A Business-Centric Approach to Enterprise Architecture

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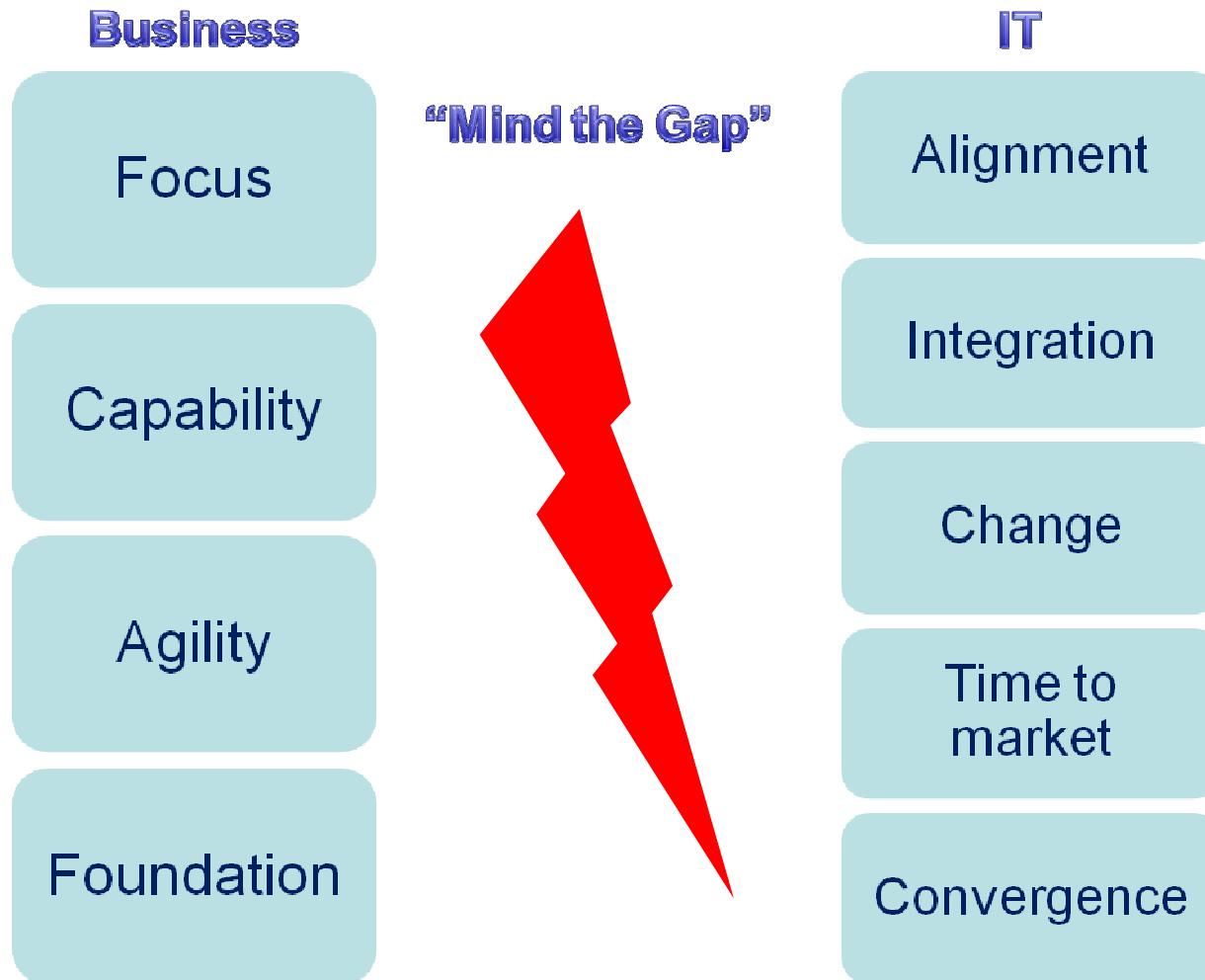
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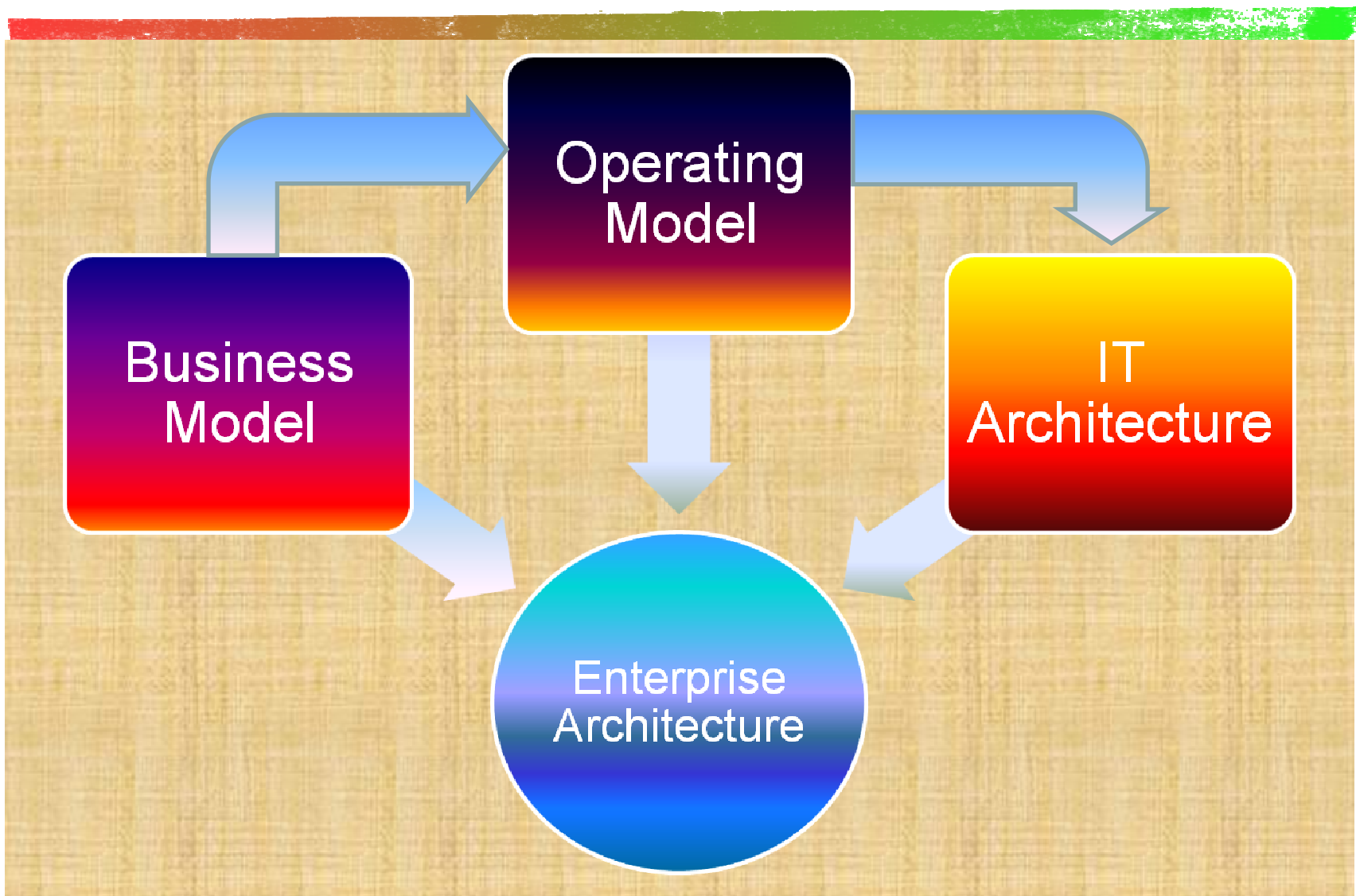
Motivation

- Enterprise Architecture has the tendency to focus primarily on information systems and information technology

- Business management seems not to understand the reason for enterprise architecture when using technical language

- Gartner research (2008) recommends to use business language to sell enterprise architecture to the business

- The following research presents an "enterprise model" in business language to close the gap between enterprise architects and business people

Perspectives Enterprise Architecture

Business

| Focus |
| Capability |
| Agility |
| Foundation |

"Mind the Gap"

IT

| Alignment |
| Integration |
| Change |
| Time to market |
| Convergence |

JW Ross et al: Enterprise Architecture as Strategy, 2006

© FAWG – A Practical Guide to Federal Enterprise Architecture

Enterprise Architecture

Motivation

- Business Centric Enterprise Architecture
- Object of Interest: THE ENTERPRISE
- Term "Architecture" has been borrowed from other disciplines
- Architecture requires a full understanding of the enterprise
- The enterprise is sufficiently defined by the
  - Business model and the
  - Operating model
- Information technology is seen as an "essential enabler" of business processes (IT Architecture ➜ "IS / IT Model")
- IT Architecture is a "derivative value"
- Enterprise Architecture often only seen as IT or Software Architecture
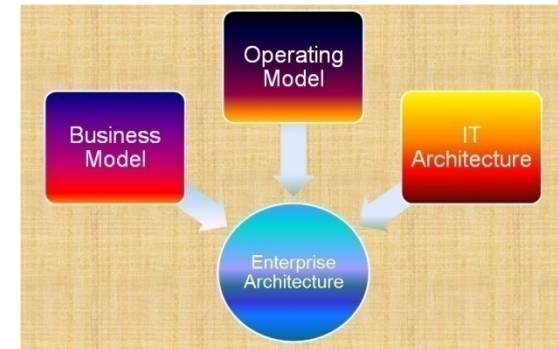
What is an Enterprise?

- Synonyms are: Business, Company, Agency
- Characteristics (from Hammer):
  - Creates value for its customers
  - The value creation is based on its processes
  - Success comes from superior process performance
  - Superior process performance is achieved by good process design, right people and the right environment
- Process-centric organization
- Prerequisite for Enterprise Architecture

Hammer: Beyond Reengineering, 1996, pp. 94
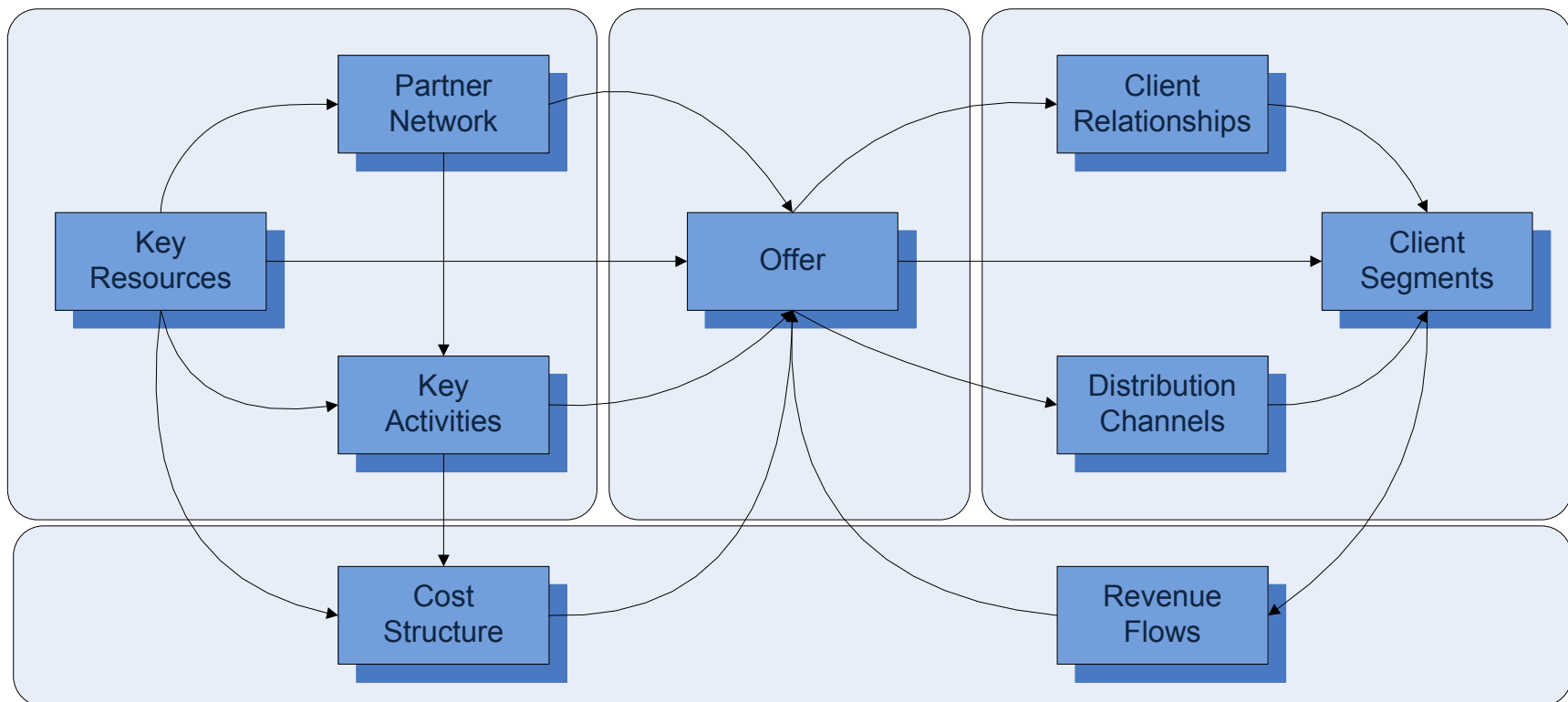
Business Model – (1)

Definition

"A business model describes the value an organization offers to various customers and portrays the capabilities and partners required for creating, marketing, and delivering this value and relationship capital with the goal of generating profitable and sustainable revenue streams"

Business Model – (2)

Business Model Canvas

Osterwalder, A., 2009: Business Model Generation

Business Model Synopsis – (1)

Four basic assets:

Physical	• Durable and non-durable items
Financial	• Cash and derivative items
Intangible	• Legally protected intellectual property and others
Human	• People's time and effort

© Malone et. al. 2006: Do some business models perform better than others?
http://ssrn.com/abstract=920667

Business Model Synopsis – (2)

Four basic asset rights models:

Creator	• Buys raw materials from suppliers and transforms or assembles them to create a product sold to buyers
Distributor	• Buys a product and resells the same product to someone else
Landlord	• Sells the right to use, but not own an asset for a specified period of time
Broker	• Facilitates sales by matching potential buyers and sellers

© Malone et. al. 2006: Do some business models perform better than others?
http://ssrn.com/abstract=920667
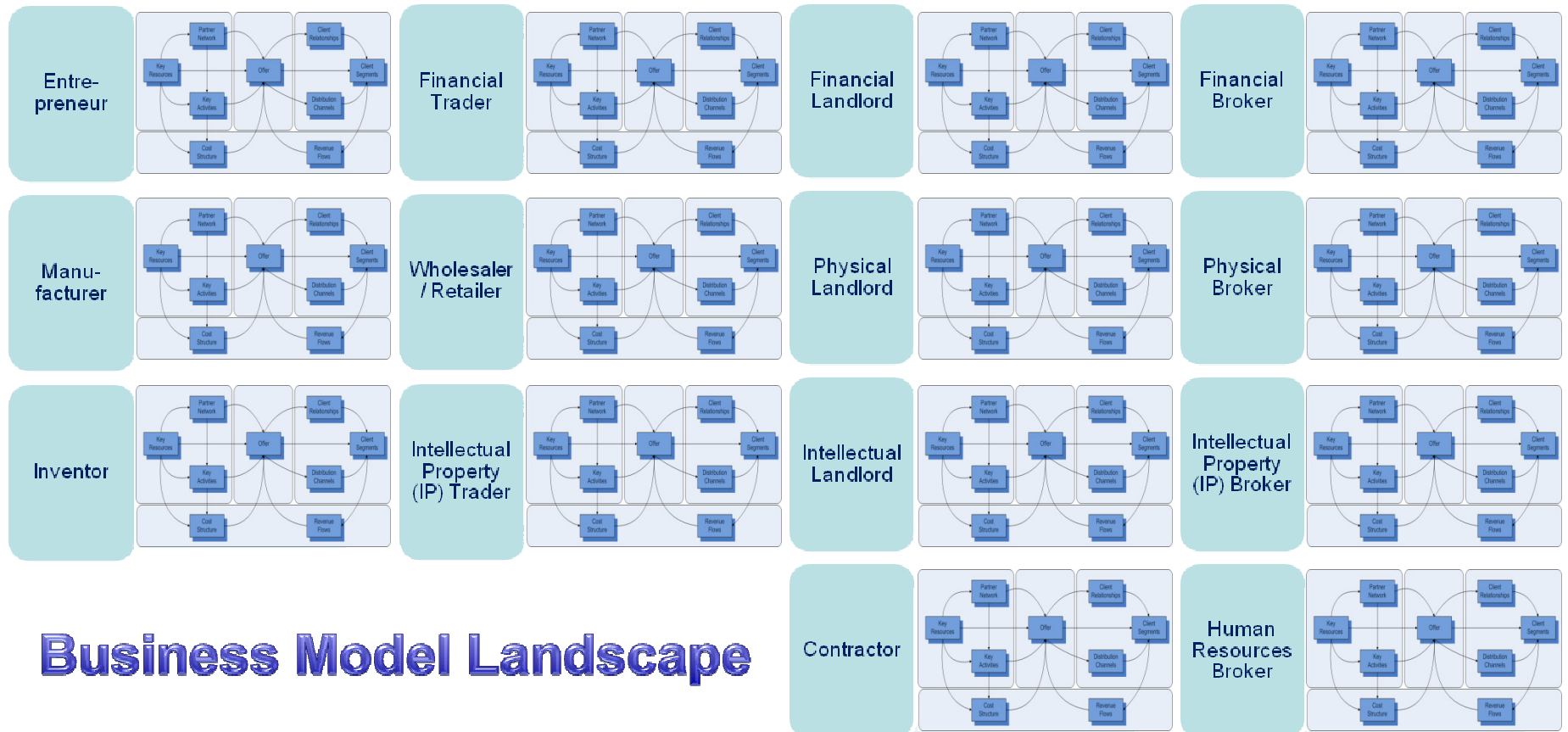
Business Model Synopsis – (3)

Permutation yields 16 / 14 valid business model types

Entre- preneur	• Creates and sells financial assets often creating and selling firms	**Financial Trader**	• Buys and sells financial assets without transforming them	**Financial Landlord**	• Lets others use cash under certain conditions	**Financial Broker**	• Matches buyers and sellers of financial assets
Manu- facturer	• Creates and sells physical assets	**Wholesaler / Retailer**	• Buys and sells physical assets	**Physical Landlord**	• Sells the right to use a physical asset	**Physical Broker**	• Matches buyers and sellers of physical assets
Inventor	• Creates and sells intangible assets such as patents and copyrights	**Intellectual Property (IP) Trader**	• Buys and sells intangible assets	**Intellectual Landlord**	• Licenses or otherwise gets paid for limited use of intangible assets	**Intellectual Property (IP) Broker**	• Matches buyers and sellers of intangible assets
Human Creator	• *Creates and sells human assets*	*Human Distributor*	• *Buys and sells human assets*	**Contractor**	• Sells a service provided primarily by people	**Human Resources Broker**	• Matches buyer and sellers of human services

© Malone et. al. 2006: Do some business models perform better than others?
http://ssrn.com/abstract=920667

Business Model Synopsis – (4)

14 business model types:

|			
Entre-preneur	Financial Trader	Financial Landlord	Financial Broker
Manu-facturer	Wholesaler / Retailer	Physical Landlord	Physical Broker
Inventor	Intellectual Property (IP) Trader	Intellectual Landlord	Intellectual Property (IP) Broker
		Contractor	Human Resources Broker

Business Model Landscape

# From Business Model to Operating Model

- **Business Model → WHAT**
- **Operating Model → HOW**
  Constitutes the business architecture and consists of the following models:
  - **Process model**
  - **Decision model**
  - **Structure model**
  - **Performance model**
  - **Governance model**
- **Each business model type has a corresponding operating model type**
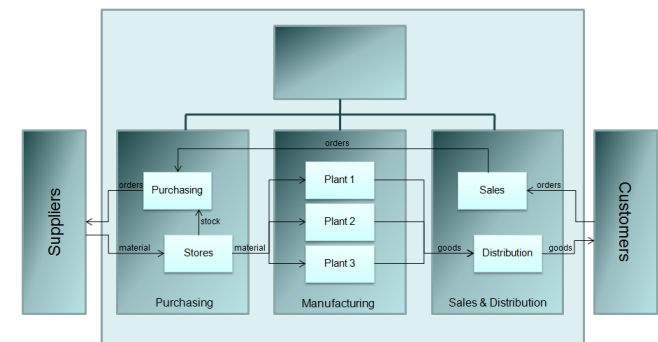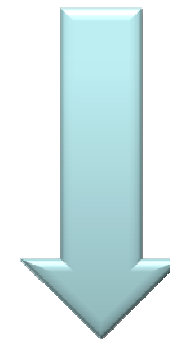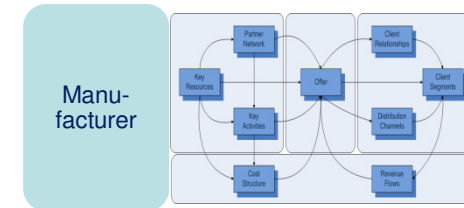
Operating Model

■ Operating Model

- **Process model**
  Describes a set of business processes at different levels

- **Decision model**
  Describes the relationship between the processes, the role players and the organizational units

- **Structure model**
  Describes the organizational structure and the roles of the organizational units

- **Performance model**
  Describes the goal hierarchy and measurements

- **Governance model**
  Describes the best practices in conducting the business and the influence of company policies and regulatory requirements

Operating Model

Process Model

Decision Model

Structure Model

Performance Model

Governance Model
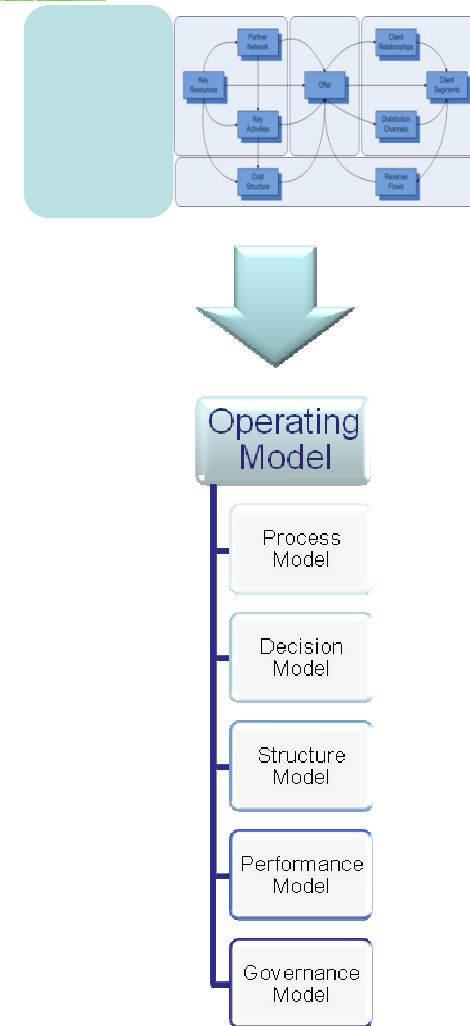
Process Model – Overview

■ The business process

■ The "classical model"

■ Value Streams

■ Value Chains

■ Value Nets

Operating Model
- Process Model
- Decision Model
- Structure Model
- Performance Model
- Governance Model

Business Processes – (1)

"*A business process is a series of steps designed to produce a product or a service*"

Operating Model
- Process Model
- Decision Model
- Structure Model
- Performance Model
- Governance Model

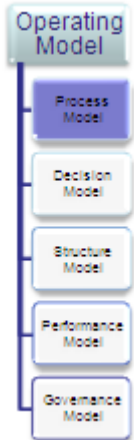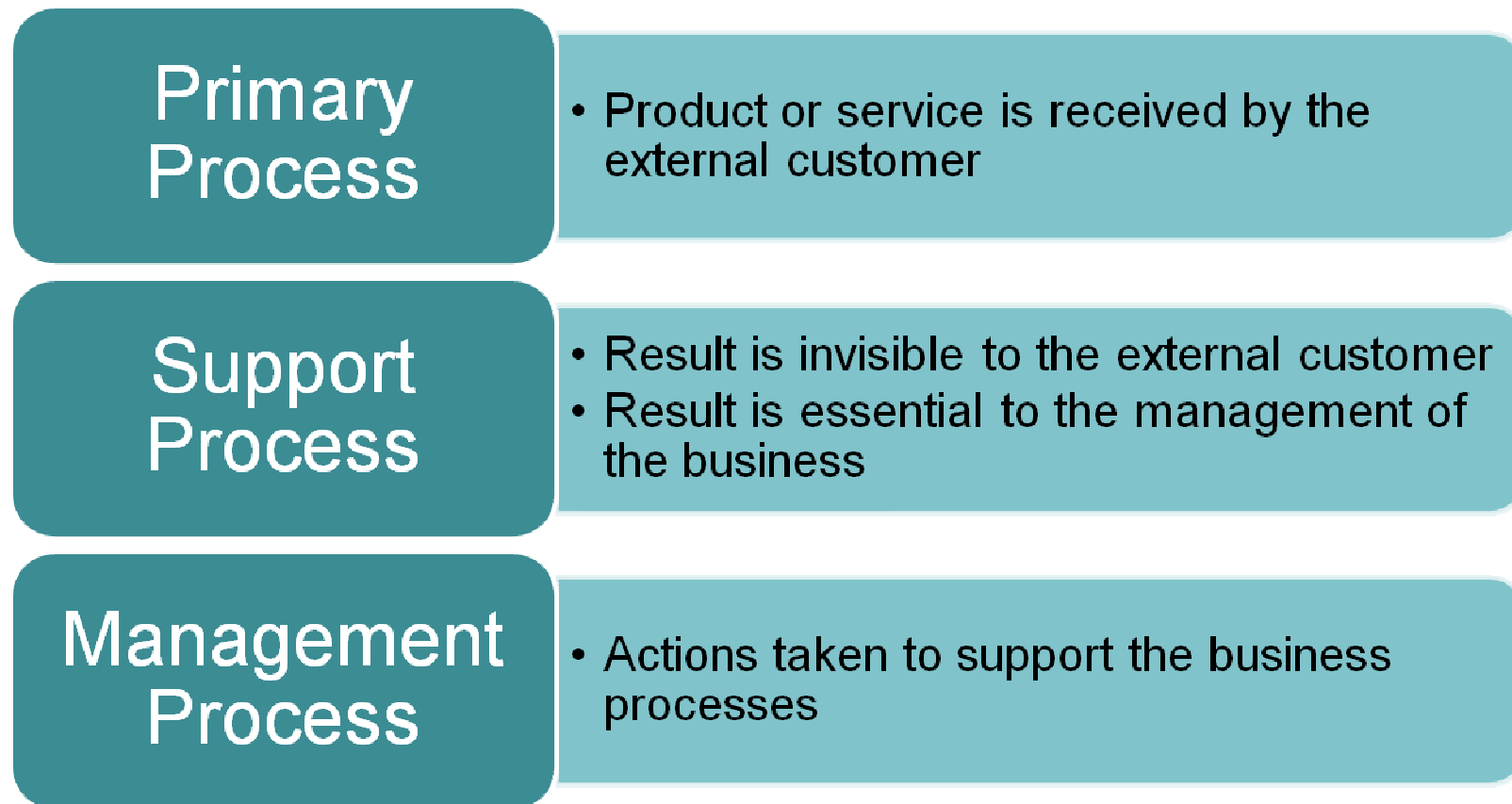| Primary Processes	Support Processes	Management Processes

"*Each step in a process adds value to the preceding steps*"
"*Processes consume resources (e.g. capital, people, time, material, …)*"

Rummler / Brache 1996: Improving performance, p. 45

Business Processes – (2)

Primary Process	• Product or service is received by the external customer
Support Process	• Result is invisible to the external customer • Result is essential to the management of the business
Management Process	• Actions taken to support the business processes

Operating Model
- Process Model
- Decision Model
- Structure Model
- Performance Model
- Governance Model

Rummler / Brache 1996: Improving performance, p. 45

Business Processes – (3)

Examples

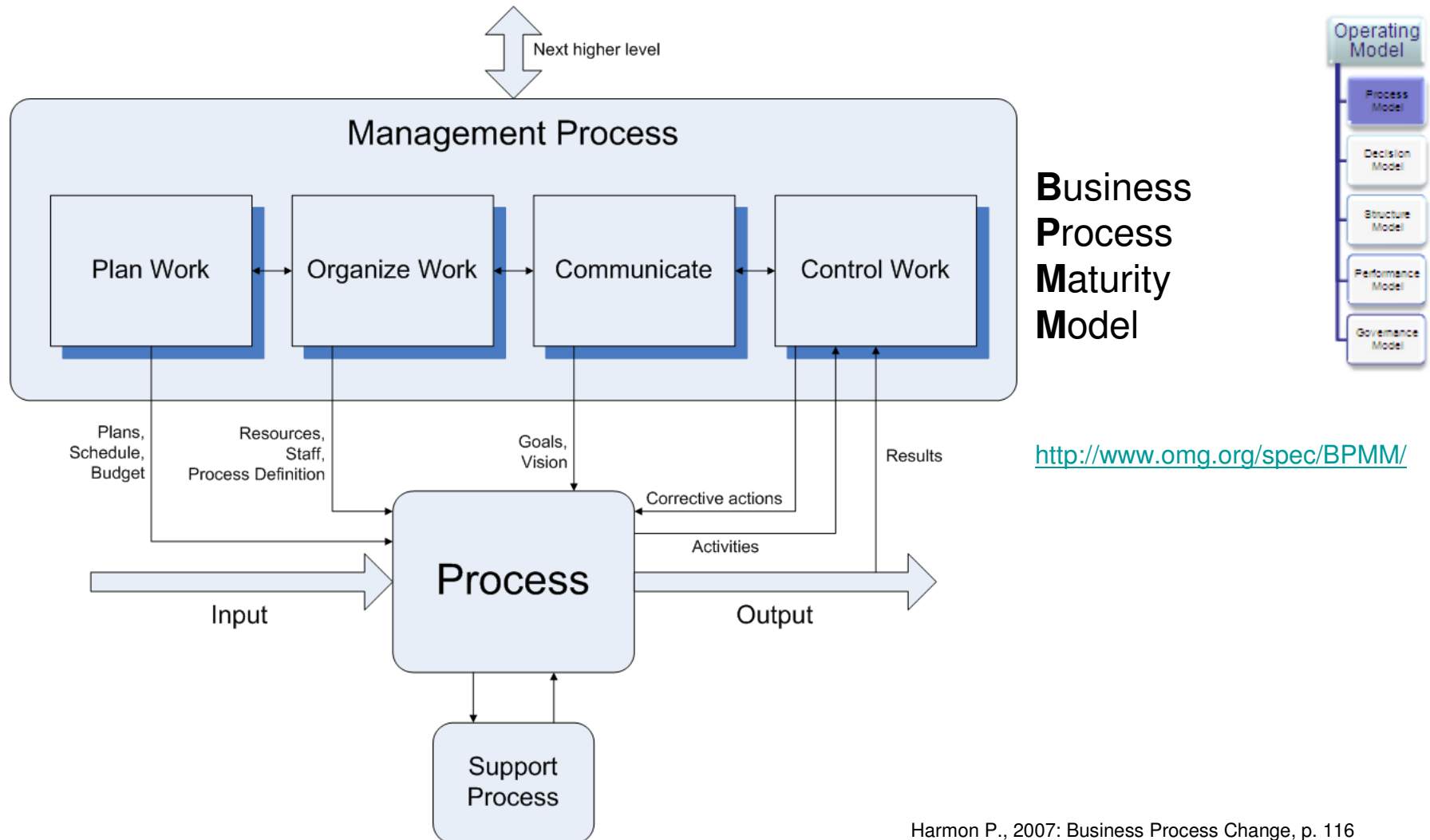|	
Primary Process	• Product / service development • Manufacturing • Distribution • Billing • Order fulfillment
Support Process	• Budgeting • Recruitment • Training • Facilities management • Purchasing
Management Process	• Strategic and tactical planning • Resource allocation • Human performance management • Operations review • Performance monitoring

Operating Model

- Process Model
- Decision Model
- Structure Model
- Performance Model
- Governance Model

Rummler / Brache 1996: Improving performance, p. 46

Business Processes – (4)

Business
Process
Maturity
Model

http://www.omg.org/spec/BPMM/

Harmon P., 2007: Business Process Change, p. 116

Business Processes – (5)

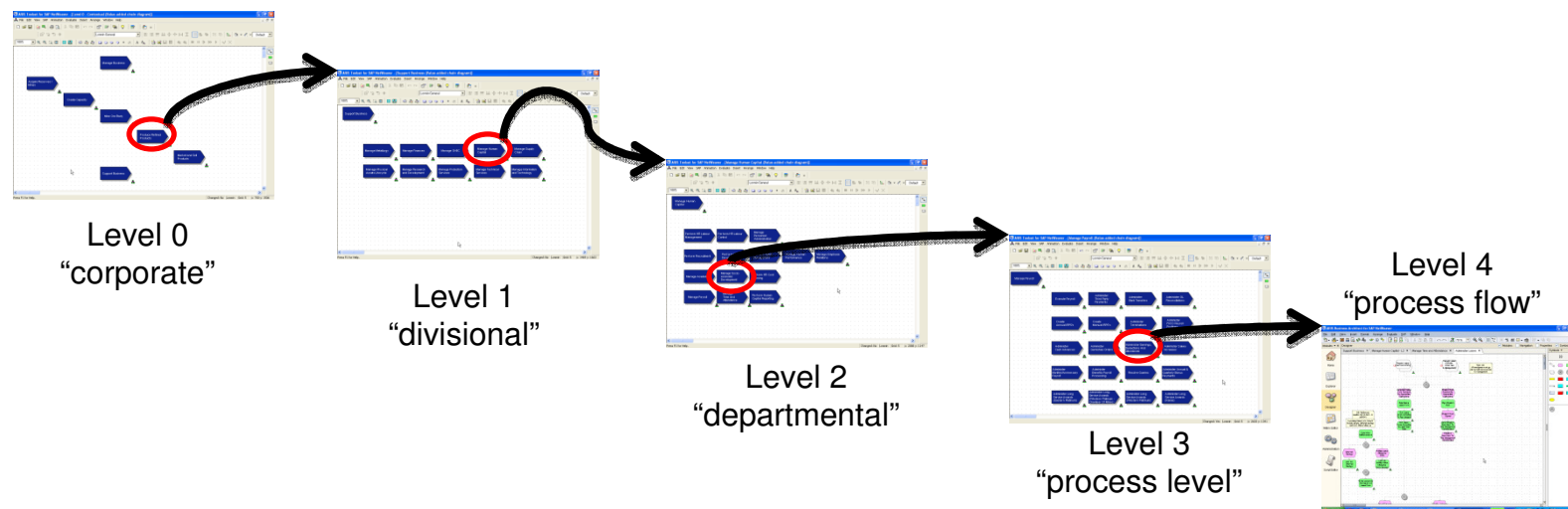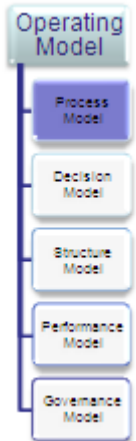- Characteristics of a business process
  - **Definability:** It must have clearly defined boundaries, input and output.
  - **Order:** It must consist of activities that are ordered according to their position in time and space.
  - **Customer:** There must be a recipient of the process' outcome, a customer.
  - **Value-adding:** The transformation taking place within the process must add value to the recipient, either upstream or downstream.
  - **Embeddedness:** A process can not exist in itself, it must be embedded in an organizational structure.
  - **Cross-functionality:** A process regularly can, but not necessarily must, span several functions
  - **Ownership:** A process is owned by a process owner.
  - **Event-Driven**: A process is triggered by an event and finished by raising an event.
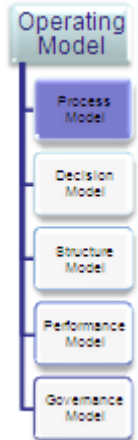
© Wikipedia: http://en.wikipedia.org/wiki/Business_process

Process Model – The "classical model"

- Hierarchy of business processes
- Top level is called a "value chain" and referred to as Level 0
- The following levels are numbered from 1 to n
- The upper levels represent a more functional view of the business

Level 0
"corporate"

Level 1
"divisional"

Level 2
"departmental"

Level 3
"process level"

Level 4
"process flow"

Process Model – Value Streams

- Value Stream
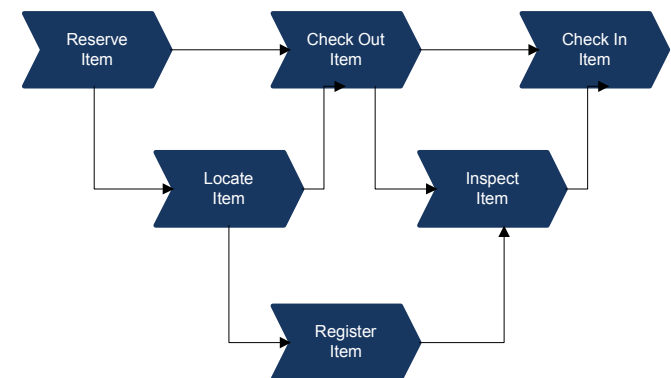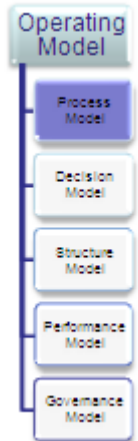 - *"A value stream is an end-to-end collection of activities that creates a result for a "customer," who may be the ultimate customer or an internal "end user" of the "value stream." The value stream has a clear goal: to satisfy or to delight the customer."*
  - The name represents the begin and end state
  - Also referred to as "principal process"
- An enterprise is a collection of value streams ("Enterprise Business Architecture")
- Value streams are cross functional processes
- Examples of value streams
  - Order to Cash
  - Hire to Retire
  - Procure to Pay
  - Build to Order

Operating Model
- Process Model
- Decision Model
- Structure Model
- Performance Model
- Governance Model

Reserve Item → Check Out Item → Check In Item
Locate Item → Inspect Item
Register Item

James Martin: The Great Transition: Using …., 1995
Whittle / Myrick: Enterprise Business Architecture: …, 2004

Process Model – Value Chains – (1)
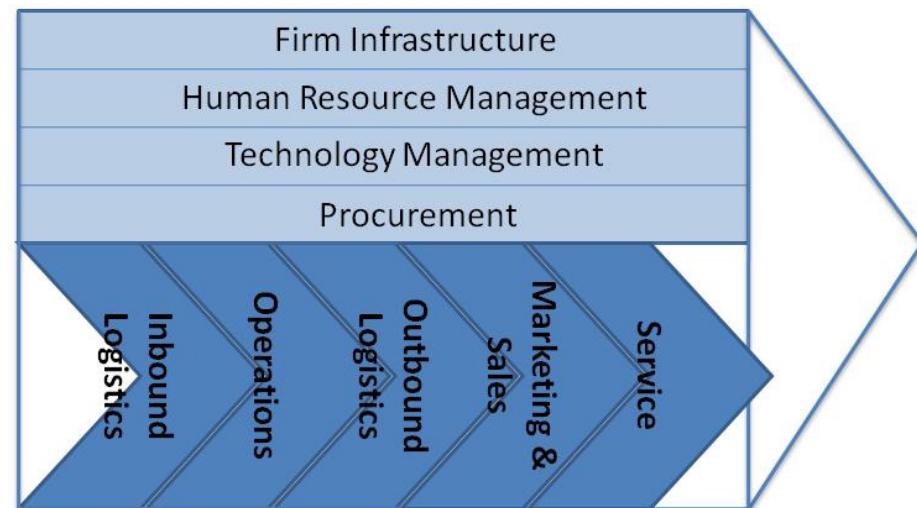
- **Value Chain**
  - The idea of the value chain is based on the process view of organisations, the idea of seeing a manufacturing (or service) organisation as a system, made up of subsystems each with inputs, transformation processes and outputs ("generic value-adding activities")
- **Primary Activities**
  - Inbound Logistics
  - Operations
  - Outbound Logistics
  - Marketing and Sales
  - Service
- **Support Activities**
  - Procurement
  - Technology Development
  - Human Resource Management
  - Firm Infrastructure

Operating Model
- Process Model
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- Performance Model
- Governance Model

Firm Infrastructure
Human Resource Management
Technology Management
Procurement

Inbound Logistics | Operations | Outbound Logistics | Marketing & Sales | Service

M. Porter, 1985: Competitive Advantage
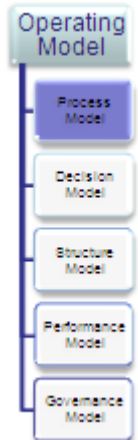
Alternative view on service organizations:
Heskett et al: Putting the Service-Profit Chain to Work, 1994
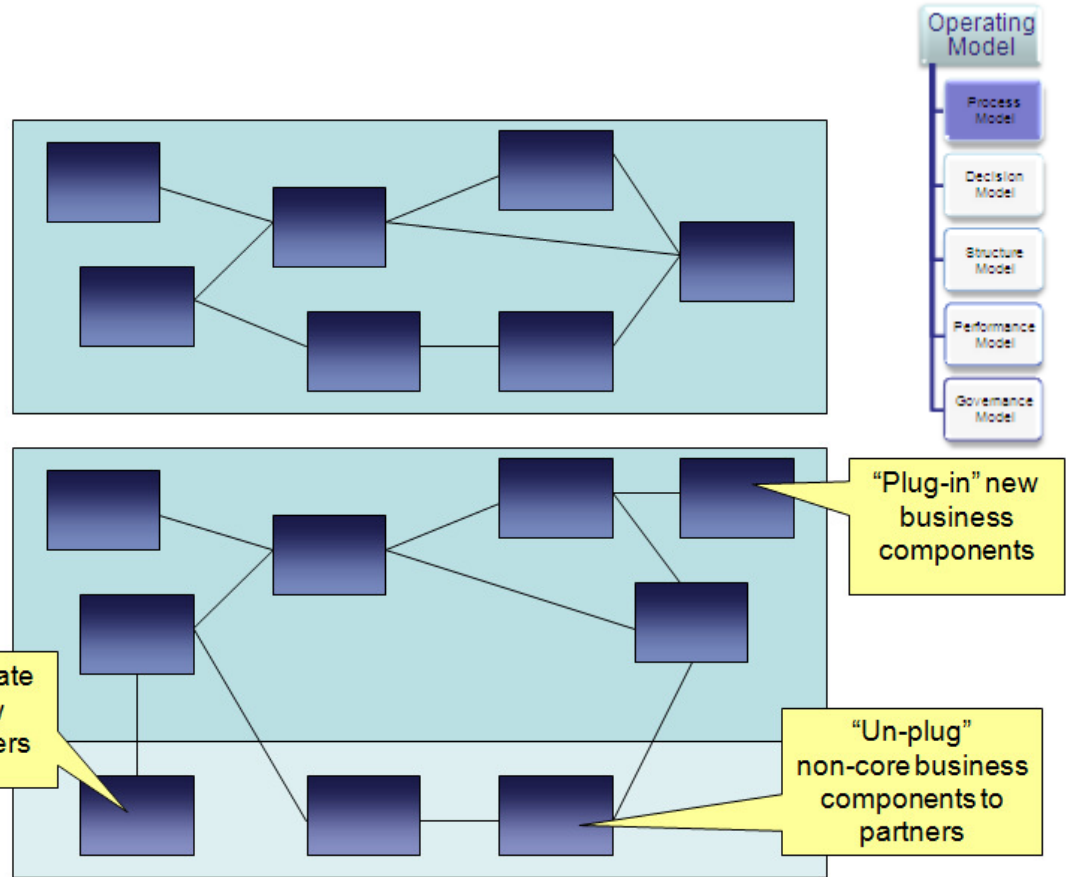
Process Model – Value Chains – (2)

- Porter's Value Chain differentiates between core and supporting activities

- Moore differentiates between
  - CORE
    "Any activity which creates sustainable differentiation in the target market resulting in premium prices or increased volume. Core management seeks to dramatically outperform all competitors within the domain of core.
  - CONTEXT
    "Any activity which does not differentiate the company from the customers' viewpoint in the target market. Context management seeks to meet (but not exceed) appropriate accepted standards in as productive a manner as possible."

G.A. Moore: Dealing with Darwin, 2005
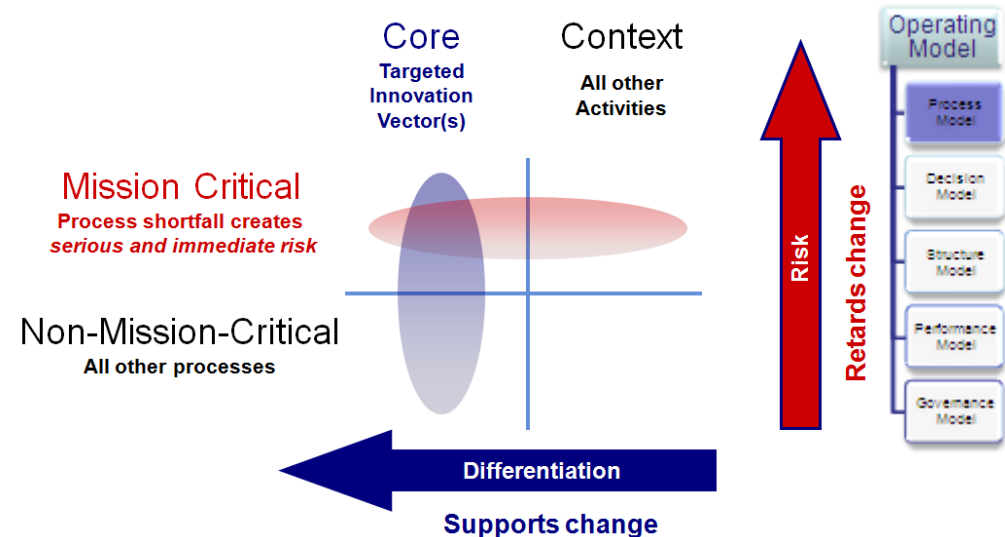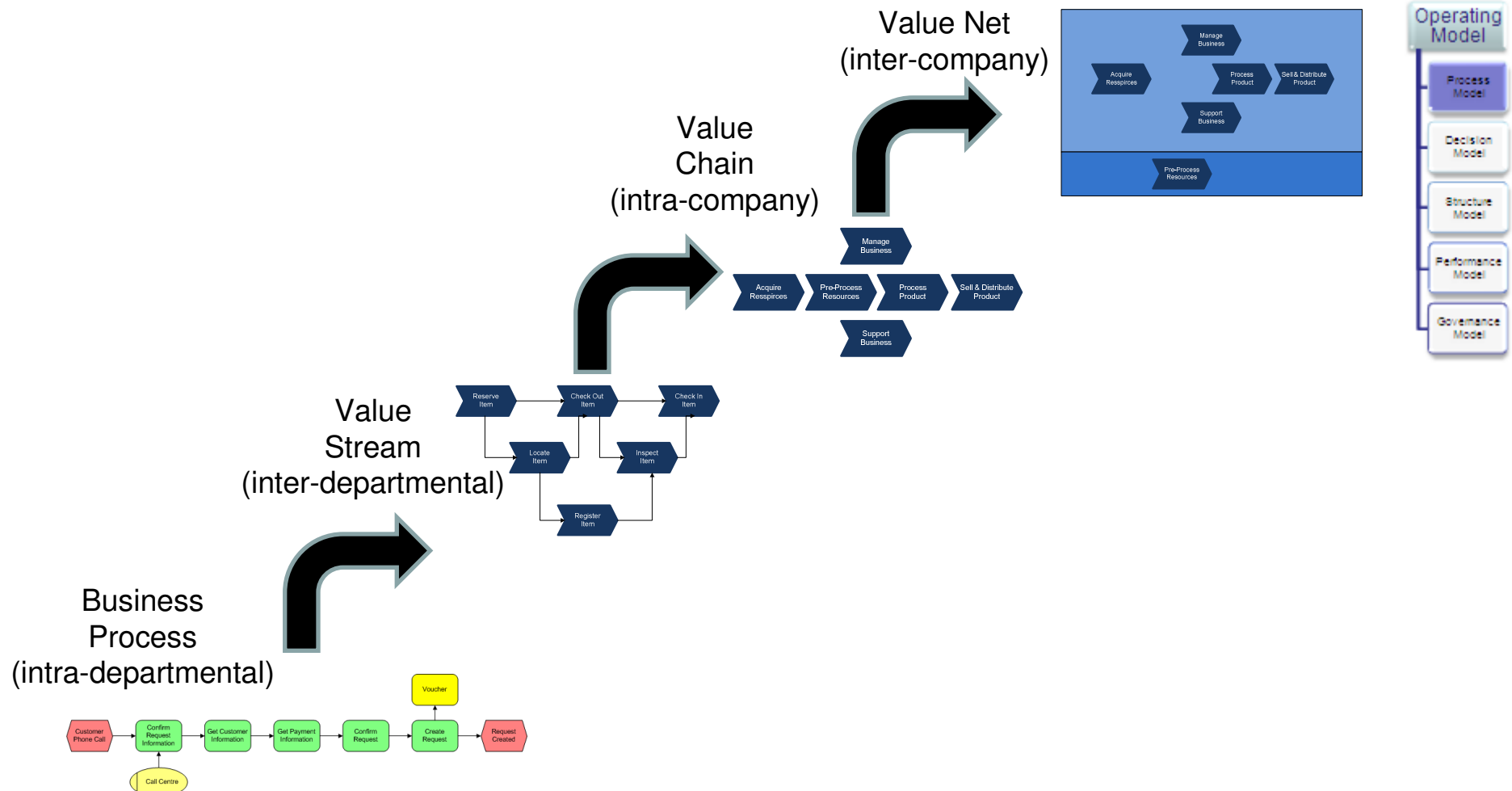
Process Model – Value Nets

- **Characteristics of value nets**
  - Customer aligned
  - Collaborative and systemic
  - Agile and scalable
  - Fast flow
  - Digital
- **Value nets**
  - Deconstruction ("unbundling") of the enterprise
  - Collaborating ecosystems
  - Focus on core business competencies
  - Service orientated enterprises
  - Continuous reviving value chains ("non-static")
  - Move from value chains to value nets

Operating Model

Process Model

Decision Model

Structure Model

Performance Model

Governance Model

"Plug-in" new business components

Integrate new partners

"Un-plug" non-core business components to partners
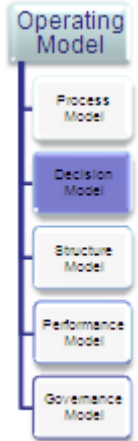
Bovet / Martha: Value Nets: Breaking the Supply Chain…, 2000, pp. 5
Cherbakov et al.: Impact of Service Orientation at the …, 2005, p. 655

Process Model – Levels of Abstraction

Decision model - Overview

- RACI

- Delegation of Authority (DoA)

- Segregation of Duty (SoD)

Operating Model
- Process Model
- Decision Model
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Decision model - RACI

- RACI
  - *"A RACI matrix, (also known as Linear Responsibility Chart (LRC) or Responsibility Assignment Matrix (RAM)), describes the participatory role types of various teams or people in completing tasks or deliverables for a project or business process. It is especially useful in clarifying roles and responsibilities in cross-functional / departmental projects and processes."* (Wikipedia)

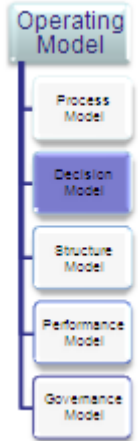|	
Responsible	• Those who do the work to achieve the task. There is typically one role of R, although this can also be delegated to others to carry out the work required.
Accountable	• Those who are ultimately accountable for the correct and thorough completion of the deliverable or task, and the one to whom R is accountable. In other words, an A must sign off (Approve) on work that R provides. There **must be only one A specified for each task or deliverable.**
Consulted	• Those whose opinions are sought. Two-way communication.
Informed	• Those who are kept up-to-date on progress, often only on completion of the task or deliverable. One-way communication.

Operating Model
- Process Model
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Decision model - DoA

- **Delegation of Authority (DoA)**
  - *"The Delegation of Authority establishes the limits of authority designated to specified positions of responsibility within a company and establishes the types and maximum amount of obligations that may be approved by individuals and or committees."*

Operating Model
- Process Model
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Decision model - SoD

- Segregation of Duties (SoD)
    - Also called Separation of Duties
    - *"A basic internal control that prevents or detects errors and irregularities by assigning to separate individuals responsibility for initiating and recording transactions and custody of assets to separate individuals.*

      Scope Note: *Segregation and separation of duties is commonly used in large IT organizations so that no single person is in a position to introduce fraudulent or malicious code without detection. "*
      (ISACA Glossary of terms)

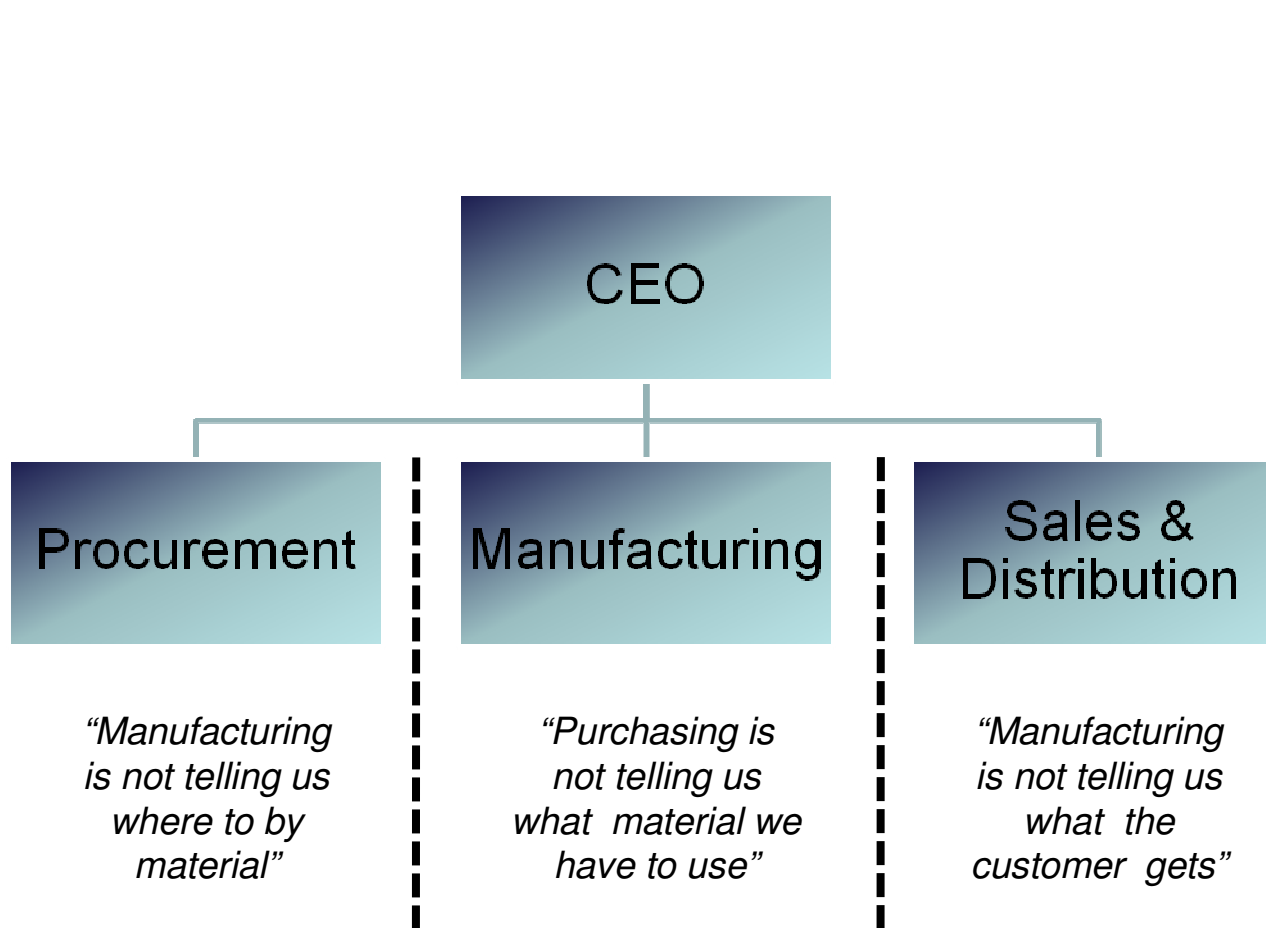   - Example:

      Two different persons have to sign-off a purchase order or authorize a payment

Operating Model

Process Model

Decision Model

Structure Model

Performance Model

Governance Model

http://en.wikipedia.org/wiki/Separation_of_duties

Structure model – Organization Charts

CEO

Procurement | Manufacturing | Sales & Distribution

"Manufacturing is not telling us where to by material"

"Purchasing is not telling us what material we have to use"

"Manufacturing is not telling us what the customer gets"

Operating Model
- Process Model
- Decision Model
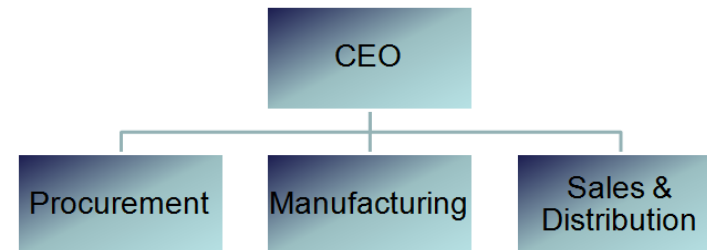- Structure Model
- Performance Model
- Governance Model

■ What does your business look like?

■ Where are the customers?

■ Where are the suppliers?

■ Where are the products and services?

■ What is the workflow to create and deliver the products and services?

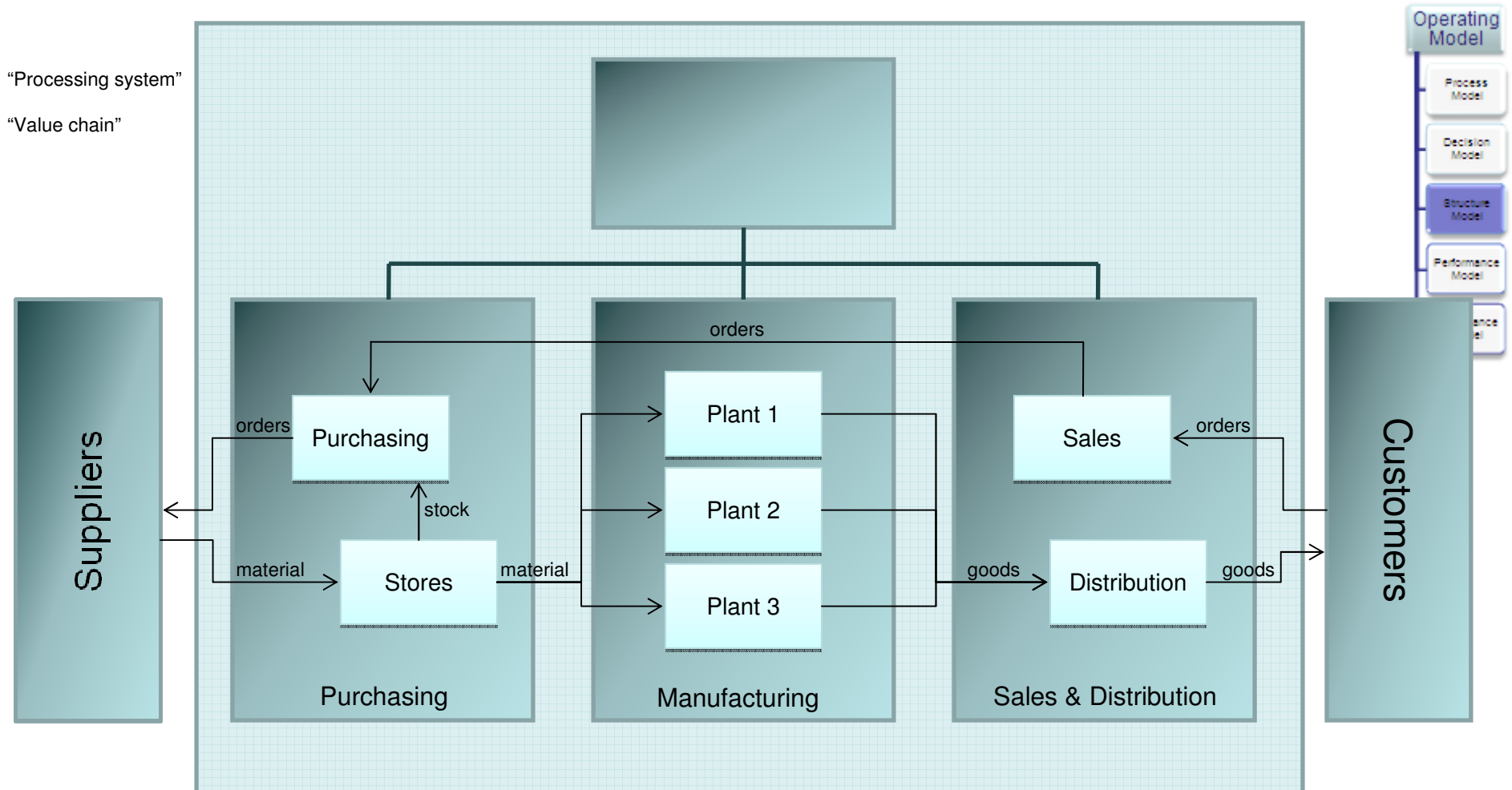■ People tend to see organizations vertically and horizontally ("silos")

Rummler / Brache: Improving performance, pp. 5

Structure model – Organization Charts

- **Purpose of an organization chart**
  - People have been grouped together for operating efficiency
  - People have been grouped together for human resource development
  - Shows reporting relationships
  - Administrative objective
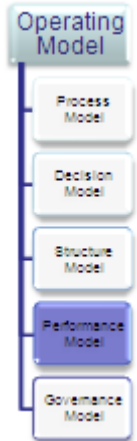- **"White space" between the boxes has to be managed**

Rummler / Brache: Improving performance, pp. 9

Structure model – Systems View

"Processing system"

"Value chain"

Operating Model
- Process Model
- Decision Model
- Structure Model
- Performance Model

Suppliers

Purchasing
- orders
- Purchasing
- material
- Stores
- stock
- material

Manufacturing
- orders
- Plant 1
- Plant 2
- Plant 3

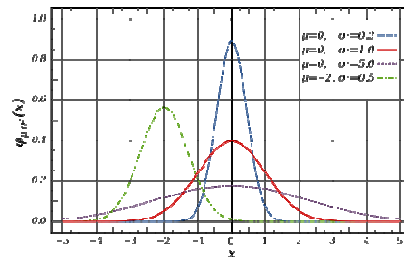Sales & Distribution
- Sales
- goods
- Distribution
- goods

Customers
- orders

Rummler / Brache: Improving performance, pp. 8
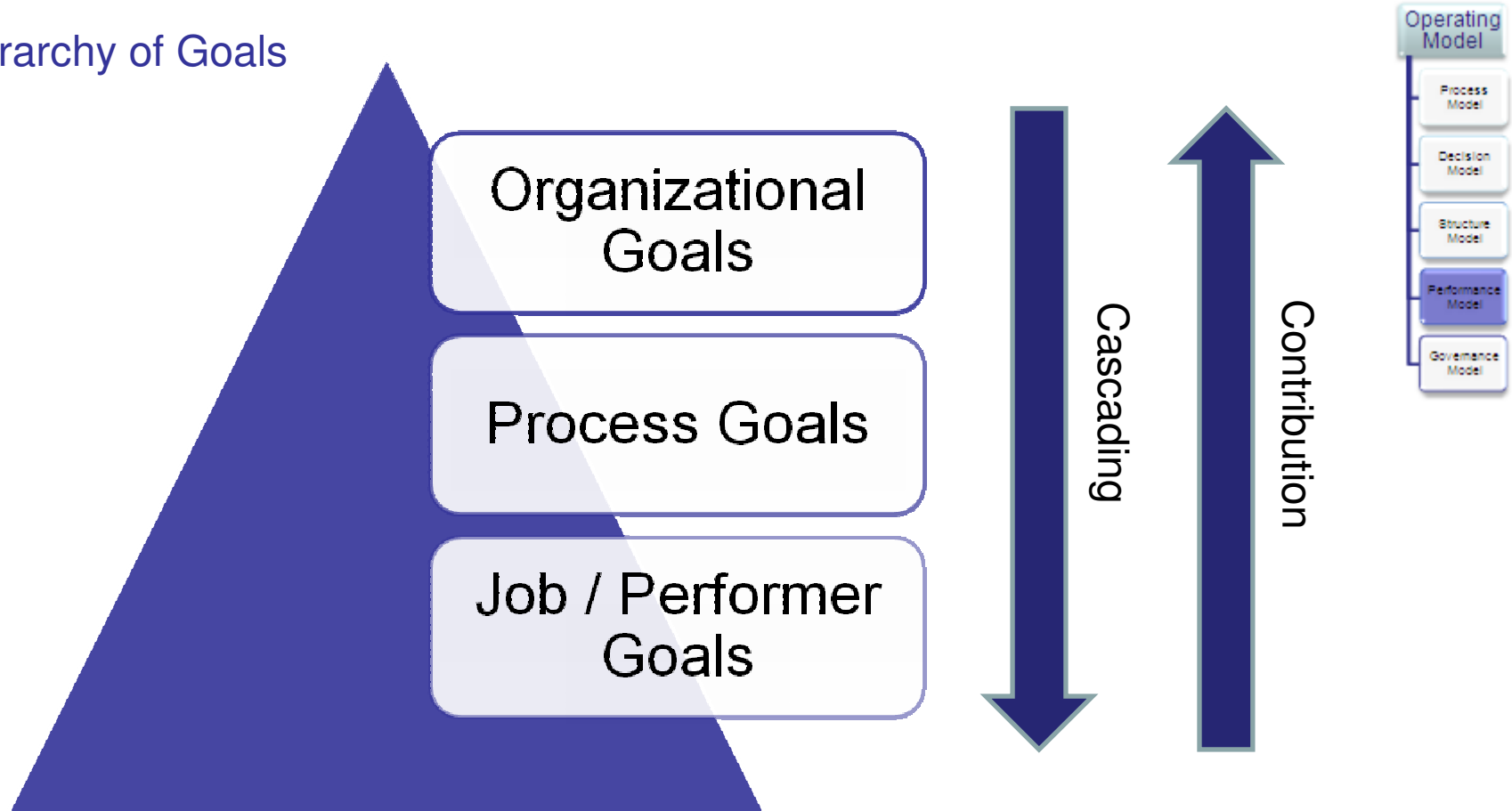
Performance model – (1)

- ■ **Three levels of performance**
  - ● Organizational Goals (driven by Strategy)
  - ● Process Goals
  - ● Job / Performer Goals
- ■ **At all levels goals have to be**
  - ● Output driven
  - ● Costumer focused
  - ● Based on several critical dimensions
- ■ **Organizational goals**
  - ● Requirements of the external customer
  - ● Strategic business requirements of the organization
  - ● Summarize the organization wide performance of all subsystems
- ■ **Process goals (from 6Sigma)**
  - ● Throughput
  - ● Variation
- ■ **Job / Performer goals**
  - ● Based on process contribution

Rummler / Brache: Improving performance, pp. 138

Performance model – (2)

Hierarchy of Goals

Organizational Goals

Process Goals

Job / Performer Goals

Cascading

Contribution

Operating Model

Process Model

Decision Model

Structure Model

Performance Model

Governance Model

Rummler / Brache: Improving performance

Performance model – (3)

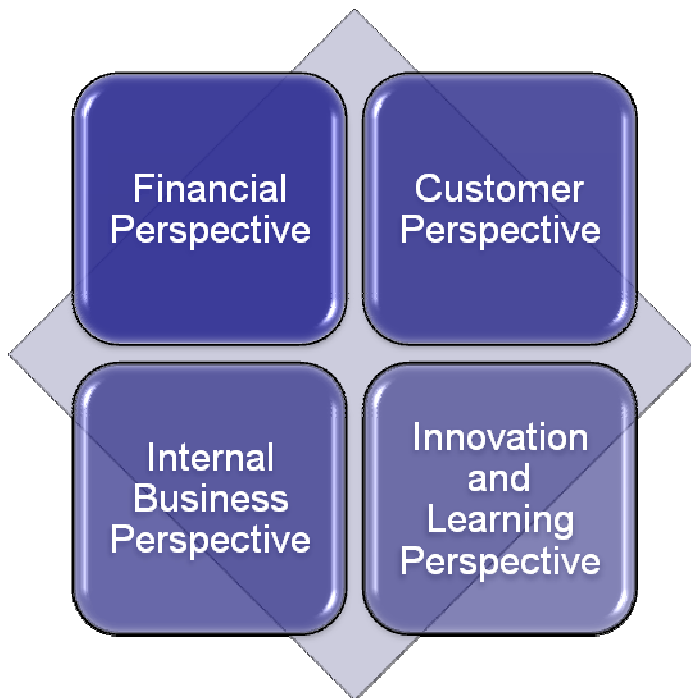|	Performance Needs			
Three Levels of Performance	**Goals & Measures**	**Design & Implementation**	**Management**	
Organizational Level	Organizational Goals and Measures of Organizational Success	Organization Design and Implementation	Organizational Management	
Process Level	Process Goals and Measures of Process Success	Process Design and Implementation	Process Management	
Activity or Job Level	Activity Goals and Measures of Activity Success	Activity Design and Implementation	Activity Management	

Rummler / Brache: Improving performance, pp. 18

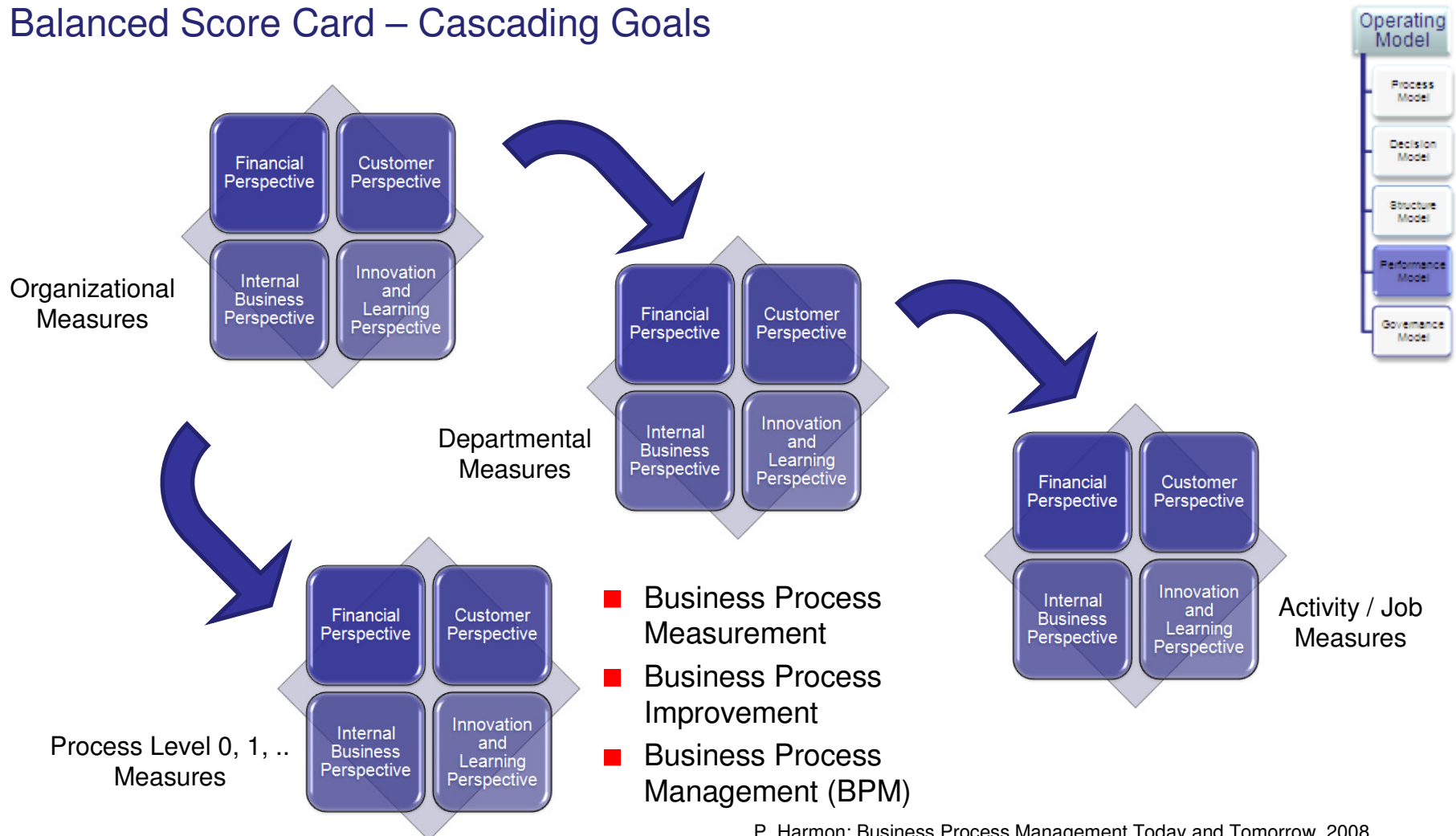# Performance model – Balanced Score Card – (1)

Balanced Score Card - Example

Kaplan / Norton: The balanced scorecard: measures that drive performance, 1992, p. 76

Performance model – Balanced Score Card – (2)

Balanced Score Card – Cascading Goals

Organizational Measures

- Financial Perspective
- Customer Perspective
- Internal Business Perspective
- Innovation and Learning Perspective

Departmental Measures

- Financial Perspective
- Customer Perspective
- Internal Business Perspective
- Innovation and Learning Perspective

Process Level 0, 1, .. Measures

- Financial Perspective
- Customer Perspective
- Internal Business Perspective
- Innovation and Learning Perspective

Activity / Job Measures

- Financial Perspective
- Customer Perspective
- Internal Business Perspective
- Innovation and Learning Perspective

- ■ Business Process Measurement
- ■ Business Process Improvement
- ■ Business Process Management (BPM)

Operating Model
- Process Model
- Decision Model
- Structure Model
- Performance Model
- Governance Model

P. Harmon: Business Process Management Today and Tomorrow, 2008
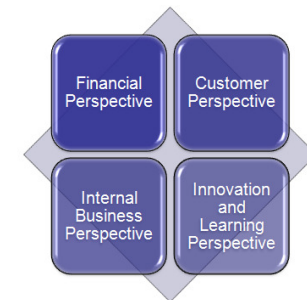
Performance model – KPI

Key Performance Indicator

- *"A key performance indicator (KPI) is a business metric used to evaluate factors that are crucial to the success of an organization."*

- Metric: unit of measurement
- Measurement: compare values of metrics over time
- Monitoring: collecting the data for measurement
- Baseline: first data collection

- Key Performance Activity (KPA)
    - activity / goal being measured
    - appears in the BSC (as a line)
    - can have one-to-many KPI's

Operating Model
- Process Model
- Decision Model
- Structure Model
- Performance Model
- Governance Model

Financial Perspective | Customer Perspective
Internal Business Perspective | Innovation and Learning Perspective

Governance Model

- **Contains rules describing best practices in conducting the business**

- **Regulatory requirements regarding ("become a good corporate citizen")**
  - Financial accounting and statements
  - Corporate Governance
  - Country specific laws and regulations
  - Requirements for listed companies on specific stock exchanges (e.g. JSE, LSE and NYSE)
  - Examples are King II or Sarbanes-Oxley (SOX)
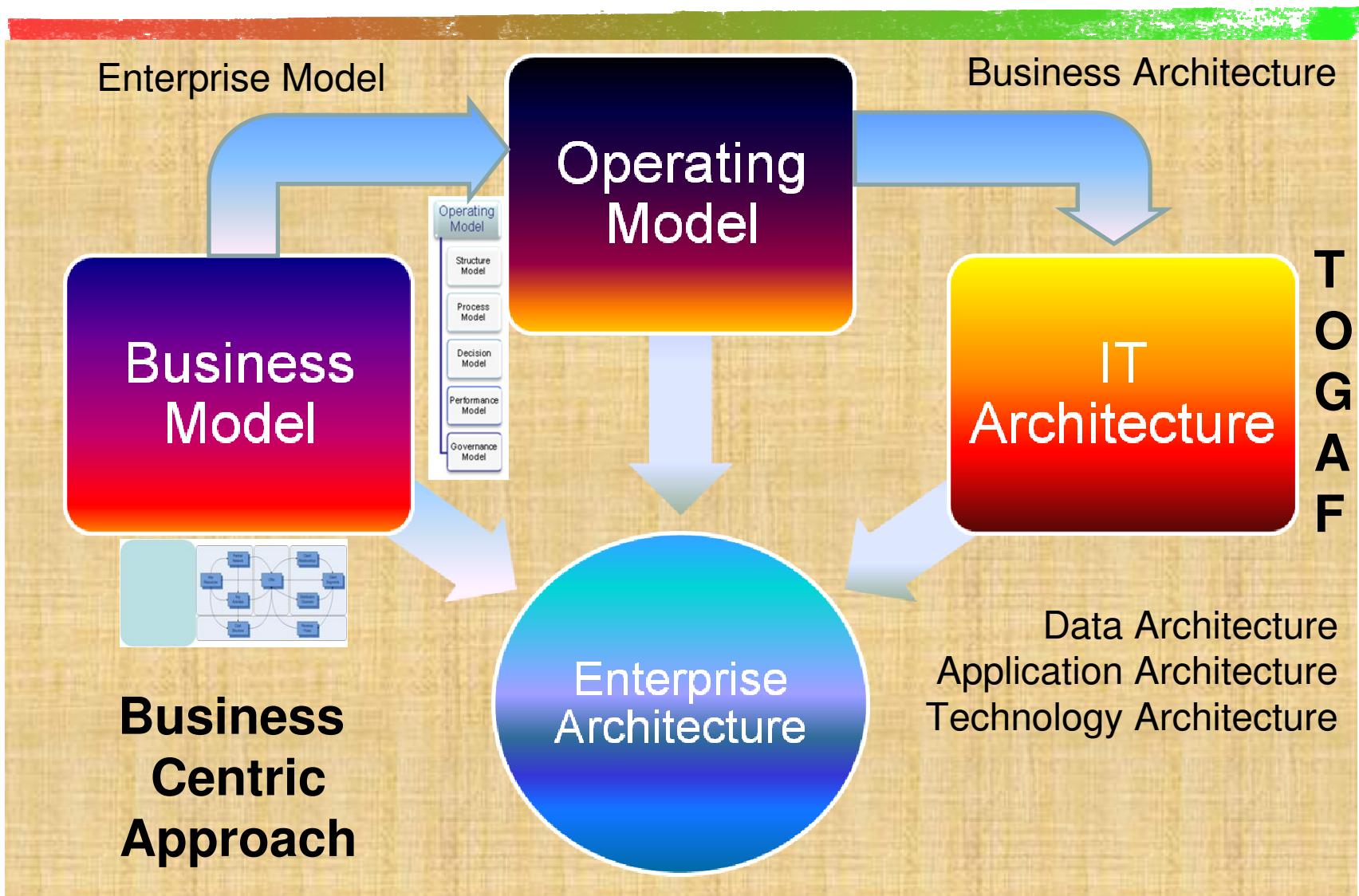 - Industry specific, e.g. BASEL II for banking industry

Further Classification of the Operating Model

- **Classification based on the standardization and integration of the processes**
  - Diversification / Coordination
  - Replication / Unification
- **Maturity stages**
  - Business silos ….
  - Dynamic Venturing

JW Ross et al: Enterprise Architecture as Strategy, 2006

Enterprise Architecture

Enterprise Model

Business Architecture

Operating Model

Business Model

Operating Model — Structure Model, Process Model, Decision Model, Performance Model, Governance Model

IT Architecture

TOGAF

Enterprise Architecture

Data Architecture
Application Architecture
Technology Architecture

Business Centric Approach

Summary

- **A business-centric approach to EA was presented, consisting of**
  - Business Model Landscape
  - Relationship between Business Model and Operating Model on type level
  - Definition of an Operating Model based on five sub-models
  - Business oriented language based on Business Process Reengineering Terminology

Thank you!