Designing and Implementing Cloud Governance:
Cloud, and Cloud Governance, are Emerging Capabilities

Eric Marks
President & CEO
AgilePath Corporation
emarks@agile-path.com
Designing and Implementing Cloud Governance

Cloud Governance Introduction and Overview
- Cloud Governance Defined
- Cloud Governance in a Cloud Architecture Roadmap
- Cloud Governance in the Enterprise
- Cloud Governance High-Level Requirements

Cloud Governance Lifecycle Overview
- Key Dimensions of Cloud Governance
- A Closer Look at Cloud Governance Activities

Cloud Governance: Avoiding IT Disintermediation
- How Can IT Organizations Remain Relevant in the Age of Cloud?
- A New Role for IT Organizations?
- Cloud-Centric Leadership Principles Supporting IT in the Age of Cloud
Cloud Architecture and Interoperability Roadmap

Cloud Governance Lifecycle

- Cloud Vision & Strategy
- Cloud Reference Model
- Cloud Reference Architecture
- Interoperability & Portability Model
- Cloud Transition Architecture
- Cloud Prescriptive Architecture
- Implementation & Deployment
- Evolution & Sustainment

Cloud Governance Model
Most Industry segments are in early stages of Cloud Adoption
Five Reasons for Cloud Governance

- Enable “Business at CloudSpeed” and establish a **Cloud-Centric IT operating model** based on the speed, agility and cost of Cloud computing
- Enable **appropriate Cloud decision-making without friction**
- **Integrated** with existing Enterprise IT Governance processes, policies, boards and tools
- **Balanced** – appropriate coverage for key decisions, investments and risks while achieving the benefits of Clouds
- **Proactive to anticipate and prevent Shadow Clouds** and Unauthorized Cloud activities that expose organizational risks
• **Cloud Governance** refers to the decision making processes, criteria and policies involved in the planning, architecture, acquisition, deployment, operation and management of a Cloud computing capability

• The **Cloud Governance Lifecycle** describes the end-to-end requirements of Cloud Governance, from planning, architecture and deployment to bursting, switching Cloud providers, and offboarding from a Cloud
A Cloud Computing Reference Model (CC-RM) Overview

- CC-RM framework for discovering repeatable Cloud Patterns that address mission needs based on Cloud-enabled resources
- A robust framework for Cloud Modeling and Architecture efforts
- Four supporting sub-Models
  - Cloud Enablement Model
  - Cloud Deployment Model
  - Cloud Governance and Operations Model
  - Cloud Ecosystem Model
- Applied in Federal Government, DoD and Commercial Clients
Risks of Poor/No Cloud Governance

- Cloud Security Risks
- Cloud Proliferation and Sprawl (vs. VM Sprawl)
- Cloud Integration (post proliferation)
- Cloud Portability & Interoperability
- Cloud Vendor Lock-In
- Cloud Applications Governance – designing and migrating applications to appropriate Cloud pattern(s)
- Lack of Incentives for Consumers to Onboard/Consume Cloud resources
- Shadow IT and Hidden Clouds
Cloud in an Enterprise Governance Framework Context

Enterprise Governance Framework

- Strategic Alignment & Strategic Planning
- Compliance, Security & Risk
- Enterprise Requirements & Demand Mgt
- Program Mgt/PMO & Execution
- Prioritization & Focus, Investment Planning
- Resource Allocation, Funding
- Portfolio Mgt., Acquisition & Legal
- Business & Enterprise Architecture
Challenge: Inserting Cloud Governance into Existing Enterprise Governance Models

Cloud Governance

New Governance Requirement(s)

Cloud Governance
SOA Governance
New compliance requirements
Revised Investment Planning process

Corporate Governance
Enterprise/Strategic Governance
Bus. Ops Governance
IT Governance
Domain Governance
Lifecycle/Systems Engineering Governance
Cloud Governance SPOT Framework

- Scope & Stakeholders
- Policies & Processes
- Organizations
- Tools and Enabling Technologies
Scope & Stakeholders

• **Scope:** Is the Cloud enterprise, business unit, a project-level requirement?

• **Stakeholders:** Who “owns” your Cloud? Who is accountable for the decisions, the architecture, the deployment, the operations?

• **Stakeholders:** Business, IT, joint? How are they represented in the requirements, onboarding, access/consumption, management?
Cloud Policies (Decision Criteria)

- Strategic guidance (formal strategy and roadmap)
- Enterprise Architecture & Technology policies
- Acquisition, Contracts & Legal, Vendor Management
- Security and Privacy, Compliance
- Cloud Operational Policies: Access, Consumption, Bursting, Management, Monitoring
Cloud Governance Processes

• Map to Cloud Governance Lifecycle Model
• Strategy & Planning Governance
• Architecture, Technical and EA Processes
• Deployment and Onboarding Processes
• Access, Resource Management, Provisioning, Operational processes
• Runtime Processes: SLA management, fault alerts, monitoring, alarms, etc.
Governance Organizations

• Consumer Stakeholder Board (Cloud Steering Group?)
  – Obtain input for requirements, Cloud services, pricing, accounting and chargeback models

• IT Executive Team?
  – Cross-functional IT construct to ensure IT governance and oversight of Cloud (end-to-end)

• Cloud Operations Team
  – Day to day operations, management, resource management, provisioning, etc.

• Cloud Working Group?
  – Initial start-up activities, R&D/POC
  – Begins the Cloud adoption process prior to formalization of strategy
Tools of Cloud Governance

- Cloud Portal and Self-Service Access
- Cloud Service Catalog
- Cloud Billing and Accounting modules
- Cloud Lifecycle Management Tooling
- Cloud Services Portfolio and Contracts Management Tools
- Cloud Management & Monitoring Tools
- Application Design and Development for Cloud
- QA and Testing for Clouds and Cloud-centric Applications
New Tools of Cloud Governance

• Cloud Lifecycle Management Tooling
• Cloud Services Portfolio and Contracts Management Tools
• Cloud Management Tools
• Cloud Monitoring Tools
• SOA Management Tools
• Application Design and Development for Cloud
• QA and Testing for Clouds and Cloud-centric Applications
Cloud Governance Decomposition

Consumers

Cloud Strategy and Planning

Cloud Architecture, Design and Deployment

Cloud Acquisition, Vendor Selection & Contract Negotiation

Resource Provisioning & Management

Cloud Operations & Runtime Management

Providers
Cloud Governance Lifecycle Overview

Start → Cloud Strategy and Planning → Cloud Business Case → Cloud Pilot or POC → Cloud Program Go/No Go

Cloud Architecture, Design, and Deployment:
- Architecture & Standards
- Cloud Solution Design
- Cloud Security Model
- Cloud Integration → QA & Test

Cloud Acquisition and Contracting:
- Vendor & Solution Selection → Acquisition & Contracts → Contract T&Cs, SLA, QoS Defined
- Deployment and/or Onboarding → Access & Consumption

Resource Provisioning and Management:
- Capacity Planning & Demand Mgt → Resource Mgt & Provisioning → Metering, Billing & Accounting
- Cloud Mgt & Monitoring → Ops & Support → Maintenance, Versioning & Sustainment

Cloud Contingency Planning and Resource/Provider Management:
- Cloud Contingency Planning → Cloud Bursting → Cloud Provider Switching → Cloud Migration (Pub to Priv) → Offboarding

End
Cloud Strategy and Planning

Start

Cloud Strategy & Planning → Cloud Business Case → Cloud Pilot or POC → Cloud Program Go/No Go

Architecture & Standards → Cloud Solution Design → Cloud Security Model → Cloud Integration → QA & Test

Vendor & Solution Selection → Acquisition & Contracts → Contract T&Cs, SLA, QoS Defined → Deployment and/or Onboarding → Access & Consumption


Cloud Contingency Planning → Cloud Bursting → Cloud Provider Switching → Cloud Migration (Pub to Priv) → Offboarding

Finish
Cloud Contingency, Migration Planning & Provider

**Start**

1. Cloud Strategy & Planning
2. Cloud Business Case
3. Cloud Pilot or POC
4. Cloud Program Go/No Go

**Architecture & Standards**

5. Cloud Solution Design
6. Cloud Security Model
7. Cloud Integration
8. QA & Test

**Vendor & Solution Selection**

9. Acquisition & Contracts
10. Contract T&Cs, SLA, QoS Defined
11. Deployment and/or Onboarding
12. Access & Consumption

**Capacity Planning & Dmd Mgt**

13. Resource Mgt. & Provisioning
14. Metering, Billing & Accounting
15. Cloud Mgt & Monitoring
16. Ops & Support
17. Maintenance, Versioning & Sustainment

**Cloud Contingency Planning**

18. Cloud Bursting
19. Cloud Provider Switching
20. Cloud Migration (Pub to Priv)
21. Offboarding

**Finish**
Cloud Governance Includes Many Diverse Requirements

- **Application Engineering**: Software as a Service (SaaS)
- **SOA Service Engineering**: SOA as a Service (SOAaaS)
- **Data Arch. & Engineering**: Data as a Service (DaaS)
- **Platform Engineering**: Platform as a Service (PaaS)
- **Infrastructure Engineering**: Infrastructure as a Service (IaaS)
Private Cloud Governance

- Internal Service Provider dynamics, e.g. creating service catalogs, behaving as a “true” Service Provider vs. serving “captive” IT consumers
- Defining SLAs, QoS terms and Service contracts for Internal IT/Business consumers
- Establishing incentive models to come to the Cloud
- Implementing charge backs, fee for service models, other cost recovery models
- Provisioning resources to internal project teams
- Migrating legacy capabilities to the Cloud

The transition from an IT Shop to a Cloud Service Provider is not an easy transition.
Public Cloud Governance Requirements

• Security, Security and Security
• Contract terms, SLA and QoS definition
• Access to and consumption of a variety of Cloud resources per Contract
• Business assurance, continuity of operations, failover
• Support, Reliability and Trust
• Portability, Cloud APIs, Interoperability, Integration with other internal IT capabilities and resources
Hybrid Cloud Governance

• Integrating Cloud resources from multiple Cloud providers (Internal, external, et al)
• API Compatibility, Cloud Platform Compatibility, Portability & Interoperability
• Contract T&Cs, SLA and QoS management
• Security, Security and Security
• Bursting criteria, Switching, Portability, Interoperability and Integration
• Management, monitoring and business assurance across entire hybrid Cloud environment
Hybrid Cloud - IaaS

Internal Cloud Consumer

Internal IT Organization

External Cloud Provider

Internal IT Infrastructure Acquisition, Provisioning and Configuration Management Process
IT Disintermediation? Business Bypasses IT

Business Consumers bypass IT governance, infrastructure provisioning and acquisition processes.
Avoiding Disintermediation: The IT Organization of the Future

• IT must behave as a broker and integrator of IT resources and capabilities
  – External Cloud resources
  – Internal IT services
  – Outsourcing services

• IT must transition into a true business relationship manager working to deliver best-in-class services, solutions and resources regardless of provider

• IT must be unafraid of external service provider comparisons, and must benchmark against them

• IT must become a true trusted advisor to the business
New Role of IT Leadership: IT Resource Broker

- Internal Cloud Consumer
- External Cloud Provider
- Internal IT/Cloud Provider

IT Resource Broker & Business Relationship Manager

- Compute
- Storage
- SaaS
- PaaS
Future IT & Cloud Governance Lifecycle
Requirements: A New Role for IT?
Avoiding Disintermediation of IT

• How can IT become/remain relevant in the Age of Cloud?
• How can IT become/remain relevant by adding value to the business?
• The Resource/Relationship Broker concept is an emerging role in “Enterprise Services Computing”
• Combining Business Relationship Management, Portfolio Mgmt, Contacts/Acquisition and Resource Mgmt into a new IT Strategic Competency
Cloud-Centric IT Leadership Principles

- **Cloud-Centric Leaders will redefine the role of the IT organization** based on a model of integrated resource management, Cloud-centric governance lifecycle principles, and the relationship management/resource broker model.

- **Cloud-Centric IT will redefine its role as a unified broker of IT resources, services and capabilities, regardless of the source.**

- **Cloud-Centric IT invites comparisons with 3rd party service providers** to benchmark internal IT capabilities, processes, rates and customer satisfaction.

- **Cloud-Centric Leaders will establish internal benchmarks for Cloud services** to compare with those of internal and third party public Cloud service providers.

- **Cloud-Centric Leadership Organizations will achieve superior optimization of IT spending,** from internal providers, external/3rd party providers, and trusted managed services and solution partners.

- **Cloud-Centric IT will offer highly differentiated business and IT services to internal and external consumers,** essentially creating new revenue opportunities and new pathways to innovation.

- **Cloud-Centric IT Leaders will spur innovation** within the enterprise by seeking better, unique and differentiated IT service models, product and services for internal and external customers.
Things to Do Tomorrow

- **Establish clear, measurable business and IT goals** for Cloud computing (Cloud Strategy)
- **Align and design your Cloud Governance Model to achieve business goals**, e.g. “Business at CloudSpeed”, cost reductions, efficiencies, agility
- **Integrate Cloud Governance with IT governance** processes, policies, organizations and tools (PP/OT)
- **Balance your Cloud governance model** to achieve speed and capability enablement, without friction and politics

**Govern Clouds early and often.** Cloud Governance will ensure realization of business, IT and operational objectives. Risks of poor Cloud Governance are dire.
Thank You
Back-ups/Notes
Cloud Strategy and Planning

- **Scope & Stakeholders:** CIO, Business Stakeholders, CTO, Chief Architect

- **Policies/Decisions**
  - Should you adopt Cloud? How? When?
  - Strategy and Planning Process
  - Reference Model and Reference Architecture
  - Pilot/POC, Go/No Go Decisions
  - Billing, Accounting, Consumption, Chargeback Models (If needed)

- **Processes:** Strategy development, review and vetting process, funding and budgeting

- **Organizations:** OCIO, Enterprise Architecture, Business/IT Alignment

- **Tools:** N/A
• **Scope & Stakeholders:** CTO, Chief Architect, Enterprise Architecture, Infrastructure Engineering,

• **Policies/Decisions**
  – Enterprise Architecture
  – Security
  – Industry Standards, APIs, Interoperability,
  – QA, Testing, Assurance, Certification/Accreditation

• **Processes:** Enterprise Architecture, technology development, systems engineering, QA/Test

• **Organizations:** EA, Cloud Core Team/Working Group

• **Tools:** Cloud platform(s), Cloud management, QA/Testing tools
Cloud Vendor Management, Acquisition, Contracts & SLAs

- **Scope & Stakeholders**: CIO/CTO, Vendor Mgt, Contracts/Legal, IT Acquisition

- **Policies**
  - Acquisition & Vendor Management
  - Legal & Compliance
  - Contracts Management
  - SLA definition and conformance

- **Processes**: Acquisition, Contracts, SLA development, Deployment/Onboarding

- **Organizations**: IT Acquisition, Legal, OCIO/OCTO, Chief Architect, Cloud Working Group

- **Tools**: N/A
Cloud Operations, Management & Support

• **Scope & Stakeholders:** Cloud Operations Team, Cloud Consumers, OCIO/OCTO, Business Stakeholders

• **Policies**
  – Capacity planning, Demand Management
  – Bursting
  – Resource acquisition, management, provisioning, capacity management
  – Implementation of Accounting, Billing, Chargeback policies

  ▪ **Processes:** SLA monitoring, Cloud Management, Operations and Support, Escalation processes

• **Organizations:** Cloud Operations Team, Cloud Help Desk, Escalation

• **Tools:** Cloud management & monitoring tools, problem resolution, case management tools
Cloud Contingency, Provider & Migration Planning

• **Scope & Stakeholders**: Cloud Operations Team, Cloud Steering Group, OCIO/OCTO

• **Policies**
  – Bursting, switching and consumption policies
  – Capacity pricing strategy and authorization levels
  – Provider management, provider migration, offboarding

• **Processes**: Cloud operations processes, capacity management, bursting processes, oversight and escalation processes

• **Organizations**: Cloud Operations Team, Cloud IT Team, Cloud Steering Group

• **Tools**: Cloud monitoring, management, capacity planning, bursting support