Your Organization's Quality Management System is OK. Now What?

Using Enterprise Architecture to Enhance Organizational Performance

Michael J. Novak

ASQ Section 0511 Meeting, February 8, 2017

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Agenda

Background:

- **Strategic Management**
- **Enterprise Engineering**
- **Quality Management**
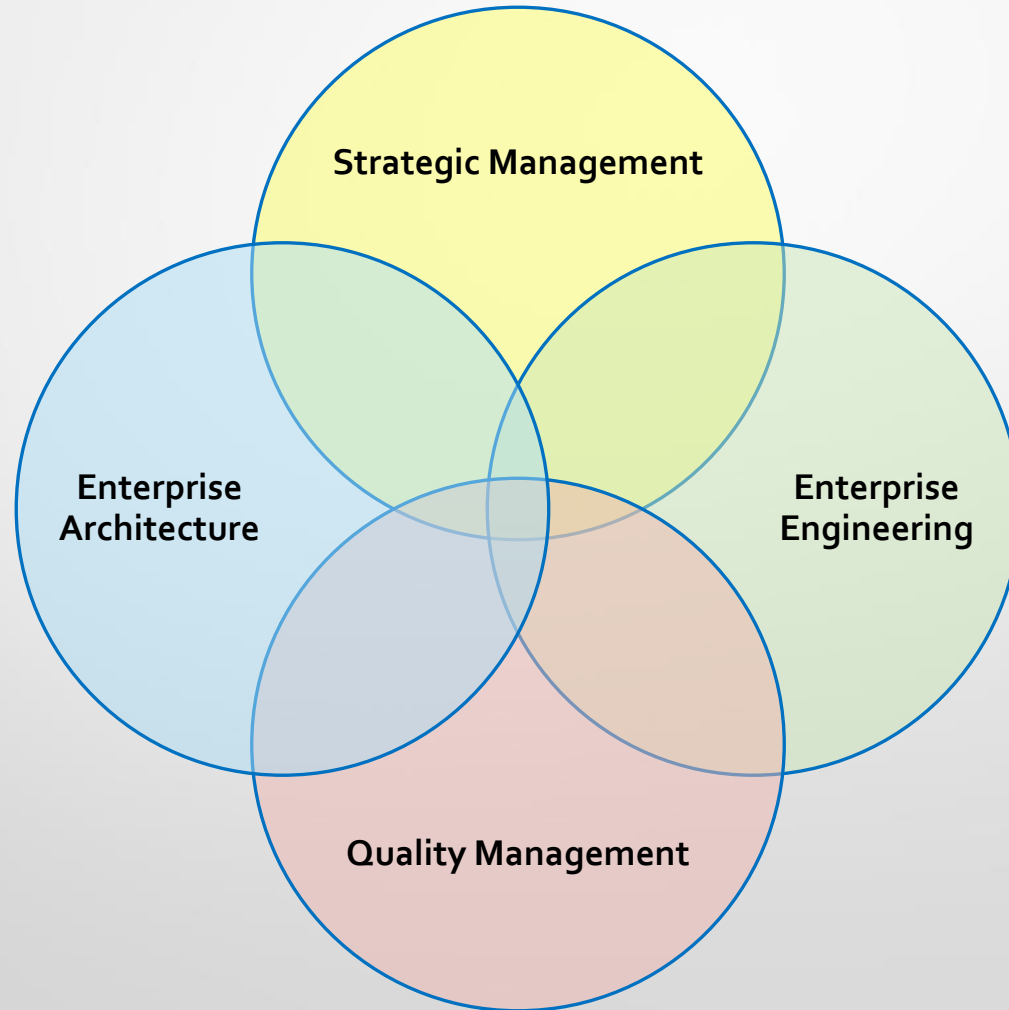
Moving Forward:

- **Enterprise Architecture**

A Note about Models

All models are wrong. Some are useful.
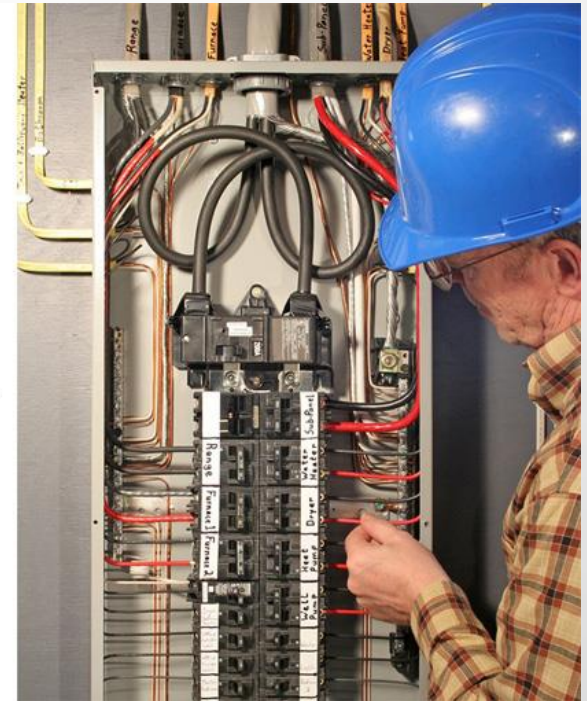
– W. Edwards Deming

Concept Relationships
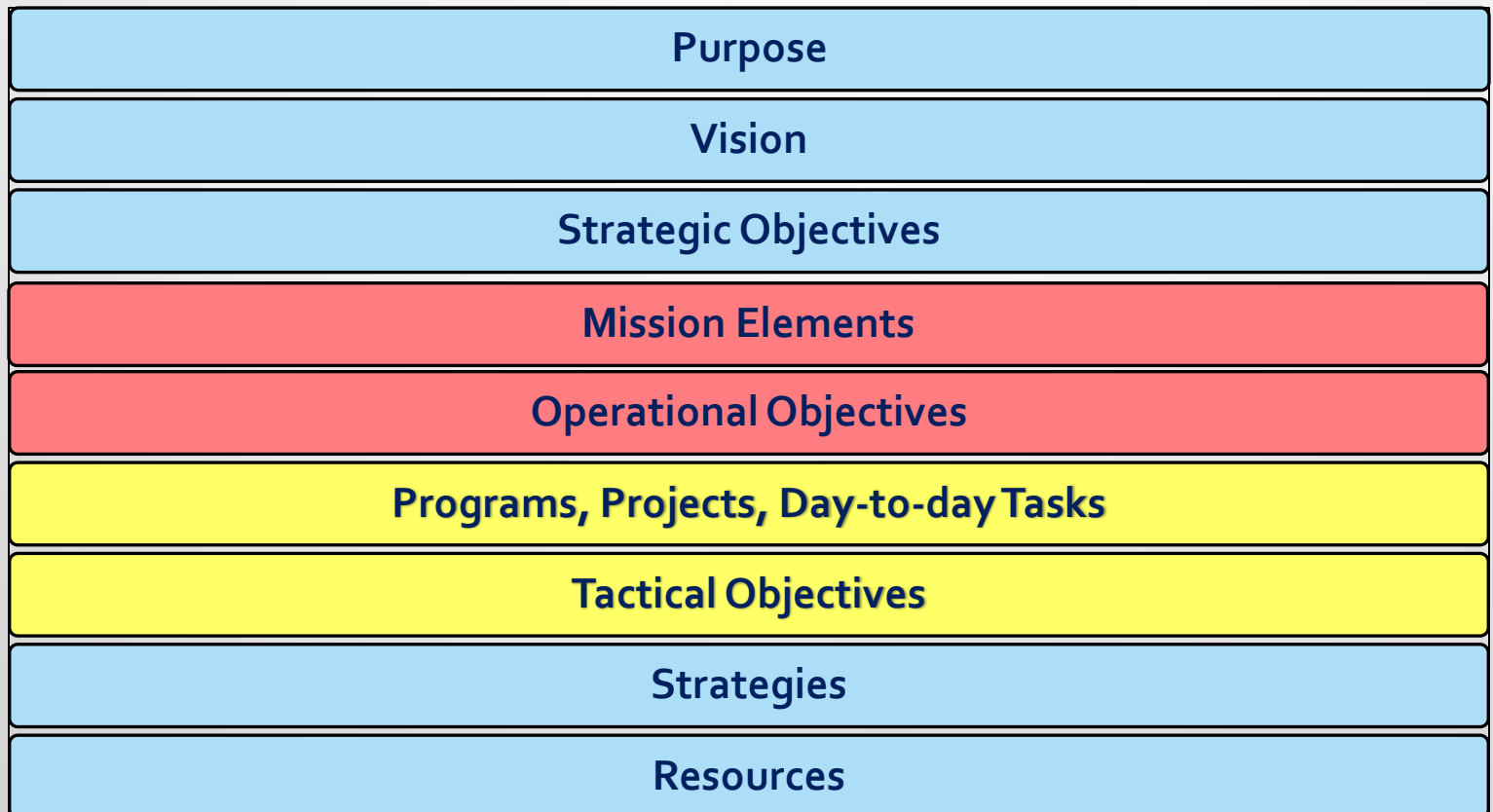
Why Enterprise Architecture?

EA

Strategic Management

"Everything eventually focuses on the Purpose, Vision, and Strategic Objectives."

Strategic Management Exists in Three Dimensions

Strategic	• **Focused on Purpose and Vision**
Operational	• **Focused on Mission Elements**
Tactical	• **Focused on Programs, Projects, and Day-to-day Tasks**

Strategic, Operational, and Tactical "Building Blocks"

Purpose
Vision
Strategic Objectives
Mission Elements
Operational Objectives
Programs, Projects, Day-to-day Tasks
Tactical Objectives
Strategies
Resources

Hierarchy of "Building Blocks" – Organizational Operations

Purpose

Vision

Mission Element	Mission Element

Program/Project/Task	Program/Project/Task	Program/Project/Task	Program/Project/Task

Hierarchy of "Building Blocks" – Organizational Objectives

Purpose

Vision

Strategic Objective	Strategic Objective

Operational Objective	Operational Objective	Operational Objective	Operational Objective

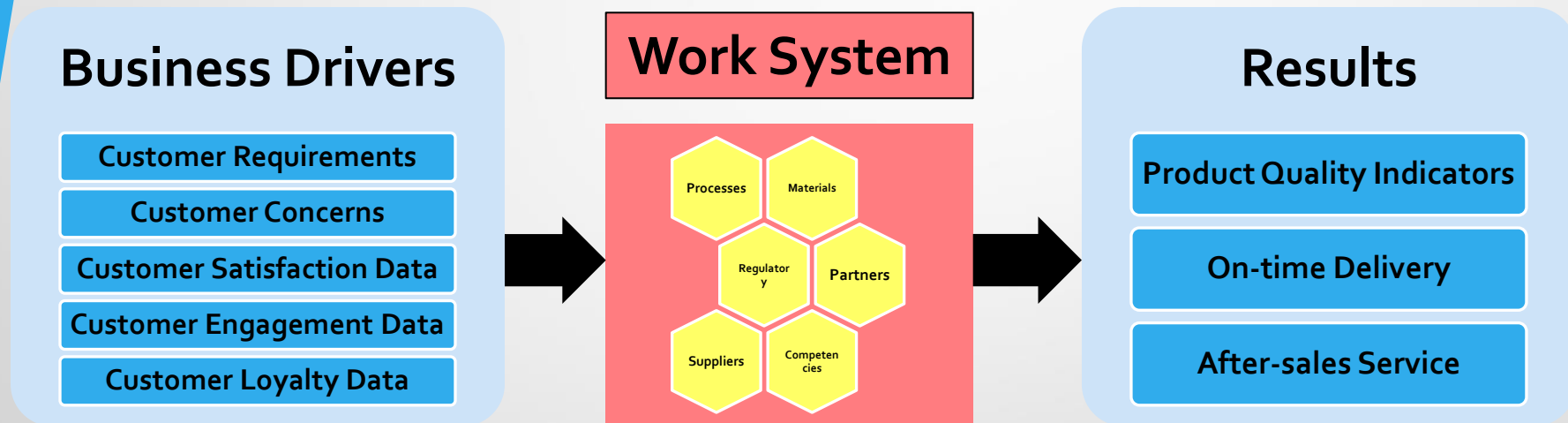| Tactical Objective	Tactical Objective	Tactical Objective	Tactical Objective	Tactical Objective	Tactical Objective	Tactical Objective	Tactical Objective
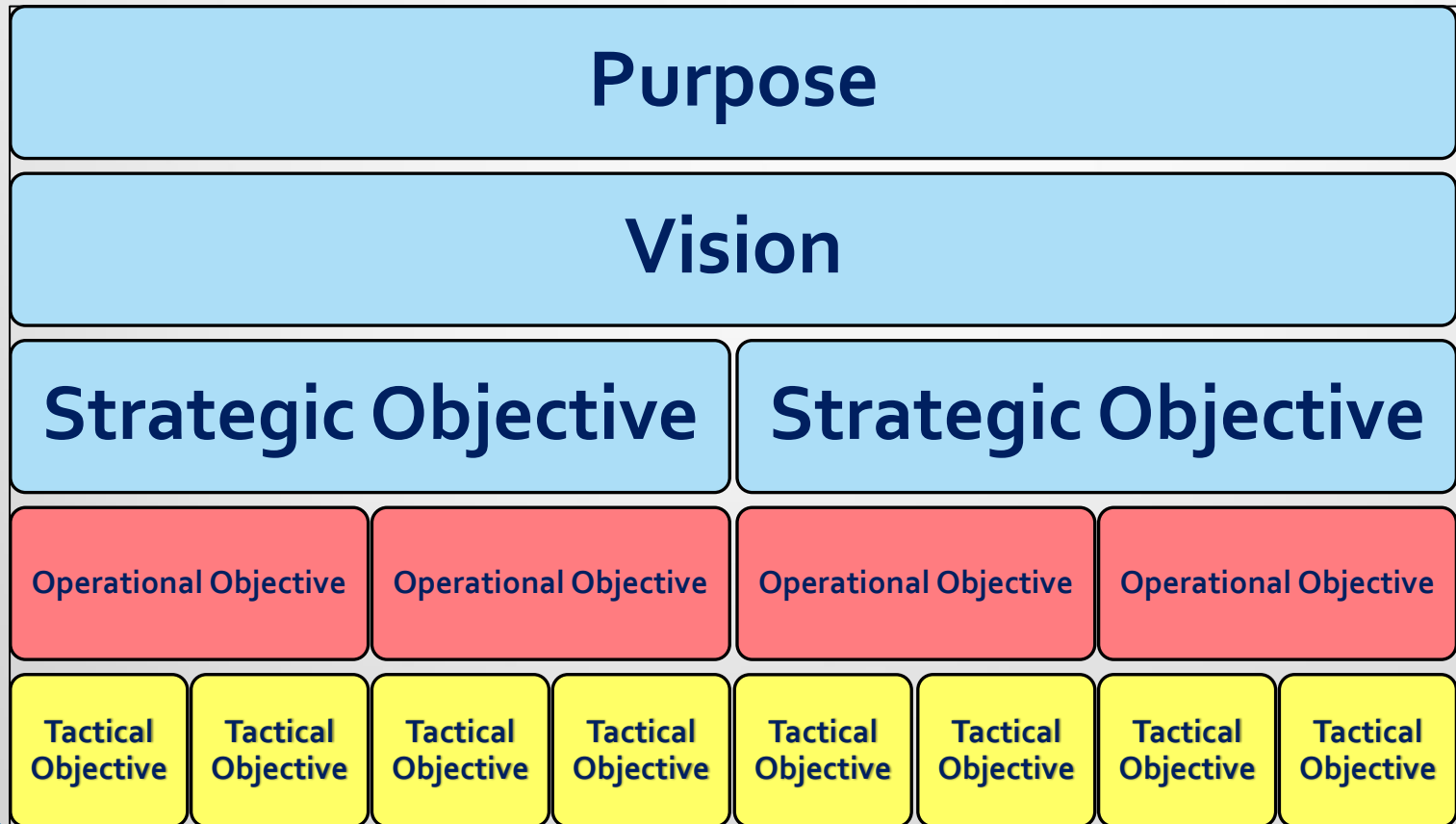
Enterprise Engineering

"Everything eventually focuses on the Business Drivers."

Enterprise Engineering

"Building Blocks" of Enterprise Engineering

- Business Drivers

- Work Processes

- Work Systems

- Desired/Required Outputs/Results/Outcomes

Enterprise Engineering "Building Blocks"

Business Drivers

- Customer Requirements
- Customer Concerns
- Customer Satisfaction Data
- Customer Engagement Data
- Customer Loyalty Data

Work System

Processes
Materials
Regulatory
Partners
Suppliers
Competencies

Results

- Product Quality Indicators
- On-time Delivery
- After-sales Service
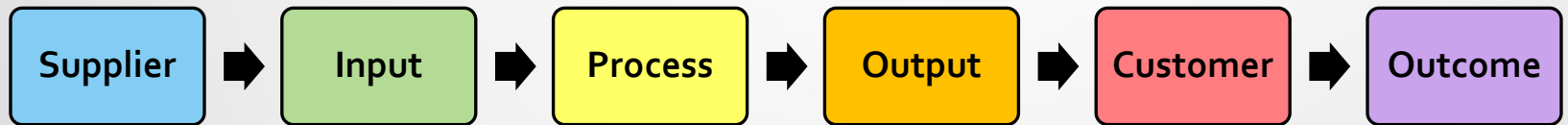
What's A "Work System?"

"Everything that affects the delivery of a product/service to the customer."

- **Internal factors**

- **External environment**
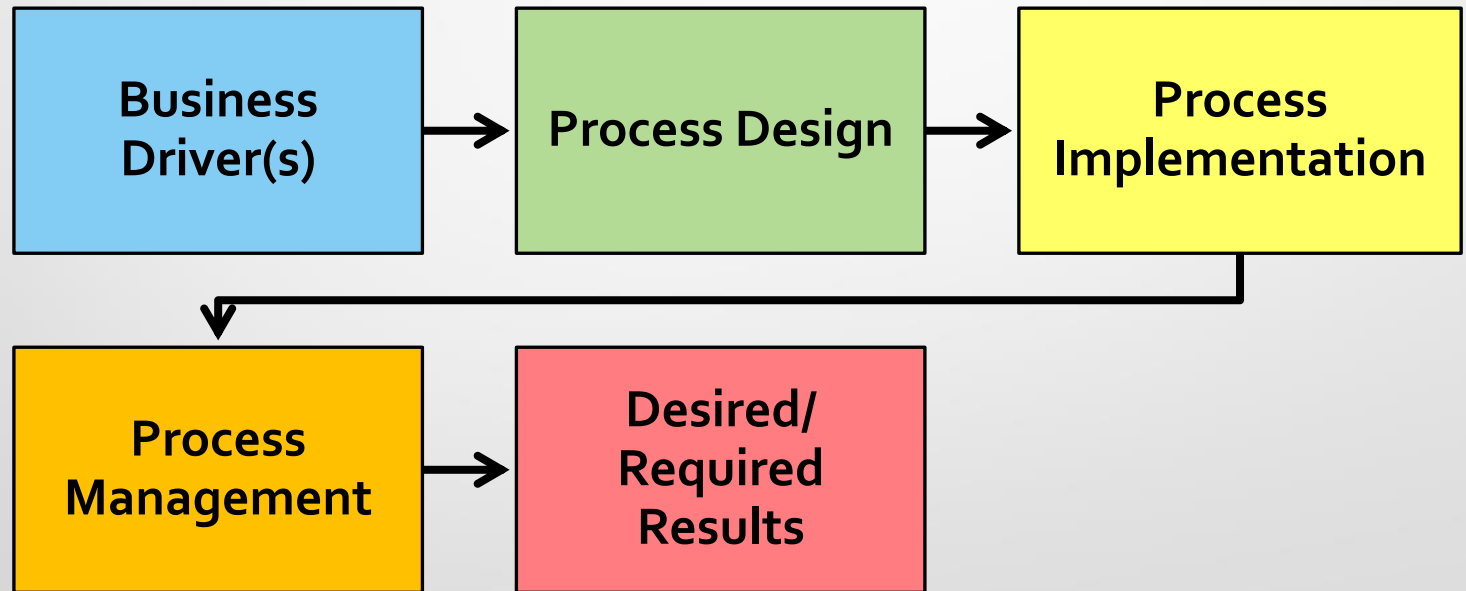
What's A "Work System?"
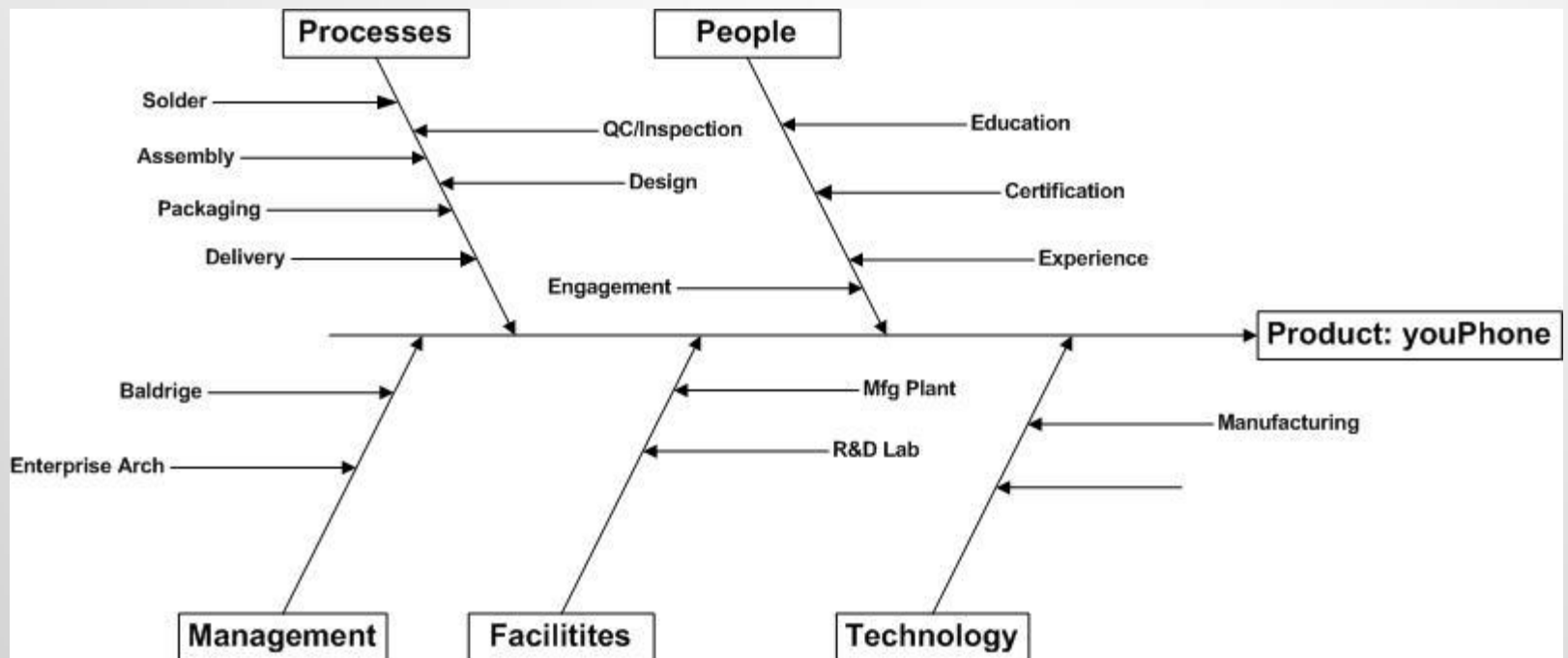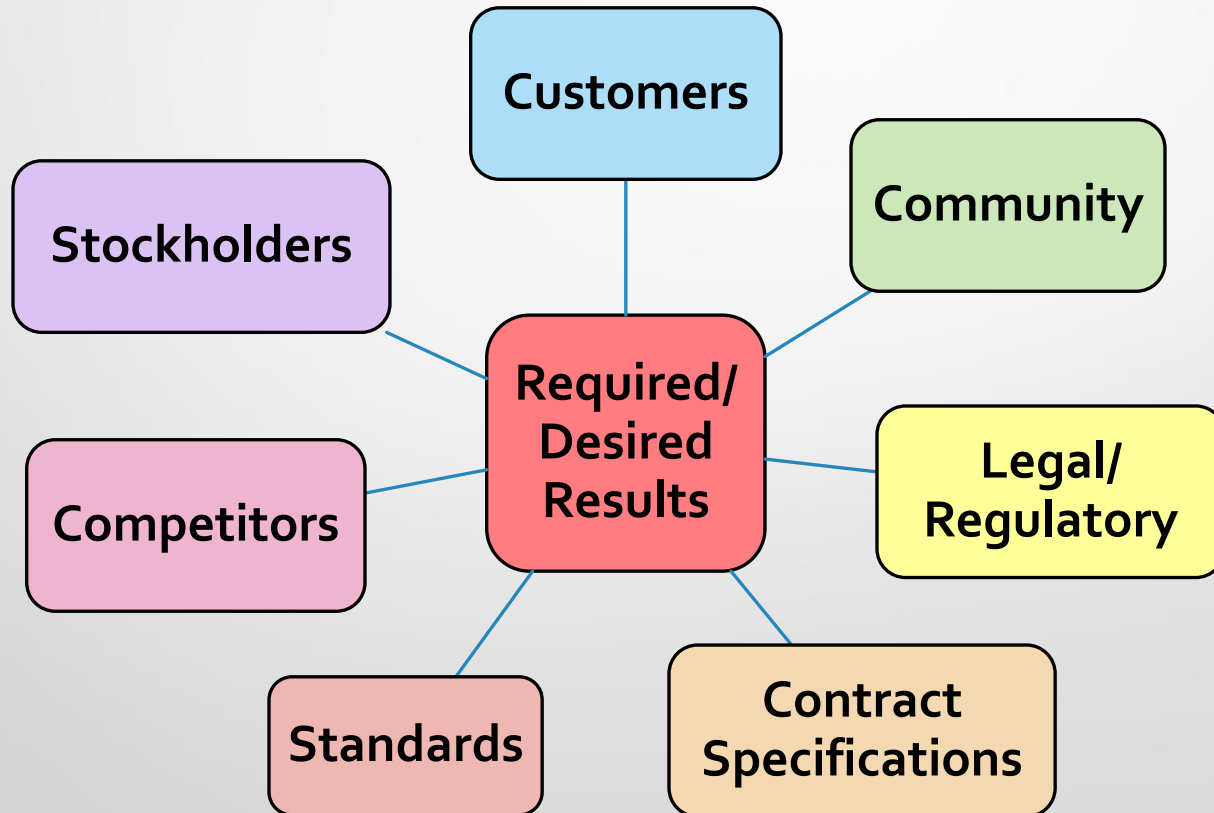
Work Processes – The Traditional View

Supplier ➡ Input ➡ Process ➡ Output ➡ Customer ➡ Outcome

CQM/OE (or Baldrige Examiner) Question: What's missing in this diagram?
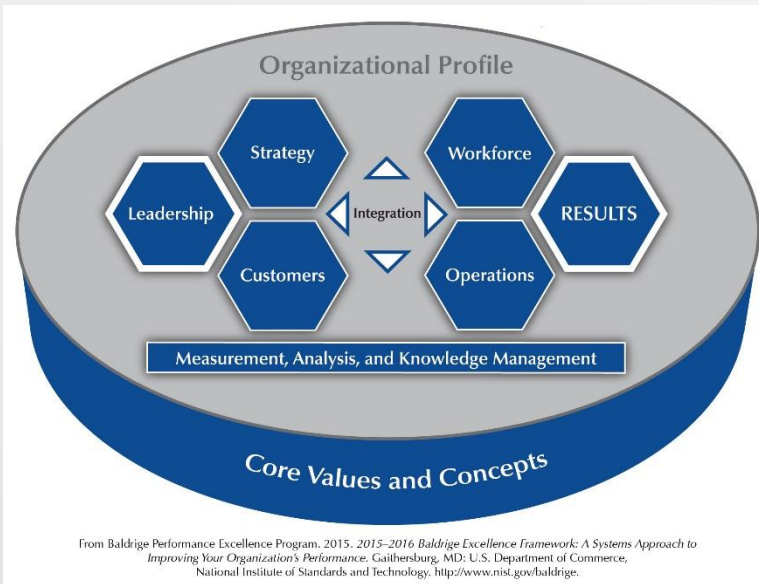
Work Processes – The Enterprise Engineering View

```
┌──────────────┐      ┌──────────────┐      ┌──────────────┐
│  Business    │ ───> │Process Design│ ───> │   Process    │
│  Driver(s)   │      │              │      │Implementation│
└──────────────┘      └──────────────┘      └──────────────┘
                                                    │
        ┌───────────────────────────────────────────┘
        ▼
┌──────────────┐      ┌──────────────┐
│   Process    │ ───> │  Desired/    │
│ Management   │      │  Required    │
│              │      │  Results     │
└──────────────┘      └──────────────┘
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What Drives Required/Desired Results?

Quality Management

"Everything eventually focuses on the Quality of the Product/ Service."

ACT PLAN
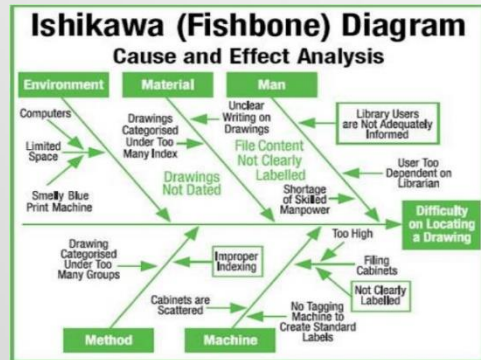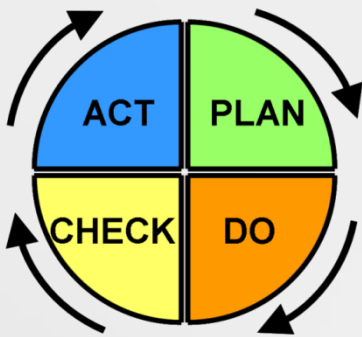CHECK DO

Total **Q**uality **M**anagement

Quality Circle

Ishikawa (Fishbone) Diagram
Cause and Effect Analysis

Environment | Material | Man

Computers
Limited Space
Smelly Blue Print Machine

Drawings Categorised Under Too Many Index
Unclear Writing on Drawings
File Content Not Clearly Labelled
Library Users are Not Adequately Informed
User Too Dependent on Librarian
Drawings Not Dated
Shortage of Skilled Manpower

Difficulty on Locating a Drawing

Drawing Categorised Under Too Many Groups
Improper Indexing
Too High
Filing Cabinets
Not Clearly Labelled
Cabinets are Scattered
No Tagging Machine to Create Standard Labels

Method | Machine

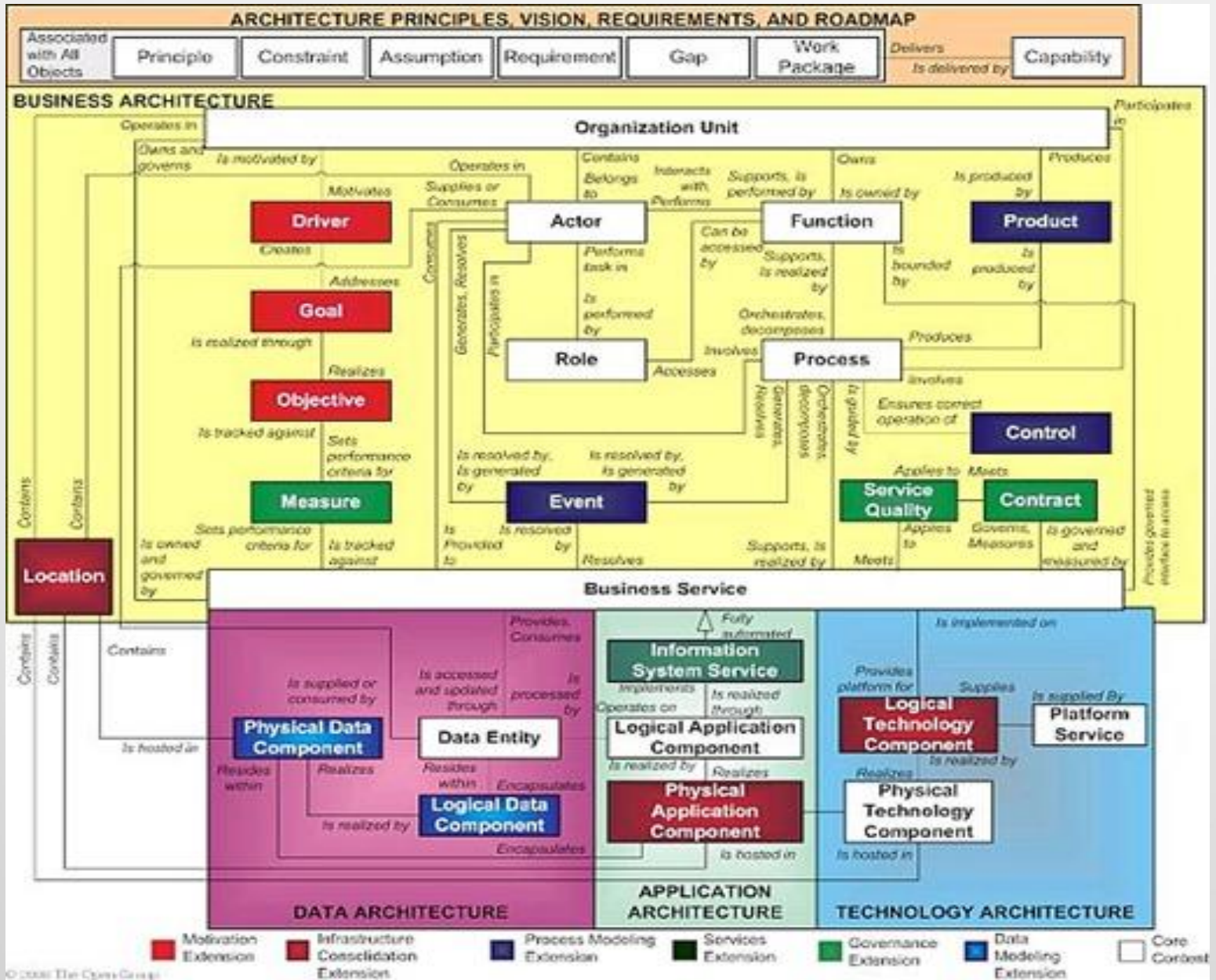|	Deming's 14 Points		
1	Create constancy of purpose .	8	Drive out fear.
2	Adopt the new philosophy and take on leadership .	9	Break down barriers. Work as a team.
3	Eliminate inspection. Build in quality.	10	Eliminate slogans. Fix the system.
4	Minimize total cost of by improving quality of supplies.	11	Eliminate quotas. Substitute Leadership
5	Constantly improve quality and productivity to decrease costs.	12	Remove barriers to pride of workmanship.
6	Institute training on the job.	13	Institute a vigorous program of education and self-improvement.
7	Supervision should be to help people.	14	The transformation is everybody's job.

Deming, *Out of the Crisis,* (p23-24)

Develop Vision and Objectives
Ongoing Continuous Improvement
Understand Existing Processes
Identify Process for Re-design
1 2 3 4 5 6 7 8
BUSINESS PROCESS RE-ENGINEERING
Identify Change Levers
Implement the New Process
Make New Process Operational
Evaluate the New Process
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lean enterprise

Control Define Measure Analyze Improve
6σ
DMAIC

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Enterprise Architecture

"Everything eventually focuses on Transforming the Organization."

ARCHITECTURE PRINCIPLES, VISION, REQUIREMENTS, AND ROADMAP

Four Dimensions of Enterprise Architecture
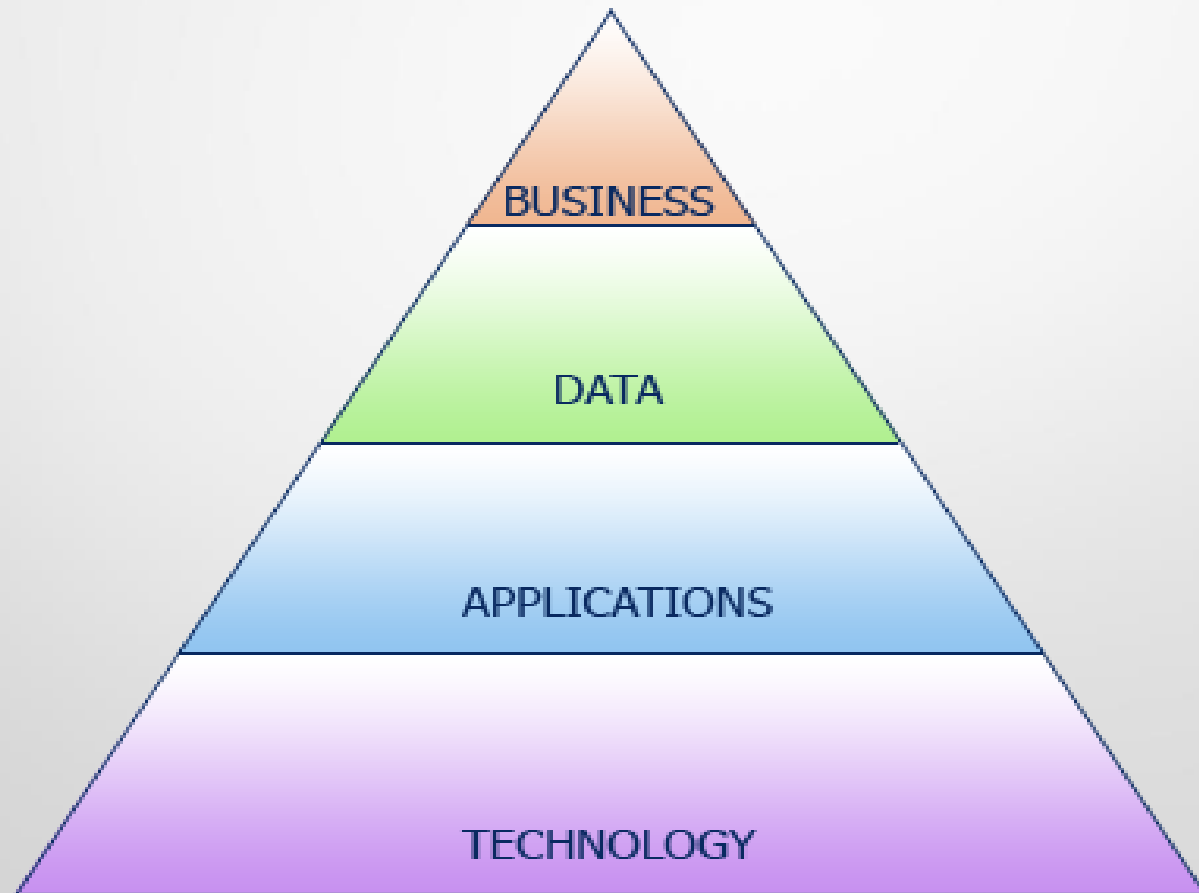
Enterprise Architecture

"Building Blocks" of Enterprise Architecture

- Business Architecture

- Data/Information/Knowledge Architecture

- Application Architecture

- Technology Architecture

- Architecture Roadmap

Why Enterprise Architecture?

A more efficient business operation

A more efficient IT operation

Better return on existing investment, reduced risk for future investment

Faster, simpler, and cheaper procurement

Business Architecture

"The Business Architecture describes the product and/or service strategy, and the organizational, functional, process, information, and geographic aspects of the business environment."

– Open Group Standard TOGAF® Version 9.1

Strategy

| Position	Govern	Influence and collaborate
• Understand national & international directions & factors • Determine organizational vision & values • Determine organizational value proposition • Determine organizational goals • Communicate values & expectations	• Develop strategies for achieving organizational goals • Prioritize statistical portfolio • Prioritize capability portfolio • Allocate portfolio & programme budgets • Build & maintain internal statistical & professional excellence	• Build & maintain strategic relations, nationally & internationally • Build & maintain external statistical excellence • Advance inter-agency & international collaborations • Secure support for statistical & capability portfolio

Capability

Plan capability improvements	Develop capability improvements	Manage capabilities	Support capability implementation
• Identify 'disruptive' & other capability improvements • Propose capability improvement projects, including shared infrastructure • Manage capability improvement programmes	• Undertake background research • Develop detailed capability requirements • Design capability solution • Build & release capability solution, including shared infrastructure • Manage capability development	• Maintain capabilities, including shared infrastructure • Promote capabilities • Evaluate capabilities	• Support design • Support operations • Support use externally

Corporate support

Manage business and performance	Manage finances	Manage human resources	Manage IT	Manage information and knowledge	Manage consumers and suppliers
• Manage business performance • Manage change • Manage legislation & compliance • Manage physical assets, including building facilities	• Accounting (including assets & liabilities) • Procurement & contracts	• Manage employee performance • Manage & develop skills • Manage talent • Manage recruitment • Succession planning	• Manage IT services • Manage IT & information security	• Manage document & records • Manage knowledge • Manage information standards & rights	• Public affairs • Media relations • Stakeholder consultation • Manage user support

Production

Develop

Specify needs	Design	Build
• Identify needs • Consult & confirm needs • Establish output objectives • Identify concepts • Check data availability • Prepare business case	• Design outputs • Design variable descriptions • Design collection • Design frame & sample • Design processing & analysis • Design production system & workflows	• Assemble & configure system components • Configure workflows • Test production system • Test statistical business process • Finalize production system

Implement

Collect	Process	Analyze	Disseminate
• Create frame & select sample • Set up collection • Run collection • Finalize collection	• Integrate data • Classify & code • Review & validate • Edit & impute • Derive new variables & units • Calculate weights • Calculate aggregates • Finalize data files	• Prepare draft outputs • Validate outputs • Interpret & explain outputs • Apply disclosure control • Finalize outputs	• Update output systems • Produce dissemination products • Manage release of dissemination products • Promote dissemination products

Manage

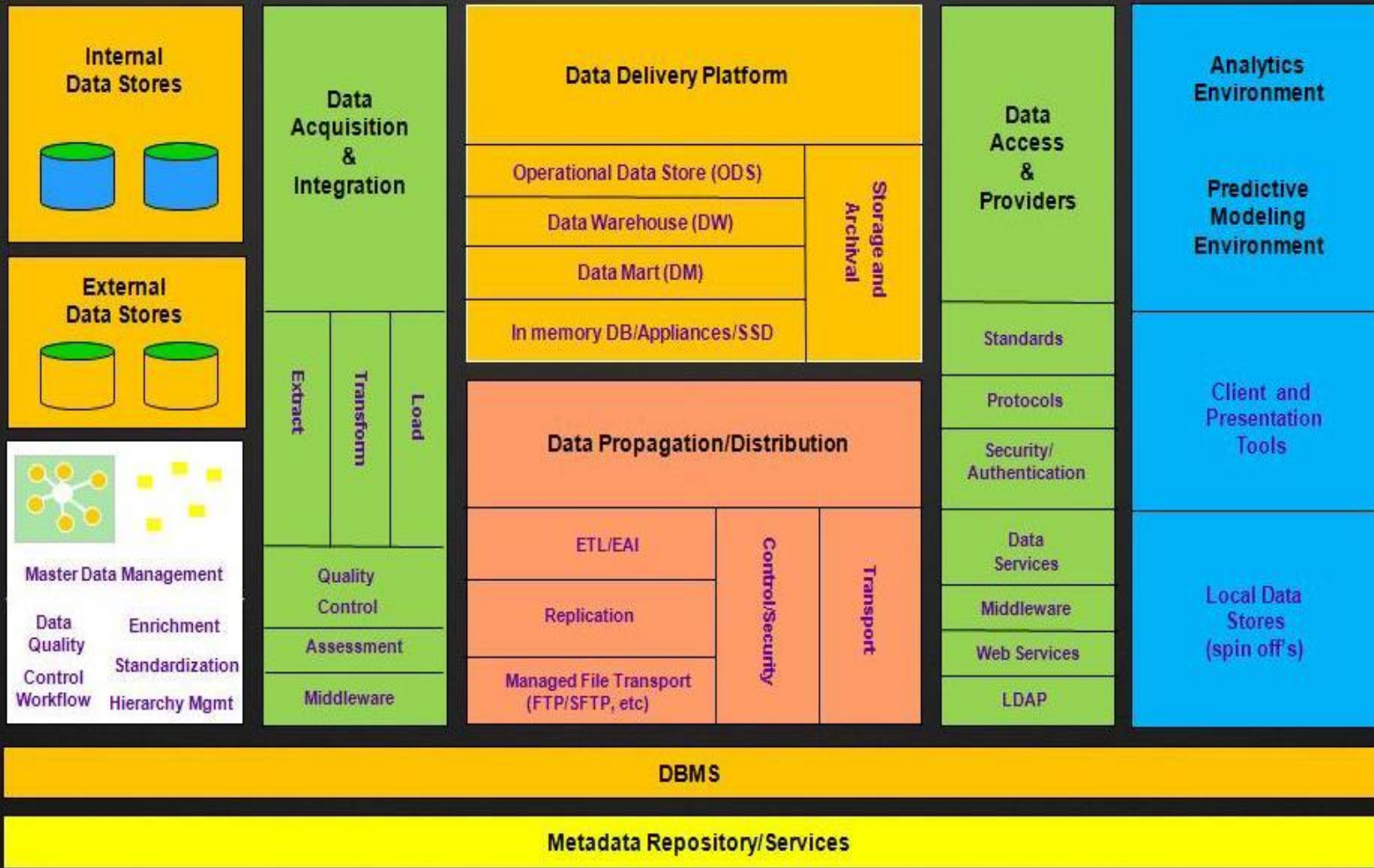| Plan	Monitor	Adjust
• Secure project approval & funding • Plan project tasks, timetable, budget & resources • Plan quality & performance metrics & targets	• Monitor project quality & performance • Monitor project budgets & timetables • Identify emerging risks & issues • Report on project progress	• Develop corrective actions & strategies • Revise project plan • Communicate corrective actions & revised expectations

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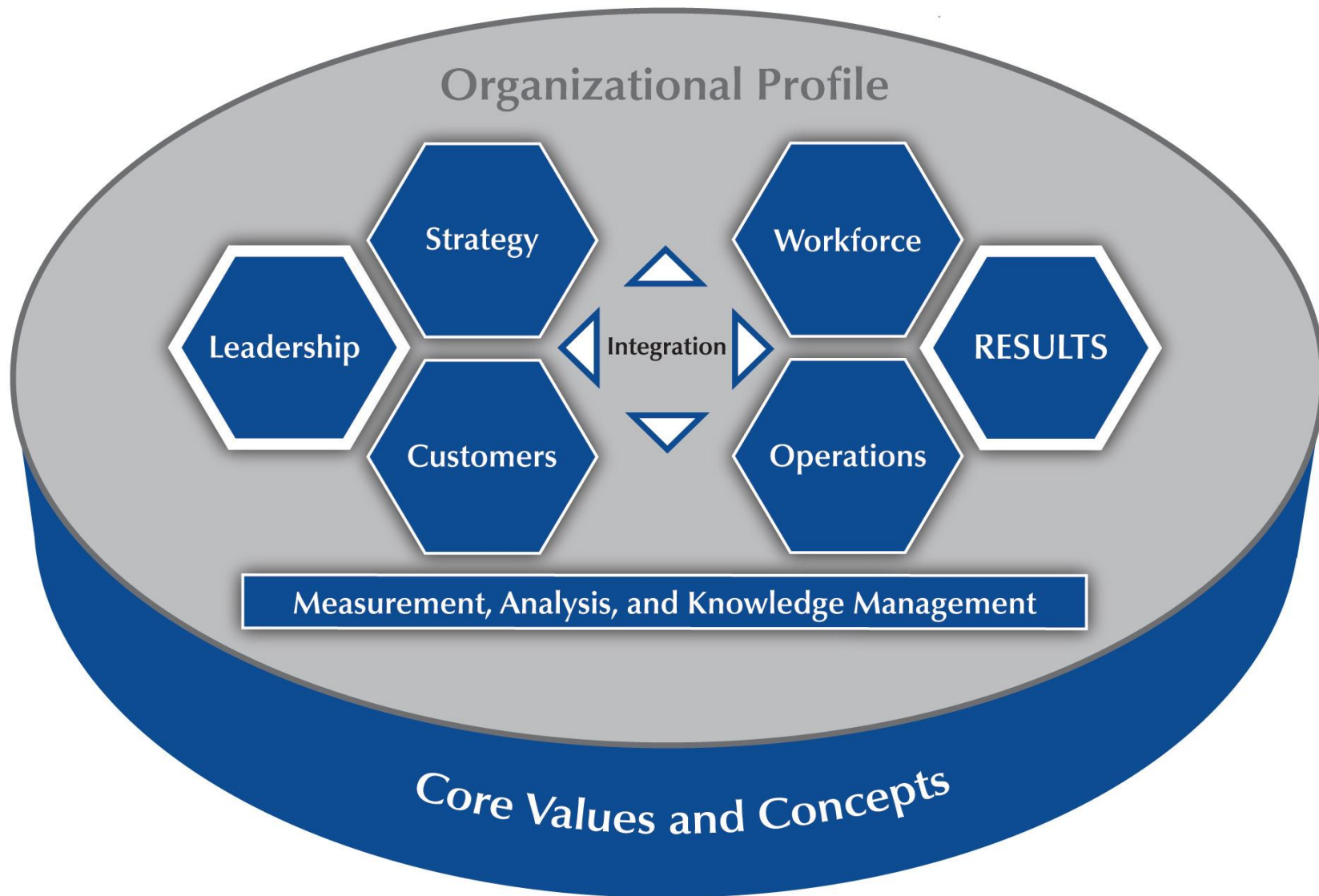
From Baldrige Performance Excellence Program. 2015. *2015–2016 Baldrige Excellence Framework: A Systems Approach to Improving Your Organization's Performance.* Gaithersburg, MD: U.S. Department of Commerce, National Institute of Standards and Technology. http://www.nist.gov/baldrige.

Data Architecture

The Data Architecture describes the data (which sometimes also includes information and/or knowledge) needed to enable effective decision making in the Business Architecture domain.

Data Architecture Reference Model

Internal Data Stores	Data Acquisition & Integration	Data Delivery Platform		Data Access & Providers	Analytics Environment
		Operational Data Store (ODS)	Storage and Archival		Predictive Modeling Environment
		Data Warehouse (DW)			
External Data Stores		Data Mart (DM)			
	Extract / Transform / Load	In memory DB/Appliances/SSD		Standards	
				Protocols	Client and Presentation Tools
		Data Propagation/Distribution		Security/ Authentication	
Master Data Management	Quality Control	ETL/EAI	Control/Security	Data Services	
Data Quality Enrichment	Assessment	Replication	Transport	Middleware	Local Data Stores (spin off's)
Control Workflow Standardization Hierarchy Mgmt	Middleware	Managed File Transport (FTP/SFTP, etc)		Web Services	
				LDAP	

DBMS

Metadata Repository/Services

Quality of Data Product

Inherent Data Quality

- Accuracy
- Completeness
- Consistency
- Credibility
- Currentness

- Accessibility
- Compliance
- Confidentiality
- Efficienct

- Precision
- Traceability
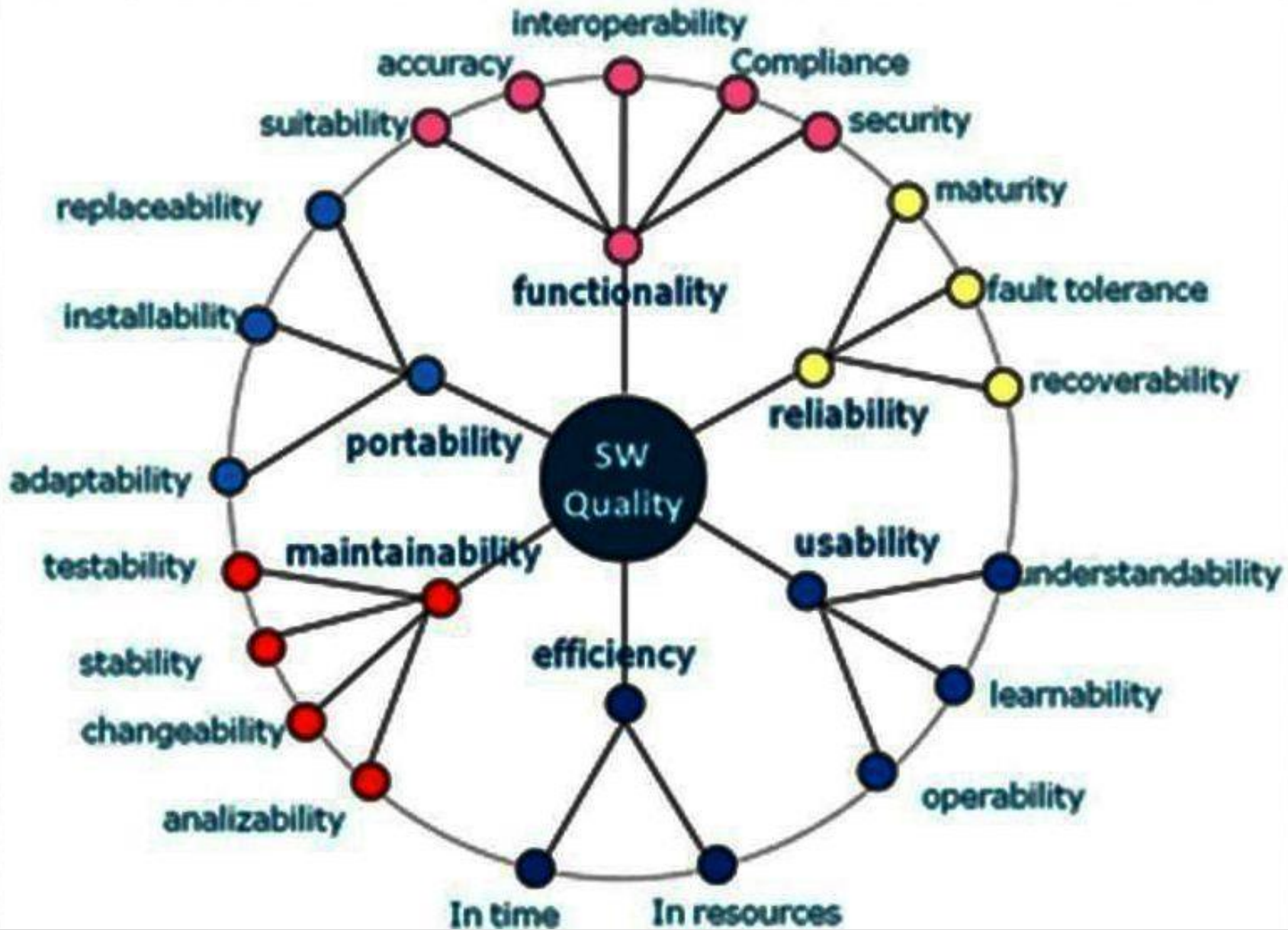- Understandability

- Availability
- Portability
- Recoverability

System-Dependent Data Quality

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Application Architecture

The Application Architecture describes the applications (software programs) needed to process data, information, and knowledge to enable effective decision making in the Business Architecture domain.

Technology Architecture

The Technology Architecture describes the technology (hardware) needed to (a) house applications that process data, information, and knowledge to enable effective decision making in the Business Architecture domain, and (b) transfer data, information, knowledge, and applications among stakeholders.
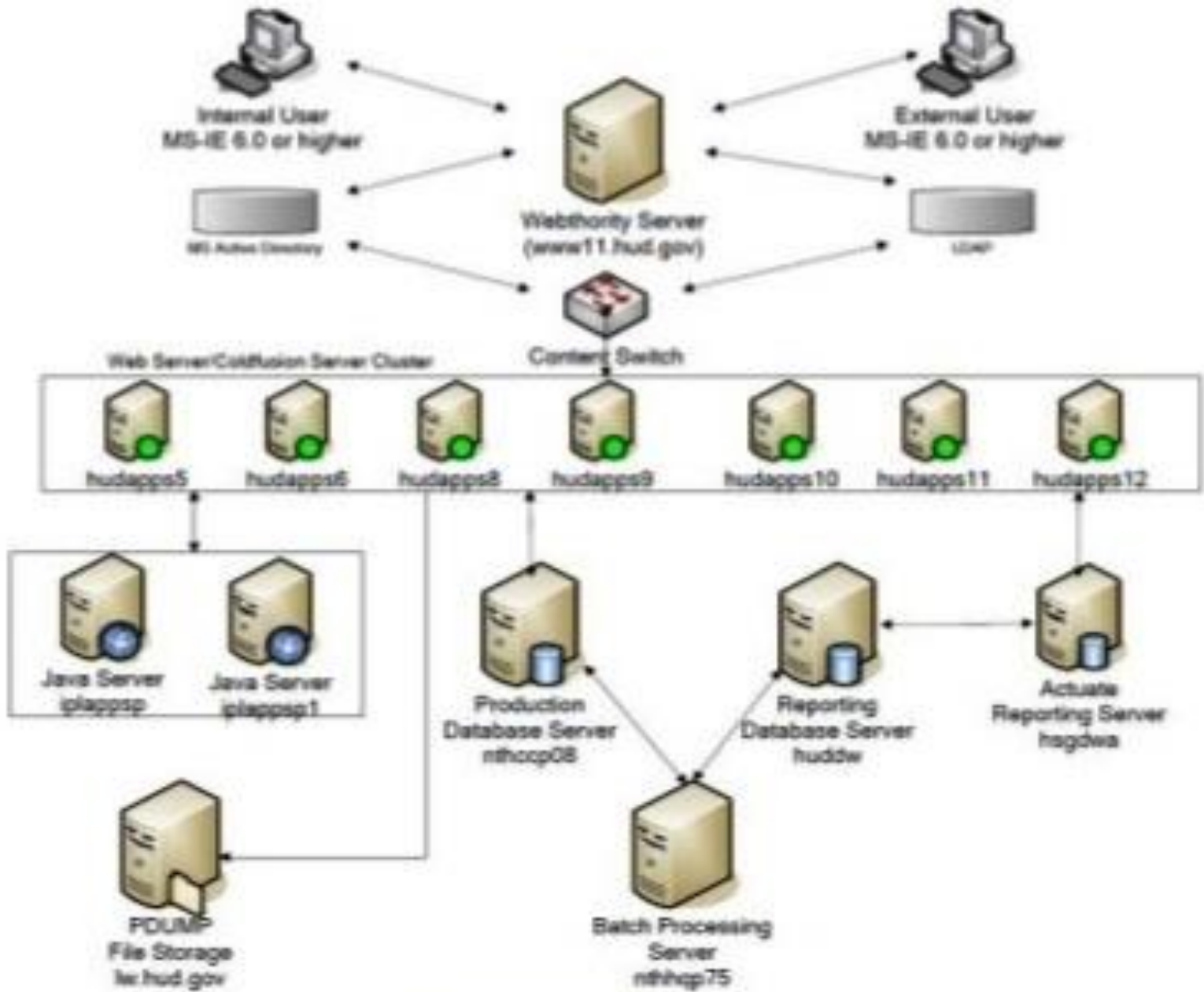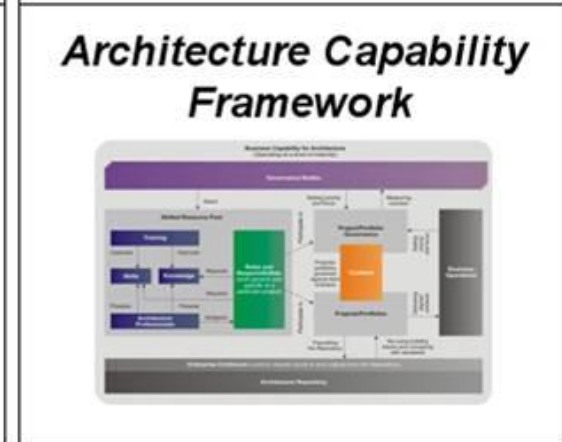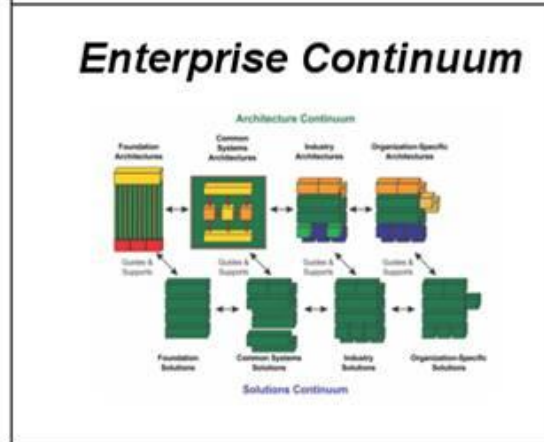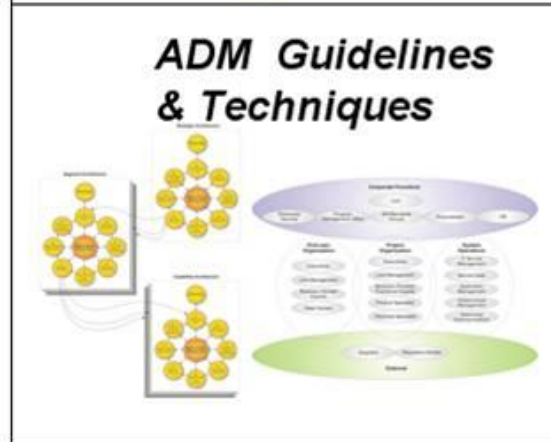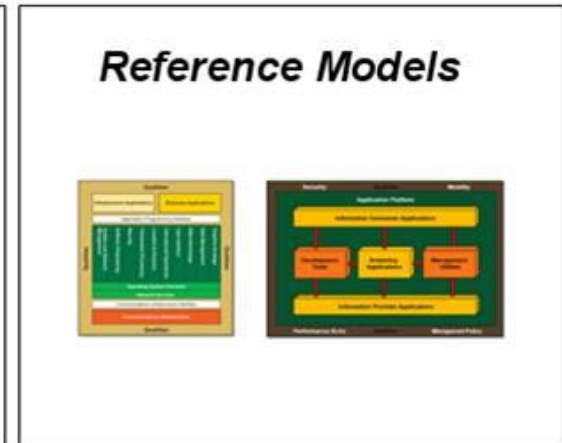
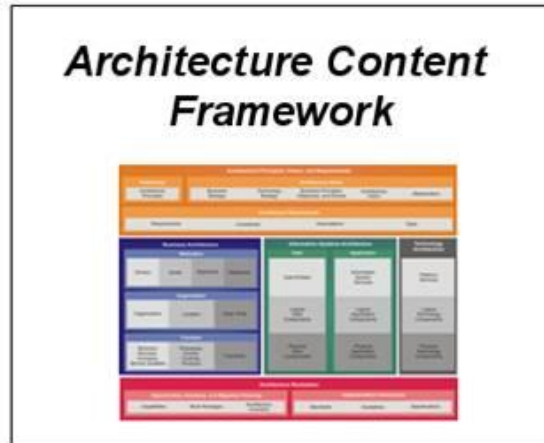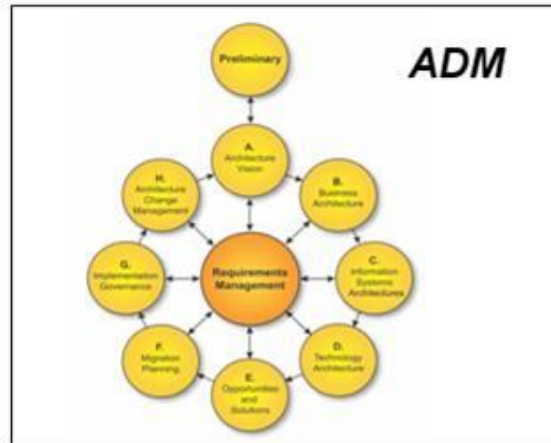# Enterprise Architecture Roadmap
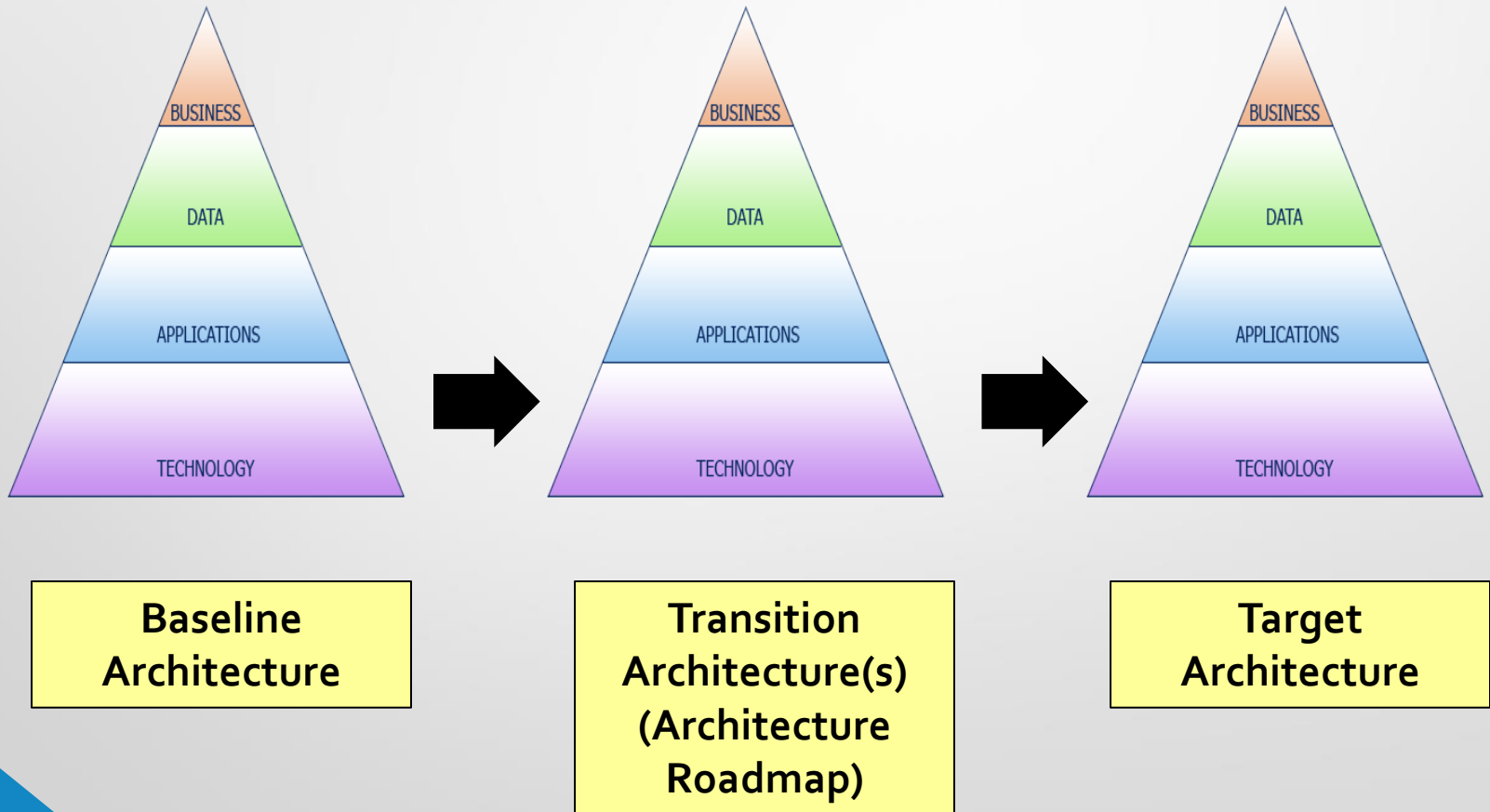
Baseline vs. Target Architectures

EA
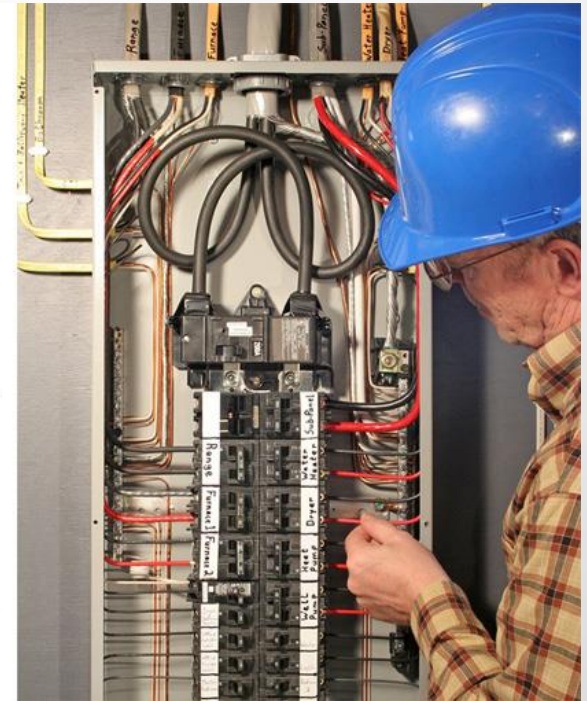
So, how do you "do" Enterprise Architecture?
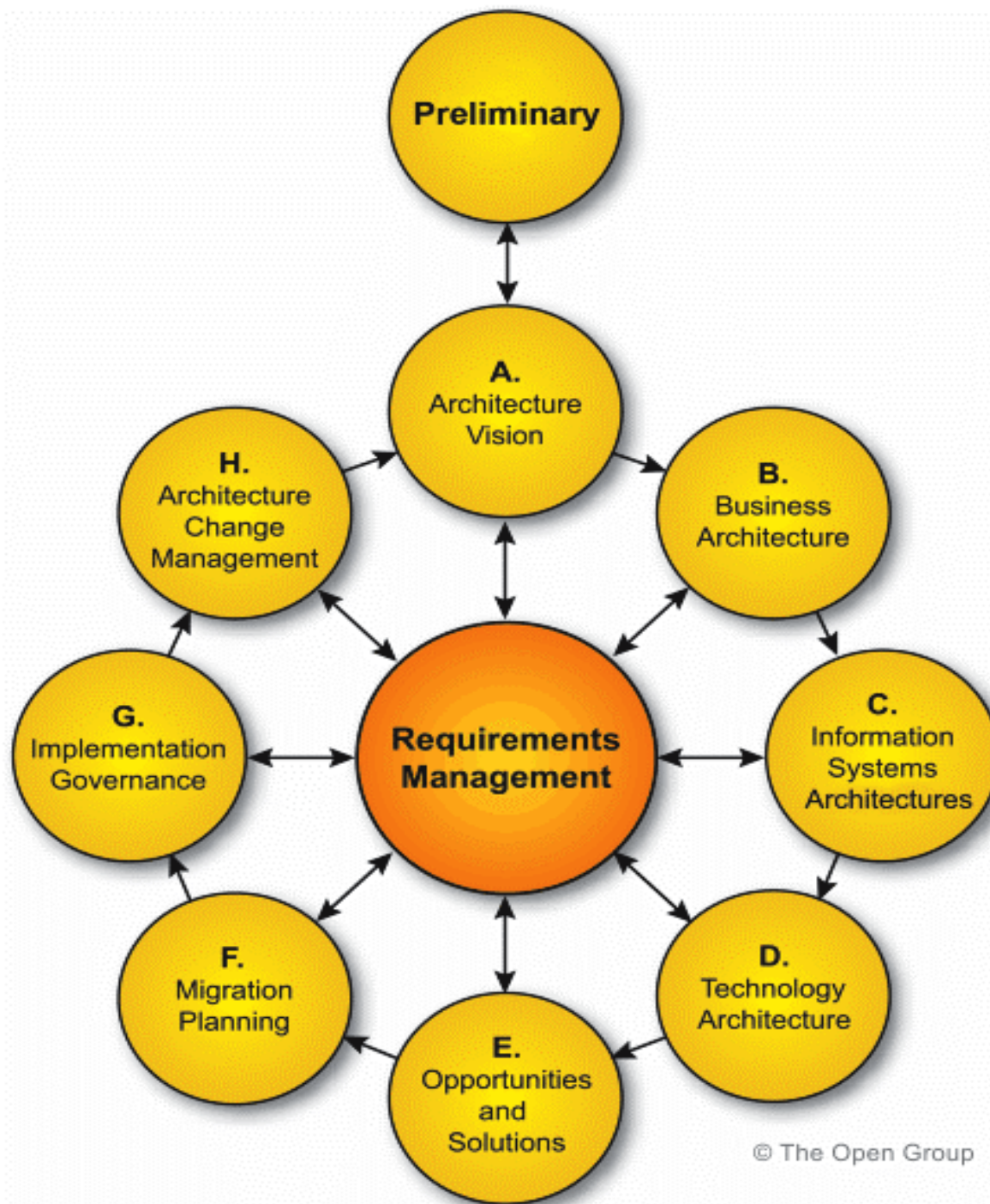
- **First, you start with a "Framework"**

- **"A structure for content or process that can be used as a tool to structure thinking, ensuring consistency and completeness." (Open Group Standard TOGAF® Version 9.1)**

TOGAF Components

The TOGAF Architecture Development Method (ADM)

- **The "core" of TOGAF**

- **The "how to" of developing an Enterprise Architecture**

© The Open Group

Preliminary Phase

The Preliminary Phase is about defining "where, what, why, who, and how we do architecture" in the enterprise concerned. The main aspects are as follows:

- Defining the enterprise
- Identifying key drivers and elements in the organizational context
- Defining the requirements for architecture work
- Defining the Architecture Principles that will inform any architecture work
- Defining the framework to be used
- Defining the relationships between management frameworks
- Evaluating the enterprise architecture maturity

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Phase A: Architecture Vision

Architecture Vision is the initial phase of the Architecture Development Method (ADM). The steps in Phase A are as follows:

- Establish the architecture project
- Identify stakeholders, concerns, and business requirements
- Confirm and elaborate business goals, business drivers, and
- Evaluate business capabilities
- Assess readiness for business transformation
- Define scope
- Confirm and elaborate Architecture Principles, including business principles
- Develop Architecture Vision
- Define the Target Architecture value propositions and KPIs
- Identify the business transformation risks and mitigation activities
- Develop Statement of Architecture Work; secure approval

Phase H: Architecture Change Management

Phase H looks at establishing procedures for managing change to the new architecture. The steps in Phase H are as follows:

- **Establish value realization process**

- **Deploy monitoring tools**

- **Manage risks**

- **Provide analysis for architecture change management**

- **Develop change requirements to meet performance targets**

- **Manage governance process**

- **Activate the process to implement change**

Requirements Management

Requirements Management looks at the process of managing architecture requirements <u>throughout the ADM</u>. The steps in the Requirements Management phase are as follows:

- Identify/document requirements

- Baseline requirements

- Monitor baseline requirements

- Identify changed requirements and record priorities

- Assess impact of changed requirements on current phase; assess impact of changed requirements on previous phases; determine whether to implement change, or defer to later ADM cycle; issue new version of Requirements Impact Statement

- Implement requirements arising from Phase H

- Update the Requirements Repository with information relating to the changes requested, including stakeholder views affected

- Implement change in the current phase

- Assess and revise gap analysis for past phases

How does Enterprise Architecture align with …

- **Strategic Management?**

- **Enterprise Engineering?**

- **Quality Management?**

	Enterprise Architecture	Enterprise Engineering	Strategic Management	Quality Management
Time Orientation	Future – Long-term	Present and Short/ Medium-term Future	Future – Short/Medium/ Long-term Future	Present and Short/ Medium-term Future
Scope	Enterprise-wide	Enterprise-wide	Enterprise-wide	Local or Enterprise-wide
Scalable for different-sized organizations	Yes	Yes	Yes	Yes
Tailorable for different types of organizations	Yes	Yes	Yes	Yes
Focus on Business Drivers	High	High	High	Moderate (High in Baldrige)
Focus on Leadership	Low	Moderate	Moderate	High
Focus on Strategic Planning and Execution	High	Moderate	High	Moderate to High
Focus on Customers	High	High	Moderate	High
Focus on Stakeholders	High	High	Moderate	Moderate
Focus on Decision Making	Moderate	Moderate	High	High
Focus on Knowledge, Information, and Data	High	Moderate	High	High
Focus on Technology	High	Low	Low	Low
Focus on Workforce	High	Moderate	Moderate	High
Focus on Operations – Processes, Systems	Moderate	High	High	High
Focus on Project, Program, and Portfolio Management	High	Low	High	Moderate
Focus on Risk Management	High	Low	Moderate	Low
Focus on Results/Outcomes	Moderate	high	high	high
Focus on Finance, Budgeting, Resource Allocation, ROI	High	Low	moderate	Moderate
Focus on Legal, Regulatory, and other Compliance	High	Low to Moderate	Low to Moderate	Moderate to High

Summary

- Review of:
  - Strategic Management
  - Enterprise Engineering
  - Quality Management
- Introduction to:
  - Enterprise Architecture
- How the four approaches compare with one another

Questions?

Thank you!

Mike Novak

Director of Quality

EA Principals, Inc.

703-216-3329

michael.novak@eaprincipals.com

mike706160@aol.com