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Intro To Grid Technologies

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מטרת האיגוד הישראלי לטכנולוגיות גריד

MAGNET

קידום הידע הטכנולוגי בתחום טכנולוגיות הגריד
ושיפור יכולת התחרות של החברות בישראל

40 IGT Members

IGT Members – Special Achievements

- Mellanox IPO
- Voltaire IPO & 1st Place in Fast500
- GigaSpaces – Globes top 10

2007 Special Achievements

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OPEN FORUM | OPEN STANDARDS

http://www.ogf.org

The Israeli Association of Grid Technologies (IGT)

Affiliate of the Open Grid Forum (OGF)

IGT Work Groups

- Grid-**SOA**
  Ronen Yochpaz, VeNotion
- Grid-**HPC**
  Dr. Guy Tel-Zur, Kamag
- Grid-**Application Server**
  Nati Shalom, GigaSpaces
- Grid-**RDMA**
  Asaf Somekh, Voltaire
- Grid-**Virtualization**
  Niran Even Chen, BeneflT
- Grid-**Data Centers & Labs Utilization**
  Peter Weinstein, IGT Lab Manager

IGT WEB Site
Knowledge Sharing and Networking

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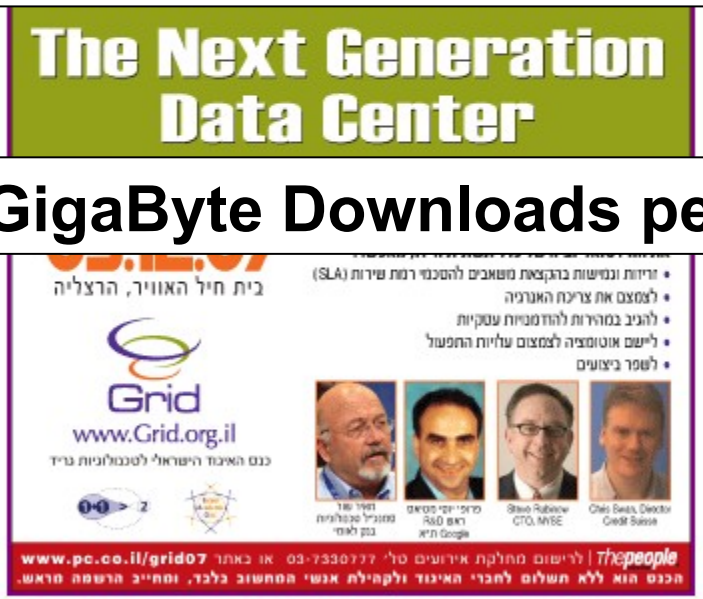
The Convergence of Grid, Virtualization And SOA

16,500 Visitors per Month, 75% from the US

The Next Generation Data Center

1GigaByte Downloads per Month



Major Milestone - HPC Basic Profile Specification Integrated into Commercial Product Releases

IBM Introduces Ready-to-Use

I will implement Grid in my organization, because:

- Better resources utilization
- SOA Flexibility
- IT Scalability
- Performance improvment
- All the above

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The Benefits of Grid
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Gridgain
GridGain is focused on doing one thing – providing the computational grid platform for Java.

Globus Toolkit
The open source Globus Toolkit is a fundamental enabling technology for the "Grid," letting people share computing power, databases, and other tools securely online across corporate, institutional, and geographic boundaries without sacrificing local autonomy. The toolkit includes software services and libraries for resource monitoring, discovery, and management, plus security and file management.

Mosix
MOSIX is a management system that allows a Linux cluster or a Grid of clusters to perform like a single computer with multiple processors. It is particularly suitable to run intensive computing and applications with moderate amounts of I/O.

Jini
Jini.org is a central place and resource for the Jini CommunitySM. It is a site to discover new information, discuss, collaborate, exchange source code and ideas, and advance Jini™ network technology.
Jini network technology is an open software architecture that enables the creation of network-centric solutions which are highly adaptive to change.

SUN Grid Engine
The Grid Engine project is an open source community effort to facilitate the adoption of distributed computing solutions. Sponsored by Sun Microsystems and hosted by CollabNet, the Grid Engine project provides enabling distributed resource management software for wide ranging requirements from compute farms to grid computing.

Unicore
UNICORE (Uniform Interface to Computing Resources) offers a ready-to-run Grid system including client and server software. UNICORE makes distributed computing and data resources available in a seamless and secure way in intranets and the internet.

Open MPI
A High Performance Message Passing Library
Open MPI is a project combining technologies and resources from several other projects (FT-MPI, LA-MPI, LAM/MPI, and PACX-MPI) in order to build the best MPI library available. A completely new MPI-2 compliant implementation, Open MPI offers advantages for system and software vendors,


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Performance Analysis
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SOA

Israel Grid Technologies

Academia Projects
GOZAL JazzEnsemble
Technion Distributed Systems Laboratory (DSL) Mosix - Grid for Linux

Bandwidth Solutions for the ISP market
PeerApp

Fast Networks
Mellanox Siliquent (Broadcom)
Tehuti Networks Voltaire XLoom
10GbE
Infiniband

Finance
GridStock

Geographic Data Mining
Correlation Systems

Hardware
Lucid

Internet
Oversi

Network File Virtualization
Exanet

SAP
Panaya

Semantic Grid
Kinor

SOA
Venotion Technologies

Software
Attunity CollaComp
GigaSpaces IBM Haifa Labs
Prima Grid Qlusters Xeround Systems

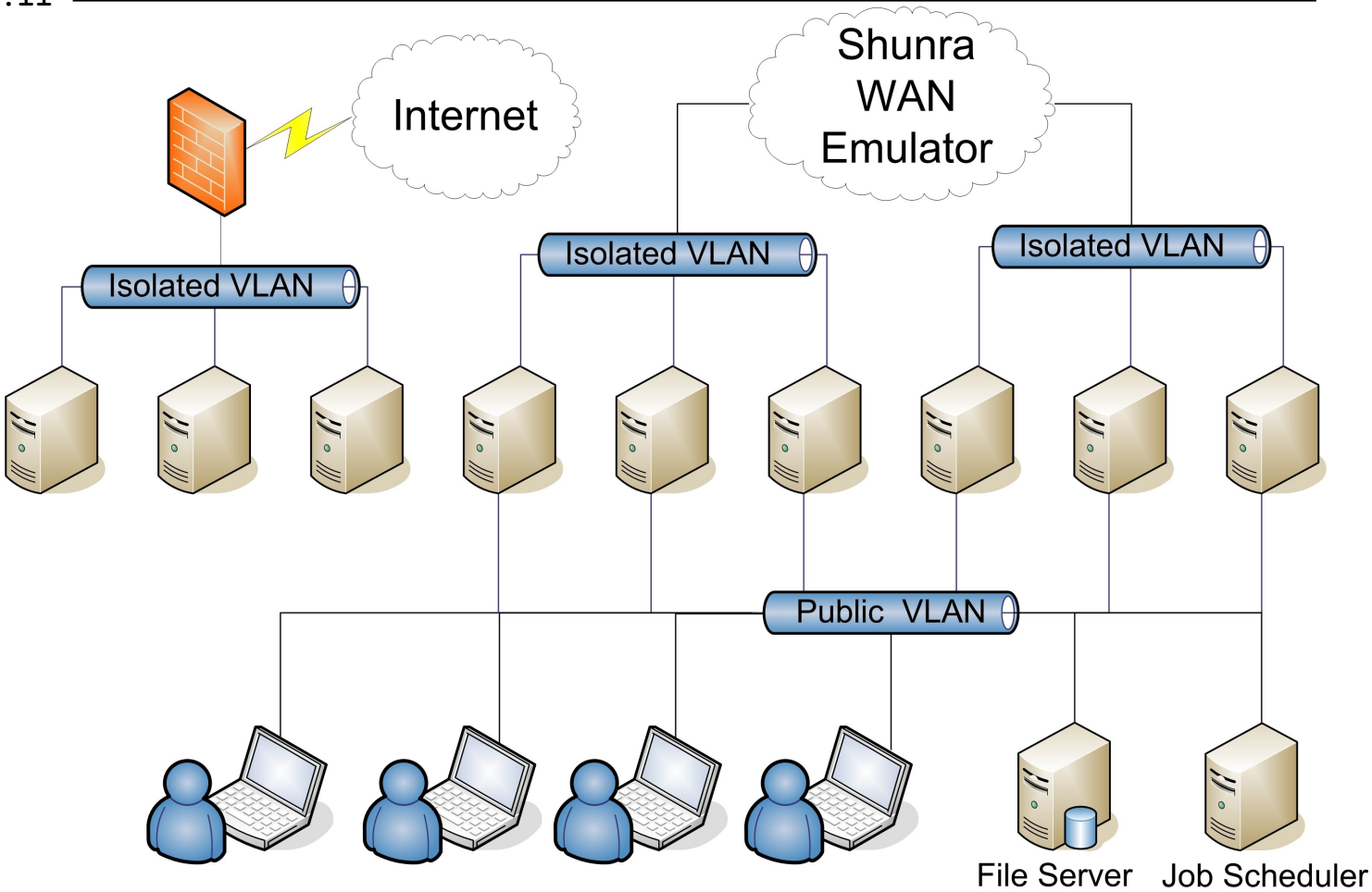
Software Development Acceleration
Xoreax

Storage
Cloverleaf Communications
SANRAD StoreAge XIV

Virtual Enterprise Simulation
Shunra

Weather forecast
Nooly

המעבדה שלנו – 96 מעבדים



Total Lab CPU Power: CPUs – 28, CPU Cores – 56
Low Latency wire-speed Gigabit Ethernet Switching

+CPUs on 1Gbit or 10Gbit Infiniband 40

What is Grid?

The Network is the Computer

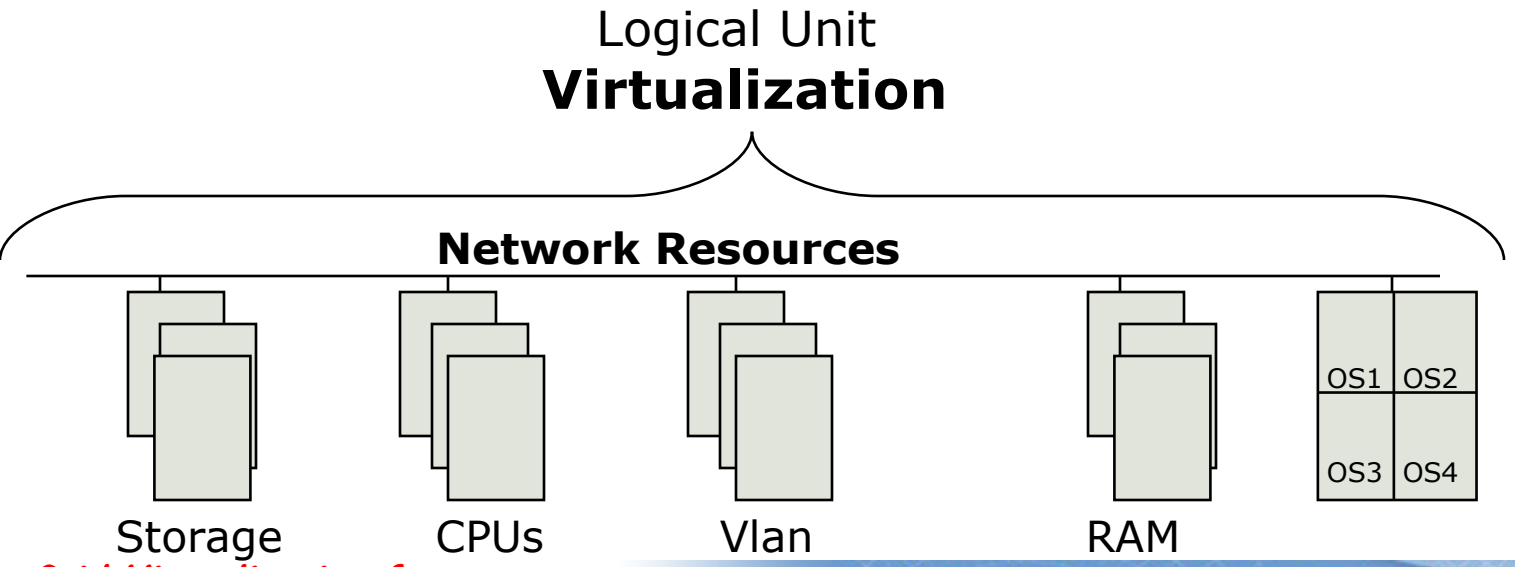
Grid Computing is a collection of standards, technologies and processes, that define the infrastructure for software network that enables unification & collaboration of the computing resources on a network and creating computing virtualization, such as: CPU, memory, communication, storage & software.

Grid Computing enables flexibility and efficient use of all computing resources, based on their: performance, capacities, availability and costs.

יתרונות הגריד

- ניצול טוב יותר של משאבי המחשוב
- כושר גידול טוב יותר של משאבי המחשוב - Scale-Out
- שיפור בביצועי אפליקציות ומערכות
- מודל שירות לאספקת משאב עפ"י דרישה - Capacity on Demand
- מענה גמיש ומהיר יותר לשינויים

התוצאה: מערכות מחשוב גמישות



A layered view (from OGF technical reference model)

Business process / service	Reference Data	Risk Management	Customer Portal
Virtualized Platform	Data Grid	Compute Grid	Server Farm
Platform Instance	Database	App Server	Web Server
Virtualized Operating Environment	NFS, SMB, NAS	Virtual Machine Monitors	Load balancing, VIPs
Operating Environment	File systems e.g. NTFS, Ext3	Operating Systems e.g. Linux, Windows	Network protocols e.g. TCP/IP, UDP
Virtualized Physical	LUNs	Hypervisors	VLANs
Physical	Disks, Array Controller, SAN switches etc.	Servers, Blades etc.	Switches, Routers etc.
	Storage	**Compute**	**Network**

Each physical layer provides Abstraction to the layer above

Each Virtualized layer provides a flexible mapping/management point

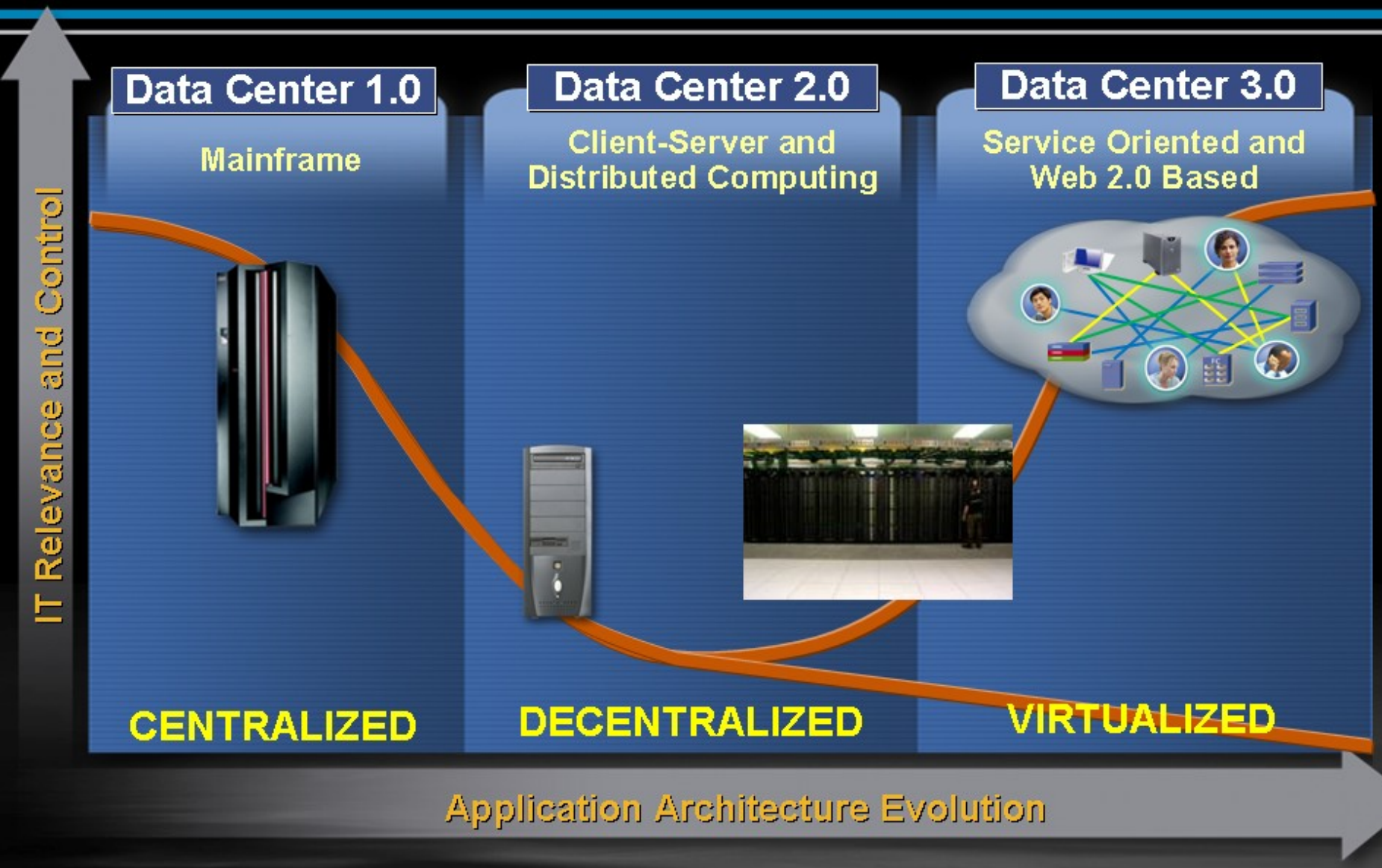
Why Grid Now?

- **Enablers**:
  - Network Performance (1-20Gbit)
  - CPU/RAM Performance/Size
  - Service Orientation
  - Virtualization
  - Multi-Core

- **Issues**:
  - Data Growth
  - Batch to On-Line
  - RDBMS Limits
  - Distributed Network
  - WEB 2.0

- **Challenges**:
  - Scalability
  - Performance
  - Distributed Computing

Data Center Transformation



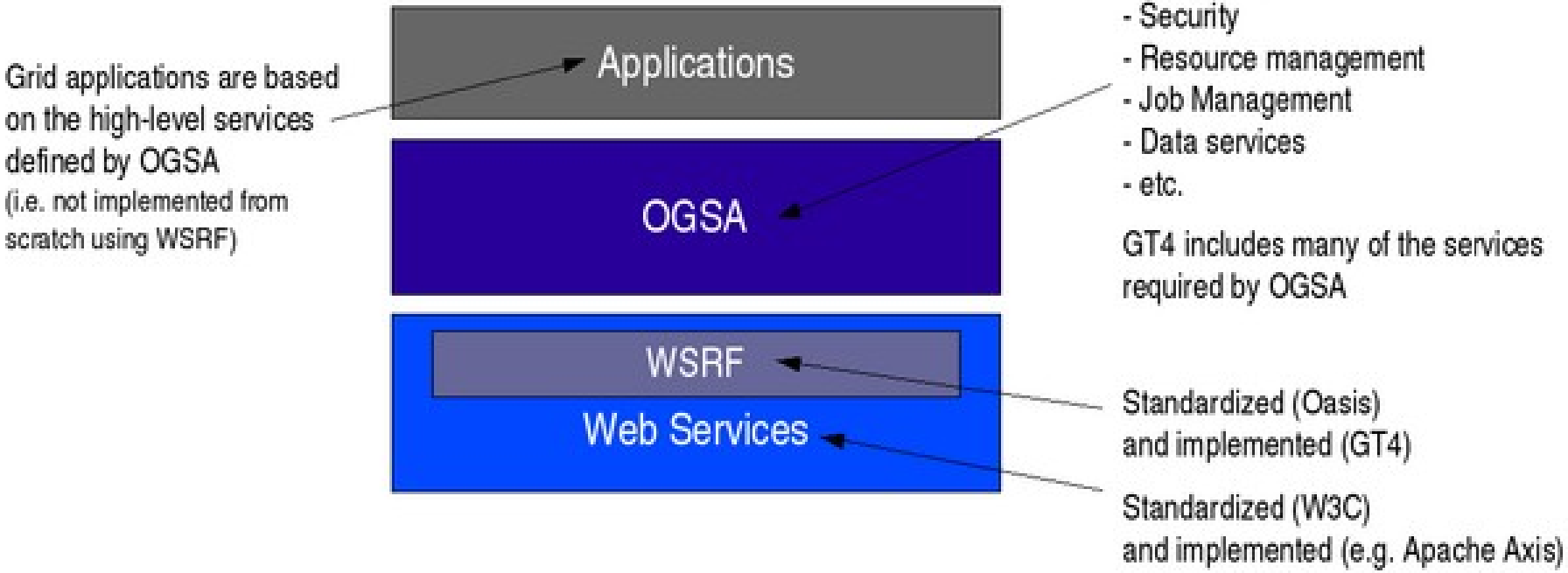
The next-generation data center

The "new data center," characterized by service-oriented applications running over a virtualized service-oriented infrastructure.

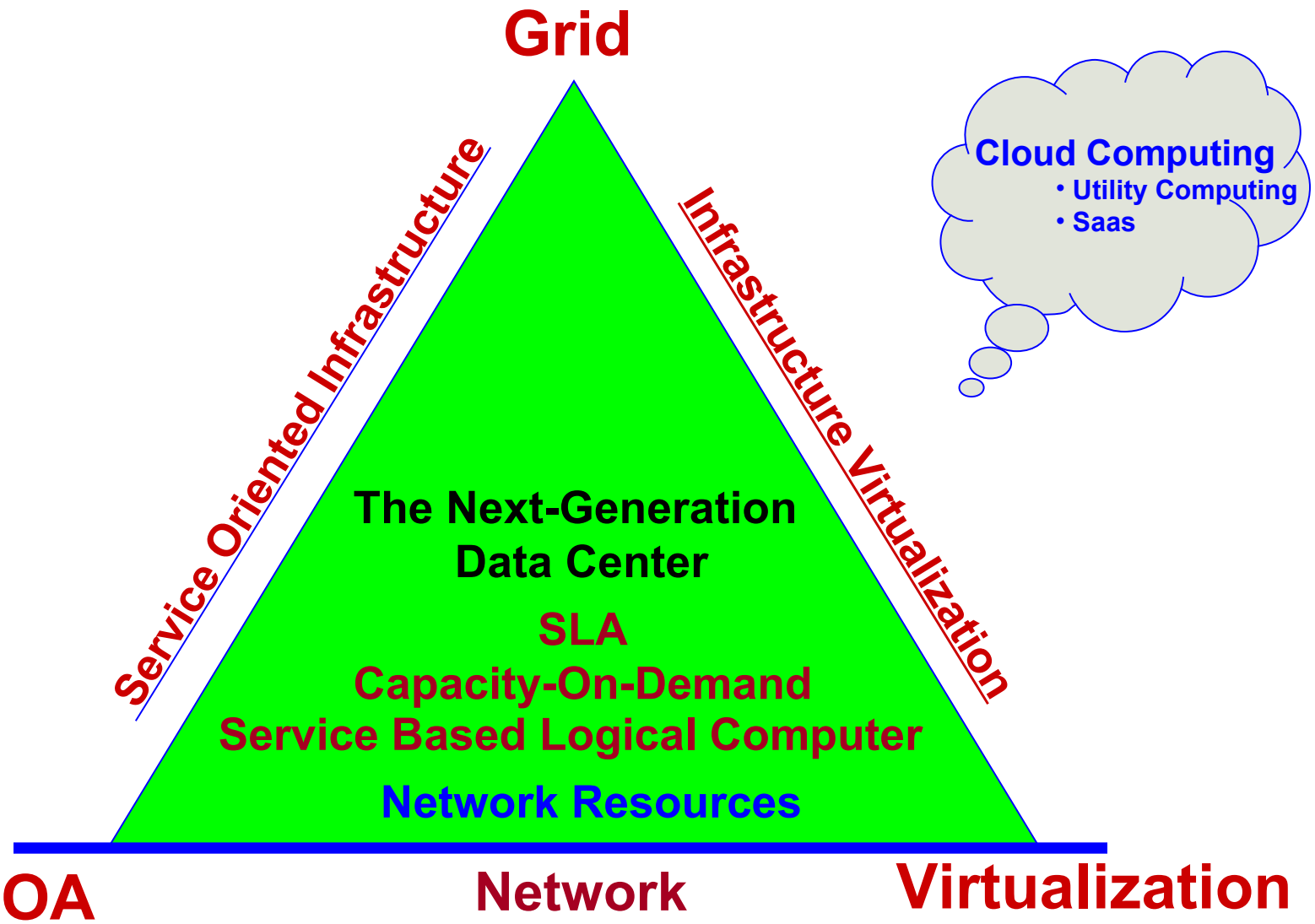
This next-generation data center brings the benefits of agility, lower operational costs, better utilization and rapid application deployment.

Tooling up for the new data center,
Research analyst Andreas Antonopoulos, Oct. 2005

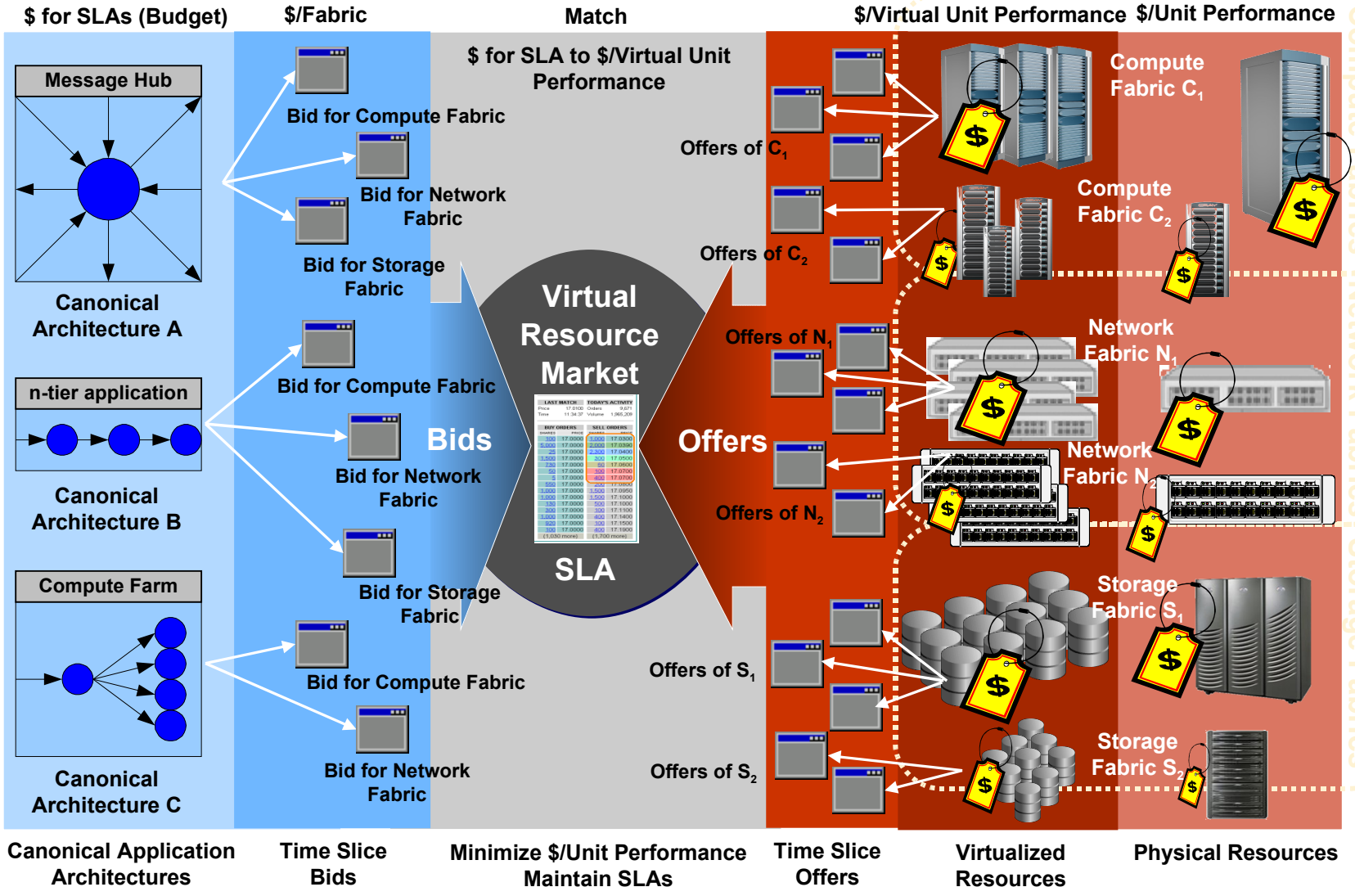
Grid & Web Services



Technologies Concepts Map



Virtual Resource Market – "SLA to Billing"



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תודה! שאלות?

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