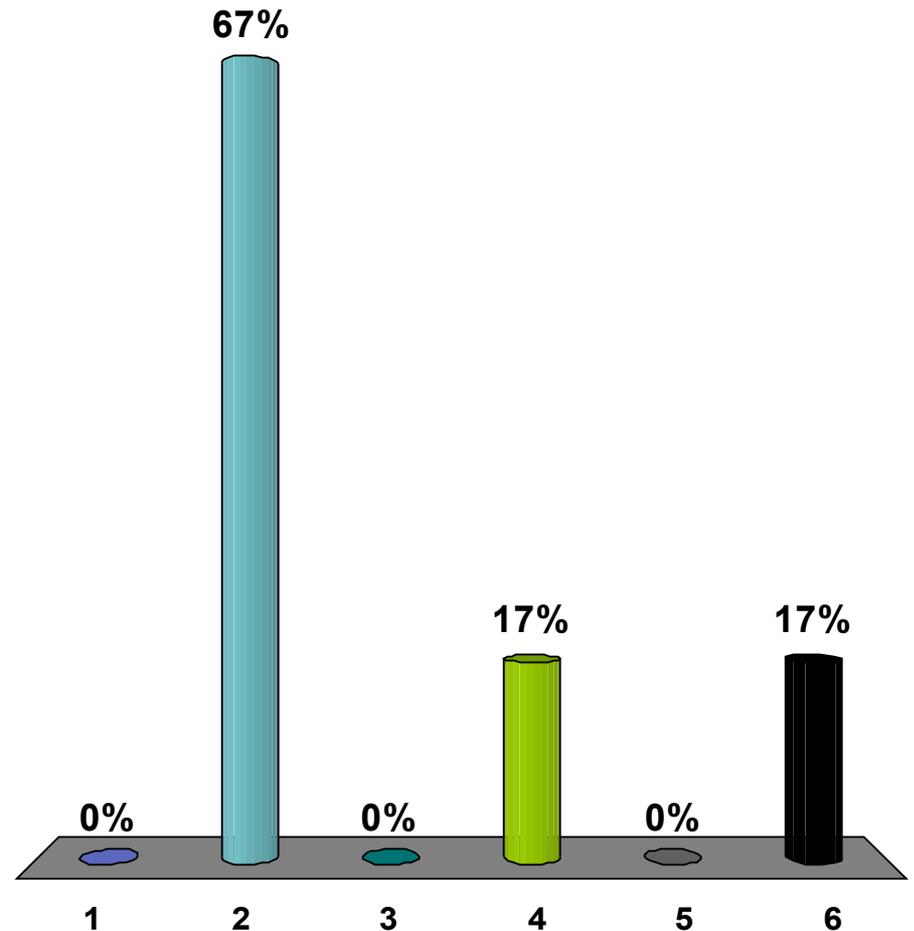


Developing a Cloud Roadmap with a Workload Oriented Approach



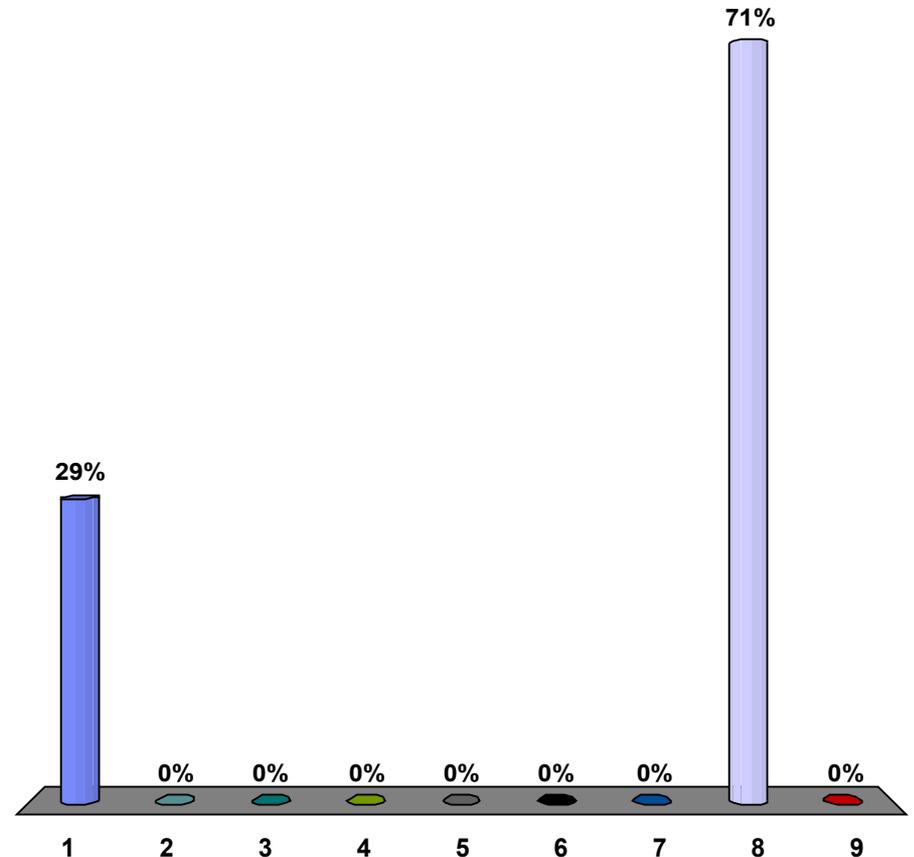
Where are you in your cloud journey?

1. Haven't started yet
2. Starting to develop our strategy
3. Validating our strategy
4. Starting to execute our cloud strategy
5. Ready to proceed with our cloud journey
6. Already using cloud and measuring success



What Cloud workloads are of greatest interest to your organization?

1. Development and test
2. Collaboration
3. Storage
4. Security
5. Business Continuity / Disaster Recovery
6. Analytics / Business Intelligence
7. ERP
8. Industry-specific / custom applications
9. Other



Many organizations are struggling with key questions around cloud – strategy, delivery models, and workloads

1. Could we utilize cloud services?
2. How would cloud support our organization's objectives?
3. What would be the benefits?
4. Would our current IT infrastructure support cloud delivery?
5. How can we develop a road map to achieve our cloud objectives?

How do we plan for and get started with Cloud?

Planning for cloud is best undertaken with a workload oriented approach.
What is a workload? Some examples ...



Analytics



Collaboration



Development
and Test



Desktop and
Devices



Infrastructure
Compute



Infrastructure
Storage

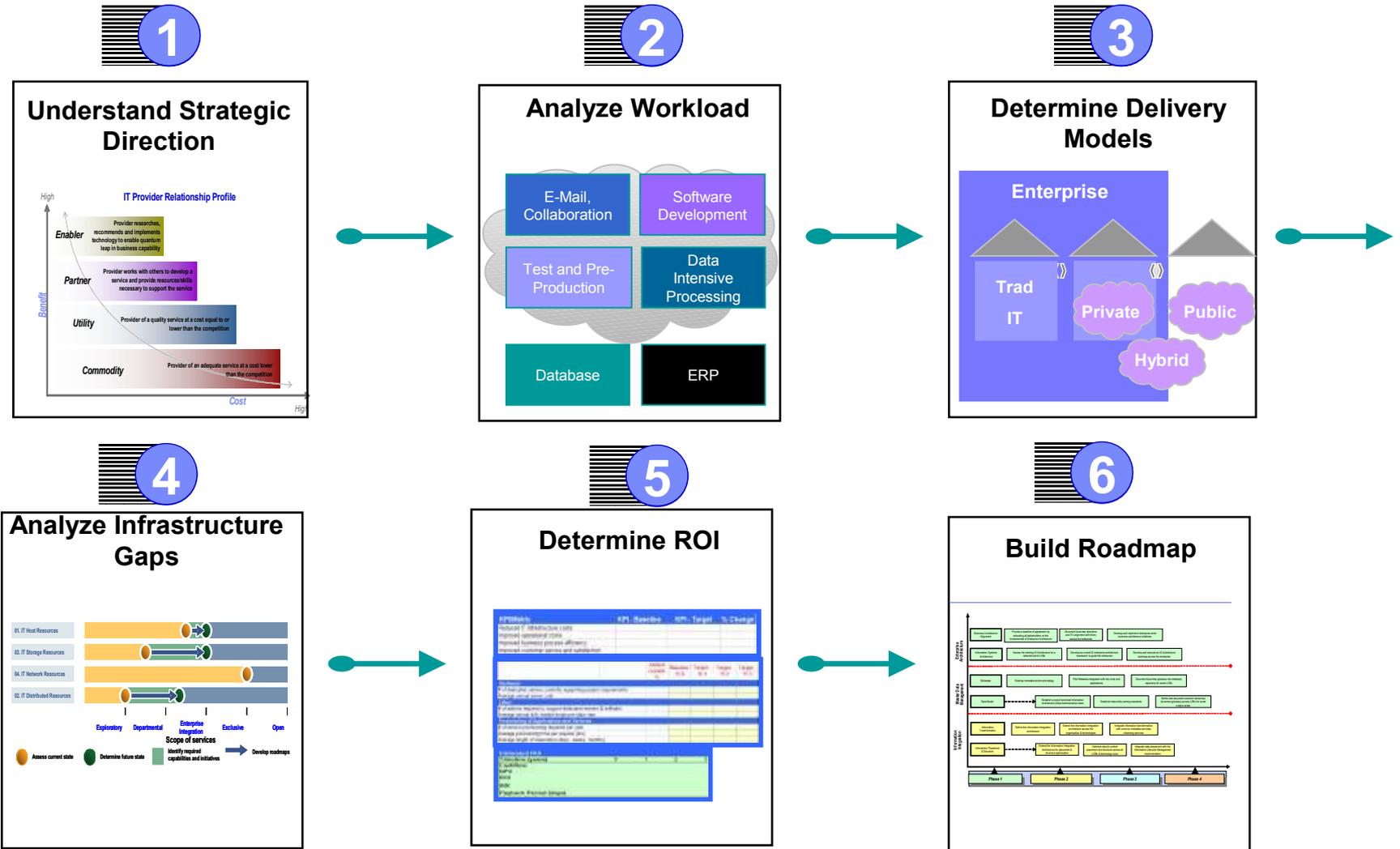
Top public workloads

- Audio/video/Web conferencing
- Service help desk
- Infrastructure for training and demos
- WAN capacity and VoIP
- Desktop
- Test environment infrastructure
- Storage
- Data center network capacity
- Server

Top private workloads

- Data mining, text mining, analytics
- Security
- Data warehouses or data marts
- Business continuity, disaster recovery
- Test environment infrastructure
- Long-term data archiving/preservation
- Transactional databases
- Industry-specific applications
- ERP applications

An effective Cloud roadmap relies upon making the right choices based upon workloads



A Cloud roadmap needs to be part of a high-level plan of IT improvements required to implement cloud computing



Sample Table of Contents

- i. Executive Summary
- ii. Introduction
- iii. Key Business and IT Initiatives
- iv. Strategic Intent for Cloud
- v. Workload Analysis
- vi. Cloud Delivery Models
- vii. Gap Analysis
- viii. Business Case
- ix. Road maps
- x. Observations, Implications and Recommendations
- xi. Conclusions
- xii. Next Steps
- xiii. Appendix

Example: Insurance Company

Business Challenge:

- Reduce IT operating and capital costs
- Simplify the infrastructure
- Transform the business and IT to support flexibility and improve services

Approach and Solution:

- Implemented Cloud Infrastructure Strategy and Design Services to:
 - Understand the potential value of Cloud
 - Understand how Cloud could be applied to their environment
 - Understand the gaps between current state and Cloud-Readiness
 - Provide guidance on analyzing and prioritizing of workloads to migrate to cloud
 - Build a strategy, plan, and roadmap to successfully implement the selected cloud delivery model.

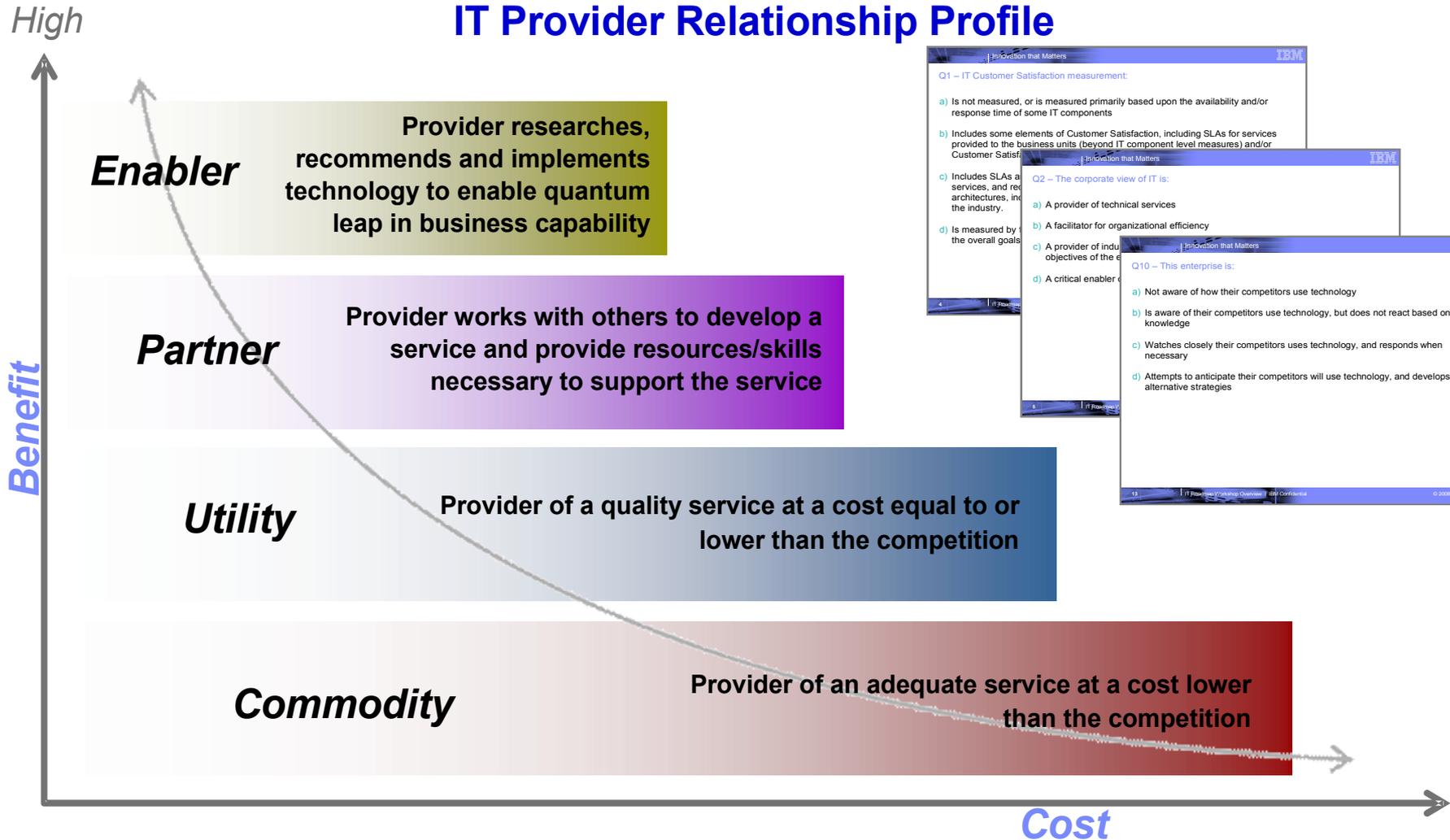
Benefits:

- Gained clarity on the strategic direction of cloud to enable the business
- Identified candidate workloads for cloud
- Established the business case and the ROI
- Determined the roadmap

Step 1: Understand the strategic direction and relationship with the business

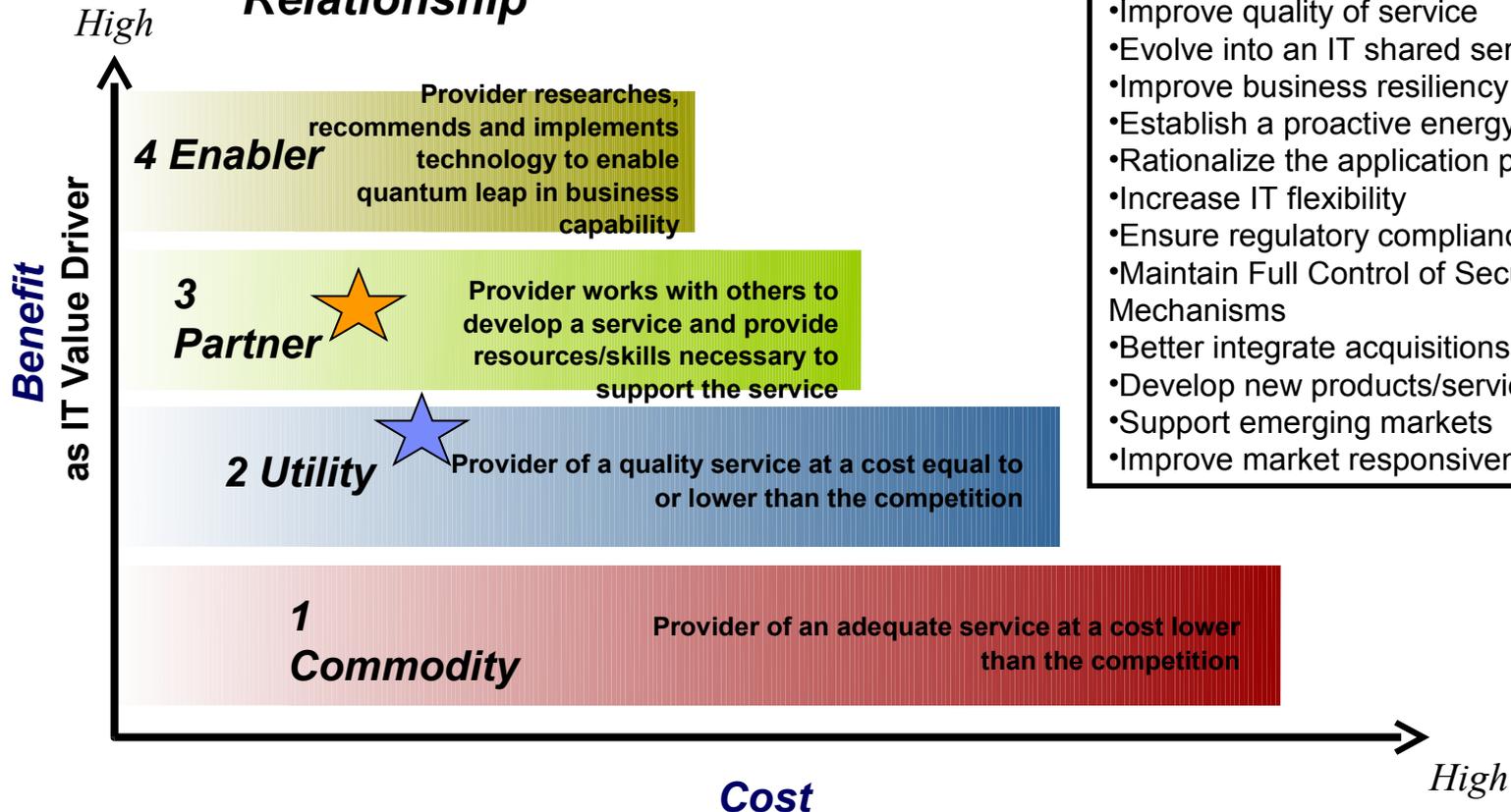
Commodity, Utility, Provider, Enabler (CUPE) Survey

IT Provider Relationship Profile



Step 1 example output: establishes the IT provider relationship and clarifies business and IT priorities

Cost versus Benefit Relationship



Priorities and Drivers

- Reduce IT operational costs
- Reduce IT capital expenditures
- Accommodate business growth at current costs
- Simplify/optimize technology infrastructure
- React to data center facility constraints
- Improve IT reliability
- Improve quality of service
- Evolve into an IT shared services model
- Improve business resiliency
- Establish a proactive energy efficiency strategy
- Rationalize the application portfolio
- Increase IT flexibility
- Ensure regulatory compliance
- Maintain Full Control of Security Protection Mechanisms
- Better integrate acquisitions
- Develop new products/services
- Support emerging markets
- Improve market responsiveness

Step 2 : Analyze the workloads for cloud feasibility

Workload Analysis Method (e-Cumulus)

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Workloads	HW, SW, Facilities Maturity	Virtualization Maturity	Utilization Improvement Opportunities	IT Automation Maturity	Workload Standardization Opportunities	Data Constraints	Business and IT process improvement opportunities	% of Total* Revenue Affected	% of Total* Cost Affected
Web Serving	Low	Low	High	Med	Med	Med	Low	11 -- 20%	11 -- 20%
Web Applications	High	Med	Med	Med	Low	Low	N/A	N/A	21 -- 30%
BI Data Warehouse	N/A Low Med High	High	Low	High	Low	High	Low	11 -- 20%	11 -- 20%
ERP, SCM	High	Low	Med	High	Low	High	Med	0 -- 10%	31 -- 40%
Analytics	Med	Med	Low	Med	Low	Med	Low	11 -- 20%	11 -- 20%
Numerical, Batch	Med	Med	Med	Med	Med	Med	Med	0 -- 10%	0 -- 10%
Collaboration	Med	Low	High	Low	Med	Low	Med	0 -- 10%	0 -- 10%
File & Print	Low	Low	High	Low	High	Low	High	0 -- 10%	0 -- 10%
Desktop	Med	Low	High	Low	Med	Low	High	0 -- 10%	21 -- 30%
Development & Test	Med	Low	Med	Med	High	Low	High	11 -- 20%	11 -- 20%

Sample Assessment Questions:

For each workload, answer True or False to each statement

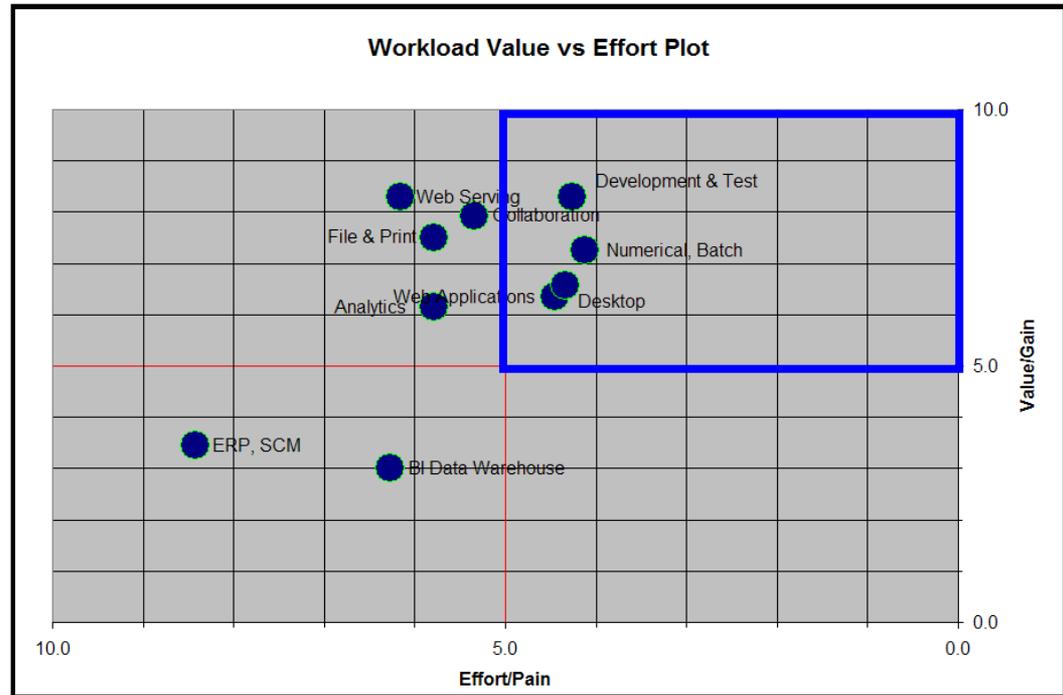
1. All IT tasks for managing a server are performed remotely using system management tools
2. At most one tool is used to perform a single type of IT task on all servers
3. Single integrated management tool or toolset is used for routine management tasks
4. Routine tasks do not require manual intervention or coordination between tasks across all servers
5. Adding/removing new servers and software components do not require manual intervention or reconfiguration of management tools

Step 2 example output: determines candidate workloads for possible migration to cloud computing

Sample Workload Scorecard

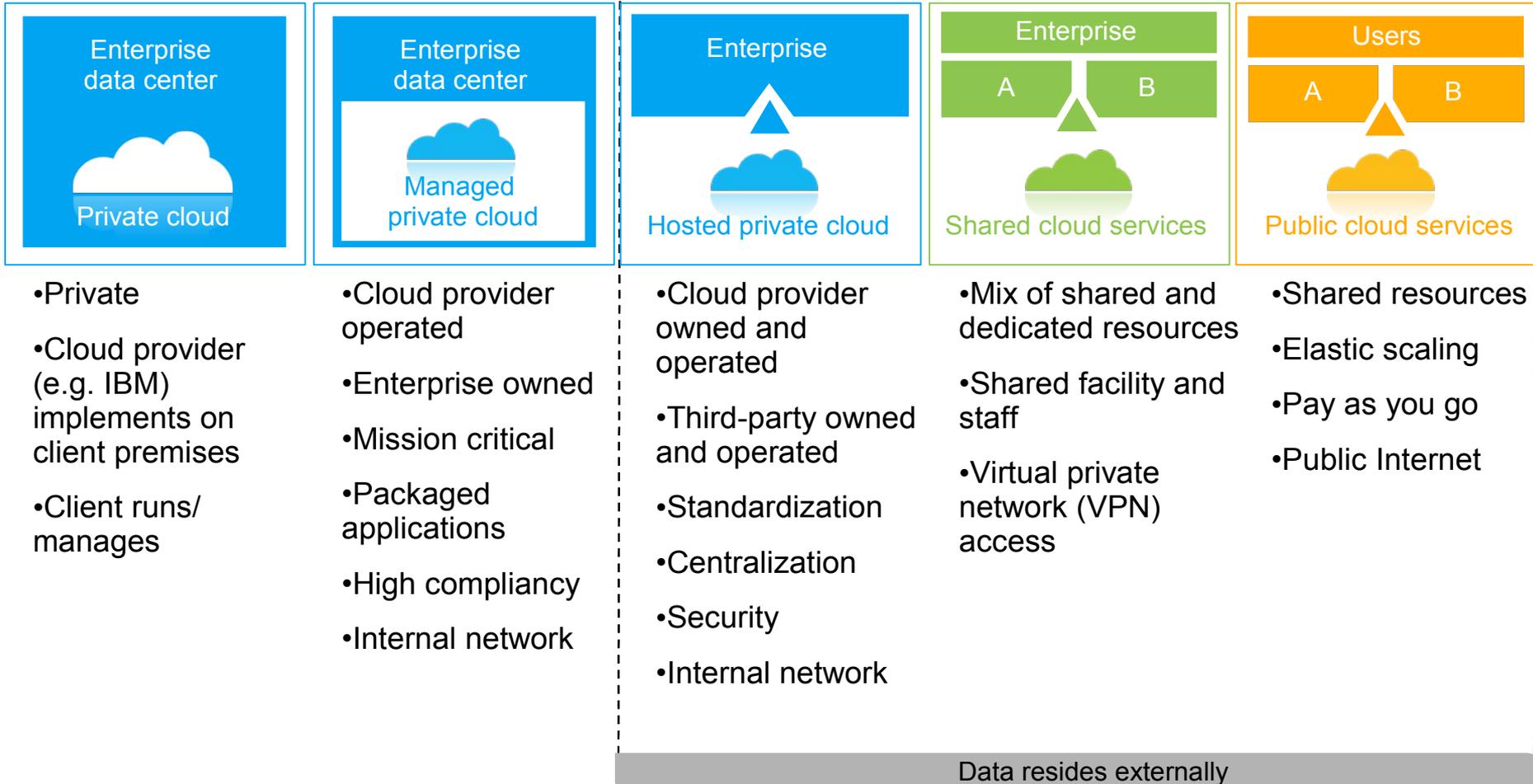
Workloads	Abs Value/ Gain Score (0.00 - 10.00)	Abs Effort/ Pain Score (0.00 - 10.00)
Web Serving	8.30	6.16
Web Applications	6.35	4.45
BI Data Warehouse	3.00	6.27
ERP, SCM	3.44	8.42
Analytics	6.15	5.79
Numerical, Batch	7.25	4.13
Collaboration	7.93	5.34
File & Print	7.50	5.79
Desktop	6.57	4.34
Development & Test	8.29	4.26

Sample Workload Pain versus Gain Output

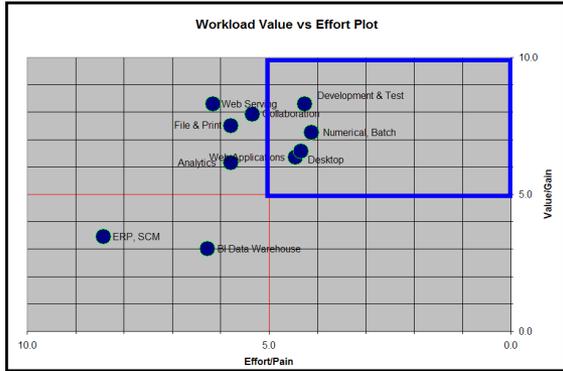


Step 3: Determine the cloud delivery models

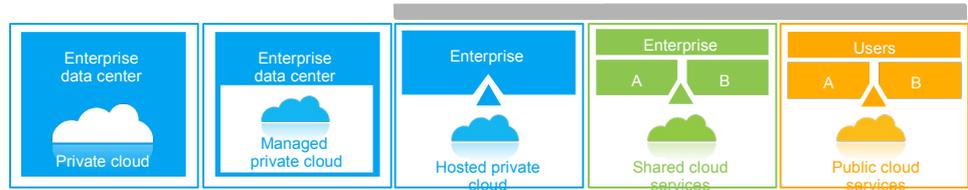
Delivery models



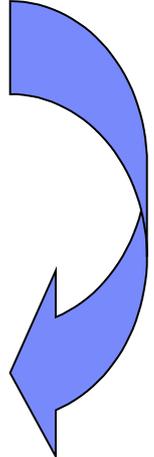
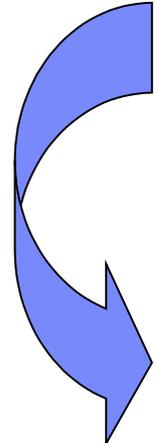
Step 3 example output: determines which candidate workloads are appropriate for the type of delivery model



Delivery models

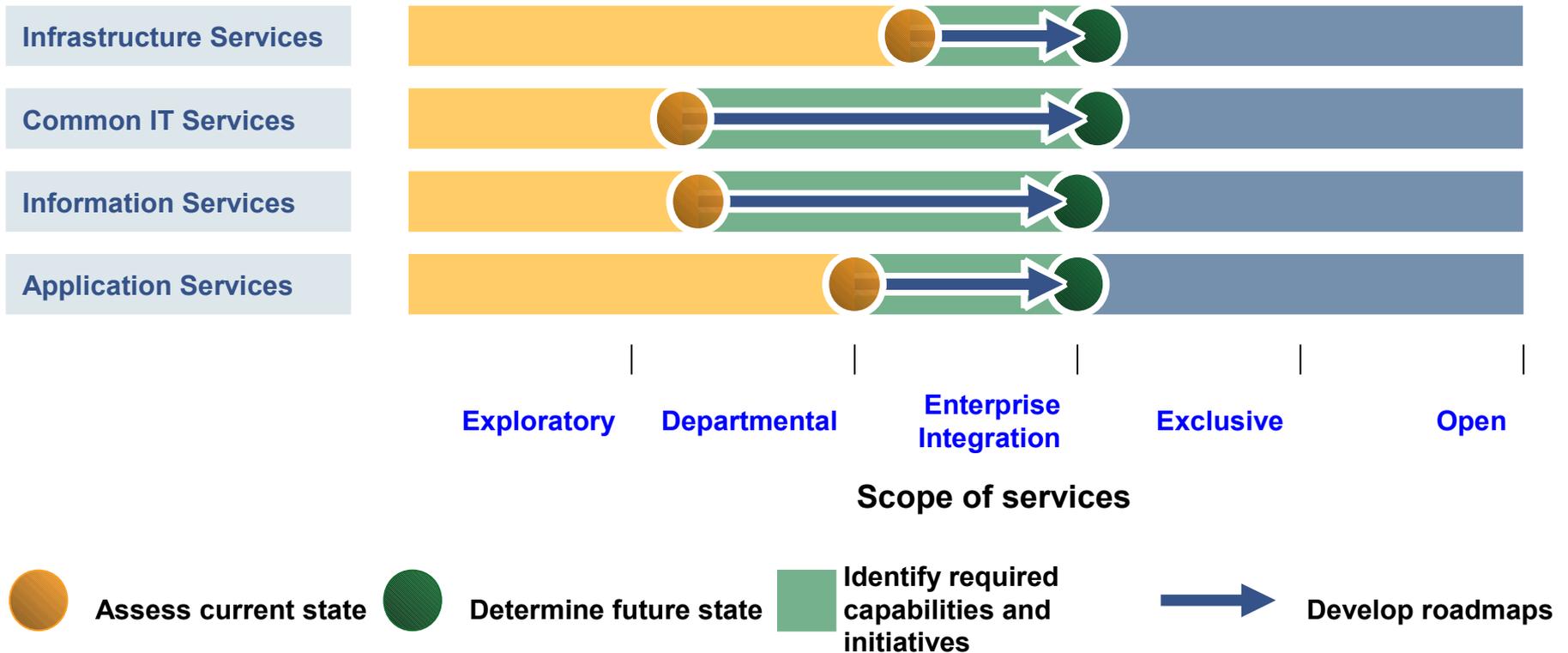


Priority	Cloud Adoption Framework Layer	Role	Pervasiveness	Resources	Example Workloads
1.	Infrastructure as a Service (IaaS)	Provider (Consumer)	Enterprise	Mainframe	
2.	IaaS	Provider (Consumer)	Enterprise	Linux and Unix Servers	
3.	IaaS	Provider (Consumer)	Enterprise	Windows Intel Servers	
4.	Platform as a Service (PaaS)	Provider (Consumer)	Enterprise	Test/QA	Dev/Test
5.	PaaS	Provider (Consumer)	Enterprise	Web Serving	xClient.com
Alternatively depending upon further risk consideration	PaaS	Consumer – Integrator	Exclusive Cloud	Web Serving	xClient.com

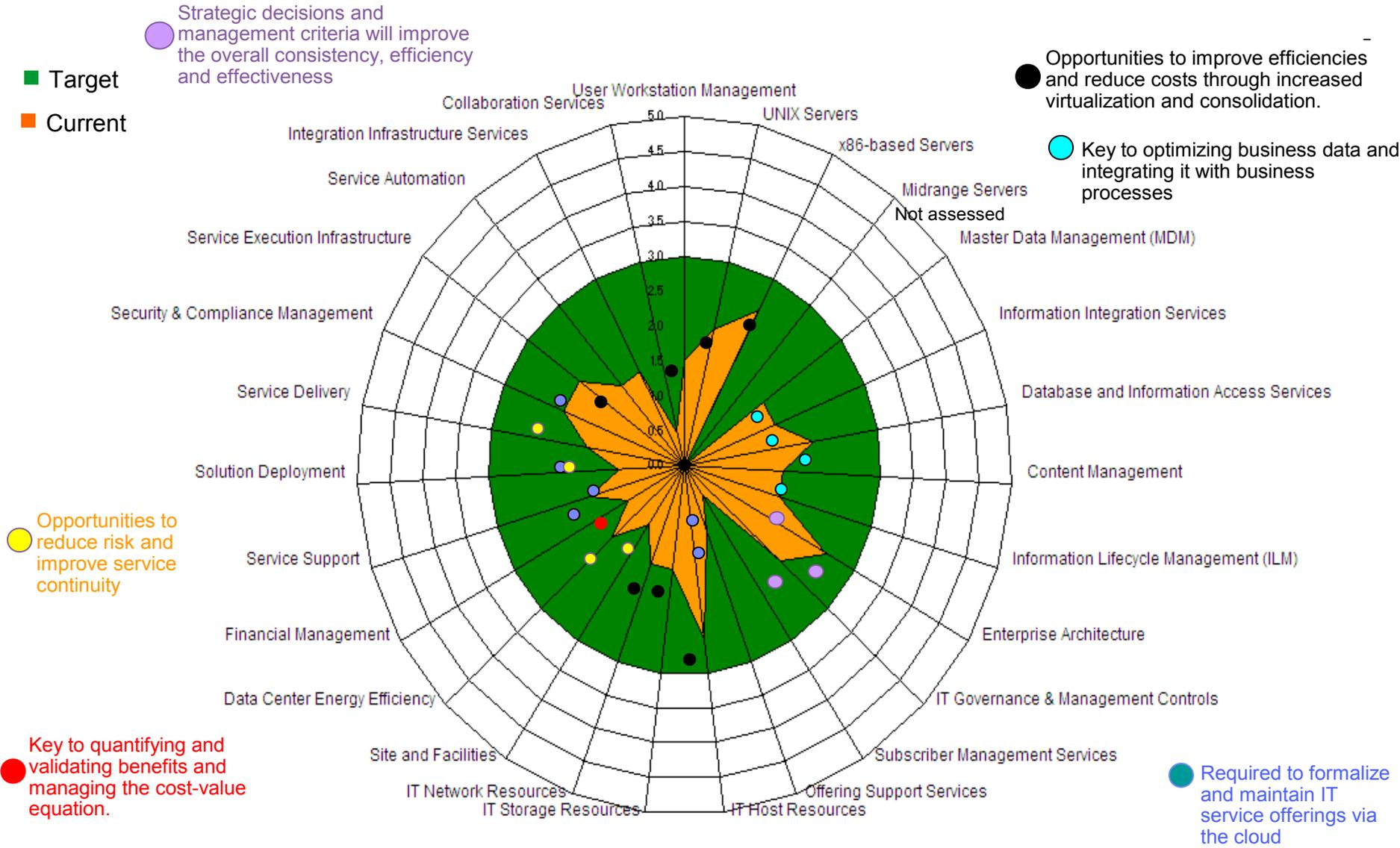


Step 4: Analyze infrastructure gaps

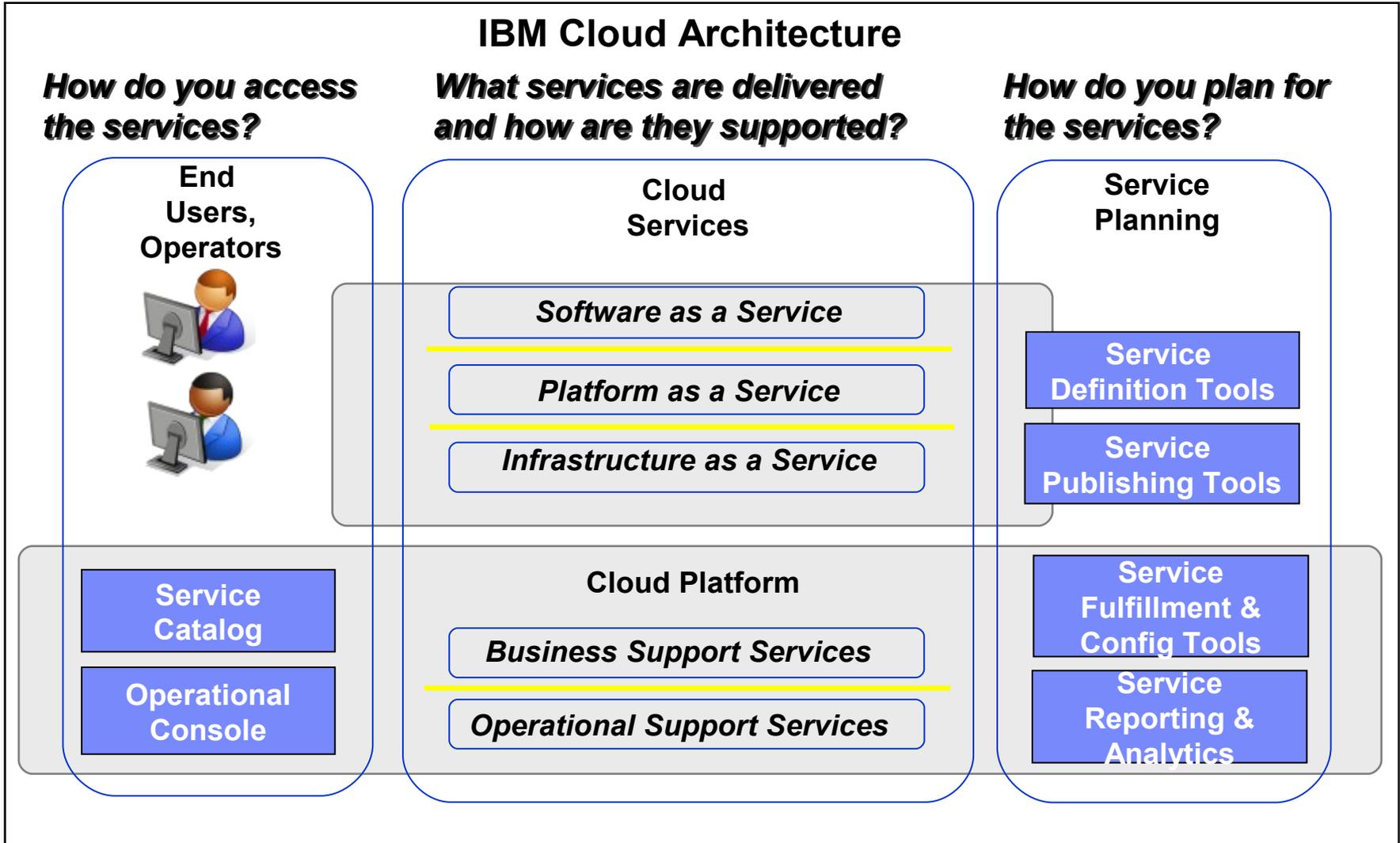
Assessment and Roadmap Tool (ART)



Step 4 example output: assesses current vs. target infrastructure characteristics



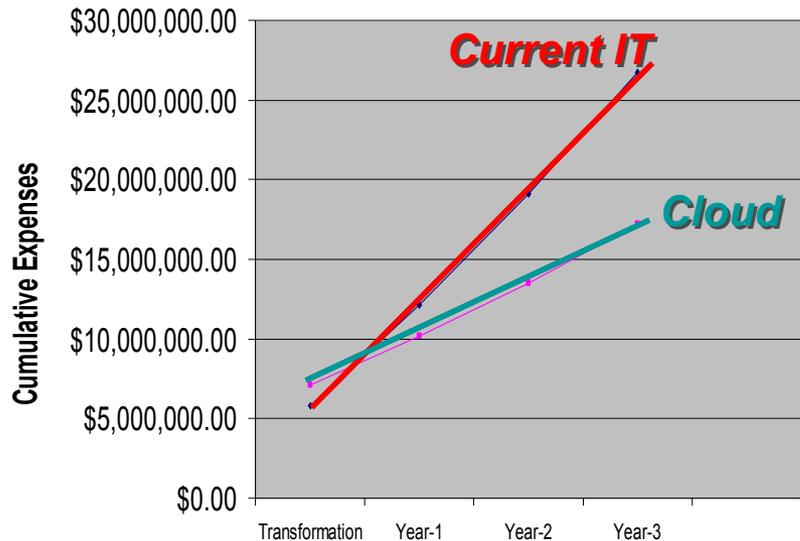
Step 4 (continued): While analyzing the gaps, an assessment of the architecture is established



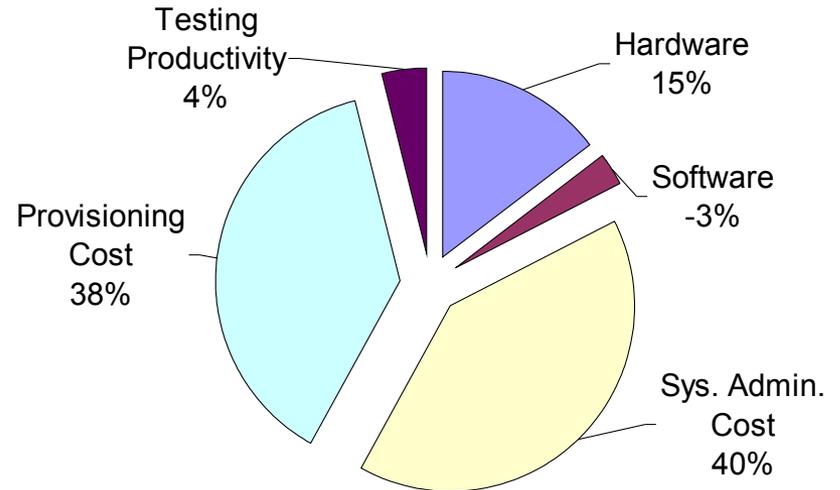
Step 5: Determine the ROI

Payback Period (months)	4.85
Estimated ROI over 3 years	469.75%
Estimated Average Annual ROI	156.58%

Cumulative Cost Comparison

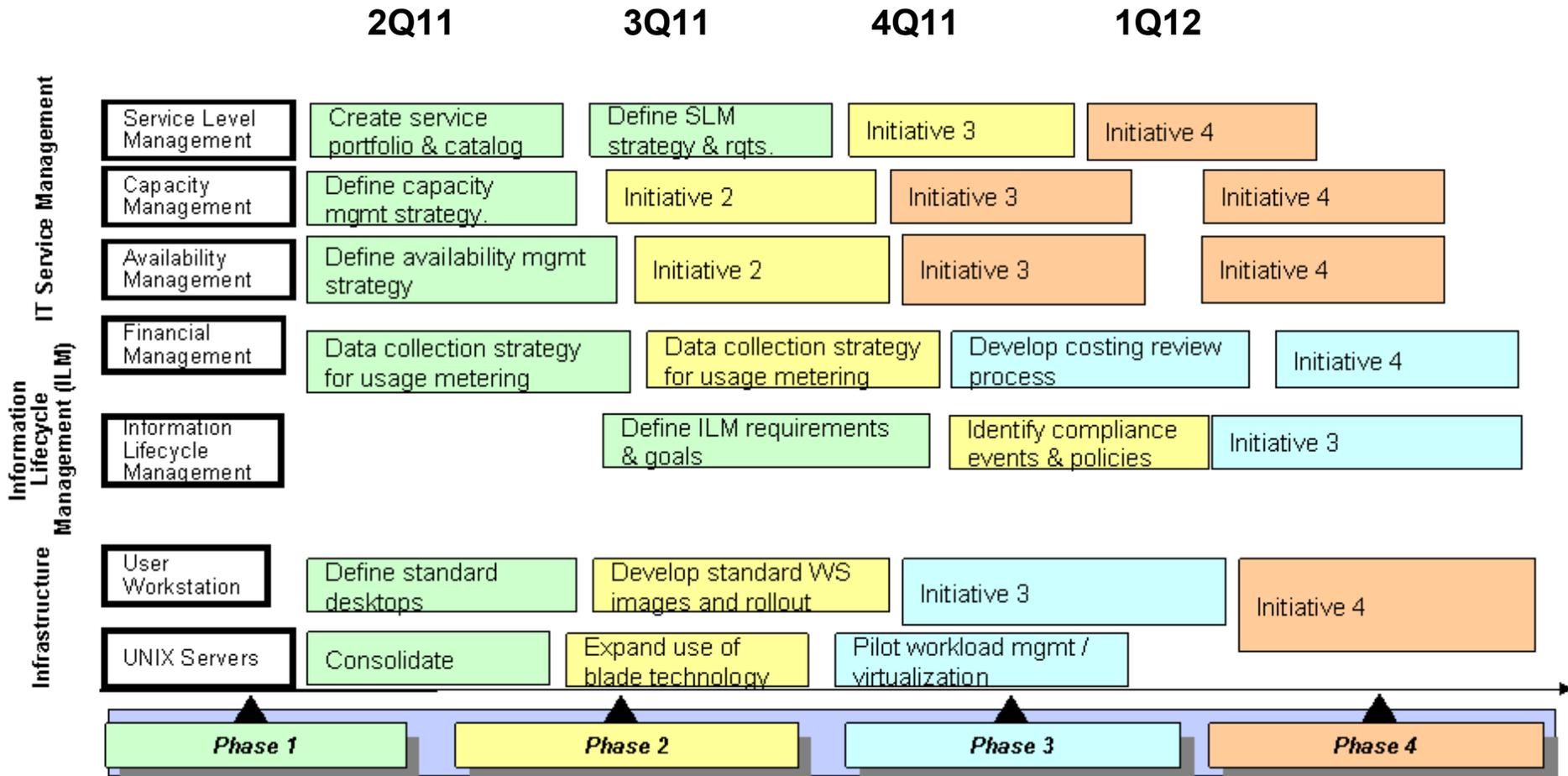


Year One Savings By Category

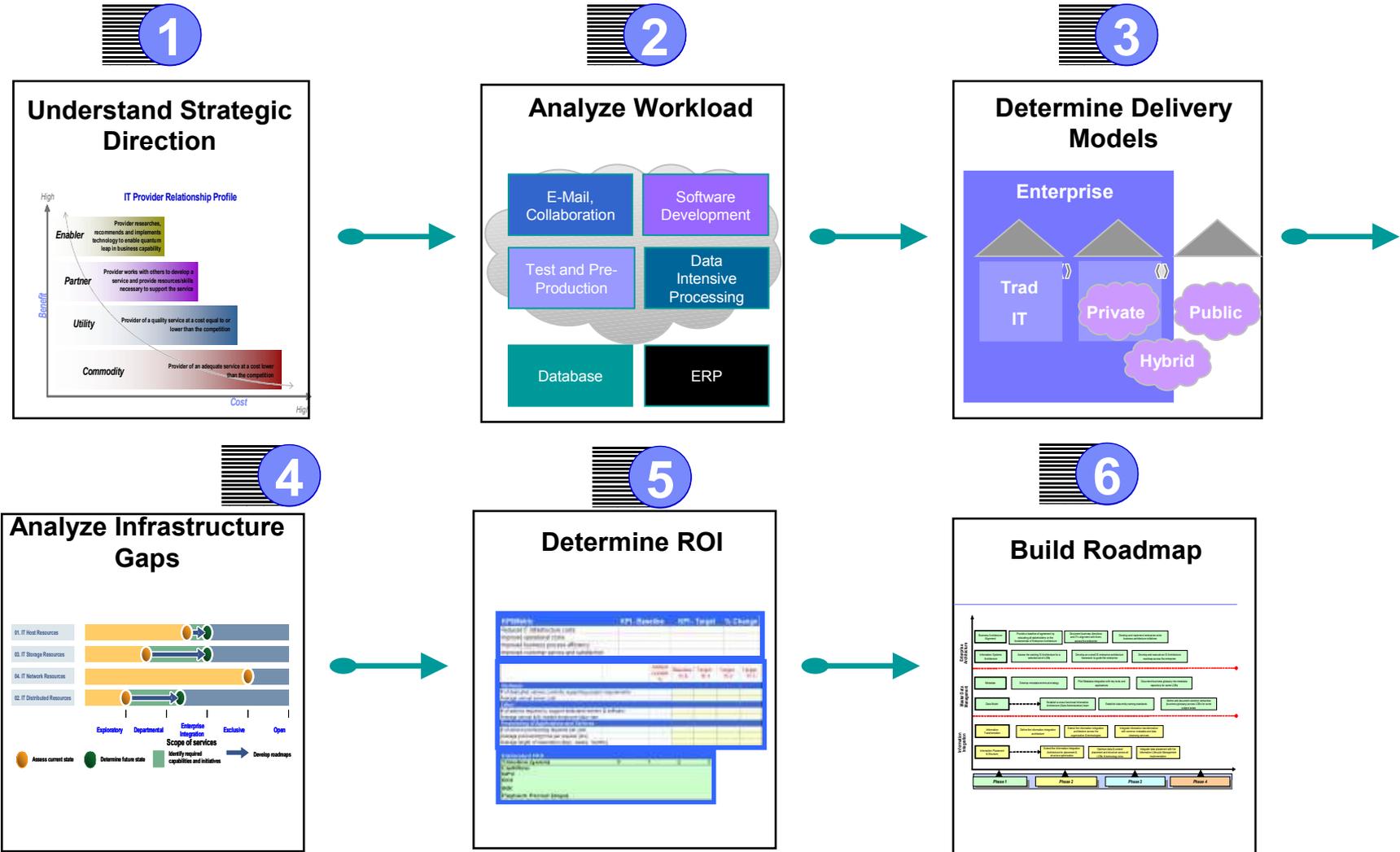


ROI projections from IBM Research Study 2009

Step 6: Build the roadmap



Summary: Build an effective Cloud Roadmap by making the right choices based upon workloads



Get started and plan for Cloud with a workload oriented approach



Develop a strategy



Develop a cloud strategy and roadmap

- Assess cloud deployment models, service options and workloads
- Understand the ROI
- Build the right business case



Ready your infrastructure



Condition your existing infrastructure for cloud

- Virtualize and automate existing systems
- Implement key technologies and services to support a cloud infrastructure
- Ensure service management is in place



Pilot and Deploy



Target specific workloads for cloud deployment

- Architect and implement low-risk workloads such as test and development, desktop, backup and recovery or storage
- Standardize workloads and supporting systems

Refining your Cloud roadmap: Workload Transformation Analysis

- You have defined your Cloud strategic direction. Now you need to accelerate adoption of that strategy, by identifying those workloads that will best fit your targeted cloud environment while giving you a good return on investment.
- **IBM Workload Transformation Analysis for Cloud** uses our IBM Research-developed patent-pending analytical tool and a structured, accelerated methodology to:
 - Produce a detailed, quantitative analysis of both business applications and infrastructure components
 - Deliver a prioritized list of suitable workloads for migration to your target cloud as well as an analysis showing the potential costs and migration impacts.
- **Why IBM?** IBM has used this same tool and methodology in our own cloud migration initiatives, narrowing a list of more than 9,500 applications from around the world to those that were best suited for our target cloud. Following our structured approach can enable you to focus on the most beneficial workloads to migrate, helping you realize the advantages of cloud computing more quickly.

If interested in the above engagement, contact Micheal Daniels madaniel@ca.ibm.com

