# I've Seen the Cloud from Both Sides Now

*…and still somehow, it's cloud's illusions I recall; I really don't know clouds at all.*

## How to Keep Your Feet on the Ground When Your Head's in the Cloud

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National Tax Education Program *(AICPA/UI)* -- Graduate and former Staff Lecturer

AICPA Committees

- TECH+/Practitioners Conference -- Planning Committee
- *Journal of Accountancy* – Technology Advisory Board
- Prior Service:
  - CITP Credential Committee – Chair (6 years)
  - National Accreditation Commission – ad hoc (3 years)
  - Microcomputer Advisory Services Committee (3 years)
  - Top 10 Technology Initiatives -- Review Committee (5 years)

**Former:**

*CPA Technology Advisor* - **Executive Editor (6 years)**

*Thomson Reuters* ***(Creative Solutions*** **-- 5+ years)**

**Vice President - Product Strategy**

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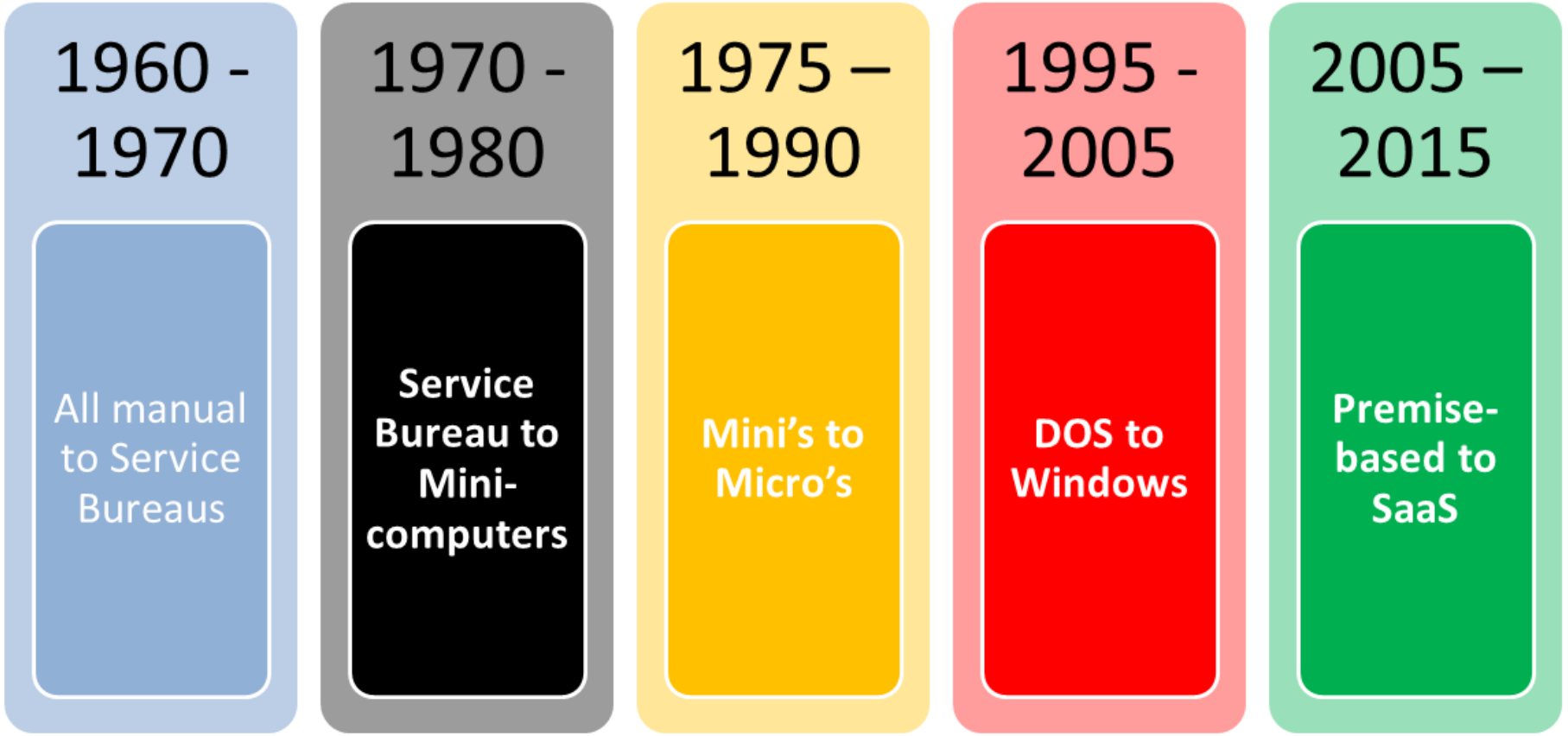
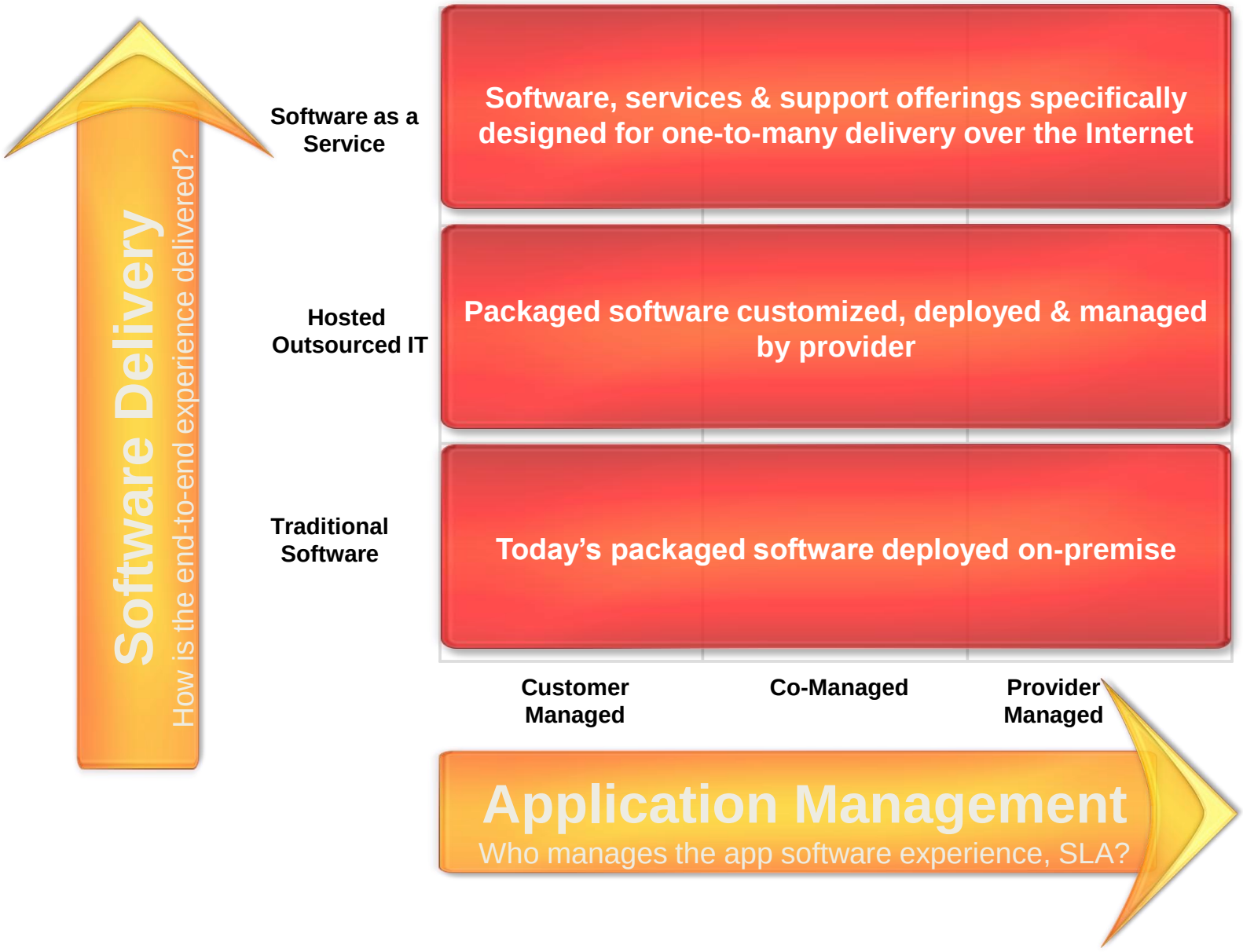
# Housekeeping

- Today's webcast will last ~ 1 hour
- There is NO CPE for this webcast
- You may type in questions during the webcast – I'll attempt to answer as many as possible
- The webcast will be recorded and available for "on demand" playback beginning tomorrow
- Slides will be available for download tomorrow
- Please complete the survey at the end of the webcast.

# Painful Changes



# Software as a Service Evolution



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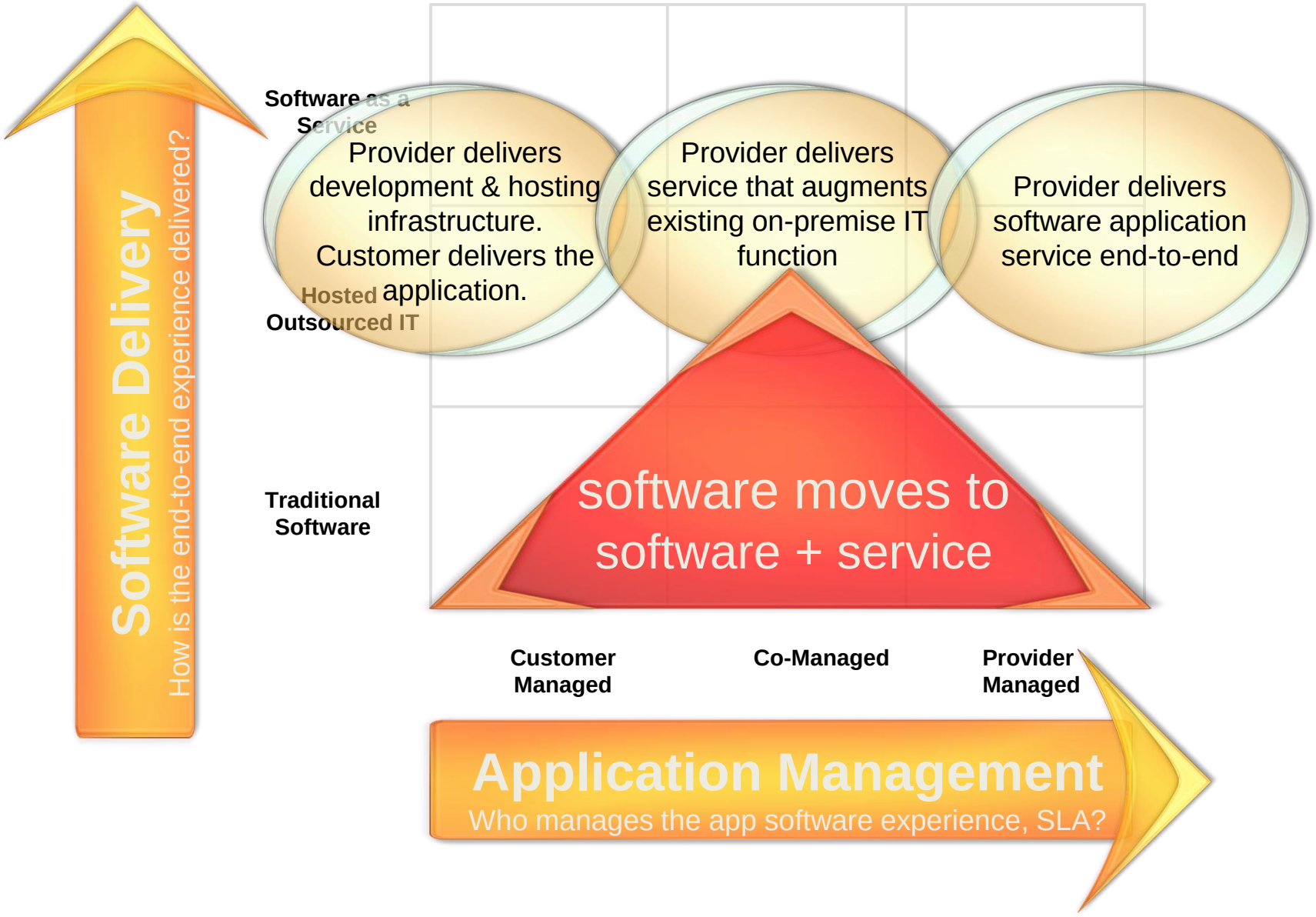


# ASP vs. SaaS

# Definitions

**ASP**

**Application service provider (ASP)** is a business that provides computer-based services to customers over a network. Software offered is usually premise-based enhanced via a Citrix-style extender.

**SaaS**

**Software as a Service (SaaS)** is designed from ground up exclusively for web deployment. Software offered is typically multitenant and users share processing power and database space that is managed by the vendor.

# An Extended Definition of SaaS

- A hosted IT capability
  - Owned, located, operated and managed externally
  - Not just application software!
    - Also operating environments, integration platforms etc
  - But… only technology, not people
- Optimized for delivery as a service
  - **Not just a hosted instance of an off-the-shelf packaged application**
  - Designed to be offered to multiple customers (multi-tenant)
  - Optimized for subscription-based licensing
  - Customer configuration, not customization
  - Transparent upgrades
  - Service level monitoring/management
- Over the Internet
  - But… not necessarily to a browser client

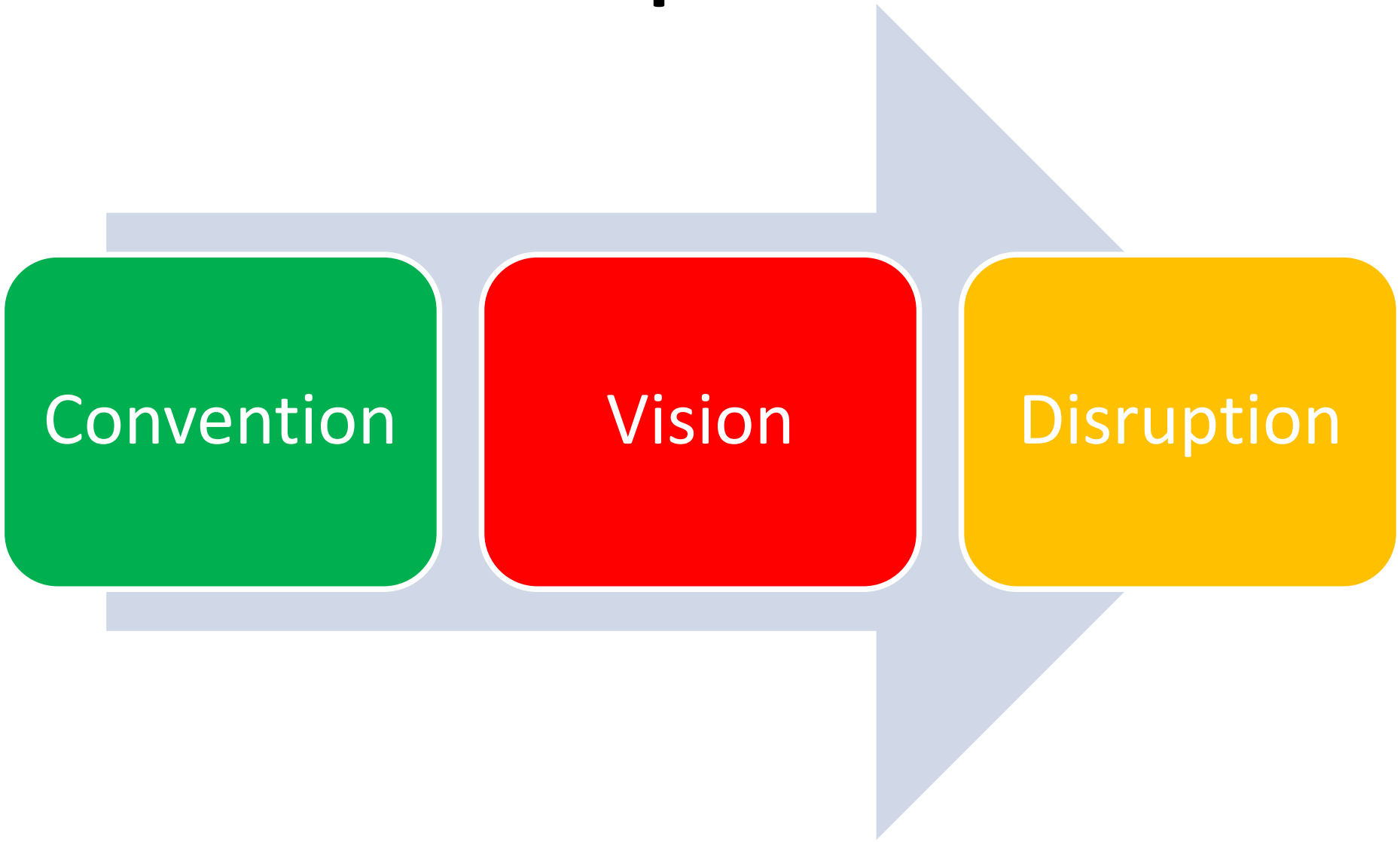
# Something old…

- Hosted IT capability delivery is nothing new!
- In the late 1960s the software & services industry consisted of “processing bureau”
- In the late 1990s the buzz was around Application Service Provision (ASP)
- Lacked connectivity --- speed and ubiquity
- No compelling benefit in product
- How is SaaS different?

# Clouds are the platform for SaaS

- Software as a Service will provide user a new model for the consumption of applications and data
- The Cloud Model allows software developers access to a scalable infrastructure and platform from day one, without the need to build a real infrastructure in anticipation of use.
  - SOA (Service Oriented Architecture)
  - PaaS (Platform as a Service)
  - Small, agile, competitors can challenge market leaders
  - Allows for disruptive technologies to enter mature markets

# The Disruption Model



# The Disruption Model

| | |
|---|---|
| **There must be an idea for change** | There is. Hosting applications online has been done since the 60s |
| **There must be a market desire for change** | There was. Many companies had become disillusioned with the difficulty of maintaining applications internally via large IT staffs |
| **There must be an advantage to change** | **1999–2001:** The early ASP companies had difficulty in clearly articulating the advantage of change to many companies. They were unable to provide a clear reason to change<br><br>**2004–Present:** SaaS application developers are now focused on new markets providing many companies with access to capabilities they can't obtain any other way. |

# The Disruption Model

| | |
|---|---|
| **There must be an infrastructure that supports change** | The infrastructure of 1999–2001 was immature and had difficulty supporting certain applications. Many companies did not have access to high-speed Internet connections. |
| **There must be a distribution mechanism for change** | The Internet provided such a mechanism |
| **Change must come at the right price** | **1999–2001:** ASP companies failed to offer convincing arguments for their services. They attempted to charge **more** for online applications. Companies that did comparison pricing analyses were unimpressed<br><br>**2004-Present:** Successful SaaS companies are bringing their price structures in line to either compete with or beat traditional software purchases. |

# The Disruption Model

| | |
|---|---|
| **There must be an acceptable quality of experience when change occurs** | **1999–2001:** In most cases, there wasn't. Early ASP applications were clumsy and slow. Online applications that attempted to compete with desktop applications suffered greatly by comparison in terms of power, interface, and overall usability. **(Still true)**<br><br>**2004–Present:** As Ajax/ Web 2.0 technology takes hold, web-based applications are starting to match their desktop counterparts in interface quality and power, though it will take time for them to match many desktop products |

# Disruption in OUR World

- Accounting is on cusp of disruption
- Countdown is between three to five years

# What does it mean for Software?

- Over the next few years the way in which software is developed and delivered will change dramatically
- New paradigm emerging
  - Nothing will be installed on local machine
  - Giant, living, information repositories will replace local copies of “published” data
  - Device and Operating System Independence
- Redefinition of support, versioning, and user access

# Playing well with others

- Multi-tenancy:
  - The system is built in a way that allows several customers to share infrastructure, without the customers being aware of it and without compromising the privacy and security of each customer's data.
- Infrastructure is invisible to users
- System evolves with time without forcing upgrades or versioning on the user.

# Building Apps out of Legos

- Service-oriented:
  - The system allows composing applications out of discrete services that are loosely coupled (independent of each other).
  - Changes to or failure of one service will not disrupt other services. It also means services can be reused.
  - Scaling to large numbers of users merely requires adding more servers to host Legos.
  - Service can expand and contract

# Applications not tied to hardware

- Virtualized:
  - Applications are decoupled from the underlying hardware.
  - Multiple applications can run on one computer (virtualization a la VMWare) or multiple computers can be used to run one application (grid computing).
- The user does not, can not and will not know where his application is being executed
- Multiple copies of Applications and Data are maintained by the Cloud

# What does this mean for Vendors?

- Moving to the Cloud **as a platform** requires a complete redesign and rebuild of existing applications
  - One cannot “port” a desktop application to the Cloud
- Cloud computing requires 100% uptime
  - (No-Nines availability)
- Users will need real 7x24 support
- Training and Help will need to be machine based
- Everything will change

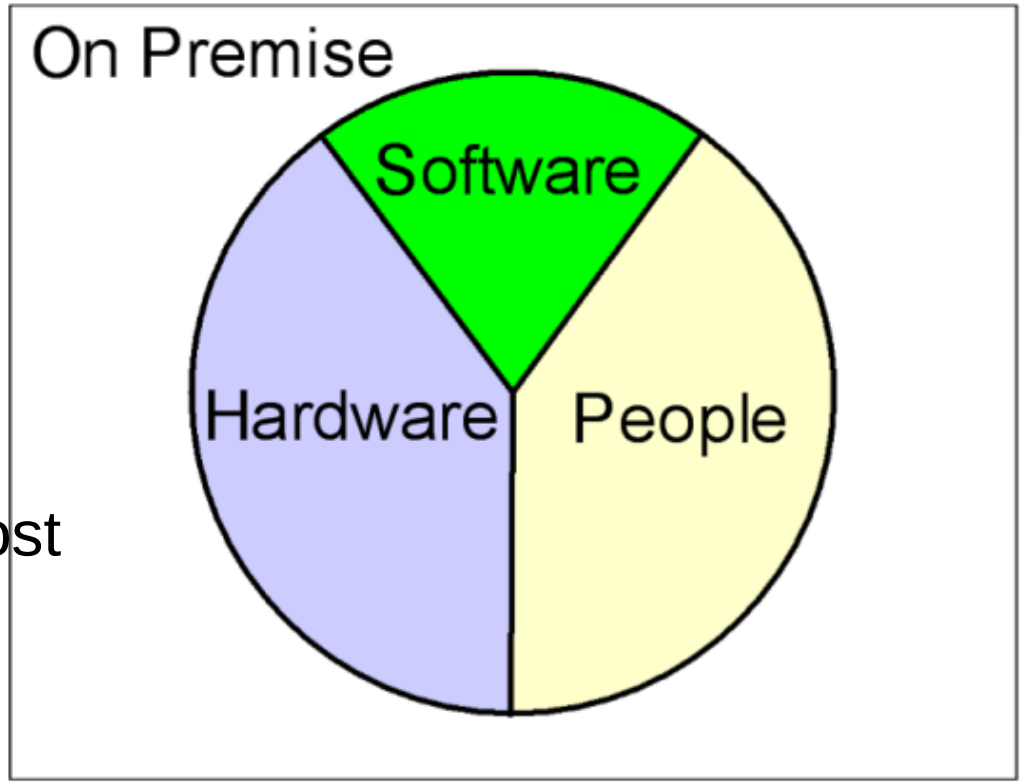
# A paradigm shift is coming

- A simple truth:
  - Current architectures and methodologies used by software provides just won't work on the Cloud
  - Google, Amazon and eBay have been forced to design and build their own infrastructure software, opting not to rely on products from the large middleware vendors such as Oracle and BEA, who designed them with a very different approach in mind.
- This is a huge challenge to the software industry.

# What does this mean to Us?

# Big Deal 1: Importance of Economy of Scale

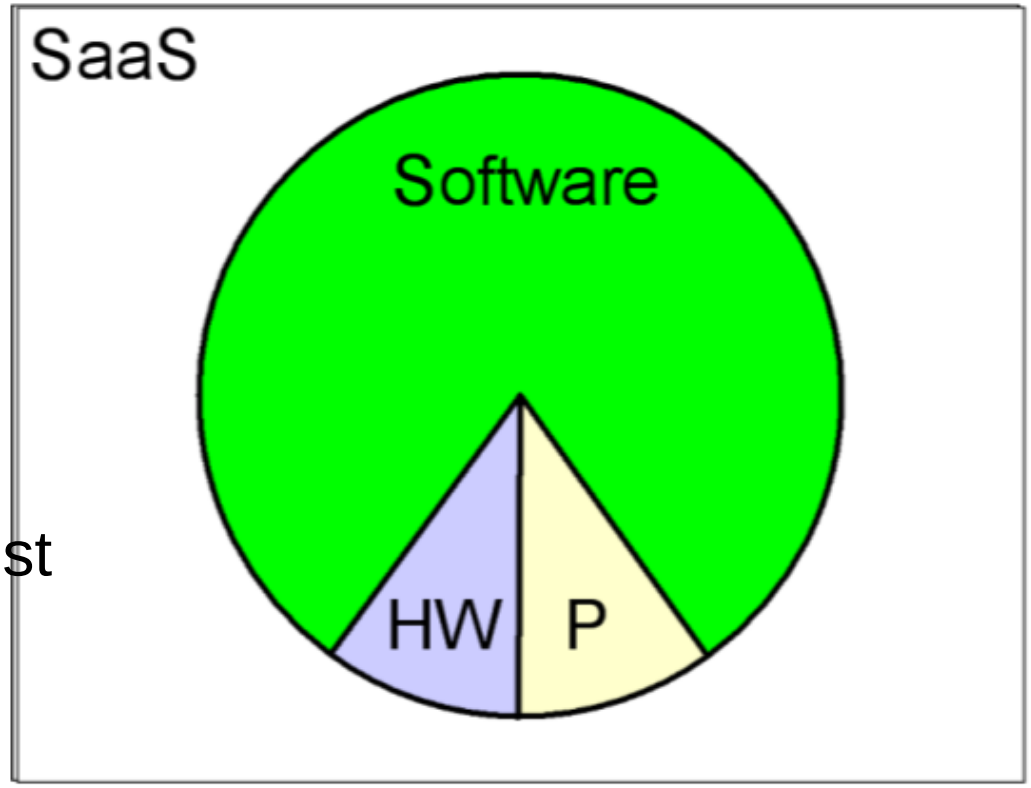
Hardware Cost at User




People Cost at User

# Big Deal 1: Importance of Economy of Scale

Hardware Cost at User

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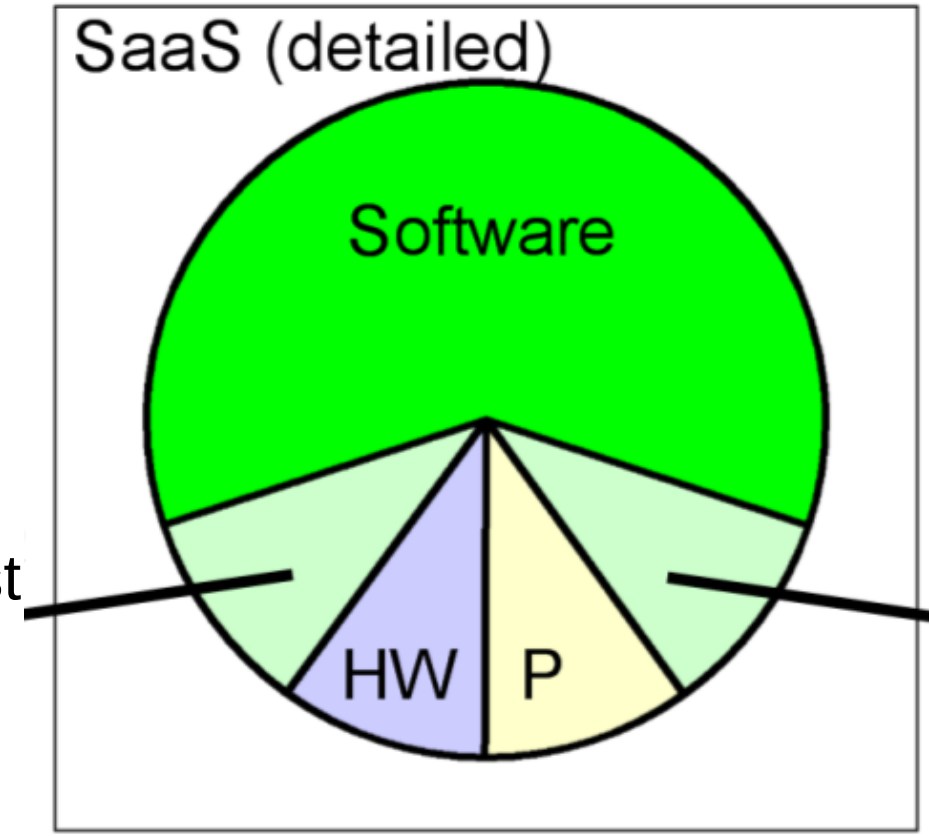
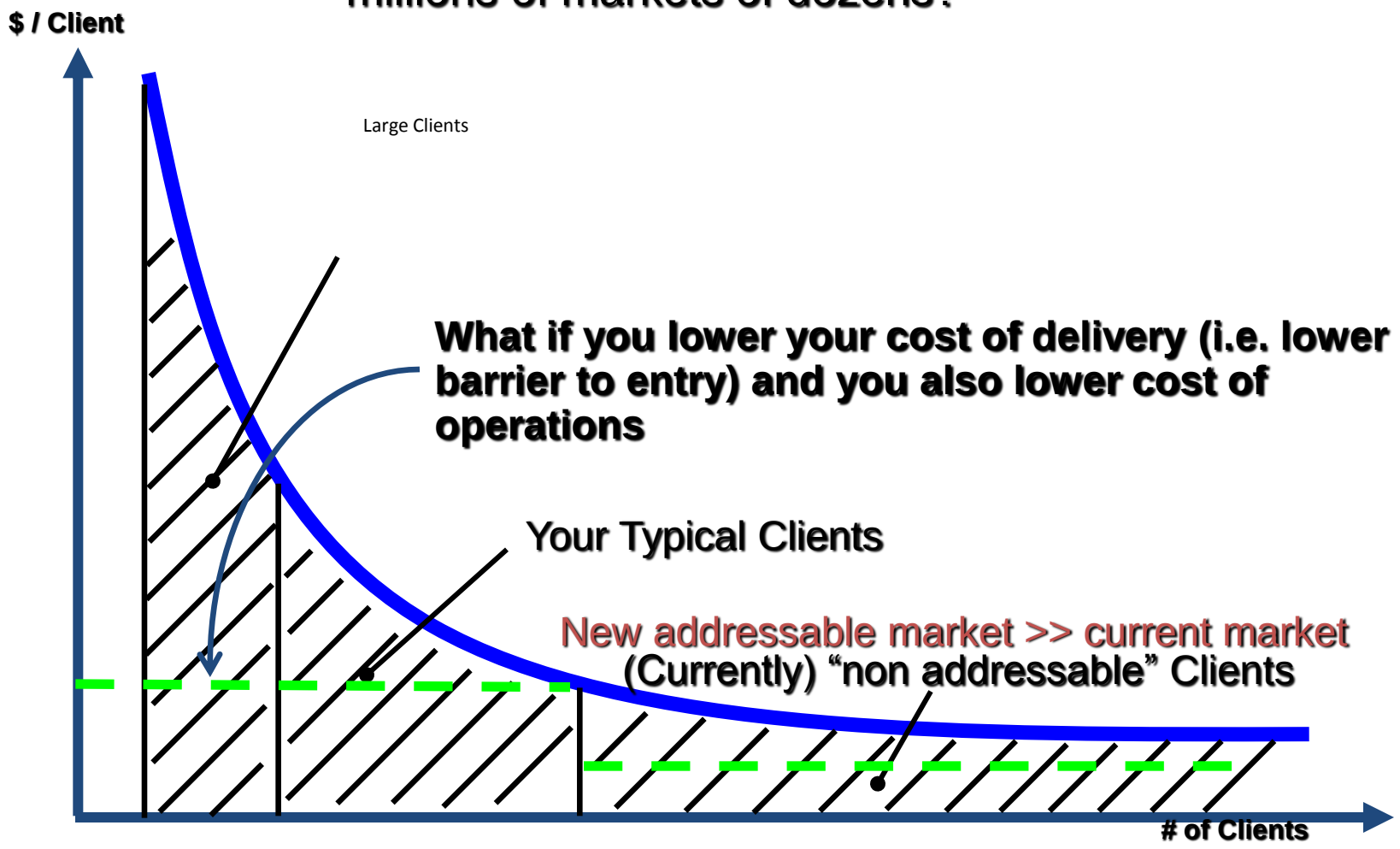



Hardware Cost at Provider

People Cost at Provider

# Big Deal 2: The Long Tail

- Dozens of markets of millions or millions of markets of dozens?



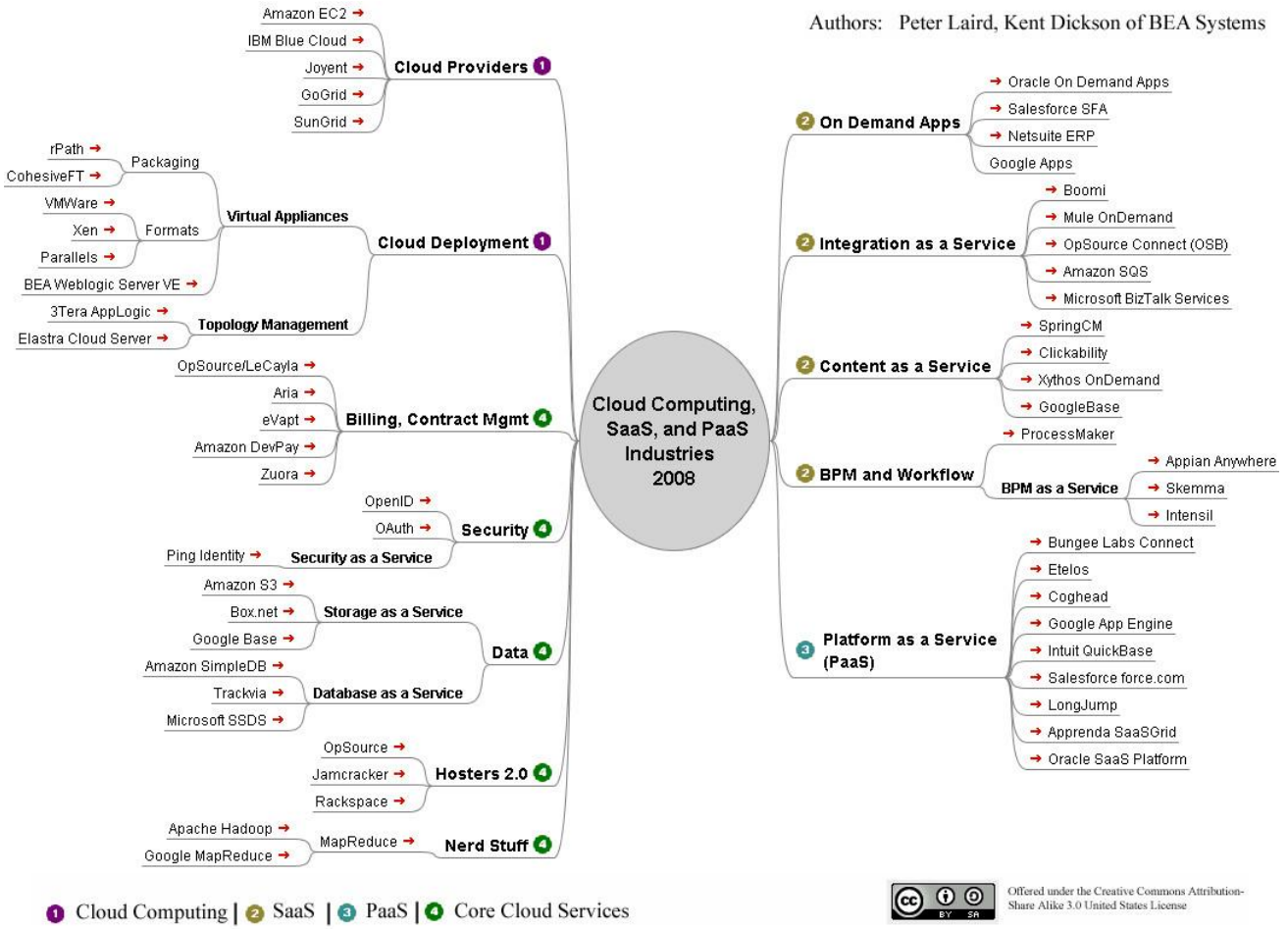
# Big Deal 3: Monetization

- Subscription (monthly fee per seat)
- Elimination of capital requirements
- Transaction based pricing
- Elasticity
- Lower barrier to entry for competitors
- Allows time for additional, high-value services

# Today's Situation

- Infrastructure costs
- Personnel costs
- Rising/uncertain equipment costs
- Upgrades, customizations
- Legacy platforms
- Cost of entry into a solution / upfront cost
- Pace of change
- Access to best practices

# Who is in the Cloud today?



# Everything is “Out There”

- Clouds are more than Utility Computing
- The concept is simple:
  - Everything that you need to run and support your applications exist as connected objects using the Web as a platform
  - Your access device does not need copies of programs or data to run

# Pros of Cloud Computing Model

**Quick deployment** - add capacity or applications almost at a moment's notice.

**Metered cost** - pay-as-you-go approach for storage, processing and applications means more efficient use of IT spending.

**Little or no capital investment** - costs don't stay on the books for years.

**Little or no maintenance cost** - maintenance is all from a workstation or configuration screen. You never have to go touch a physical server.

**Lower costs** - Many customers use the same infrastructure, so the vendor is able to buy in bulk and amortize costs over more customers, potentially lowering per-unit cost to each customer.

# Cons of Cloud Computing Model

**Little or no capital investment** – no bonus or Sec. 179 depreciation so there could be a tax disadvantage

**Monitoring and maintenance tools are not mature yet** - visibility into the cloud is limited, despite recent announcements by major vendors that they're modifying their data-center management applications to provide better control and reporting

**Immature standards** – several groups are developing standards for interoperable management, data migration, security and other functions, but real standards are still a couple of years away.

# Risks of Cloud Computing Model

**Data mobility** - Most SaaS vendors have some ability for customers to download and store data, but the downside of using someone else's application is often that you can't get all your data out of it in a way that's usable in a different vendor's software.

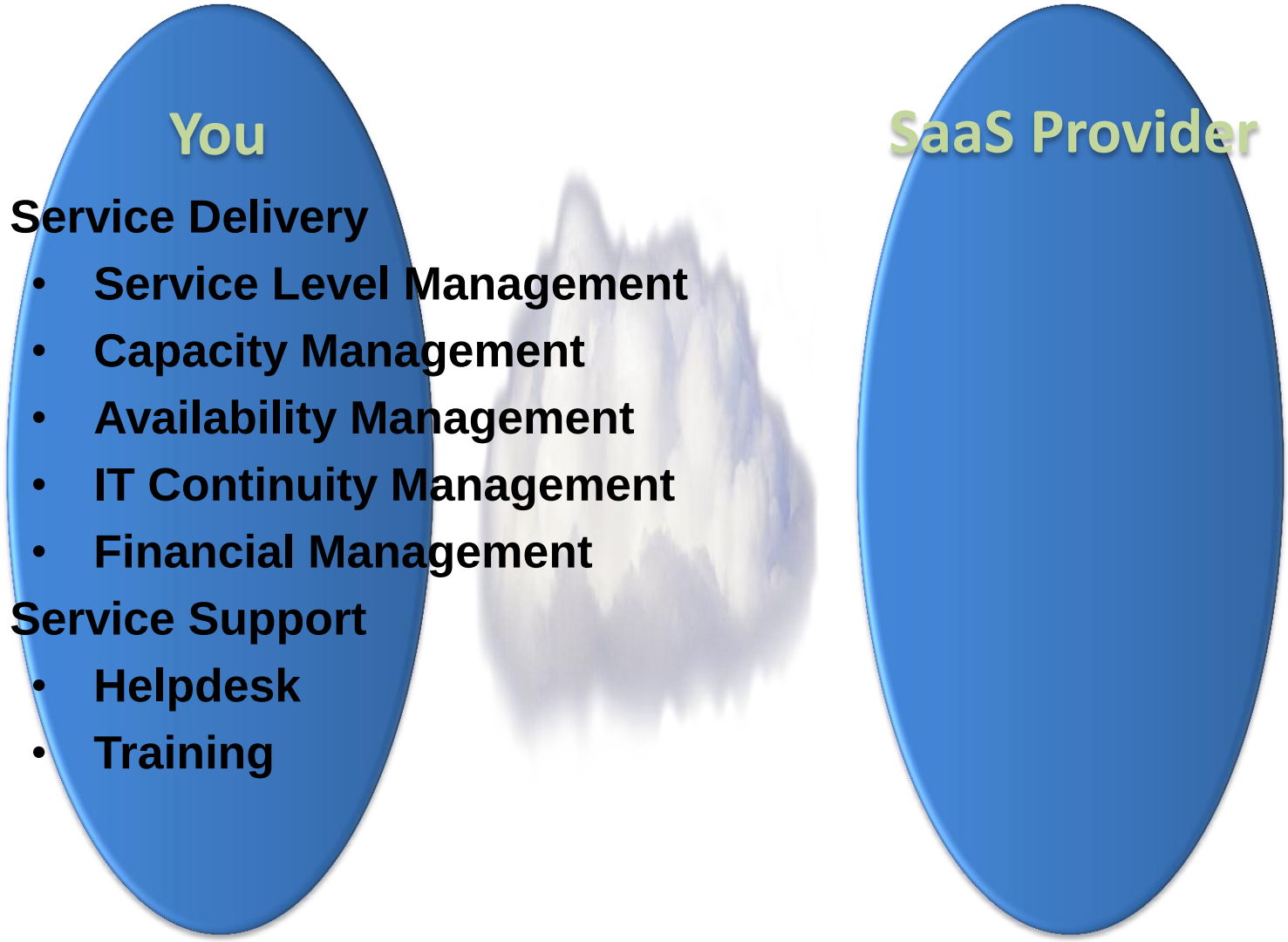
**Privacy** - Most cloud contracts include privacy language that promises a customer's data is secure and private. But with cloud-monitoring and management software still in its infancy, a customer's ability to know for sure who's looking at what data – even who within their own organizations is using it - is sometimes limited.

**Service levels** - Cloud computing isn't entirely one-size-fits-all; there is some ability to customize the applications and services each customer gets. But the ability to tailor service-level requirements to the specific needs of a business is often less than with IT departments whose whole purpose is to further the company's business goals.

**Interoperability** - The highly-customized internal applications that some companies rely on most are often unavailable. That may be fine with companies that prefer to use relatively generic applications.

WARNING
CHALLENGES
AHEAD

# Premise based



# SaaS based

## You

- Integration
  - Identity Management
  - Data
  - Operations
  - Security
- Contract Management
  - SLAs
  - Compliance

## SaaS Provider

- Service Delivery
  - Service Level Management
  - Capacity Management
  - Availability Management
  - IT Continuity Management
  - Financial Management
- Service Support
  - Helpdesk
  - Training

# Challenges to Consider

- Identity management / security
- Integration
- Quality of service / remediation
  - Rigorous understanding of SLAs, contracts required
- Skills
  - Change, customization
- Cultural resistance
- Regulatory, legal issues
- Managing implications of automated upgrades

*Integration has surpassed security as the #1 barrier to SaaS adoption**

*7 Trends in Enterprise Software Adoption for 2008, Forrester Research, Feb. 22, 2008

# How to Vet a SaaS Provider

# Vendor Considerations

- Privacy Policy
- Encryption
- SAS 70
- Data Center
- SLA (no nines)
- Third party certification

# Privacy Policy

Vendors that publish their privacy policy provide users with full disclosure of the standards that govern the information and practices of the firm's website. A high quality vendor's privacy policy should be easily found on every page of their website.

# Privacy Practices Validation

Strong vendors disclose information practices and employ an independent auditor, such as TRUSTe, to review all privacy practices for compliance.

To ensure enforcement of a SaaS vendor's privacy policy, look for an auditor's logo such as TRUSTe.

# Encryption in Transit

Vendors who understand the serious nature of data security will utilize Extended Validation technology.

VeriSign's 128-Bit Secure Sockets Layer (SSL) with Extended Validation technology.

These 'super certificates' can only be issued by a select few very high-level 'certificate authorities.'

Each of these high-level issuers must undergo independent audits to confirm their compliance with special standards relative to their business verification practices."

To ensure use of Extended Validation technology, look for the green address bar:

# UPDATE *SSAE* No. 16*

- Will replace SAS 70 as the standard for reporting on service organizations in **June, 2011**
- The SSAE No. 16 was finalized by the Auditing Standards Board of the (AICPA) in January 2010.
- It was drafted to replace the SAS 70 as a more effective standard for reporting on service organizations, and to update the US service organization reporting standard to match the new international service organization reporting standard, ISAE 3402.
- For those service organizations that have a performed SAS 70 audit, minor changes will be required to effectively report under the new SSAE No. 16 standard. Details are limited.

* Statement on Standards for Attestation Engagements

# SAS 70 Type II Data Center

- SAS 70 (Statement on Auditing Standards Number 70) is an internationally recognized standard developed by the AICPA designed to provide a highly specialized audit of an organization's internal controls to ensure the proper handling of client data.
- Certification ensures that client data is protected in a data center that is using industry-leading best practices in information technology and security.
- Look for a data center that is a 100% U.S.-based SAS 70 Type II certified facility.
- In addition, make sure that the vendor does not allow anyone outside of the United States to ever have access to client data located in the data center.

# Elements of a Type II Data Center

- Air conditioning (humidity, condensation, static electricity, etc.)
- Raised flooring
- Back-up power
- Automatic fail-over at ALL levels
- Complete mirroring
- Fire protection (halon, etc.)
- Physical security (video, multi-factor ID, guards, man-traps)
- Sonet ring connectivity
- No “single point of failure”

# Cloud Infrastructure Elements

Self-healing:

- In case of failure, there will ALWAYS be a hot backup instance of the application ready to take over without disruption (automatic fail-over)
- Since there is an entrenched policy that says everything should always have a backup, when such a failure occurs and the backup becomes the primary, the system launches a new backup, maintaining complete reliability policies.

# No-Nines Availability

(99.999% is not good enough)

- SLA-driven:
  - The system is dynamically managed by service-level agreements that define policies such as how quickly responses to requests need to be delivered.
  - If the system is experiencing peaks in load, it will create additional instances of the application on more servers in order to comply with the committed service levels — even at the expense of a low-priority application.

# SAS 70 Type II Audit

- SAS 70 provides assurance that a vendor has **comprehensive systems** to ensure data security.
- Vendors that undergo such an audit are stringently evaluated on such elements as **systems, technology, facilities, personnel management,** and detailed **processes** for handling client data.
- At the end of a **six-month process**, vendors receive a comprehensive audit report that includes a description of their operational controls and a description of the auditor's tests of operating effectiveness.
- At **regular intervals after** the initial audit, vendors go through additional audits to maintain their SAS 70 Type II status.
- A high quality SaaS vendor will provide a copy of its comprehensive audit report, including a **description of operational controls** and auditor’s tests of operating effectiveness.

# Third-party Certification of Security

Vendors should consistently monitor the security of their web applications using the best security auditing technology available to test web applications for vulnerability issues. Best practices include utilizing McAfee SECURE or another comparable program to test the website on a daily basis. When evaluating a SaaS vendor, look for the SECURE logo:

# Conclusions

# SaaS is Here to Stay!

*The CPA Technology Advisor's* 2009 Innovation Awards:

- Copanion (GruntWorx Pro)
- Bill.com
- SmartVault
- CCH (IntelliConnect)
- Capital Confirmation

The Sleeter Group's 2009 Awesome Add-on's:

- BigTime
- SmartVault
- Bill.com

# Bottom Line

- The Cloud is here
- It is behind and supporting giant companies like Google and Amazon
- CCH, Thomson Reuters and Intuit have ALL announced SaaS service roll-outs [**NOTE**: *TR & Intuit also actively support SaaS-ified ASP options*]
- These companies are offering “pay as you go” plans for developers and users to leverage their Clouds.
- The costs are very low, flexible (if you need more you get it and pay for it), and rugged, often backed by the strength of the provider itself
- This is an option worth looking at for both users and developers.

# Today's Real Life Examples

# SaaS* Offerings Tax & Accounting

- www.OrangeDoor.com
- www.Copanion.com
- www.SmartVault.com
- www.Bill.com
- www.QuickBooks.com
- www.Intacct.com
- www.XCM.com
- www.CCHGroup.com
- www.ThomsonReuters.com
- www.Speedtax.com
- www.ProfitCents.com
- www.Avalara.com
- www.PayCycle.com
- www.MethodIntegration.com
- www.AccountantsWorld.com
- www.CapitalConfirmation.com
- www.Intuit.com

# Questions?