



Architecting an On Demand Enterprise with the Federal Enterprise Architecture (FEA)

Deep Dive and Case Studies

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Agenda

- What is driving organizations toward an On Demand enterprise?
- The Federal Enterprise Architecture (FEA) – Driving e-Government transformation
- Characteristics of an On Demand government
- On Demand organizational transformation
- Defining the On Demand operating environment
- Leveraging the FEA to drive the On Demand transformation of the federal government
- Case study
- Questions

On Demand Government

A Government whose business processes - - Integrated end-to-end across the organization and with other government agencies and partner institutions - - can respond with speed to citizen demands, business needs, changing economic conditions and legislative priorities and policies.

Constantly Changing Environment

Productivity

Governance

Economy

Capital and Asset Utilization

Security
Threats

Pricing
Pressures

Customer
Preferences

business

**Delivery
Options**

on demand business

**Financial
Models**

technology

Open Movement

Commoditization

Autonomic Computing

Grids

Web Services

Clusters

Blades

Virtualization

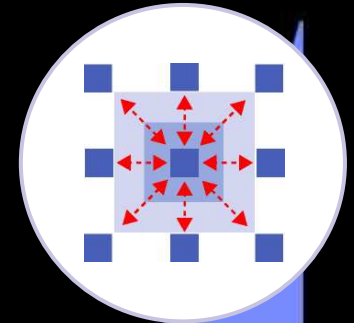
Standards

Business Transformation

Driving Competitive Advantage

- § Improved customer services
- § More agile, responsive business
- § Faster return on investment
- § Higher returns and multiples

On demand
Business

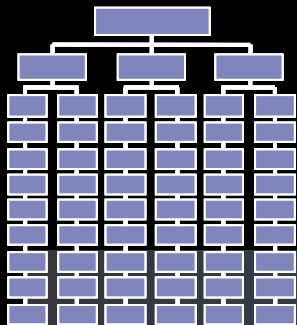


External
Collaboration

Horizontal
Process
Integration

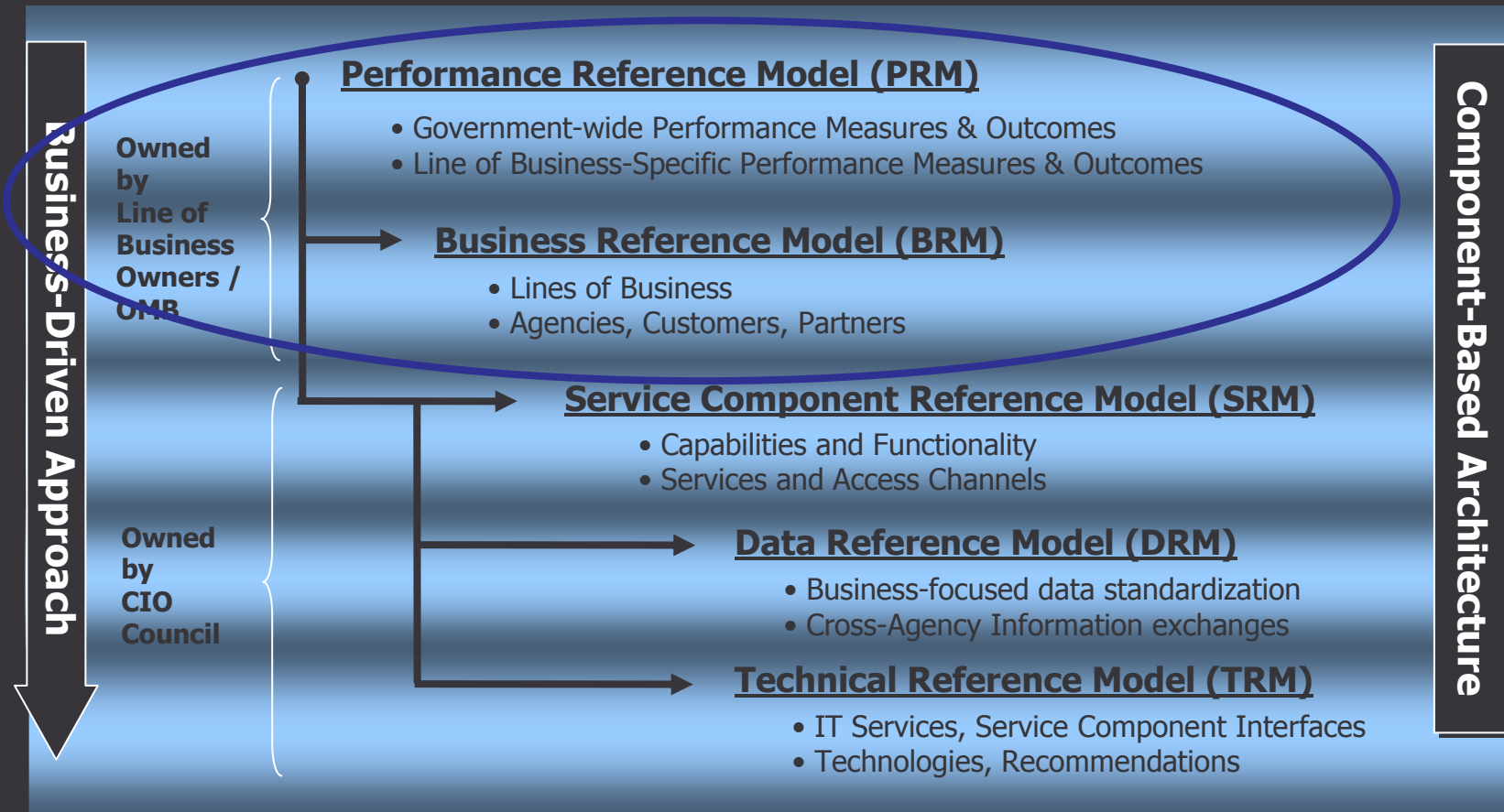
Functional
optimization

Static
Enterprise
Model



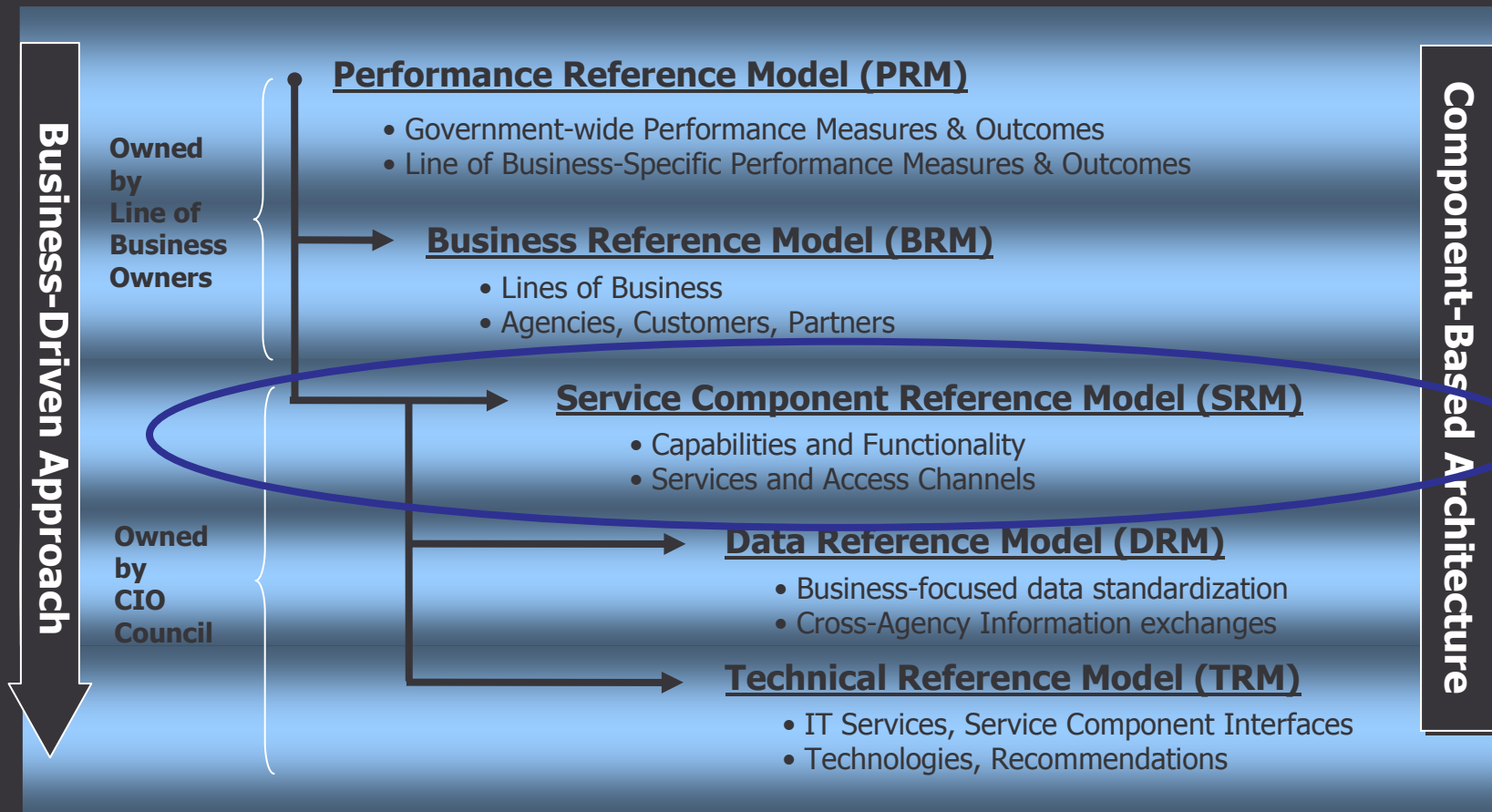
Federal Enterprise Architecture

U.S. Federal Government is using the FEA as a driver for e-government transformation



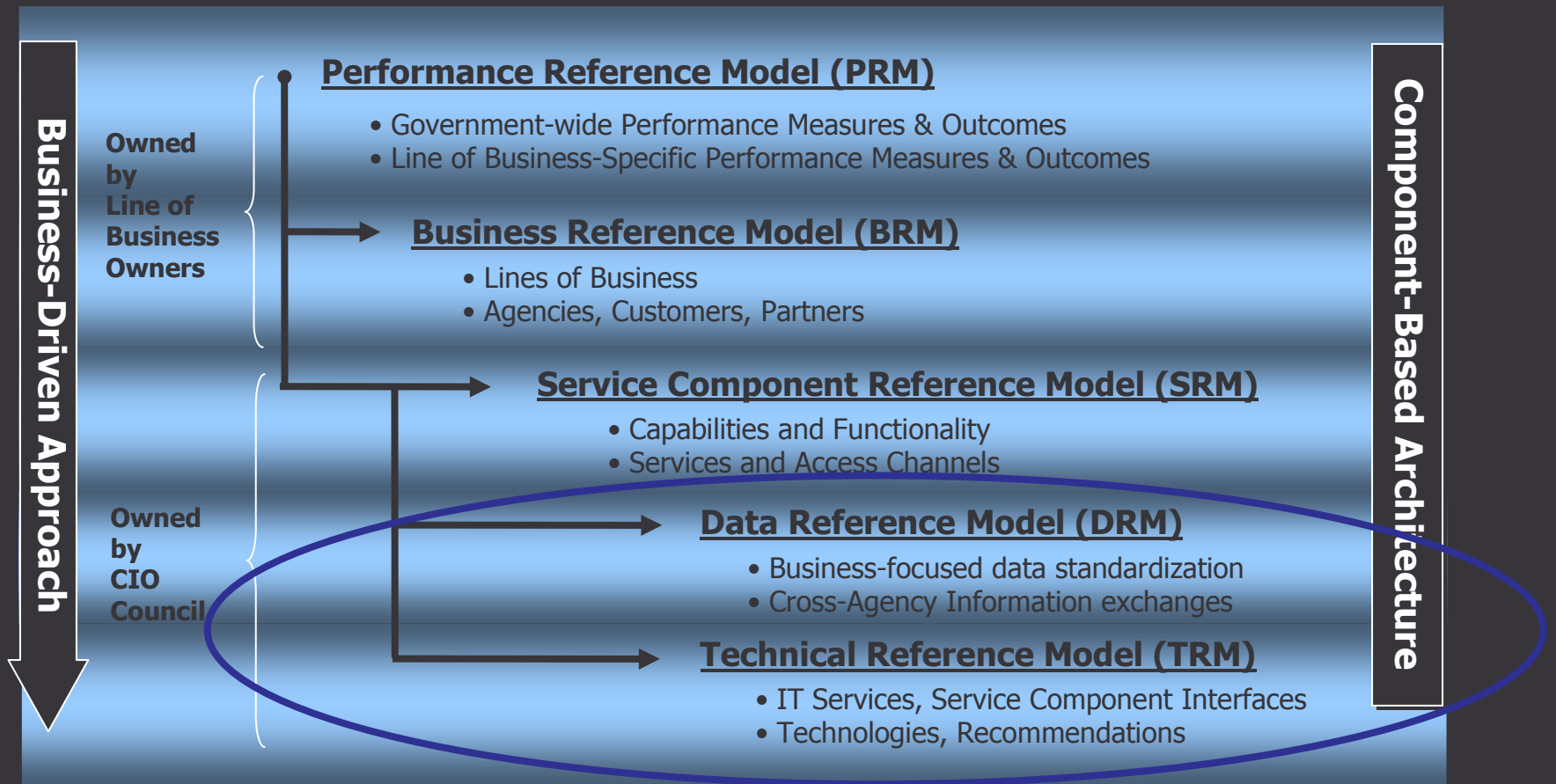
Codifies the U.S. Federal Government Agencies Structures and Missions

Service Components Link to Business Objectives



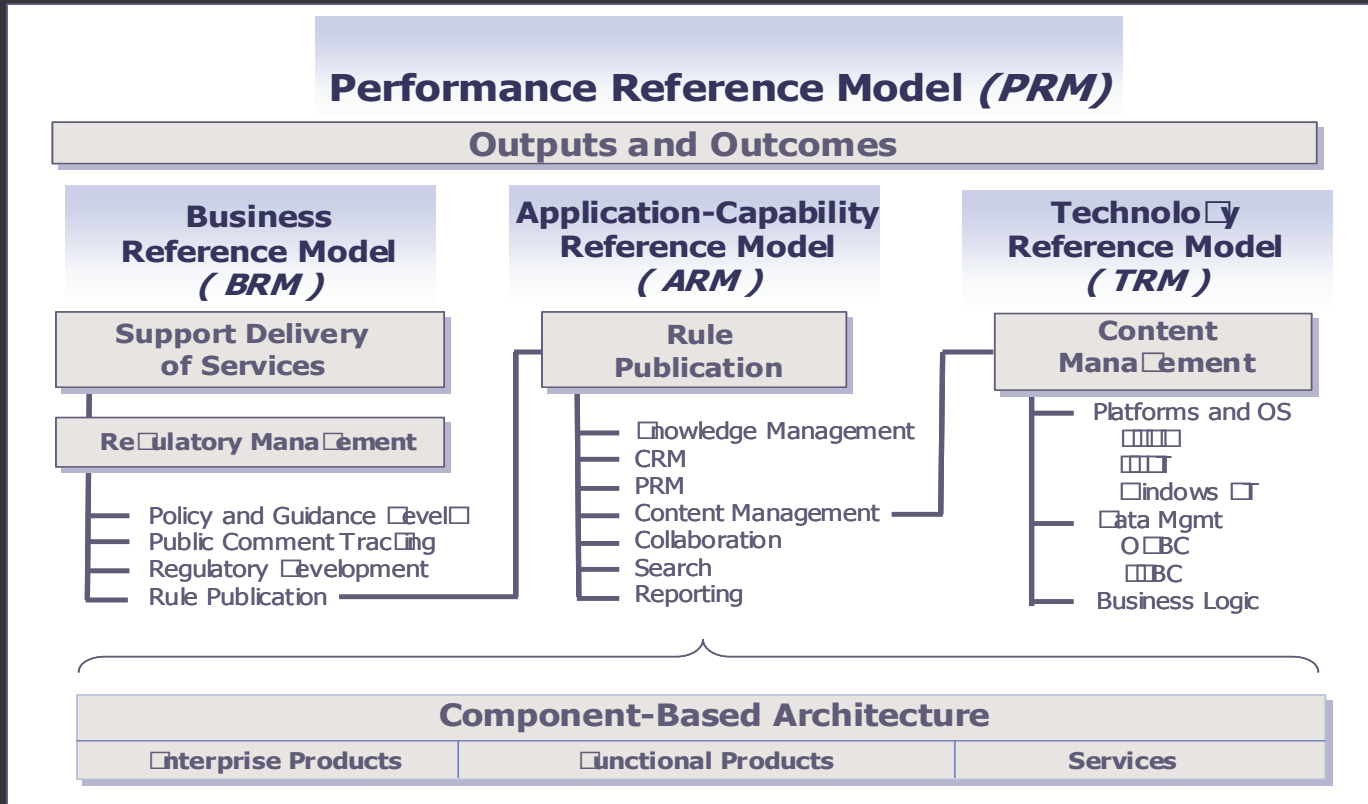
Reference Model for Services Provided Aligned to the BRM

FEA Technical Architecture Layers



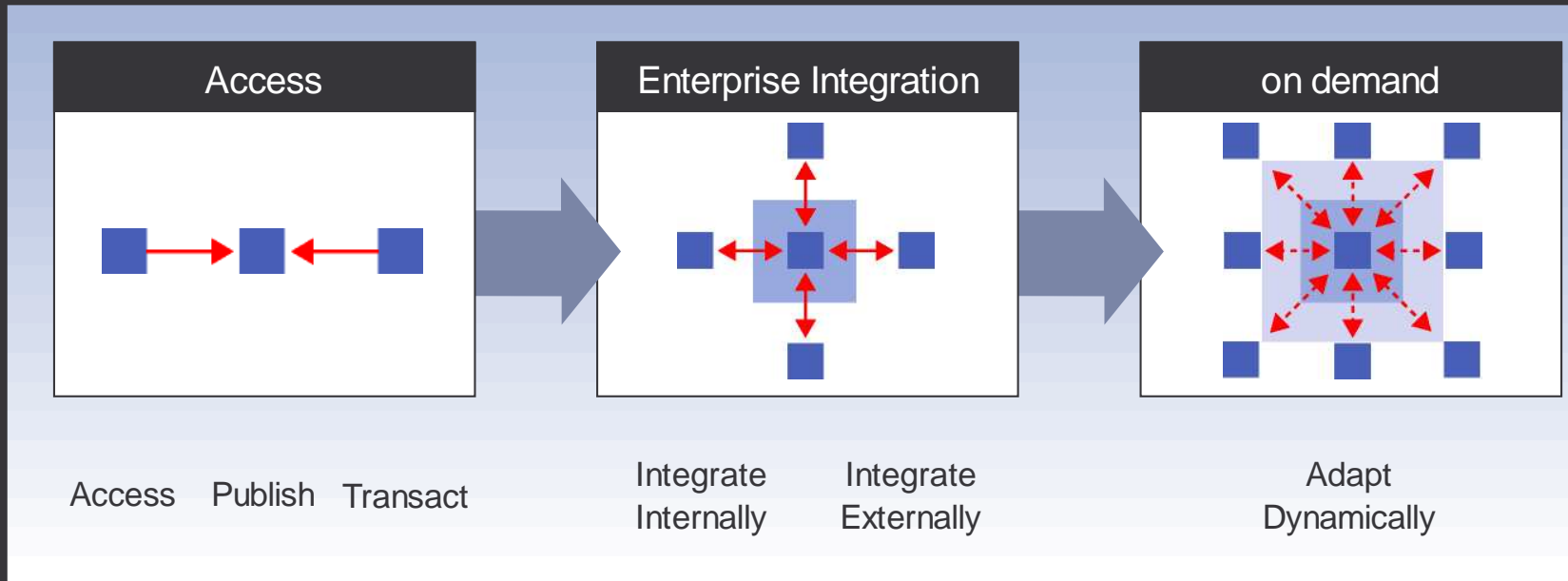
Ontology for describing Data Models and Technical Architecture

Performance Reference Model Links Measurement



A conceptual depiction of the interrelationships between the FEA Reference Models. This integrated approach will serve as the foundation of Component-Based Architecture design.

On demand is the next step in e-business adoption...



- § Basic HR newsletters / portals
- § Publishing dynamic content internally and externally
- § Simple (consumer focused) procurement systems
- § E-mail added to customer service

- § Employee intranets
- § Limited integration procurement systems
- § Custom EDI over VPN and preliminary XML linkages with customers
- § Web-based customer service

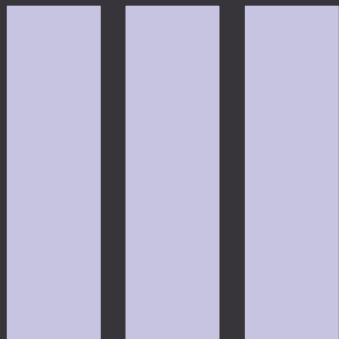
- § Personalized portals (employees, customers, partners, suppliers)
- § Integrated, open-standards based supply chains
- § Real-time decision making with full customer visibility on all customer interactions

Organizational productivity means that business operations must shift from a vertical to horizontal focus...

Access digital information

Processes are bounded by functions

Function A Function B Function C

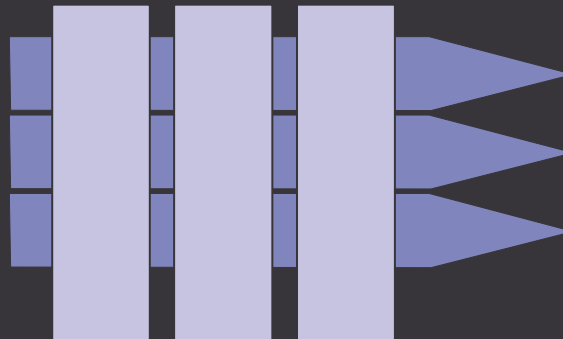


- Functions lead business
- Traditional business applications – limited integration

Integration: real e-business transactions

Processes led by functions, integrated across functions

Function A Function B Function C



- Core processes defined, functions still lead business
- Integration is “reactive”
- Enterprise applications are integrated
- Middleware exploits the internet

on demand: real-time adaptable operations

Processes led by business, extended to value nets

Function A Function B Function C



- Planned process integration leads the business activity
- Adaptive, integrated enterprise applications
- Processes linked with partners and suppliers

Attributes of an On Demand Enterprise

Attributes of on-demand business	Business requirements	IT environment requirements
Responsive	Insight-driven decision making <ul style="list-style-type: none"> ● Industry insight and best practice ● Increased responsiveness to customers ● Faster deployment against new opportunities 	Integrated <ul style="list-style-type: none"> ● Transaction and process integration across the enterprise ● Connection to partners, suppliers and customers ● Active data mining and decision support
Variable	Return on investment <ul style="list-style-type: none"> ● Reduced or variabilized business costs ● Reduced capital investment requirements ● Improved process productivity 	Utility-like <ul style="list-style-type: none"> ● Lower cost of ownership ● Usage-based pricing ● Leverage of existing technology investments
Focused	Outsource non-core <ul style="list-style-type: none"> ● Focus on key value-added processes ● Cross-functional integration ● Leverage of third party scale and efficiency 	Open standards <ul style="list-style-type: none"> ● Integration with legacy systems ● Adaptability to technology environment change ● Modularity to leverage range of ISV offerings
Resilient	Risk reduction <ul style="list-style-type: none"> ● Reduced operational risk ● Robust security and privacy ● Increased business availability 	Autonomic <ul style="list-style-type: none"> ● Self-diagnosis and self-healing ● Remote monitoring and management ● Embedded security and privacy capabilities

Characteristics of "On Demand" for Governments

Governments' challenges	Characteristics of an On Demand enterprise	Description
<p>Changing expectations of citizens & businesses</p>	<p>Responsive</p>	<p><i>Able to sense and respond in real time to the changing needs of citizens, businesses, employees, and other governments</i></p>
<p>Collaboration across governments & w/partners, Managing skills shortages</p>	<p>Focused</p>	<p><i>Concentrating on core competencies – areas where it has a differentiating advantage – and using strategic partners to manage needs outside of these competencies</i></p>
<p>Sustained budget & resource pressures</p>	<p>Variable</p>	<p><i>Employing variable cost structures to operate at high levels of productivity, cost control, capital efficiency and financial predictability</i></p>
<p>Balancing demands of safety and privacy</p>	<p>Resilient</p>	<p><i>Able to handle changes in political, economic, and physical environment and manage changes and threats with consistent availability, security and privacy – around the world, around the clock</i></p>

A focused strategy enables governments to deliver more with less

A Focused Government...

- ∅ Defines core functions critical to the their key missions - areas where the most value can be added
- ∅ Establishes a clear value/service proposition to citizens/businesses, employees and partners
- ∅ Develops competencies around its mission and core functions
- ∅ Consolidates or streamlines non-core functions

Key Performance Indicators Affected

Administer & deliver services:

Clear definition of desired long term position & role in public services

Process & information management:

Processes integrated across government departments and with partners

Employee productivity & development:

Organizes workforce and training around the organisation's top priorities

Financial improvement:

Obtaining efficiencies through economies of scale and sharing of resources

A responsive Government adds greater value to its community

A Responsive Government...

- ∅ Capable of sensing and dynamically responding to internal or external changes

- Changes in Government policy
- Emerging citizen, partner, employee or Government needs
- Unpredictable external influences – terrorism / world affairs

- ∅ Enables its employees to rapidly make well-informed, citizen/business-focused decisions

Key Performance Indicators Affected

Administer & deliver services:

Anticipates the needs of citizens and businesses

Process & information management:

Captures information efficiently and shares it across the organization & with other agencies or governments (consistent with privacy policy)

Employee productivity & development:

Develops workforce to advise and assist, not just to enforce rules

Financial improvement:

Implementing new programs quickly that benefit community growth

By creating more variability in their operating model, Governments can achieve higher service performance and predictability

A more Variable Government...

- Ø Scales service/budget capacity etc. smoothly in line with actual demand or supply factors
- Ø Able to deploy the right process and organizational capabilities for each product or service
- Ø Partners with third-party providers, and integrates with other Government agencies in flexible “value networks”

Key Performance Indicators Affected

Administer & deliver services:

The right services delivered as and when required

Process & information management:

Accurate information delivered to all departments as and when required

Employee productivity & development:

Employee training available with new and changing initiatives

Financial improvement:

Fixed operating costs reduced

Governments must be resilient to deal effectively with an increasingly dynamic political, social and economic environment

A Resilient Government...

- ∅ Able to deliver consistent, reliable service 24 hours a day, 365 days a year
- ∅ Develops an agile, adaptable business and technological operating environment
- ∅ Prepares for unforeseen 'shocks' to protect public assets, safeguard citizens and reduce operational risks

Key Performance Indicators Affected

Administer & deliver services:

Services levels maintained at all times

Process & information management:

Processes withstand unpredictable changes and events

Employee productivity & development:

Workforce can be trained and deployed to meet changing needs

Financial improvement:

Costs & risk management shared with partners

Transforming to an on demand business requires substantial organizational change

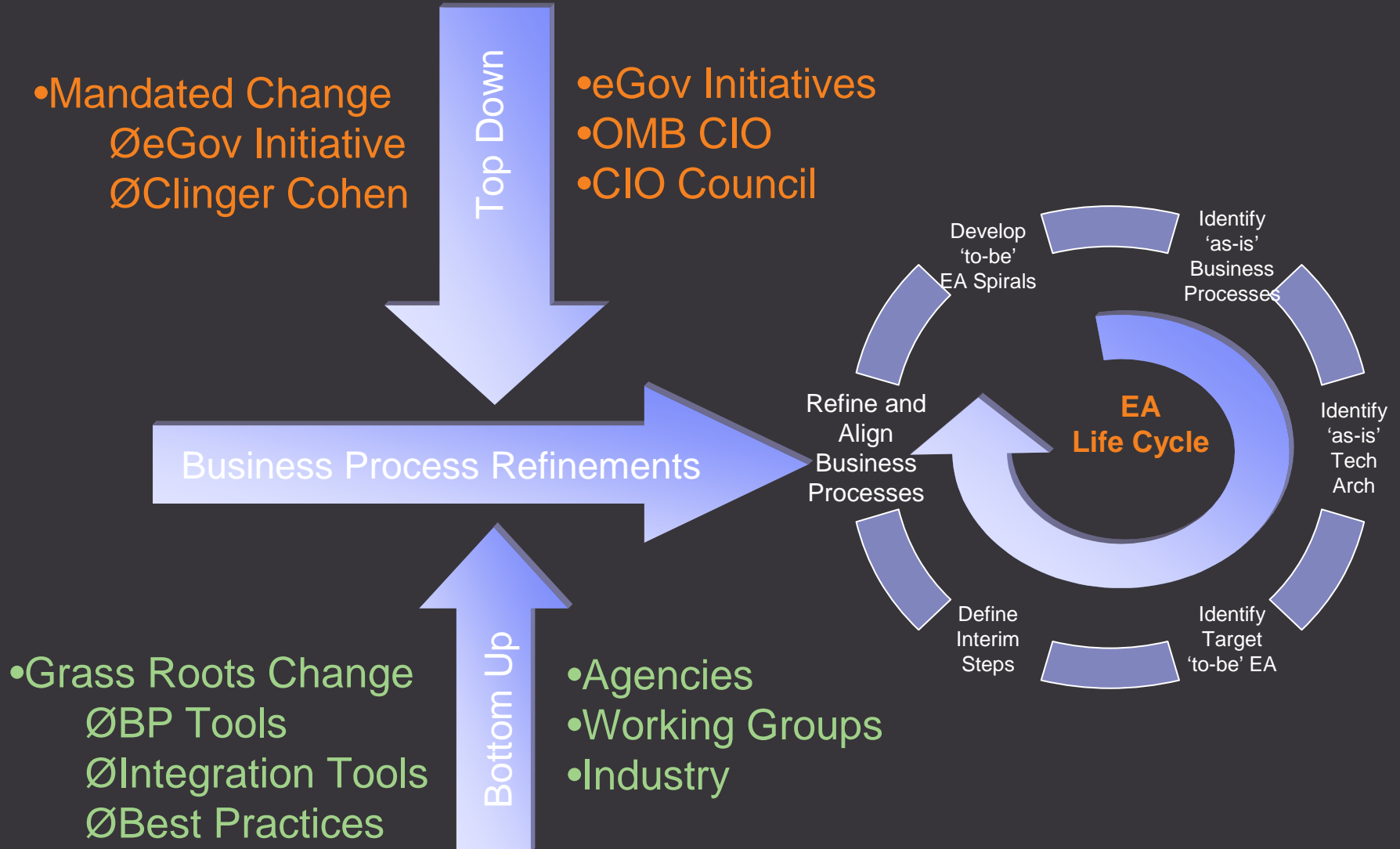
Adapt Organization

	FROM	TO
Organizational Infrastructure	<ul style="list-style-type: none"> ● Stable, departmental reporting relationships ● Strong orientation toward department results ● Vendor, contractually-driven relationships ● Competency specialization 	<ul style="list-style-type: none"> ● Flexible, networked, integrated, virtual cross agency teams ● Structures/incentives that support collaboration ● Performance based partnerships ● Broad individual competencies and capabilities
Governance	<ul style="list-style-type: none"> ● Rigid, vertical control systems ● Metrics that favor “tried and true” endeavors ● Top-down, limited authority levels ● Stable, “done once” performance measures 	<ul style="list-style-type: none"> ● Adaptive governance structures and practices ● Steady state yet adaptive to continuous innovation ● Distributed, fast decision making ● Dynamic performance management
Change Management	<ul style="list-style-type: none"> ● Narrow groups of largely uninvolved sponsors ● Change management via consultants ● Training as needed for new requirements ● Projects are managed discretely ● EA Inwardly focused only 	<ul style="list-style-type: none"> ● Broad-based change leadership capabilities ● Rigorous, consistent, broad-based change management ● Focused learning through multiple channels ● Manages global, virtual groups of projects ● EA focused on cross Agency Collaboration

Transitioning Government to an On Demand Organization

- PRM and BRM need to be dynamic in nature.
 - Best Practice Driven
 - Feedback and Oversight Drives Changes to Cross Agency Organization
 - Cross Agency Business Functions are consolidated and coordinated
 - Business Process drives Organization
 - Cross Agency Collaboration Driven by Presidential Initiatives
 - For example, 21 eGov Initiatives

BP Refinement Requires Meet in The Middle Leadership



e-Gov Initiatives

Government to Citizen

1. USA Service
2. Free File
3. Online Access for Loans
4. Recreation One Stop
5. Eligibility Assistance Online

Lead Agency
GSA
TREAS
DoEd
DOI
Labor

Government to Business

1. Federal Asset Sales
2. Online Rulemaking Management
3. Expanded Electronic Tax Products
4. Consolidated Health Informatics
5. Business Compliance One Stop
6. International Trade Process Streamlining

Lead Agency
GSA
EPA
Treas
HHS
SBA
DOC

E-Authentication

Government to Government

1. e-Vital
2. e-Grants
4. Geospatial Information One Stop
5. Project SAFECOM

Lead Agency
SSA
HHS
FEMA
DOI
FEMA

Internal Effectiveness and Efficiency

1. e-Training
2. Recruitment One Stop
3. Enterprise HR Integration (includes e-Clearance)
4. e-Travel
5. Integrated Acquisition
6. e-Records Management
7. Payroll Processing

Lead Agency
OPM
OPM
OPM
GSA
GSA
NARA
OPM

On Demand Business

Requires an On Demand Operating Environment

Business Transformation

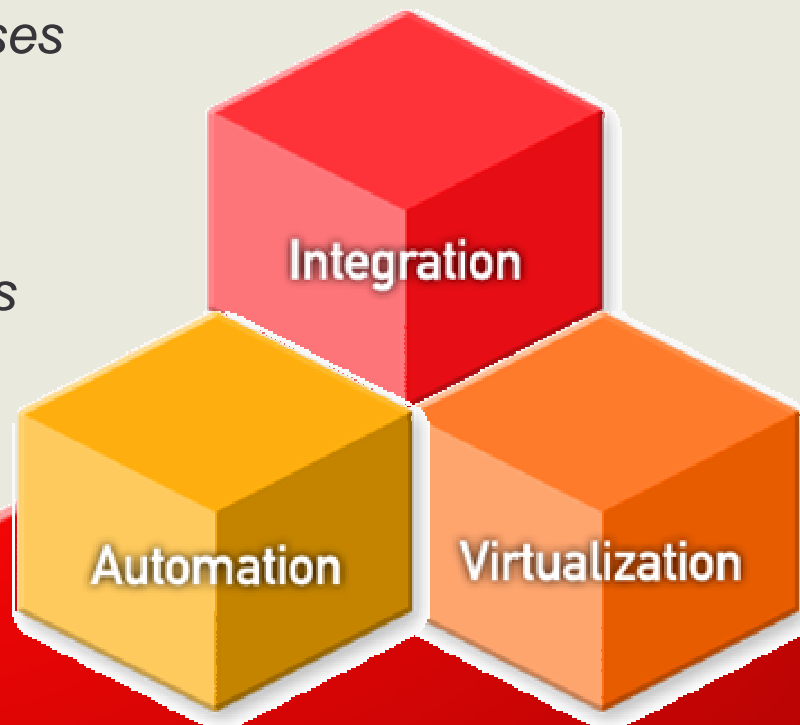
§ *Align IT processes with business priorities*

§ *Enable business flexibility and responsiveness*

Reduce cost

Improve asset utilization

Address new business opportunities



On Demand Operating Environment

On Demand Operating Environment

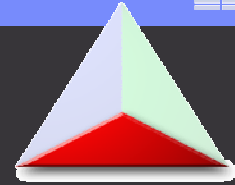
Open

Integrated

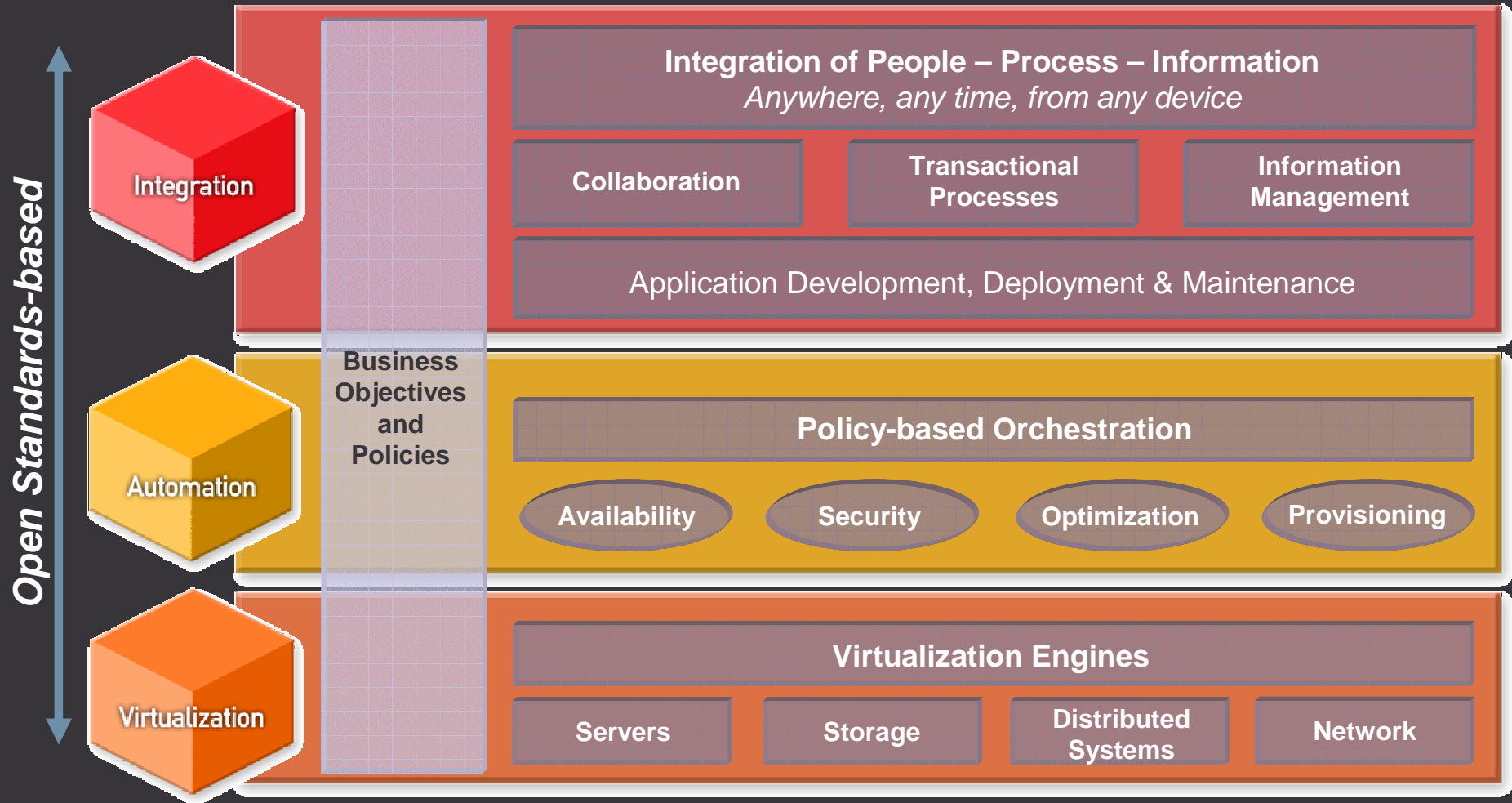
... an approachable, adaptive, integrated
and reliable infrastructure delivering on
demand services for on demand
business operations ...

Virtualized

Autonomic

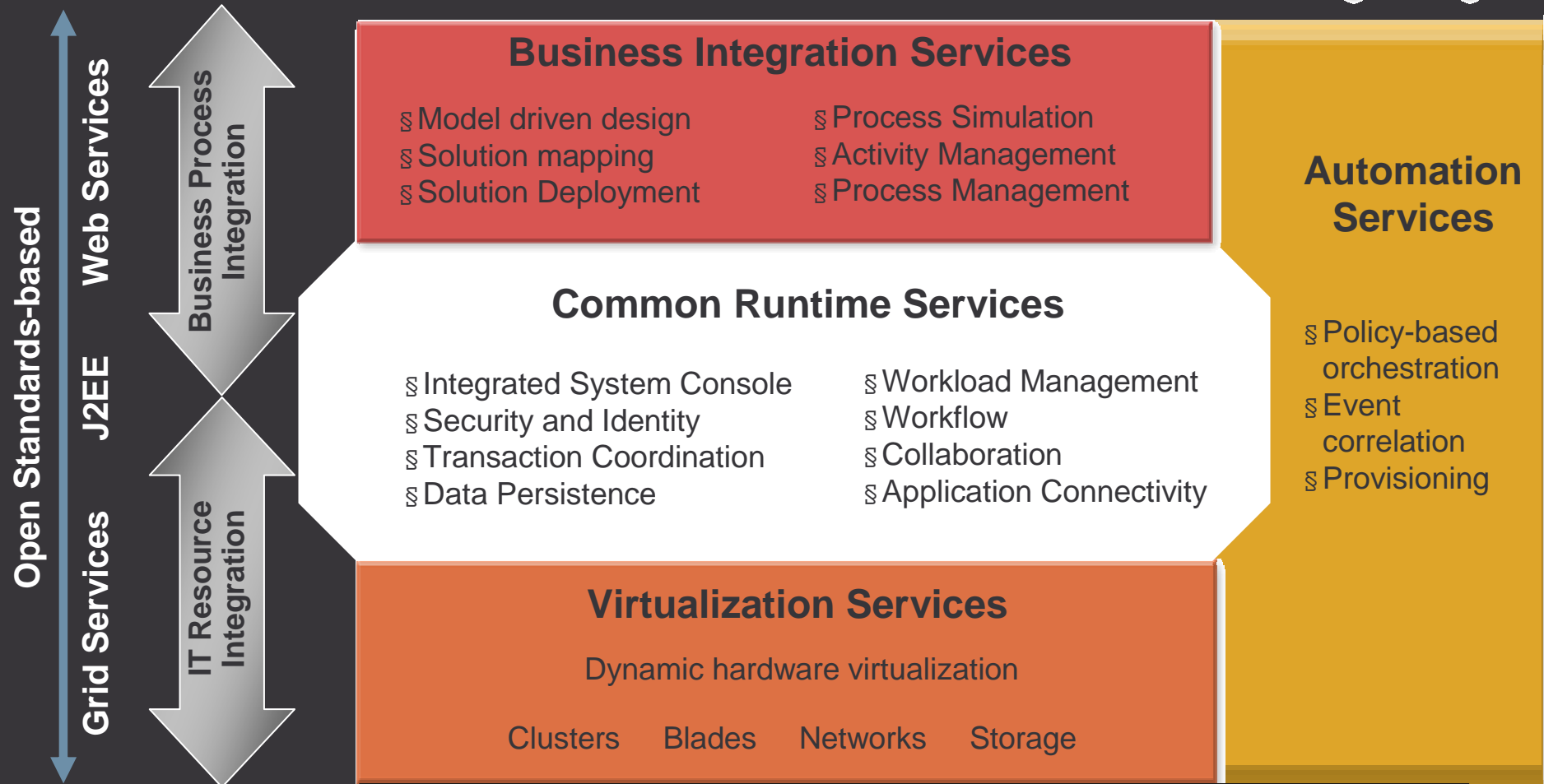
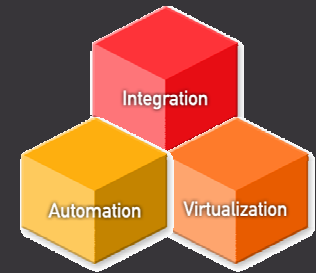


On Demand Operating Environment



Creating the Operating Environment

Based on an Evolving Set of Shared Components that Simplify Development, Deployment and Maintenance



On Demand Business Transformation

Phases of Delivery

Understand on demand and potential benefits

- § Establish Leadership
- § Use FEA as model for developing Road Map to On Demand
- § Leverage Industry Best Practices

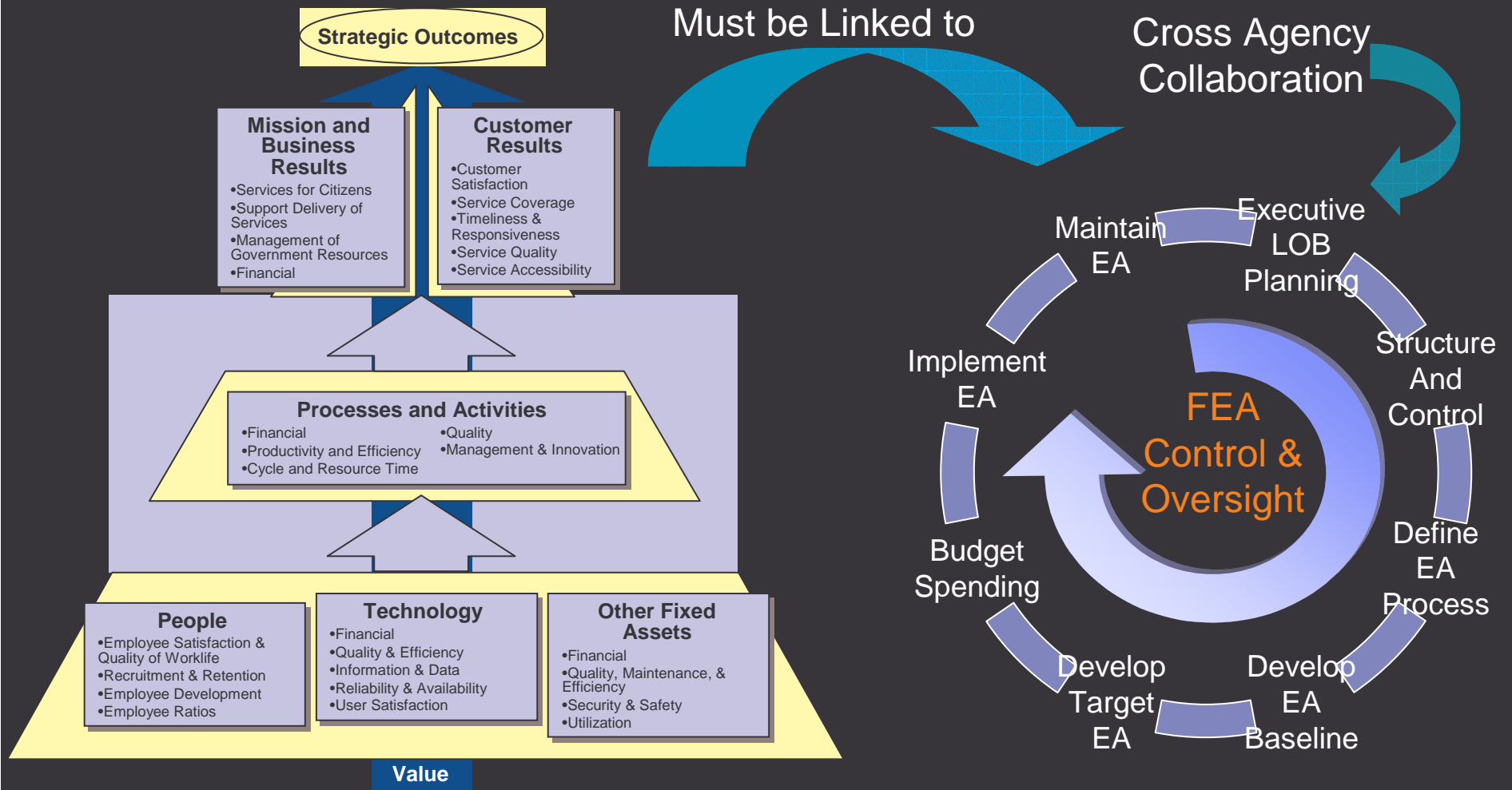
Identify, assess potential opportunity areas

- § Client discussion framework; Workshop
- § Assessments, roadmaps, business cases
- § Application infrastructure assessments
- § Transformation Outsourcing Benchmarks

Engage in transformative change

- § Business process transformation
- § Designated Industry Solutions
- § Enterprise Application Integration
- § Change, Organization & Culture
- § Transformation Outsourcing
- § Innovation services

FEA PRM & Proposed Control and Oversight Process

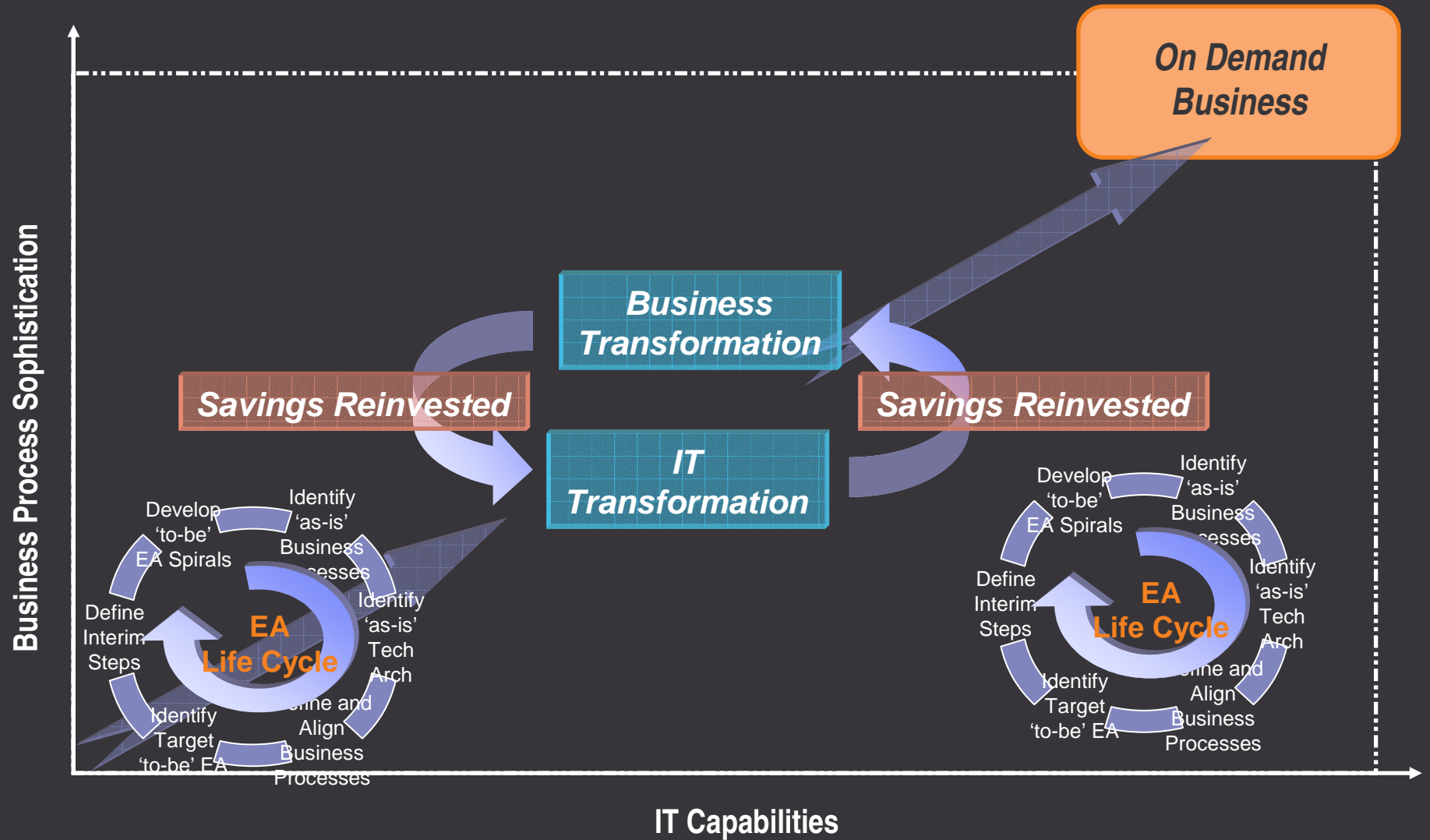


Performance Reference Model

On Demand Transformation using the FEA



FEA Life Cycle Drives On Demand Reinvestment



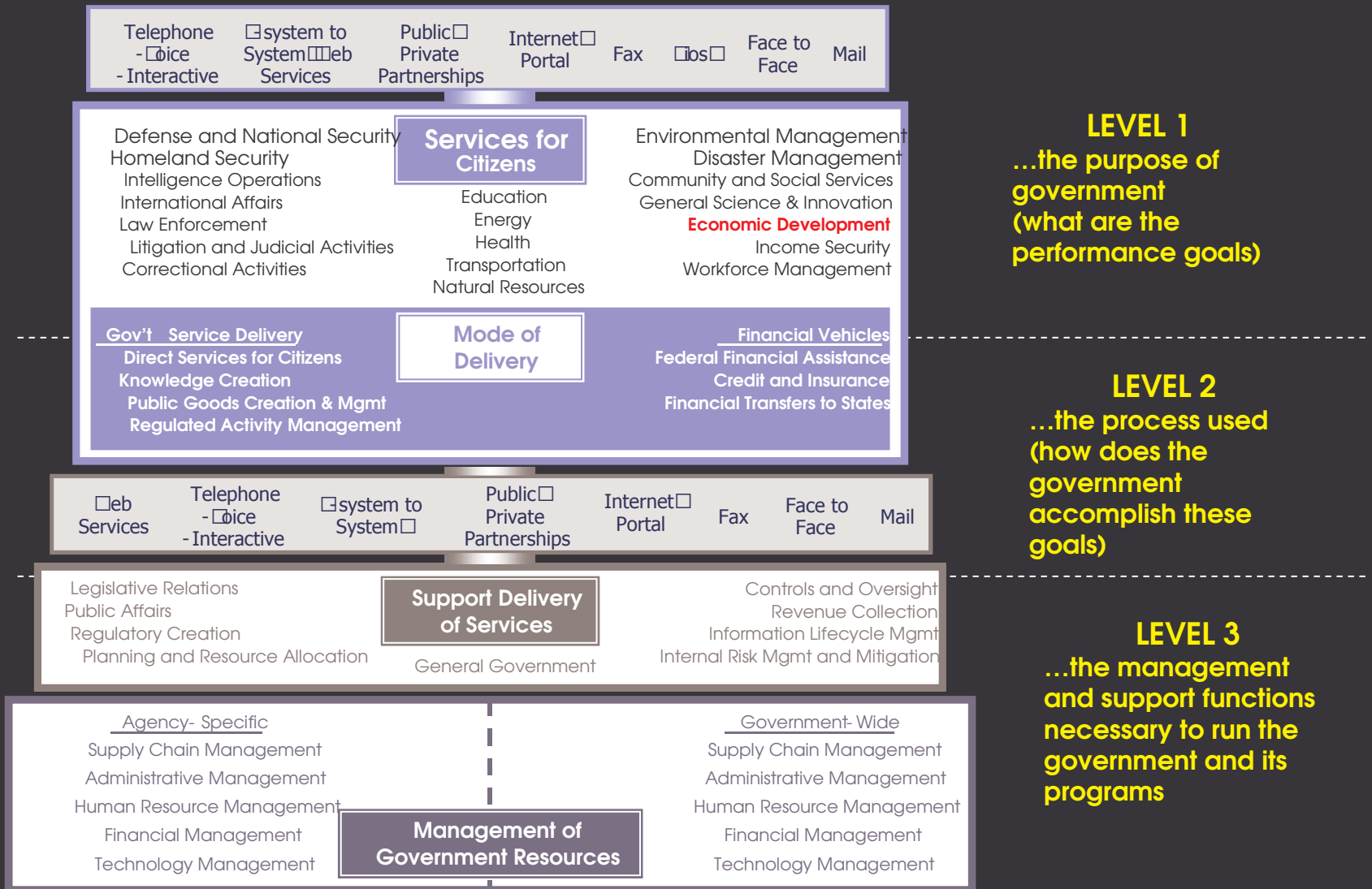
On Demand Government Transformation using the FEA

- Use e-Gov Initiatives to drive the On Demand Transformation
- Define Cross Agency Business Processes
 - Create Virtual Organizations
 - Empower cross agency collaborators
 - Drive changes into BRM
 - Measure success using PRM
- Create On Demand Road Maps
 - Define intermediate milestones for Agency Enterprise Architectures
- Enterprise Architecture is an Iterative Process
- Integrate New On Demand Capabilities into TRM and DRM Annually
 - Fast moving technology changes
- Transform your organization or – Become Marginalized

CASE STUDY: U.S. Patent and Trade Office

- Recent GAO Report Cites only 5 of 116 agencies properly using FEA
- GAO found almost no compliance from DoD

Business Relationship Model (BRM)



Case Study - USPTO

Economic Development

- Business and Industry Development
- Intellectual Property Protection
- Financial Sector Oversight

USPTO Mission Focus

Economic Development

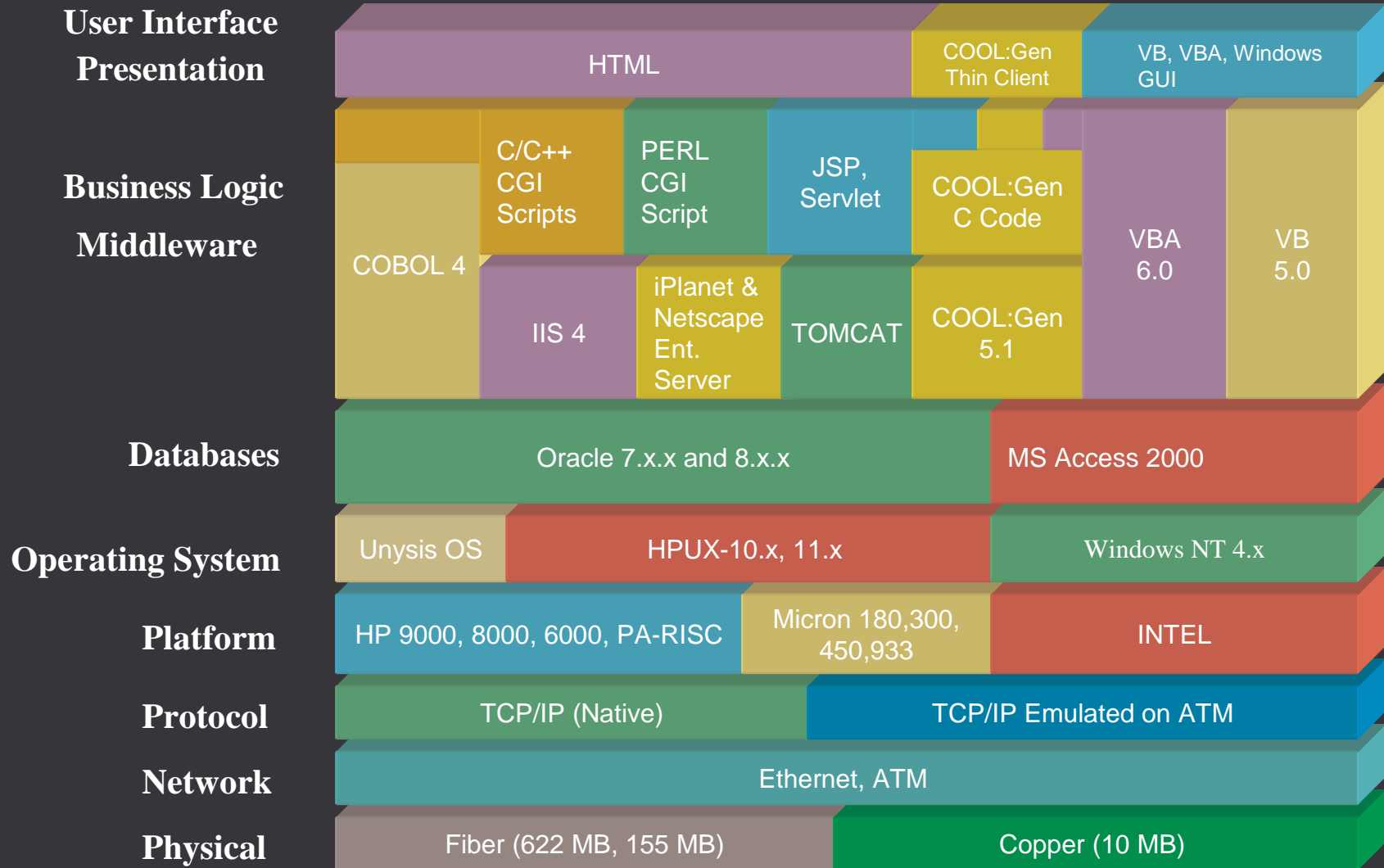
Sample High-Level Functional Decomposition

- Business and Industry Development
- Intellectual Property Protection
 - E-Commerce
 - Pre-Examination
 - Examination
 - Post Examination
 - Sustain the Organization
- Financial Sector Oversight

Example UEA SRM Mapping - E-Filing Service for Patent Business Area

Description	Service Layer	Service Type	Service Component	Technology	Access Channel	Delivery Channel
Online Patent Application Electronic Filing System (EFS)						
<p>Electronic Filing System (EFS) provides applicants to file patent applications online with USPTO through Electronic Patent Business Center. EFS supports the authoring, preparation, secure submission, receipt, validation, and processing of patent applications electronically via Internet. EFS uses public key infrastructure (PKI) services for secure electronic communications with applicants and their representatives and accepting credit payment via internet.</p> <p>EFS allows 3rd party authoring and submission software adhered to WIPO e-filing standard and DTD.</p> <p>http://www.uspto.gov/ab/c/efs/index.html</p>	<ul style="list-style-type: none"> Digital Asset Services 	<ul style="list-style-type: none"> Content Management Document Management Knowledge Management 	<ul style="list-style-type: none"> Content Authoring Tagging Document Conversion Knowledge Capture 	<ul style="list-style-type: none"> TSA XML authoring i4i (XML conversion tool) Alterna TIFF Image Format Xerces (Java code parser) DynaZIP 	<ul style="list-style-type: none"> Web Server - Internet Explorer 5.x HP Communicator 	<ul style="list-style-type: none"> Internet (HTTP) (HTTPS)
	<ul style="list-style-type: none"> Customer Services 	<ul style="list-style-type: none"> Customer Initiated Assistance 	<ul style="list-style-type: none"> Online Help Online Tutorials 	<ul style="list-style-type: none"> Microsoft Word WordPerfect 		
	<ul style="list-style-type: none"> Back Office Services 	<ul style="list-style-type: none"> Financial Management 	<ul style="list-style-type: none"> Credit / Charge 	<ul style="list-style-type: none"> Oracle, Digital Liner Tape, EMC Storage 		
	<ul style="list-style-type: none"> Common Services 	<ul style="list-style-type: none"> Security Management 	<ul style="list-style-type: none"> Identification Access Control Encryption Verification 	<ul style="list-style-type: none"> Java Servlet, Java Server Page, Java IPlanet Web Entrust Public Key Infrastructure (USPTO Direct) 		

USPTO – TRM Component Model



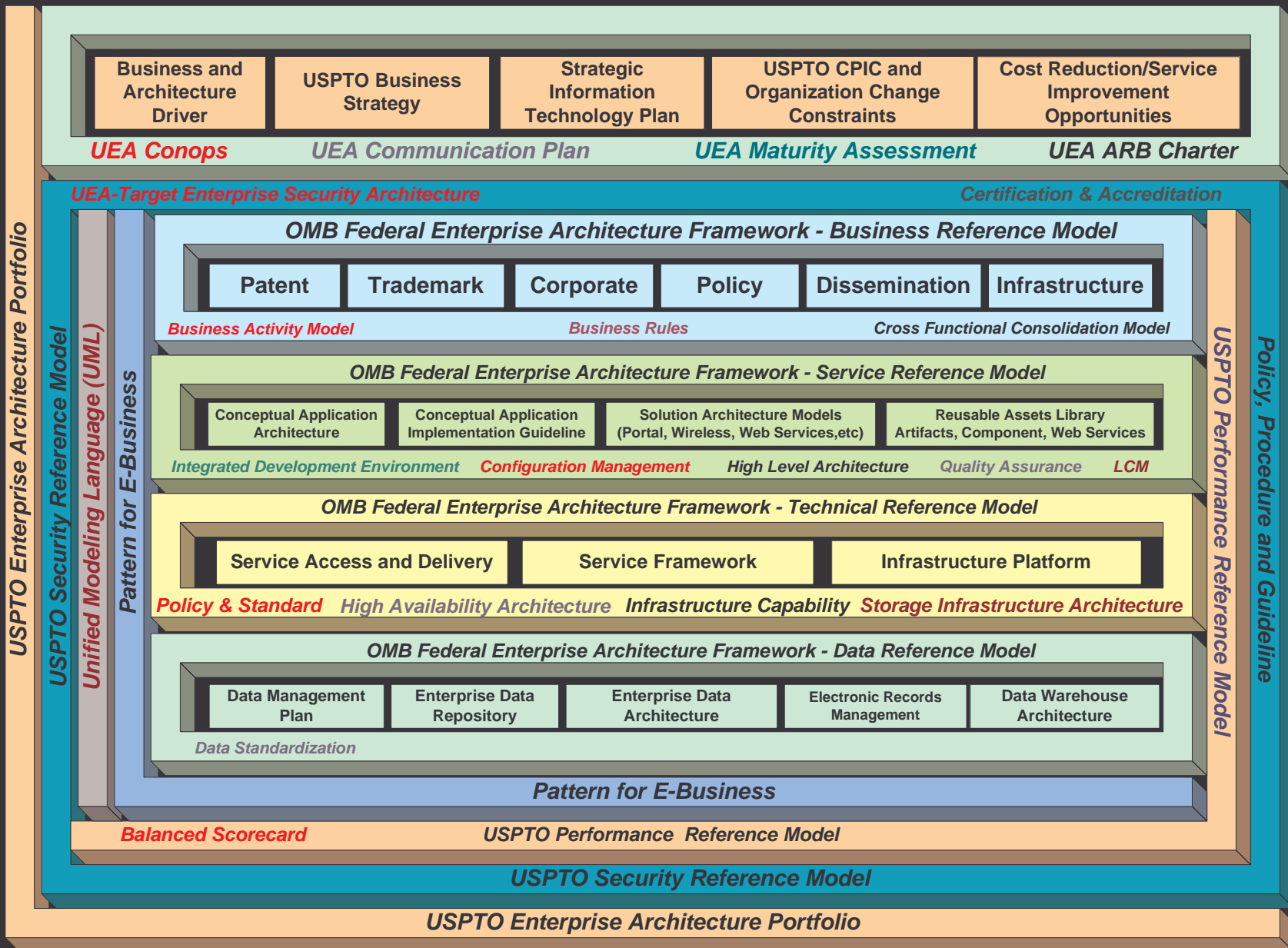
CASE Study: USPTO SRM to TRM Mapping

Service Access and Delivery		
• Blackberry	• Exchange Server 5.5 SP4	• P2P computing technology
Service Framework		
• ALGOL (TRAM use only)	• HP-UX v10.20 (retired by June 2003)	• Tuxedo
• COBOL 74 (TRAM use only)	• InstallShield	• Vision by Unify (OEMS use only)
• COOL:Gen v5.1	• IPlanetv4.x or earlier	• Visual Basic 4
• Dell PowerEdge Server with Windows NT 4.0 OS	• Objectware: Visual Compare	• Visual Basic 5***
• ERGO (A-16 TRAM use only)	• Objectware: Repository Publisher	• Visual C++ 4
• FrontPage (web authoring)	• Oracle 7 (PACR use only)	• Visual C++ 5
• HP Netserver Server with Windows NT 4.0 OS	• Secure OS Software for Linux	• Visual C++ 6***
• WebLogic	• Windows NT 4.0	• Classroom Learning System (Pathlore)

Case Study: USPTO – Product LifeCycle Example

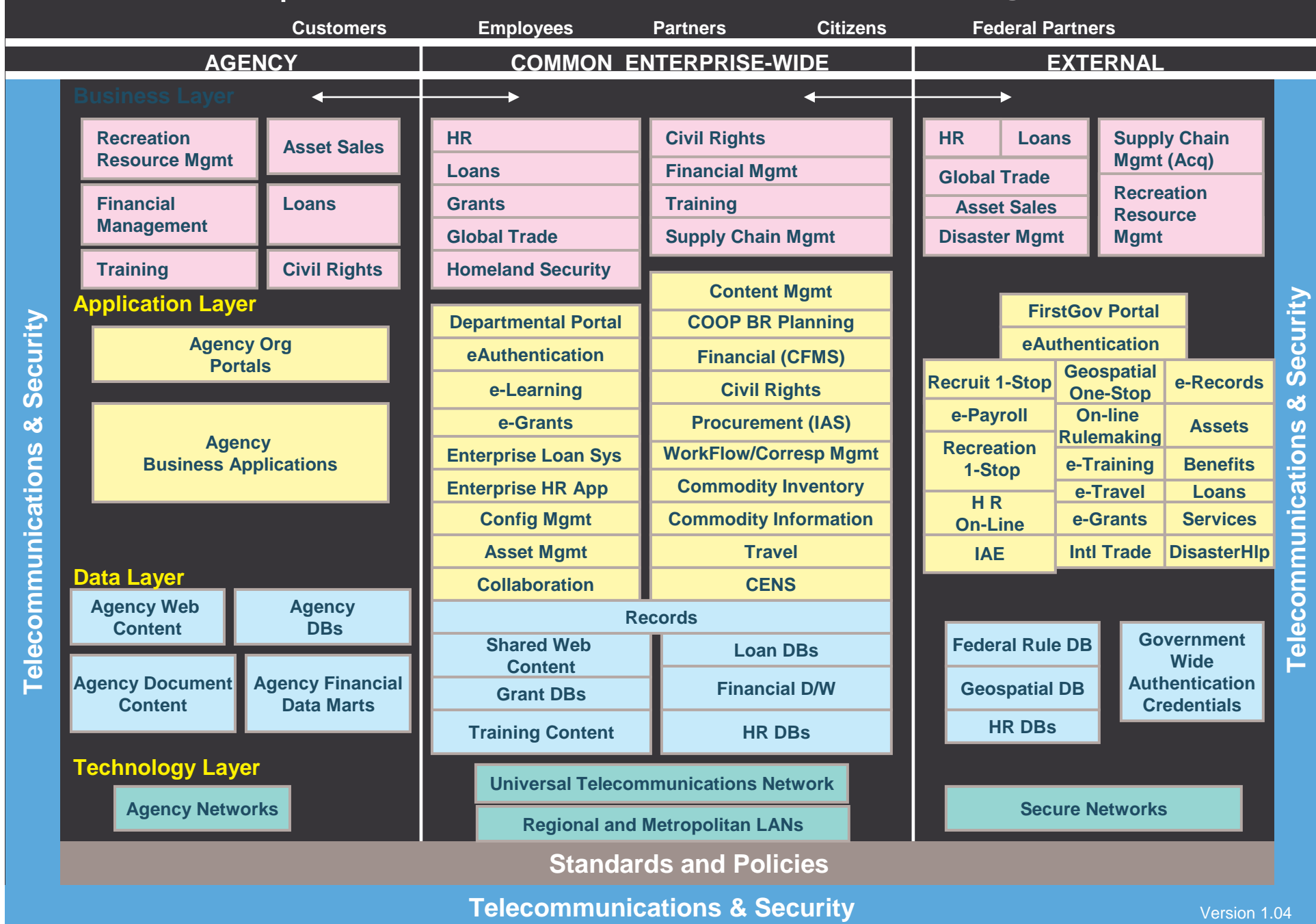
<u>Current Environment</u>	<u>Next 18 Months Near-Term Deployment</u>	<u>Containment Target</u>	<u>Retirement Target</u>
<ul style="list-style-type: none"> Blackberry 	<ul style="list-style-type: none"> -- 	<ul style="list-style-type: none"> Blackberry (infringed on patents held by NTP Inc.) 	<ul style="list-style-type: none"> No further procurement
<ul style="list-style-type: none"> Visual Basic 6 Visual Basic 4 	<ul style="list-style-type: none"> Microsoft .NET suite (e.g. Visual Basic .NET; Visual C++ .NET or Visual Studio .NET) Or J2EE Suite (with Java 2 SDK 1.2 or higher) 	<ul style="list-style-type: none"> -- 	<ul style="list-style-type: none"> --
<ul style="list-style-type: none"> Visual Basic 5 		<ul style="list-style-type: none"> Visual Basic 4 	<ul style="list-style-type: none"> Visual Basic 4 (Retired by 30-June 2003)
<ul style="list-style-type: none"> Visual C++ 4 		<ul style="list-style-type: none"> Visual Basic 5 	<ul style="list-style-type: none"> Visual Basic 5 (Retired by 30-June-2003)
<ul style="list-style-type: none"> Visual C++ 5 		<ul style="list-style-type: none"> Visual C++ 4 	<ul style="list-style-type: none"> Visual C++ 4
<ul style="list-style-type: none"> Visual C++ 6 		<ul style="list-style-type: none"> Visual C++ 5 	<ul style="list-style-type: none"> Visual C++ 5
<ul style="list-style-type: none"> Visual C++ 6 		<ul style="list-style-type: none"> Visual C++ 6 	<ul style="list-style-type: none"> Visual C++ 6 (Retired by 30-Sep-2003)
<ul style="list-style-type: none"> Cold Fusion (IDE) Visual Café (IDE) 	<ul style="list-style-type: none"> Rational Rose (UML) Or Web Sphere Studio Application Developer v4.0 	<ul style="list-style-type: none"> -- 	<ul style="list-style-type: none"> --
<ul style="list-style-type: none"> COOL::Gen v5.1 	<ul style="list-style-type: none"> Advantage Gen v6.5 	<ul style="list-style-type: none"> COOL:Gen v5.1 	<ul style="list-style-type: none"> COOL:Gen v5.1 (after complete migration)
<ul style="list-style-type: none"> Crystal Info 	<ul style="list-style-type: none"> Crystal Enterprise 	<ul style="list-style-type: none"> 	<ul style="list-style-type: none">
<ul style="list-style-type: none"> HP Netserver with NT 4.0 	<ul style="list-style-type: none"> Microsoft will terminate 	<ul style="list-style-type: none"> HP Netserver with NT 4.0 	<ul style="list-style-type: none"> HP Netserver with NT 4.0

Case Study: USPTO EA Model



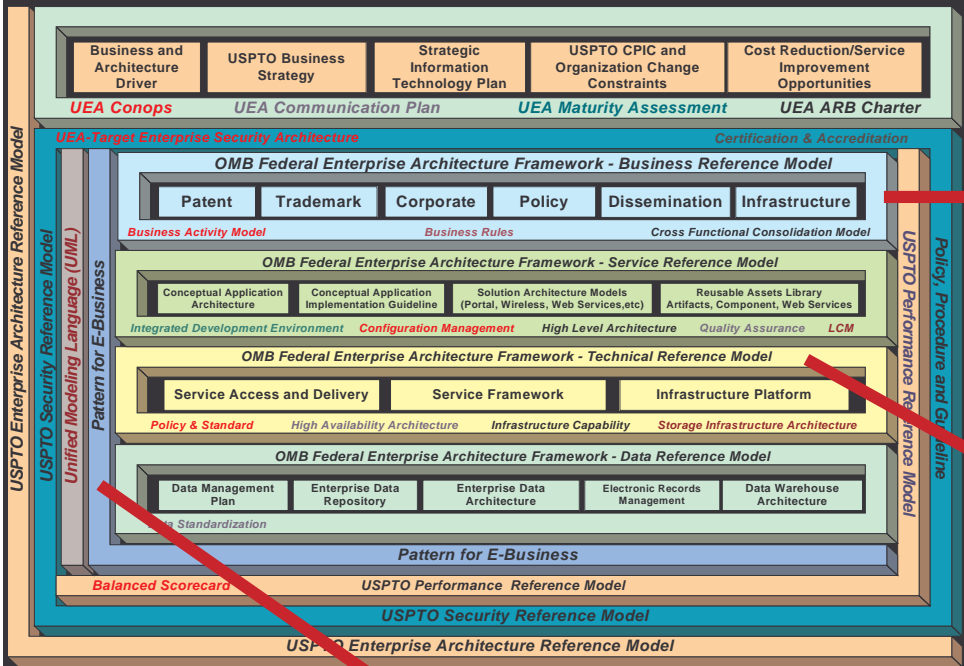
USDA Enterprise Architecture Model

August 26, 2003 



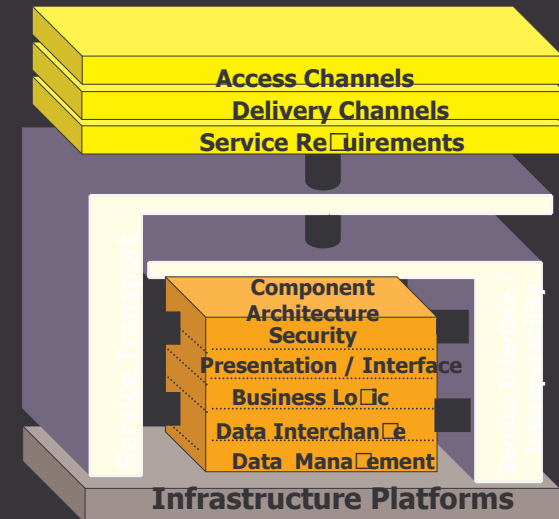
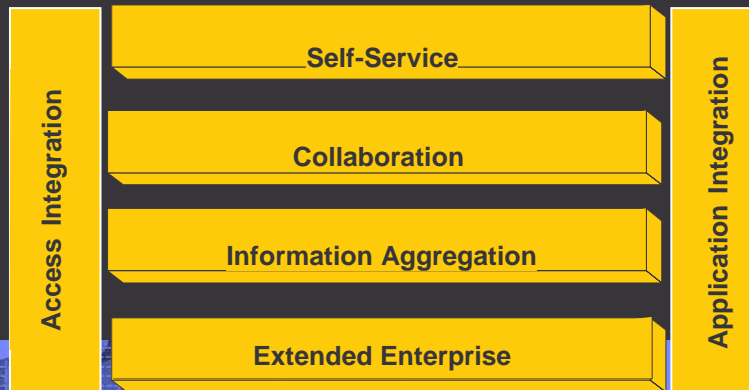
Telecommunications & Security

Case Study: USPTO – FEA Supplemental with Patterns

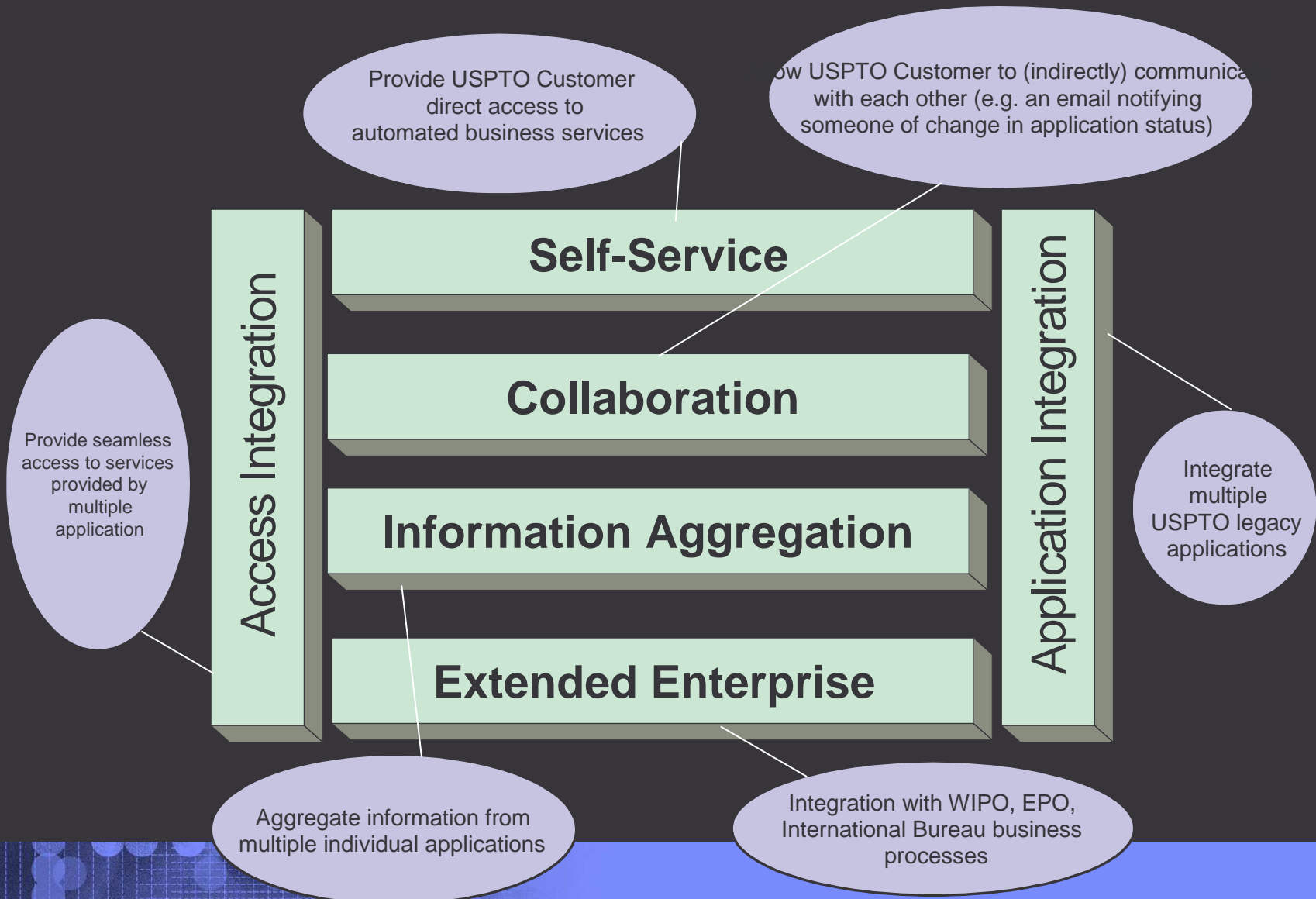


FEA Reference Models Alignment – SRM, TRM

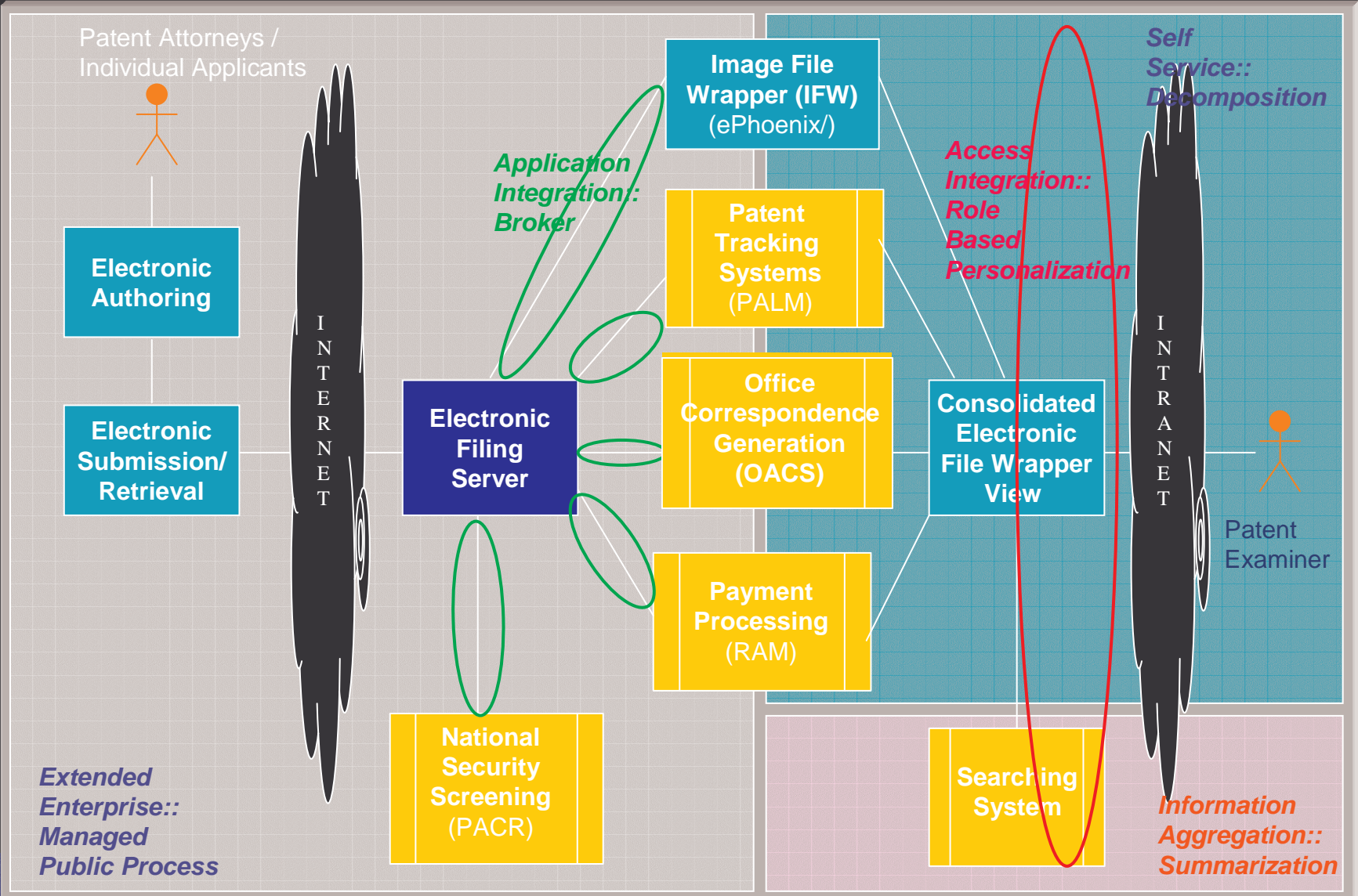
Leveraging IBM e-Business Patterns



Case Study: USPTO Leverages Patterns for e-business



Case Study: USPTO AOD Using e-business Patterns



Conclusion

- FEA is actually quite light as compared to other EA Frameworks – some agencies have questioned usefulness
- Virtually no guidance on solution architectures
- Mostly a dictionary of terms and codification of federal IT capabilities
- Used to align agencies IT spending to budget process
- Useful framework for promoting cross agency collaboration
- May be valuable in helping to leverage federal government purchasing power
- Successful mechanism for modernizing the overall federal government IT management organization

Thanks!



business on demand

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PRM Measurements

Fiscal Year	Measurement Area	Measurement Category	Measurement Indicator	Baseline	Planned Improvements to the Baseline	Actual Results
FY05	Mission & Business Results	Support Delivery of Services	Percent of individual tax returns filed electronically	41%	Increase to 44%	TBD
FY05	Customer Results	Timeliness & Responsiveness	Time citizens save by filing electronically	TBD	TBD	TBD
FY05	Processes & Activities	Financial	Cost to government per tax return processed	TBD	TBD	TBD
FY05	Technology	User Satisfaction	Number of internal users satisfied with IRS Free Filing	TBD	TBD	TBD
FY06	Mission & Business Results	Support Delivery of Services	Percent of individual tax returns filed electronically	TBD	TBD	TBD
FY06	Customer Results	Timeliness & Responsiveness	Time citizens save by filing electronically	TBD	TBD	TBD
FY06	Processes & Activities	Financial	Cost to government per tax return processed	TBD	TBD	TBD
FY06	Technology	User Satisfaction	Number of internal users satisfied with IRS Free Filing	TBD	TBD	TBD

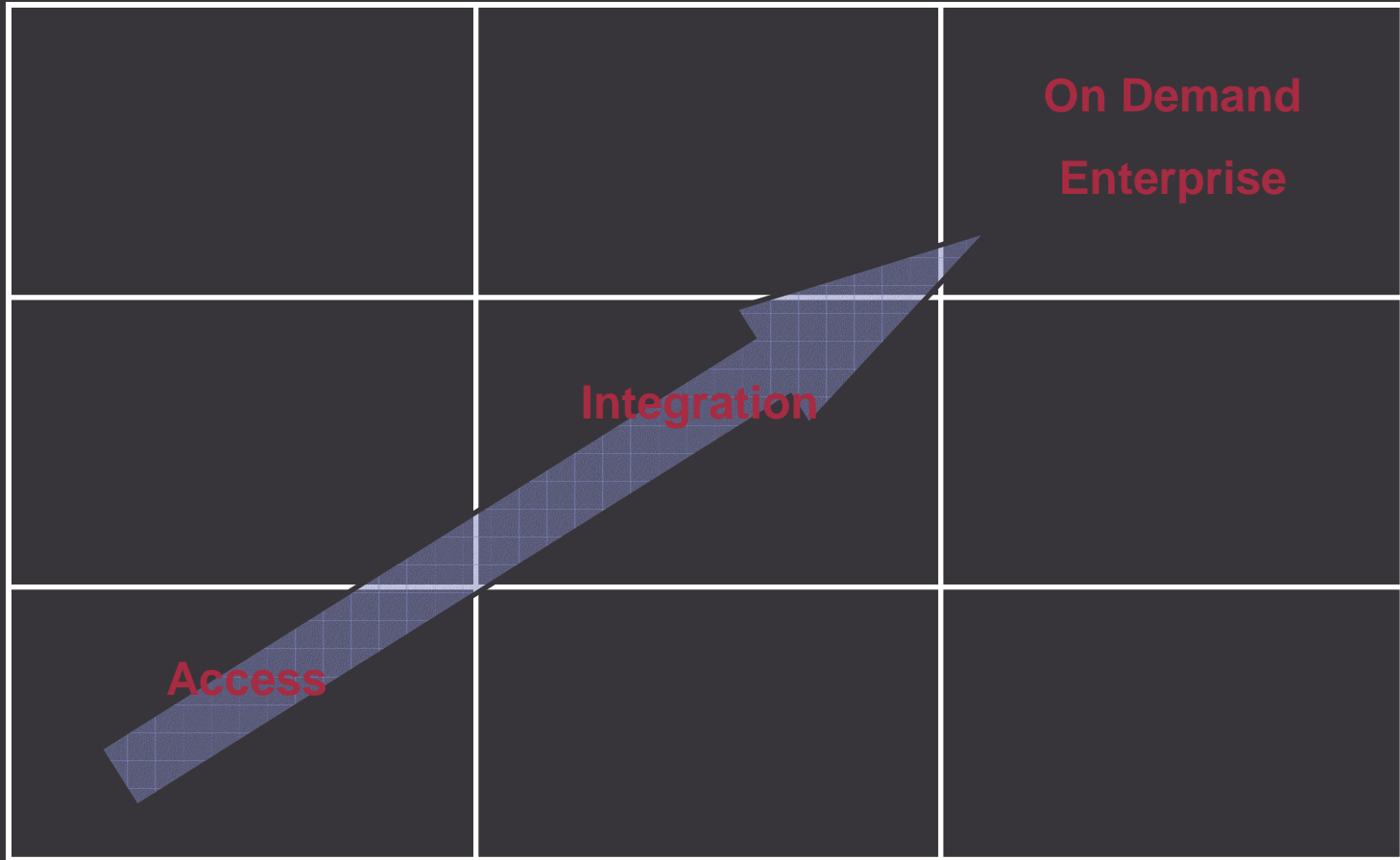
The On Demand Journey – Part 1

Level of business process sophistication

Value Net
Optimized

Enterprise
Optimized

Process
Optimized



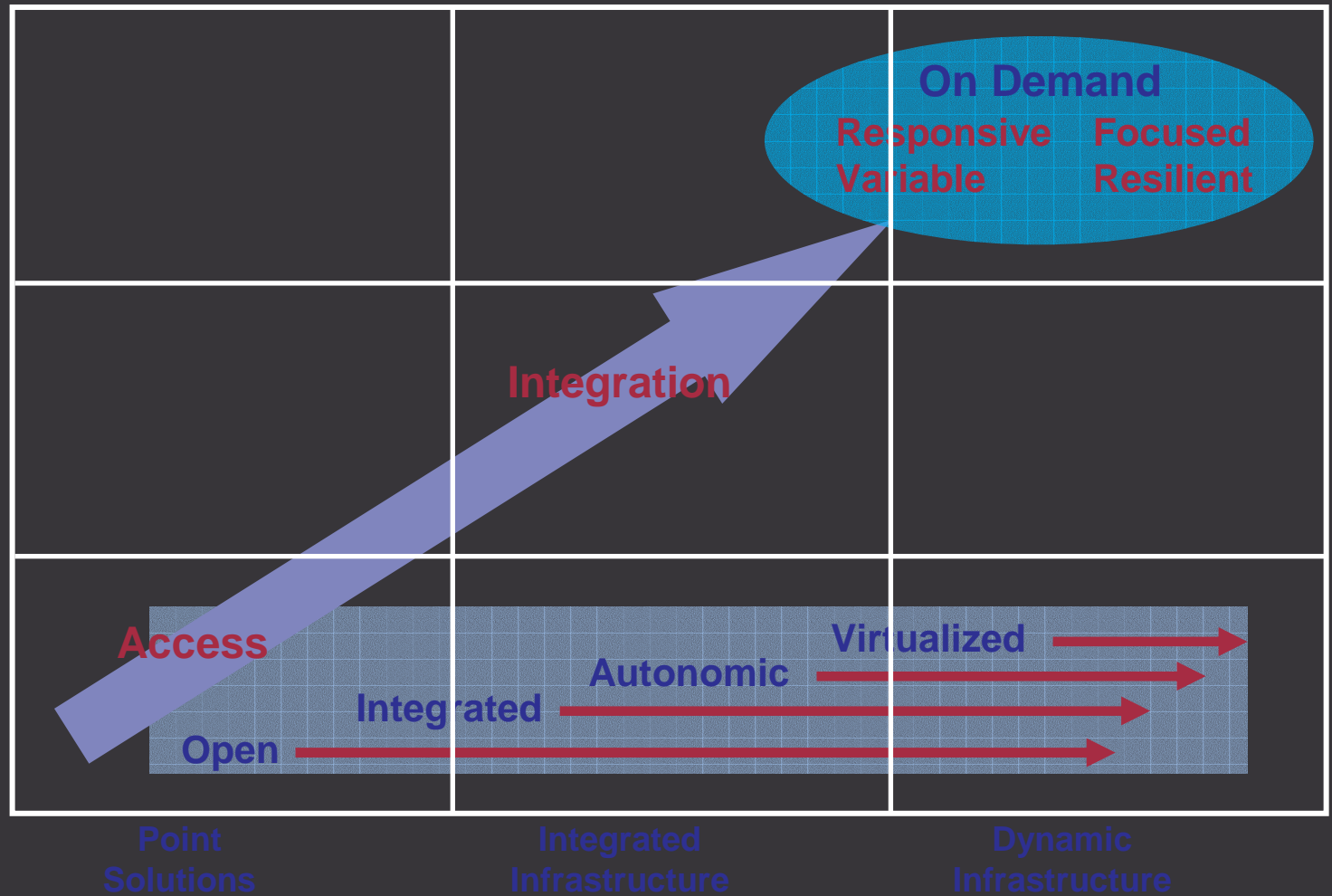
Point
Solutions

Integrated
Infrastructure

Dynamic
Infrastructure

Level of IT sophistication

The On Demand Journey – Part 2



IBM's On Demand Transformation

Workforce	ON DEMAND WORKPLACE: w3 Helping to manage, focus and equip employees to increase productivity, and shape IBM culture.
Manufacturing	300mm SEMICONDUCTOR FACILITY Fully automated, integrated processes continuously prioritize chip production schedules. Development + manufacturing combined.
Supply Chain	INTEGRATED SUPPLY CHAIN End-to-end integration of processes and systems. Reduced \$5 billion in cost and expense in 2002. Expect another \$5 billion in 2003.
Business Process Outsourcing	HR BENEFITS ADMINISTRATION, CONTRACT MANUFACTURING Partner with Fidelity Employer Services and with Sanmina-SCI for PC manufacturing in US and Europe.
Technology Optimization	GRID IBM intraGrid for R&D. Grid technologies used for designing our latest microprocessor technologies. Solutions Grid for ISV partners.

The End

Four Key Properties Of On Demand Technology



Integrate

Help you work and act as one.

Open

Connect with others at will, inside or outside your enterprise.



Virtualize

Resource exists only when and where you need them.



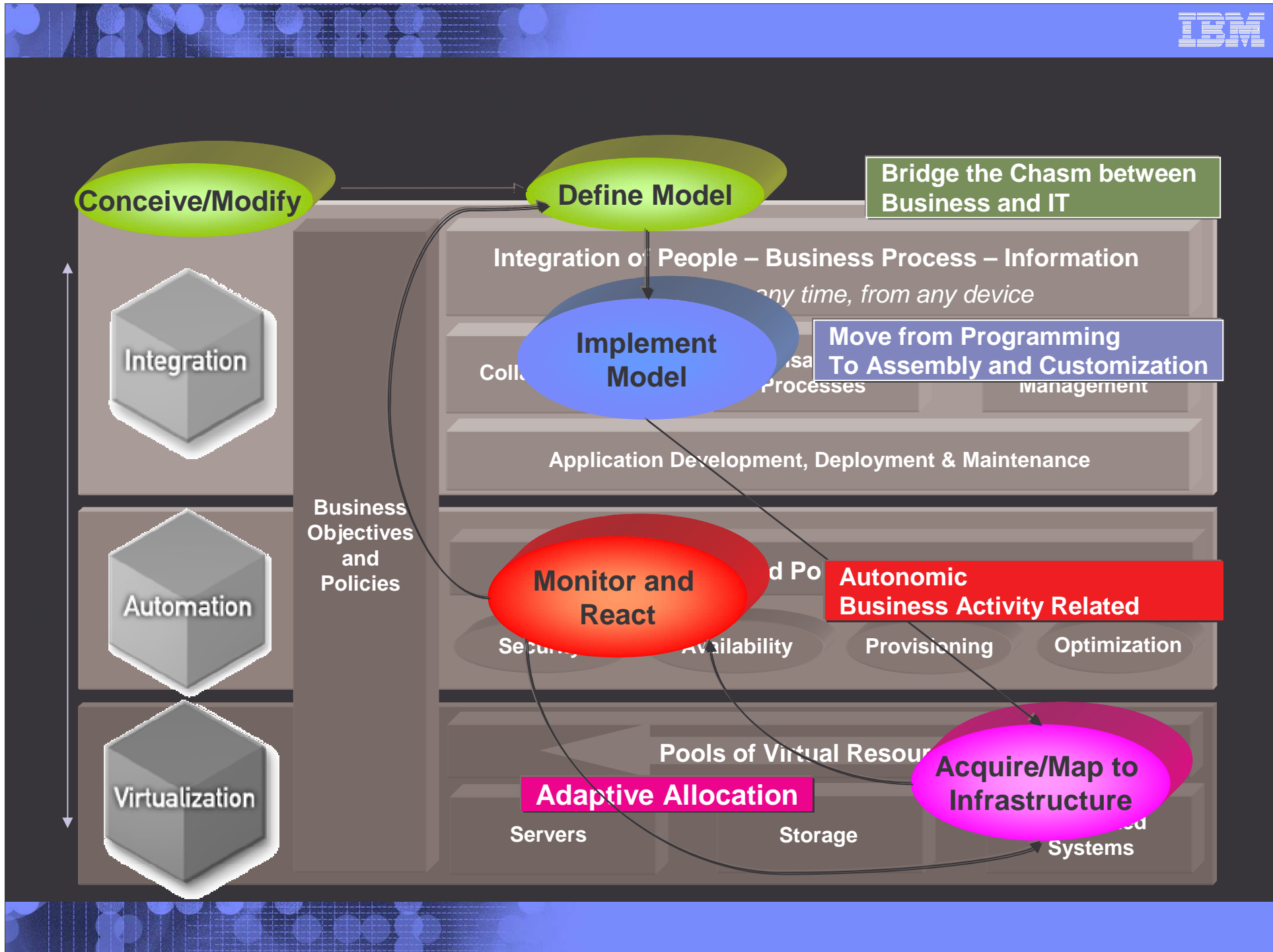
Autonomic

Detect and solve problems automatically.

Technologies That Integrate

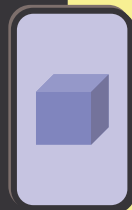
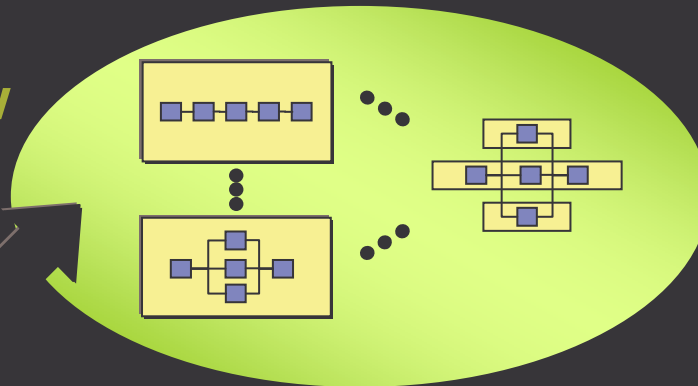


- Coordinate real-time and long-lived **business processes** inside and outside your enterprise, **through one management interface**.
- **Provide a single, unified security model** for your whole enterprise **to allow single-sign** on to any application and the centralized application of security policies.
- Search or browse for information and subject matter experts from multiple locations and set up **collaboration with colleagues instantly**.
- Access, integrate, and manipulate distributed and diverse data through a federated system server as if it were a **single data source**.
- Automatically create an **easy-to-use** and always-updated **place for developers to go for all project information**.

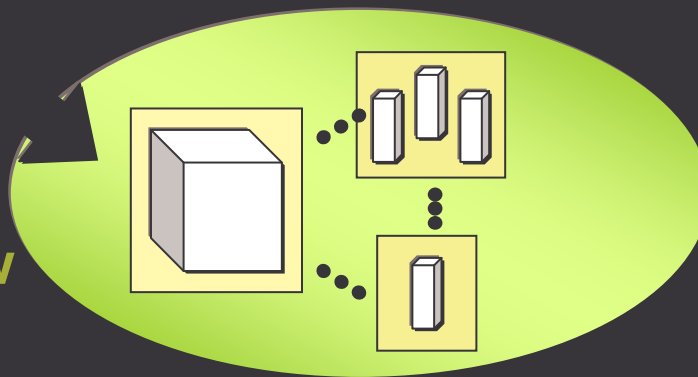


Define Model

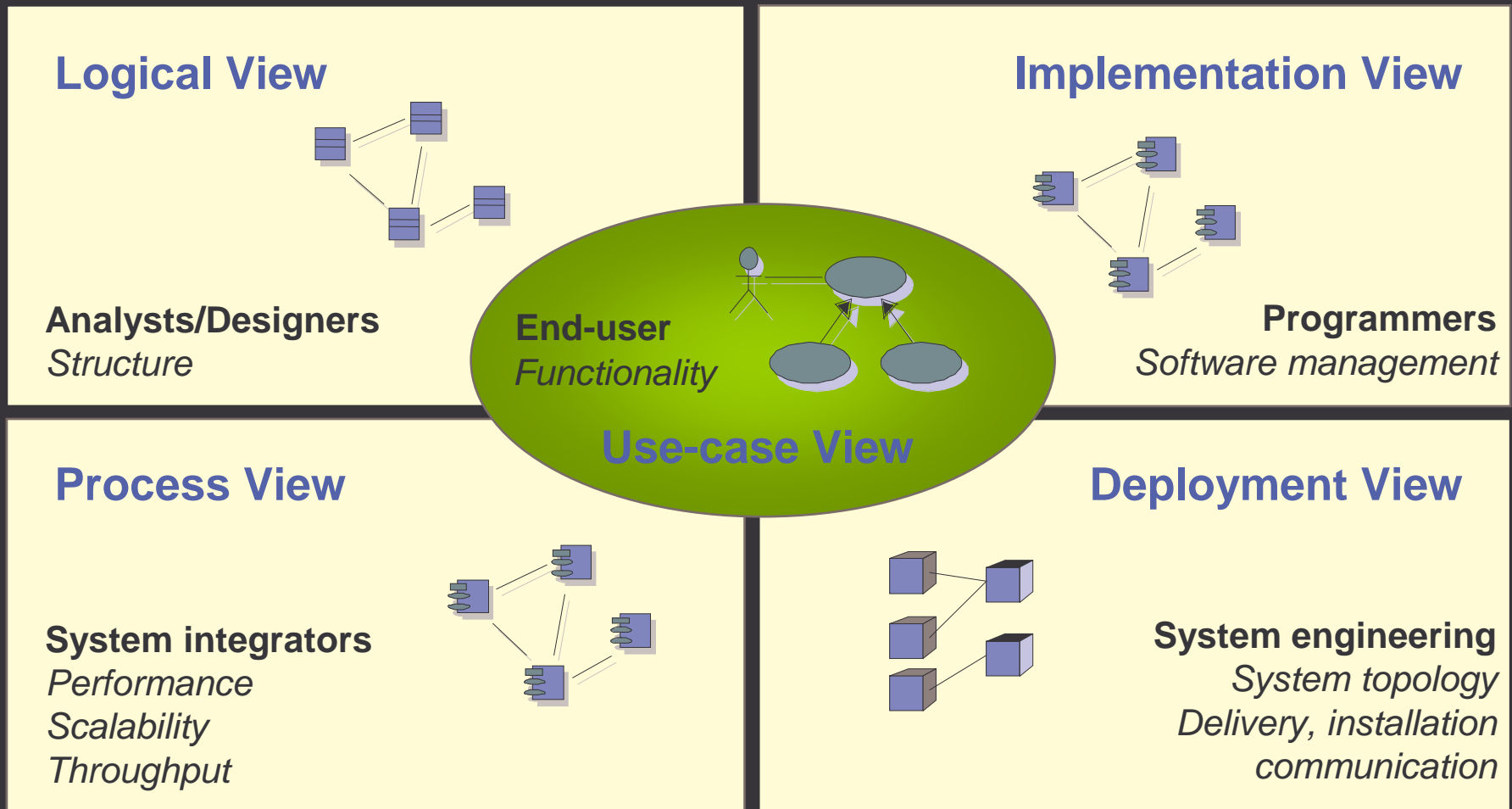
Business View



Infrastructure View

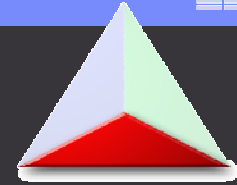


Different views to be modeled

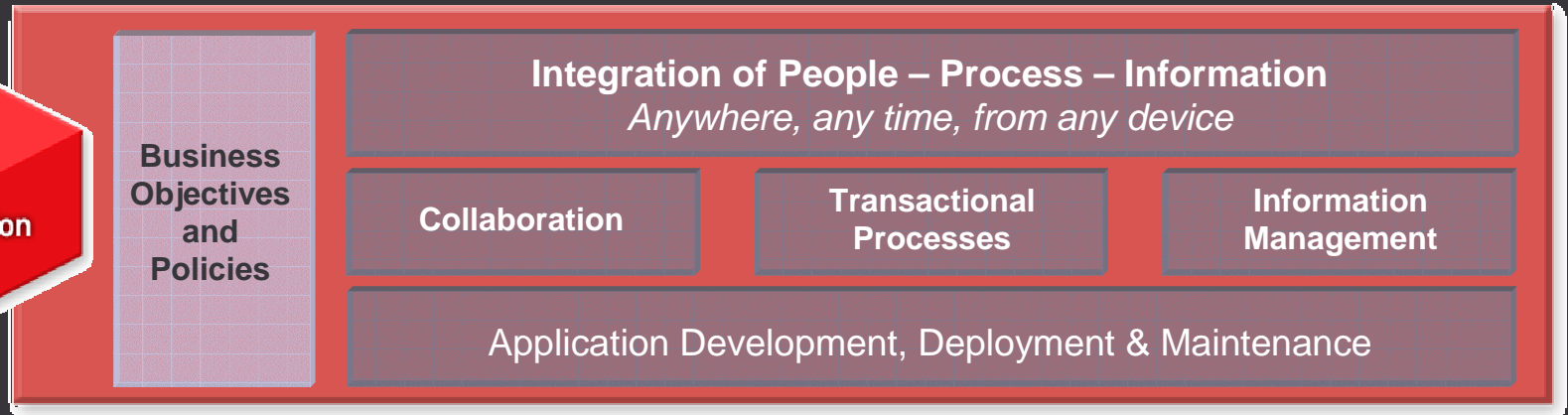
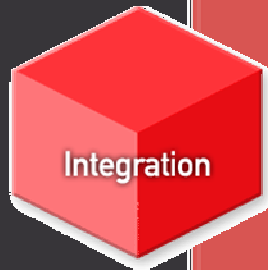


Conceptual

Physical



Offerings for Integration



People

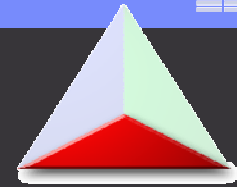
IBM Collaboration Portal Offering

Processes

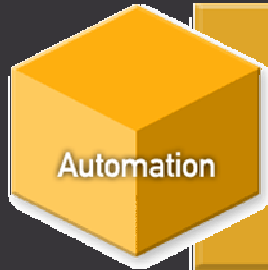
IBM Business Integration Offering

Information

IBM Information Integration Offering



Offerings for Automation



Business Objectives and Policies

Policy-based Orchestration

Availability

Security

Optimization

Provisioning

Availability

IBM Availability Management Offering

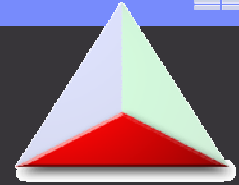
Security

IBM Security Event Management Offering

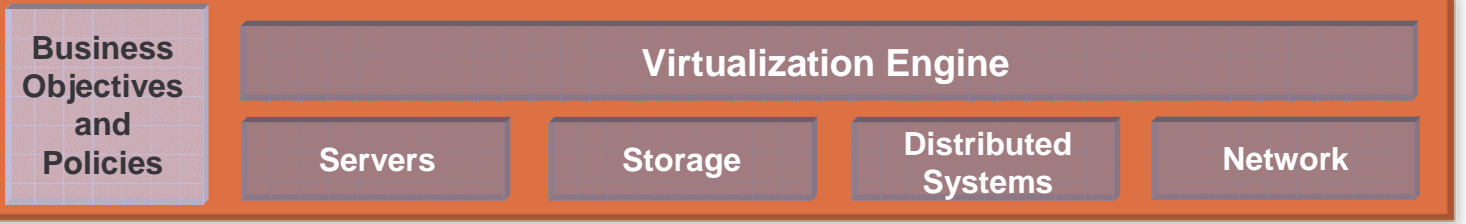
Optimization

IBM Optimization for zSeries Offering

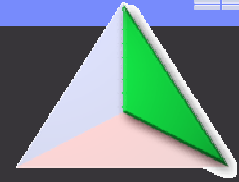
IBM Web Server Provisioning Offering



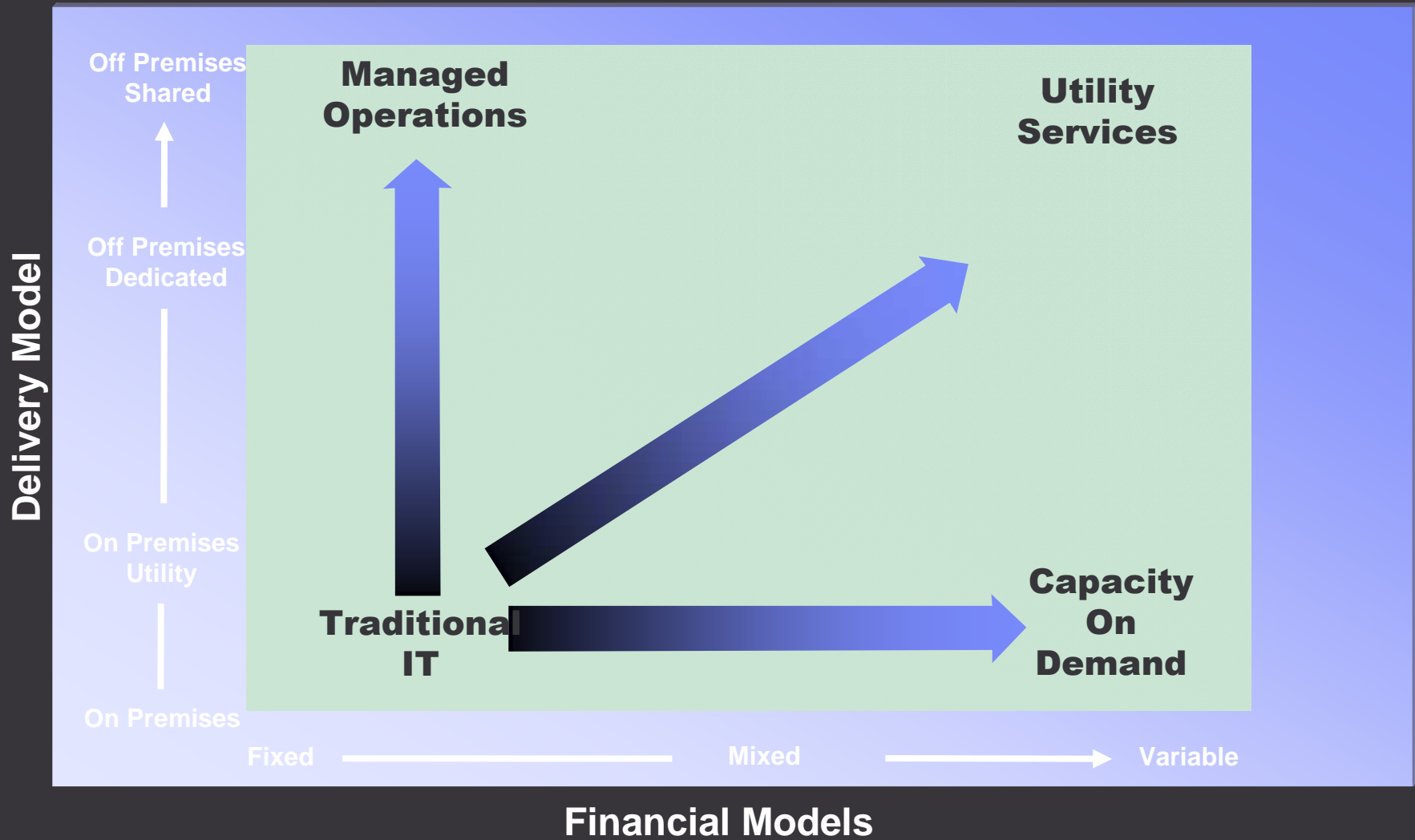
Offerings for Virtualization



Servers	IBM Entry Virtualization Offering
Storage	IBM TotalStorage Virtualization Family Offering
Distributed Systems	IBM Adaptive Server Allocation for WebSphere Offering



Financial and Delivery Models



Utility Computing

	Traditional Computing		Utility Services
IT Infrastructure	Peak usage	➔	Required usage
Capacity Provisioning	Varying lead times	➔	Nominal procurement; short lead times
Charge-back	Estimated allocation	➔	Usage-based billing
User Management	Dedicated business analyst	➔	Self-service
Capital Investment	Large-scale, up-front investments	➔	Incremental investments
Cost Profile	Asset-based fixed costs	➔	Services-based variable costs



Utility Types

'Internal' Utility

A **client-operated IT utility** using **dedicated, client owned assets**

Client Benefits

- Control
- Dedicated resources

Private Utility

A **client-specific utility** using **dedicated assets**, but **construction and management of these services is provided by an external provider**

Client Benefits

- Control
- Dedicated resources
- Assisted management

Hybrid Utility

A **mixture of client specific utility services** using **dedicated resources**, and **shared use of some public utility services with other subscribers**

Client Benefits

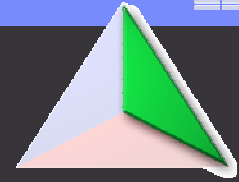
- Control for key functions
- Dedicated resources for some assets
- Progressively enter public arena as services mature

Public Utility

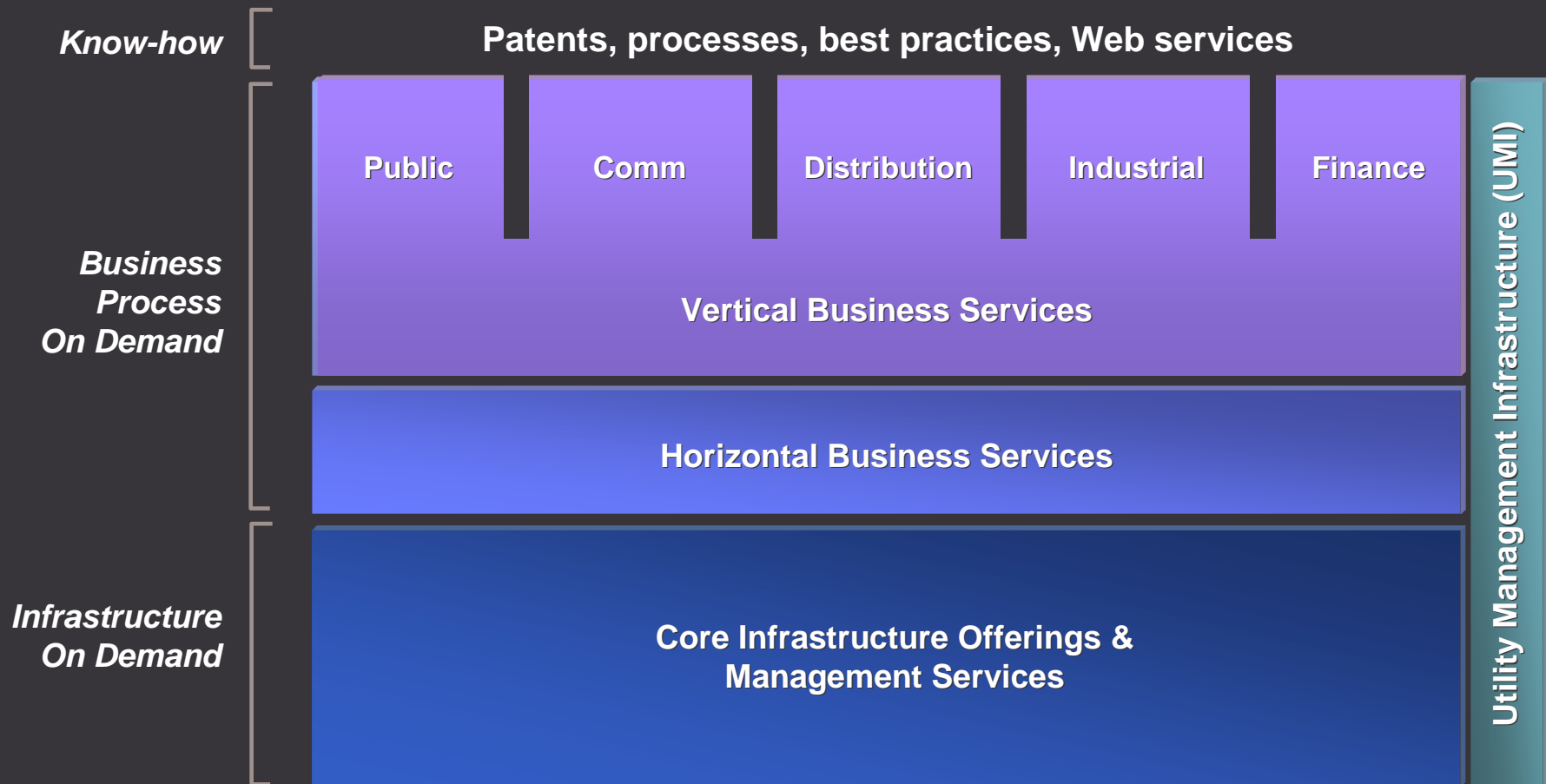
A **set of IT utility services shared across multiple subscribers**

Client Benefits

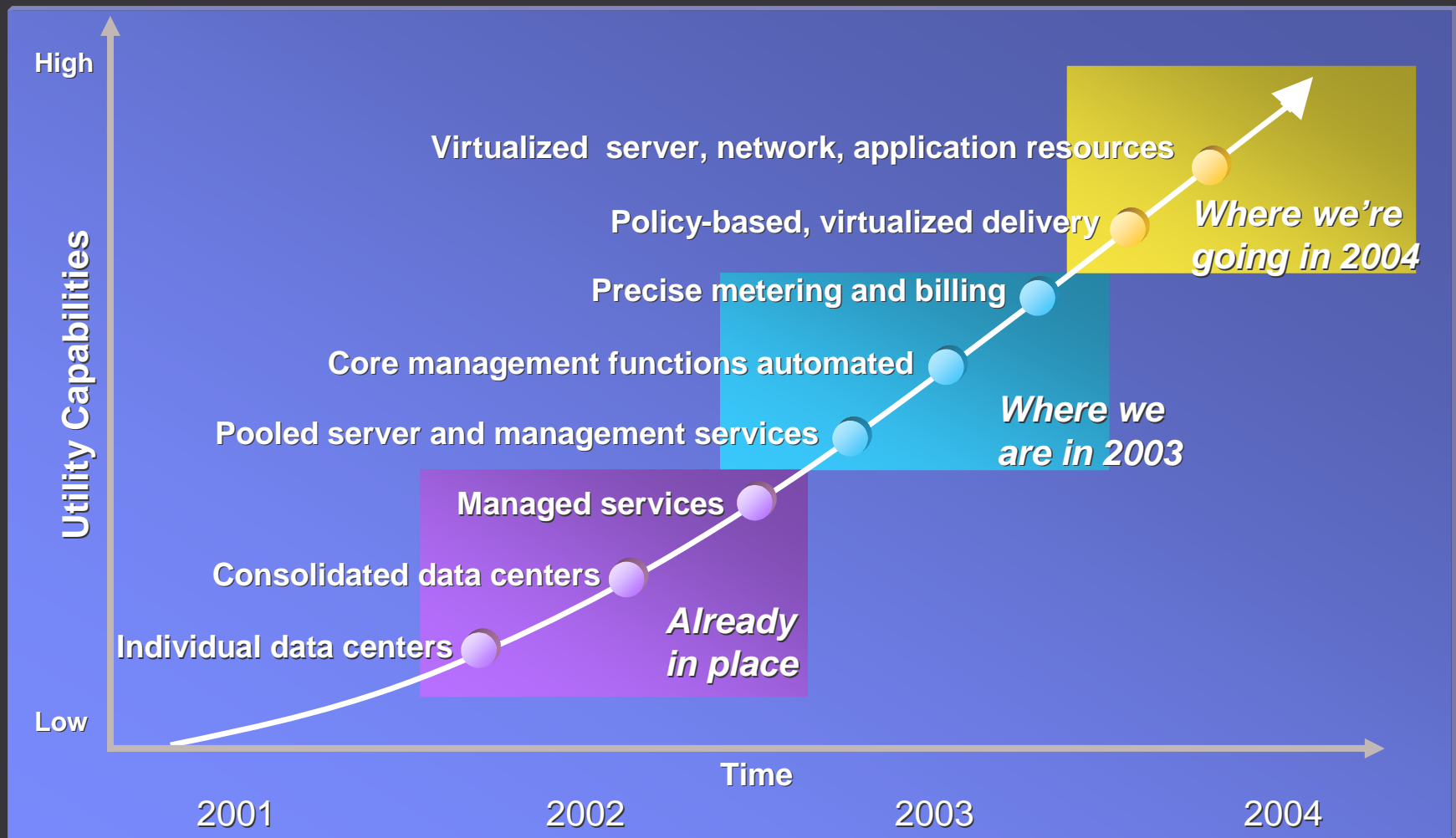
- Full provisioning of IT in a utility mode, giving a comprehensive usage and cost profile
- Cost efficiencies
- Shared risk

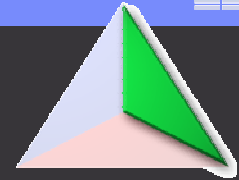


On Demand Utility Strategy



Utility Management Infrastructure





On Demand Utility Offerings

Vertical Business Services

- Life Science / Lion Hosted Services
- Retail / Continuous Replenishment Pgm
- Education / ePals SchoolMail Service
- Telecom / Portal Hosted Services

Horizontal Business Services

- Business Exchange Services
- Leveraged Procurement Services
- Dynamic Workplace
- Customer Relationship Management

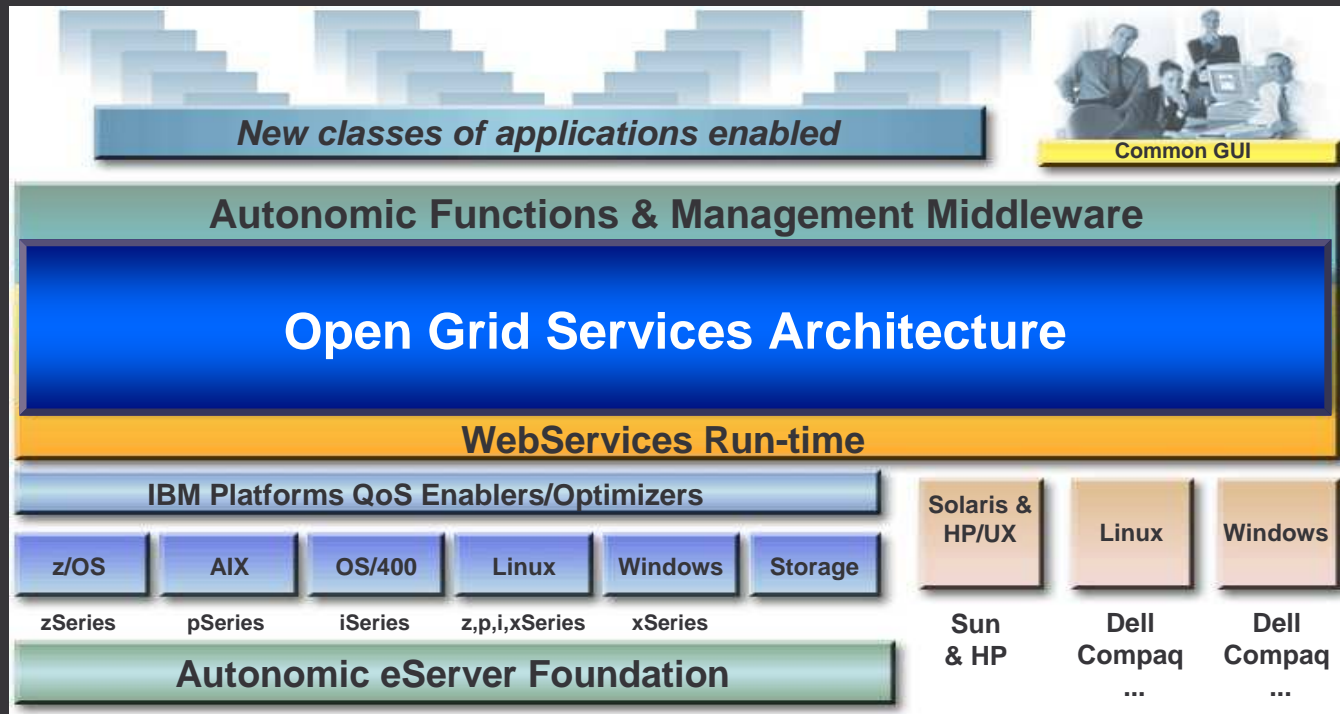
Infrastructure On Demand

- Linux Virtual Services
- Managed Storage Services
- Open Infrastructure Offering
- Logical Partitioning
- Blades/IBM Director
- Enterprise Workload Management (eWLM)
- TotalStorage Step Ahead

On Demand Operating Environment

Autonomic Computing, Grid, CUoD, Virtualization

Open Grid Services Architecture



Globus Toolkit (GT)

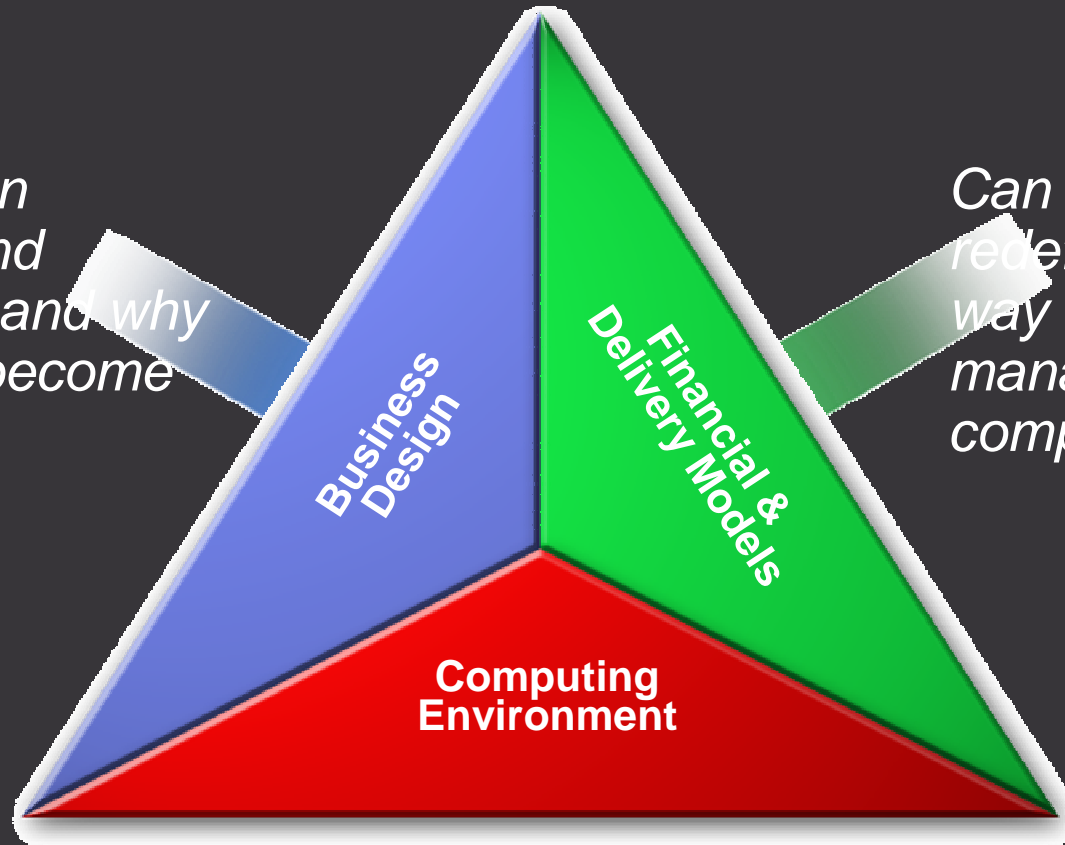
Globus Toolkit With IBM & Industry contributions

Globus Toolkit based on Grid Services

Integrate GT with WebSphere and IBM Operating Systems

Key Questions

What is an on demand business and why should I become one?



Can on demand redefine the way I acquire and manage computing?

What kind of computing environment does on demand require, and how do I build one?

Building an On Demand Business

