Grid Computing

# IBM Grid Toolbox V3 for Multiplatforms

## Session S05

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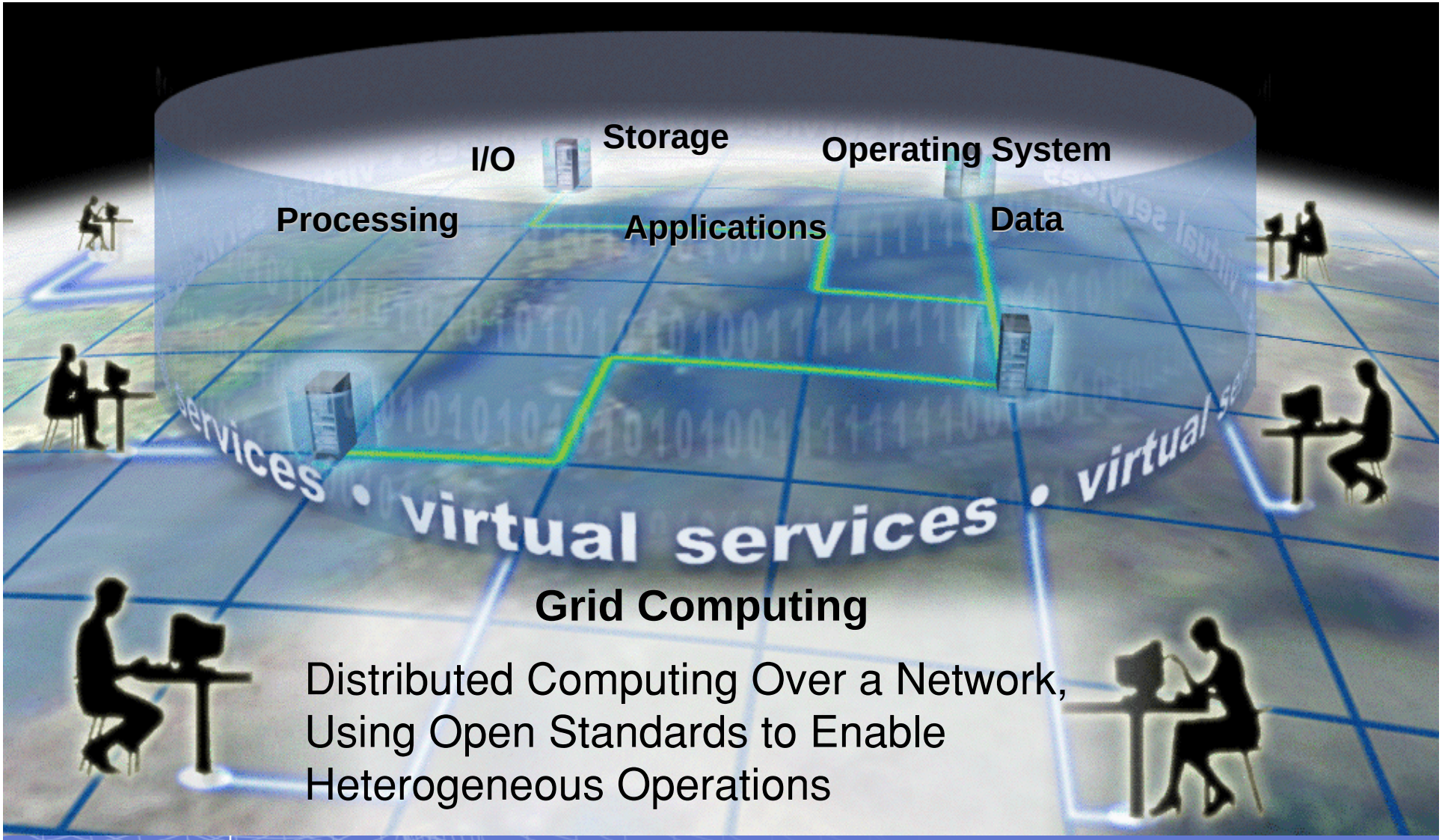
# Agenda

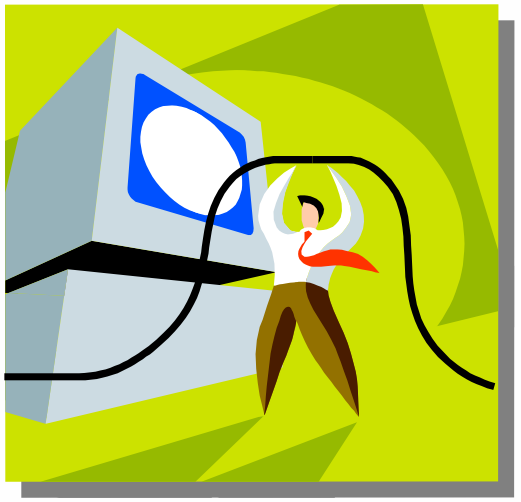
- Grid Technology –What it means for your business?
- IBM support for Grid standards and the IBM Grid Toolbox strategy
- What is the IBM Grid Toolbox V3 for Multiplatforms?
- Summary

# Virtualized: Grid Computing



# Grid Technology

- **Grid computing is creating IT and Business value today!**
- **Early adopters are gaining competitive advantage!**
- **Grid computing roadmap is becoming more robust and clear!**
- **Customers are using IBM Grid Offerings to start small and grow!**
- **Grid is a logical first step in the on demand journey!**



# IBM support for Grid standards

# The Global Grid Forum: Open Grid Services Architecture (OGSA)

*The TCP/IP of Grid Computing*

# IBM's Involvement in open standards

- IBM is both a contributor to and a consumer of the Globus Toolkit 3.0
  - As a contributor
    - To encourage industry adoption and exploitation.
      - Globus open source reference implementation is the current defacto standard.
    - To promote interoperability between vendor implementation of standards
    - To promote service portability
  - As a consumer
    - To harvest, integrate and deliver as the IBM Grid Toolbox V3 product.

# Globus Toolkit 3.0

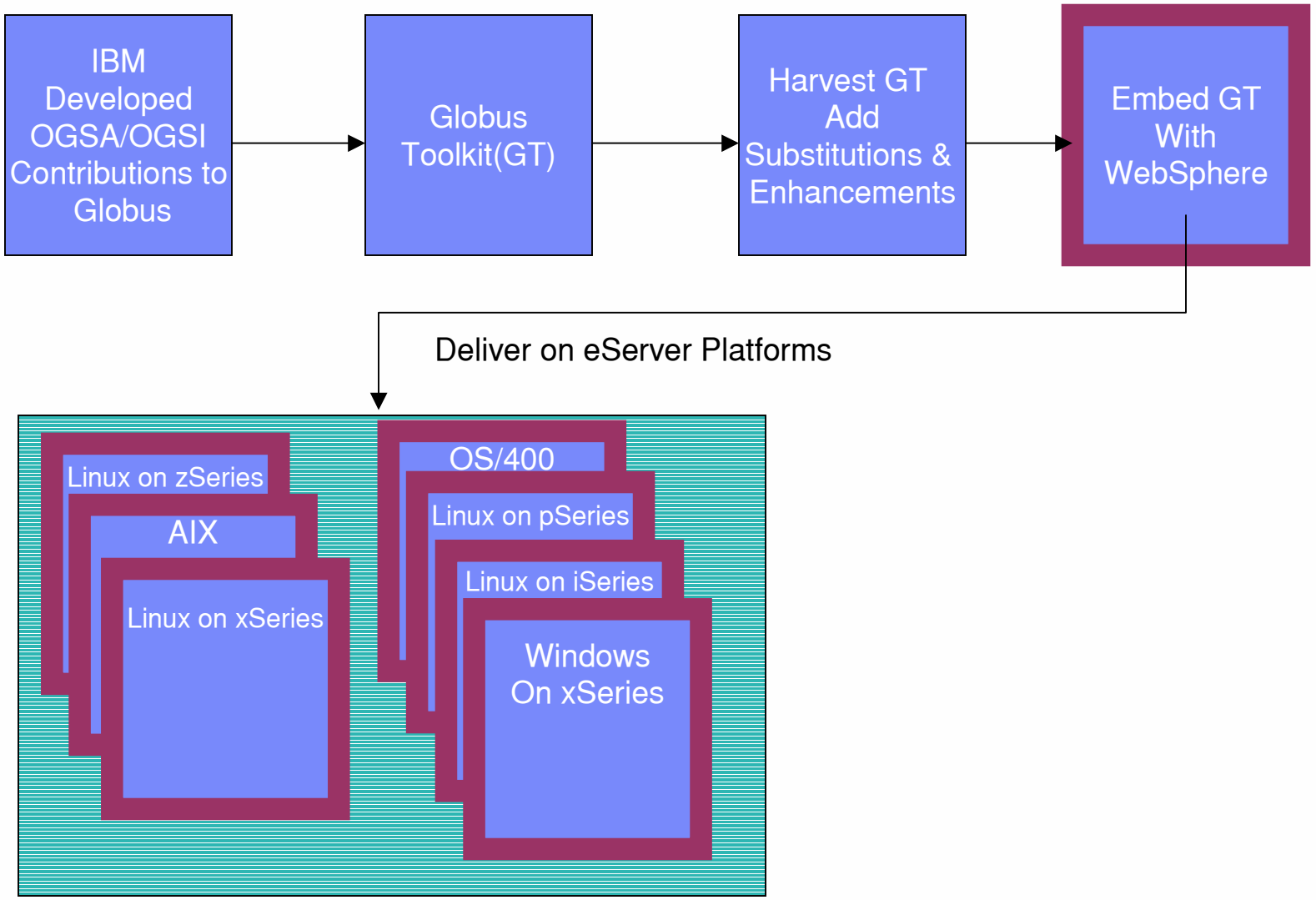
## *Evolution to an Open Grid Standard*

- **An open source implementation of Open Grid Service Infrastructure**
  - Several OGSi-compliant services corresponding to familiar GT2 services
  - The ability to create new OGSi-compliant services
- **Includes GT2 software that provides**
  - Grid security (GSI)
  - Remote job submission and control (GRAM)
  - High-performance secure data transfer (GridFTP)
  - Consistent interfaces to system and service information (formerly MDS)
  - Other GT2 services for building Grid infrastructures and applications
- **GT3.0 rollout occurred throughout 2003**
  - Alpha release in January 2003
  - Public beta release at the end of April
  - Official GT3.0 ‘production’ in June

Significant IBM content contributed for OGSi

Tooling and UI contributed

# IGT Contribution/Harvest/Delivery Model



# What is the IBM Grid Toolbox V3 for Multiplatforms?

# IBM Grid Toolbox V3 for Multiplatforms

- A comprehensive, integrated toolkit for creating and hosting grid services that includes material developed by the Globus Project (http://www.globus.org/) as well as a set of APIs and development tools to create and deploy new grid services and grid applications.
  - A platform for the **Grid Developer** to develop and test grid service and grid applications.
  - A platform for the **Grid Administrator** to host grid service and grid applications.

**Customer scenarios used to design, document and test….**

# Implementing Grid services with the IBM Grid Toolbox

- Provides a more complete development and deployment environment for grid services
  - Includes a hosting environment to run grid services and share them with other grid participants
  - Contains common (base) services for building distributed grid applications
  - Supplies tools to manage and administer grid services and the hosting environment
  - Offers a set of APIs and development tools to create and deploy new grid services and applications
- Facilitates quicker, easier development and deployment of grid services
- Supports multiple platforms to meet the needs of heterogeneous environments

# IBM Grid Toolbox Goals

- **Common Infrastructure for Grid Computing and On Demand Solutions**
  - System integration layer between Grid and On-demand Middleware and the operating system platforms
  - Enable applications built on top of the OGSi common solution framework
  - Common building blocks for both Grid and on demand
- **Any vendor can deliver their own implementation of OGSA**
  - IBM Grid Toolbox interoperates with other standard compliant implementations
  - Grid technologies are portable across any standard compliant OGSi implementation

# IBM Grid Toolbox Interoperability

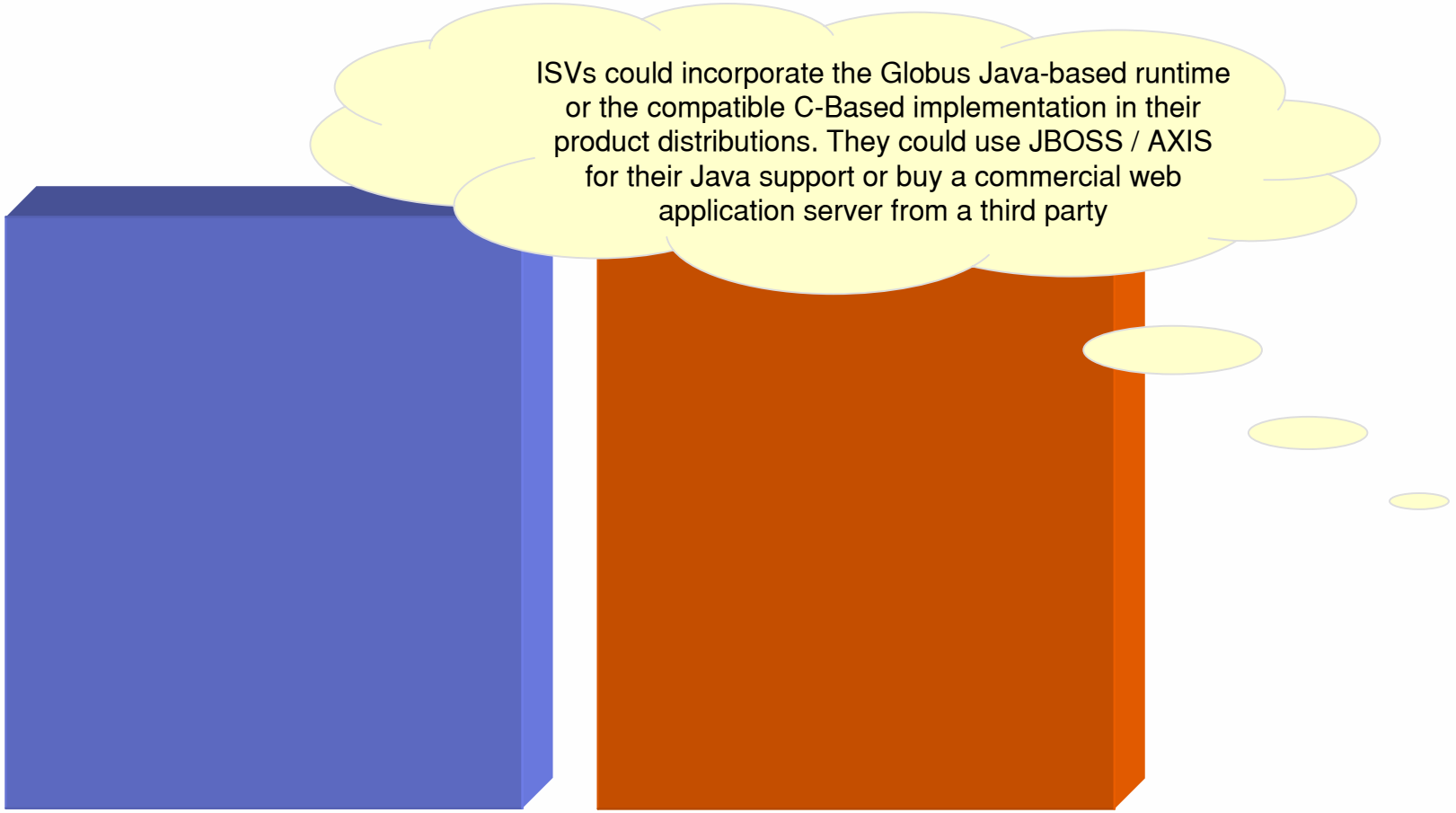
- Both IBM and other open source or proprietary products require a "runtime" environment (and container) to support them.

# IBM Grid Toolbox Interoperability

- OGSI (the open standard extension to Web Services) also requires/extends that runtime environment.
- Most of the code in OGSI is produced as a reference implementation, which is free open source available from Globus. IBM makes some source contributions to Globus

# IBM Grid Toolbox Interoperability

- Any ISV can harvest that same open source reference implementation in their package



# IBM Grid Toolbox Interoperability

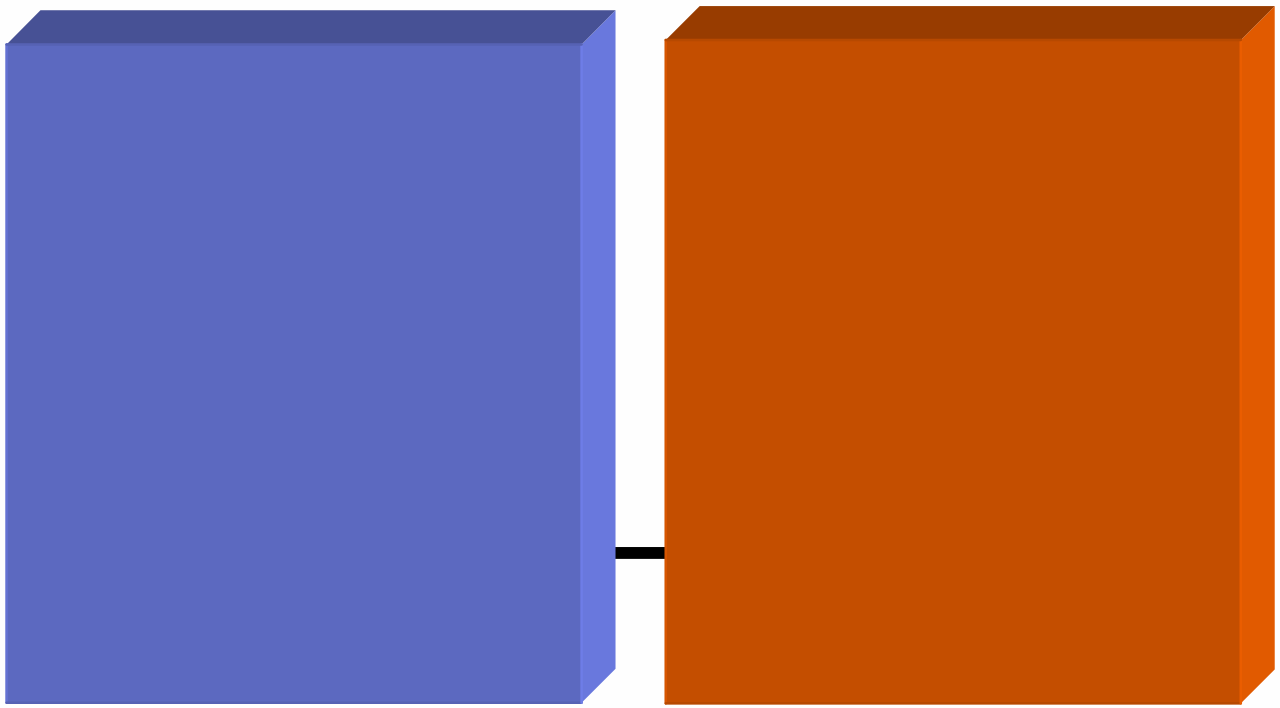
- IBM enhances the code we “harvest” from Globus to “work optimally” with the WebSphere runtime and to run on specific IBM Server platforms.
- IBM also adds some “core services” not available from Globus to its Grid Toolbox package (object only)

# IBM Grid Toolbox Interoperability

- ISVs can build value-added function (services) on top of the OGSI infrastructure and whatever runtime they have chosen.

# IBM Grid Toolbox Interoperability

- The limited runtime provided with the Grid Toolbox does not support user level applications
- It permits Grid-service interoperability with the services it provides and applications running anywhere in the grid (on other runtimes).



# IBM Grid Toolbox V3 for Multiplatforms

**GT3.0 Core (with IBM Contributions)**

OGSi, Notification, Registry

**IBM substitutions / enhancements**

Grid Services

CMM (a.k.a. CRM) , Policy, Repository, Container Mgmt

Management UI Admin,

Command-Line Tooling

OGSi Logging (using WAS facilities)

**GT3.0 Services**

Job Execution Services

Resource Management Services

Information Services

GT3-Security-Compatible

**Embedded Technologies**

WAS Bobcat 5.0.2

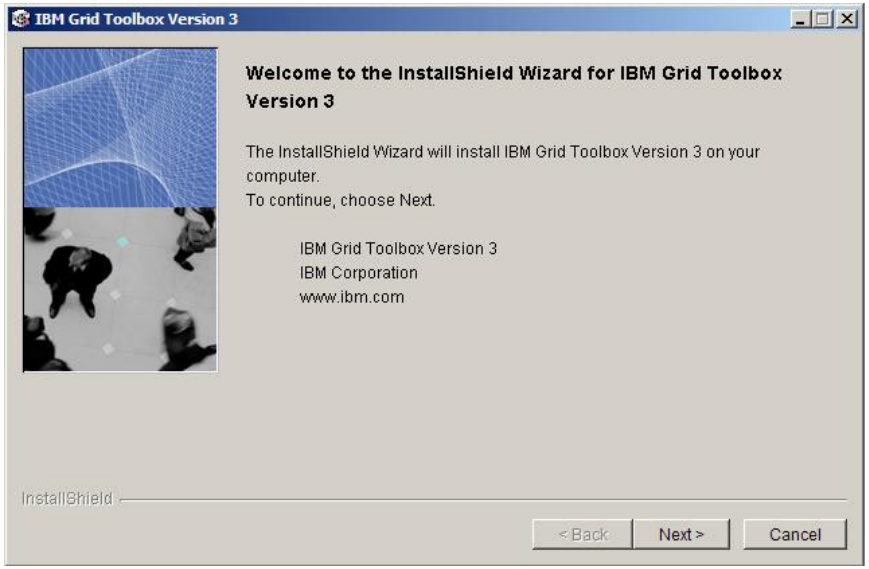
Database (Cloudscape)

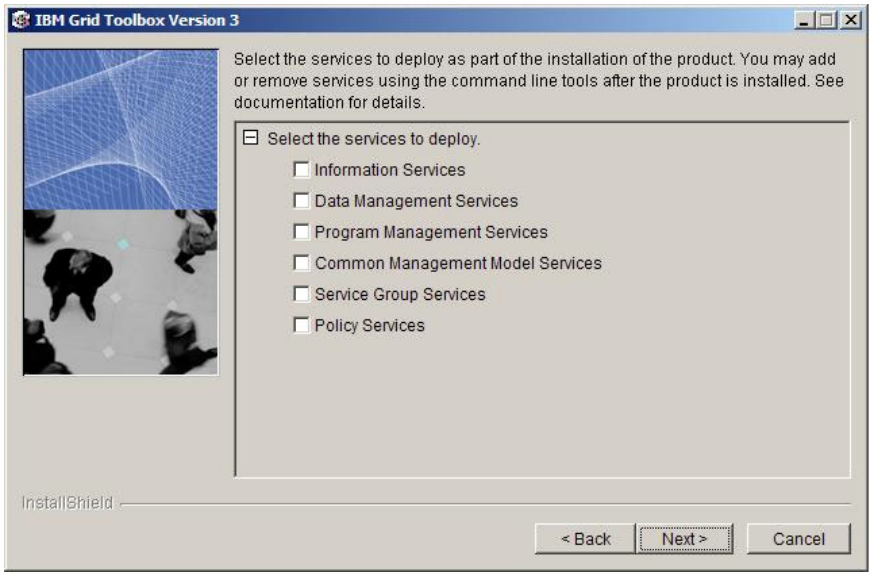
***Integration of GT3.x and IBM technologies into a Single Product***

***Available on AIX, and Linux on xSeries, pSeries, iSeries and zSeries***
***OS/400 available 6/25/04***

# Installed via InstallShield Wizard

- InstallShield wrapper provided for native platform install technology.
- Commercial alternative to open source Grid Packaging Technology (GPT).
- Wizard hides the initial configuration and deployment details.
  - Installs in less than 30 minutes.



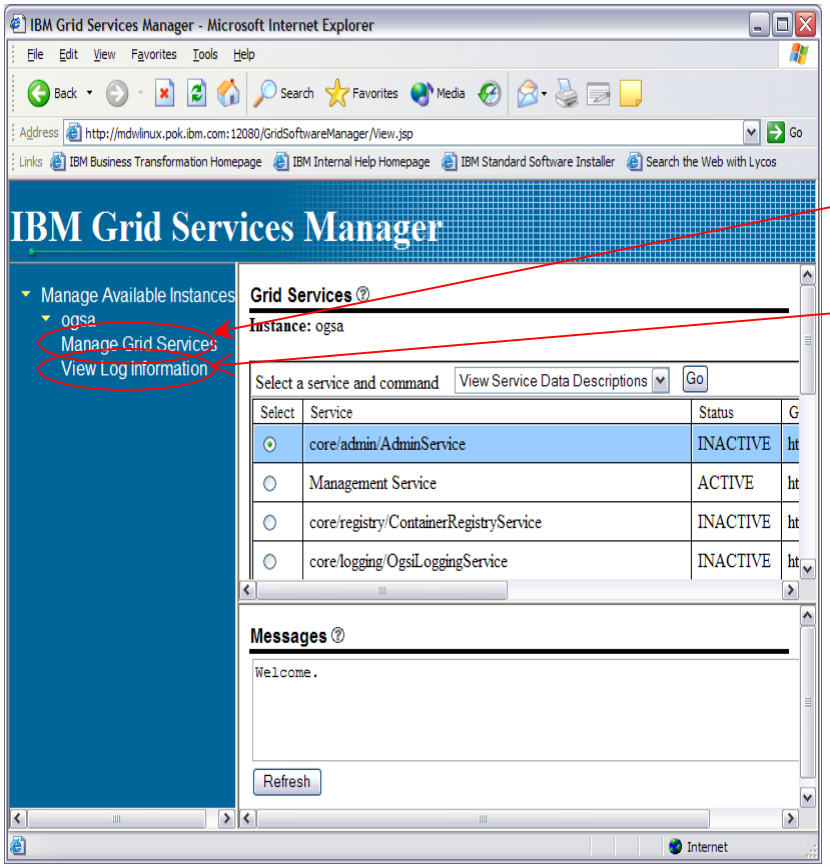



# The eServer Grid Information Center


- On-line information on Grid Computing and the IBM Grid Toolbox.
- Tutorials that use and demonstrate sample services and client applications.

http://publib.boulder.ibm.com/eserver/

# The IBM Grid Services Manager




- J2EE Based Management UI
  - Manage running grid services
    - Display and interact with services
    - Browse Service Data
  - Manage and view runtime logging.
- Used by grid service developers.
- Used by grid application administrators
- Uses J2EE security to control access.
  - Forms based logon
- Capable of managing GT3.0 instances with OGSI Management and Logging Service deployed.

# Summary

- IBM Grid Toolbox for Multiplatforms V3.0 provides a fully integrated alternative to the open source distribution of Globus Toolkit 3.0 with additional IBM value-adds.
- For additional information…
  - http://www.ibm.com/grid
  - http://www.ibm.com/grid/solutions/grid_toolbox.shtml
  - http://publib.boulder.ibm.com/eserver/
  - http://www.ibm.com/redbooks

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