High Tech, PLM, and the Cloud
A CIMdata Complimentary webinar
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Presenter's Profile
Your presenter's professional background

- Laila Hirr, High Tech Electronics Practice Manager
  - 25 years of experience in many areas of PLM
  - Has worked as Engineering Systems Manager in High Tech
  - Program management for variety of global PLM implementations
  - Executive leadership for PLM services companies
  - Holds an MS in Mechanical Engineering from Portland State University and a BS in Mechanical Engineering from San Diego State University

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What you will learn today

- You will receive a PLM refresher

- You will understand the terminology and perceptions of using the cloud to manage IP

- You will gain an understanding of the business value of managing in the cloud for high-tech

- You will be made aware of the exceptions to keep in mind with PLM in the cloud

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Our Mission...
Strategic management consulting for competitive advantage in global markets

CIMdata is the leading independent global strategic management consulting and research authority focused exclusively on the PLM market.

We are dedicated to maximizing our clients' ability to design and deliver innovative products and services through the application of PLM.

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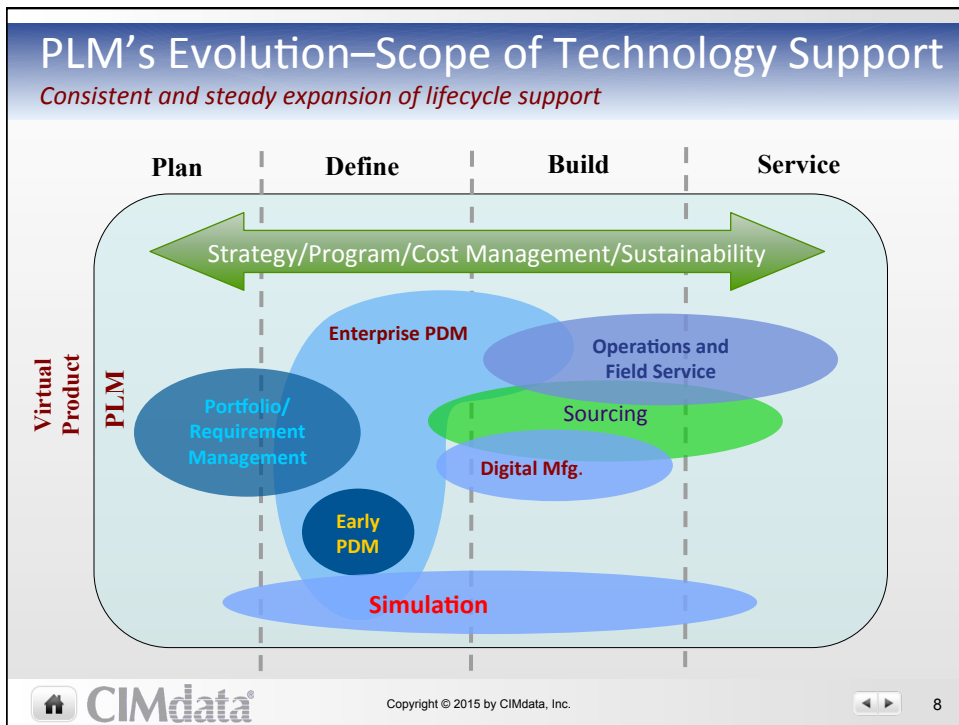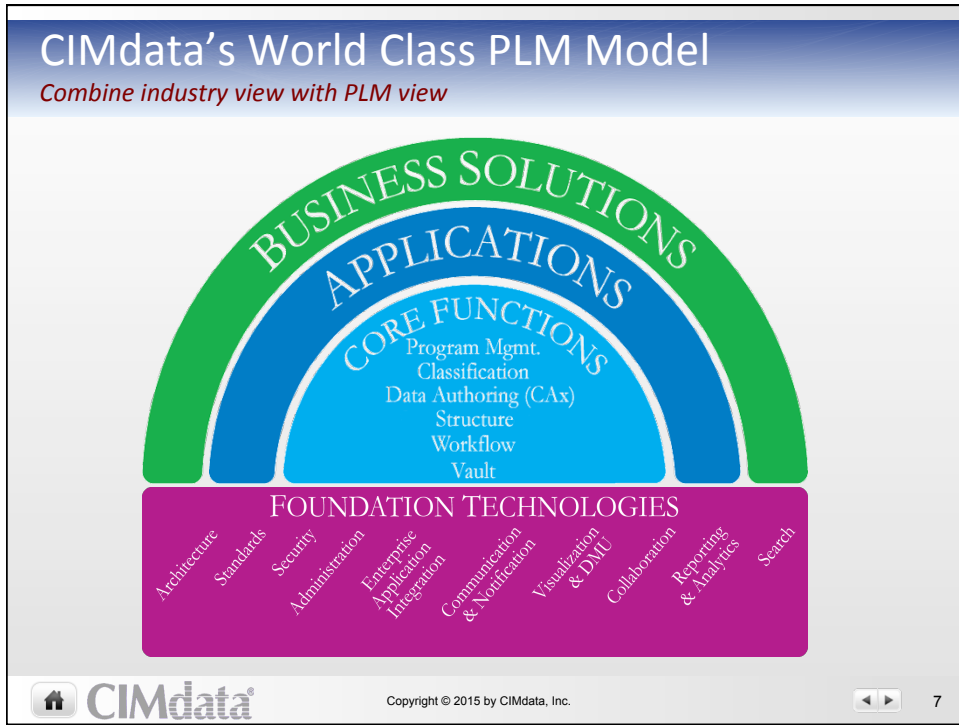
Agenda

- PLM Refresher
- Cloud Terminology
- Cloud Perceptions
- Business Value of the Cloud
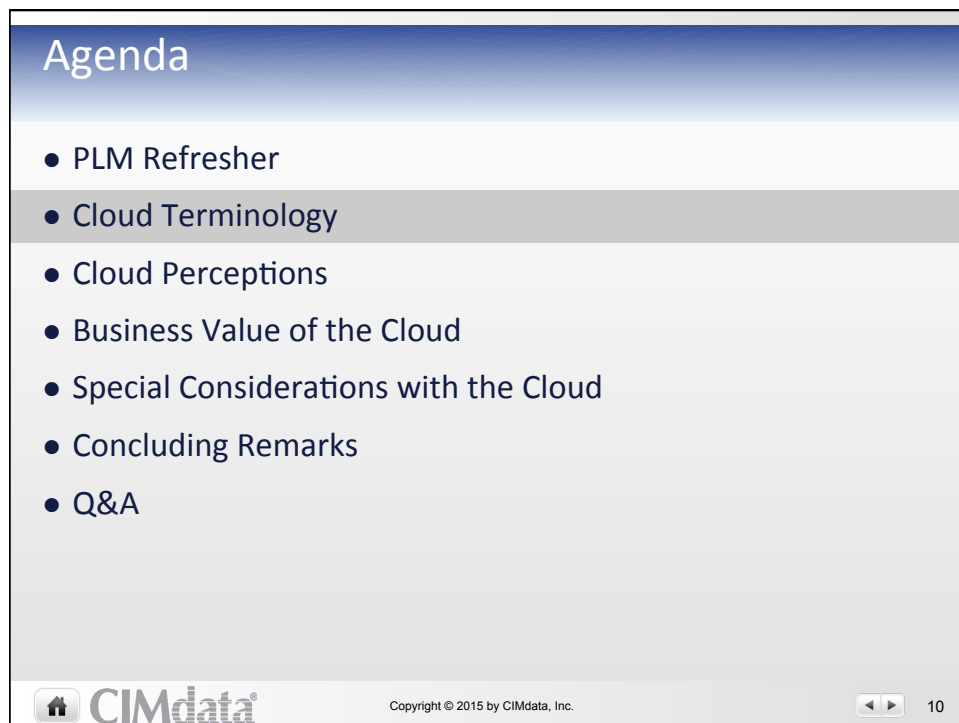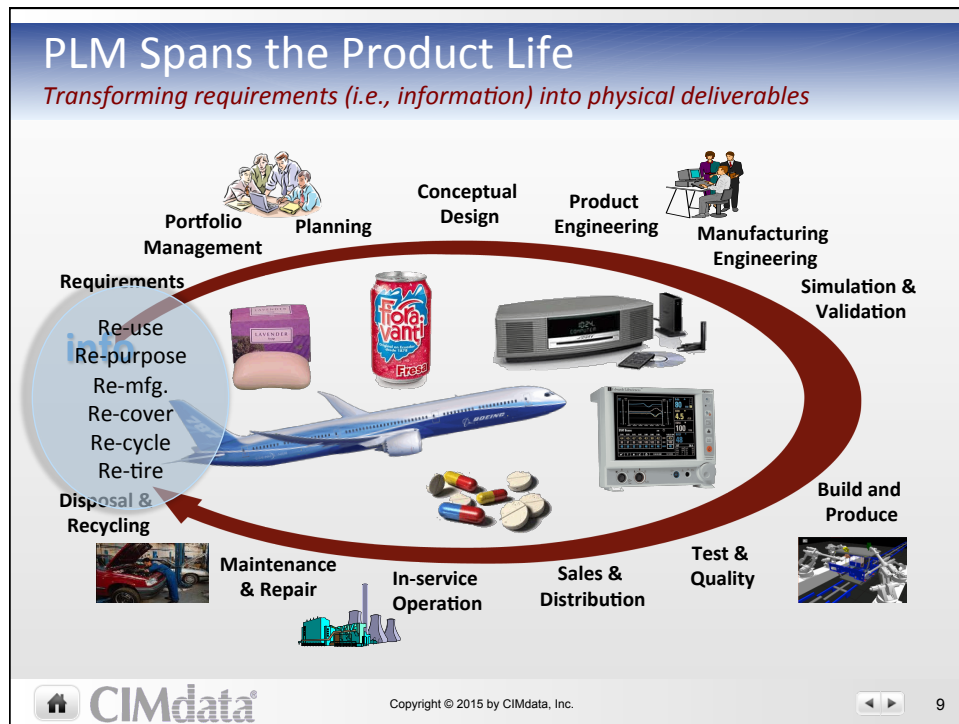- Special Considerations with the Cloud
- Concluding Remarks
- Q&A

Our Definition of PLM...

PLM – integrating people, processes, information, and business systems

- Strategic business approach
  - *NOT* just technologies
  - Consistent set of business solutions
- Collaborative creation, use, management & dissemination of product related *intellectual assets*
  - All product/plant definition information – the virtual product
    - MCAD, AEC, EDA, CASE, analysis, formulas, specifications, portfolio, docs, …
  - All product/plant process definitions – the virtual processes
    - Processes that plan, design, produce, operate, support, decommission, recycle, …
- Supports the extended enterprise
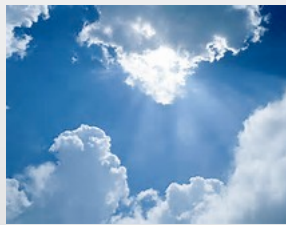- Spans full product/plant lifecycle, from concept to end of life

CIMdata's World Class PLM Model
Combine industry view with PLM view

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PLM's Evolution–Scope of Technology Support
Consistent and steady expansion of lifecycle support

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PLM Spans the Product Life
Transforming requirements (i.e., information) into physical deliverables

Portfolio Management

Planning

Conceptual Design

Product Engineering

Manufacturing Engineering

Requirements

Simulation & Validation

Re-use
Re-purpose
Re-mfg.
Re-cover
Re-cycle
Re-tire

Disposal & Recycling

Build and Produce

Maintenance & Repair

In-service Operation

Sales & Distribution

Test & Quality

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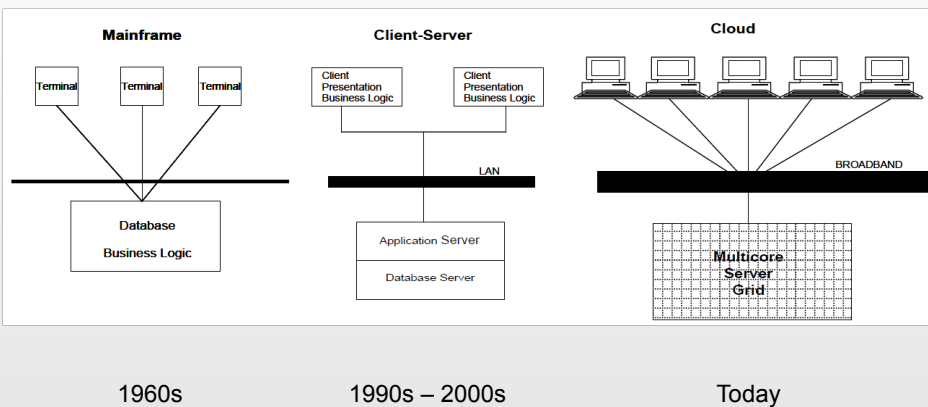CIMdata   10

What Does "The Cloud" Mean?
National Institute of Standards and Technology

Cloud computing is a model for enabling ubiquitous, convenient, on-demand network access to a shared pool of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.
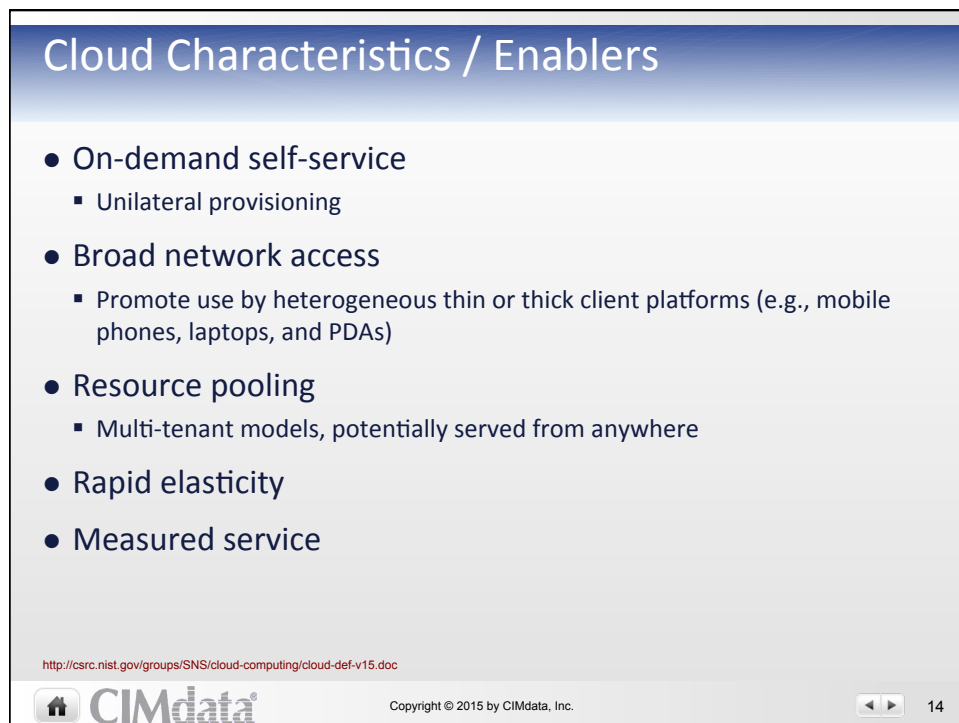
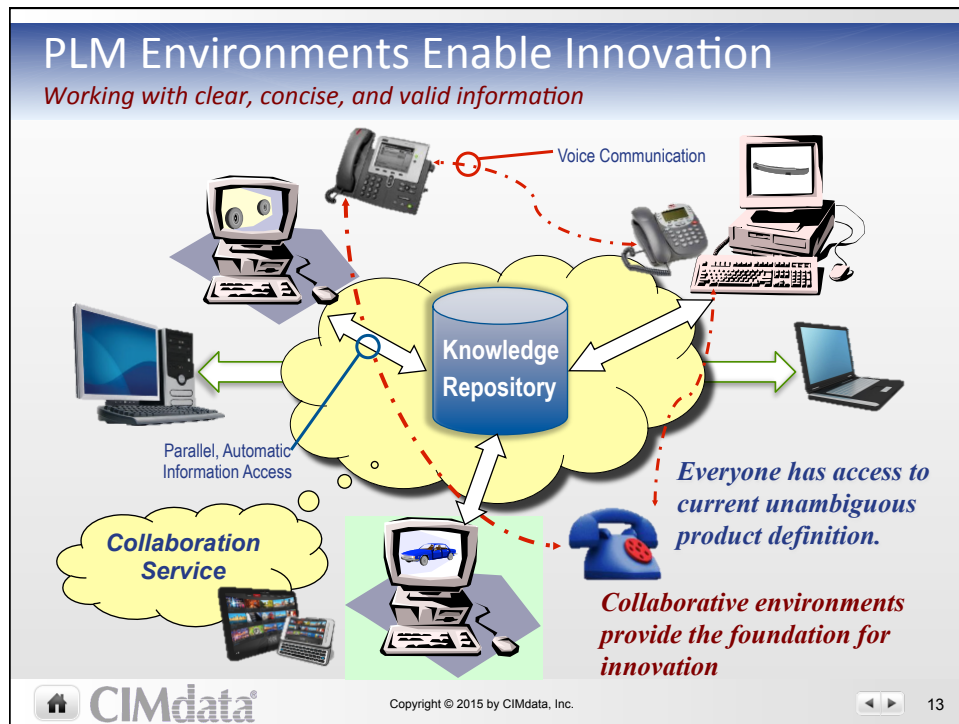## Cloud Computing
Back to the Future

Mainframe	Client-Server	Cloud
1960s	1990s – 2000s	Today

Merrill Lynch, "The Cloud Wars: from disruptive to pronounced to tectonic," 21 May 2010

PLM Environments Enable Innovation
Working with clear, concise, and valid information

Cloud Characteristics / Enablers

- On-demand self-service
  - Unilateral provisioning

- Broad network access
  - Promote use by heterogeneous thin or thick client platforms (e.g., mobile phones, laptops, and PDAs)

- Resource pooling
  - Multi-tenant models, potentially served from anywhere

- Rapid elasticity

- Measured service

http://csrc.nist.gov/groups/SNS/cloud-computing/cloud-def-v15.doc
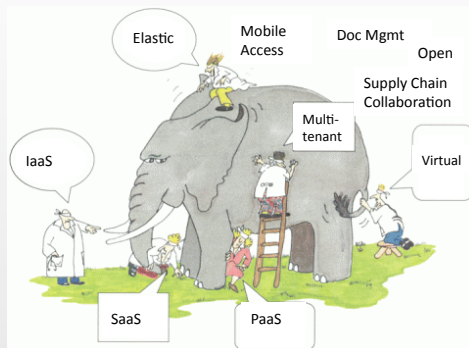
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What Does "The Cloud" Mean?
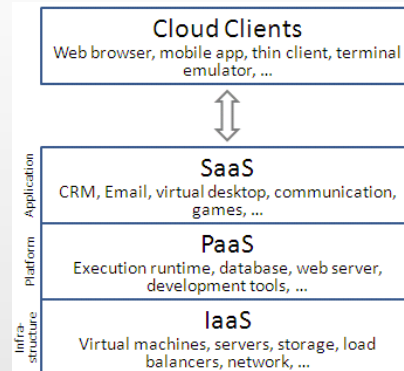*Generally "accepted"*

- Cloud computing is a general term for the delivery of hosted services over the Internet
  - Public
    - A multi-tenant environment where the hardware, storage, and network are purchased by multiple clients or companies
  - Private
    - A single-tenant environment where the hardware, storage and network are dedicated to a single client or company
  - On-Premise
    - Traditional IT – hardware, storage and network are internal to and fully controlled by corporate IT
  - Hybrid
    - A combination of public cloud services and on-premises private cloud – with orchestration and automation between the two

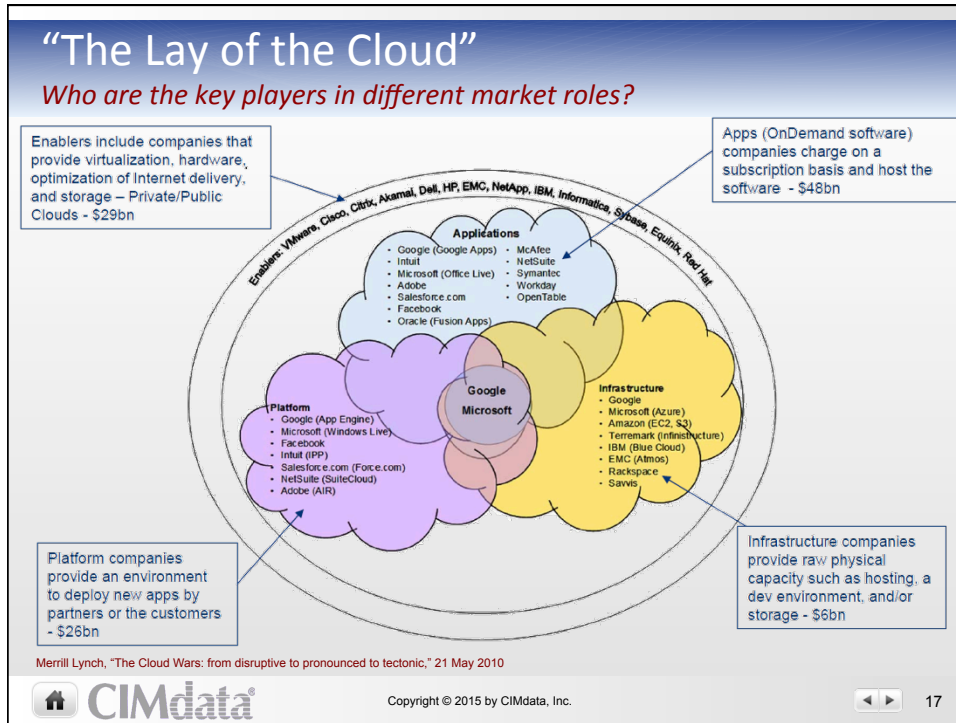## What is PLM on the Cloud?
IaaS? PaaS? SaaS?

Source: http://eugene.kaspirsky.com

Cloud Clients
Web browser, mobile app, thin client, terminal emulator, ...

SaaS
CRM, Email, virtual desktop, communication, games, ...

PaaS
Execution runtime, database, web server, development tools, ...

IaaS
Virtual machines, servers, storage, load balancers, network, ...

Source: http://en.wikipedia.org/wiki/Cloud_computing

Social, Mobile, Analytics, Cloud (SMAC) & "aaS" – Lots of Overlap & Dependency

Cloud is the Enabler for Social, Mobile, and Analytics

"The Lay of the Cloud"

Who are the key players in different market roles?

Enablers include companies that provide virtualization, hardware, optimization of Internet delivery, and storage – Private/Public Clouds - $29bn

Apps (OnDemand software) companies charge on a subscription basis and host the software - $48bn

Platform companies provide an environment to deploy new apps by partners or the customers - $26bn

Infrastructure companies provide raw physical capacity such as hosting, a dev environment, and/or storage - $6bn

Merrill Lynch, "The Cloud Wars: from disruptive to pronounced to tectonic," 21 May 2010

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Is Cloud Usage Really Understood?
2014 Cloud Report from Netskope

40-50? ········ typical IT estimate

cloud apps in use in enterprise

397
on average, discovered by Netskope

In the Netskope Active Platform, we see an average of 397 cloud apps per enterprise—10x IT's estimate. In addition, 77% of those apps are not enterprise-ready. They are rated "medium" or below in the Netskope Cloud Confidence Index™, an objective measure of cloud apps' security, auditability, and business continuity adapted from Cloud Security Alliance guidance.

77% of those cloud apps are not enterprise-ready

Source: http://www.netskope.com/netskope-cloud-report (Netskope develops cloud analytic tools)

Data and applications are already running on the cloud, Industrial companies need to understand this and manage issues and embrace opportunities

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Generational Perceptions
The foundations of the Fear, Uncertainty, and Doubt are different

- Social media generation
  - Easy access to information empowers conceptual and innovative thinking
  - "Strong" desire to have meaningful contributions
  - Willingness to hunt and gather
  - Open to out of the box thinking
  - Fuzzy boundaries between personal and business

- Brick and Mortar generation
  - Information is power - Contributor value is by personal expertise
  - Innovation is individualistic
  - Earn and protect expertise
  - Experiential history defines reality
  - Sharp lines between personal and business

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Cloud Misperceptions
General perceptions about cloud can be misconstrued to impact PLM

- Public requires self-management
  - Most PLM offerings in the cloud are full service

- Public implies shared access
  - Multi-tenant does not mean shared access – each tenant has it's own security model applied

- Loss of ownership of data
  - Your IP is your IP
  - Should make sure you've addressed EOL issues – export data, retire system etc in contracts

- On premise is more secure
  - Most Corp IT departments have limited security resources
  - Cloud offerings have dedicated teams and highly secure facilities

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Market Trends & Challenges
Lots of activity, fast moving

- IT appears to be struggling to keep up with Cloud
  - Security, Governance, and Integration challenges are well understood
  - Lines of Business (LOB) are moving ahead, can you help customers address cloud issues?

- IT is dramatically underestimating Cloud penetration in enterprise
  - LOB's are trying to solve problems, may be underestimating risks
  - Services they are choosing may not meet enterprise requirements

- Cloud growing fast
  - Cloud infrastructure growth is 2X+ Data center growth
  - Driven by LOB/developers within business

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Cloud Benefits & Barriers
Are these stronger or weaker in PLM?

- Benefits
  - Cost savings for the Cloud provider and customers
  - Pay-as-you-go
  - Resource flexibility
  - Ease of use and speed of deployment
  - Vendor accountability
  - Low switching costs

- Barriers
  - Unified standards still missing
  - Reliability and security concerns still remain
  - Organizational inertia
  - Vendor viability

SaaS Adoption Survey
Why? Agility the # 1 Driver

- SMBs moving faster than large enterprises
- While important, security and privacy issues mask other bigger challenges:
  - Risk aversion, reluctance to change
  - IT skills refresh, fear of job loss
  - Readiness of application architectures and workloads
  - Lock-in and integration

Sand Hill Group - Leaders in the Cloud-vendors ccv3

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Business Value of the Cloud

- CAPEX vs OPEX
  - Lower up front costs by avoiding capital expenses
  - Easier virtualization for pilots/prototyping

- Scalable/Elasticity
  - Storage
  - Licenses
  - Performance

- Reliability
  - Higher redundancy and replication

- Security
  - Higher concentration of dedicated security resources/expertise

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Business Value of the Cloud
Some common PLM level benefits

- Rapid access to upgrades and new capabilities
  - Typically can restrict what is enabled for end users
- Validation services for FDA
- SOX compliance
- Fast deployments
- Easy to add external partners
- "Temporary" joint development projects

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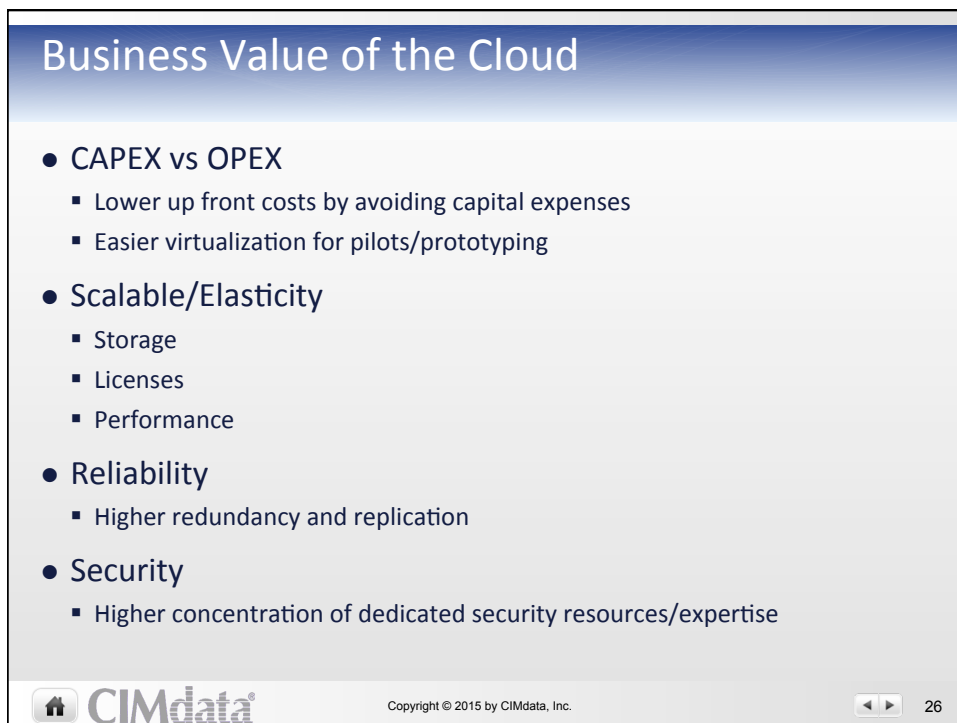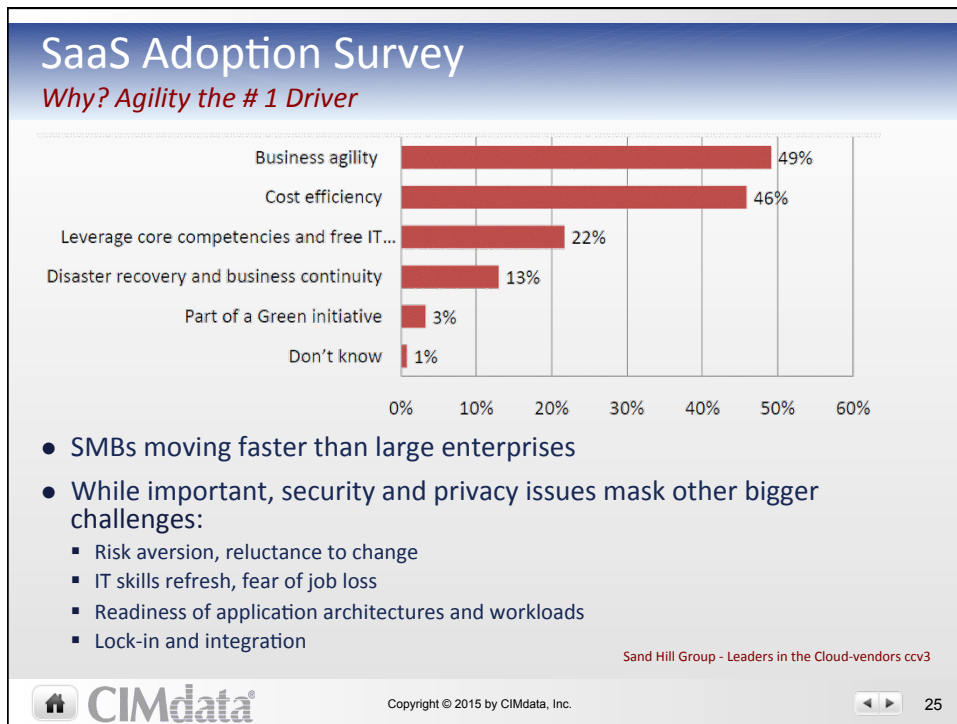- Business Value of the Cloud
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Special Considerations with the Cloud
Be sure to account for these requirements if you have them

- Global access
  - Replication servers – big value of the cloud is the lower cost of ownership here
- ITAR and/or Import/Export Controls
  - This may change your options – some vendors support, some don't.
  - More likely a private or hybrid approach requirement
- Integrations supported
  - ERP, CRM, etc – typically well supported – don't make assumptions
- Capabilities offered
  - Some offerings are 100% multi-tenant
  - Others are choice of multi-tenant and single-tenant with different offering impacts

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Leading PLM Solution Providers
All have solutions available on the Cloud (1 of 2)

- IaaS
  - All providers are leveraging IaaS
  - Still need internal expertise, shifts from running data center
  - Sometimes easier for business to manage vs. internal IT
- SaaS
  - Real savings comes from shared admin by multi-tenant apps
    - Not many out there
  - Per user pricing not elastic enough, opportunity for business model change?
- PaaS
  - No significant announcements
  - Recent CIMdata commentary identifies need for enterprise business platform strategy
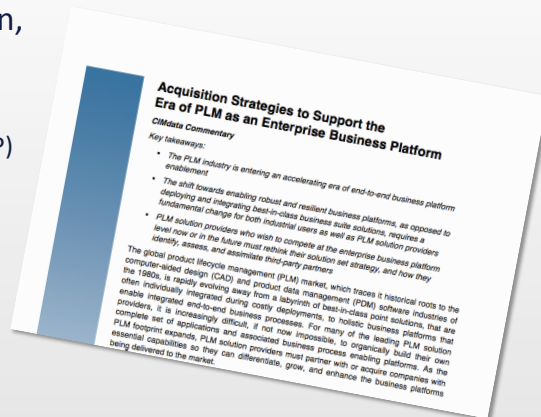
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Leading PLM Solution Providers
All have solutions available on the Cloud (2 of 2)

- Few multi-tenant cloud apps available that support resource elasticity, parallelization, SOA and are broadly deployed
  - Complexity of PLM (and ERP) when compared with CRM appears to be slowing cloud adoption

Acquisition Strategies to Support the Era of PLM as an Enterprise Business Platform

CIMdata Commentary

Key takeaways:

- The PLM industry is entering an accelerating era of end-to-end business platform enablement
- The shift towards enabling robust and resilient business platforms, as opposed to deploying and integrating best-in-class business suite solutions, requires a fundamental change for both industrial users as well as PLM solution providers
- PLM solution providers who wish to compete at the enterprise business platform level now or in the future must rethink their solution set strategy, and how they identify, assess, and assimilate third-party partners

The global product lifecycle management (PLM) market, which traces it historical roots to the computer-aided design (CAD) and product data management (PDM) software industries of the 1980s, is rapidly evolving away from a labyrinth of best-in-class point solutions, that are often individually integrated during costly deployments, to holistic business platforms that enable integrated end-to-end business processes. For many of the leading PLM solution providers, it is increasingly difficult, if not now impossible, to organically build their own complete set of applications and associated business process enabling platforms. As the PLM footprint expands, PLM solution providers must partner with or acquire companies with essential capabilities so they can differentiate, grow, and enhance the business platforms being delivered to the market.

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Concluding Remarks
What we've covered today

- Reviewed the fundamental definition of PLM

- Discussed Public, Private, On Premise and Hybrid Cloud

- Covered generational attitudes and cloud misperceptions

- Noted the common business benefits of the cloud

- Highlighted the PLM business benefits of the cloud

- Pointed out things to keep in mind before finalizing decision to go to the cloud

PLM in the cloud is real and is as mainstream as public, private, and hybrid offerings from many of the PLM solution providers.

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Cloud Forecast: Hazy, or Hot and Humid?
Cloud and SaaS major influence on "Back to the Future" theme

- What does this mean to the end user?
  - Will it be cheaper, more expensive, or cost neutral?
  - Do Clouds need to be private or public?
  - Are companies ready to put their intellectual assets in public Clouds?

- For solution suppliers side
  - Are they ready to move from traditional end user license agreements (EULAs) to service-level agreements (SLAs)?
  - What are the software quality and delivery implications of this change?

- For the channel partners
  - Losing their piece of license revenue?
  - Require different delivery skills, e.g., need to integrate on-premise with Cloud solutions

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HTE PLM Road Map 2015
Santa Clara Biltmore, June 16, 2015

Innovating in a Nanosecond World
How PLM makes Innovation and Collaboration for the HTE Industry Repeatable, Sustainable and Scalable

The high technology industry is cyclical in nature, has extremely fast development cycle times, and has highly complex and integrated business collaboration supply chain models. Additionally, high tech companies tend to have multiple technical disciplines and tools. Regulation and compliance issues come into play with increasingly complex restrictions that must be efficiently and accurately addressed. This PLM Road Map event will explore these challenges and others, their impacts that often result in design delays and subpar product innovation when innovation must accelerate in this increasingly complex environment, and how PLM can and should play a key role in enabling innovation.

- 1 day single track event
- 2 CIMdata speakers
- 2 Industry key note speaker
- 7 Industry speakers
- 6 Solution provider case studies
- Collaboration Café for breaks
- June 17th – Systems Engineering Knowledge Council workshop

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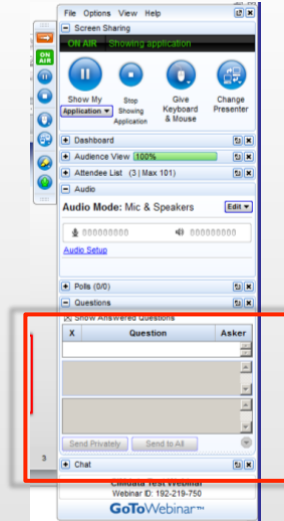- Concluding Remarks
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Questions?
Please use the GoToMeeting chat panel

- We're hoping that the anonymity of the chat window might help participants ask more questions

- If you want to ask a question on the record, we'll certainly let everyone know you're asking

- The most important thing is interaction – let us hear from you on the call

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