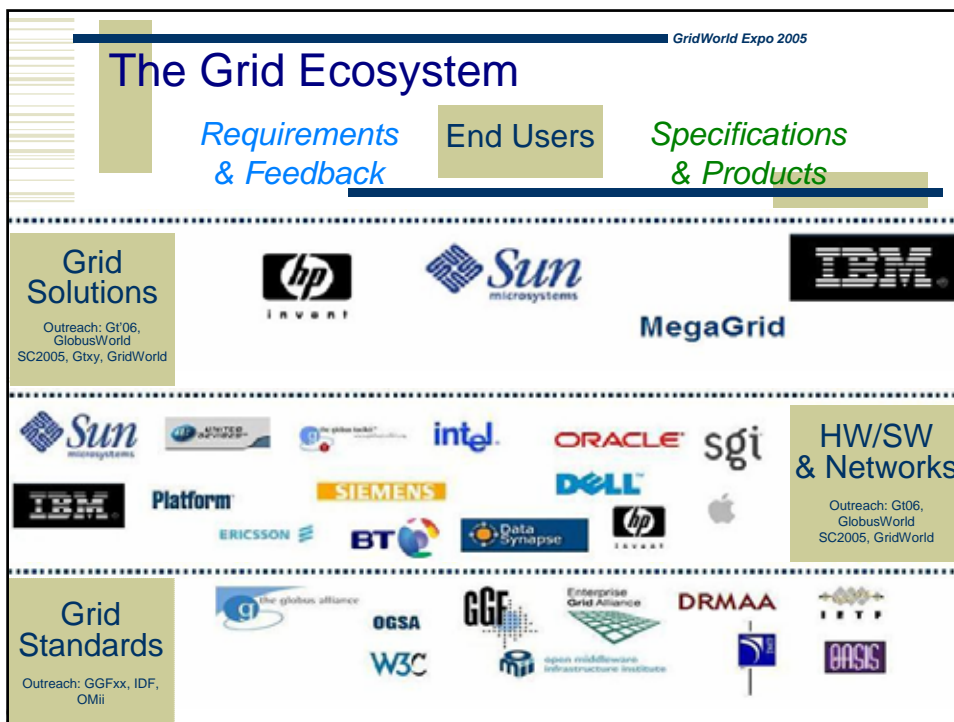
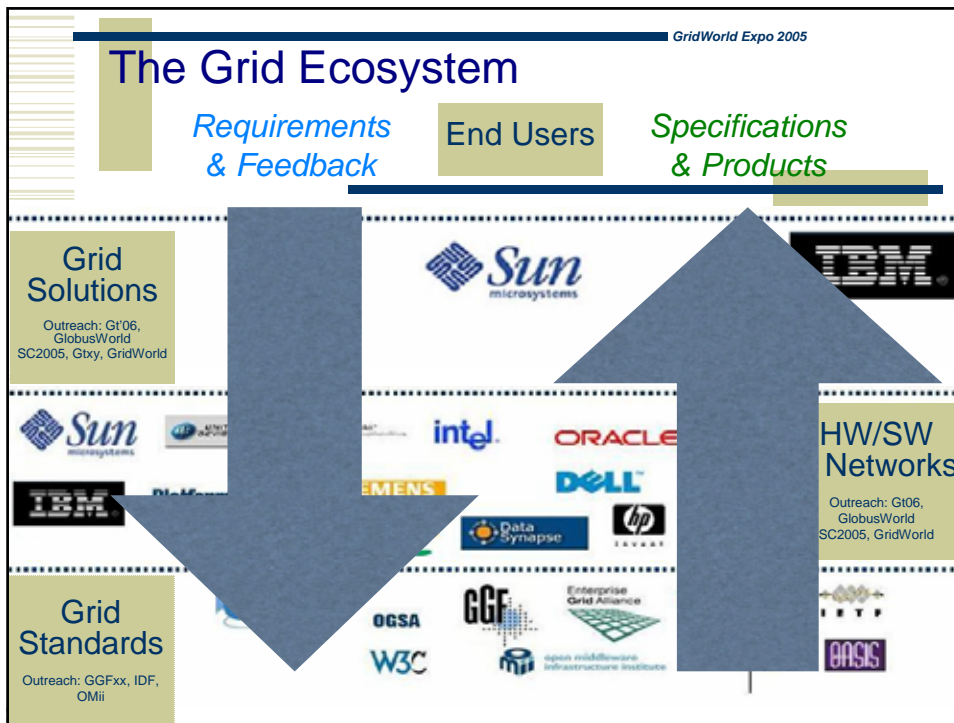
“World of Business” Definition;

- GRID = an aggregation of all available resources (Hardware, Software, Networking, Storage, Tools and Application Software) aimed at maximizing the enterprise with the sole purpose of solving problems!

Definitions Not as Important as -- Solve My Problem, NOW!

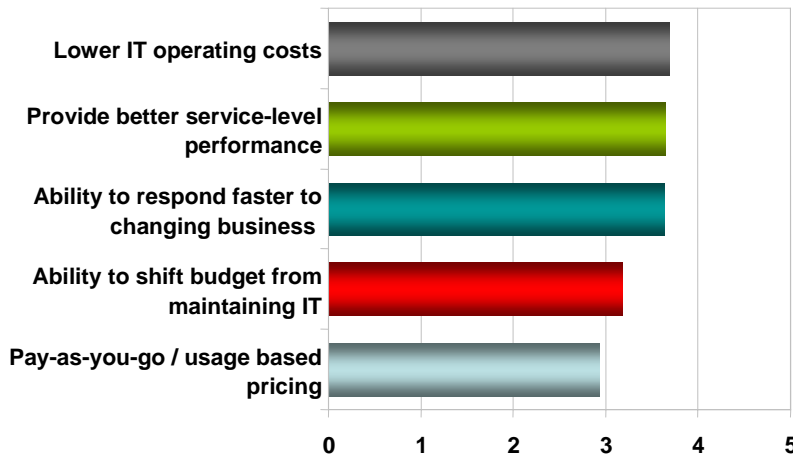
Grid Evolution





What Are Enterprise Customers Demanding?

Q: How Valuable Are the Following Potential Benefits of Grid Computing?



Source: Project Barometer II, IDC March, 2004 - N = 414 Worldwide; 126 in the U.S.

Grid Drivers: Optimizing the Infrastructure

- ◆ **Price/Performance**
 - ◆ Maximize existing resources
 - Resource optimization: Maximize return on capital equipment by accessing spare cycles
 - Better prioritize the use of resources
 - Provides a mechanism to share specialized resources across organizational boundaries
- ◆ **Cost Sharing**
 - Allow multiple groups to contribute resources to a project while maintaining control of the resources
- ◆ **Improved Management Model**
 - Incorporate multiple systems in an organization under a single unified systems mode

Grid Drivers: New Capabilities

- ◆ **Virtual Organizations – Enables Collaborations**
 - New organization structures via new infrastructure
 - Collaborative computing
- ◆ **New Class of Capability Computers**
 - Potential to solve some very large parallel problems
 - Make new discoveries
- ◆ **New Business Models**
 - Outsourcing of computing tasks
 - Utility computing business
 - Peak load support
 - Catastrophe planning

Inhibitors For Grid Adoption Market & Technology

- ◆ **The Greatest Inhibitor Identified was Organizational**
 - The cultural challenges to think about compute resources in a new way and the sharing of those resources across potentially multiple business units or organizations represent the greatest impediment to commercial grid adoption
 - Requires a different way of thinking about how to deliver IT data center services
 - Resistance to changing corporate behavior is always the toughest hurdles to overcome in technology adoption

Inhibitors For Grid Adoption Market & Technology

- ◆ The General Lack of Tools and Industry Standards has Led Many Sites to Think of Grids as Having Large Costs
 - Which in turn implied the mitigation of any infrastructure cost savings
- ◆ Security is also Identified as a Major Inhibitor to Broad Commercial Adoption of Grid Technology

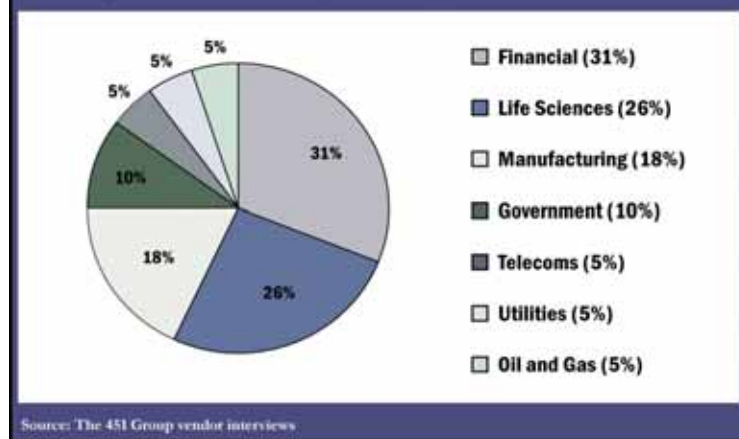
Commercial Grids



- ◆ Manufacturing Grid Solutions
\$2.6B (USD) by 2007
- ◆ Total Grid Market
\$13B (USD) by 2006

Vertical Adoption of Grids

Figure 10: Early adopters of grid computing (multiple responses possible)



Courtesy of the 451 group

Commercial Grids

- ◆ Finance
- ◆ Automotive & Aerospace
- ◆ Manufacturing
- ◆ Pharmaceuticals

Financial Services



2,000 Processor, 50 Server Grid
\$4.5M (USD)



300 Node Grid System



Online Brokerge



Parallel Grid Array



+30% Savings on Basic Computing



Automotive Grids



“Clash Analysis” Takes Hours Instead of Days



Virtual Modeling for Economic and Efficient Schemes



Linking to Their Respective Tens of Thousands of Suppliers

Aerospace

In the Airbus Business Model
Grid Computing Is Essential.



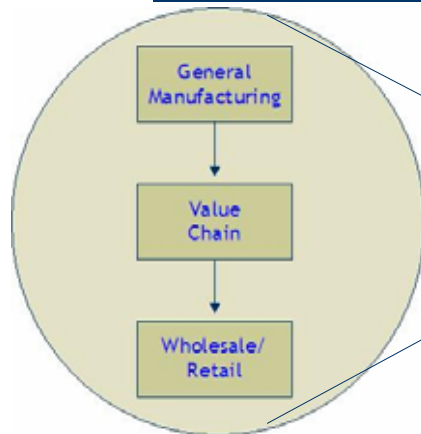
The Dreamliner Team Relied
Heavily on Grid Computing to
Process a Multitude of Finite
Linear Equations.



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

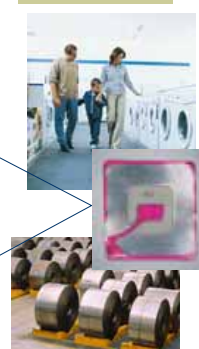
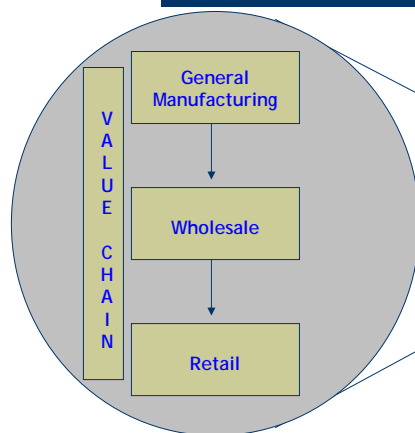


Manufacturing



SOI Built on Grids

Manufacturing



SOI Built on Grids

Manufacturing



Multi-Site Grid

- Cut IT Costs by +20%
- Optimization - 35%
- Resource Utilization 3X

Pharmaceuticals



Emergence in Grid Computing

- ◆ Forces that are too great for us to fully perceive, identify, and calculate are driving creation of --
 - Innovation
 - Production
 - Sales
 - Implementations and
 - Value!

Our Publications

GRID
today

Daily News & Information for the Global Grid Community
www.GRIDtoday.com

DSstar

Data Intensive Storage Solutions for the Enterprise
www.DSstar.com

HPC
wire

The Publication of Record for High Performance Computing
www.HPCwire.com

GRID today

2005 Editorial & Events Calendar

JUNE

- Which industries will benefit most from Grid computing?
- Vendors leading the charge into Grid
- Defining enterprise grid standards
(Events - GGF 6/26-29 Chicago)

JULY

- The latest on OGSA standards
- What's new in web services standards
- The Challenges in International Grid efforts
(Events - GRIDtoday VIP Summit 7/12-13 Chicago
Sigraph 7/31-8/4 LA)

AUGUST

- Standards body collaboration: Fact or fiction?
- Middleware standards
- Enterprise Grid Update
(Events - LinuxWorld Expo)

SEPTEMBER

- The eScience scorecard
- Grid computing in the EU
- How's your cyberinfrastructure?
(Events - GRIDtoday VIP Summit Europe
HPC on Wall Street
UK All Hands Meeting
iGrid 2005)

OCTOBER

- Focus on Grids for data and research
- Lambda Grids
- Internet2
(Events - Pragma 9)

NOVEMBER

- Supercomputing '05 Preview
- Most popular Grid applications
- Grid computing: More than computational
(Events - SC05 11/12-18 Seattle)

DECEMBER

- Grid: Year-End Review
- What's in store for '06?
- Grid vs. traditional HPC
(Events - eScience & Grid 12/5-8 Melbourne)

Contributions, Questions or Comments

Please email:
Editor@gridtoday.com

Or check out:
www.gridtoday.com





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Thank You!