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# What Cloud Computing Means for The Data Center of the Future

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© 2010





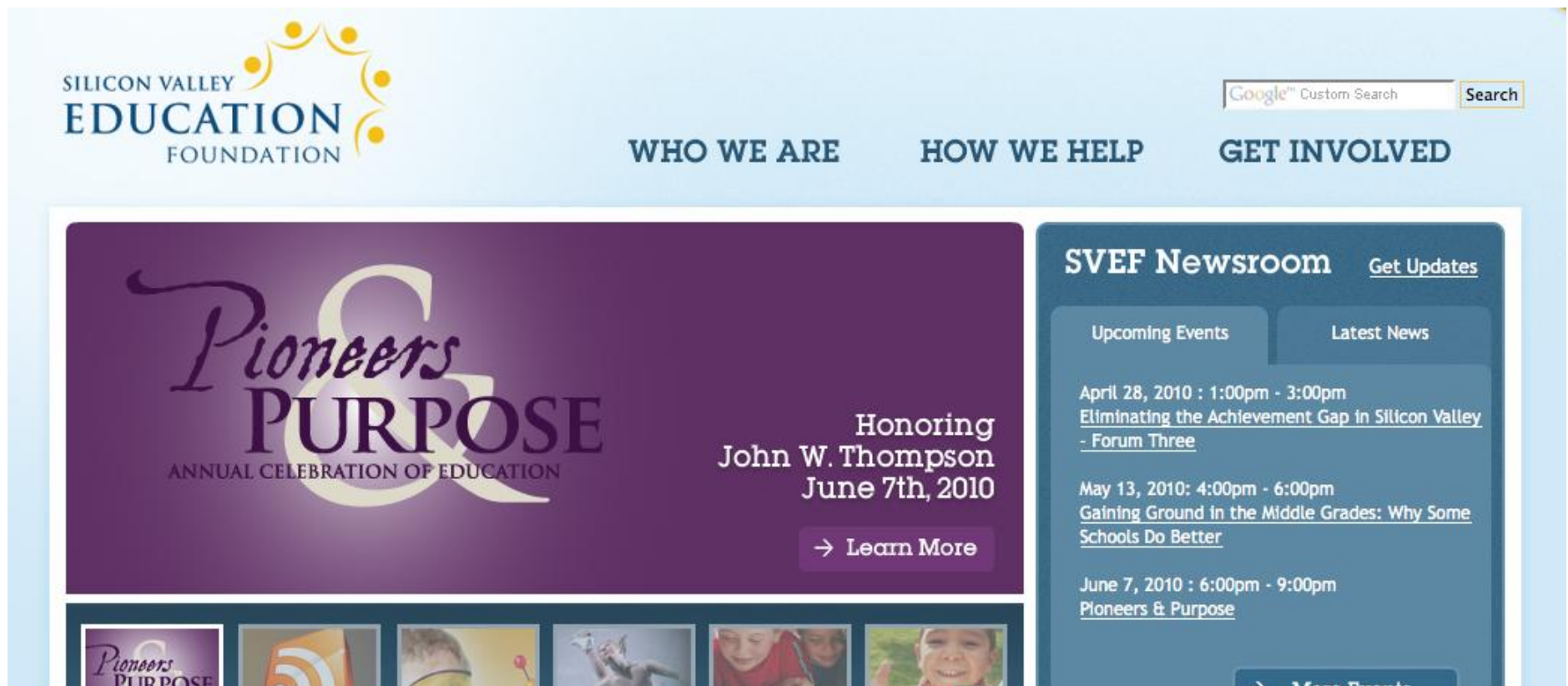


# NIST Definition of Cloud Computing

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- On-demand self service
- Broad network access
- Resource pooling
- Rapid elasticity
- Measured service

# Silicon Valley Education Foundation



The screenshot shows the homepage of the Silicon Valley Education Foundation. At the top left is the organization's logo, which consists of the text "SILICON VALLEY EDUCATION FOUNDATION" next to a stylized graphic of three yellow figures holding hands in a circle. To the right of the logo is a search bar with the text "Google™ Custom Search" and a "Search" button. Below the logo and search bar are three navigation links: "WHO WE ARE", "HOW WE HELP", and "GET INVOLVED".

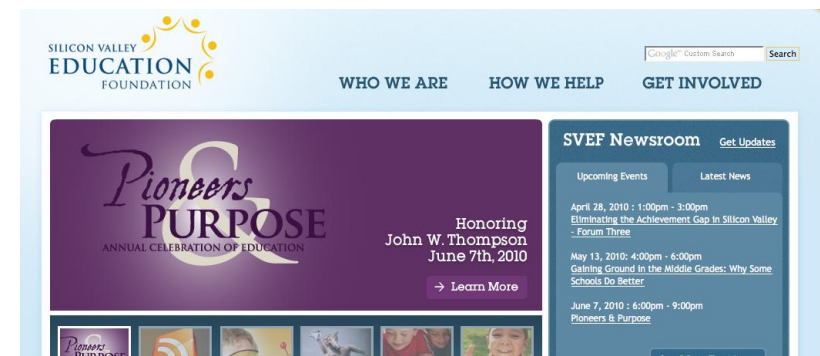
The main content area is divided into two columns. The left column features a large purple banner for the "Pioneers & PURPOSE" event. The banner text reads "Pioneers & PURPOSE" in a large, stylized font, with "ANNUAL CELEBRATION OF EDUCATION" in smaller text below it. To the right of the banner, it says "Honoring John W. Thompson June 7th, 2010" and includes a "Learn More" button with a right-pointing arrow.

The right column is titled "SVEF Newsroom" and has a "Get Updates" link. It contains two sub-sections: "Upcoming Events" and "Latest News". Under "Upcoming Events", there are three entries: "April 28, 2010 : 1:00pm - 3:00pm Eliminating the Achievement Gap in Silicon Valley - Forum Three", "May 13, 2010: 4:00pm - 6:00pm Gaining Ground in the Middle Grades: Why Some Schools Do Better", and "June 7, 2010 : 6:00pm - 9:00pm Pioneers & Purpose". At the bottom of the newsroom section is a "More Events" button with a right-pointing arrow.

At the bottom of the page, there is a horizontal strip of six small thumbnail images. The first thumbnail shows the "Pioneers & PURPOSE" logo. The other five thumbnails show various photos of children and educational activities.

# Silicon Valley Education Foundation

- Purpose: Better education in Silicon Valley
- Constituency: 13K teachers, 130K students
- STEM focus
- Key issue: teacher collaboration
- Solution: Lessonopoly



Username
 

 Password
 
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- [Forgot password?](#)
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**CLASSROOM**

- [My Home](#)
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**LESSON PLANS**

- [Search](#)
- [Submit](#)
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**CONNECT**

- [Teachers](#)
- [Groups](#)
- [Forums](#)
- [Wiki](#)

**Sponsors**


Welcome to **Lessonopoly**, a free tool that lets you manage your classroom, find and share lesson plans, and connect with other teachers.



Manage your  
classroom



Find lesson plans  
in our Library



Connect with  
other teachers

**Featured Lesson Plans: Science of the Olympics**


With the Vancouver 2010 Winter Olympics upon us, now is the perfect time to take a closer look at the secret behind the sports: science and math! Lessonopoly has created student activities and lesson plans to support the video series, [Science of the Olympic Winter Games](#), created by NBC Learn and the National Science Foundation. Featuring exclusive footage from NBC Sports and contributions from Olympic athletes and NSF

**State Superintendent**


"I'm really excited about the fresh ideas teachers can get from this website. Lessonopoly is an open educational resource that gives teachers an excellent tie-in tool for fun learning."

The Science of the Olympic Winter Games project is a great example of how Lessonopoly can help make science interesting, relevant, and exciting for students."

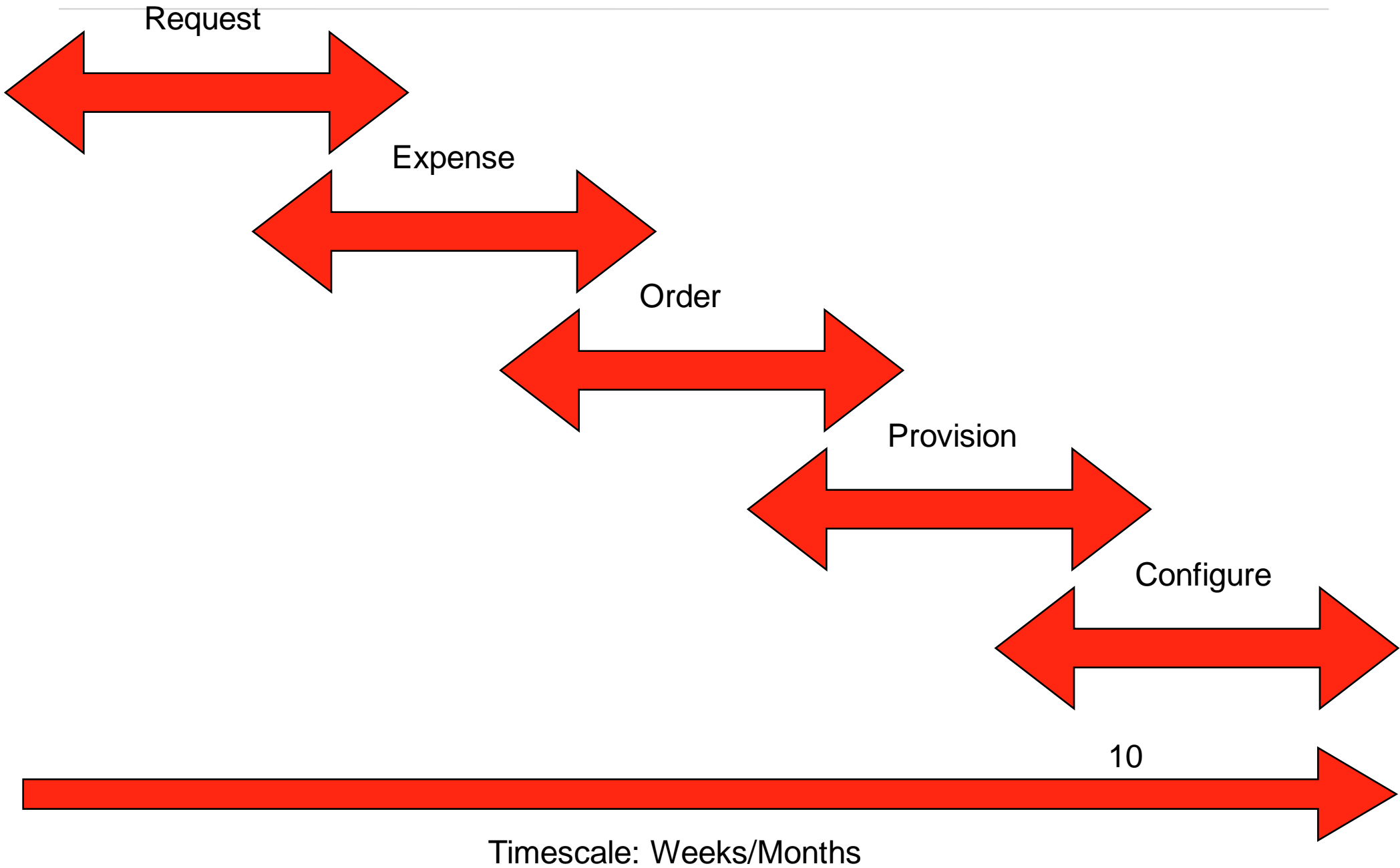


# Lessonopoly Cloud TCO Savings

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<b>Single Server</b>	<b>Multi-Tier</b>	<b>Horizontally Scaled</b>
<b>55%</b>	<b>57%</b>	<b>55%</b>

# Traditional Provisioning



# Cloud Provisioning

Request

Expense

Order

Provision

Configure

Process  
Re-engineering

Capacity

Standard Templates

Budget

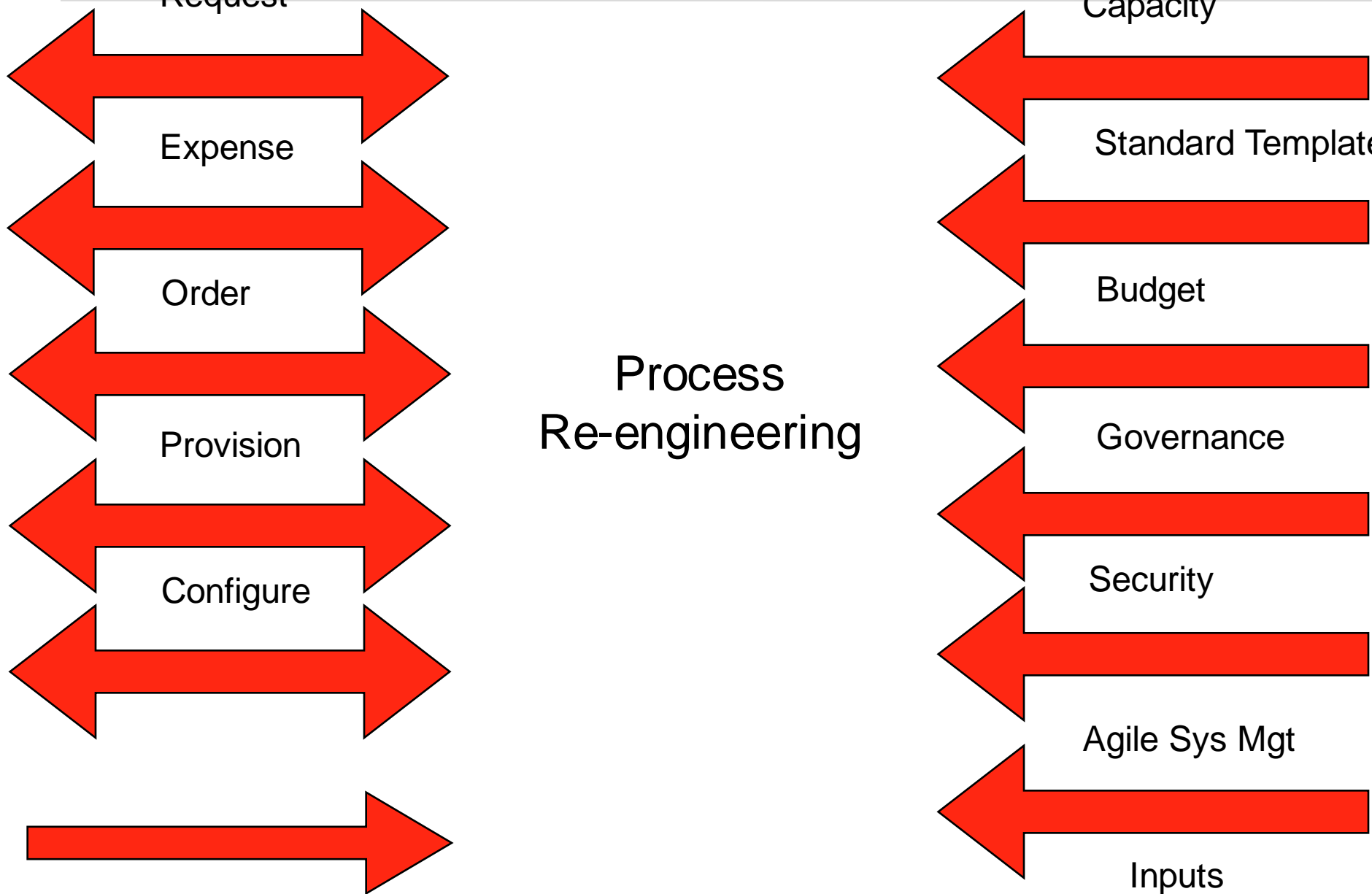
Governance

Security

Agile Sys Mgt

Inputs

Timescale: Minutes



# Bechtel Benchmark Study

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Resource	Bechtel	Cloud Provider
Bandwidth	\$500/megabit	\$10-\$15/megabit (YouTube)
Sys Admin Ratio	100 servers per admin	17,000 servers per admin (Google)
Storage	\$3.75/GB/Mo	\$.10/GB/Mo (Amazon)

# Data Center Outcomes

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- Unprecedented demand for agility
- Severe cost pressure -- benchmarking
- Transparency



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# Cloud Computing Challenges

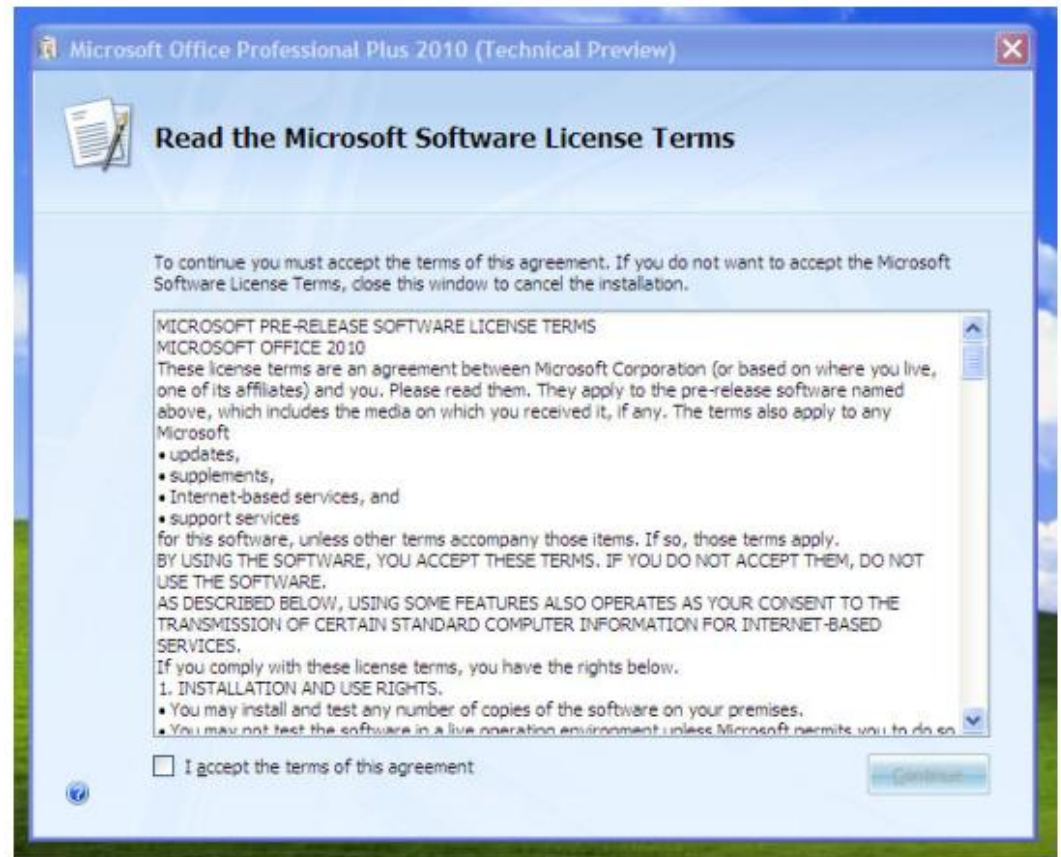
# Cloud Security Truths

- Three elements
- Often confused
- Shared responsibility
- Asymmetric risk



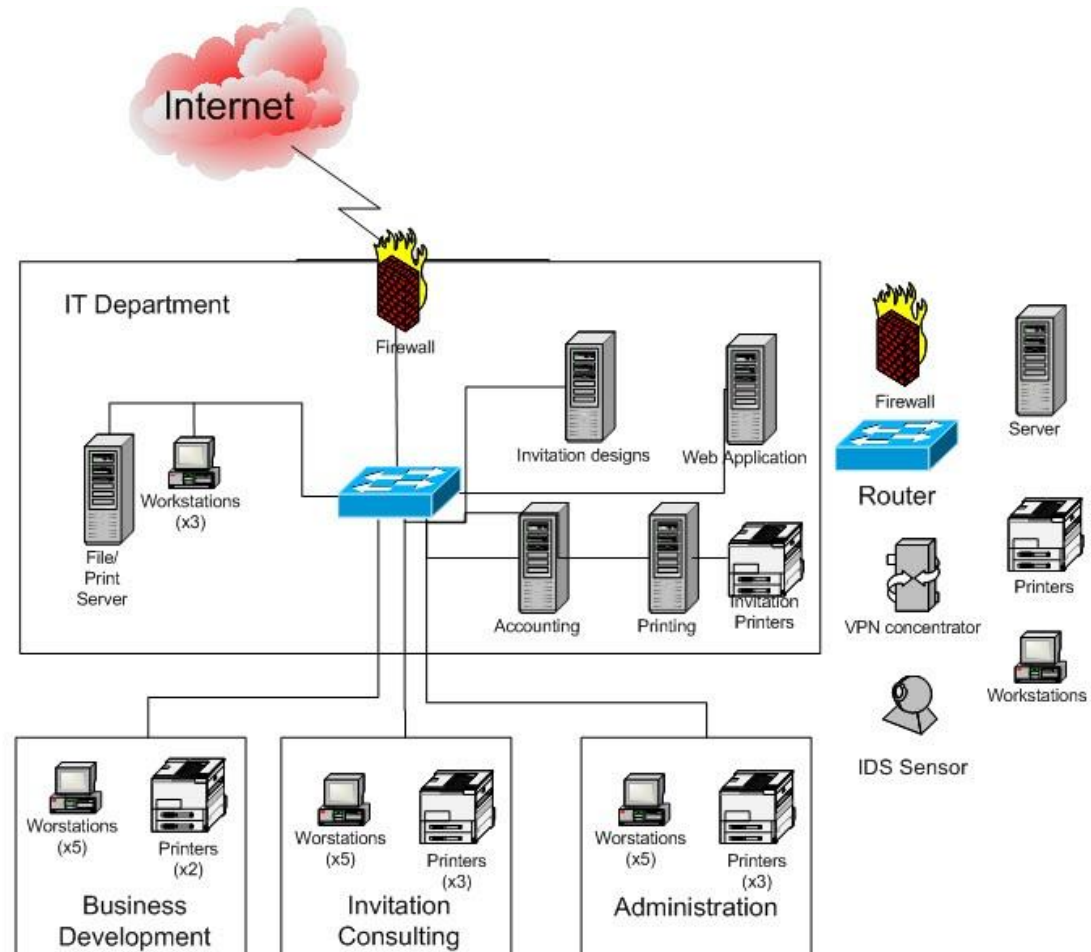
# Software Licensing

- Hardware
- IP address
- Not elastic
- Not metered



# Complex System Integration

- No SOA
- Hard-wired
- Skinny straw



# Organizational Conflict

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“It is difficult to get a man to understand something when his job depends on not understanding it.”

Upton Sinclair







# Your Takeaway

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## Cloud Computing

- A combination of five characteristics
- Brings new expectations to IT
- **Potential** financial benefits
- Presents new challenges
- Will redefine what we call “computing”



# More Resources

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- Read my blogs: HyperStratus and CIO
- Follow me on Twitter: bernardgolden
- Request our cloud computing security whitepaper [info@hyperstratus.com](mailto:info@hyperstratus.com)
- Contact me at [bernard.golden@hyperstratus.com](mailto:bernard.golden@hyperstratus.com)