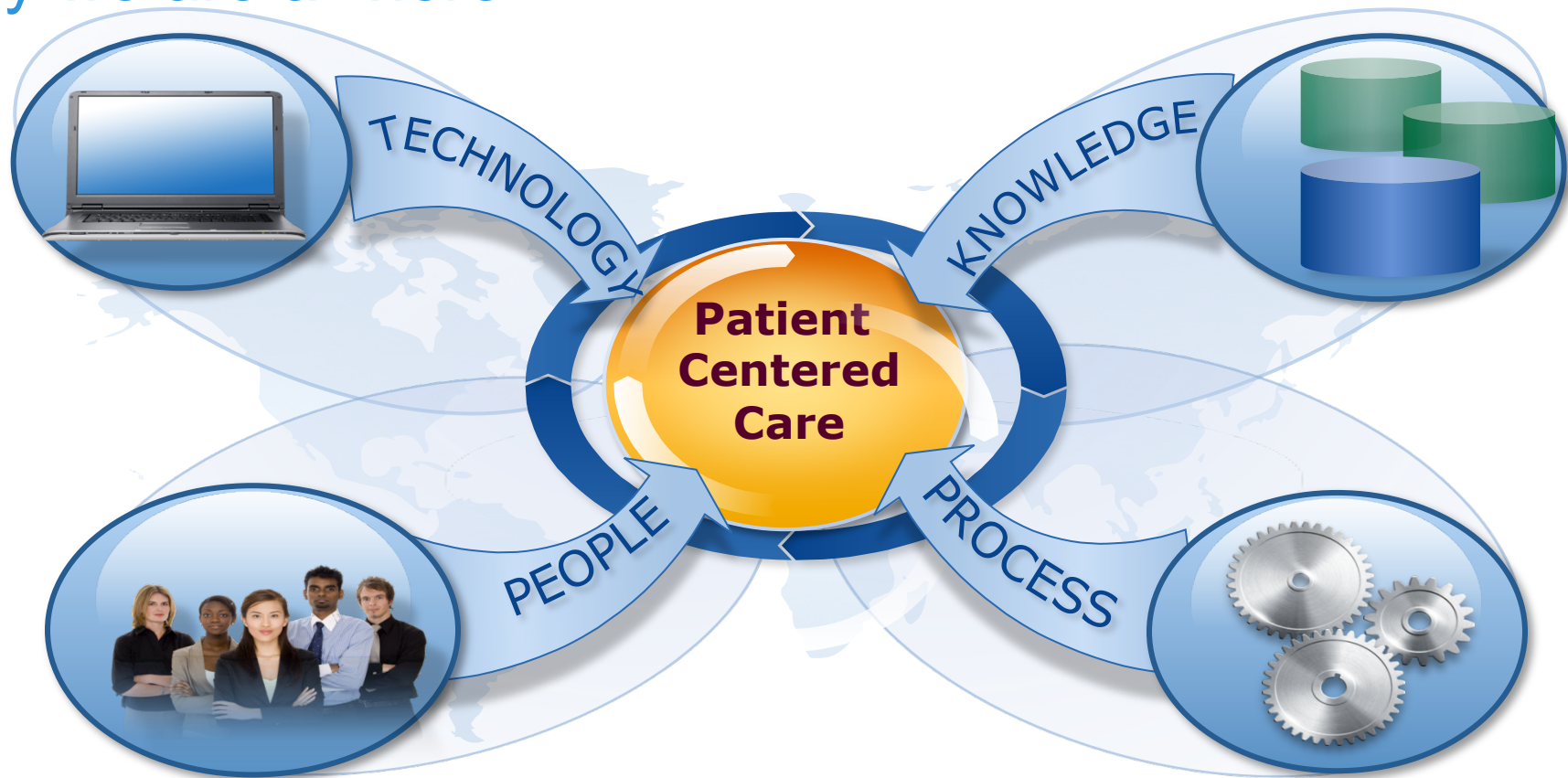


The Next Wave of Healthcare IT

Trey McMillian
IT Transformation Advisor

Why we are all here



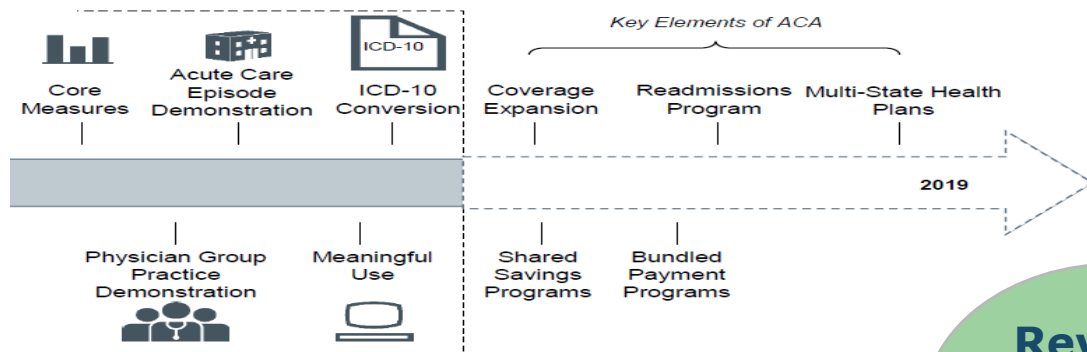
Disclaimer: Please read the fine print

- I am not here to sell you a product or a service. I am here to share EMC's perspective on IT trends and inform you of what I see occurring in the Health & Life Sciences vertical. My role within EMC is to provide an unbiased perspective for our clients.

Have you ever experienced this?

- What's the cloud and when are we going to get there?
- I just returned from RSNA and I need you to implement a solution we just bought.
- We can discuss prioritization as long as you know my priorities are number 1.
- Why does it take 6 – 12 months for a project to be completed?
- I was much more productive when we used paper.
- I just read a paper on Big Data and I think we need it.
- I want you to deliver IT services faster and cheaper!

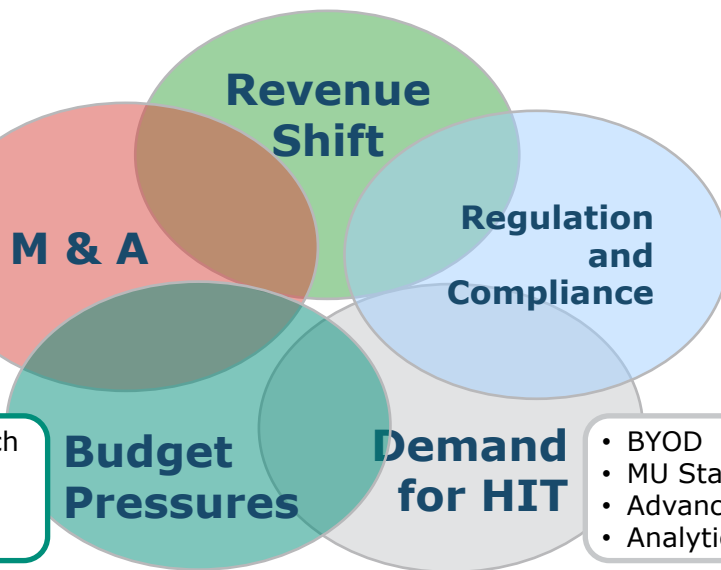
Factors Affecting Healthcare Providers



- Reimbursement decreasing
- Patient census decreasing
- Outcome based payment
- Bundled payments

- Survival: Need to grow to avoid being an acquisition target
- Acquisitions
- Divestments
- Challenge of maintaining high service levels while growing

- Reduced budgets to match reduced reimbursements
- Fixed budgets despite variable hospital mix



- MU
- HITECH
- HIPAA
- ICD-10
- Joint Commissions

- BYOD
- MU Stage 2
- Advanced imaging storage
- Analytics

Healthcare Businesses Need to React



**React Faster To
Find New Growth**

Healthcare Businesses Needs to React



**React Faster To
Find New Growth**

**Cut Operational Costs &
Legacy More Than Ever**



Healthcare Businesses Needs to React



**React Faster To
Find New Growth**



**Accountable
Care**

**Operational Costs &
Pay More Than Ever**



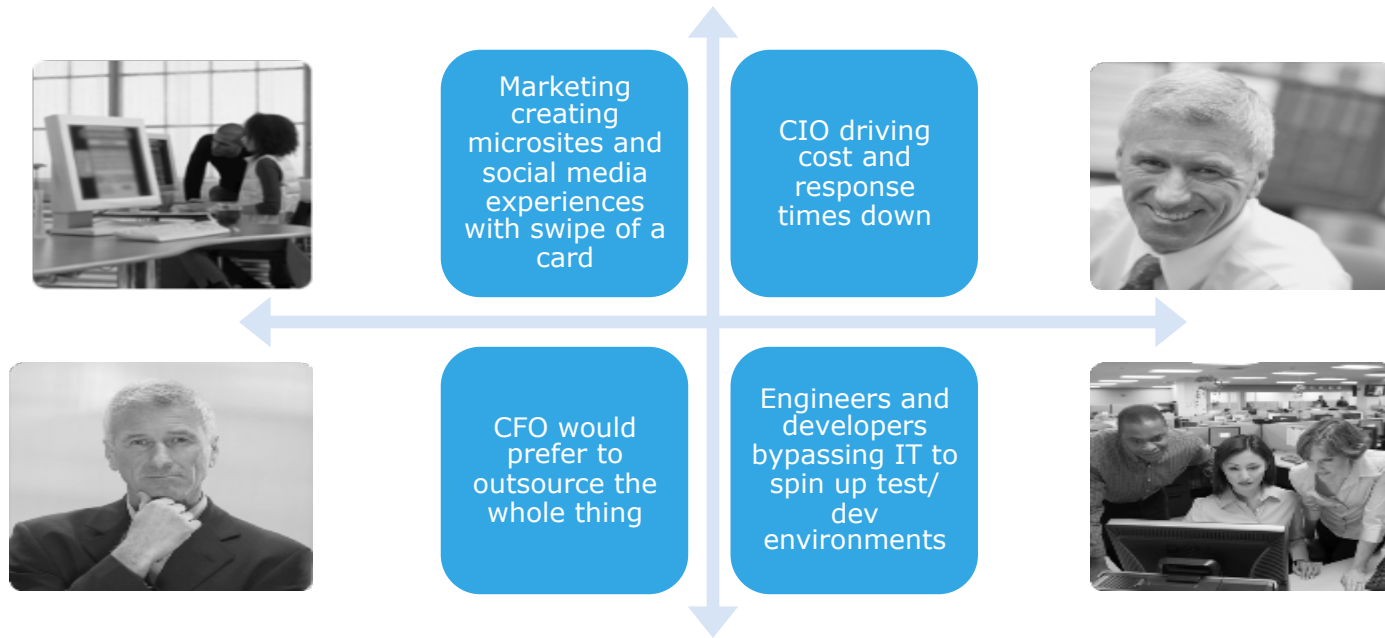
Challenges Facing IT Providers Today



- Business expectations have changed with exposure to external services
- ...and their demands on IT have changed, requiring:
 - Rapid, automated fulfillment of requests
 - Documented, standardized services and choice
 - Transparent, competitive costs and service levels
 - Professional-grade customer service
- Without change, users act on their own
- Conversation with the business must change

IT Must Become a Service Provider: Not Just a Technology Provider

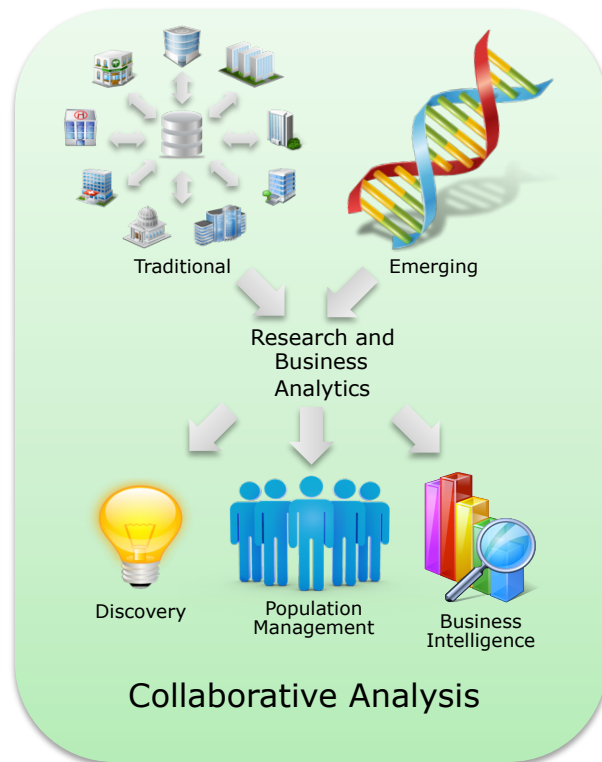
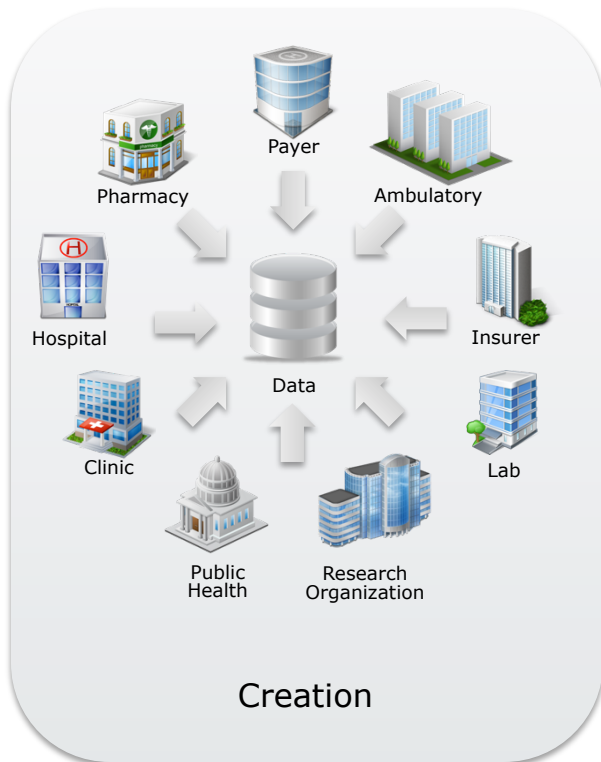
Consumers and Leadership Are Driving Transformation



IT Pain Points

- “Shadow IT” threatens IT budget control
- Lack of standardization is costly and impacts productivity
- IT is under pressure to reduce operational costs
- IT is not supporting the business agility necessary for the company to compete effectively
- Many IT organizations lack the in-house service definition skills needed to produce a service catalog

Barriers to Change Are Information Based



Healthcare IT Business Challenges



New HIT Agenda



Provide Secure Access to Applications and Data Through **Mobile Devices**



Use **Agile Development** to Build New Patient-Centric Applications



Build **Data Lakes** To Deliver Insights and Applications on Business, Clinical & Research Data



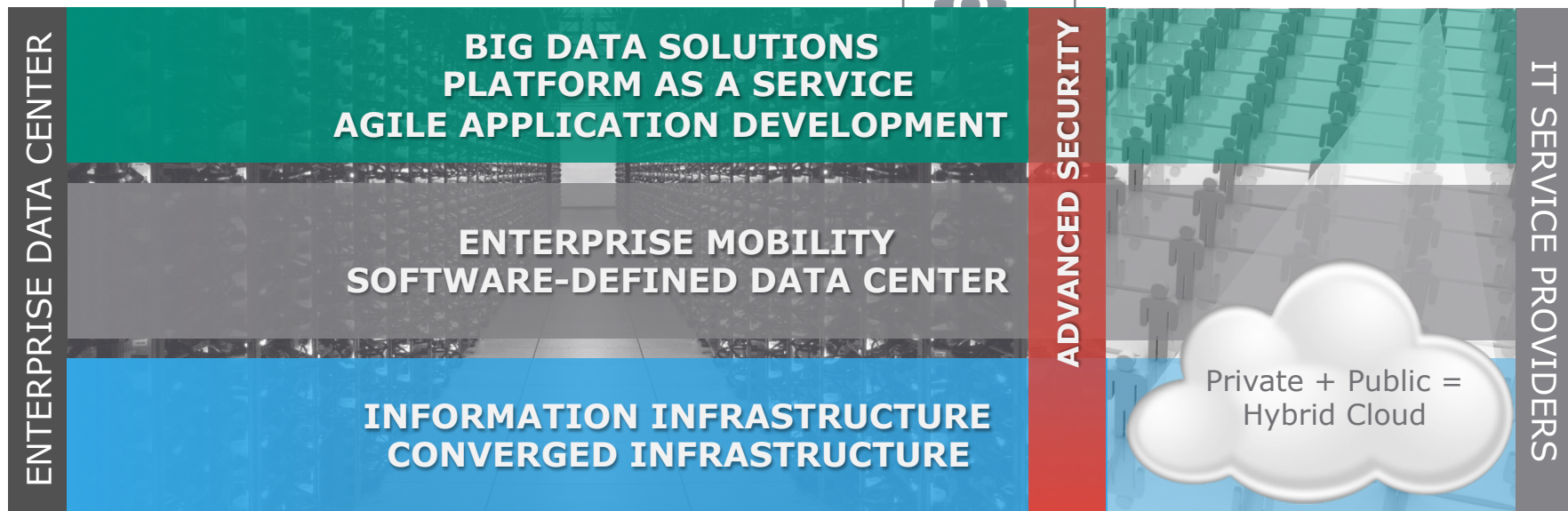
Move to **Software-Defined Data Center** Infrastructure and Expand to Hybrid Clouds



Enable HIPAA With Data-Driven Security and Rapidly Respond to Threats.

The New Healthcare IT Stack

Data is Liquid, Access is Easy and Everything is Secure

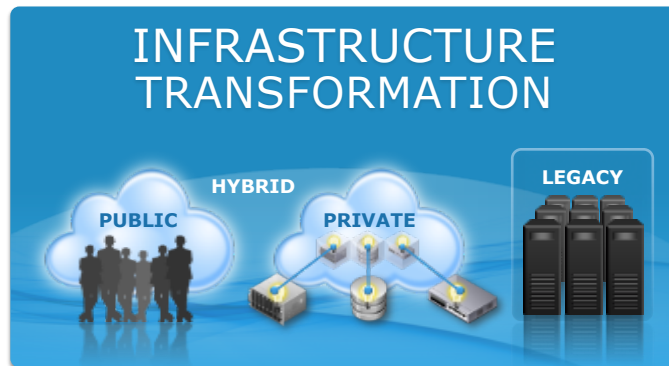


Transforming to IT as a Service

Align Workloads
With Most Suitable
Cloud Model And
Empower Them For
Mobile And Big
Data Solutions



Deliver Private
Cloud With Legacy
And Hybrid Cloud
Extensibility



Package And
Orchestrate
Services For Agile
IT Operations And
Convenient
Consumption

What IT As A Service Delivers

BROKERED
AS WELL AS BUILT



SELF
PROVISIONED



CONSUMERIZED
CHOICE OF DEVICE



T R A N S P A R E N T
P R I C I N G
A N D S E R V I C E L E V E L S

STANDARDIZED
SERVICES



A U T O M A T E D
D E P L O Y M E N T

IT as a Service Business Outcomes



- Increased Speed and Agility
- Reallocated Resources to High Impact Projects
- Greater Operational Efficiency
- Reduced OpEx and CapEx
- Heightened Compliance and Security
- Improved Customer Experience

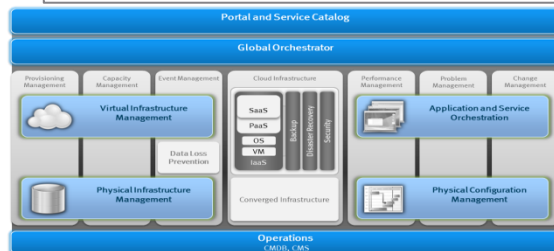
How Do You Get Started?

We See Several Different Approaches

1

Transition to a Modern Cloud Architecture

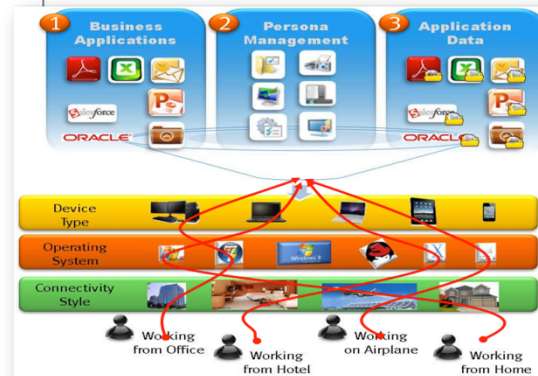
- Infrastructure Architecture
- Automation, Orchestration & Management
- Security & Availability



2

Launch a Specific Service

- Desktop As A Service, End User Compute, VDI
- Modernized Applications / Software As a Service
- Business Process As A Service
- Content As A Service



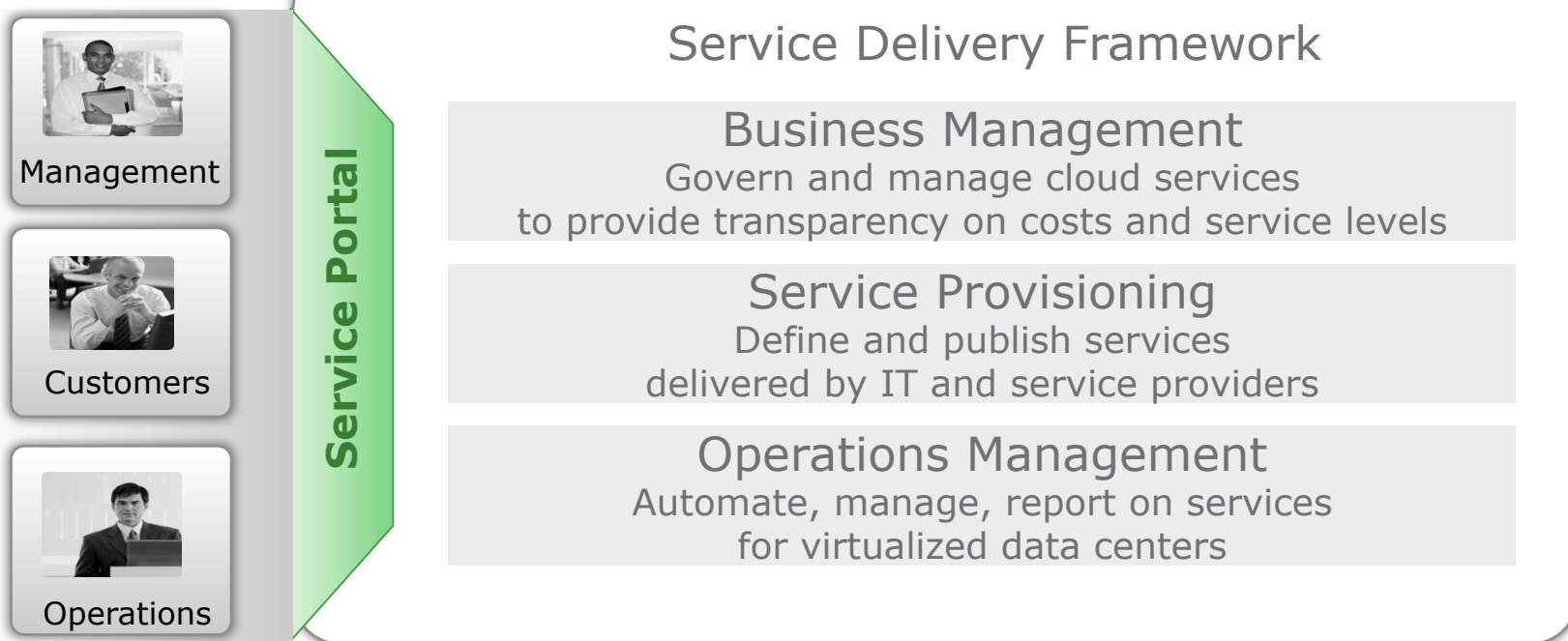
3

Run IT As A Business

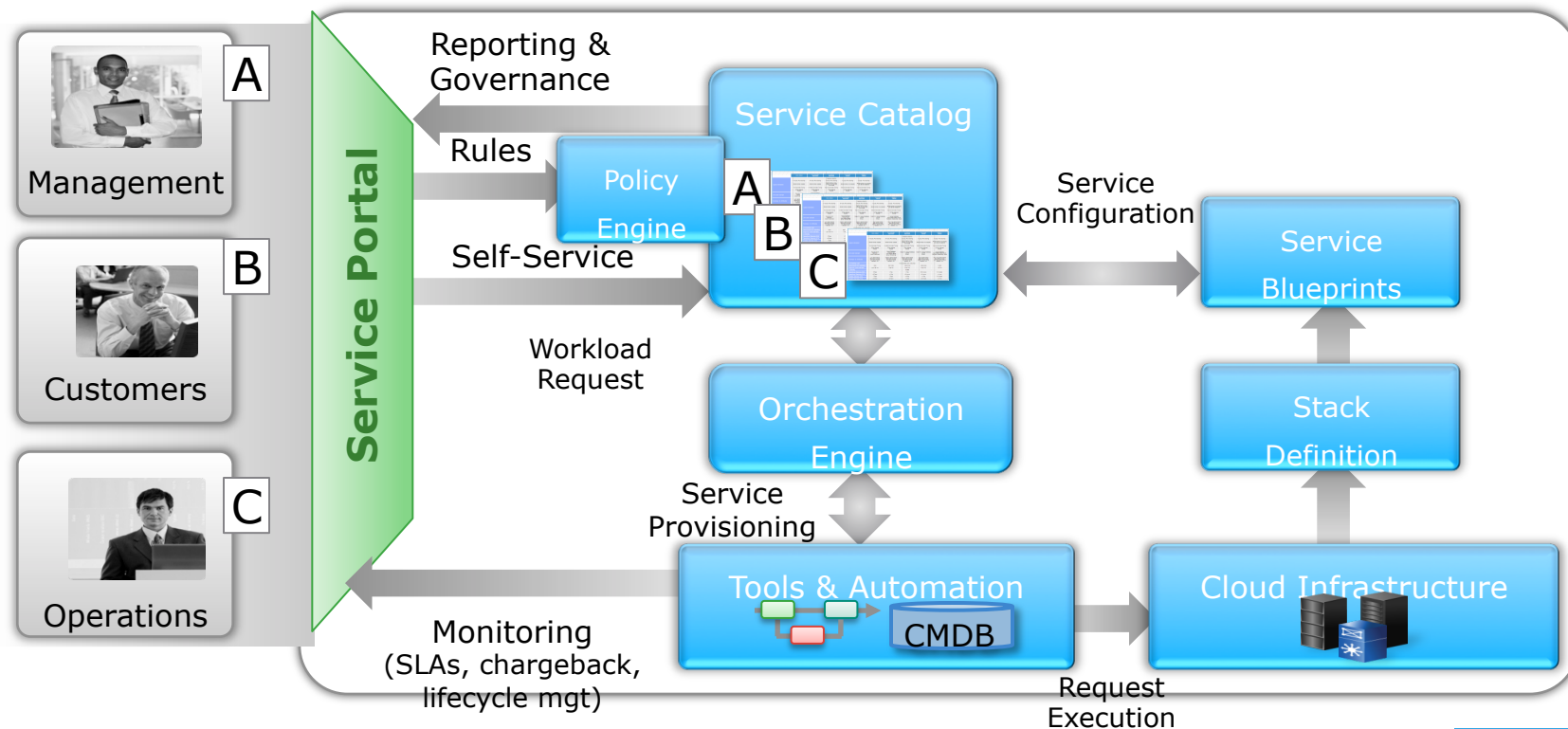
- Run IT As A Business
- ITaaS Strategy
- Service Management
- Organization & Process
- Supply & Demand



Service Delivery Framework Is Key to IT as a Service



Elements of a Service Delivery Framework



Building the Service Delivery Framework

Gain practical experience

1

Focus on Infrastructure as a Service

Establish standards for service delivery

2

Define Service Management Lifecycle

Create service blueprints to establish business groups, workflow, technology layers

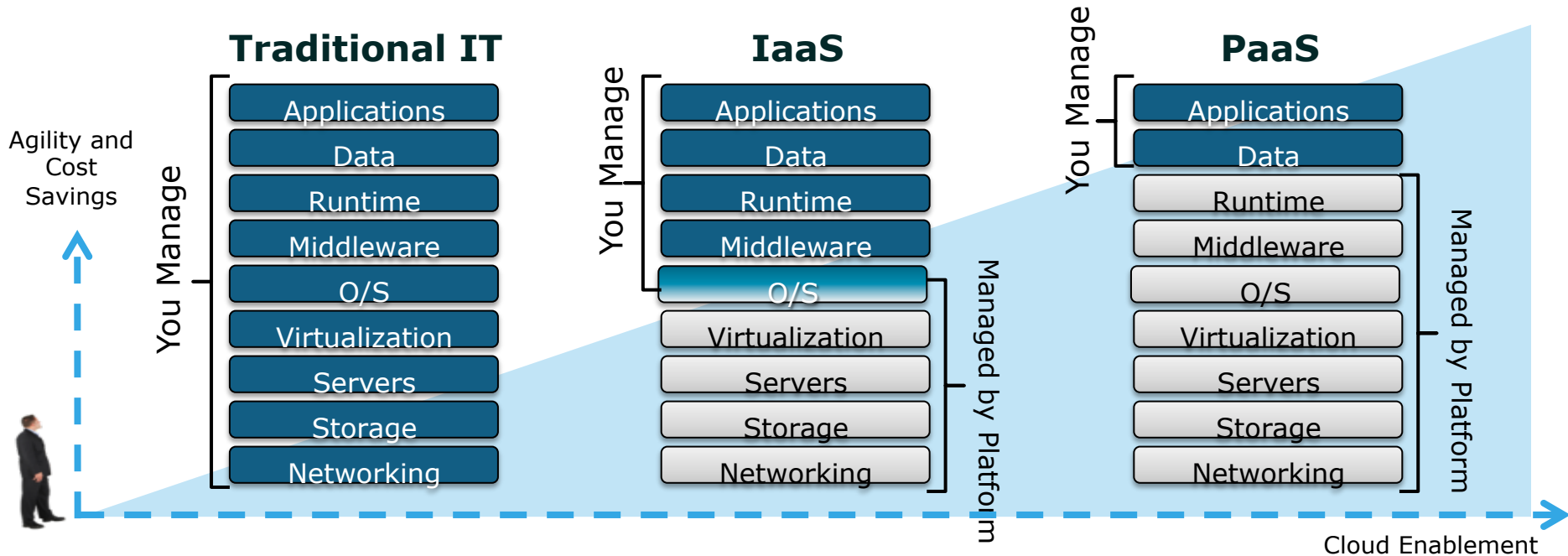
3

Deliver a Working Pilot

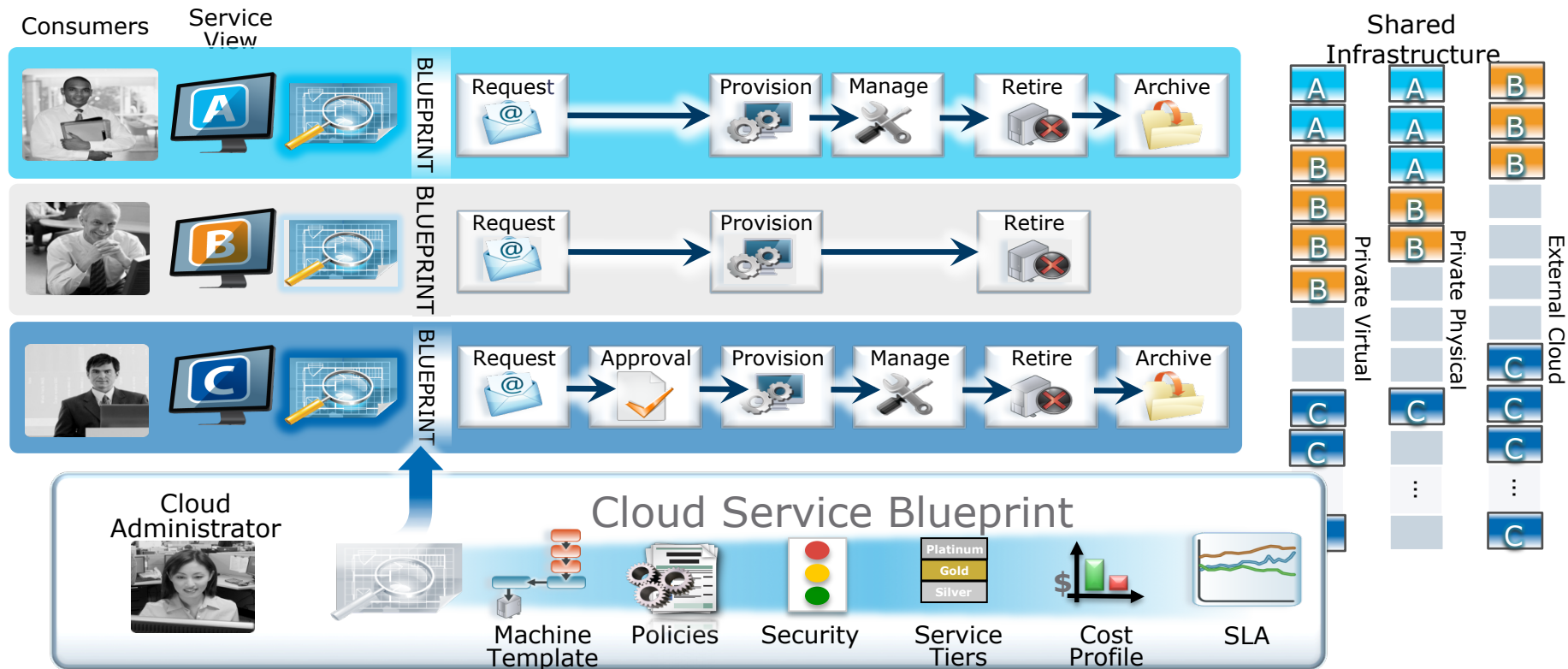
Realize automated service delivery in your environment

Focus on IaaS First

Establishes standards for technology stack



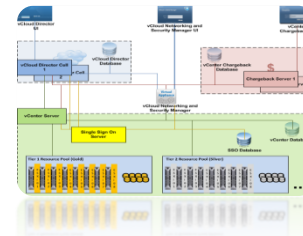
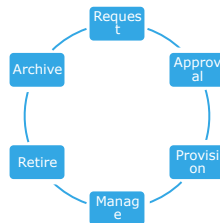
Managing Complete Service Lifecycle With Blueprints



EMC Infrastructure Automation Service

Gain Practical Cloud Management Experience

3



Hands-On Experience

Gain Management and Orchestration Skills

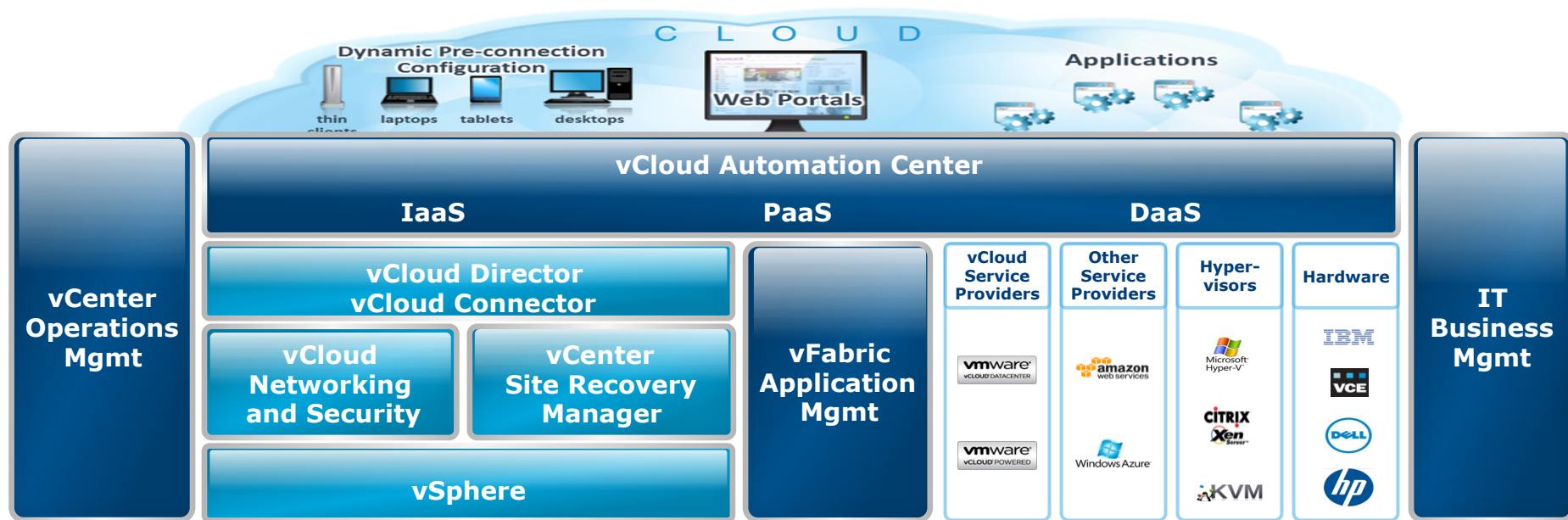
Service Lifecycle

Develop Service Blueprints

Pilot

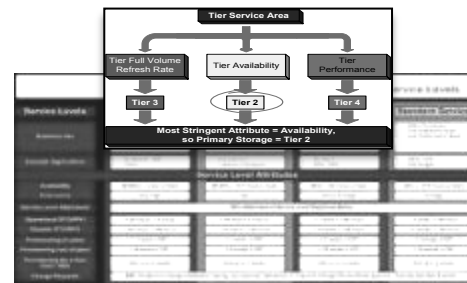
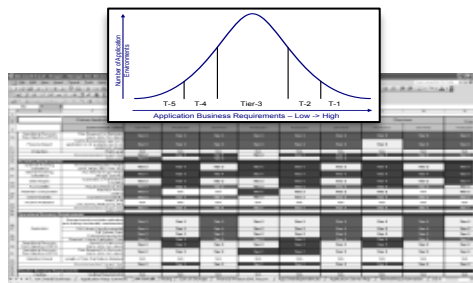
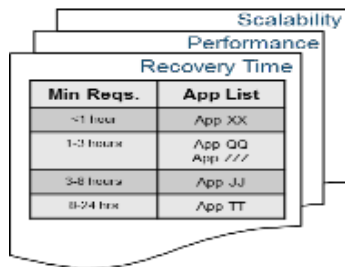
Deliver Pre-Production VMware vCloud Automation Center environment

VMware Cloud Management Framework



EMC Service Catalog Strategy & Design Service

Defining standard services to foster consumption



Workload Requirements

Analyze requirements by workload

Service Definition

Express service attributes, service level targets by tier, basic unit costing

Architecture Definition

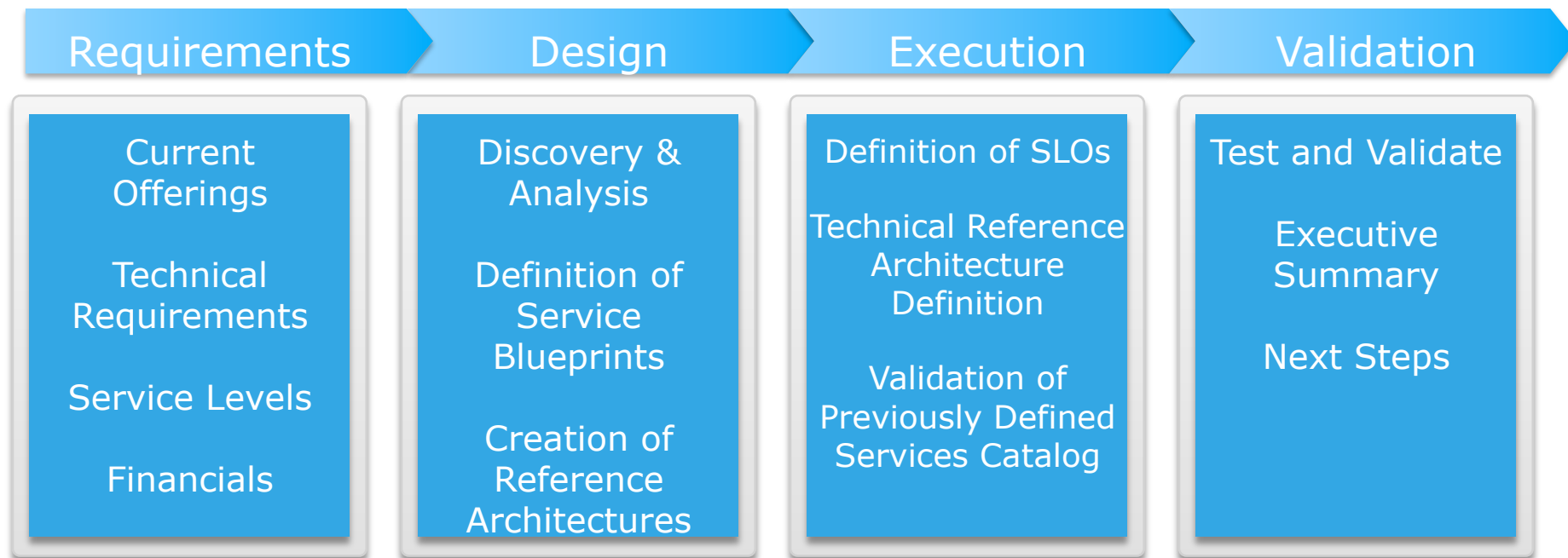
Define reference architecture, configurations and decision logic

EMC Point of View & Best Practices

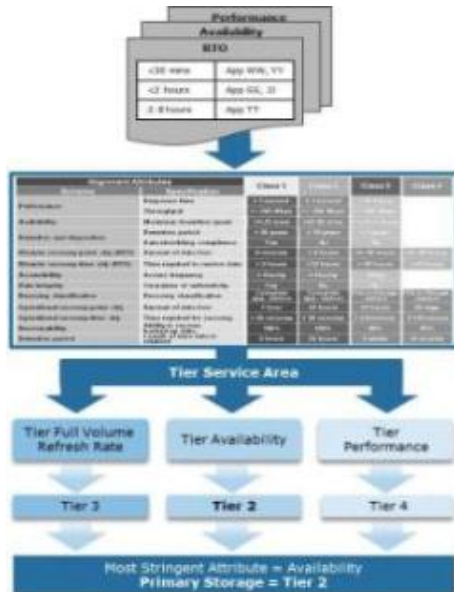


- Document services in clear, easy-to-understand language
- Begin with a few business or technical services at each level
- Define additional services and refine existing services through an iterative process
- Immediately expose services through a role-based view within a service portal
- Institute reporting to facilitate continuous process improvement through KPIs
- Link the process to other operational and management processes

Service Catalog Methodology



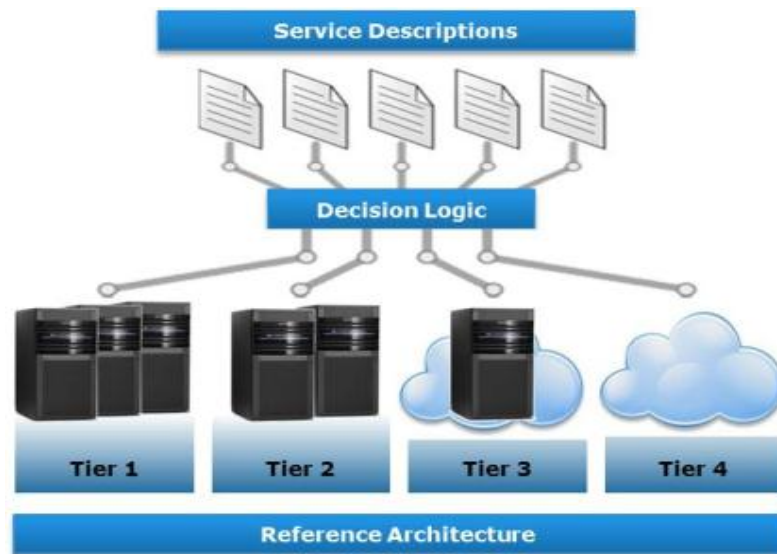
Service Catalogs Change the Conversation



- Foundational to ITaaS transformation
- Defines the services that IT can deliver
- Provides transparency to cost/benefit tradeoffs
- Drives standardization and motivates consumption of standard services
- Fosters automation, self-service, ITaaS

Service Catalog Approach & Deliverables

- Service Descriptions:
Consumer-facing menu
 - How to request service
 - Cost per unit
 - SLAs and OLAs
- Decision Logic:
Ties requirements to service levels
 - Application workload focused
 - Functionality, performance and criticality filters
- Reference Architectures:
Transparent service
 - Translates decision logic to available solutions
 - Detailed technical specifications

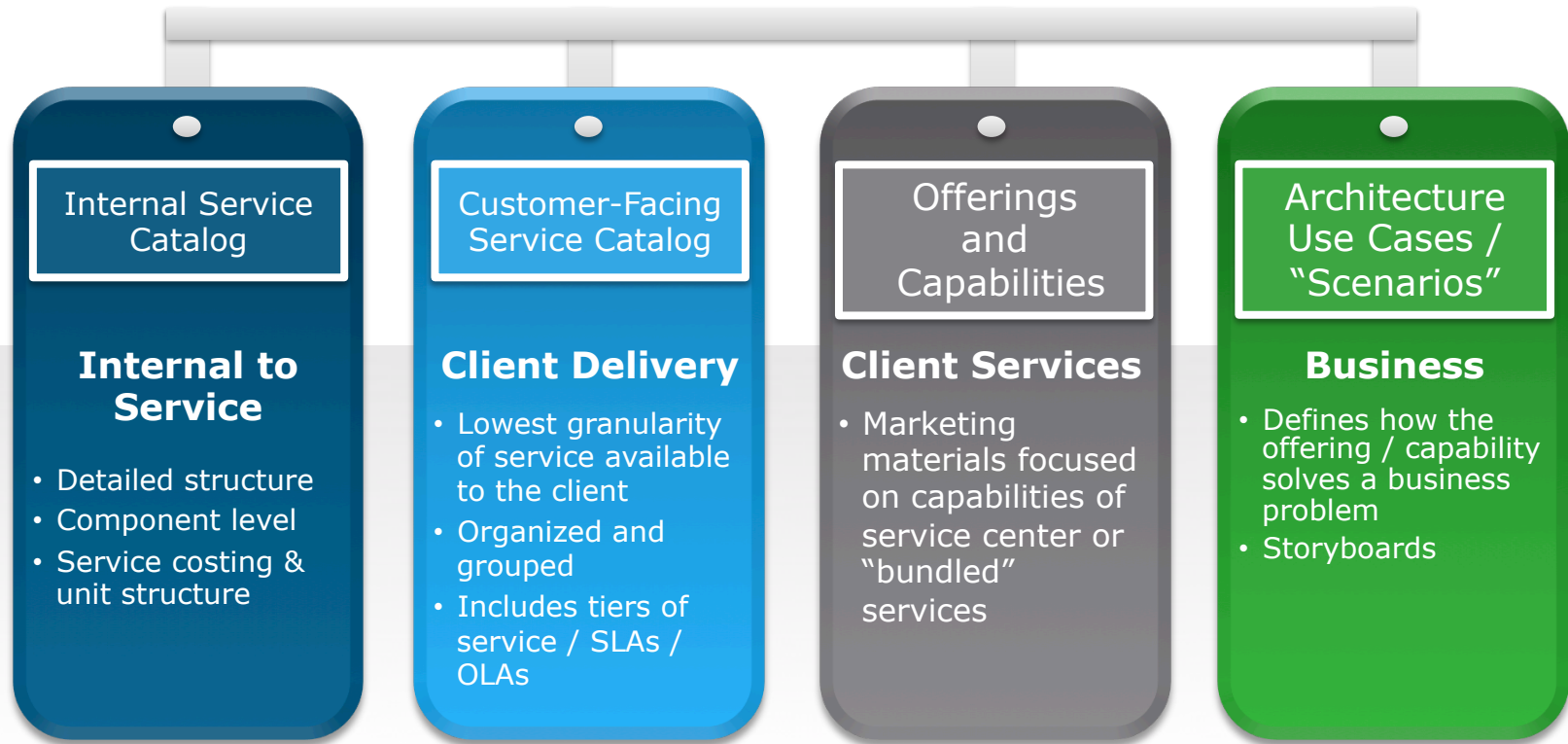


Service Catalogs Consist of Business and Technical Services



- Business Services
 - End-user Services (SaaS)
 - Hardware Procurement Services
 - Office Supply Procurement Services
- Technical Services
 - Infrastructure Services: IT internal services (IaaS)
 - Application Services: Dev/test services (IaaS and PaaS)

Views of a Service Catalog



Future State Vision: A Day in the Life

Scenario 1: IT App-Store

Selection of
Different IT
Service
Types

The screenshot displays an IT App-Store interface. At the top, there are navigation tabs: Desktops & Laptops, Collaboration & Communication, Cloud Services, and Mobility. Below these, a welcome message for 'Doug' is visible, along with links for APPROVALS, CART, and MY ORDERS. A search bar is present with the text 'What can we help you find?'. A 'Support' button is also visible. The main section is titled 'CLOUD SERVICES' with the subtitle 'Host applications, websites and more.' Below this, there is a sorting bar with options: ORDER BY --> Sub-Category | Lowest Price | Highest Price | Rating | Most Popular. The main content area displays a grid of service offerings, each with an icon, title, rating, and pricing details.

Service Offering	Rating	One Time Price	Recurring Price
.NET Developer Desktop Blueprint	5 stars	\$20	-
Atlassian Confluence Blueprint	5 stars	\$20	\$1 / Day
Atlassian JIRA Blueprint	5 stars	\$25	\$1 / Day
Atlassian Stash Blueprint	5 stars	\$25	\$5 / Day
Java Application Platform Blueprint	5 stars	\$45	\$5 / Day
Java Development Desktop Blueprint	5 stars	\$5	-
Jenkins Continuous... Blueprint	5 stars	\$30	\$0.05 / Minute
LDAP Server Blueprint	5 stars	-	-
Liferay Portal Blueprint	5 stars	-	-

Each
Offering is
Summarized
and
Selectable
(see next
page)

Future State Vision: A Day in the Life

Scenario 1: IT App-Store (cont.)



Virtual Server

☆☆☆☆

Virtual servers for self-managed app hosting

Order a Virtual Server to host self-managed applications within IT data centers, quickly and cost-effectively.

Features

Conveniently packaged sizes
Choose from small, medium, large or extra large. Each package comes with 100 GB of usable storage.

You choose the operating system
Choose between Windows 2008 Enterprise (64-bit) or RedHat Linux 6 (64-bit).

Maintained and Supported
Operating System and infrastructure maintenance is managed by EMC IT and includes anti-virus management, host based intrusion scanning & prevention, OS/Security patching and standard VM monitoring. EMC IT supports the Operating System layer of the VM while the Application Administrator is responsible for all application related issues. The Application Administrator can contact the IT Service Desk 24x7 to raise incidents on server issues.

Automatic backup and retention
Backups are performed using Avamar and are done on a daily basis, after local business hours in the US, EMEA and APJ respectively. The standard retention period for backups is 30 days.

Visit InfoPedia
For more information on Virtual Servers, visit InfoPedia.

Intended Use:

Business managed applications
Applications that do not require disaster recovery capabilities and do not have SOX or revenue impact. You may not store EMC confidential, government regulated, restricted information including employee, financial, contractual or other sensitive information such as source code, credit cards, social security numbers, etc on the Virtual Servers. You may not deploy Oracle or SQL Server databases on the Virtual Servers. You may not install and operate an Oracle or Microsoft SQL Server database. Internal Only.

Business operations impact
Applications where 24-hour outage data loss will not materially impact business operations, impede or prevent core or ancillary business processes. Not suitable for primary EMC data.

From \$505 USD

Monthly

1 Business Days

Order

On-Line Ordering

Details, Options, Service Bundles and Service Levels

Offering Descriptions

Small

1 vCPU
2 GB
100 GB Usable Storage
1 Business Day

From \$111

From \$105

Medium

2 vCPU
4 GB
100 GB Usable Storage
1 Business Day

From \$174

From \$168

Large

4 vCPU
8 GB
100 GB Usable Storage
1 Business Day

From \$302

From \$296

Extra Large

8 vCPU
16 GB
100 GB Usable Storage
10+ Business Days

From \$557

From \$552

Usable Storage:
Virtual Servers come with 100 GB base usable Storage with the option to increase in 100 GB increments up to a max of 500 GB for standard orders.

Chargeable Storage:
For the Operating System, all VMs require an additional 22 GB for Linux and 40 GB for Windows which will be automatically added to storage count. Similarly, Memory GB also counts towards total storage. EMC-IT will chargeback for total storage (OS + Memory + Usable Storage). Example: A Medium Windows VM will have 144 GB total Storage.

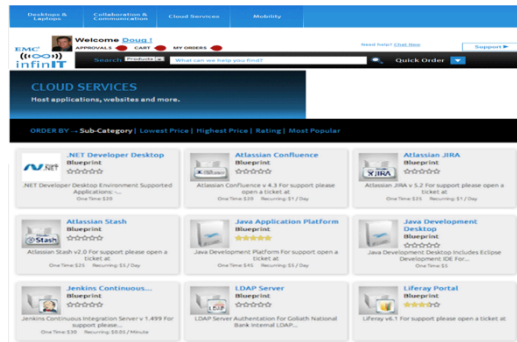
Non-Standard Orders:
If you choose any of the following options, the order is non-standard:
XL size orders
Greater than 5 VMs (any size) in one order
Usable Storage request of over 500 GB (any size)

Non-Standard orders will be fulfilled on a best effort basis. They have the same criteria for usable Storage and Chargeable Storage as noted above. After all business approvals are received, the provisioning team will assess the request and respond with an estimated delivery time within 5 business days.

CPU: vCPU max clock count is 1.5 GHz for any size VM.

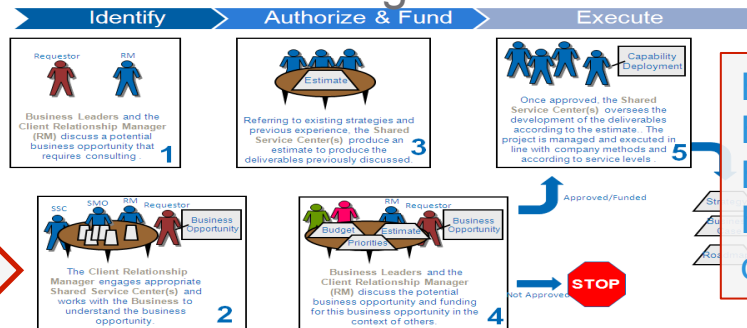
Future State Vision: A Day in the Life

Scenario 2: Request for New Service Not In Catalog

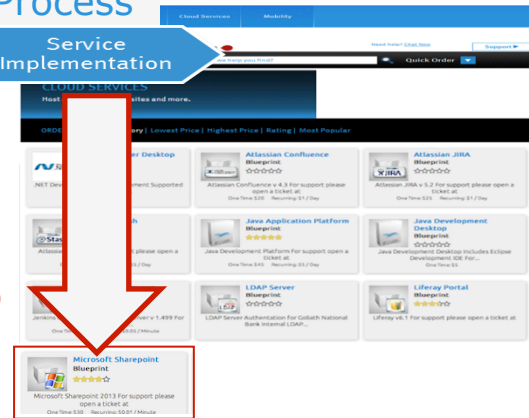


???

Required Service NOT Available



Business & IT Engage to Evaluate & Estimate Creation of New Service(s)



New Service Available

Contact Information

Trey McMillian
Trey.McMillian@emc.com