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**Integrating**  
the  
**Enterprise System**  
and  
**Quality Management Systems**

By  
Vern Goodwalt  
The 3 Point Group  
[the3pointgroup@aol.com](mailto:the3pointgroup@aol.com)  
951-683-6613



# Content

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- **Enterprise Resource Planning (ERP) and the Enterprise Management System**
- **ISO 9001:2008, ISO 9004:2009, and other Quality Management Approaches**
- **Processes, Measures, and Benchmarking**
- **Toyota's Quality Issues**



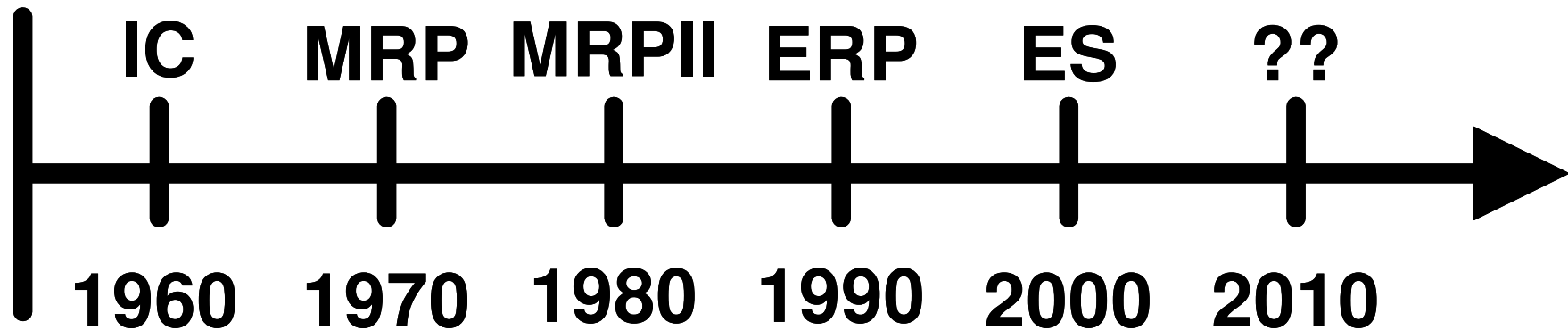
# **Enterprise Resource Planning (ERP)**

## **and the**

# **Enterprise Management System**



# Timeline of integrated software generation development



- Enterprise Systems (ES) of the 2000's added more features, functions, and better integration to support the entire value chain of business operations from customer order until the payment is received.

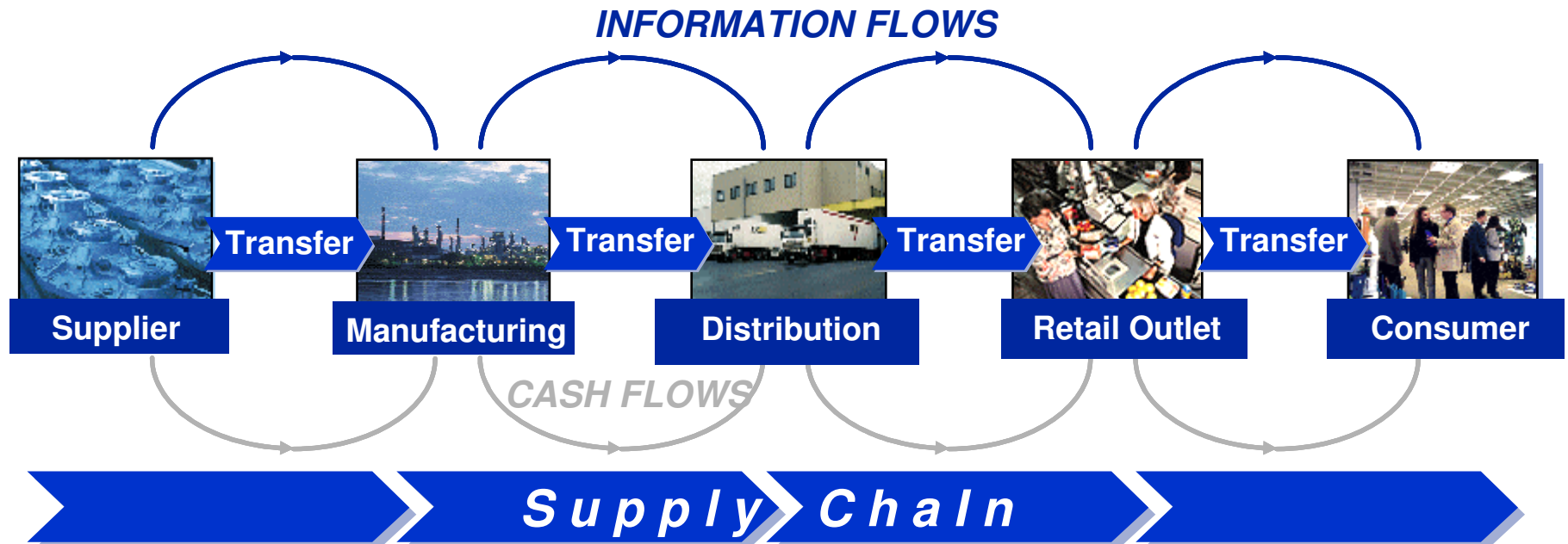


# SAP Enterprise System

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- **SAP R/3 integrates and encompasses the primary aspect of supply chain processing.**
- **SAP R/3 consists of a series of integrated core business applications modules for transaction processing.**
- **These modules contain a set of functions that implement best business practices for supply chain management (SCM) activities.**

# Integrated Supply Chain Management



▶ Integrated software that supports the information flows among the processes in the supply chain.

▶ **SAP R/3 is Enterprise Software.**



# Enterprise System

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- **SAP R/3 transaction data is entered where the data is initially created in the business process.**

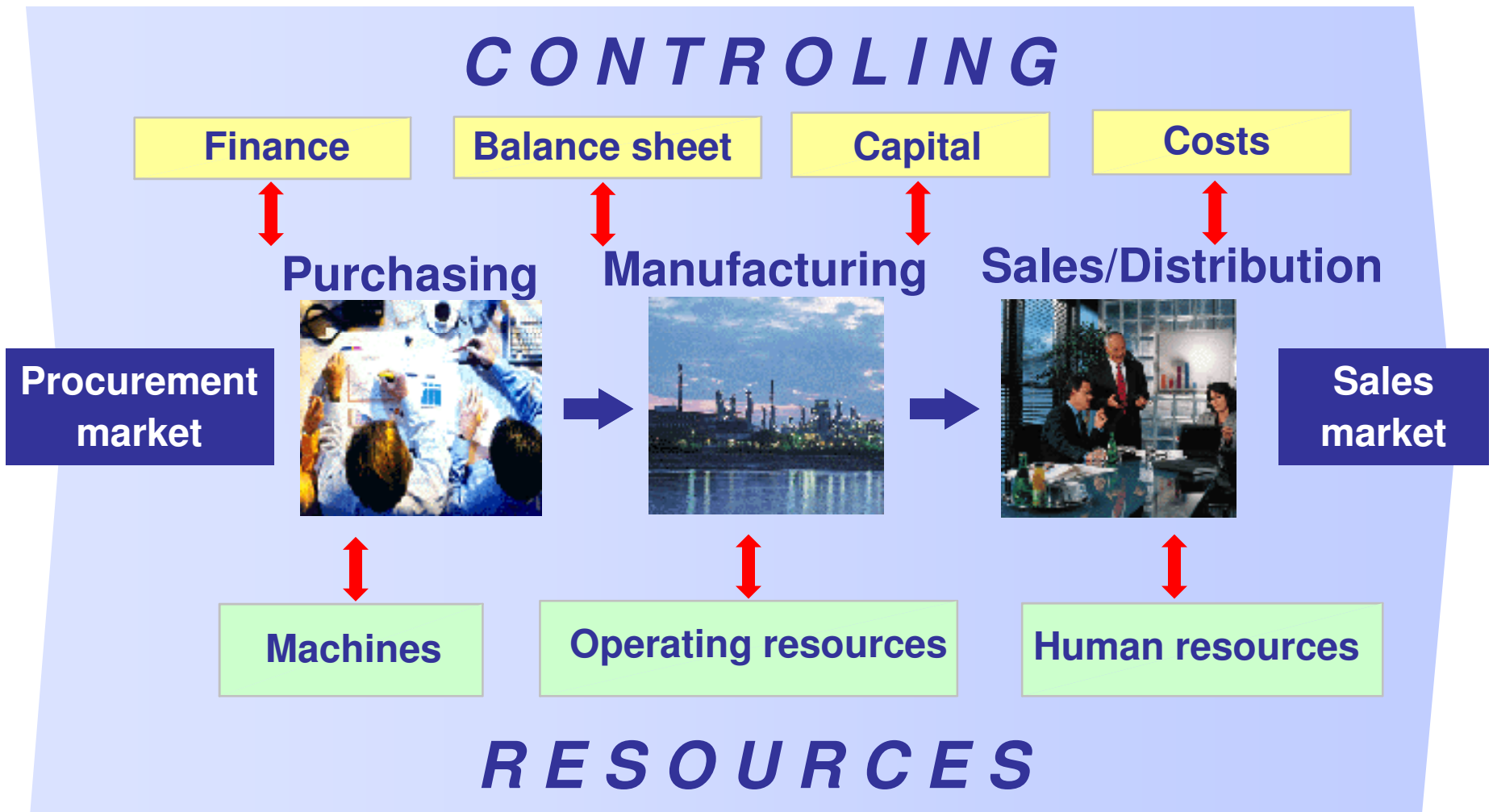
## **Example:**

The receipt of a customer order to the delivery of that order to the customer.

- **Once entered, data is available for reference and use with all other events along the supply chain.**
- **A change in the data from one SAP R/3 application will result in an automatic update of that data when used in the other application modules involved.**

# Enterprise System

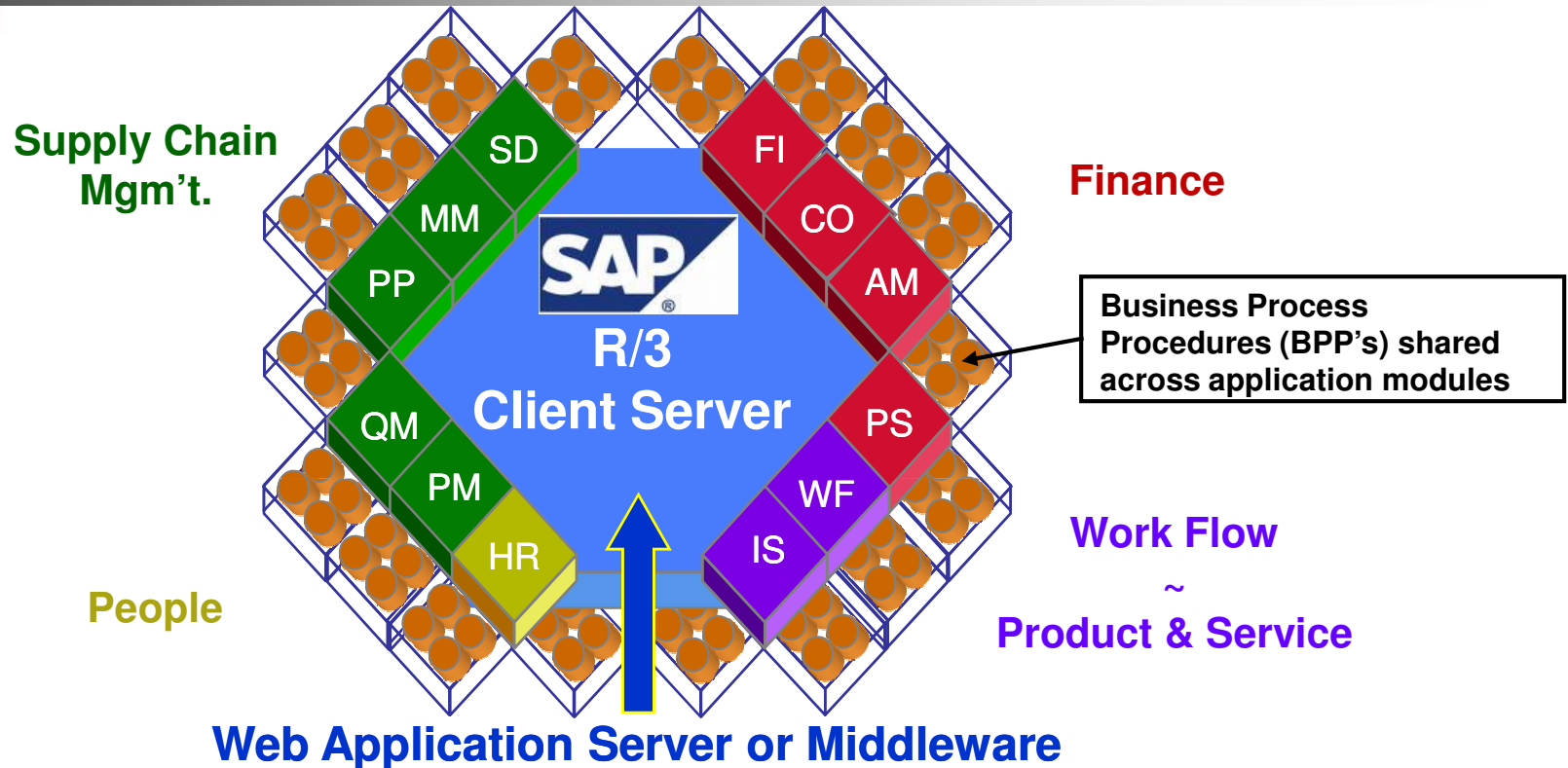
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# Linked Business Processes

- **Application link enabled (ALE) technology facilitates the transfer of standard business messages between processes.**
- **The internet extends this supply chain integration outside the boundaries of the business itself to encompass vendors and customers.**
- **Business Process Procedures (BPPs) are the actual program elements that provide the functionality of the R/3 System.**
- **Many of these BPPs are used by more than one of the application modules.**

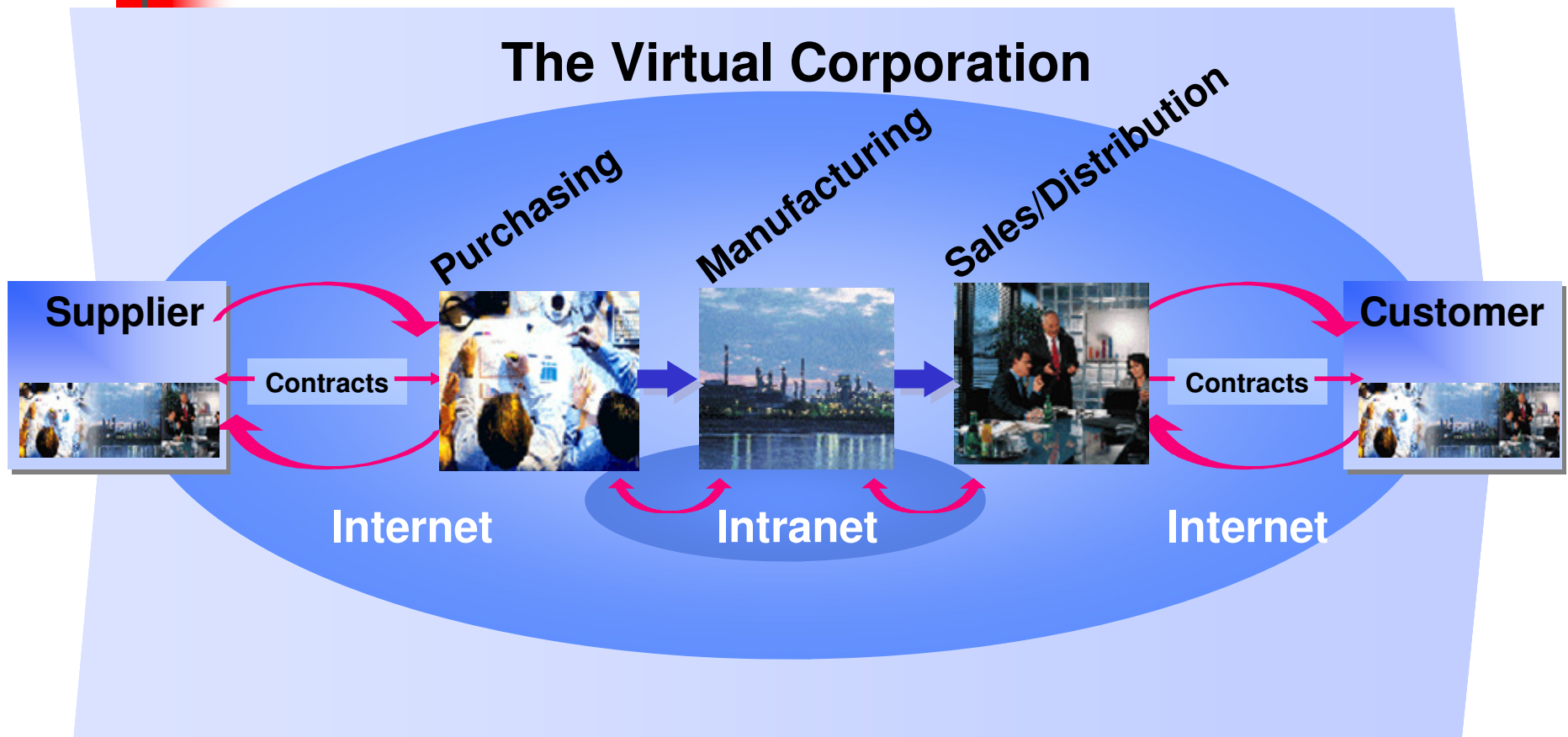
# Enterprise Functional Business Area Application Modules



- **SD** - Sales & Distribution
- **MM** - Material Management
- **PP** - Production Planning
- **QM** - Quality Management
- **PM** - Plant Maintenance
- **HR** - Human Resources

- **FI** - Financial Accounting
- **CO** - Controlling
- **AM** - Fixed Asset Mgm't.
- **PS** - Project System
- **WF** - Workflow
- **IS** - Industry Solutions

# Web Application Server or Middleware

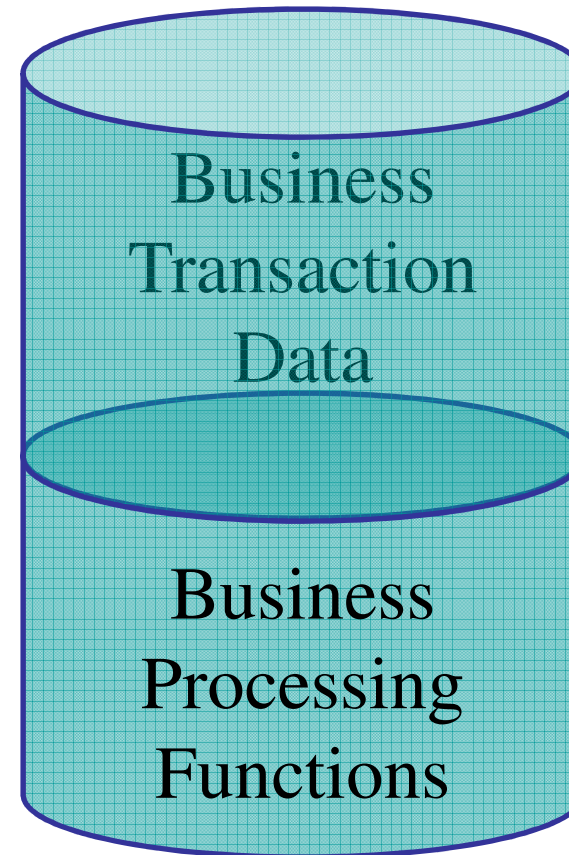


- R/3 Improves:**
- Business Infrastructure in multiple vendor environment
  - High transaction volumes
  - Real-time decisions across the supply chain

# Database Organization

- All transaction data
- All code objects
  - Screens
  - Reports
  - Functions

R/3 Repository

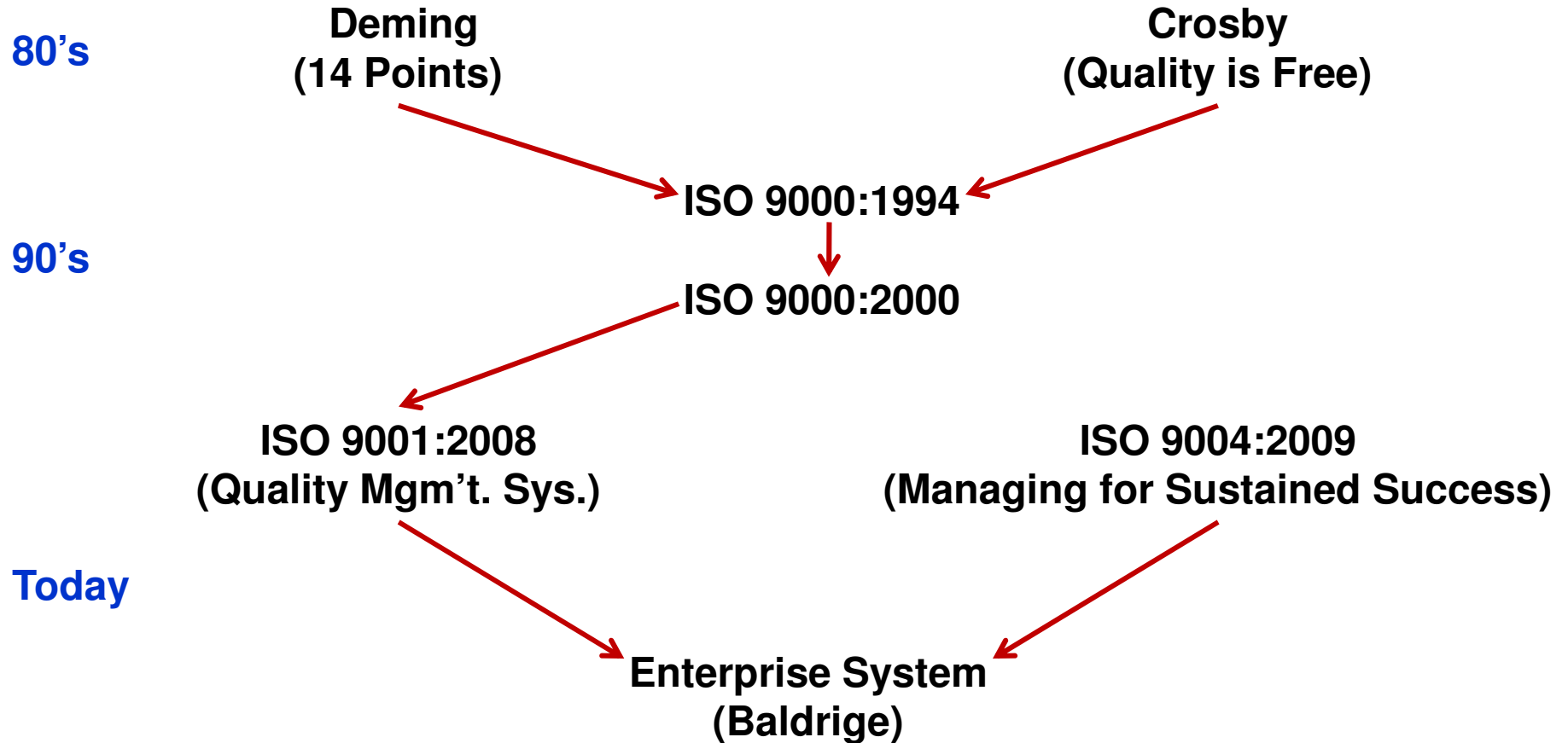




# **ISO & Enterprise Based Quality Management Systems**



# Quality Management





# ISO 9001:2008 & ISO 2004:2009 Clauses

## ISO 9001:2008

4. Quality management system
5. Management responsibility
6. Resource management
7. Product realization
8. Measurement, analysis and improvement

## ISO 9004:2009

4. Managing for the sustained success of an organization
5. Strategy and policy
6. Resource management
7. Process management
8. Monitoring, measurement, analysis and review
9. Improvement, innovation and learning

## 4 Quality management system

- 4.1 General requirements
- 4.2 Documentation requirements

## 5 Management responsibility

- 5.1 Management commitment
- 5.2 Customer focus
- 5.3 Quality policy
- 5.4 Planning
- 5.5 Responsibility, authority and communication
- 5.6 Management review

## 6 Resource management

- 6.1 Provision of resources
- 6.2 Human resources
- 6.3 Infrastructure
- 6.4 Work environment

## 7 Product realization

- 7.1 Planning of product realization
- 7.2 Customer-related processes
- 7.3 Design and development
- 7.4 Purchasing
- 7.5 Production and service provision
- 7.6 Control of monitoring and measuring equipment

## 8 Measurement, analysis and improvement

- 8.1 General
- 8.2 Monitoring and measurement
- 8.3 Control of nonconforming product
- 8.4 Analysis of data
- 8.5 Improvement

## 4 Managing for the sustained success of an organization

- 4.1 General
- 4.2 Sustained success
- 4.3 The organization's environment
- 4.4 Interested parties, needs and expectations

## 5 Strategy and policy

- 5.1 General
- 5.2 Strategy and policy formulation
- 5.3 Strategy and policy deployment
- 5.4 Strategy and policy communication

## 6 Resource management

- 6.1 General
- 6.2 Financial resources
- 6.3 People in the organization
- 6.4 Suppliers and partners
- 6.5 Infrastructure
- 6.6 Work environment
- 6.7 Knowledge, information and technology
- 6.8 Natural resources

## 7 Process management

- 7.1 General
- 7.2 Process planning and control
- 7.3 Process responsibility and authority

## 8 Monitoring, measurement, analysis and review

- 8.1 General
- 8.2 Monitoring
- 8.3 Measurement
- 8.4 Analysis
- 8.5 Review of information from monitoring, measurement and analysis

## 9 Improvement, innovation and learning

- 9.1 General
- 9.2 Improvement
- 9.3 Innovation
- 9.4 Learning

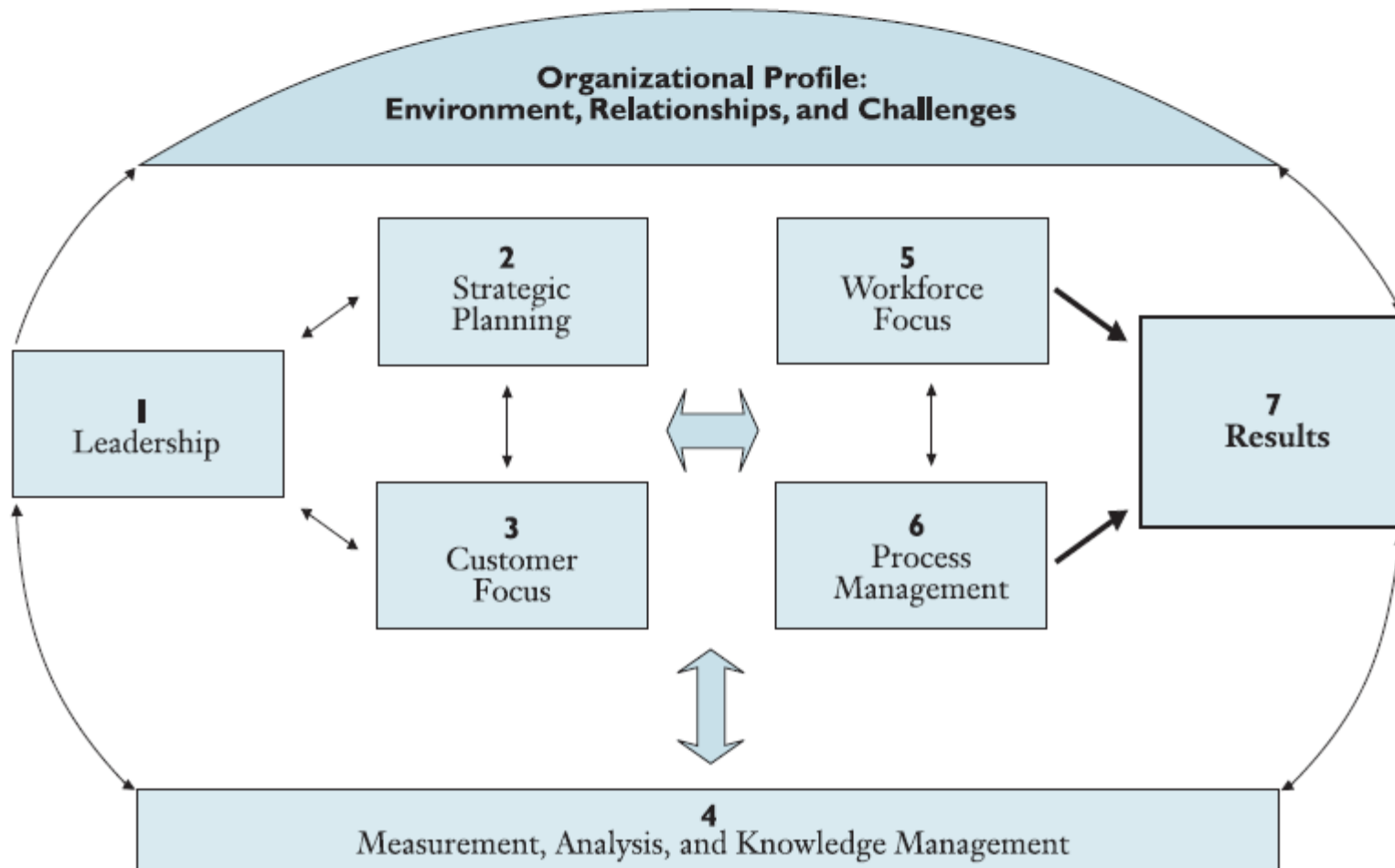
# Correspondence between ISO 9004:2009 and ISO 9001:2008

Subclause in ISO 9004:2009	Subclause in ISO 9001:2008
4.1 (Managing for the sustained success of an organization) General	4.1 (Quality management system) General requirements 5.1 Management commitment
—	4.2 Documentation requirements
4.2 Sustained success	—
4.3 The organization's environment	7.2 Customer related processes
4.4 Interested parties, needs and expectations	5.2 Customer focus
5.1 (Strategy and policy) General	5.3 Quality policy
5.2 Strategy and policy formulation	5.3 Quality policy
5.3 Strategy and policy deployment	5.4 Planning
5.4 Strategy and policy communication	5.5.3 Internal communication 7.2.3 Customer communication
6.1 (Resource management) General	6.1 Provision of resources
6.2 Financial resources	—
6.3 People in the organization	6.2 Human resources
6.3.1 Management of people	
6.3.2 Competence of people	6.2.2 Competence, training and awareness
6.3.3 Involvement and motivation of people	—
6.4 Suppliers and partners	7.4.1 Purchasing process
6.4.1 General	
6.4.2 Selection, evaluation and improvement of the capabilities of suppliers and partners	7.4.1 Purchasing process
6.5 Infrastructure	6.3 Infrastructure
6.6 Work environment	6.4 Work environment



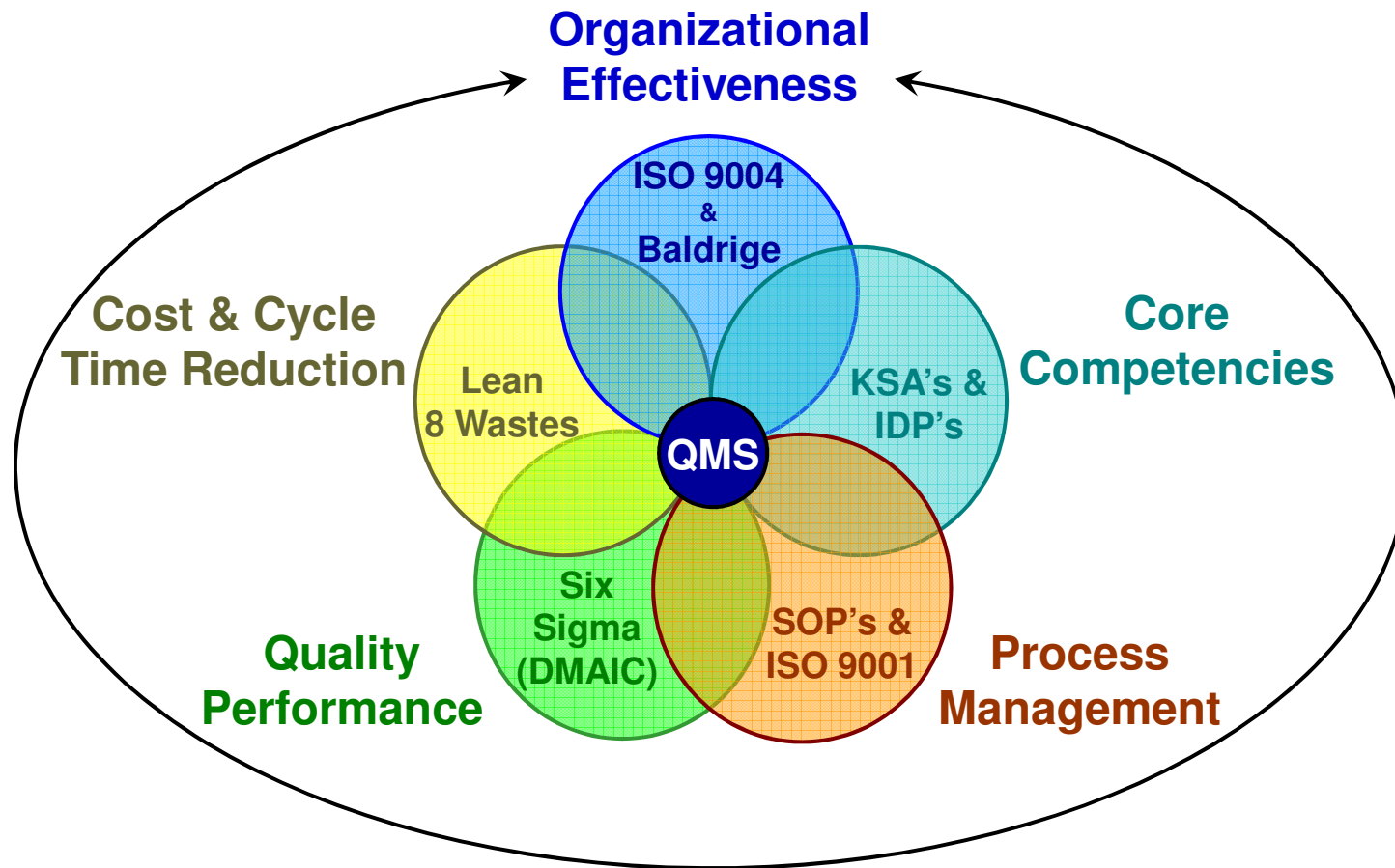
# Baldrige Criteria for Performance Excellence

## Baldrige Criteria for Performance Excellence Framework A Systems Perspective





# Enterprise Quality Management System (E-QMS)

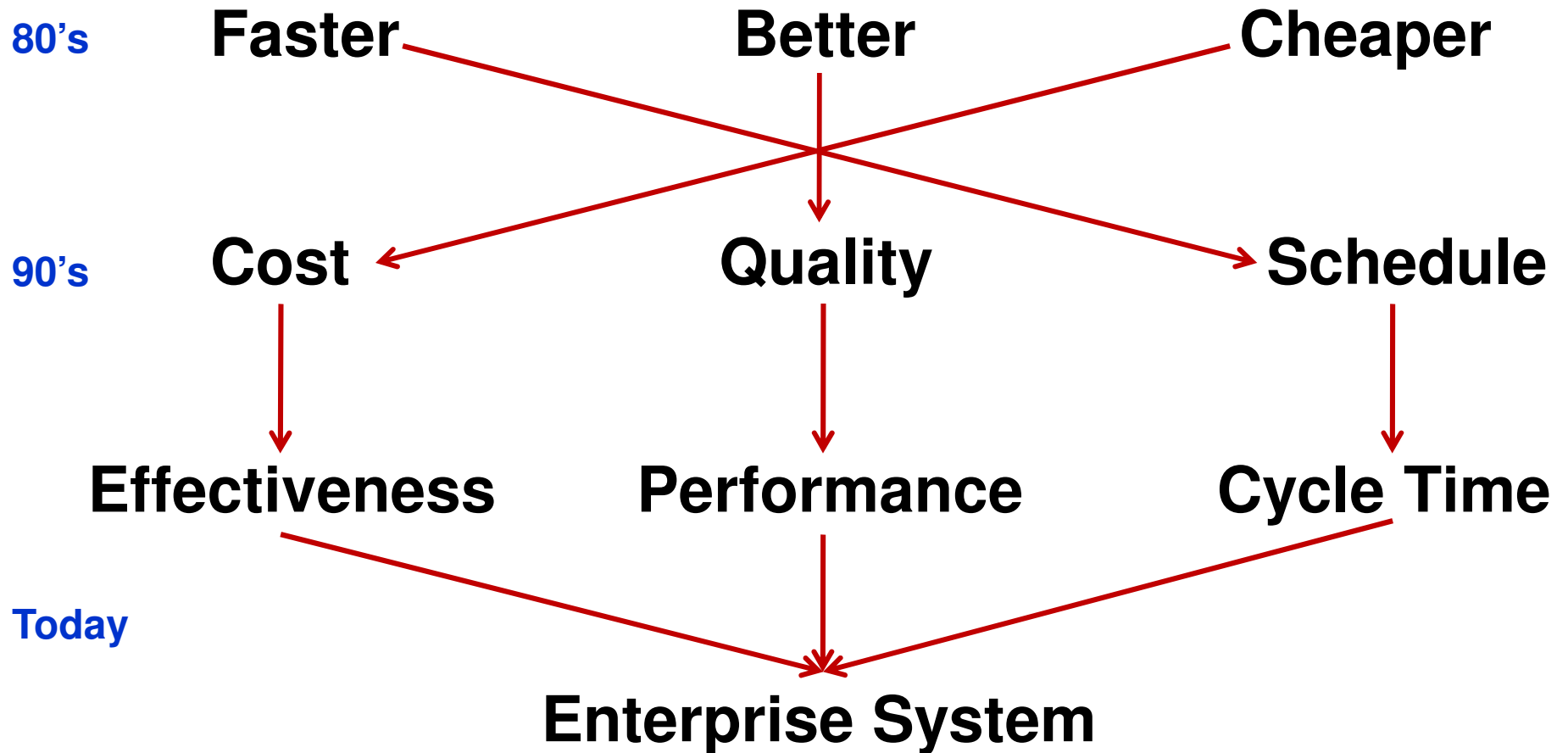


A Framework for Performance Excellence & Continuous Improvement

“Lean Sigma”

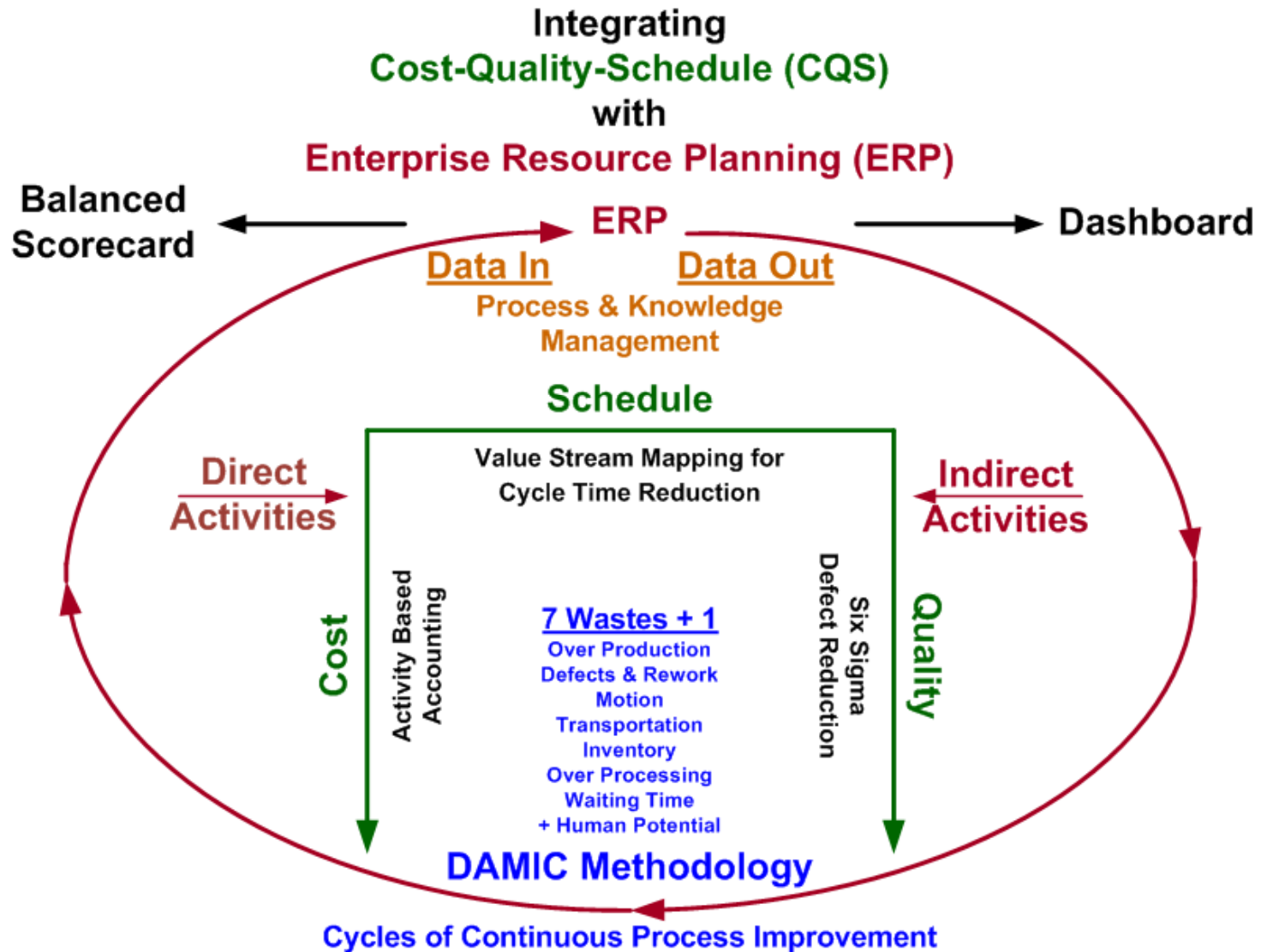


# Faster-Better-Cheaper





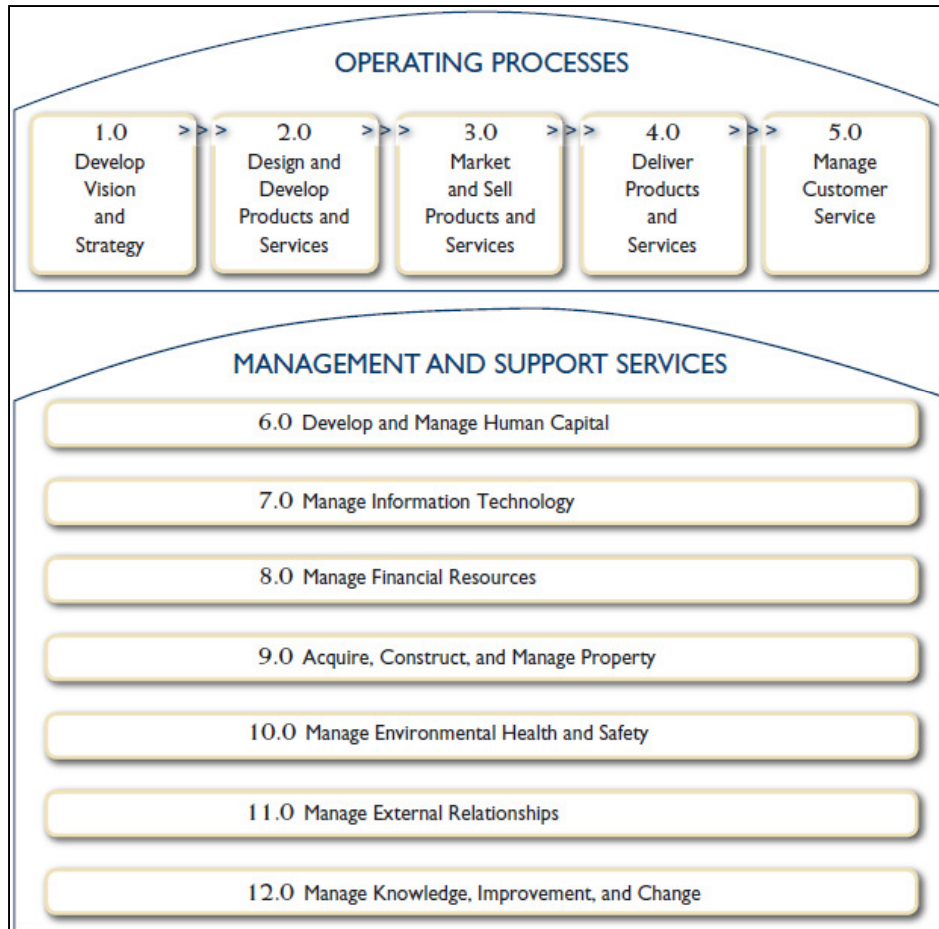
# CQS & ERP Framework





# Process, Measure, and Benchmarking Frameworks

# APQC Process Classification Framework



## 1.0 Develop Vision and Strategy

- 1.1 Define the business concept and long-term vision
  - 1.1.1 Assess the external environment
    - 1.1.1.1 Analyze and evaluate competition
    - 1.1.1.2 Identify economic trends
    - 1.1.1.3 Identify political and regulatory issues
    - 1.1.1.4 Assess new technology innovations
    - 1.1.1.5 Analyze demographics
    - 1.1.1.6 Identify social and cultural changes
    - 1.1.1.7 Identify ecological concerns
  - 1.1.2 Survey market and determine customer needs and wants
    - 1.1.2.1 Conduct qualitative/quantitative assessments
    - 1.1.2.2 Capture and assess customer needs
  - 1.1.3 Select relevant markets
  - 1.1.4 Perform internal analysis
    - 1.1.4.1 Analyze organizational characteristics
    - 1.1.4.2 Create baselines for current processes
    - 1.1.4.3 Analyze systems and technology
    - 1.1.4.4 Analyze financial positions
    - 1.1.4.5 Identify enterprise core competencies
  - 1.1.5 Establish strategic vision
    - 1.1.5.1 Align stakeholders around strategic vision
    - 1.1.5.2 Communicate strategic vision to stakeholders

# About the American Productivity and Quality Center (APQC)

- Founded in 1977 as a member-based nonprofit, APQC (the American Productivity and Quality Center) has become one of the world's leading proponents of process and performance improvement.
- We help organizations adapt to rapidly changing environments, build new and better ways of working, and succeed in a competitive marketplace. One of the ways in which we achieve this is by connecting individuals to facilitate knowledge sharing and learning.
- Our research and services include:
  - **Open standards research** (*Free pdf downloads*)
  - Custom benchmarking
  - Best practices research
  - In-depth knowledge management expertise
  - Our Knowledge Base research library
- APQC's achievements include;
  - organizing the first *White House Conference on Productivity*,
  - spearheading the creation and design of the **Malcolm Baldrige National Quality Award (1987)**,
  - launching knowledge management as a key business practice (1995),
  - introducing the Open Standard Benchmarking Collaborative<sup>SM</sup> (2004) research, and
  - creating the C. Jackson Grayson Distinguished Quality Pioneer Medal (2008).



# Process Measures and Glossary's

## Summary of Enterprise Process Measures

1. Understand markets and customers
2. Develop vision and strategy
3. Design products and services
4. Market and sell
5. Produce and deliver products
6. Invoice and service customers
7. Develop and manage human resources
8. Manage information resources
9. Manage financial and physical resources
10. Execute environmental management program
11. Manage improvement and change

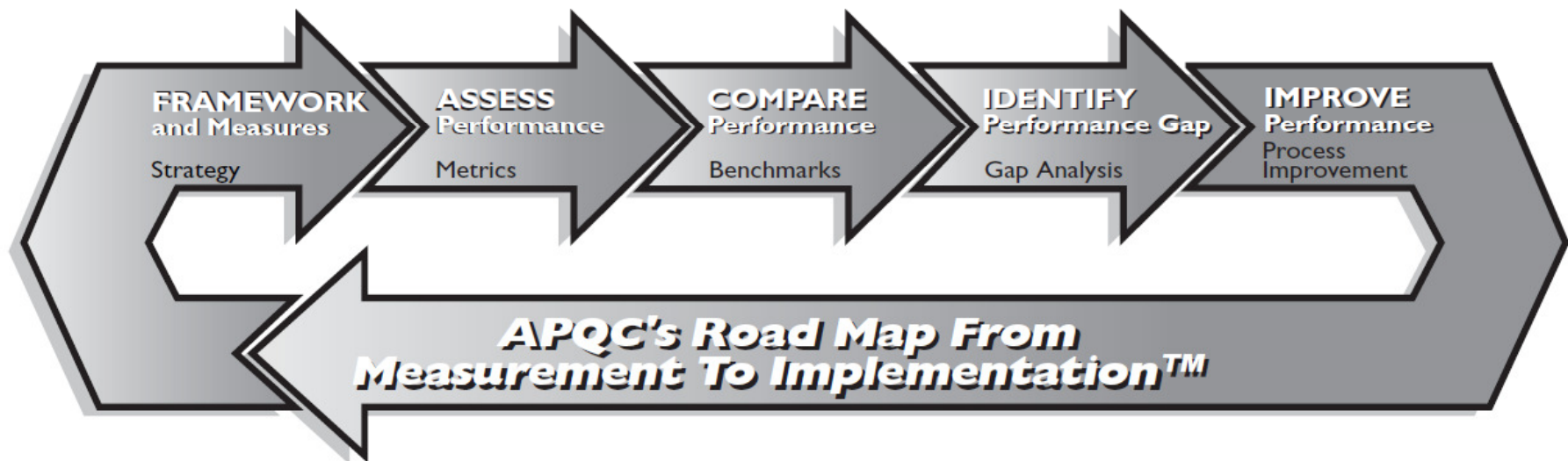
## Glossary of Teams

- Performance Excellence Terms
- Benchmark Terms



# Measurement Implementation

## APQC's Road Map from Measurement to Implementation™

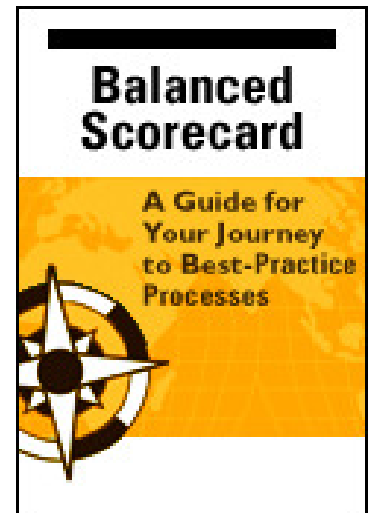


# Balanced Scorecard Guide

- As one of the titles in APQC's Passport to Success series, this guidebook details what is required of organizations as they establish and deploy a balanced scorecard effort.

Supported by examples of best practices and tips from actual practitioners, *Balanced Scorecard: A Guide for Your Journey to Best-practice Processes* explains how to:

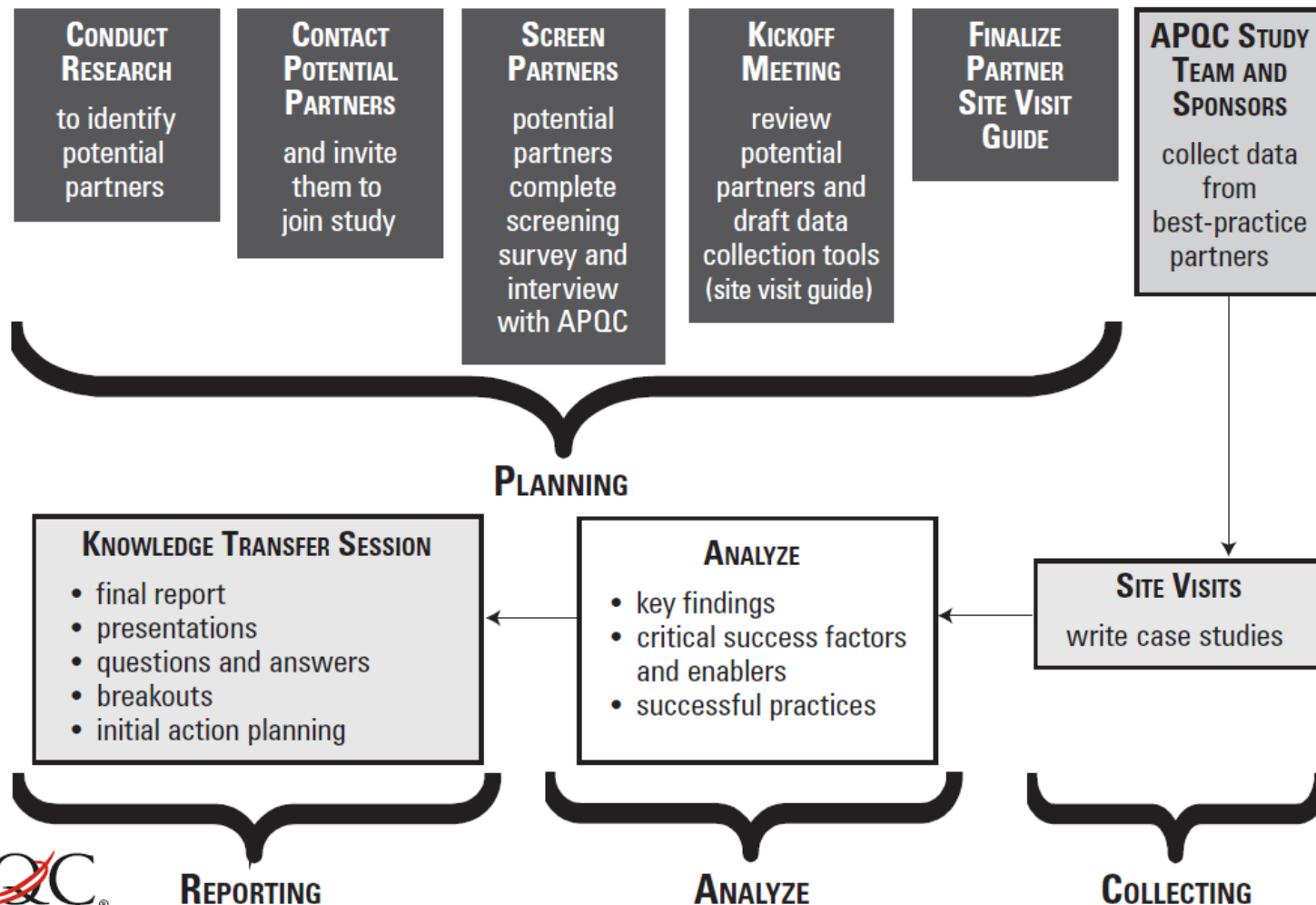
- design a balanced scorecard,
- develop strategic metrics and data-gathering tactics,
- gain all-level support,
- deploy and maintain the scorecard, and
- link measures to strategy and employees' daily activities.





# Benchmarking Methodology

## APQC's Benchmarking Methodology Overview





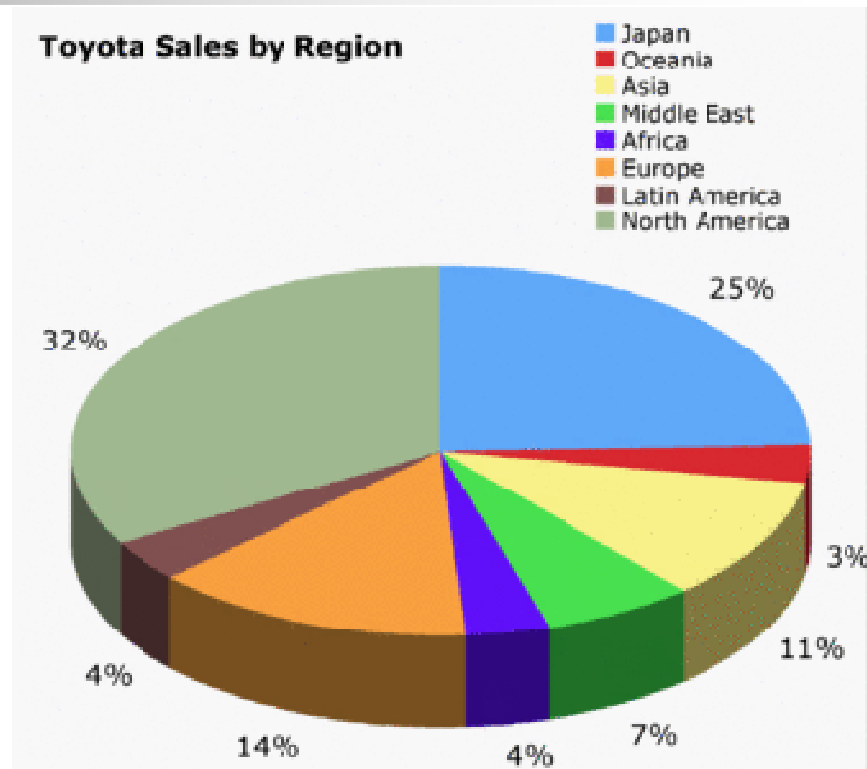
**What's the real cause of Toyota's quality issues?**



# Toyota Sales

## When and why did Toyota start having quality problems?

Toyota Motor Sales (TMS), U.S.A., Inc., today reported total year-end sales of 2,260,296 vehicles, up 10.1 percent over 2004. With ten consecutive years of record-breaking sales, this marks the second time in TMS' 48-year history it has reached sales of over two million vehicles.



### 1960-2010 World Sales

