**CCITP - Meeting Notes**
**Date: Thursday 3/2/17**
**Time: 2:00-3:30**
**Location: UMC 247**
**Zoom:** https://cuboulder.zoom.us/j/198557140

---

Next meeting is Thursday 4/13
*Please note: this strays from our usual schedule

Attendees:
Brent Phillips, Chris Bell, Aisha Jackson, Jim Fudge, Orrie Gartner, Gena Welk, Justin Suzuki, Ron Richler, Scott Griffith, Grant Matheny, Jacob Tafoya, Mannie Wayo, Eric Heltne

Remote Attendees:
Alan Fasick, Chuck Fischer, Dan Herrick, David Kohnke, Debra Weiss, Debbie Hamrick, Greg Hoppes, Janet Houser, Jeff Groth, Jnicholson, Joe Workman, Patrice Thoreson, Scott Maize, Steve Hart

Agenda:

| | Topic | Time | Speaker(s) |
|---|---|---|---|
| 1 | Introductions / Agenda Review / Updates on Action Items From the Previous Meeting | 5 min | Chris |
| 2 | LMS Evaluation and Selection Project Update | 15 -20 min | Aisha / Jim |
| 3 | Cloud Computing | 20 min | Orrie |
| 4 | Software License updates | 15 min | Justin |
| 5 | Discussion of today's topics | 30 min | Chris |
| 6 | Decision & Action Item Review | 2 min | Gena Welk |

We started late because there was a room scheduling mix-up. To prevent this from happening again, we have confirmed room reservations for meetings the rest of this semester and summer and have updated our processes.

**Agenda 1: Introductions / Agenda Review / Updates on Action Items From the Previous Meeting**

(led by Chris Bell)

Action Item follow up from last meeting:

**Item 1:** Get Orrie Gartner to come to CCITP to talk about Cloud - SAAS in the administrative realm, get Orrie's white paper

Result; Orrie is here and we'll hear from him in a few minutes!

**Item 2:** Justin/Licensing
- Justin may issue a survey of ITPs on software usage
- We want to learn about site license about Acrobat
- We want to learn about inCommon licensing about Acrobat Pro for Adobe11 (but we've heard it breaks)

Result: Justin is here to update us about these points.

**Item 3:** Follow up on Housing's issues with getting new hires receiving identikeys in a timely manner.

Result: Chris has been in touch with Patrice and Robert. The key issue is around HR record creation which then kicks off identikey creation. Housing IT and the OIT Identity Management folks (Kerry Havens) have already explored the issue, but are going to have a meeting to further investigate and we'll all share updates at the next CCITP meeting.

**Item 4:** ReExplore ITP access to ServiceNow for case visibility and reporting.

Result: Jon Budoff, the Service Manager of ServiceNow, has taken this on with gusto. He is exploring it again with ServiceNow and it seems he's cautiously optimistic about possibilities. He is pursuing two possibilities:
1. Read only access to cases in an ITP's department
2. Ability to add Work Notes to cases directly. Potentially with a yet-to-be-defined minimal license cost.

**Agenda 2: LMS Evaluation and Selection Project Update**
(presented by Aisha Jackson with support from Jim Fudge)

Aisha Jackson presents "Learning Management System (LMS) Evaluation & Selection Initiative: Faculty and Student Survey Results" (see attached)

- In March, Aisha's team will limit the candidate pool for our new LMS to 3 vendors
- In April, more in-depth analysis of the 3 vendors' proposals
- In May, a decision for campus LMS will be made

Question: May we persuade faculty to use a single LMS?
Answer: Unless that is mandated as a policy by campus, faculty are (and will remain) free to choose their own.

Question: Do we have a disaster recovery plan for LMS?
Answer: That is a requirement in the current RFP - We want to be sure the vendor has a stable plan for backups and disaster management.

**Agenda 3: Cloud Computing**
(presented by Orrie Gartner)

Orrie presents "IaaS Public Cloud Service Offering Project" (see attached)

OIT envisions that the service will be an extension in the cloud of what OIT provides to campus on premises.

Software License updates

**Agenda 4: Software License Management**
(presented by Justin Suzuki)

- Justin will survey ITPs about commonly used software on campus
- Campus is still in negotiations about Adobe CC and Acrobat licenses
- We will not purchase a MySQL enterprise license, but we may purchase MySQL in bulk (still to be determined)

---

Next meeting is Thursday 4/13
*Please note: this strays from our usual schedule

**Agenda 5: Discussion of today's topics**

5.2: In regards to Aisha's presentation (LMS)

ITP's get lots of D2L questions. Could they (ITPs) be informed so as to handle some of the D2L help questions?

5.3: In regards to Orrie's presentation (Cloud Computing)

Ease of access and “quick spin-up” sound promising, but should not be adopted by campus to the detriment of safety. ITPs would like reassurance about the backup plan and disaster recovery of the cloud computing resource.

This service is not necessarily useful for the average everyday user (at least in a transparent way). What are the services IaaS actually offers? Perhaps offer an example use case to show where this adds value to campus faculty.

What are the anticipated costs? What is the best estimate of the timeline for implementation?

Concern was expressed about the CLARITY of pricing. Users will want to know and understand what is included in the price paid. (For example, it might be free to upload content, but the user will be disappointed at best if s/he discovers there is a cost to access it later.)

5.4: Justin’s presentation

Adobe seems to be abandoning the individual machine license. It’s cumbersome (clunky and time consuming) for the ITP to upgrade Adobe for the user - Bruce has to package it, supply it to the ITP, and then the ITP has to become involved on an individual machine basis. (Ron will be in direct contact with Justin about this, and Janet would like to be included as well.)

5.7 Other

ITP question: I have a need to offer access to an on-campus server that can be accessed only while on campus or through the VPN. The access is required by a non-university affiliate.
OIT’s Answer: You can request a “sponsored account” for the user who is not associated with CU (by calling 5-help). This user will be issued an identikey. At that time they can download AnyConnect and enter their CU identikey and password to access UCB VPN.

## Agenda 6: Decision & Action Item Review

Action items:

1. Request Kerry Havens to attend a future CCITP meeting to discuss the process of identikey provisioning for new employees.
2. More information requested about ITP access to DNS

Outstanding questions:

1. Can ITP’s be more integrated into the LMS program (on some level) so they can knowledgeably field questions they receive (usually about D2L)? (to Aisha)

2. ITPs would like reassurance about the backup plan and disaster recovery of the cloud computing resource. (to Orrie)
3. What are the services IaaS actually offers? Perhaps offer an example use case to show where this adds value to campus faculty. (to Orrie)
4. What are the anticipated costs? What is the best estimate of the timeline for implementation? (to Orrie)
5. Concern was expressed about the CLARITY of pricing. (to Orrie)
6. Determinations about Adobe CC and Acrobat licenses. (to Justin)
7. How will MySQL licenses be purchased and/or offered to campus? (to Justin)
8. Is there a way to streamline Adobe updates for the end user? (to Justin)
9. Follow up on ITP access to ServiceNow for case visibility and reporting (to Jon B.)

---

Next meeting is Thursday 4/13

*Please note: this strays from our usual schedule

# Learning Management System (LMS) Evaluation & Selection Initiative: Faculty and Student Survey Results

CCITP Presentation

Thursday, March 2, 2017

# Project Goal

Evaluate Desire2Learn and other learning management systems (LMS) to identify the best LMS to meet CU Boulder's teaching, learning and administrative needs

# Project Process

1. Gather feedback from students, faculty, and staff about their experiences with D2L and other LMSs
2. Request proposals from LMS providers
3. Plan and conduct an evaluation of LMSs from the teaching, learning, administrative, and technical lenses
4. Select an LMS, and if D2L is not selected, manage the procurement process

# Student Data

# Data Sources

## MyCUInfo 2015 Usability Survey

- Survey data collected in Fall 2015.
- 3,713 submissions

## 2016 Online Experience Student Interviews

- 30-minute in-depth interviews about the online student experience.
- 16 students

# Data Sources

## WRTG 3035 Spring 2016 Report

- Report co-written by entire WRTG 3035 class.
- Students conducted literature review, survey, focus group, observations, case study interviews.

## Social Media Posts

- Searches for posts and comments related to D2L on Facebook, Twitter, and Reddit, originating from Boulder, CO, or posted to CU Boulder groups.
- Posts between May 2015 and November 2016 were collected.

# Data Sources

## Student Flash Survey

- Quick, in-person surveys conducted using an iPad and Qualtrics in November 2016.
- 96 students

## Student-Wide Survey

- Qualtrics survey was posted to D2L, MyCUInfo, and CU Boulder Today in December 2016.
- 687 students

# Overview of Findings

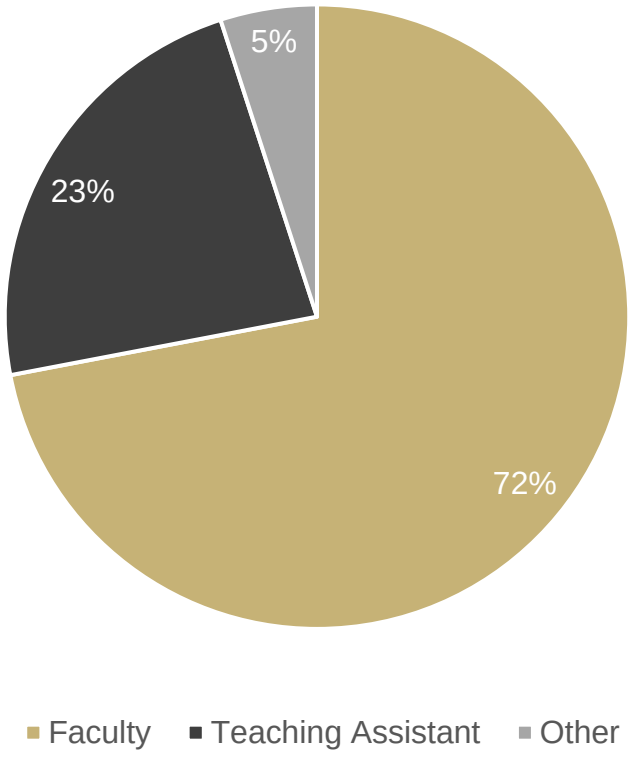
1. Students are generally satisfied with D2L.
2. Students feel that D2L's aesthetics are outdated.
3. Students are frustrated with D2L's lack of simplicity.
4. Students wish that faculty would use the D2L gradebook more effectively.
5. Students wish that all their faculty would use one LMS.
6. Students are frustrated with faculty's inconsistent configuration of D2L courses.

# Faculty Data

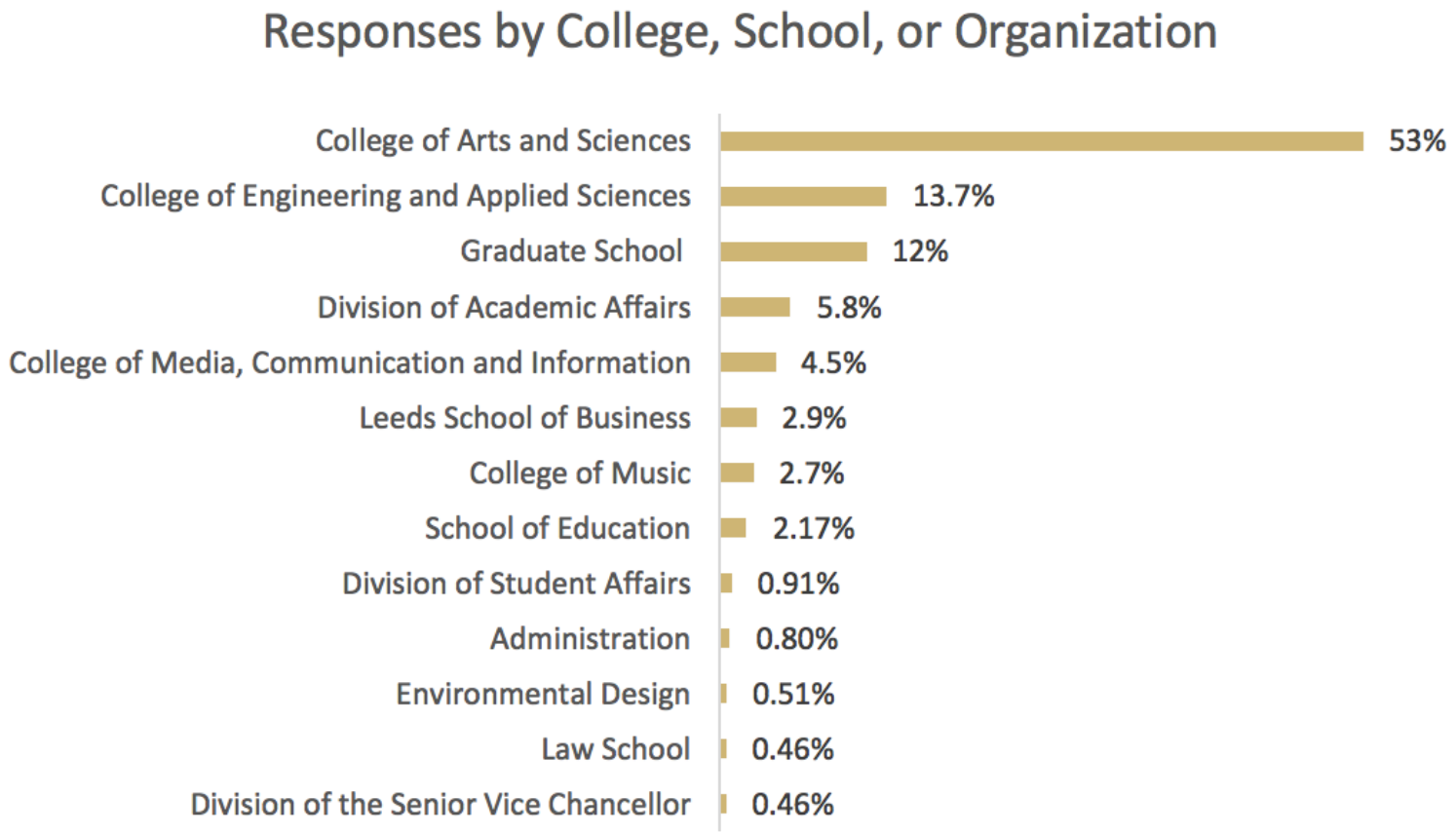
# Survey Responses

- Sent to 8,055 faculty and graduate students
  - 1,599 participants (19.85%) started the survey
  - 1297 completed (16%)

# Participant Roles



# Participant Demographics



# 20% of 798 participants noted that we should stay with D2L

“I would prefer not to have to learn another LMS when I believe D2L already adequately meets students' and my needs.”

“I dislike D2L, but have learned to use it. Thus I'd rather stick with it than try something unknown and probably not much better.”

# 10% of 798 participants noted that CU Boulder should leave D2L

”I don't know a single faculty member who likes D2L. I hope the negative reviews prompt the administration to drop D2L and switch to a more intuitive, easy-to-use platform.”

# 18% of 798 responses commented on the cost of switching

“I think D2L is adequate for my needs. I think another LMS will be adequate for my needs, but involve a learning curve, expense to the University, and logistical difficulty. I don't see why we would switch unless there is a real problem with D2L that I'm not aware of. At some point we are simply rearranging deck chairs by changing management systems every 5 years. They all have strengths and weaknesses.”

# Implications for Project

- Focus on user experience (e.g., ease-of-use)
  - Evaluation criteria in request for proposals
  - Encourage consistency across courses
- Evaluate the relative advantage of adopting a new LMS
- Better understand and address migration concerns
- Develop Registrar Web Grading/LMS Integration

# Next Steps

- March
  - Publish Faculty and Student Survey Reports
  - Initial RFP review
  - Narrow candidate pool
- April
  - Conduct detailed evaluation of systems
  - Vendor presentations
  - Sandboxes
  - User experience studies
- May
  - Select LMS

# Discussion & Questions

- Visit Project Website
  http://www.colorado.edu/lms

- Contact Us
  - Aisha Jackson
    aisha.jackson@colorado.edu

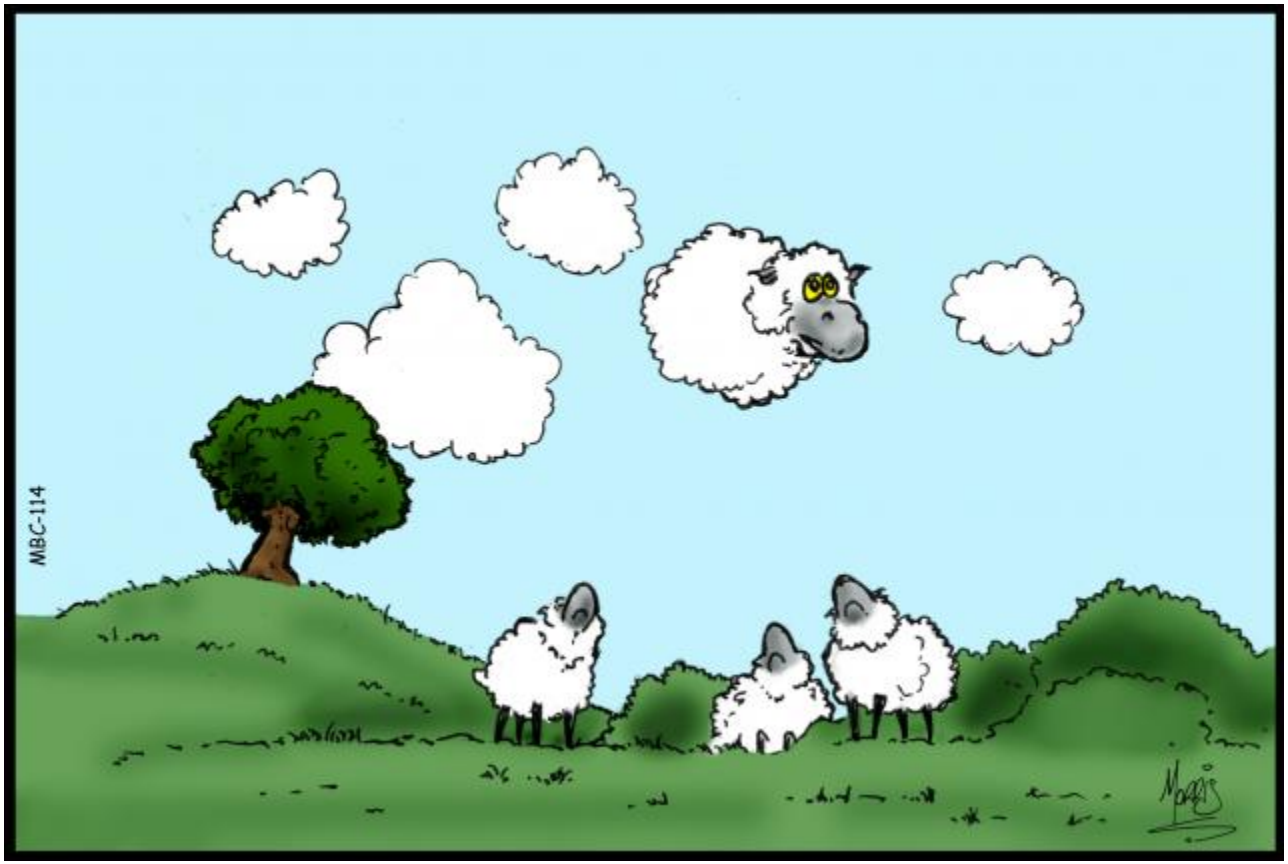
  - Sandra Sawaya
    sandra.sawaya@colorado.edu

# IaaS Public Cloud Service Offering Project

# Question

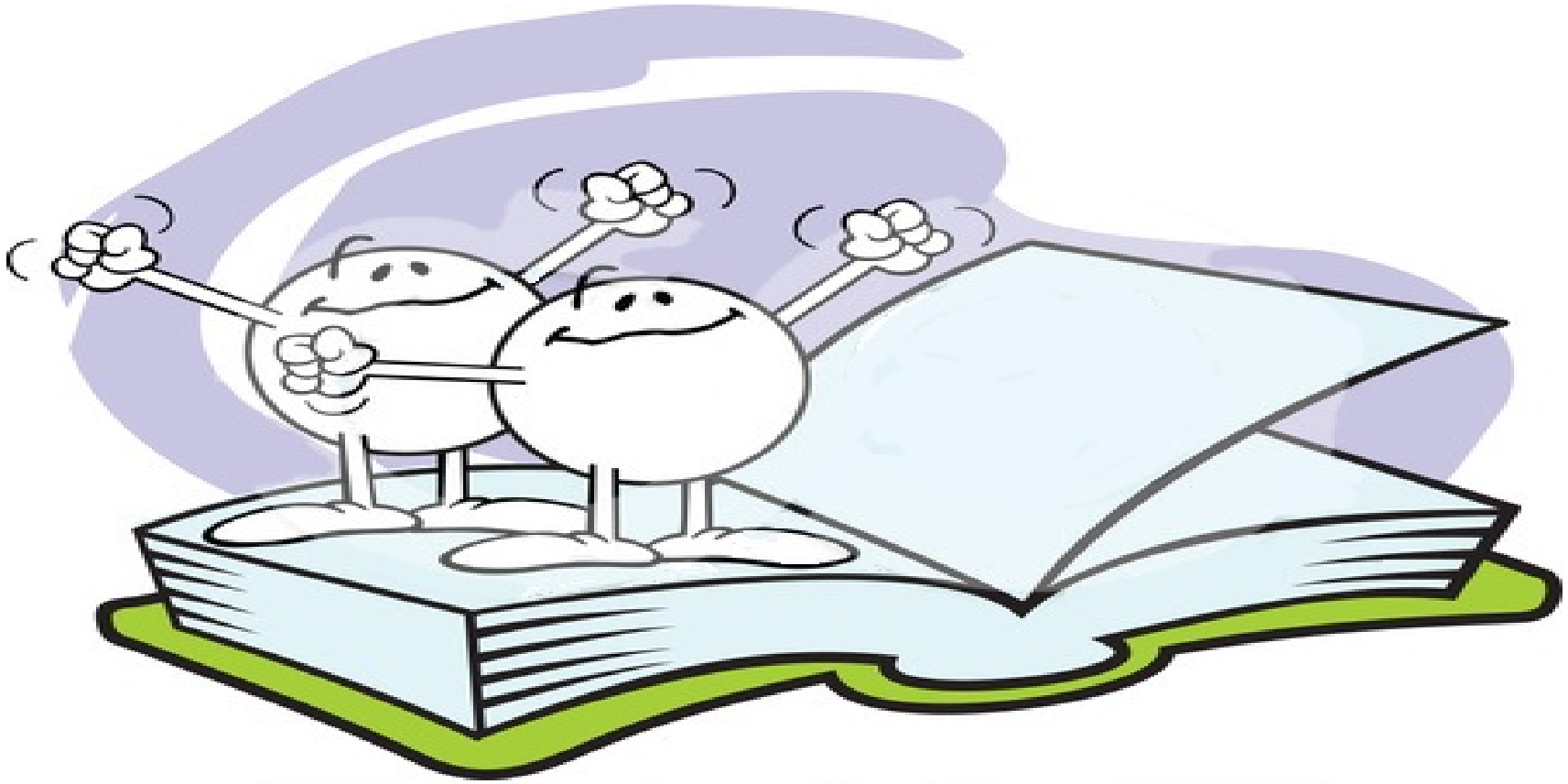
What do you call a sheep with no legs?

# A Cloud




Source: http://learnenglishkids.britishcouncil.org/sites/kids/files/MBC114.jpg

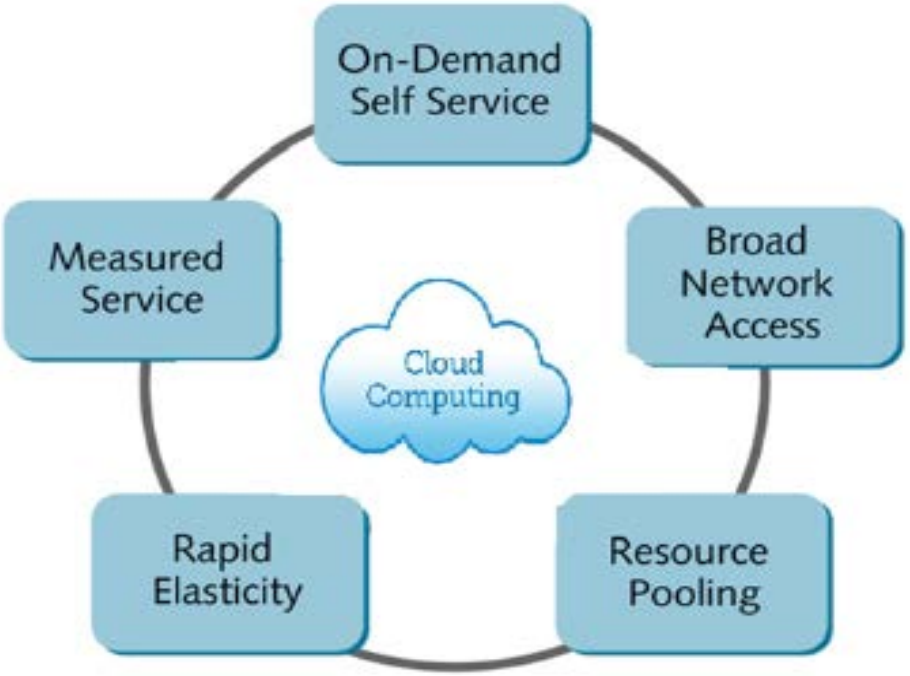
# Definitions



# Definitions: What is Cloud Computing

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 (NST 2011)

# Definitions: What is Cloud Computing



# Definitions: Cloud Service and Deployment Models

## 3 service models:

1. Software as a Service (SaaS)
2. Platform as a Service (PaaS)
3. Infrastructure as a Service (IaaS)

## 4 deployment models:

1. Private
2. Community
3. Public
4. Hybrid

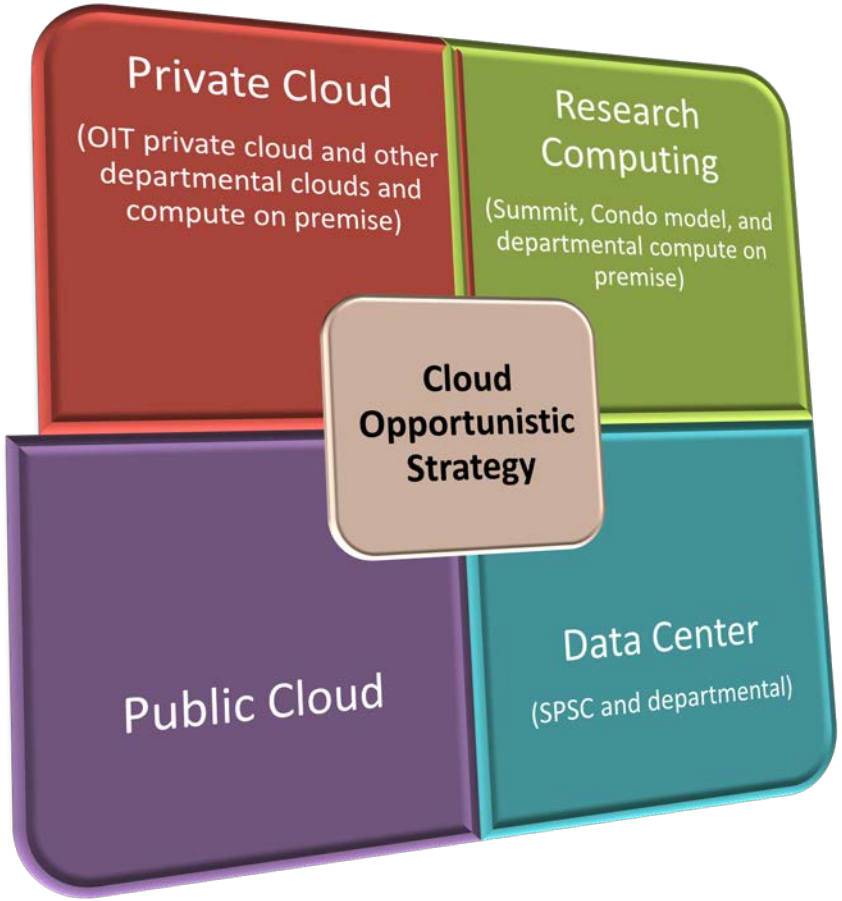
# Proposed Cloud Vision

The University will offer a multi-provider public cloud deployment service in a hybrid configuration providing cloud services for administrative, teaching & learning and research needs with a central point of contact acting as the broker of these cloud services.

# Proposed Cloud Vision (in English)

The University will offer a multi-provider public cloud deployment service in a hybrid configuration providing cloud services for administrative, teaching & learning and research needs with a central point of contact acting as the broker of these cloud services.

# Cloud Opportunistic Strategy




- Cloud Opportunistic Strategy prioritizes cloud utilization.
- Cloud services can fulfill many, not necessarily all, of an institution's computing needs, and reduces the dependency on physical assets.

# Project Goal

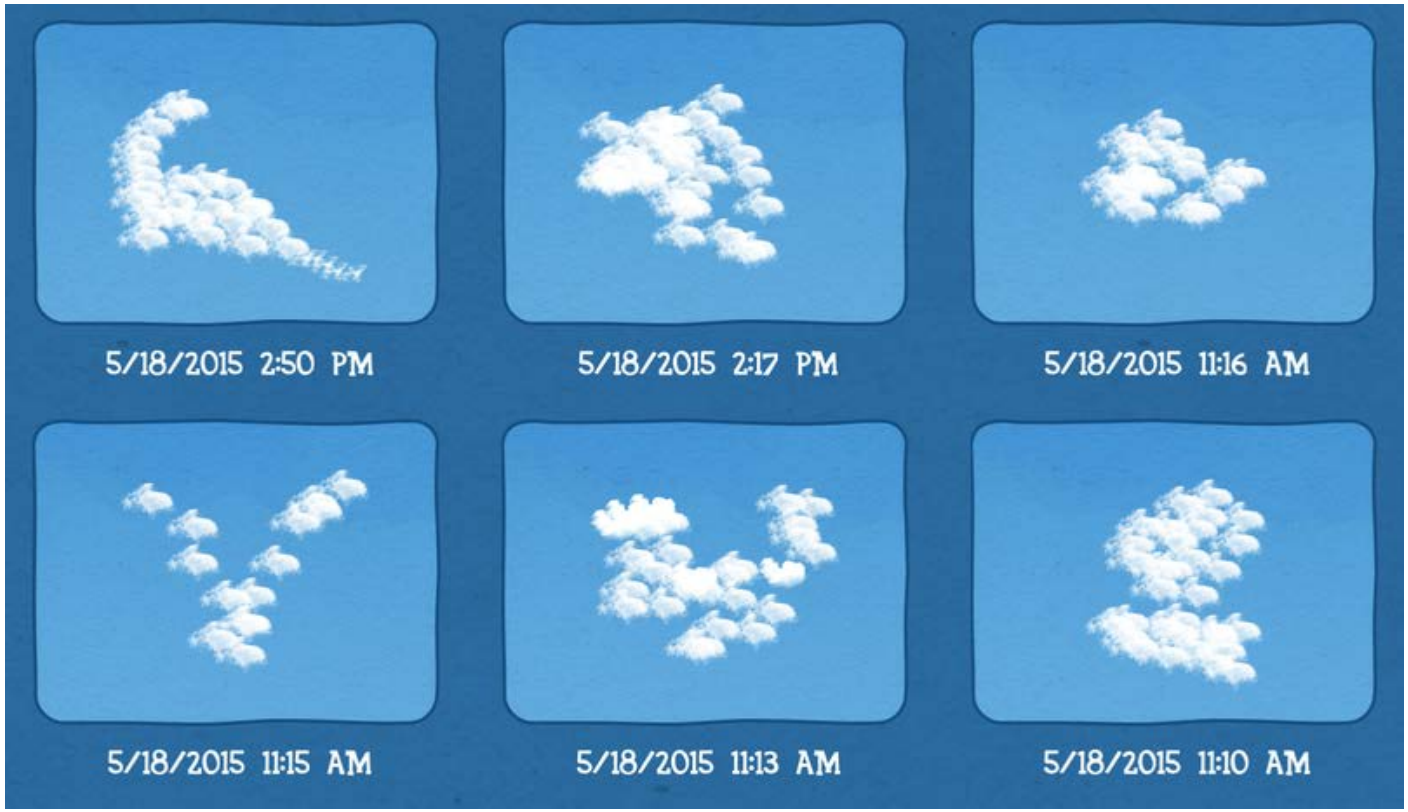
**Create a single provider public cloud IaaS service focused on the support of administrative and research computing needs for CU-Boulder with OIT acting as the provider and broker to campus for the cloud IaaS services**

*Ensure the vision is always kept in-mind and so the project will not implement anything to explicitly impede the ability of a hybrid configuration or multi-provider offering*

# Project Charter

- Infrastructure as a Service (IaaS) with focus on Administrative Computing and a tie-in to Research via work with VC of Research
- Develop a single provider public IaaS service
- Supplement to current OIT Private Cloud and other on premise private clouds
- Multi-provider management (separate private cloud and public cloud mgmt. as opposed to hybrid management architecture)
- Single provider implementation - OIT broker of cloud service
- Important: Implementation will not impede the ability to expand service offering to other needs (teaching & learning, additional RC) nor should anything explicitly impede ability to implement hybrid management cloud down the road. KEEP VISION IN MIND AT ALL TIMES.

# Various Cloud Activities



# Benefits of this Project

- Improve speed of delivery (agility)
- Provides scalable and elastic compute
- Allows customer or OIT to focus on core competencies
- Reduces complexity of campus individuals and departments doing their own “cloud”
- Allows for innovation
- Improves access to data
- Shortened time to market
- Customers can understand potential costs and do not need to manage the complexities of public IaaS financials themselves

- **It is important to note cost is <u>not</u> an expected benefit.**

# Benefits of this Project

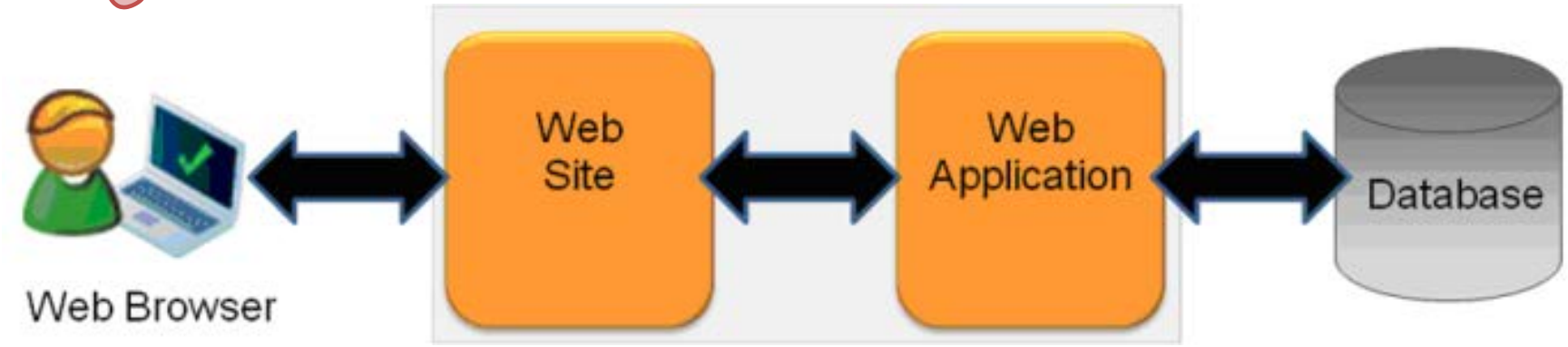
(why are we wanting to do this?)

In Short:

- Provide more services.
- Provide new services.
- Provide services quicker.

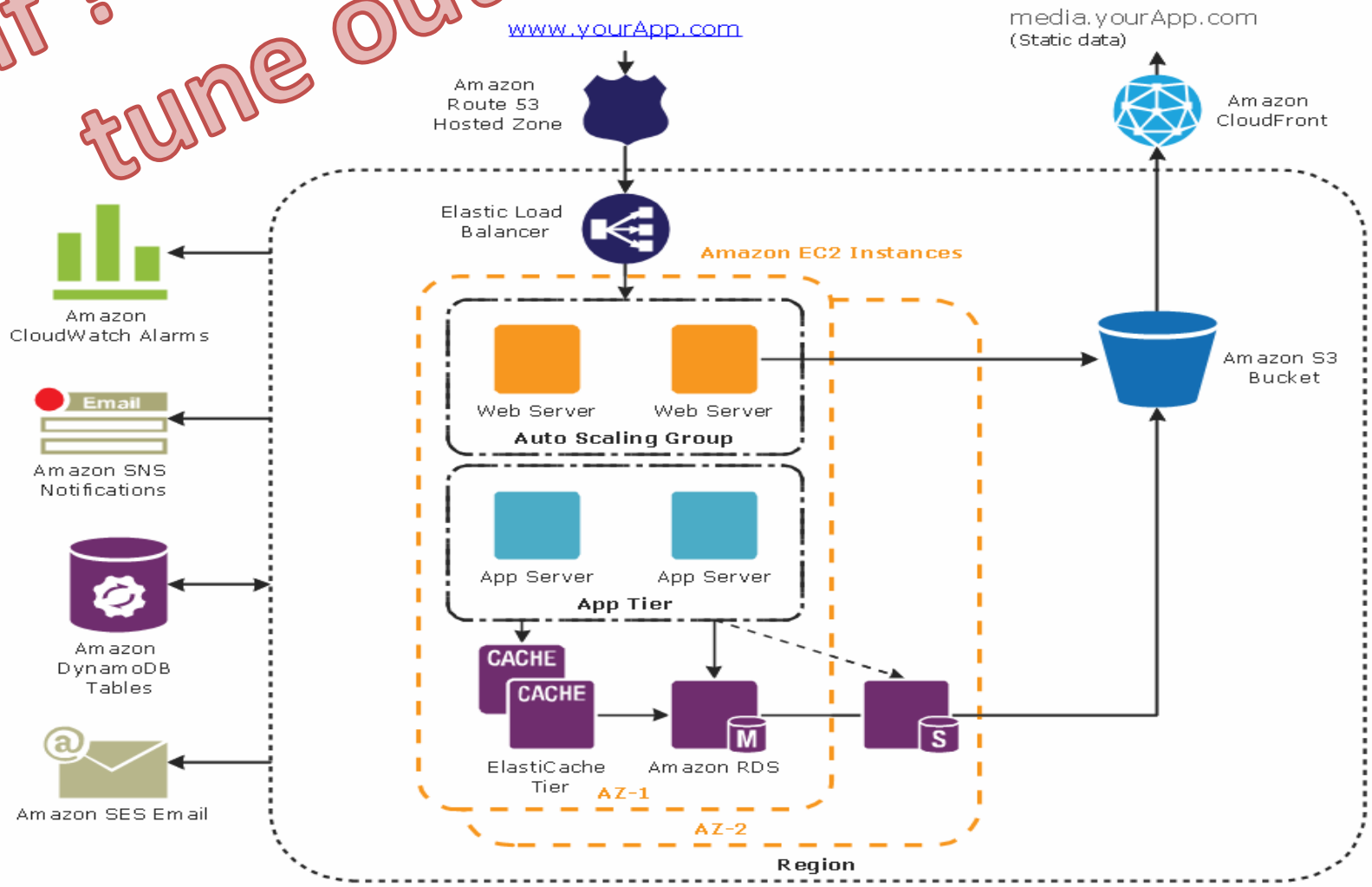
# Basic Web Application Architecture

If != techie
tune out



# AWS Cloud Native Web Application Architecture

If != techie
tune out



# Plan Creation Phase

## Actions:

- Requirements gathering
- Identify key skillsets required that may or may not currently exist
- Identify key areas of the organization impacted

## Outcomes (at minimum):

- Cloud team identified including lead architect(s)
- Creation of initial cloud strategy
- Process decision guideline on where a service should be placed (cloud smart)

# IaaS Cloud Provider Selection Phase

## Actions:

- Choose group of cloud service providers to examine
- Select cloud provider

## Outcomes (at minimum):

- Define criteria for selecting provider
- Identity public cloud service provider to start with
- Identify known capital costs
- Procurement and engagement

# Architect Cloud Services and Mitigate Risks Phase

## Actions:

- Architecture of the network for cloud will be designed and developed
- Architecture of the Identity and Access Management strategy will be designed and developed
- Architecture of the “tenancy” model will be designed and developed
- Architecture of the security controls will be designed and developed
- Design for availability, business continuity, disaster recovery will be developed. Backups included.

## Outcomes (at minimum):

- Architecture and design for cloud service will be defined
- Networking and Identity Management Strategy defined
- Security Plan in place
- Business continuity strategy well on its way including HA, backups/DR

# Creation of Services and Deployment Phase

## Actions:

- Define “financial and billing model”
- Create forecasting model to estimate one’s cloud bill
- Define “people, process and tools”
- Define the privileges users should have relative to cloud computing (“separation of duties” and responsibility)
- Define alerts and notifications that are necessary
- Define incident response process
- Define audit process

## Outcomes (at minimum):

- Documented service
- Financial and billing model defined
- Ability to forecast cloud consumption costs
- Documented governance strategy including roles, policies, alerts, incident response, and an audit process

# Automation of Cloud Services Phase

## Actions:

- Determine standard service offerings (3 flavors idea)
- Identify any additional service capability offerings to layer on top of standard offerings (i.e. specific IIS or LAMP)
- Create process for end users to purchase and provision cloud services
- Identify configuration and deployment tools required for cloud orchestration
- Create templates and deployment scripts to increase agility in deployments
- Automation of security controls and intrusion detection

## Outcomes (at minimum):

- Process defined for users to purchase and provision cloud services
- Configuration and deployment tools in place
- Templates available to increase agility for deployments
- Automation of security controls and intrusion detection tools in place

# Operating Cloud Environment at Scale Phase

## Actions:

- Define method to label instances when provisioned (tagging)
- Create procedures around continuous evaluation of service to ensure user privileges stay correct
- Identify and implement method to monitor cloud consumption
- Communications around website and marketing developed
- Ongoing security posture validation and remediation
- Identity path for OIT to become “cloud broker”. This may identify path to hybrid cloud.
- Identify any areas in organizational, management, or staffing structure that must evolve due to ongoing operations of cloud

## Outcomes (at minimum):

- Metadata tagging for expense visibility defined
- Management oversight around operation and utilization is created
- Website and marketing plan created
- Ongoing security posture validation and remediation tools and processes created
- Tools for “cloud broker” identified (and potentially) selected and/or procured
- Opportunities or efficiencies from an organizational, management, or staffing structure change and/or retraining opportunities identified

# End State

# Computing Public Cloud Service

## Summary:

In examining how other institutions have approached providing a central cloud computing environment, looking at how administrative cloud computing is being deployed provides lessons that can be applied to the research compute and teaching & learning spaces. The general approach is to initially focus and develop a single provider public cloud deployment service targeted at a single service model, usually IaaS (see Appendix A for picture of IaaS service model), focused on the support of research computing needs to allow a central point within the University to act as the provider and broker to campus for cloud services. The end vision is to have a much broader cloud service provided to campus.

## Possible Vision:

A possible vision for a cloud service can be stated as follows:

*The University will offer a multi-provider public cloud deployment service in a hybrid configuration providing cloud services for administrative, teaching & learning and research needs with a central point of contact acting as the broker of these cloud services.*

With definitions as follows:

Multi-provider: Different cloud vendor providers are available for use (examples in this space include AWS, Azure, Google Cloud). We know, both from our peers and listening to campus, no single cloud provider will meet all needs and multiple options must be available.

Public cloud: Not on premise

Hybrid configuration: manage both on premise cloud resources and public cloud resources as on premise compute is in abundance and still appropriate for many use cases (Cloud Opportunistic Strategy).

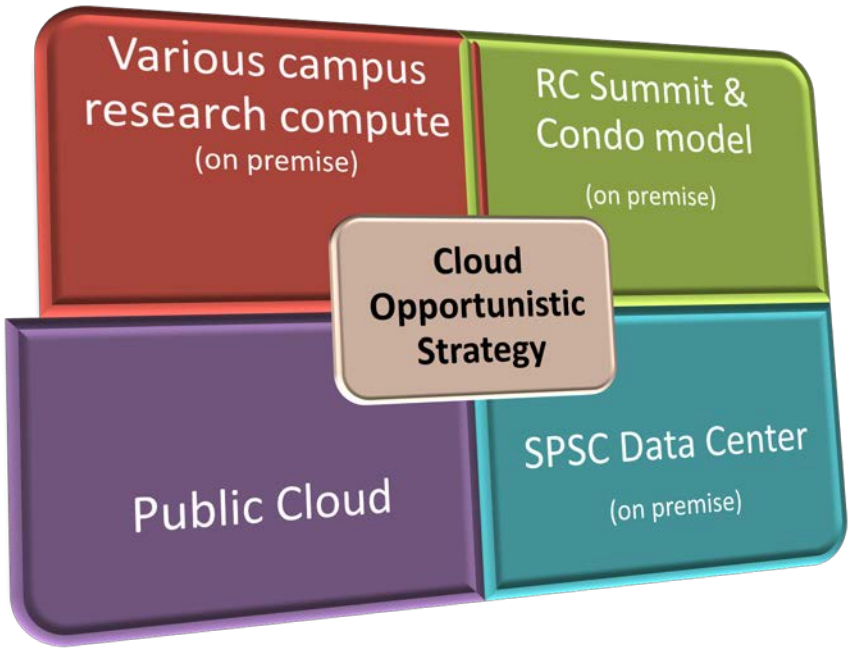
Central point of contact acting as a broker: A central point on campus can take the request and based on a number of factors, cost just being one of them, provide the various cloud compute options with a potential recommendation on which cloud service is best for the requested need.

## Possible Strategy:

There are 4 cloud strategies institutions go through before adopting a cloud-first strategy. Some institutions are at various levels within the 4 strategies within their institution and some choose not to adopt a cloud-first strategy.

- **Cloud Aware**: Aware of broad cloud trends but not yet prepared to adopt public-cloud solutions. On-premise solutions developed in a manner to prepare for eventual move to the public cloud
- **Cloud Experimentation**: Learns about various cloud services available to them in forms of SaaS, PaaS and IaaS and deploys common SaaS solutions

- **Cloud Opportunistic**: Actively seek out cloud solutions to meet new business requirements. New services may remain on premise but cloud solutions are actively considered and deployed when reliability, scalability, or other benefits are identified
- **Cloud First**: Places cloud at the top of the decision making chain. Default assumption within the institution is cloud services will fulfill the majority of the institution's computing needs.




At this time, all 4 strategies are seen on the CU-Boulder campus. For the purpose of the research cloud working group, a cloud opportunistic strategy would seem to be the strategy of choice, especially when comparing CU to peers. This strategy would actively seek public cloud solutions for research computing but acknowledge there are still use cases where on premise compute are appropriate.

## Benefits of Leveraging the Public Cloud:

The following have been identified from peers, CU's own experience, and other organizations as benefits of leveraging the public cloud from a central perspective:

1. Improve speed of delivery (agility)
2. Allows researchers to focus on core competencies (i.e. focus on research)
3. Reduces complexity of campus individuals and departments doing their own "cloud"
4. Reduces "shadow IT" in the "cloud" and the risks around data and identity
5. Central procurement handles pitfalls of standard cloud licensing at the individual/departmental level
6. Allows for innovation
7. Improves service levels
8. Improves access to data

9. Shortened time to market
10. Provides scalable and elastic compute

It is important to note cost is **not** a benefit of leveraging the public cloud. Gartner research has shown this to be the case and discussions with peer institutions have verified public cloud is not necessarily cheaper – in fact in some cases it is more. It does provide the advantages outlined above in 1-10 but less cost should not be assumed at the start of a public cloud initiative.

## Organizational Impacts of the Public Cloud:

This is, by far, the highest rated identified obstacle by our peer institutions for a University's ability to move to the cloud. In adopting cloud strategies, a paradigm shift occurs to the IT organizations and IT staff members across the enterprise.

Lines of traditional IT areas, including security, networking, system administration, development, and procurement are blurred and IT staff members will feel anxious about their roles and positions as different set of skills is required to support cloud solutions. This includes individuals both in the central campus IT organization as well as the distributed IT organizations across campus.

Buy-in from all areas and levels of a Universities' disparate IT organizations is required for staff at all levels to function as change agents supporting current and emerging cloud technologies. Staff, both at central IT and local IT levels, generally need three things:

1. An understanding of their roles and any changes to their current position
2. Time and resources to explore the technologies
3. An understanding of the business case for the technologies

At every evolutionary phase during the history of IT, the most notable industry changes are marked by changes to staff roles. When moving from mainframes to the client/server model the role of computer operator disappeared, replaced by system administrator. When virtualization arrived, the need to understand physical server maintenance disappeared replaced with virtual infrastructure specialists. When moving to cloud computing, roles will change again.

The following roles and skills are known to be needed in an organization leveraging public cloud computing. Some of these roles likely exist at the University of Colorado – Boulder today though they may not be cloud specific.

| Business Roles | Technical Roles |
|---|---|
| Business Analyst | Application Administrator |
| IT Liaison | Cloud Architect |
| Product Manager | Emerging Technologies Analyst |
| Project Manager | Integration Specialist |

| Vendor Management | Data Roles |
|---|---|
| IT Strategic Sourcing Manager | Data Custodian |
| Vendor Manager | Information Security Analyst |

## Business Roles

- Business Analyst: The lack of customizability of many services means there must be a greater emphasis on collecting user requirements before selecting a cloud service and on understand in advance how the cloud applications can be integrated into the business
- IT Liaison: Ensures academic, administrative and research groups on campus not just stay informed but serve as strategic partners when various cloud-based services are being considered. This role helps coordinate activities of units from around campus.
- Product Manager: Serves as liaisons between users, technical staff and vendors ensuring services delivered by the IT organization and vendor partners meet customer needs and serving as the customer advocate. Particularly important in SaaS services.
- Project Manager: Ensure systems being adopted have been thoroughly vetted and implemented to meet the requirements.

## Vendor Management Roles

- IT Strategic Sourcing Manager: The procurement of cloud computing services is vastly different from traditional procurement. Key differences are in areas such as cost models, product comparison, contractual protections, SLAs, and the ongoing nature of the client/supplier relationship. Having IT strategic sourcing staff resource experienced in this space for work with contracts and risk mitigation is important.
- Vendor Manager: Maintains the ongoing relationship between the cloud consumer and the cloud provider.

## Technical Roles

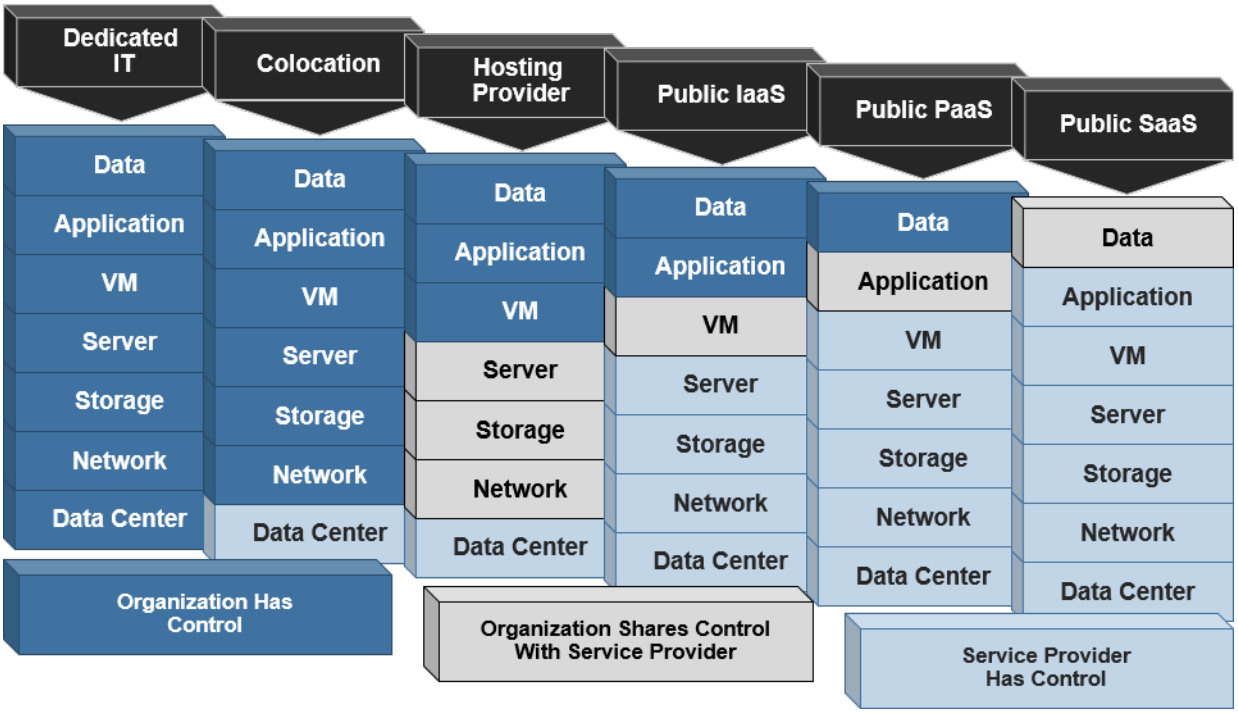
- Application Administrator: Handle the configuration, management, and access control for IT services.
- Cloud Architect: A vital role that designs solutions that integrate multiple cloud (IaaS, PaaS, SaaS) and virtualization platforms including on-premises services and solutions and data sources.
- Emerging Technologies Analyst: Researches and provides insights into future academic and administrative technology trends.
- Integration Specialist: Responsible for understanding business structures and needs and developing integration requirements and processes to integrate cloud services with on premise solutions and/or other cloud vendors. Responsible for the architecture, design, and implementation of the integrations. Also responsible for ongoing operational support, monitoring, maintenance, and updates of the integrations. Includes areas such as identity management, middleware, security and auditing, and business system integration.

## Data Roles

- Data Custodian: Primarily focused on the security and management around how University data resides and is used in the cloud. Data custodians may be technology units and personnel responsible for the network, the data center, system administrators, information security, researchers, etc.

- Information Security Analyst: Responsible for the information security standards and requirements, third-party risk assessments, and mitigation plans. Generally centralized in the IT Security Office.

## Appendix A: Service Models:




# References:

## Guidance Documentation used:


2016 Planning Guide for Cloud Computing and Virtualization, http://www.gartner.com/document/3142121?ref=SolutionPath

2017 Planning Guide for Cloud Computing, http://www.gartner.com/document/3471551?ref=SolutionPath

The Cloud Architect's Guide to Implementing Public Cloud Services, http://www.gartner.com/document/3139322?ref=projectKI&refval=8777

Solution Path for Developing a Public Cloud Strategy, http://www.gartner.com/document/3308217?ref=solrAll&refval=174893420&qid=855dc1d10fd67a855654edaa4008962b

Internet 2 Cloud Architecture: https://spaces.internet2.edu/display/CA/Cloud+Architecture+Home