

Dr. Zhong TIAN 田忠

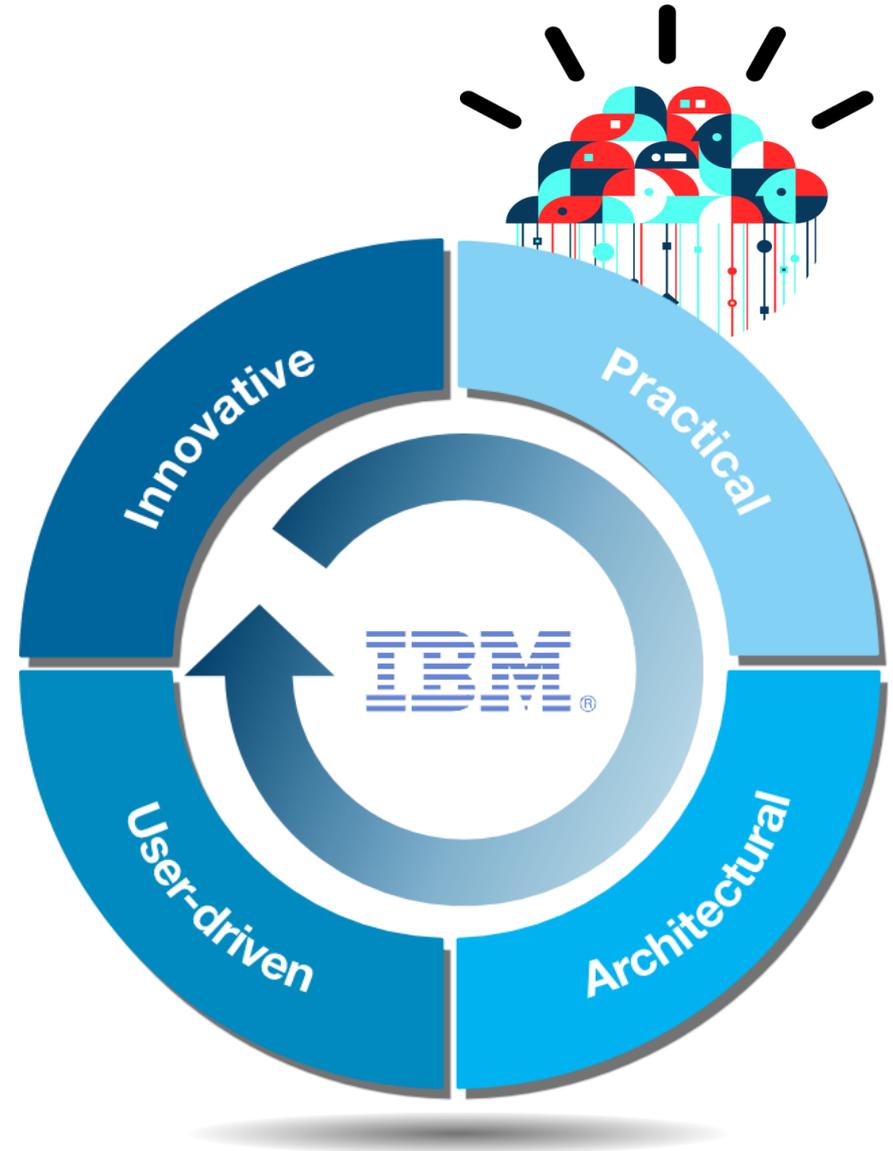
IBM Senior Technical Staff, Open Standards, Member of IBM Academy of Technology

Lessons Learned: Business agility through open standards & cloud



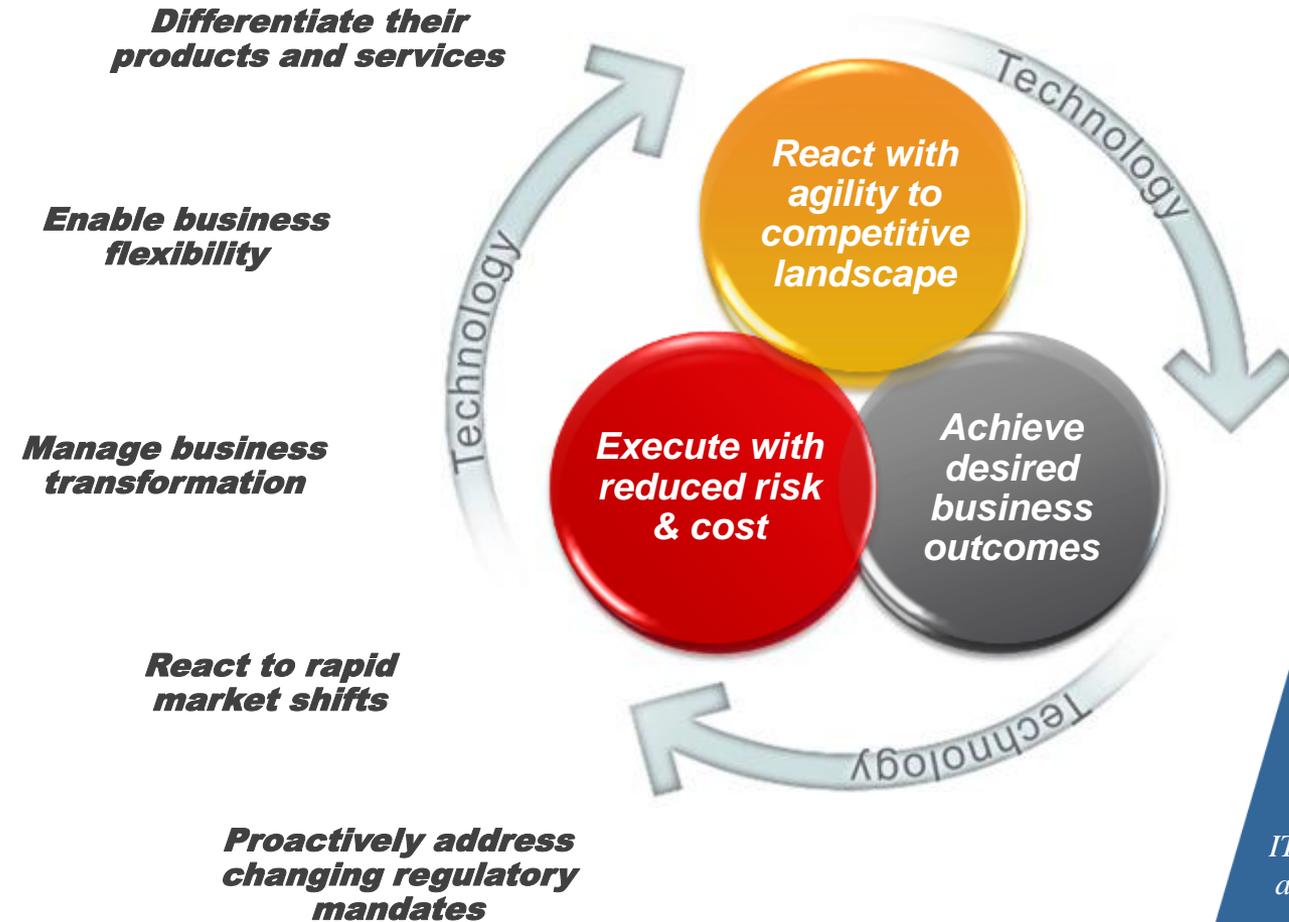
Discussion agenda

1. *It's not your parents standards process
- A new approach to standards drives
business results.*
2. *Business agility through open standards
& cloud*
3. *Lessons learned: 3 steps to successful
adoption of cloud computing.*



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Businesses globally are facing an unparalleled rate of change...



80%

of CEOs anticipate turbulent change & bold moves



64%

of CIOs are expected to work with business executives to drive innovation & manage change

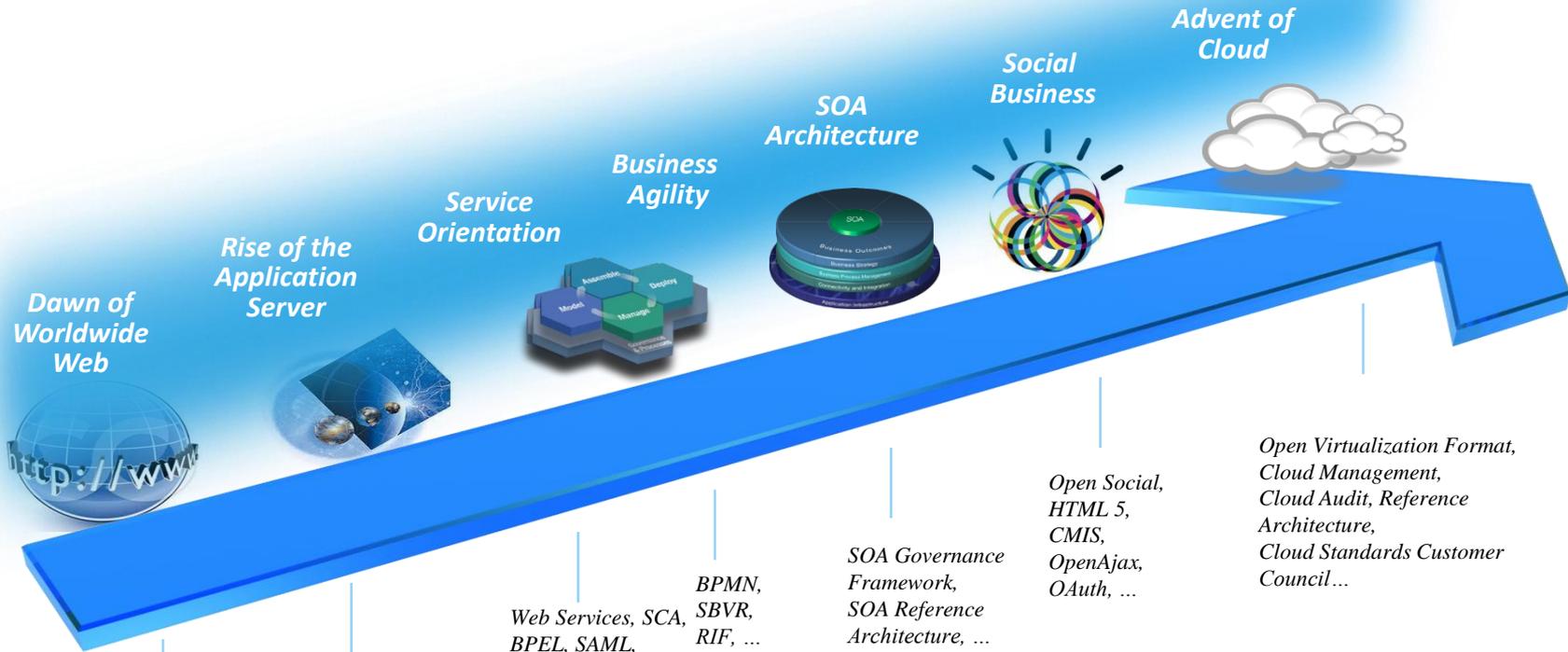


54%

IT budgets were spent on ongoing operations and maintenance costs, limiting investments in innovation

* Source: IBM CEO Study

Standards allow enterprises to manage & leverage change across market evolution cycles



Dawn of Worldwide Web

HTTP, HTML, WSFL, XLANG, REST...

Rise of the Application Server

Java, Java EE, XML, XML Schema, SOAP, WSDL, UML, Web2.0, ...

Service Orientation

Web Services, SCA, BPEL, SAML, XACML ...

Business Agility

BPMN, SBVR, RIF, ...

SOA Architecture

SOA Governance Framework, SOA Reference Architecture, ...

Social Business

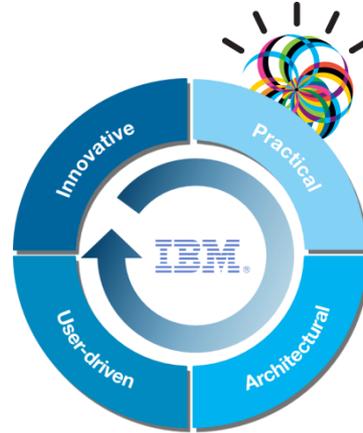
Open Social, HTML 5, CMIS, OpenAjax, OAuth, ...

Advent of Cloud

Open Virtualization Format, Cloud Management, Cloud Audit, Reference Architecture, Cloud Standards Customer Council...

Today's Focus: Cloud & social builds on and leverages the standards which preceded this market cycle

Open standards: Invention? or Reinvention?



reinventing standards

OR

using existing standards

vendor-driven standards

OR

customer-driven standards

proprietary social business tech

OR

interoperable social business tech

Or is it somewhere in between...?

A Smarter Approach to Standards Development

Interoperable. Flexible. Customer Driven.

Innovative

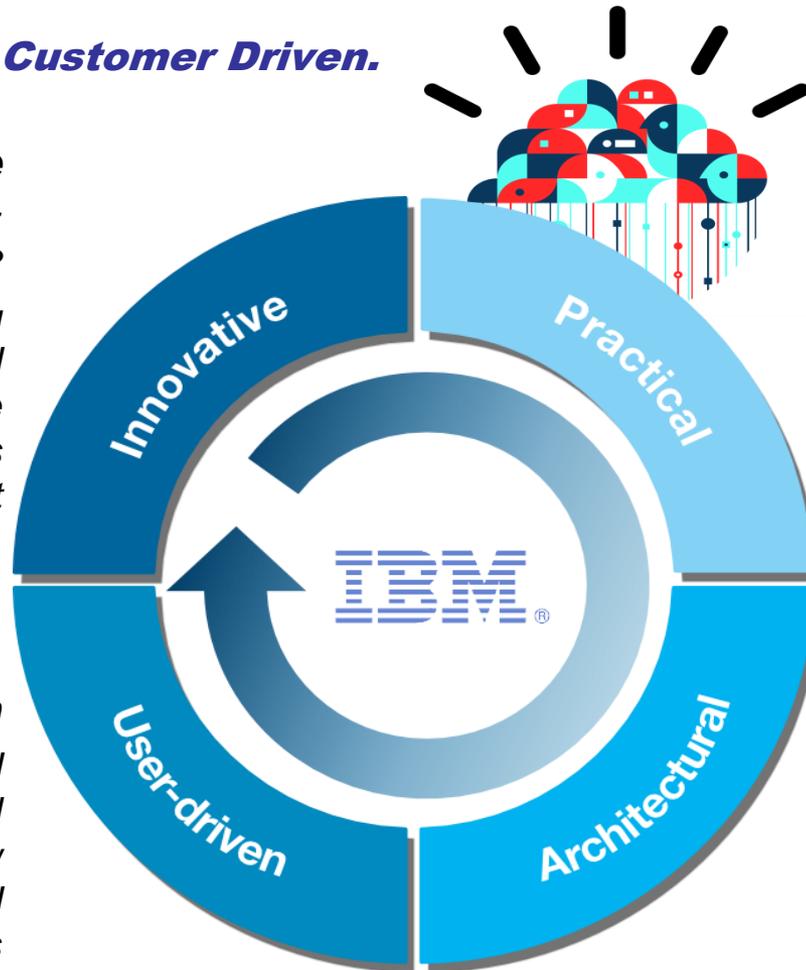
*Open standards for cloud:
Invention? Reinvention?*

*Cloud computing is changing
the economics of IT and
requires a rethinking of how we
all engage in standards
development*

**Cloud
Standards
Customer
Council**

User-driven

*The members of the Cloud
Standards Customer Council
create a cross-industry view
into market-leading Cloud
use cases and best practices*



Practical

*Business success is not
theoretical. Practical cloud
computing is grass roots
plain and simple: it involves
leveraging real world
implementations of standards
& open source*

Architectural

*Standards allow enterprises
to manage change across
market evolution cycles
extending the value of
customers' services based
architectures and
investments*

The standards landscape is changing and multiple standards development models are utilized and in many cases evolving.

Industry standards organizations

Industry like automotive, retail, and communications engage their ecosystems and embrace their common challenges answering the question: *How do we solve common problems with software standards?*

International standards organizations

In both national or international bodies, increasingly the global community is engaged to identify new technology directions that will yield the market growth critical for today's economy.

Ad hoc specification collaborations

Whether two companies or twenty-two developers, specification collaboration often starts with a simple idea. Increasingly innovative models of ad hoc collaboration are emerging to shape the IT landscape.

Software standards consortia

Software consortia continue to generate strong IT sector participation and generate the software interoperability standards critical to compete in today's integrated global economy.



IBM is helping the charge in evolving standards organizations to become user driven, practical, architected and innovative (e.g. OASIS, OMG, W3C, SC38)

Open Source, Open Standards, Open Architectures

What is Open Computing?



Open standards

- *Improving information sharing by simplifying integration of disparate technologies*
- *Promoting interoperability by using open published specifications*

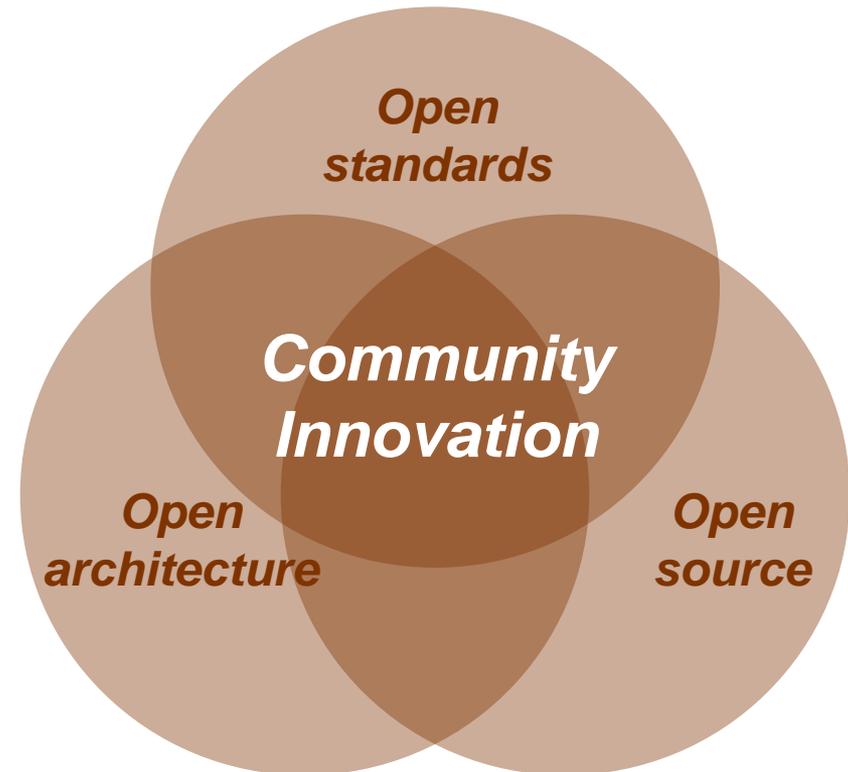
Open architecture

- *Increasing collaboration by easily extending business processes – eg SOA*
- *Innovating on top of common specifications*

Open source

- *Promoting innovation by leveraging community development*
- *Accelerating open standards adoption*

Open Computing



Cloud computing is changing the economics of IT and speeding the delivery of innovative products & services

Improve the speed, agility and dexterity of business

Improve security and compliance control postures

Deliver IT without boundaries

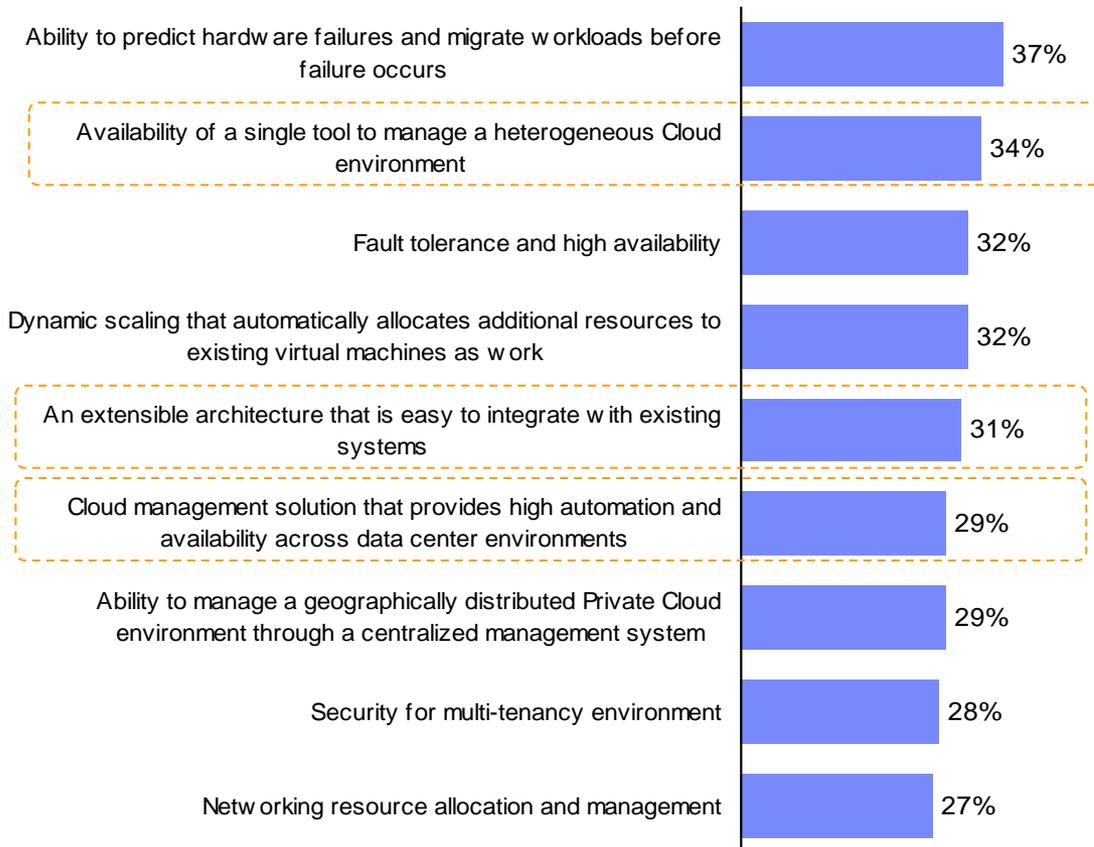
Deliver new business value in real time



Standardization, normalization, and reduction of unnecessary complexity

CIO: Significant growth in hybrid cloud is driving the need for interoperability and openness

Technology Features Most Often Rated As Differentiators Worth Paying Extra For
% Selecting



60%

of CIOs plan to use cloud, up from 33% two years ago

...the majority being hybrid environments

* Source: 2010 IBM STG Private Cloud Study (Q3-Q5b)

* Source: IBM CEO Study

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Non-IT Executives: Significant growth in hybrid cloud is driving the need for interoperability and openness

Exhibit 8

Barriers to cloud technology

% of respondents

Rank the top 3 barriers, if any, your company has overcome or still faces in realizing value from the cloud.

IT executives,
n = 462 **Non-IT executives,**
n = 264

	IT executives, n = 462	Non-IT executives, n = 264
Evaluating and managing security or business continuity risks	25	14
Managing regulatory risks or exposure	14	11
Developing a compelling business case for using cloud systems	12	14
Adapting existing business processes to cloud systems	11	12
Addressing issues with migration or interoperability with our company's current systems or data architecture	10	8
Lack of awareness or interest in cloud systems in our company	10	21
Adjusting technology governance processes for cloud systems (eg, policies for control, monitoring)	9	4
Developing the right set of skills to build, manage, and support cloud systems	7	13

60%

of CIOs plan to use cloud, up from 33% two years ago

...the majority being hybrid environments

McKinsey Global Survey results:

How IT is managing new demands

Oct 2010

* Source: IBM CEO Study



Architecture		✓	✓	✓			✓	
API	✓			✓		✓		✓
Virtualization	✓							
Management	✓	✓	✓			✓		✓
Storage						✓		✓
SLA		✓					✓	
Network	✓							
Security	✓	✓	✓		✓			



Dozens of new communities and organizations have formed around cloud standards including industries and governments

IBM Leadership / Participation

IBM Monitoring

The Cloud Standards Customer Council

<http://www.cloud-council.org>



- Provide customer-lead guidance to the multiple cloud standards-defining bodies
- Establishing the criteria for open-standards-based cloud computing

“CSCC Forms New Security Working Group”

- Feb. 2012 Co-chaired by The Kroger Co. and Boeing

- Develop high priority use cases for cloud security that reflect customer issues and pain points
- Identify Regulatory Compliance Capabilities and Options through Security Architecture Standards
- Identify “Best-of-Breed” Security Solutions for Customers of Cloud

“CSCC Forms New SLA Group”

- Feb. 2012 Co-chaired by Boeing & IBM

- Practical reference to help enterprise IT analyze service level agreements (SLAs)
- Checklist of key criteria for evaluating and comparing SLAs from different providers
- Highlight the role of standards to improve interoperability across different cloud providers

2012 Projected Workgroups & Projects

Use Cases: Entry, Provisioning, Orchestration & Continuous Delivery (DevOps)

Gap Analysis: DMTF CIMI (IaaS API) & OASIS TOSCA

Liaisons use case scenarios with DMTF, OASIS, SNIA, TMF, TOG

Health Care & Government Working Groups

300+

companies are participating

50%

operate outside the IT realm

2011 Deliverables:

- Practical Guide to Cloud Computing,
- Cloud Computing Use Cases,
- Cloud Computing Business Patterns.

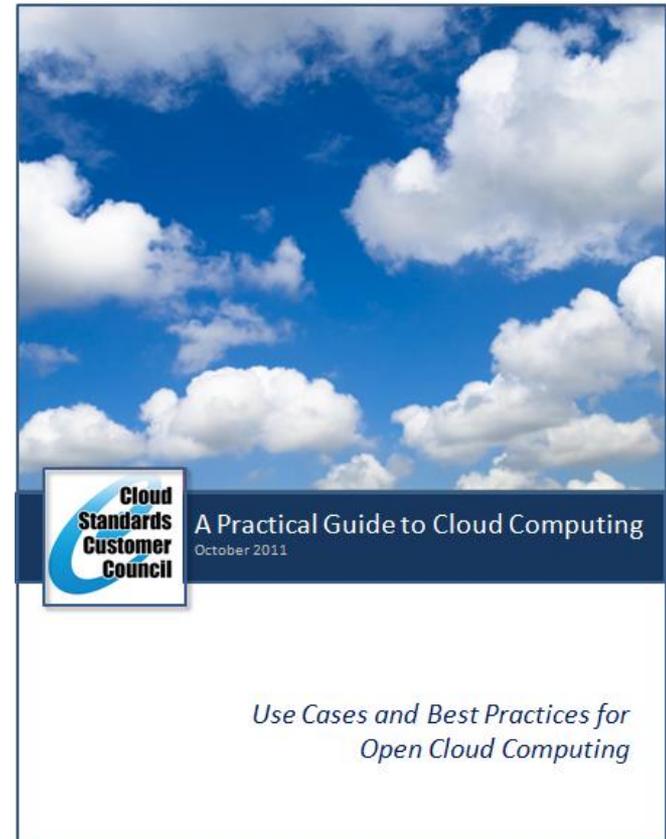
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Deliverable: CSCC Practical Guide to Cloud

*The **CSCC Practical Guide to cloud computing** details a prescriptive **plan & key considerations for success***

- ✓ Assemble your (cloud consumer) decision team
- ✓ Develop business case and an enterprise cloud strategy
- ✓ Select cloud deployment model(s)
- ✓ Select cloud service model(s)
- ✓ Determine who will develop, test and deploy the cloud services
- ✓ Develop a proof-of-concept before moving to production
- ✓ Integrate cloud solution(s) with existing enterprise services
- ✓ Develop and manage Service Level Agreements (SLA)
- ✓ Manage the cloud environment



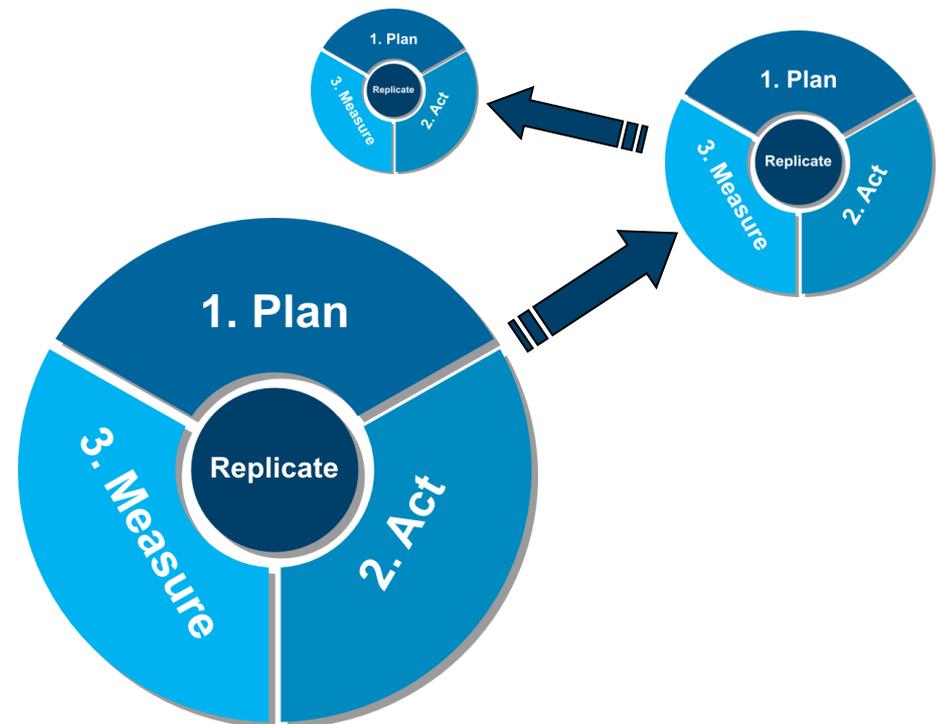
World wide launch & public release webcast hosted by Melvin Greer (Lockheed Martin – CSCC Steering Group Chair) on Oct 5, 2011

http://www.cloudstandardscustomerCouncil.org/CSCC_PG2CC-10-04-11.pdf

3 Steps to the successful adoption of cloud computing technologies

- 1. Plan** – Identify your cloud computing advocates and form a cross-functional team to develop your business case and articulate the expected returns from empowering processes with social capability
- 2. Act** – Develop a proof of concept by leveraging the appropriate technology that extend existing solution investments
- 3. Measure** – Obtain stakeholder agreement for the proof of concept and establish the metrics of success by which the project will be measured

Evaluate each implementation, replicate successes & build upon consecutive investments to grow a comprehensive cloud infrastructure program



Grounding the advice on a real success story!



*North Carolina State
University, circa 2004*

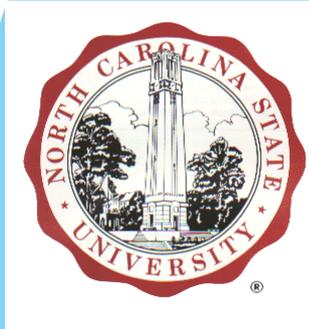
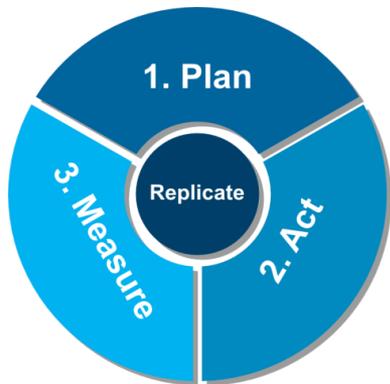
"We reached a critical point – at a time when we were confronting serious challenges to the campus' student computing model, the NC Supercomputing Center closed due to state funding cuts. Unfortunately, only 50% of the amount needed to solve both problems was available, leaving us with the option of doing both services poorly or inventing a novel solution without any reassuring evidence that one existed. We chose latter course of action, daunting being preferable to failure, and the rest is history."

*Mladen A. Vouk, Head of Computer Science, and Associate Vice-Provost for Information Technology
Samuel F. Averitt, Vice Provost Information Technology*

The successful adoption of cloud computing

Step 1: Plan

- *Establish a balanced IT / Business team, with members who are passionate about driving change & represent a diverse set of organizational interests*
- *Plan small, inexpensive, easy-to-action projects that are assured to be successful due to their simplicity*
- *Leverage each small success to build a transformational momentum that can be used to grow a larger program*

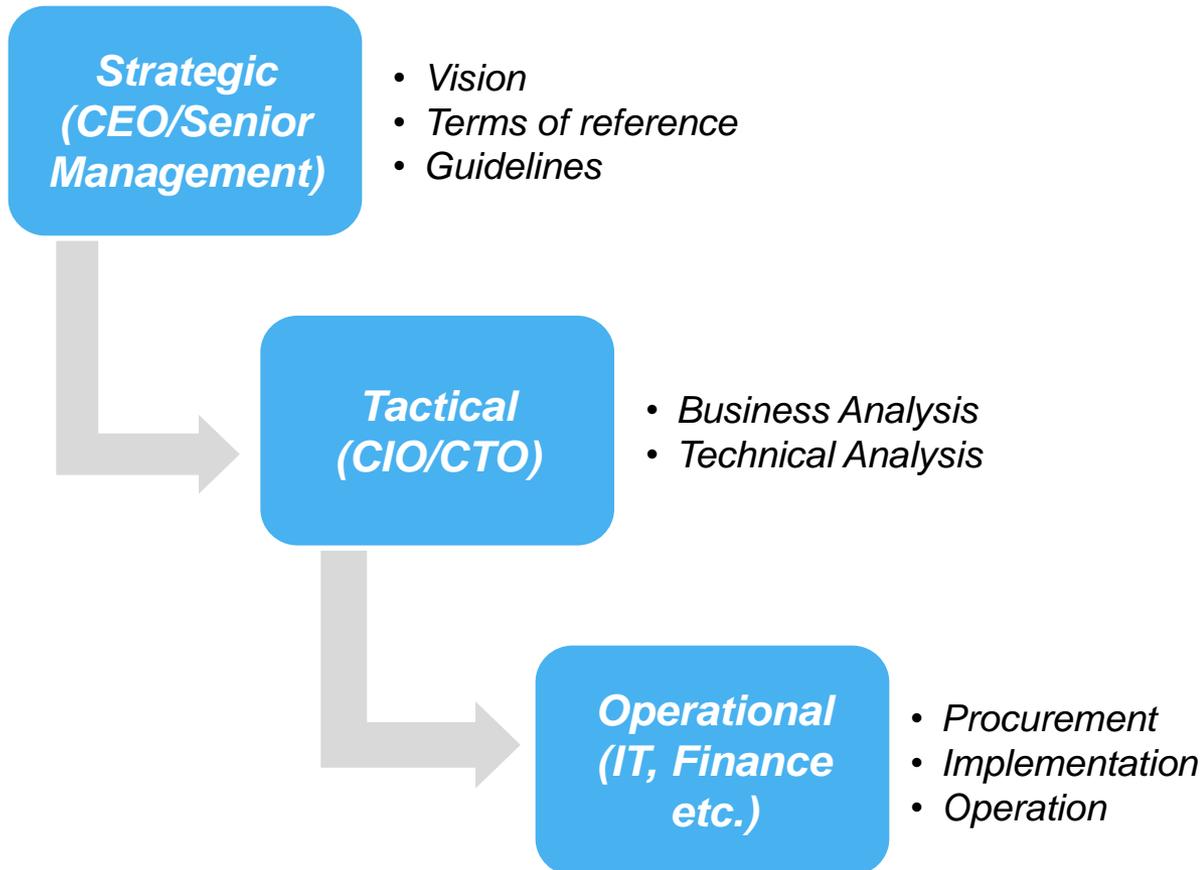


[The plan] would deliver the core functionality as soon as possible without the risks of a “big bang” approach.

*~Samuel F. Averitt
Vice Provost Information
Technology*

 **Assemble your (cloud consumer) decision team**

Bringing IT and line of business together to leverage the cloud



- **Business leaders will leverage cloud to increase sales/revenues**
- **Senior management leadership is critical**
 - Make final decisions
 - Accountable for success
- **Technical leaders drive detailed business and technical analysis**
- **Legal / Admin integral to team support**
- **Education is important at all levels and varies by recipient**



Develop business case and an enterprise cloud strategy

Key Elements of Strategic Planning

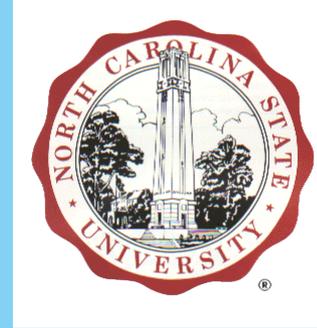
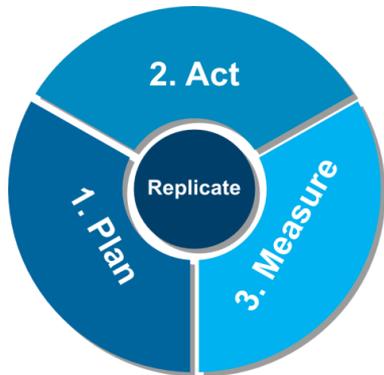
Educate the team	All team members (IT, business, operations, legal) must be educated on what cloud computing is and what it is not
Consider the existing IT environment	Develop a complementary cloud adoption strategy focusing on integrating and leveraging existing technologies and standards
Understand required services and functionality	Determine business justification and potential ROI and/or potential new revenue opportunities
Establish a long term plan	Reduce risk of vendor lock in and disconnected cloud services – avoid increased integration and maintenance costs
Identify clear success goals and metrics to measure progress	Define benchmarks for the existing service. Ensure objective of implementing new cloud service has been achieved. Metrics need to be agreed to by executives
Understand Legal/Regulatory Requirements	Consumers must understand responsibilities associated with national and supra-national obligations. Examples include: <ul style="list-style-type: none"> • Physical location of the data • Data Breach • Personal Data Privacy • Intellectual Property, Information Ownership • Law Enforcement Access
Track results for an extended time	Identify trends that may need to be addressed to improve existing service

Strategic plan reduces potential impacts and facilitates future decisions

The successful adoption of Cloud Computing

Step 2: Act

- *Keep an overall view of the architecture in mind, but keep projects small and manageable*
- *Extend existing architecture before building from scratch to help build confidence for more complex projects*
- *Execute tasks crisply and avoid sacrificing quality for the schedule*



...the advantage [of the solution] is its extensibility and re-use of existing servers. There is almost no limit to the range of services we can offer... we can keep adding functionality to improve the experience

~Samuel F. Averitt
Vice Provost Information
Technology



Select cloud deployment model(s)

Establish criteria for selecting the right deployment model

	Private (on-site)	Private (outsourced)	Public
Criticality of cloud services	Mission critical, security sensitive services	Mission critical, security sensitive services	Non mission critical services
Migration costs	Managing cloud software may incur significant costs	Lower costs since cloud hardware and software provisioned and managed by provider	Similar to private (outsourced) with additional security precautions to be taken into account
Elasticity	Limited resources are available. Computing and storage capacity fixed.	Extensive resources are available	Generally unrestricted in their size
Security threats	Implement same level of security as non-cloud resources	Techniques need to be applied to subscriber's and provider's perimeter	Limited visibility and control over data regarding security
Multi-tenancy	Clients would typically be members of the subscriber organization	Similar to those for Private (on-site) cloud	Single machine may be shared by the workloads of any combination of subscribers



Select cloud service model(s)

	Large Organizations	Small / Medium Business
IaaS - Primary consideration is capital expense reduction and access to IT capacity that would otherwise not be available	Private (on-site) provides a good initial transition to IaaS with relatively low risk Private (outsourced) and Public can potentially deliver added business value	May not be feasible given insufficient ROI associated with consolidating a relatively small number of existing IT assets A direct move to SaaS may be advisable for many SMBs
SaaS - Benefit from the “pay-as-you go” concept, with highly scalable offering flexibility to companies to provision and de-provision based on business needs	Consider SaaS initially for non-critical business functions to deliver improved ROI Adopt new disruptive SaaS solutions to maintain or extend competitiveness	Evaluate and identify business processes that can be enhanced by cloud-based applications to improve competitiveness with larger organizations
PaaS - Integrated development and runtime platform optimized for creating, deploying and managing cloud applications	Analyze PaaS offerings in terms of TCO / ROI and risks such as vendor lock-in, interoperability, existing IT infrastructure	Assess in-house development resource to justify the expense of a PaaS environment A direct move to SaaS may be the best alternative for many SMBs

Many organizations face the challenge of staging a gradual adoption of cloud capabilities, incrementally advancing their IT environment



Determine who will develop, test & deploy cloud services

Maximize resources to accelerate Cloud adoption

▪ *Options*

- *In-house development and deployment*
- *Cloud provider development and deployment*
- *Independent cloud service development provider*
- *Off the shelf cloud service offerings*

▪ *Critical factors*

- *Cost*
- *Responsiveness*
- *Flexibility*

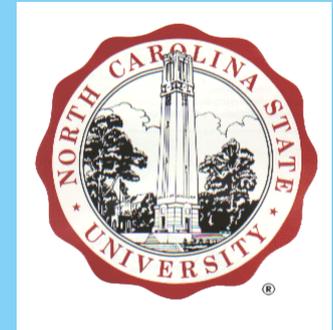
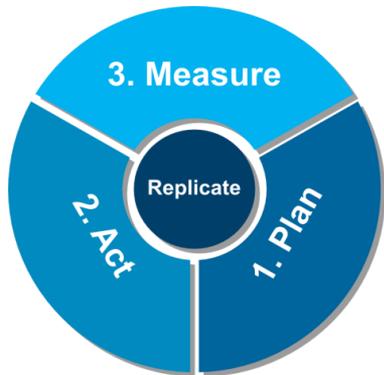
▪ *Considerations*

- *Available skills*
- *Start up considerations*
- *Updates to existing services*
- *Testing / deployment*

The successful adoption of Cloud Computing

Step 3: Measure

- *Identify clear, pertinent metrics that can be measured accurately without additional expense*
 - *Project cost vs. ongoing savings or revenue (ROI)*
 - *User experience metrics (response time, volume, usability)*
- *Ensure that measurements gauge success that is significant to stakeholders*
- *Measure consistently and honestly to make certain each project is truly having the desired impact*



Develop and manage Service Level Agreements (SLA)

Key Elements of SLA Management

Assign core SLA team

- Must consist of members from IT, business, operations and legal
- Must also understand the expectations of the cloud service

Develop SLA for contracted service

- Identifies elements which are critical to protecting the ongoing operations of the enterprise
- SLA sets expectations for when issues must be resolved, and spells out any penalties and an exit strategy should the cloud provider not be able to meet the terms of the SLA

Define critical processes with the cloud provider

- Process to ensure issues which cause service to perform outside of the agreed to performance levels are resolved consistent with the SLA
- Escalation process to elevate the visibility of issues, depending on impact, to the appropriate parties in both the cloud consumer and cloud provider organizations

Schedule regular review meetings with key stakeholders within the enterprise

- Objective is to review SLA status on an on-going basis
- Increasing important as more cloud services are being implemented and/or the number of cloud providers increases

Schedule regular checkpoint meetings with cloud provider

- Establishes ongoing dialogue to ensure problems are addressed before they become major issues
- Establish a trail on the status of the elements of the SLA

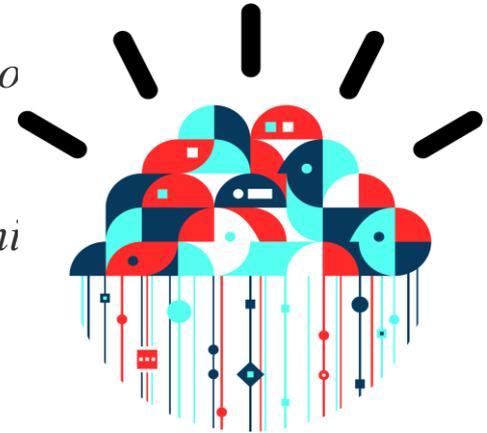
Maintain a continuous level of responsibility

- SLA does not absolve the cloud consumer of all responsibilities
- Ongoing vigilance required to ensure that enterprise users continue to receive expected level of service

Take action on your cloud journey

Contact your local IBM rep

- Visit the IBM Cloud *virtual briefing center* for more information on o capabilities <https://events.unisfair.com/rt/ibm~cloudlaunch>
- Use the *Cloud Adoption Advisor* to identify cloud adoption opportuni <http://www.ibm.com/cloud/advisor>
- View demos of *IBM Workload Deployer*
<http://tinyurl.com/iwdDemos>
<http://www.youtube.com/watch?v=c4YEvw6BqnM>
- Join the *Cloud Standards Customer Council* for practical advice on architecting your open cloud:
 - Member Application: <http://www.cloud-council.org/application>
 - Practical Guide V1: <http://bit.ly/oINkU2>
 - Use Cases V1: <http://bit.ly/xeGOPk>



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