



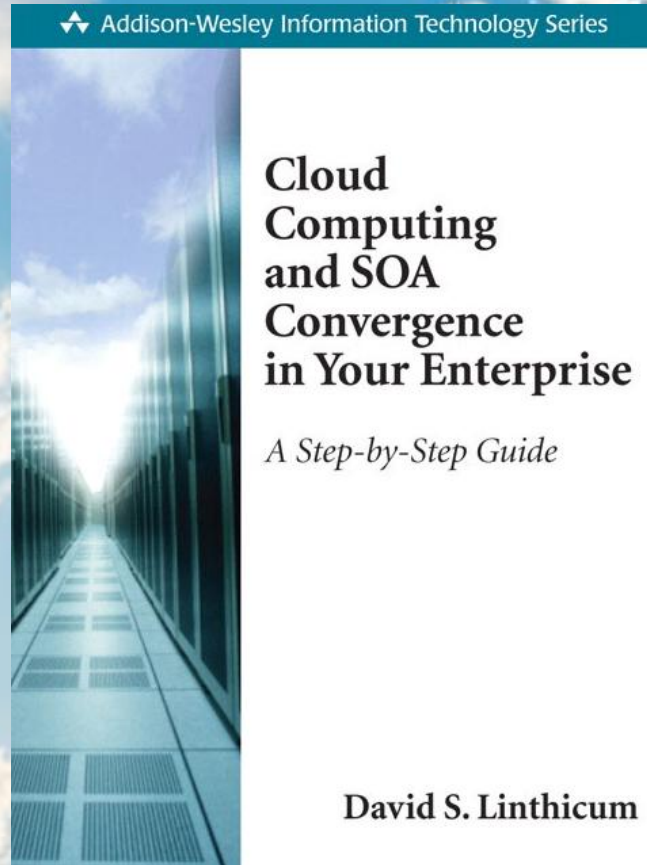
# Leveraging Cloud Computing within a Traditional DOD Enterprise Architecture Strategy.

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Mission Critical. Vision Practical.™

David S. Linthicum, CTO  
dlinthicum@bickgroup.com





- Maintain or reduce budget, but maintain operational effectiveness.
- Continued focus on support for the warfighter.
- Use of standards and process mandates, such as DODAF.
- Security becoming more complex, as well as strategic.
- IT procurement cycles not friendly to innovation.
- Huge “talent gap” around cloud computing.



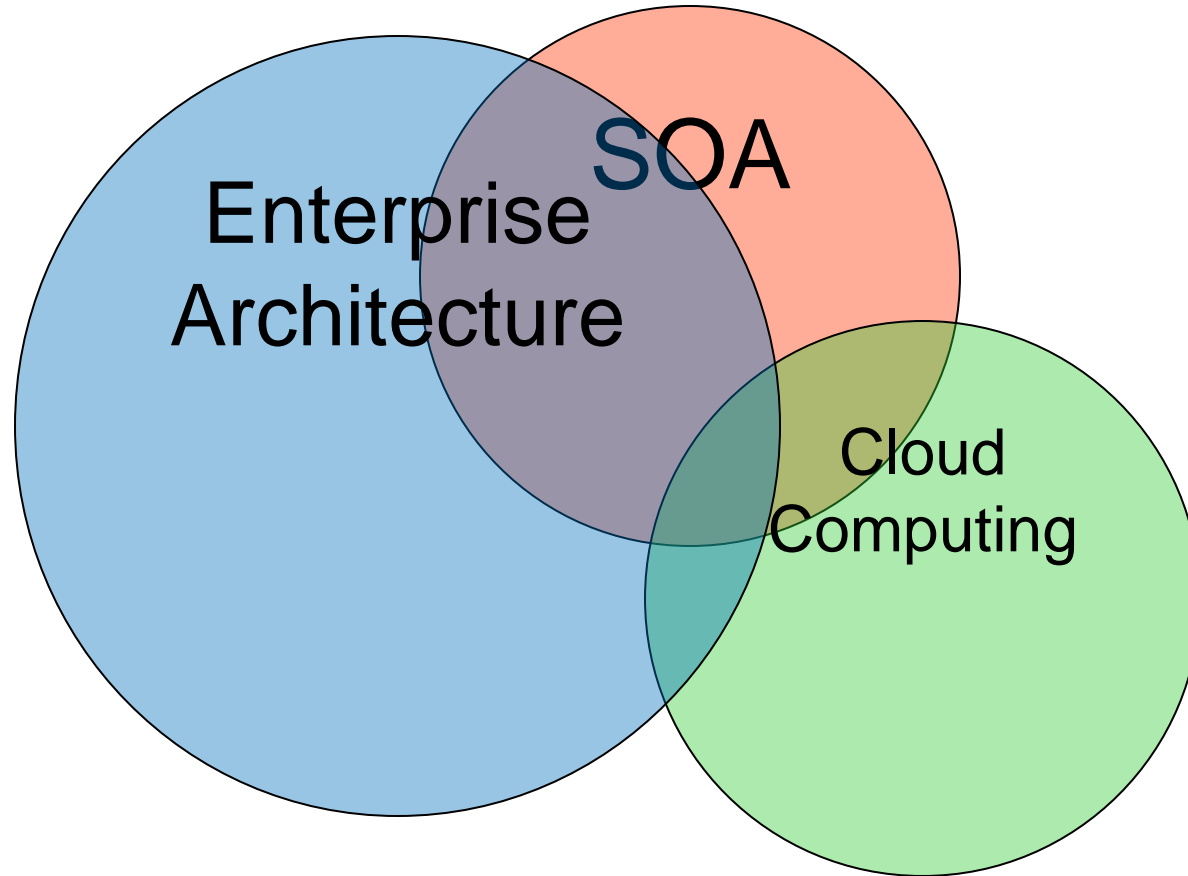
- The Department of Defense (DoD) Architecture Framework (DODAF)
  - Defines a common approach for describing, presenting, and comparing DoD enterprise architectures
  - Facilitates the use of common **principles, assumptions** and **terminology**
- The principal objective is to
  - Ensure that architecture descriptions can be compared and related across organizational boundaries, including Joint and multi-national boundaries

Source: Alessio Mosto



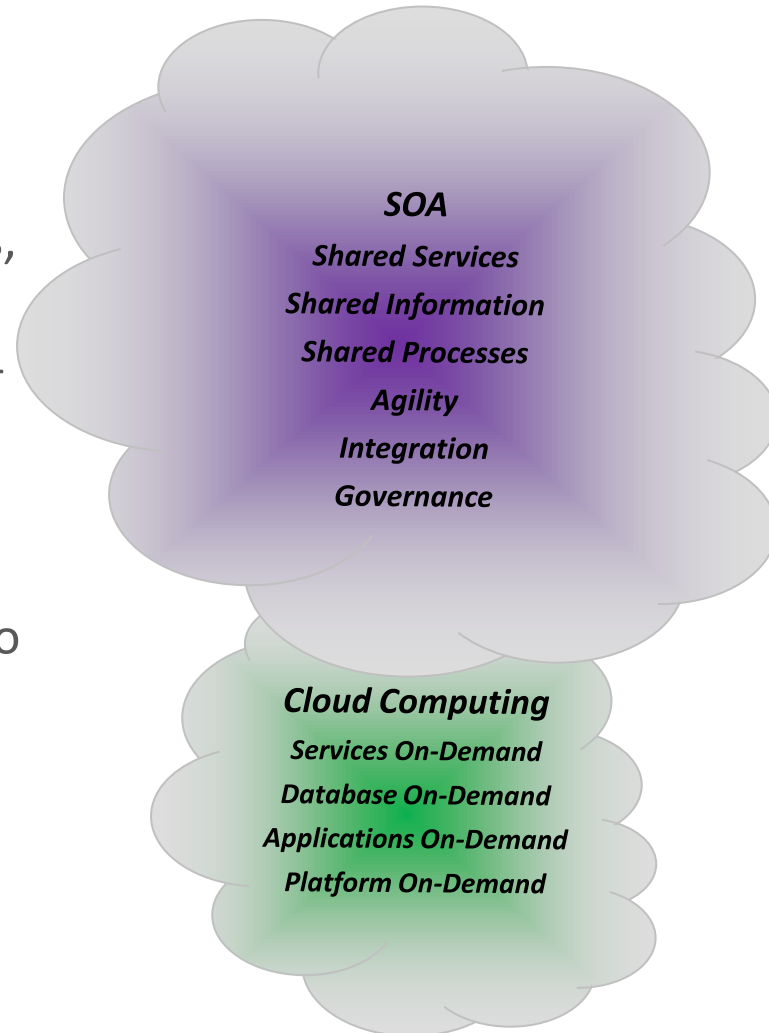
- Recent DoD policy highlights use of architectures for:
  - Understanding the DoD as an **enterprise**
  - Identification of operational requirements
  - Rationalization of IT investment decisions
  - Improvements to interoperability among various systems

So, where does cloud computing fit into DOD EA?





- One can consider cloud computing the extension of SOA out to cloud-delivered resources, such as storage-as-a-service, data-as-a-service, platform-as-a-service -- you get the idea.
- The trick is to determine which services, information, and processes are good candidates to reside in the clouds, as well as which cloud services should be abstracted within the existing or emerging SOA.





## Software as a Service (SaaS)

*Finished applications that you rent and customize*

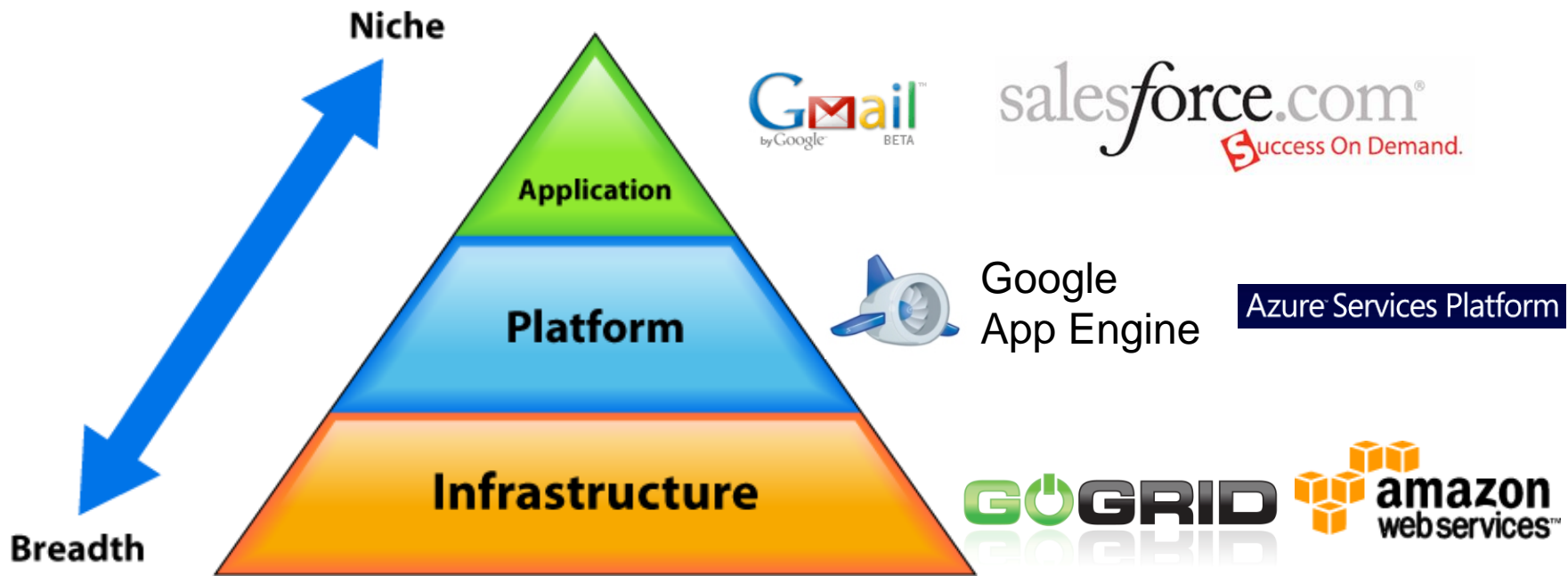
## Platform as a Service (PaaS)

*Developer platform that abstracts the infrastructure, OS and middleware to drive developer productivity*

## Infrastructure as a Service (IaaS)

*Deployment platform that abstracts the infrastructure*

- Describes Cloud Services Economy
- Building blocks: IaaS -> PaaS -> SaaS



Source: GoGrid

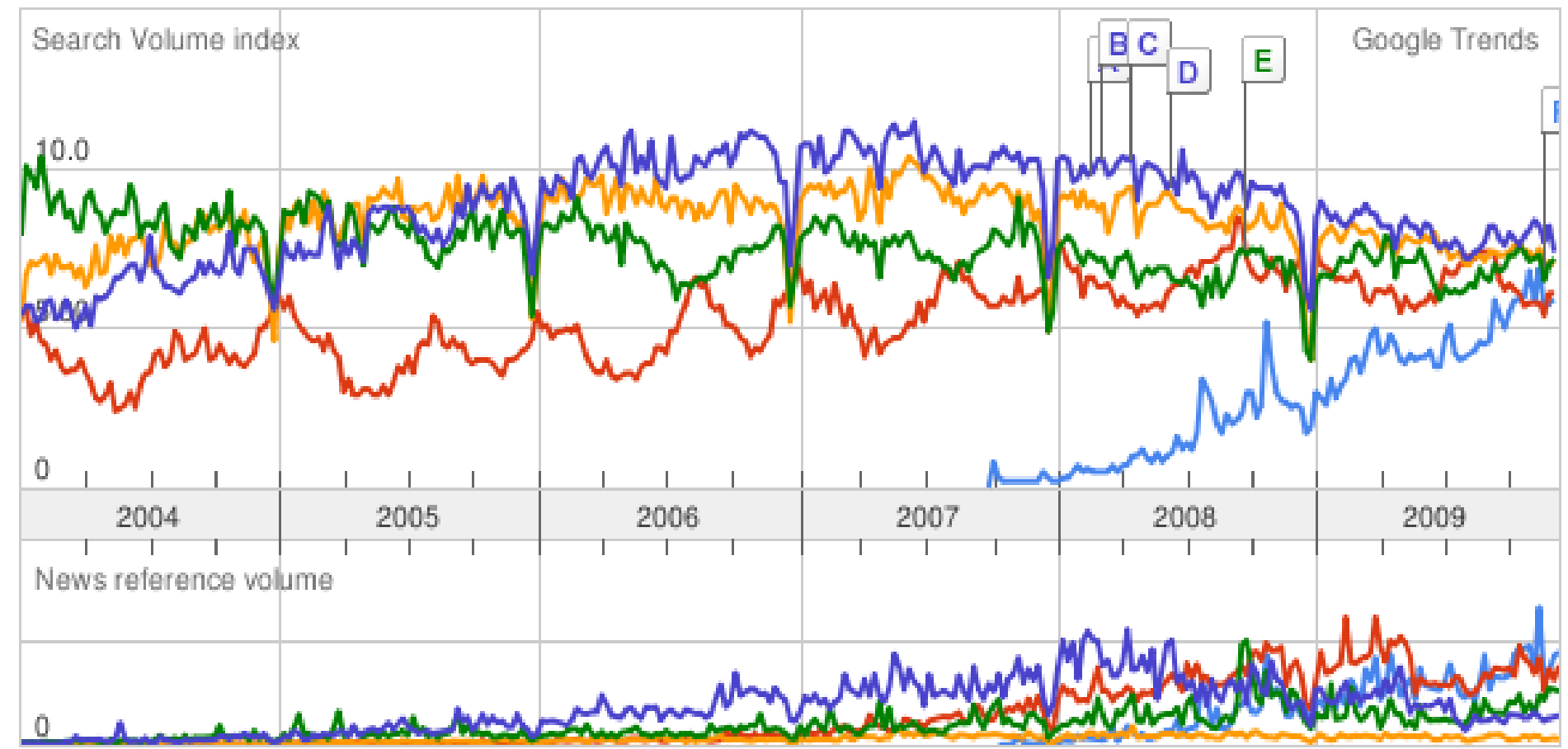


“For the cloud, we're all in.”

# CLOUD POPULARITY=HYPE



cloud computing 1.00    saas 5.30    itil 8.40    ppm 7.60    soa 1.00



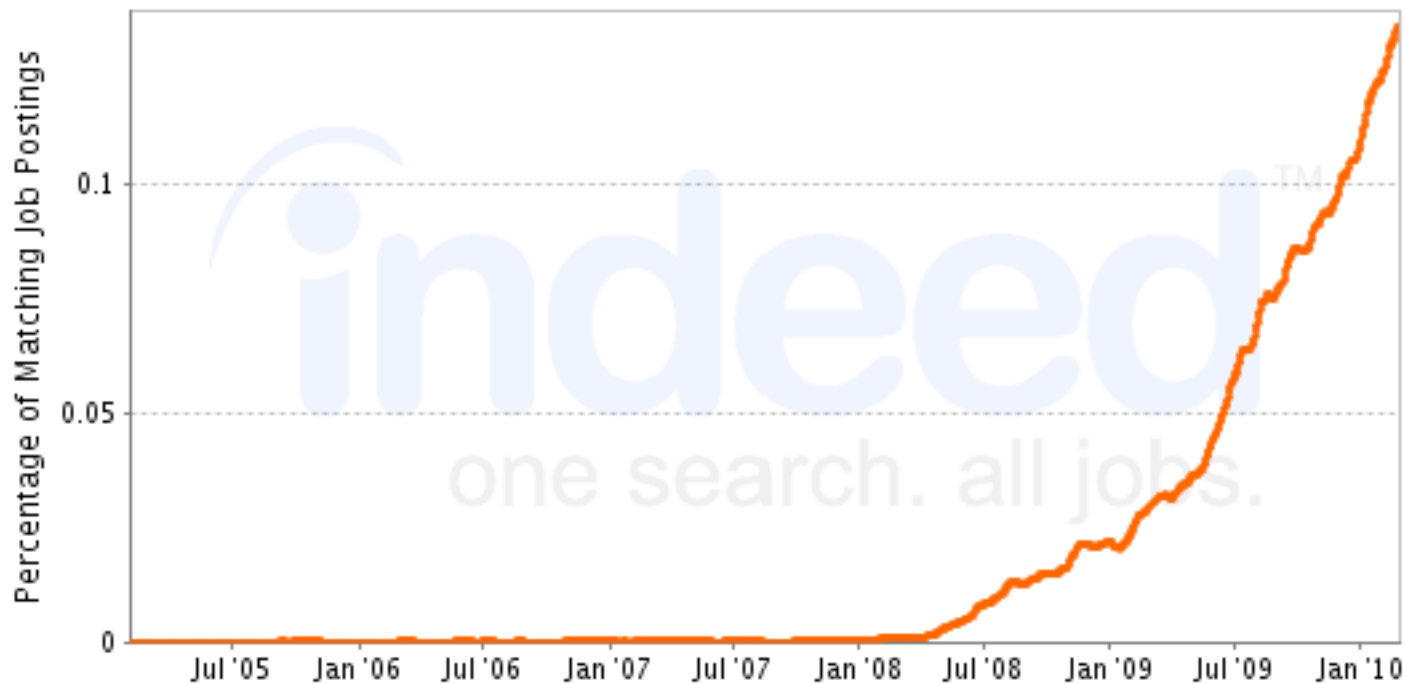
Source: CA

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## Job Trends from Indeed.com

— cloud computing





# NIST defines cloud computing as a set of characteristics, delivery models, and deployment models

## 5 Characteristics

- ▶ *On-demand self-service*
- ▶ *Ubiquitous network access*
- ▶ *Resource pooling*
- ▶ *Rapid elasticity*
- ▶ *Pay per use*


## 3 Delivery Models

- ▶ *Software as a Service (SaaS)*
- ▶ *Platform as a Service (PaaS)*
- ▶ *Infrastructure as a Service (IaaS)*

## 4 Deployment Models

- ▶ *Private Cloud*
- ▶ *Community Cloud*
- ▶ *Public Cloud*
- ▶ *Hybrid Cloud*

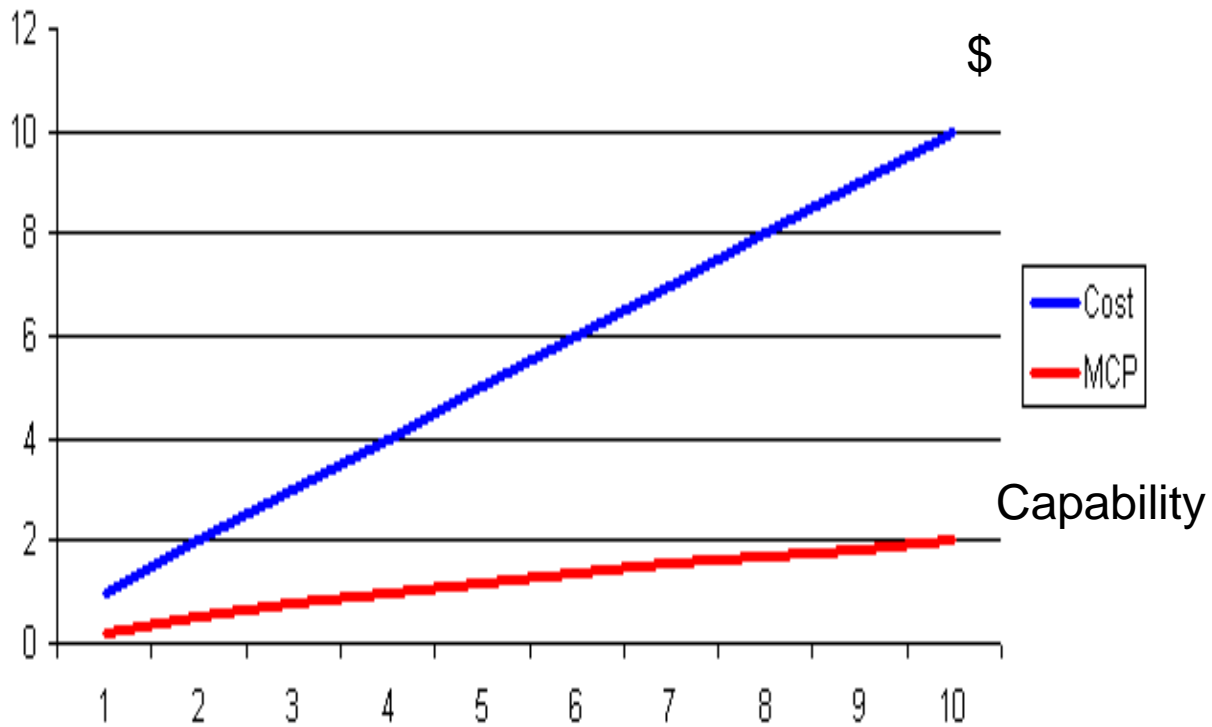




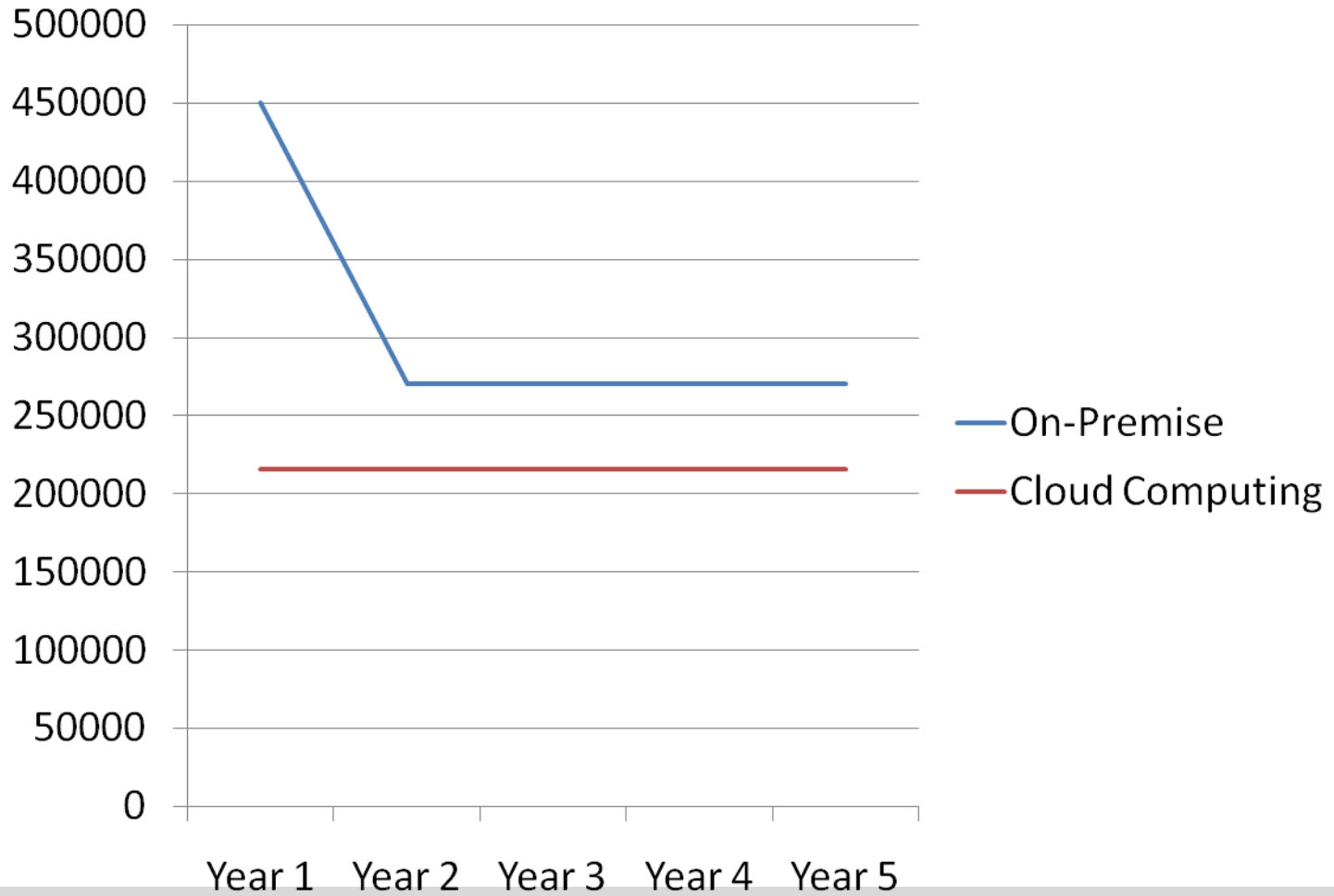
“Cloud-computing will help to optimize the Federal data facility environment and create a platform to provide services to a broader audience of customers.”

President’s Budget for FY 2010  
Section 9, Cross Cutting Programs

# WHY CLOUD?

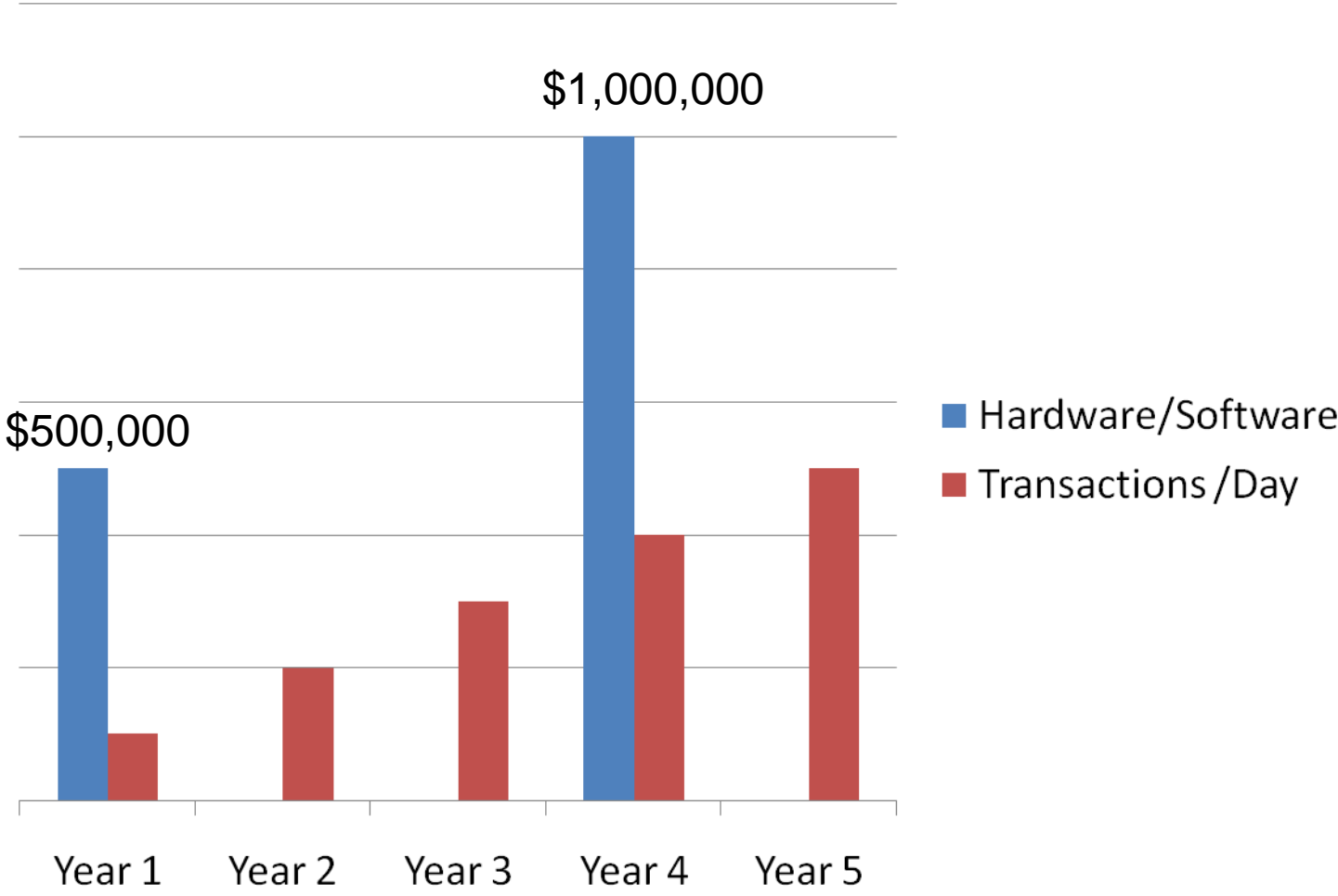


# UNDERSTANDING THE ROI

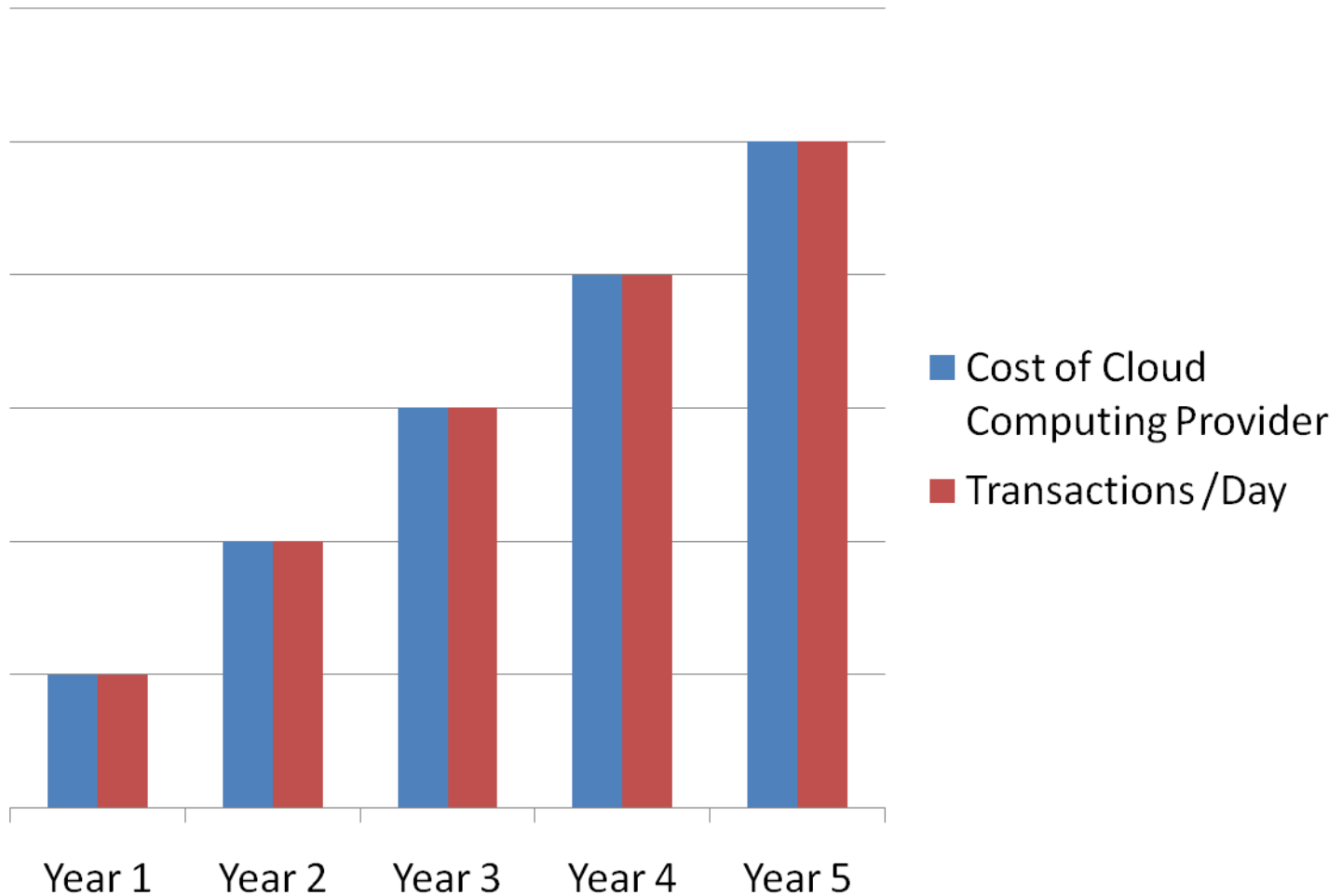




# On-Premise

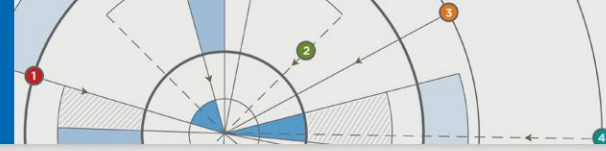


# Cloud Delivered

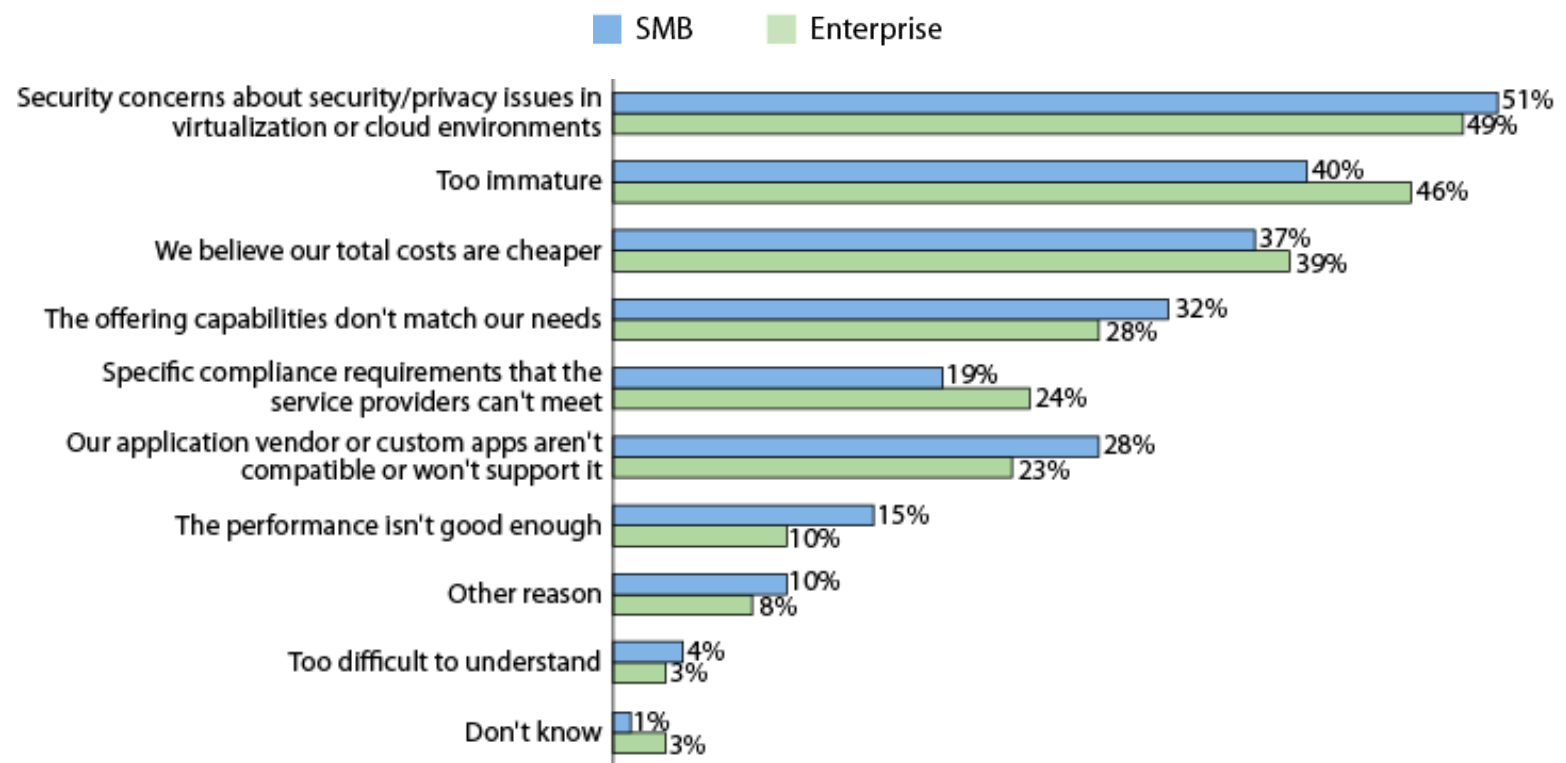




- DOD IT is understandably skittish about cloud computing.
- However, many of the cloud computing resources out there will actually provide better service than on-premise.
- Security and performance are still issues.
- Also, control.
- ***Private clouds are perhaps the best option.***



**“Why isn't your firm interested in pay-per-use hosting of virtual servers (also known as cloud computing)?”**



Base: 267 SMB and 275 enterprise hardware decision-makers

# BUT, THERE IS SOME PUSHBACK: GREENPEACE VS. CLOUD COMPUTING?



"The report finds that at current growth rates, data centers and telecommunication networks, the two key components of the cloud, will consume about 1,963 billion kilowatt-hours of electricity in 2020."

# AND, TRADITIONAL SOFTWARE FEELS THREATENED LARRY ELLISON'S "CLOUD RANT"





- Ability to leverage the value of cloud computing using on-premise systems that are directly controlled by enterprise IT.
- Ability to better utilize existing computing resources, thus reducing costs.
- Ability to provide better scalability through virtualization, or through “cloud bursting.”
- Availability of open source solutions.
- Fits nicely with the movement to SOA.
- Less scary than public cloud computing.
  - Security
  - Privacy
  - Compliance



# Cloud technology adoption falls under different deployment models

- Private cloud ***Two types: internal and external***
  - enterprise owned or leased
- Community cloud
  - shared infrastructure for specific community
- Public cloud
  - Sold to the public, mega-scale infrastructure
- Hybrid cloud
  - composition of two or more clouds



## Two flavors of private clouds:

### INTERNAL

- You own the hardware
- You own the software
- On premises

*Example:  
VMWare*

### EXTERNAL

- You don't own the hardware
- You don't own the software
- Remotely managed location

*Example:  
Amazon Virtual Private  
Cloud*



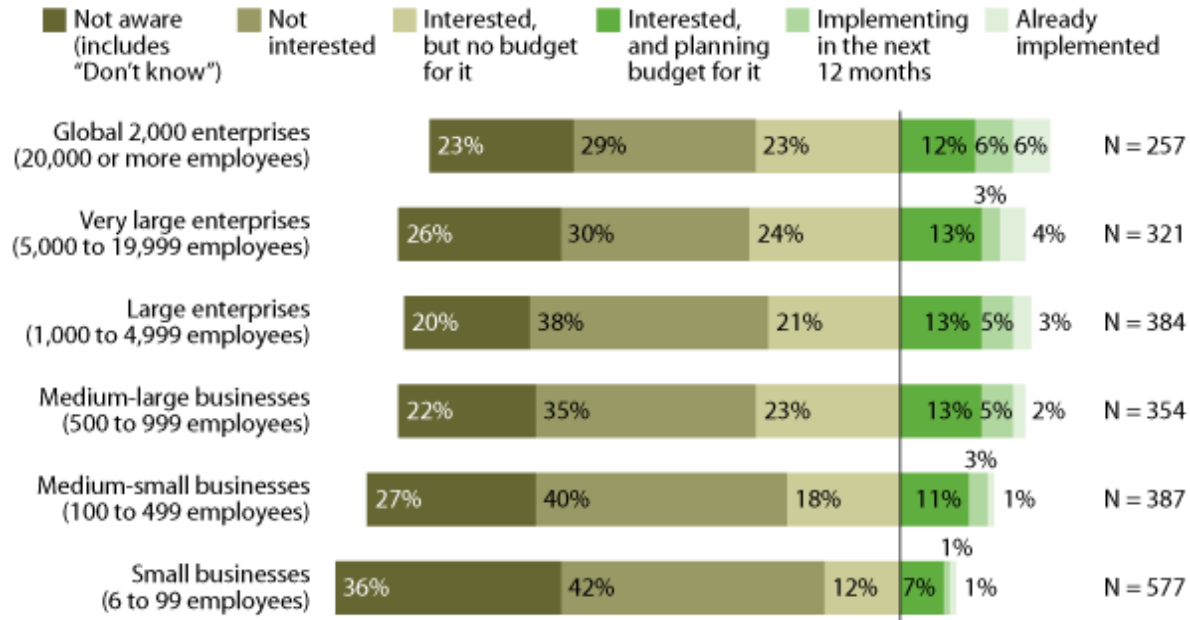
- Recent ciozone.com article by Michael Neubarth:
  - P Laudenslager: in “Private Clouds Are an Oxymoron” on plaudenslager.wordpress.com August 26, 2009, says **the trouble with the idea of private clouds is that “almost all of the flexibility, scalability, and efficiency in cloud offerings come from sharing the load with other customers.”**
  - Sam Johnson in “The Case Against ‘Private Clouds’ on samj.net on August 5, 2008, says he believes **“it is impossible to emulate some of the key features of cloud computing in-house, most notably, peak-load engineering, but more generally unleashing the true potential of a global service oriented architecture.”**
- However, the focus needs to be on the solution not the buzzword:
  - It’s about the architecture and the value. It’s not about the name.
  - It’s about leveraging your resources as efficiency as possible, not replicating public cloud computing.
  - It’s building on what we know, not reinventing the wheel.



## “Private Cloud Computing is Real – Get Over It”

- Tom Bittman – Gartner

“What is your company’s highest level of awareness or interest in building and operating an internal “cloud” or pool of pay-per-use virtual servers?”



Base: hardware decision-makers at North American and European enterprises, midmarket companies, and small businesses

Source: Enterprise And SMB Hardware Survey, North America And Europe, Q3 2008

47102

Source: Forrester Research, Inc.



## However, not so fast.

- Not all computing resources should exist in the clouds, private or public.
- Cloud computing is not always cost effective.
- Do your homework before making the move.



## A Fit When:

Processes, applications, and data are largely independent

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Points of integration are well defined

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Lower level of security is fine

---

Core internal enterprise architecture is healthy

---

Web is the desired platform

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Cost is an issue

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Applications are new

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## Not A Fit When:

Processes, applications, and data are largely coupled

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Points of integration are not well defined

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Higher level of security is required

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Core internal enterprise architecture needs work

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The application requires a native interface

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Cost is an issue

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Application is legacy

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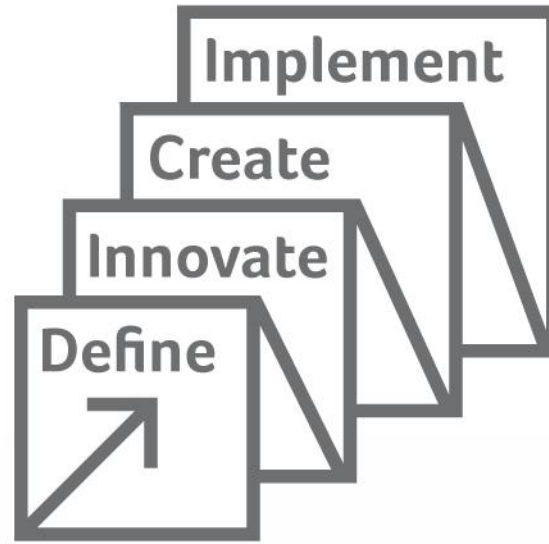
## Path to clouds: start with the architecture

Understand:

- Mission drivers
- Information under management
- Existing services under management
- Core business processes



Methodology



For Facilities



For the Cloud



# CLOUD APPROACH



For the Cloud



“AS-IS”



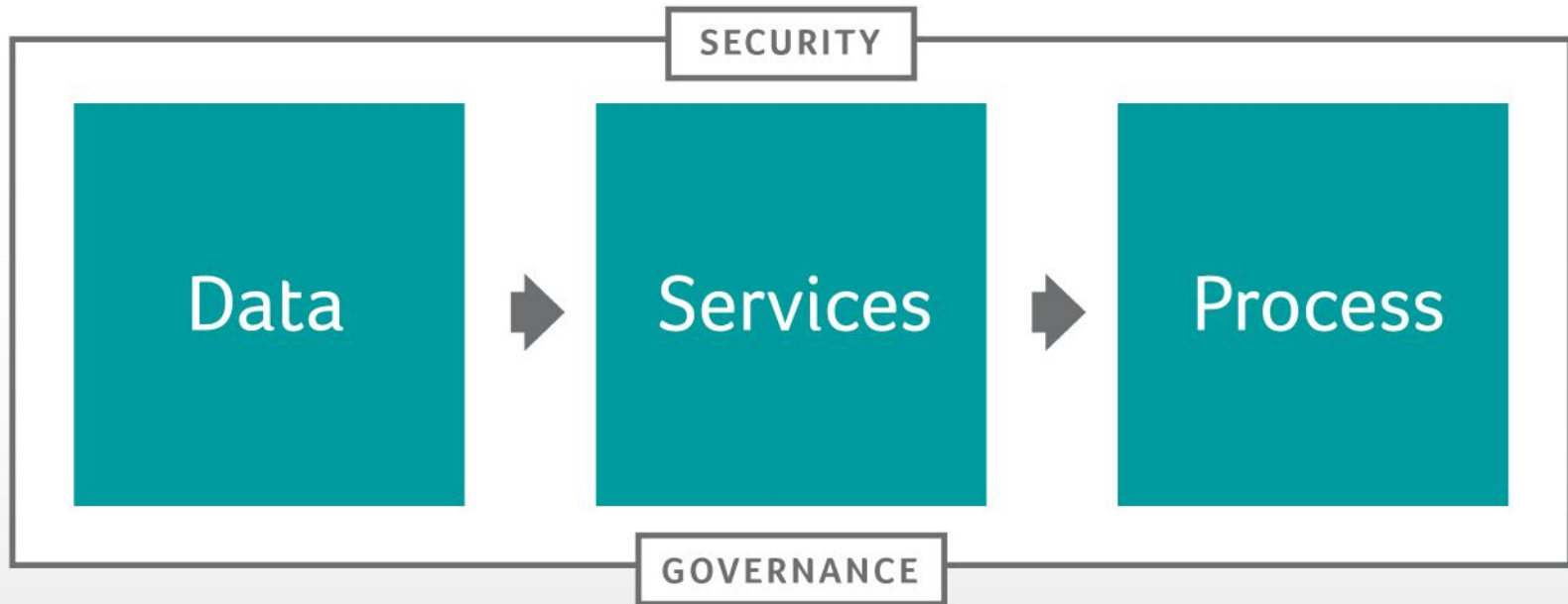
For the Cloud

AS-IS

TO BE

DEPLOY

## Business Case



# "TO BE"

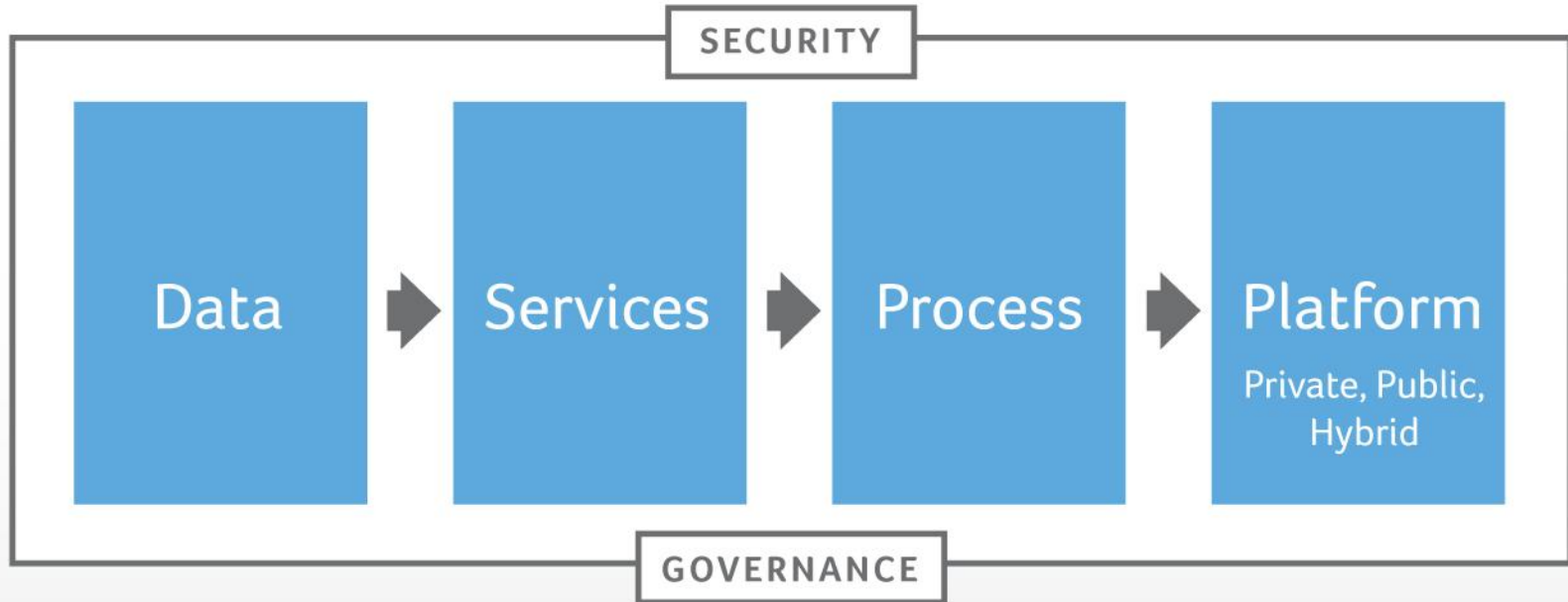


For the Cloud

AS-IS

TO BE

DEPLOY



# DEPLOY

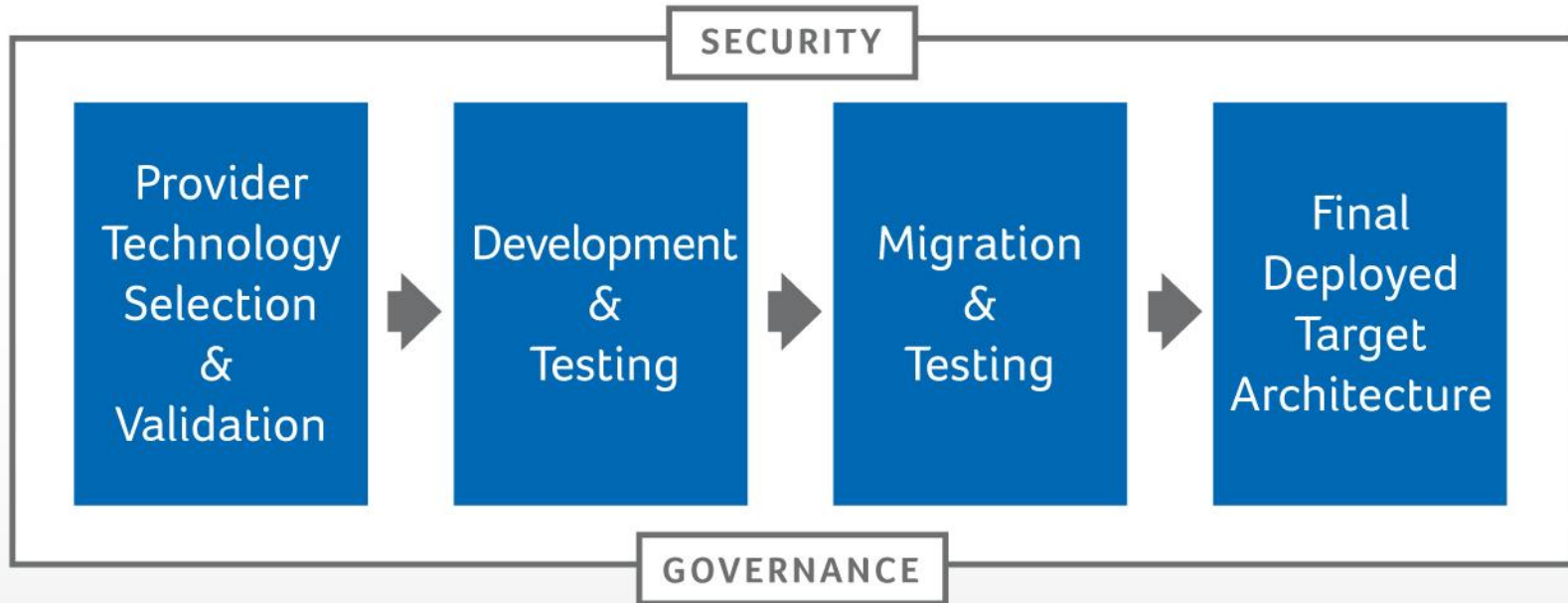


For the Cloud

AS-IS

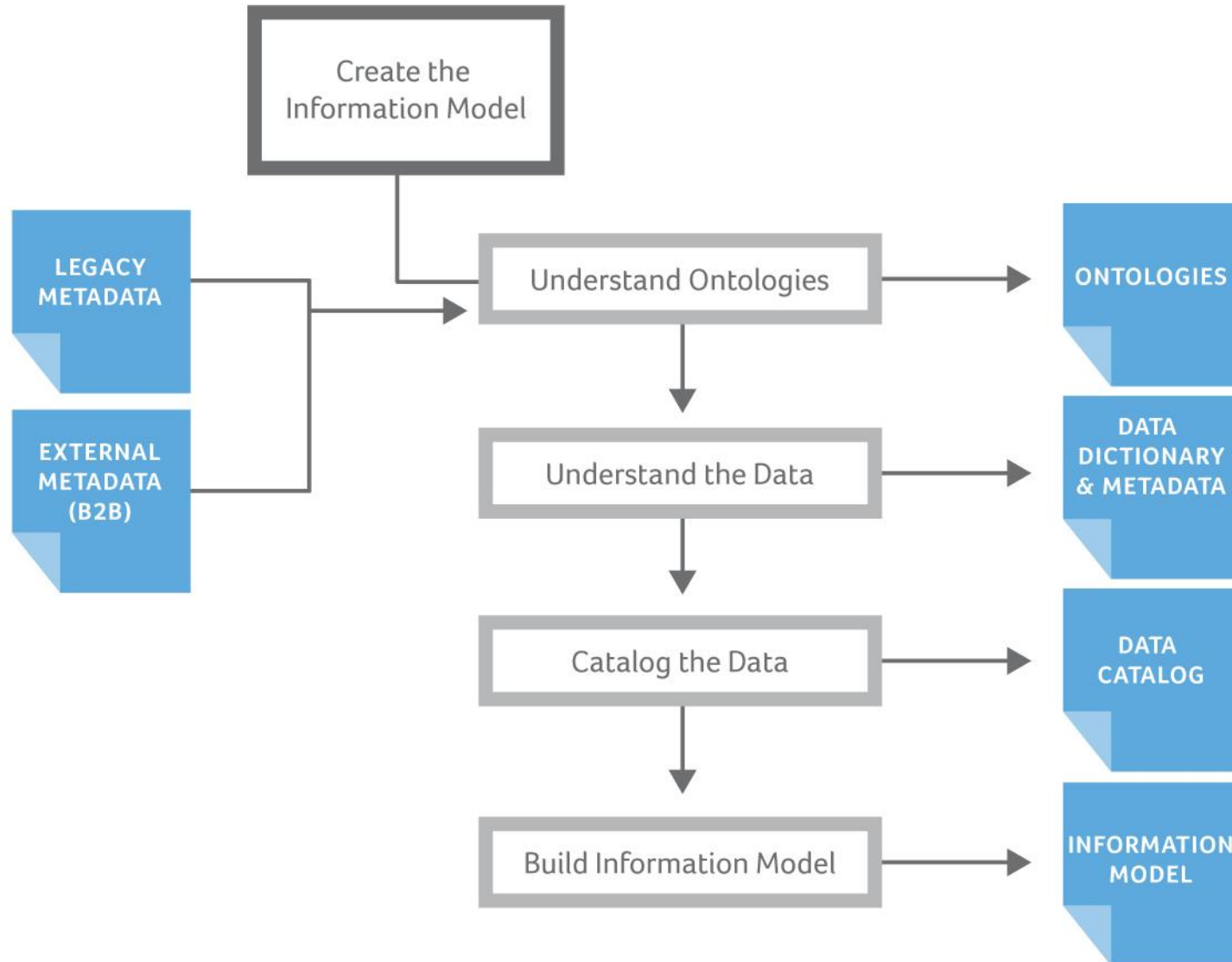
TO BE

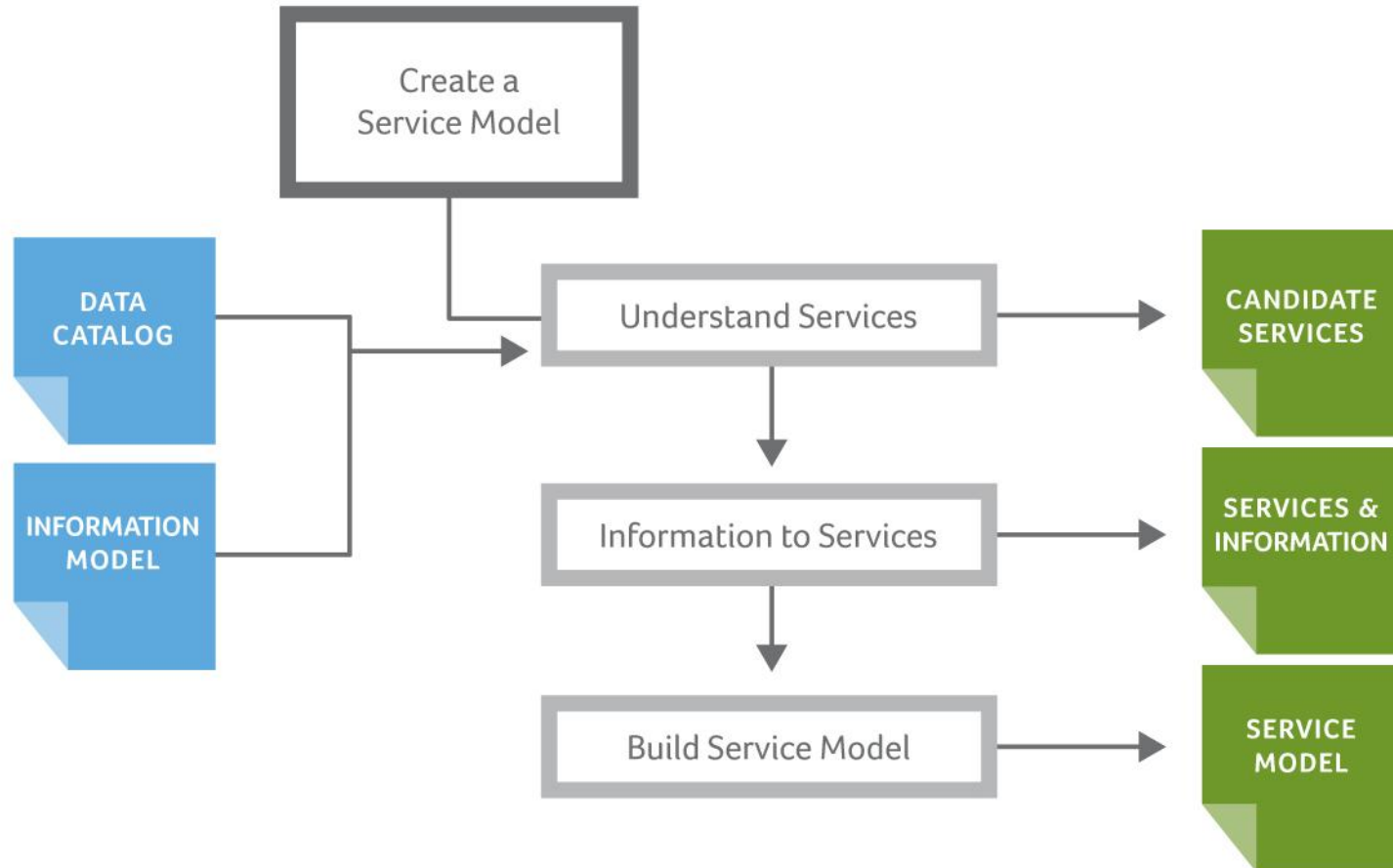
DEPLOY





1. Access the mission.
2. Access the culture.
3. Access the value.
4. Understand your data.
5. Understand your services.
6. Understand your processes.
7. Understand the cloud resources.
8. Identify candidate data.
9. Identify candidate services
10. Identify candidate processes.
11. Create a governance strategy.
12. Create a security strategy.
13. Bind candidate services to data and processes.
14. Relocate services, processes, and information.
15. Implement security.
16. Implement governance.
17. Implement operations.







Let the mission requirements lead you, not the hype.

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Make sure to consider security and governance as systemic concepts.

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Make sure to consider performance and scalability.

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Understand the hard and soft costs up front.

Leverage SOA approaches and best practices.

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Don't forget about the data.

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Understand all compliance issues up front.

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Don't be afraid to start over, if needed.

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Learn all you can before starting the project.



**BICK**

Mission Critical. Vision Practical.™

*Cloud computing strategy experts.  
Cloud computing architecture and design experts.  
Cloud computing deployment experts.  
Cloud computing and data center experts.*

**We Build Clouds.**

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THANKS!



**David S. Linthicum**  
dlinthicum@bickgroup.com

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