www.Grid.org.il

Cloud Computing
Pay-per-Use for On-Demand Scalability
Why Now?

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www.Grid.org.il

About IGT

MAGNET

Knowledge sharing and networking
Grid/Cloud Technologies – Industry Oriented

http://www.cloudcomputing.org.il

Cloud computing is about much more than technological capabilities.

Technology is the mechanism, but, as in any shift in business, the driver is economics.

Nicholas Carr,The author of “The Big Switch”

Better Economics

We want to pay only for what we use
And we want to control it accurately.

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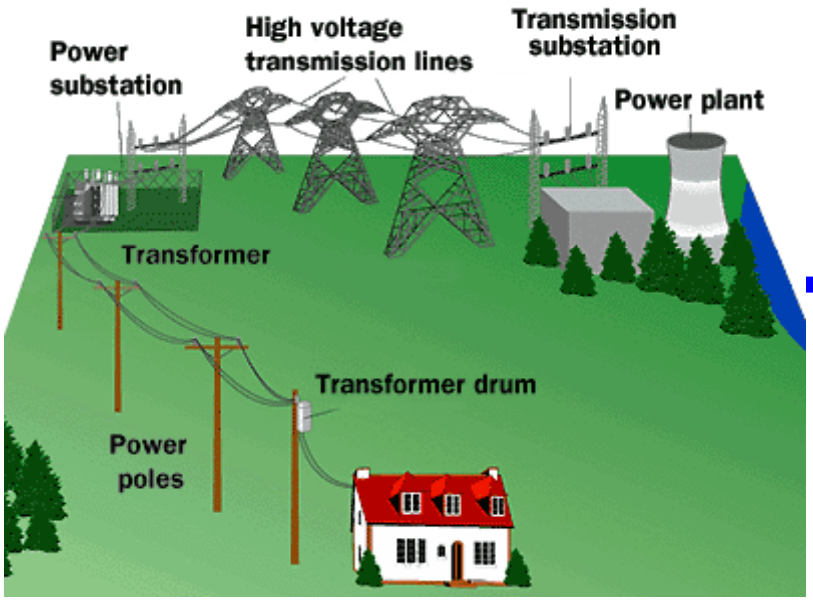
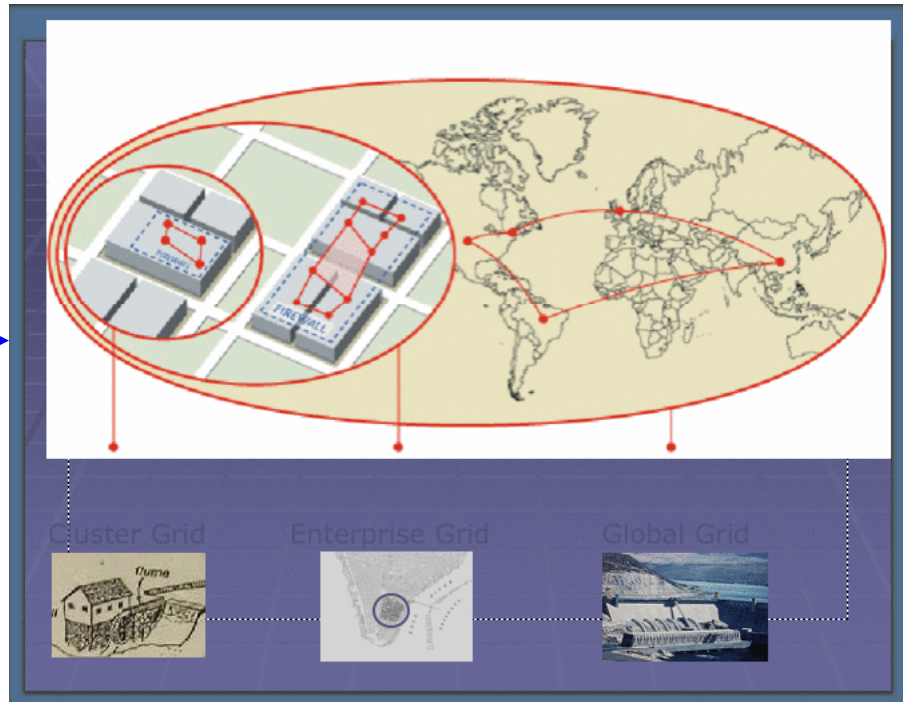
Cloud is the business implementation of the Grid Philosophy

MAGNET



Power Grid



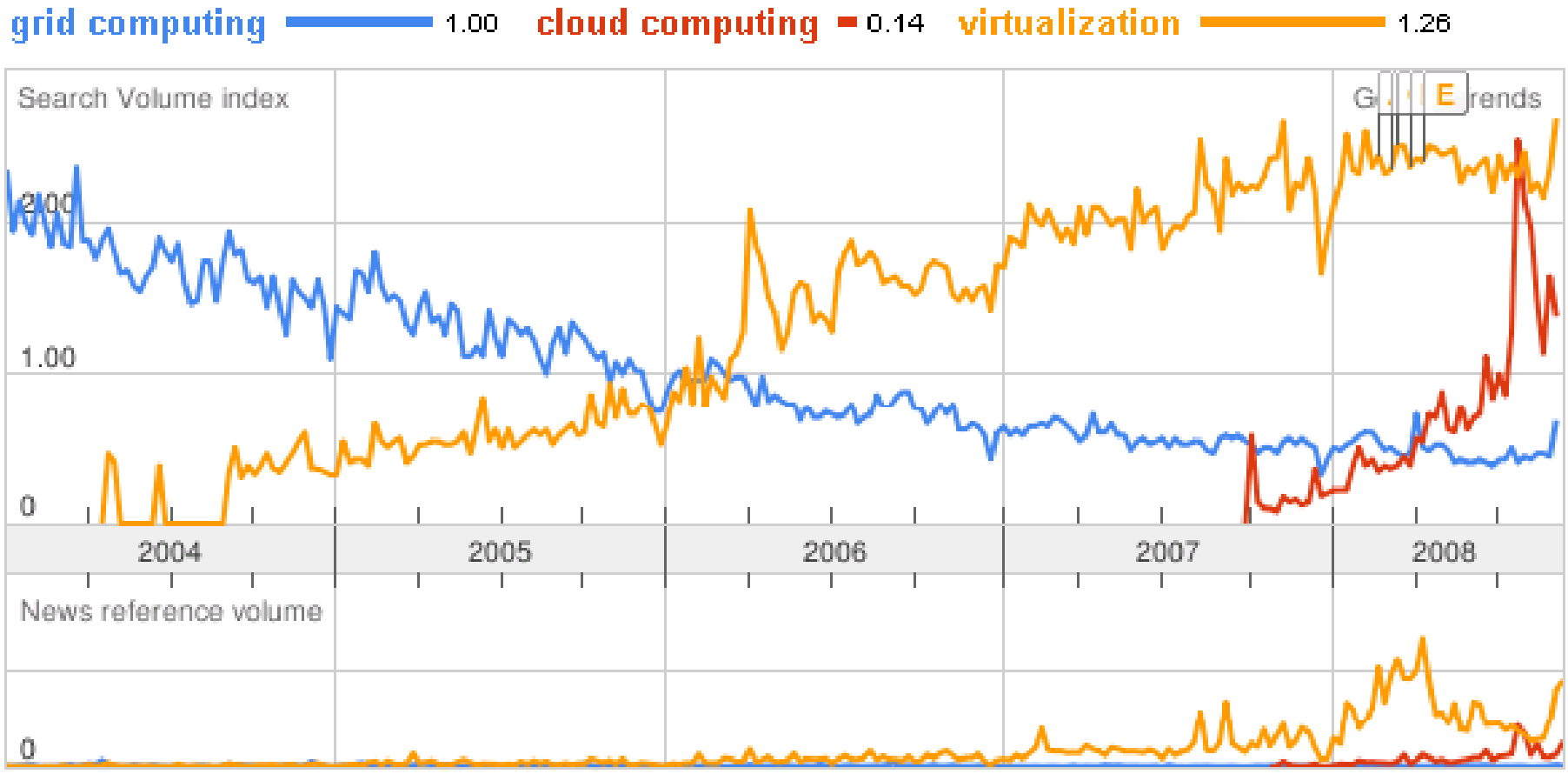
Compute Grid

Provides On-Demand Transparent Services

Pay per Use

The Network is the Computer

Popularity



Google Trends LABS

22 Sep. 2008

Grid and Clouds

Issue	Classic Grid Computing	Cloud computing
Why we need it? (The Problem)	To enable the R&D community to achieve its **research goals in reasonable time.** **Computation over large data sets, or of paralleizable compute-intensive applications**.	**Reduce IT costs.** **On-demand scalability for all applications**, including research, development and business applications.
Main Target Market	First - Academia Second – certain industries	Mainly Industry
Business Model – Where the money comes from?	**Academia** Sponsor-based (Mainly government money). **Industry pays** Internal Implementations.	**Hosted by commercial companies**, paid-for by users. Based on the economies of scale and expertise. Only pay for what you need, when you need it: **(On- Demand + Pay per Use).**

Cloud Market

"The future is about having a platform in the cloud,"

Microsoft Chief Steve Ballmer said of the trend in a July, 2008 e-mail to employees.

Cloud Market

"By 2012,
80 percent of Fortune 1000 companies
will pay for
some cloud computing service,

And

30 percent of them
will pay for
cloud computing infrastructure".

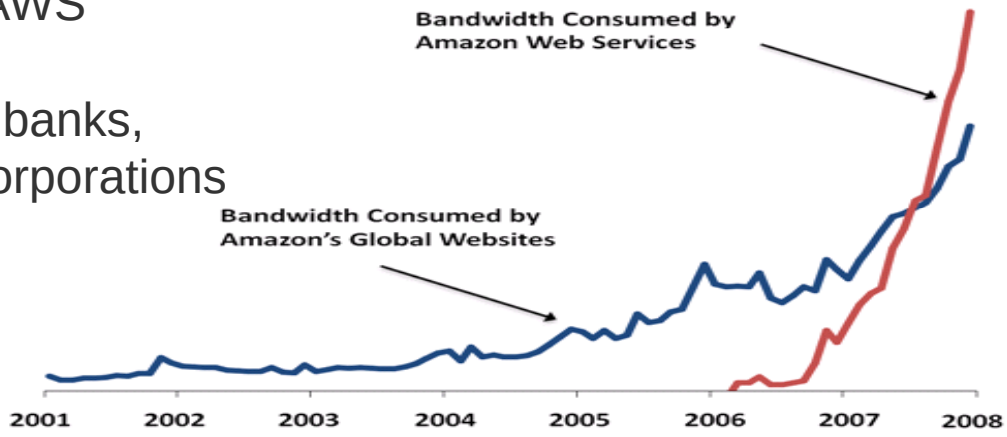
Gartner, 2008

EC2 – "Google of the Clouds"

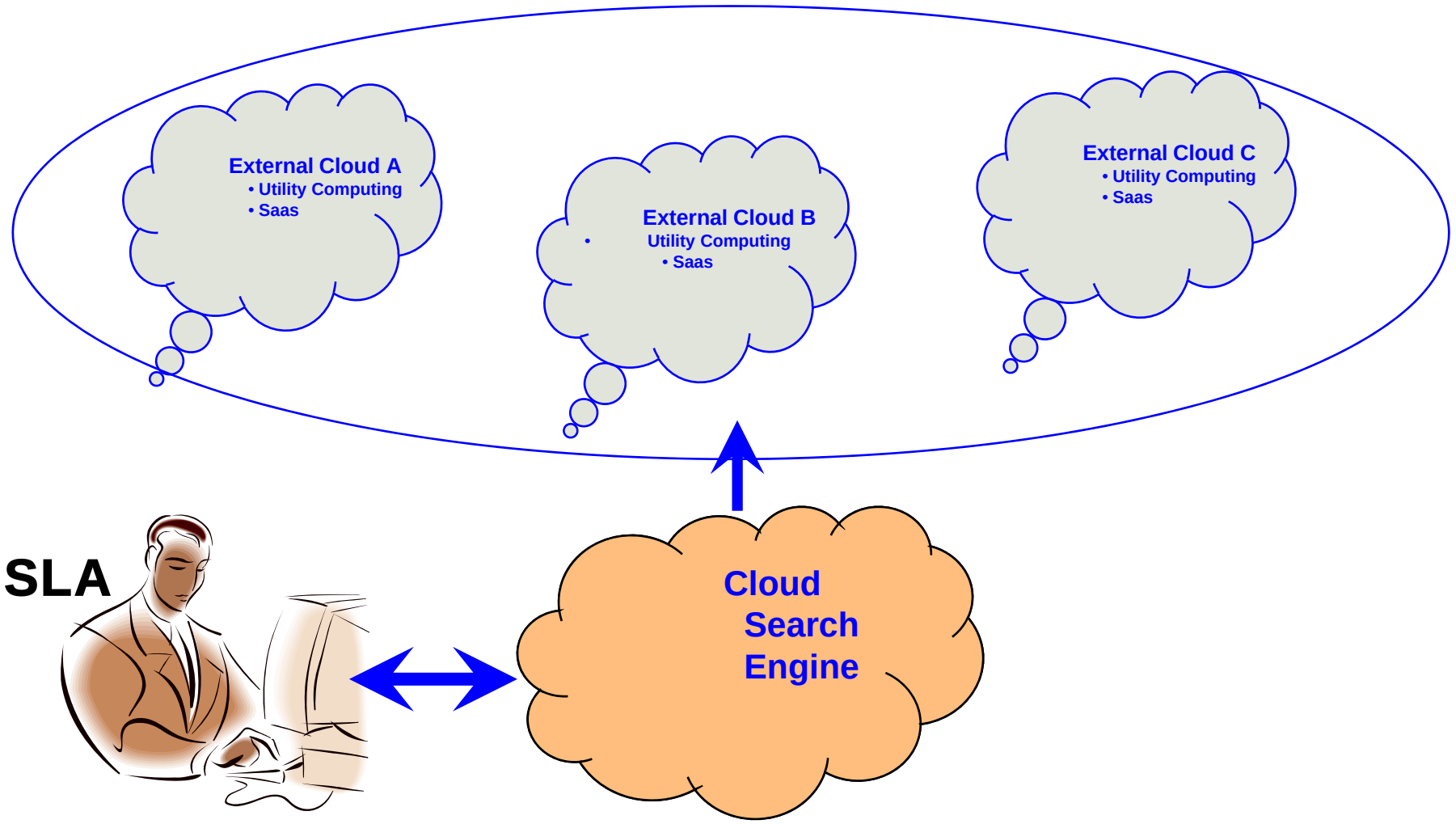
According to Vogels, 370,000 developers have registered for Amazon Web Services since their debut in 2002, and the company now spends more bandwidth on the developers than it does on e-commerce.

http://www.theregister.co.uk/2008/06/26/amazon_trumpets_web_services/

- In the last two months of 2007 usage of Amazon Web Services grew by 40%
- $131 million revenues in Q1 from AWS
- 60,000 customers
- The majority of usage comes from banks, pharmaceuticals and other large corporations

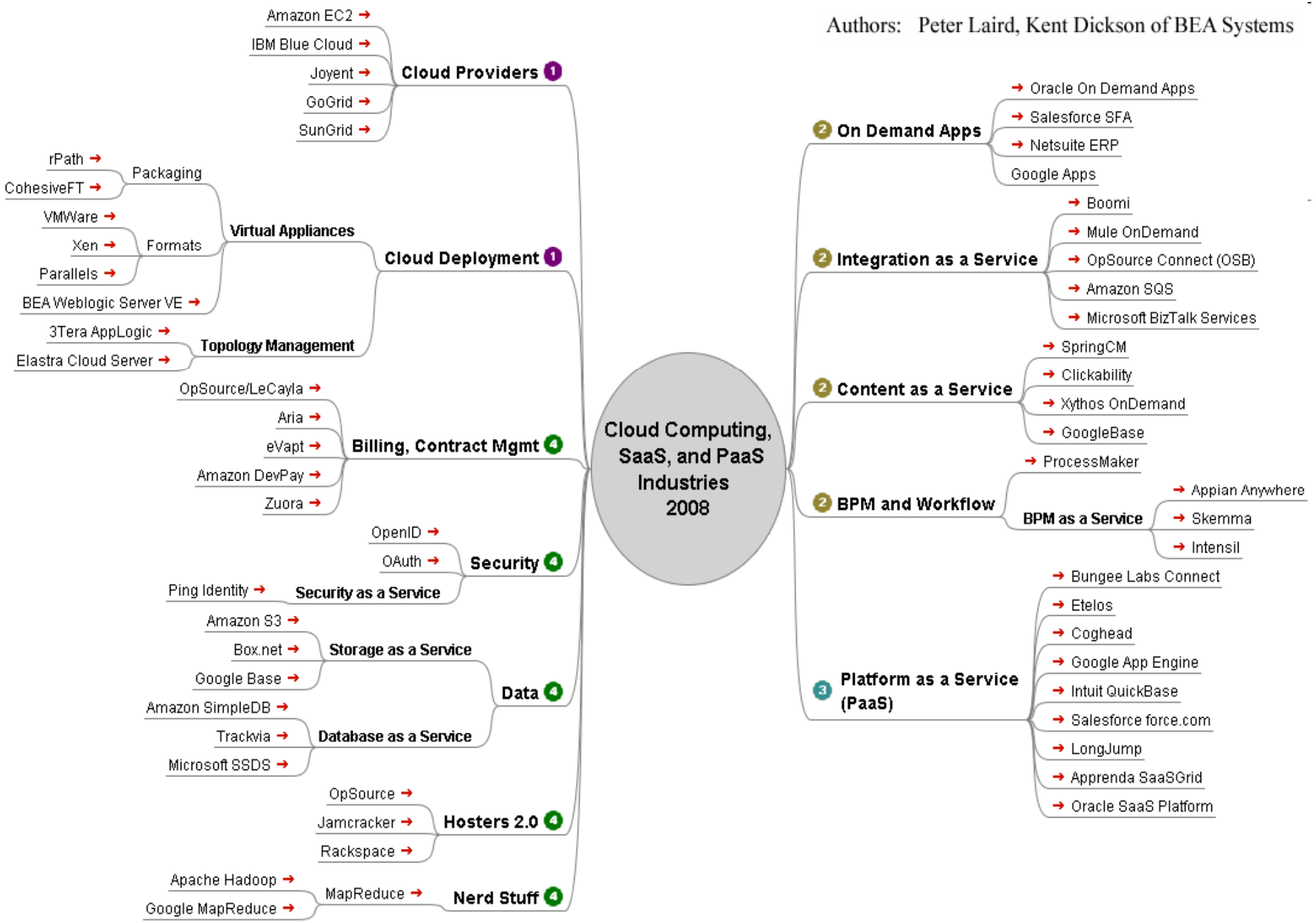


Coming up - The Cloud Market
Where do you want to Cloud today?

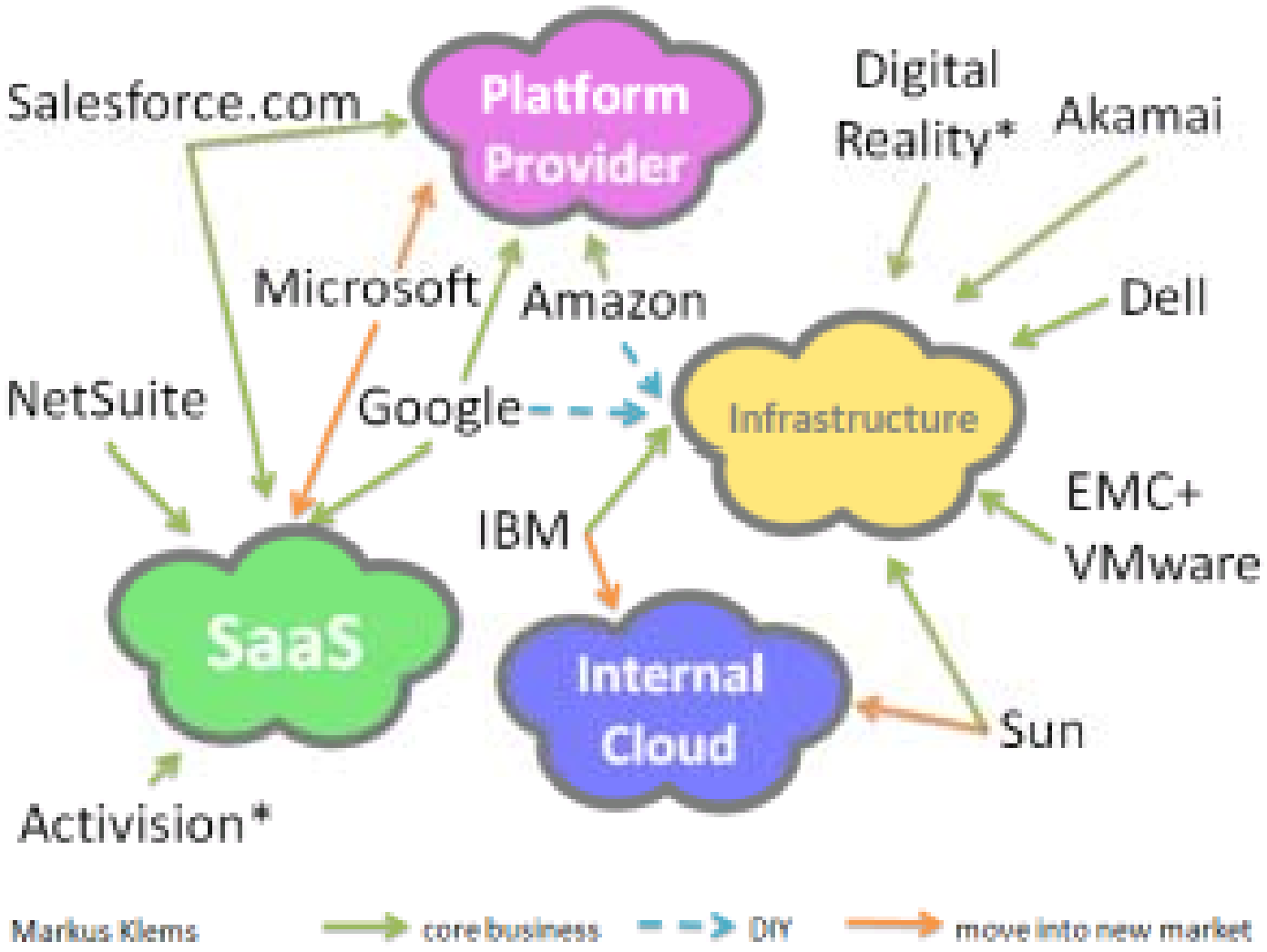


Compare Cost / performance

Authors: Peter Laird, Kent Dickson of BEA Systems



1 Cloud Computing | 2 SaaS | 3 PaaS | 4 Core Cloud Services

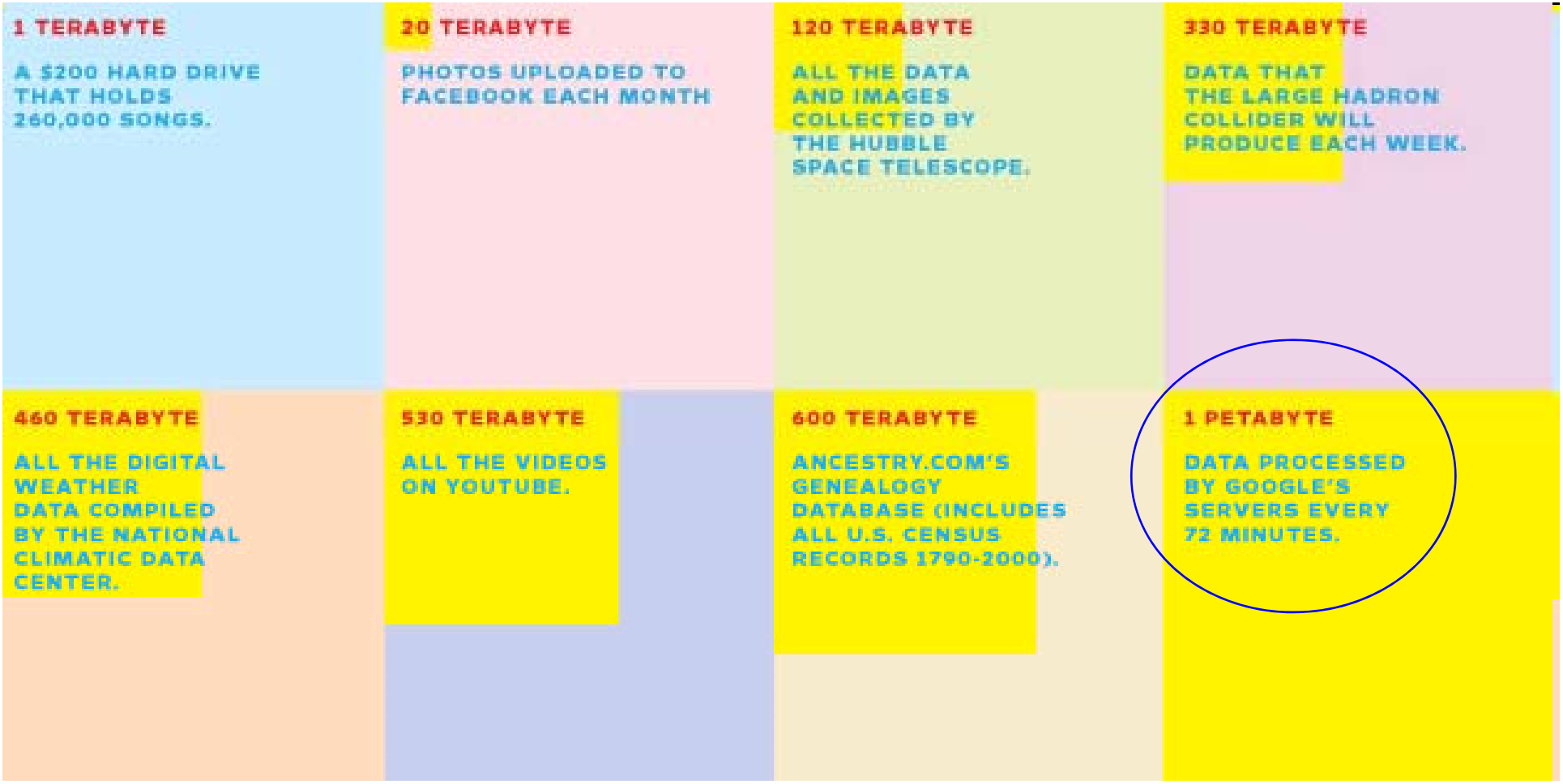

Salesforce.com
Platform Provider
Digital Reality*
Akamai
Microsoft
Amazon
Dell
NetSuite
Google
Infrastructure
EMC+
VMware
IBM
SaaS
Internal Cloud
Sun
Activision*
Markus Klems
core business
DIY
move into new market

Why Now?

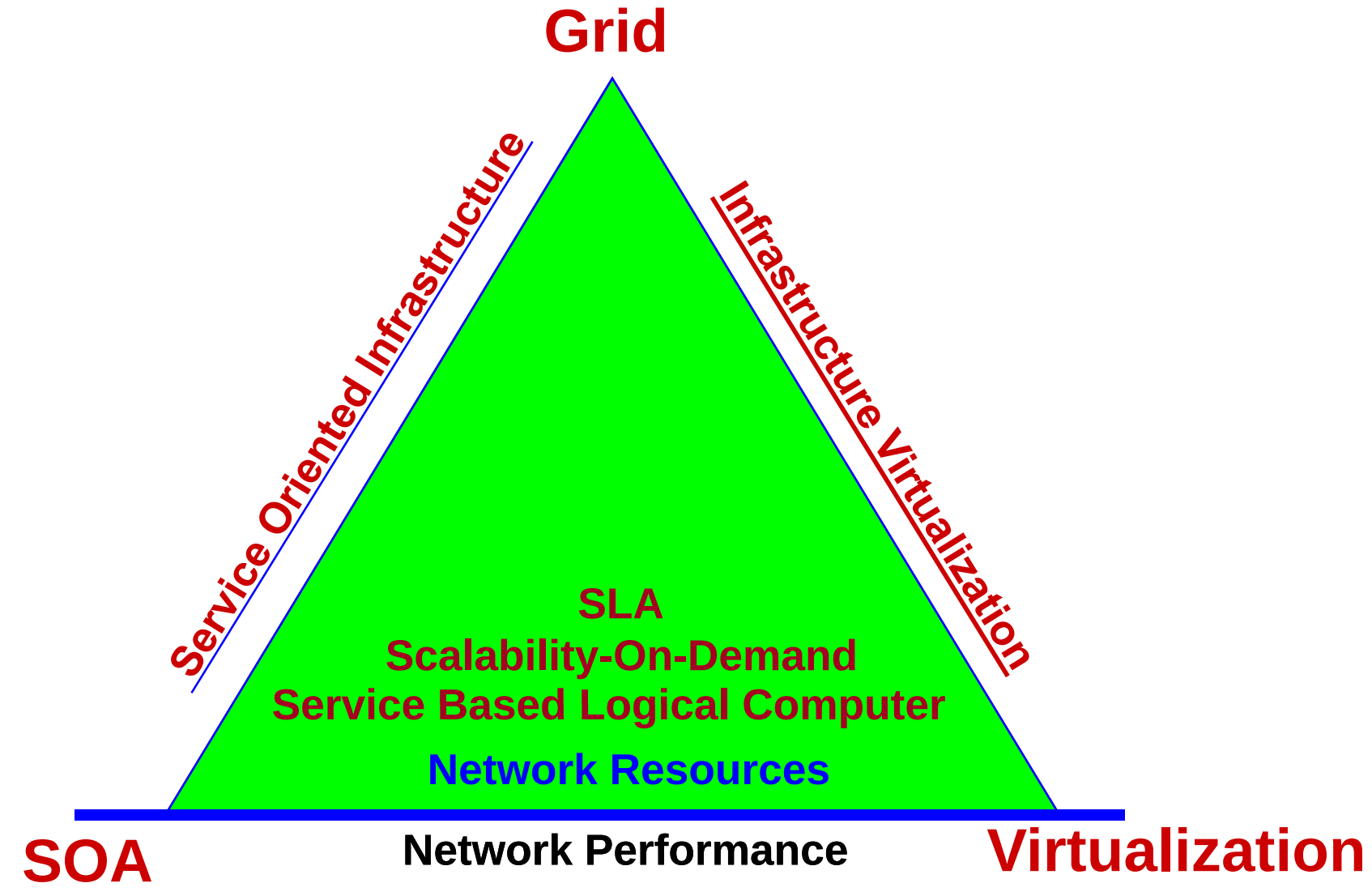
Its all about the economics of scalability
Enabled by technology maturity

Why Now? (Data)

On-Line Data Growth needs On-Demand Scalability



Why Now? (Concepts)
Technology Maturity



Why Now? (Technology Enablers)

The Virtualization Technologies – More Software on less Hardware

Multi Core and RAM size

LAN/WAN Performance

Internet maturity: Bandwidth & Web 2.0

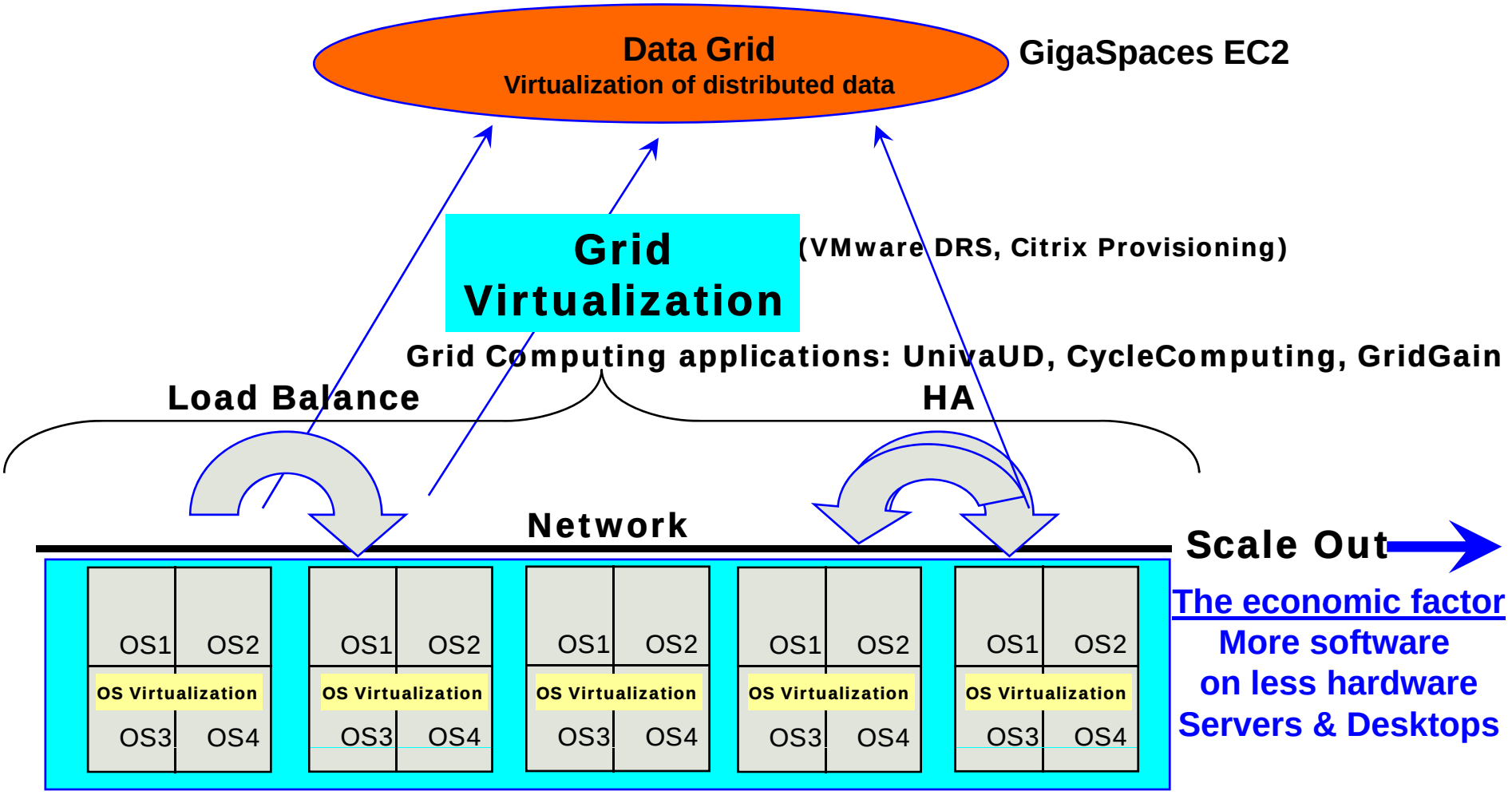
Thanks in part to multi-core processors, it "doesn't even make sense" to run a machine without a virtual layer.

By the end of next year, VMware should have the technology to allow for seamless switching between in- house and external clouds.

Mendel Rosenblum, co-founder and chief scientist of VMware

Open Virtualization Format (OVF) 1.0.0a is made public by DMTF

Why Now? (Virtualization)



The Virtualization Spectrum

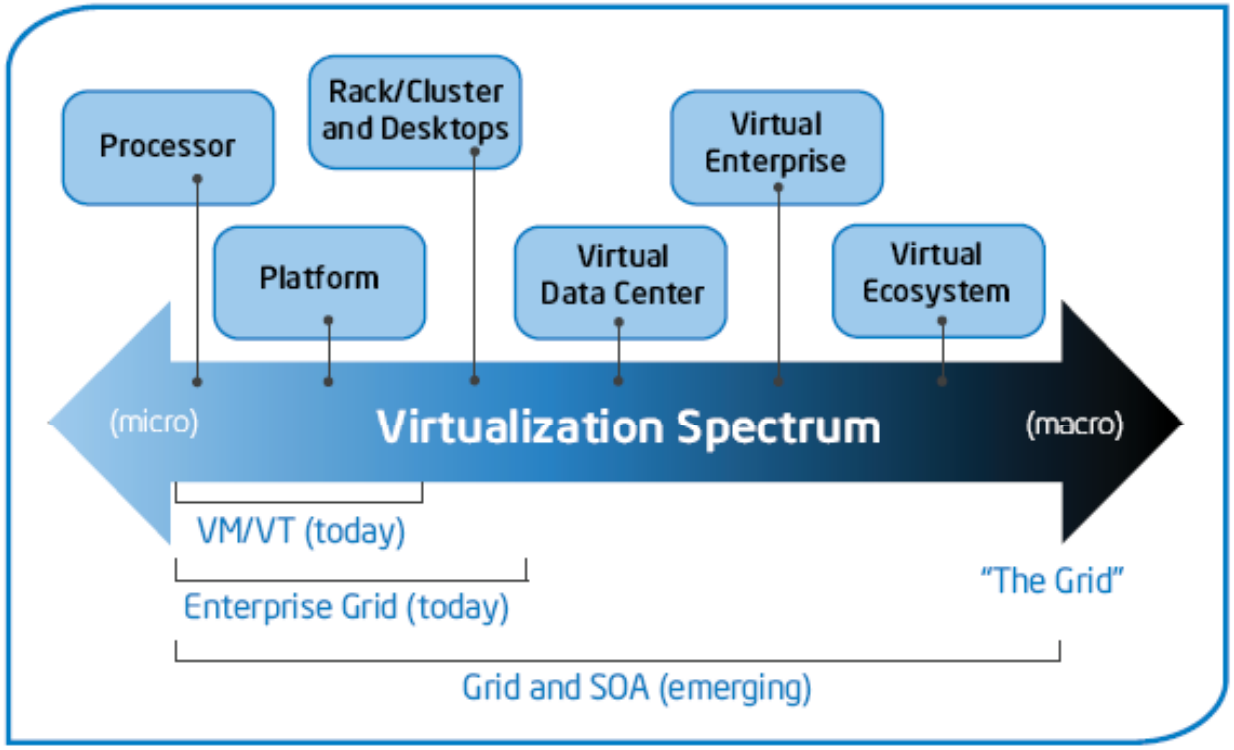
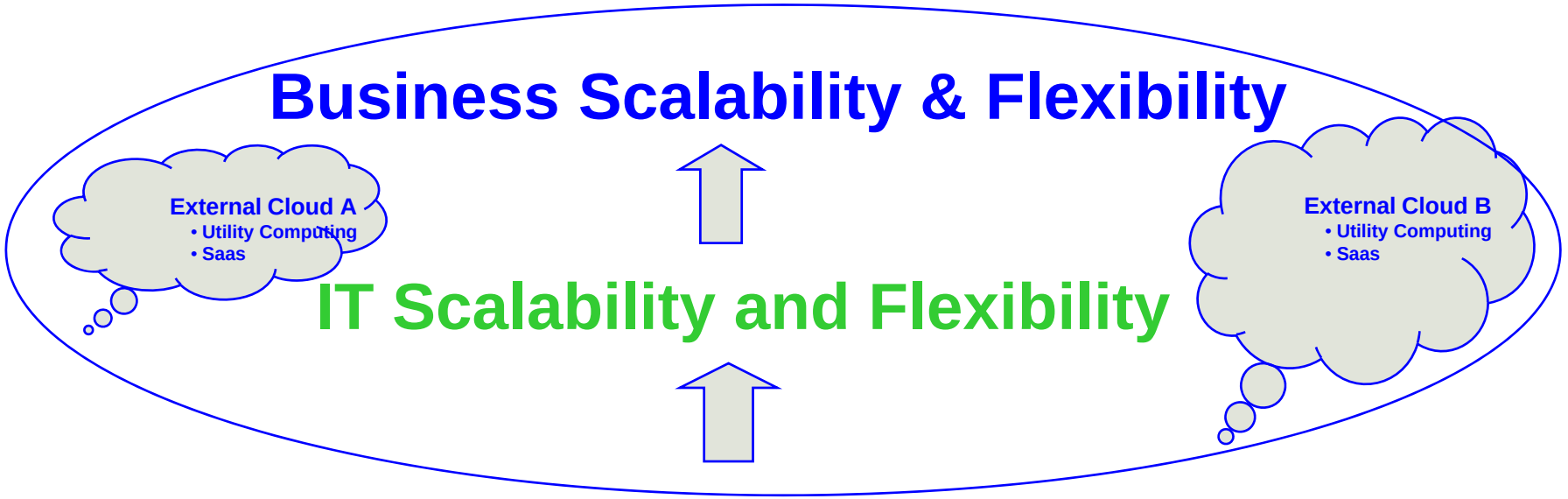
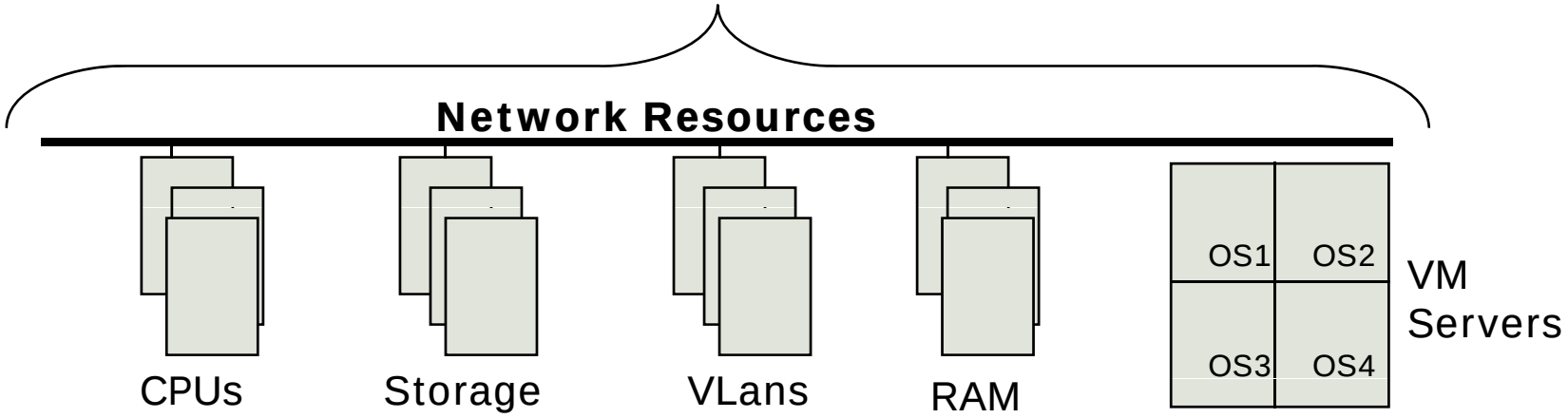


Figure 1. The virtualization spectrum *(Source: Intel 2006)*

Cloud in the Enterprise



Service-Oriented Infrastructure Virtualization



Why Now? (Economy)

- CIOs -> Do more with Less (Energy costs / Recession will boost it)

- Lower cost for Scalability

- Enterprise IT budget - Spending 80% on MAINTENANCE

- In average, we utilize only 15% of our computing resources capacity

- Peak Times economy

-The Enterprise IT is not its core business

- Psychology of Internet/Cloud trust (SalesForce, Gmail, Internet banking, etc.)

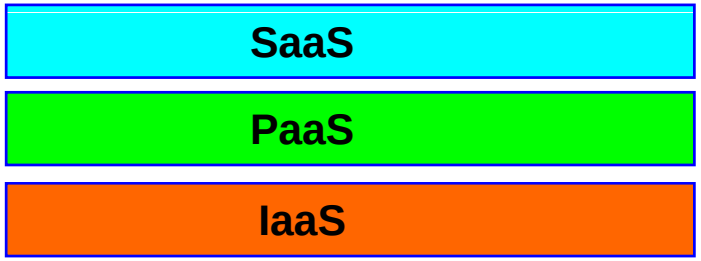
- Ideal for Developers & SMB

Why Now? (Benefits)

- Cost savings, leveraging economies of scale
- Pay only for what you use
- Resource flexibility
- Rapid prototyping and market testing
- Increased speed to market
- Improved service levels and availability
- Self-service deployment
- Reduce lock-in and switching costs

Clouds Types

- VM Based (EC2, GoGrid)
- Storage Based (EMC, S3)
- Customers Applications based (Google)
- Cloud Applications based (SalesForce)
- Grid Computing/HPC/GPGPU Applications
- Mobile Clouds (iPhone UI, WEB APPS)
- Private Clouds
- Cloud of Clouds



Challenges

- Security and Trust
- Customer SLA – compare Cost/Performance
- Dynamic VM migration – Unique Universal IP
- Clouds Interoperability
- Data Protection & Recovery
- Standards: Security, SLA, VMs
- Management Tools
- Integration with Internal Infrastructure
- Small compact economical applications
- Cost/Performance prediction and measurement
- Keep it Transparent and Simple

Summary

- Cloud Computing - The New IT Economy
- Pay-per-Use for On-Demand Scalability
- All major vendors are investing in Clouds
- Cloud Trading Market will evolve
- VM will be mobile across clouds
- Mobile phones (iPhone) cloud users
- International implications (Access to Data)

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Thank you!

MAGNET

See you at IGT2008

The World Summit of Cloud Computing
December 1-2, 2008, Israel

http://www.cloudcomputing.org.il

Cloud Computing: Pay-per-Use for On-Demand Scalability

The Israeli Association of Grid Technologies (IGT)