# Management Information Systems

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*Linking to Suppliers & Customers*

# First things first



*Case study*
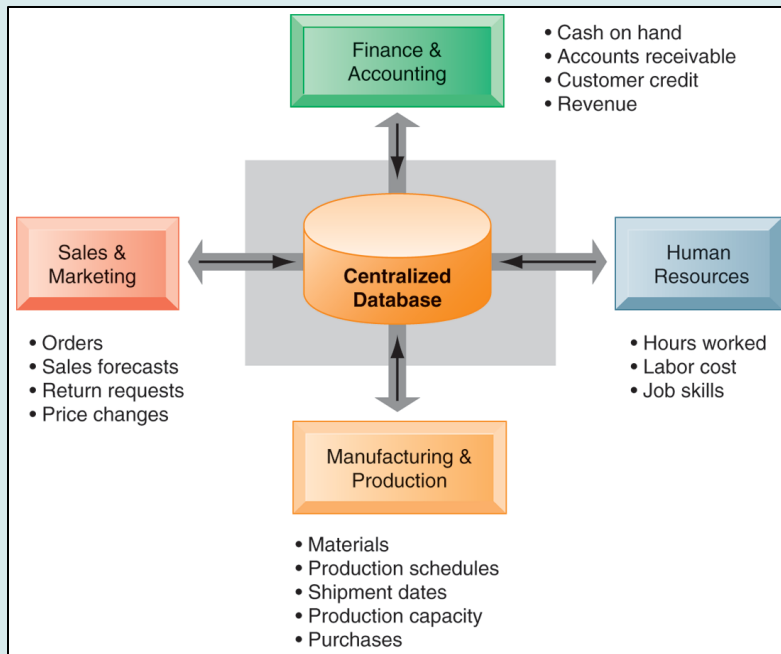
# Enterprise Resource Planning (ERP)

# Definition

"A suite of integrated software modules and a common central database that:

collects data from many divisions of the firm for use in nearly all of firm's internal business activities

makes available information entered in one process to be immediately available for other processes"

# Characteristics



**ERP software**

- It is business process-driven
    - It incorporates best-practices in different business divisions

- To implement, firms:
    - Select functions of the ERP system they wish to use
    - Map business processes to software processes (through configuration tables in the software)

# Characteristics

**Enterprise Application**          **Primary Users**          **Primary Business Benefit**



ERP  ⟷  Accounting, Finance, Logistics, Production  ⟷  Forecasting, Planning, Purchasing, Material management, Warehousing, Inventory, Distribution

# Major benefits

- Increase operational efficiency

- Provide firm-wide information to support decision making

- Include analytical tools to evaluate overall organizational performance

# Major causes of implementation failure

- Since ERP's are based on best practices companies may need to change their methods of achieving business objectives

- ERP systems can be complex, expensive, and time-consuming to implement

# Supply chain management

# Definition

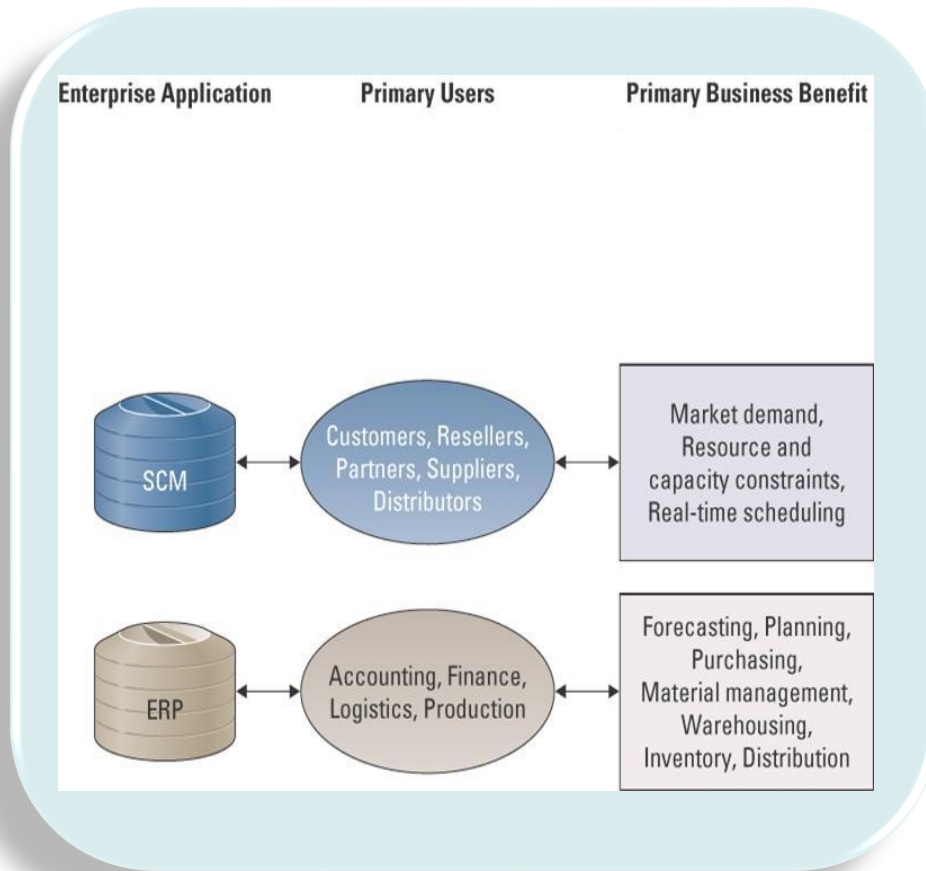"A network of organizations and processes for:

procuring raw materials,

transforming them into products, and

distributing the products"

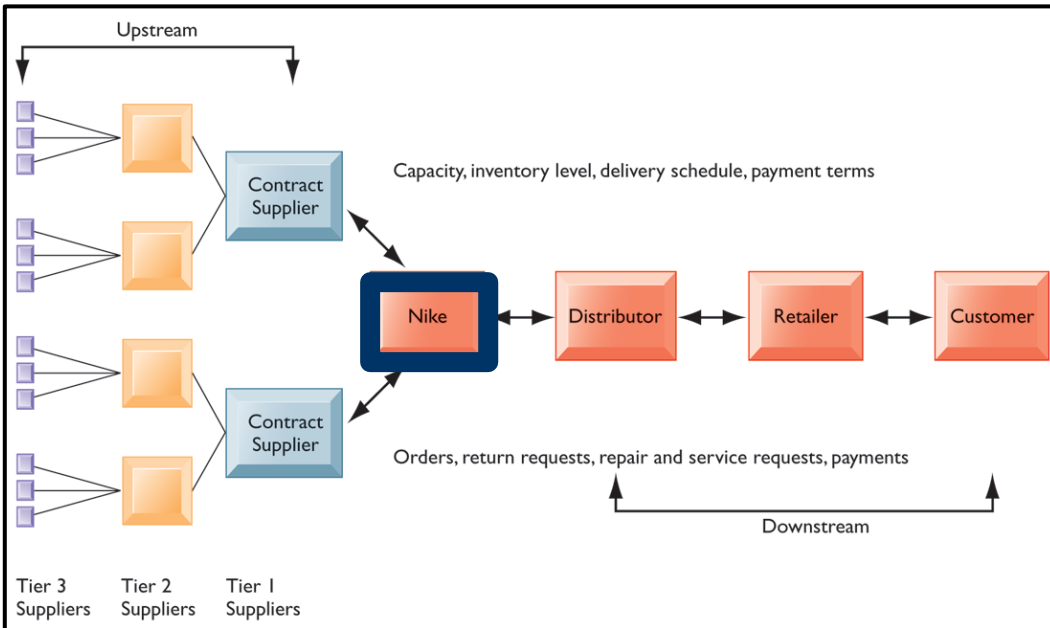| Flows |
| --- |
| • Material flows<br><br>• Information flows<br><br>• Financial flows |

# ERP vs SCM



**Comparison**

- ERP is to improve and streamline internal business processes, while

- SCM aims to facilitate the collaboration between the organization, its suppliers, the manufacturers, the distributors and the partners

# An example supply chain



**Characteristics**

- Upstream supply chain
    - Firm's suppliers, suppliers' suppliers, processes for managing relationships with them

- Downstream supply chain
    - Firms and processes responsible for delivering products to customers

# Why do we need to manage supply chains ?

- It is an information management problem !
  - Inefficiencies cut into a company's operating costs
    - Can waste up to 25% of operating expenses
  - Just-in-time strategy:
    - Components arrive as they are needed
    - Finished goods shipped after leaving assembly line

- Safety stock
  - Buffer for lack of flexibility in supply chain

- Bullwhip effect
  - Information about product demand gets distorted as it passes from one entity to the next, across the supply chain
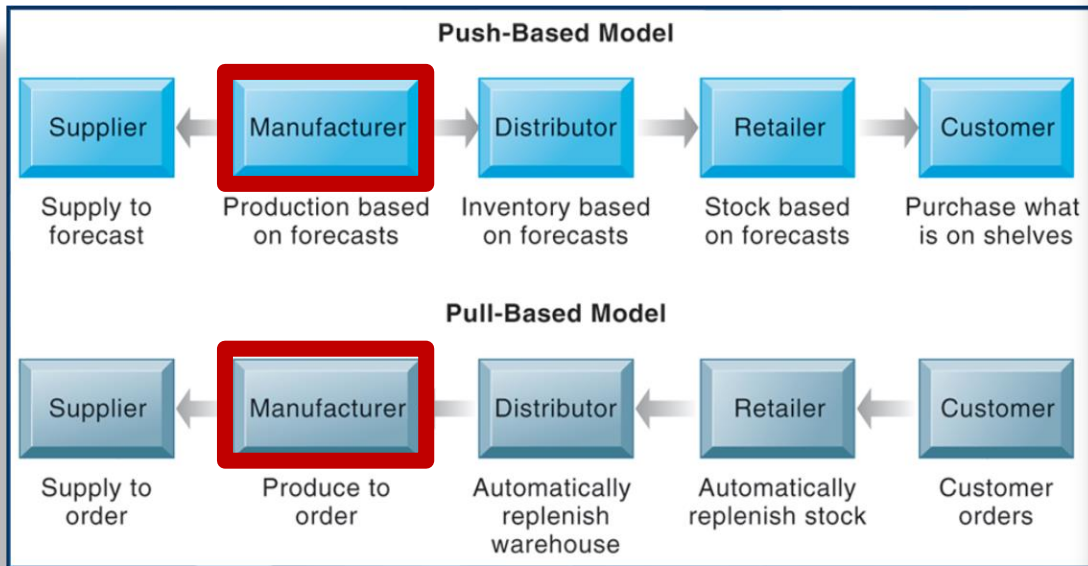
# Bullwhip effect

# Why do we need to manage supply chains ?

- Try also to go global !
  - Geographic distances, time differences, culture differences
  - Increased complexity in defining pricing policies (e.g. due to different local tax regimes, local transportation costs, etc.)
  - Government regulations

- Internet to the rescue
  - Partner selection, communications

# How do we manage a supply chain ?

## Push-Based Model

| Supplier | Manufacturer | Distributor | Retailer | Customer |
|---|---|---|---|---|
| Supply to forecast | Production based on forecasts | Inventory based on forecasts | Stock based on forecasts | Purchase what is on shelves |

## Pull-Based Model

| Supplier | Manufacturer | Distributor | Retailer | Customer |
|---|---|---|---|---|
| Supply to order | Produce to order | Automatically replenish warehouse | Automatically replenish stock | Customer orders |

### Two main models

- Push-based model (build-to-stock)
  - "Sell what we make"
  - Schedules based on best guesses of demand

- Pull-based model (demand-driven):
  - "Make what we sell"
  - Customer orders trigger events in supply chain

# How do we manage it ?

- Sequential supply chains
  - Information and materials flow sequentially from company to company

- Concurrent supply chains
  - Information flows in many directions simultaneously among members of a supply chain network

# How do we manage it ?

- Supply chain management software

- Supply chain planning systems
  - Model existing supply chain
  - Demand planning
  - Optimize sourcing, manufacturing plans
  - Establish inventory levels
  - Identifying transportation modes

- Supply chain execution systems
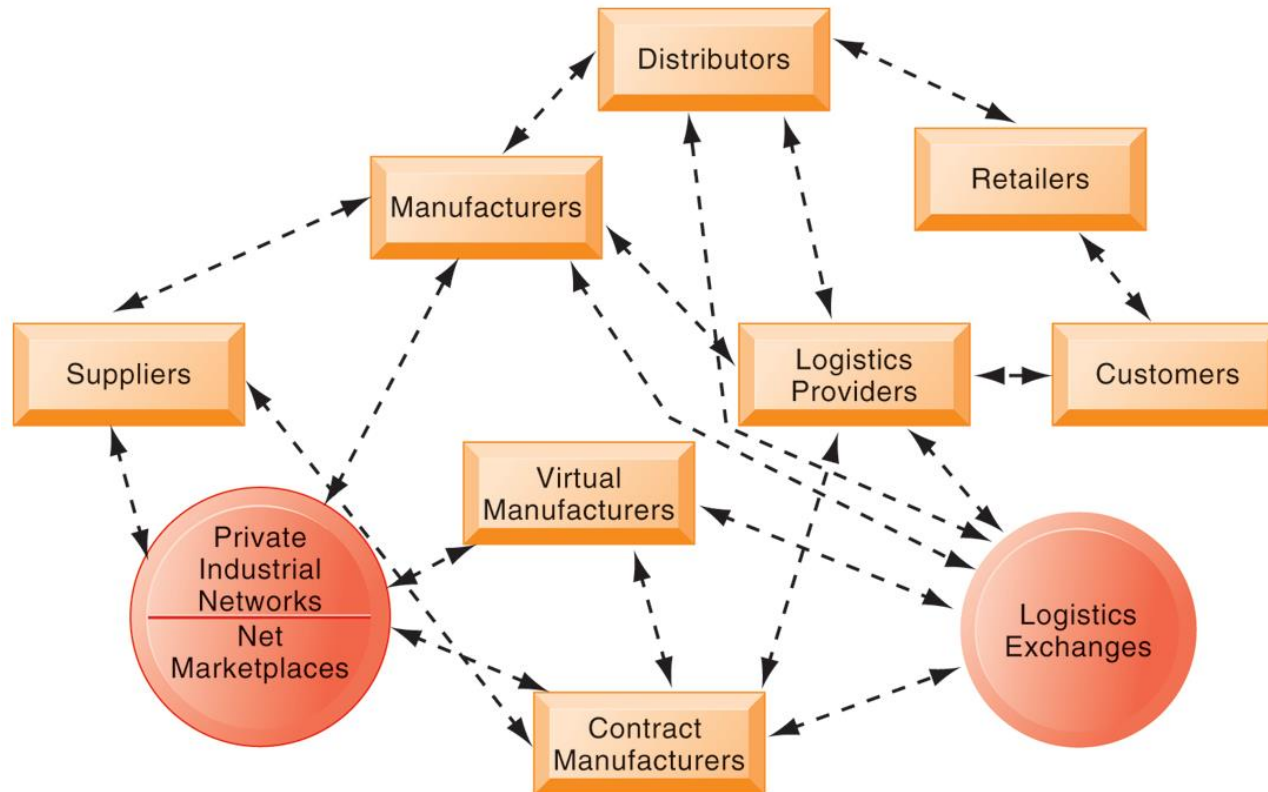  - Manage flow of products through distribution centers and warehouses

# Extranet
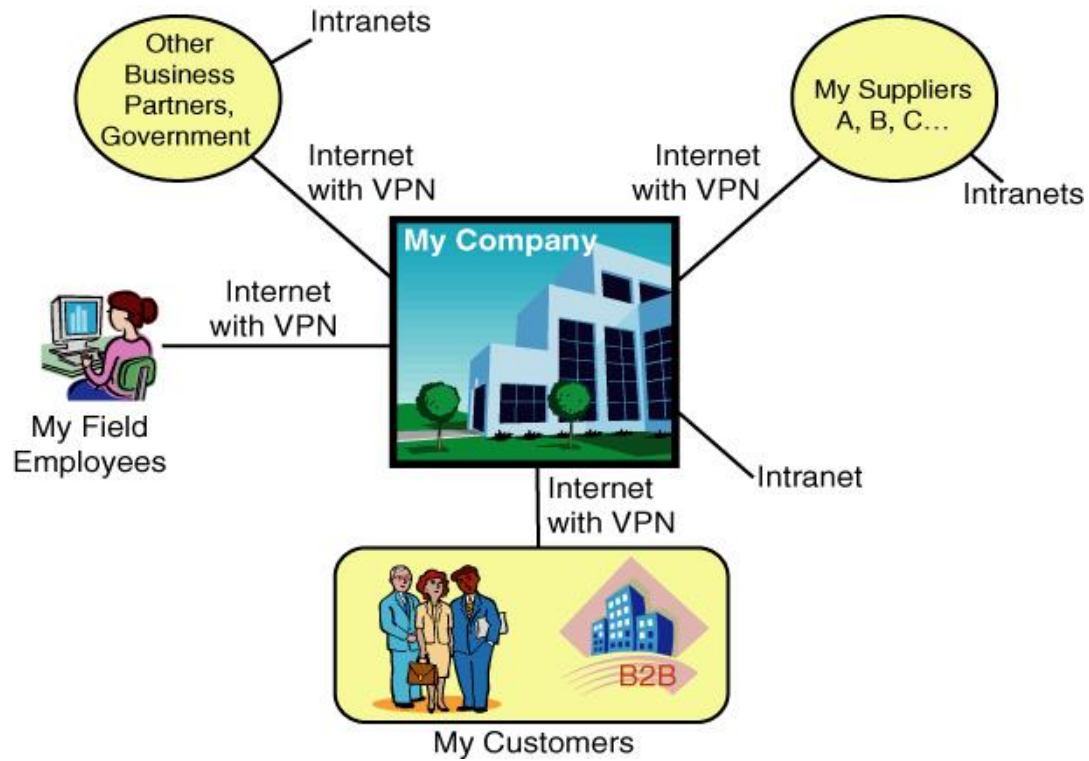
# Benefits

- Match supply to demand

- Reduce inventory levels

- Improve delivery service

- Speed product time to market

- Use assets more effectively

- Reduced supply chain costs lead to increased profitability

- Increased sales

# And how does the future look like ?

# Customer relationship management

# Definition

"It is about capturing and integrating customer data from all over the organization. This is achieved by:

consolidating and analyzing customer data

distributing customer information to various systems and customer touch points across enterprise

providing single enterprise view of customers"

# ERP vs SCM vs CRM
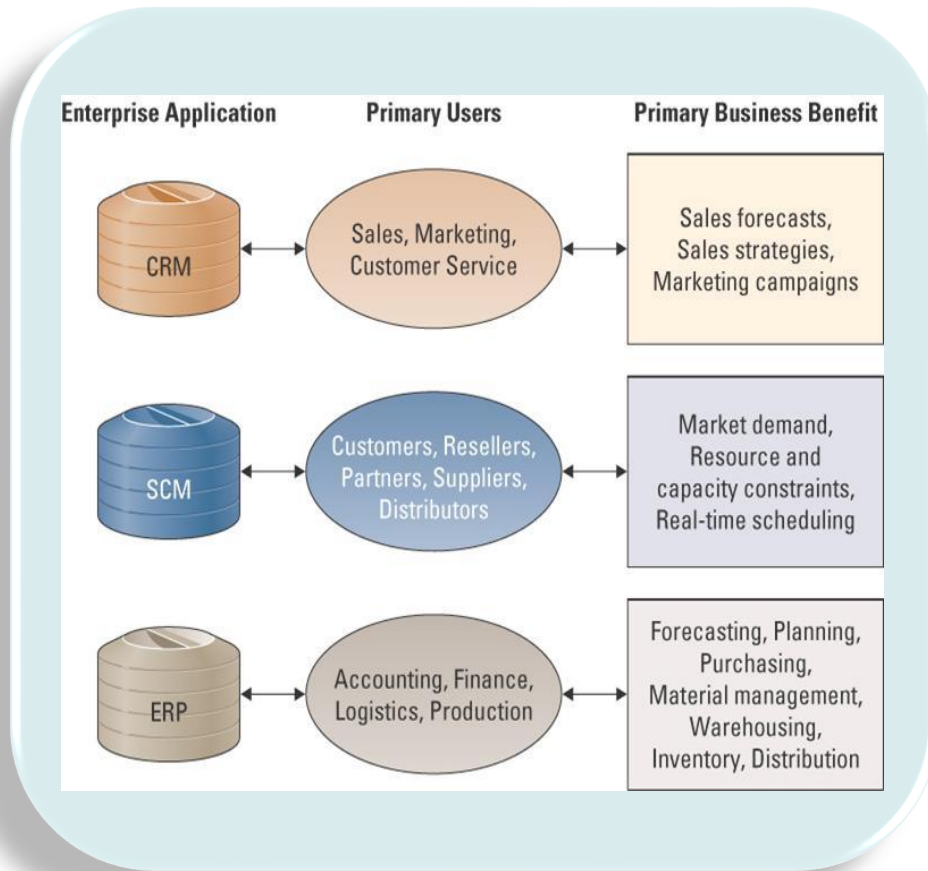


**Comparison**

- ERP is to improve and streamline internal business processes, while

- SCM aims to facilitate the collaboration between the organization, its suppliers, the manufacturers, the distributors and the partners, and

- CRM attempts to enhance the relationship with customers

# Customer touch points
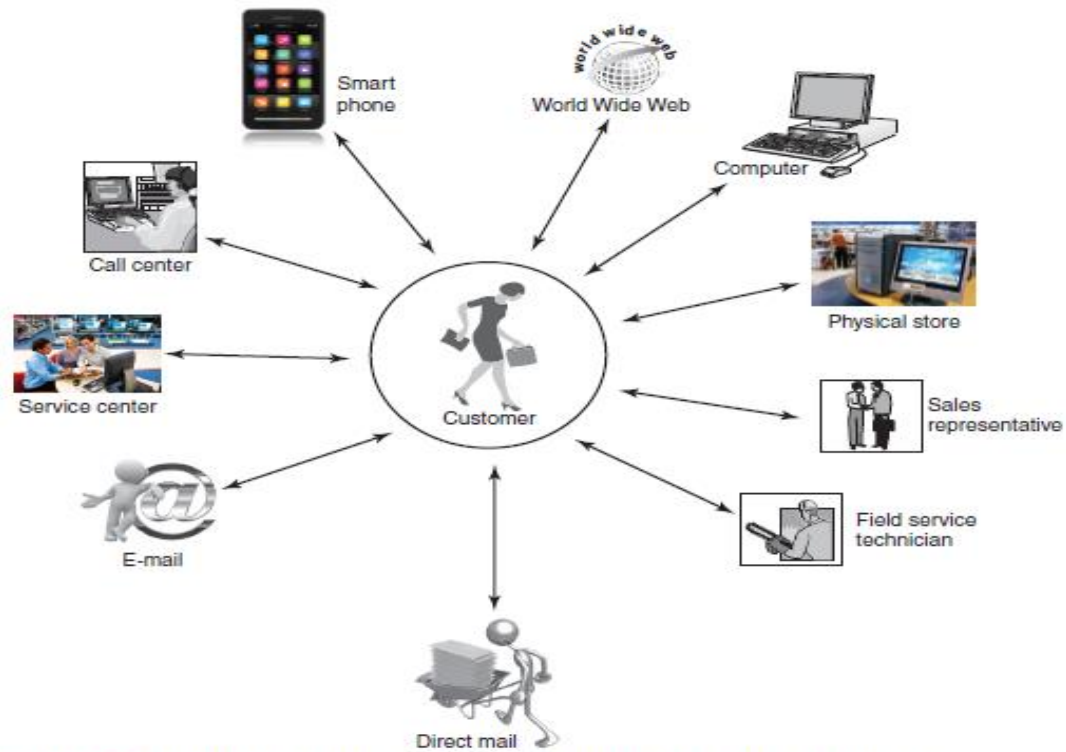
# Why do we need to manage customers ?

- Cost
- Dissatisfied customer impacts
- Increasing the customer retention rate
- Odds of selling to new customers
- Retention of complaining customers

- Do you capture all related information to help you service them in the best possible way or, at least, better than your competitors?
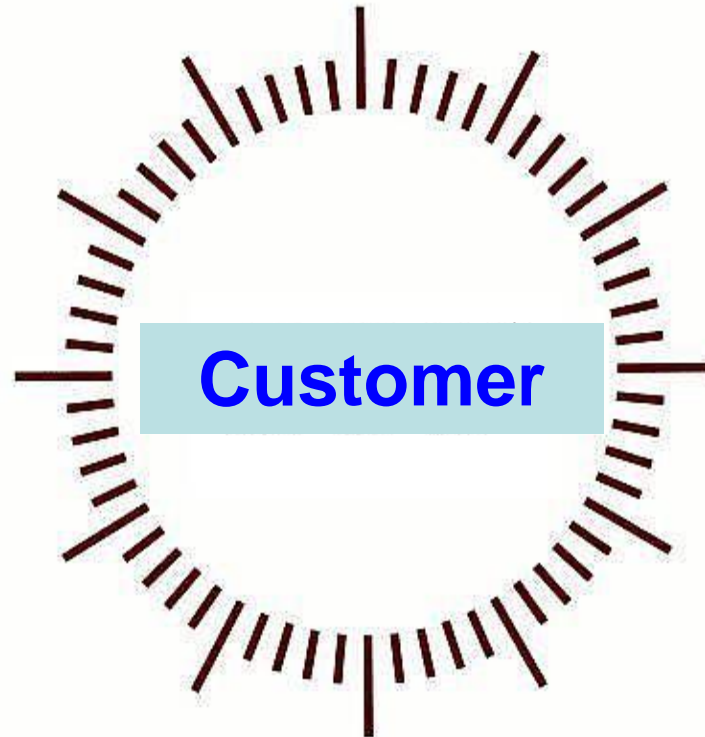
# Value of a customer

- Duration of the relationship

- Number of relationships (e.g. more than one product)

- Profitability of the relationship

- GOAL: Maximize lifetime value of a customer

# Need for 360-degree view of the customer



Accounting

Finance

**Customer**

HR

Marketing

# How do we manage it ?

# A typical CRM system



**More modules**

- Partner relationship management (PRM)
  - Integrating lead generation, pricing, promotions, order configurations, and availability
  - Tools to assess partners' performance

- Employee relationship management (ERM)
  - Performance-based compensation

# How do we manage it ?



**Customer Data**

| Sales | Marketing | Service |
|---|---|---|
| Account Management | Campaign Management | Service Delivery |
| Lead Management | Channel Promotions Management | Customer Satisfaction Management |
| Order Management | Events Management | Returns Management |
| Sales Planning | Market Planning | Service Planning |
| Field Sales | Marketing Operations | Call Center & Help Desk |
| Sales Analytics | Marketing Analytics | Service Analytics |

## CRM software

- It is business process-driven
  - It incorporates best-practices in sales, marketing, customer service

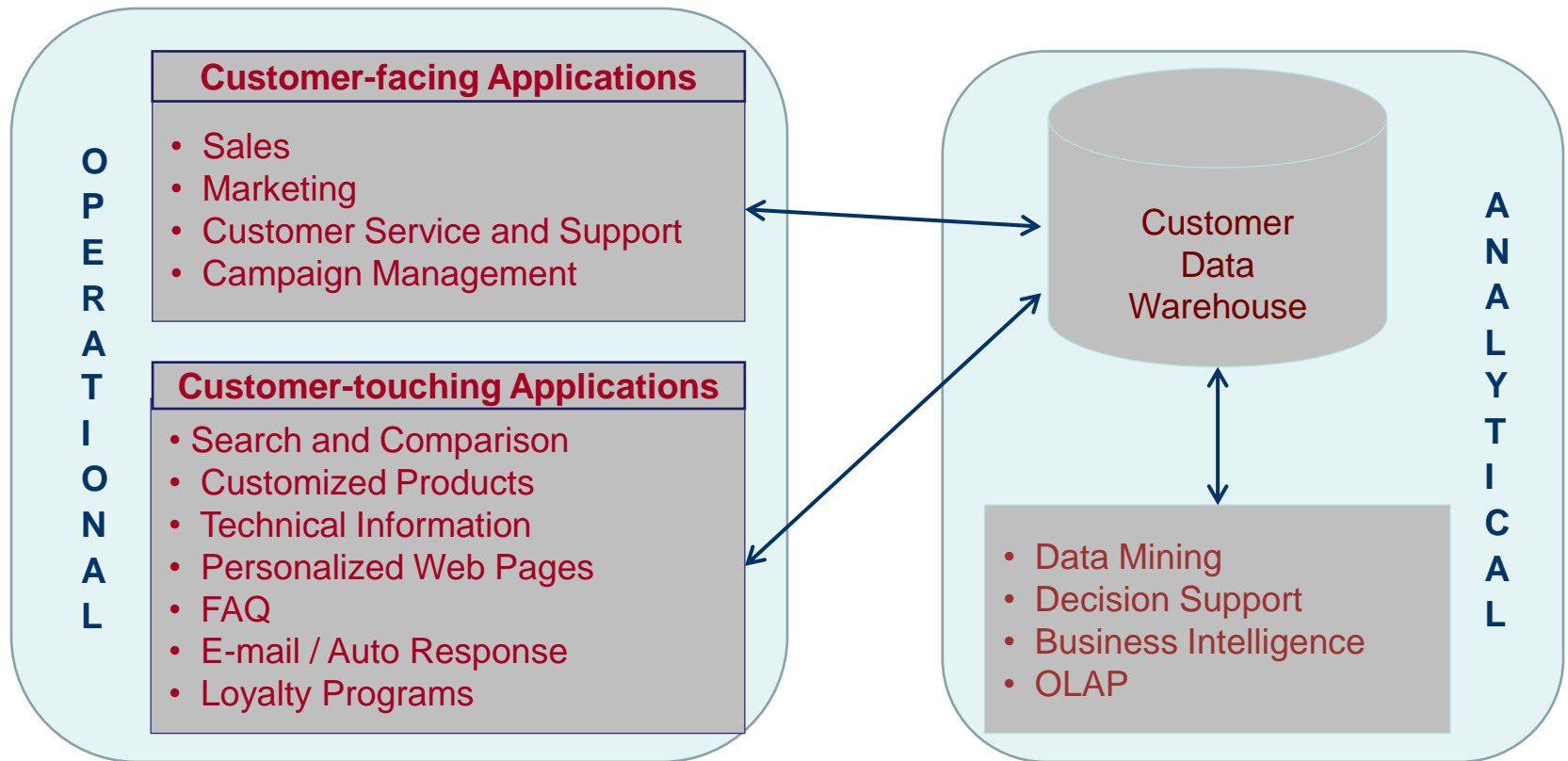- May have to rework internal processes to map onto a CRM system's best-practice process basis

# How do we manage it ?

- Operational CRM systems
    - Customer-facing applications
    - E.g. sales force automation, call center and customer service support, and marketing automation

- Analytical CRM systems
    - Analyze customer data output from operational CRM applications
    - Based on data warehouses populated by operational CRM systems and customer touch points
    - Customer lifetime value (CLTV) = f(revenue produced by customer, expenses for acquiring & servicing, expected lifetime of relationship)

# How do we manage it ?

**O P E R A T I O N A L**

### Customer-facing Applications

- Sales
- Marketing
- Customer Service and Support
- Campaign Management

### Customer-touching Applications

- Search and Comparison
- Customized Products
- Technical Information
- Personalized Web Pages
- FAQ
- E-mail / Auto Response
- Loyalty Programs

Customer Data Warehouse

**A N A L Y T I C A L**

- Data Mining
- Decision Support
- Business Intelligence
- OLAP

# Operational CRM systems

## Customer service/support

- Call center
- Outbound telesales
- Inbound teleservice

## Salesforce automation

- Contact management system
- Sales lead tracking system
- Sales forecasting system
- Product knowledge system
- Configurators

## Marketing

- Cross selling
- Up selling
- Bundling

# Analytical CRM systems
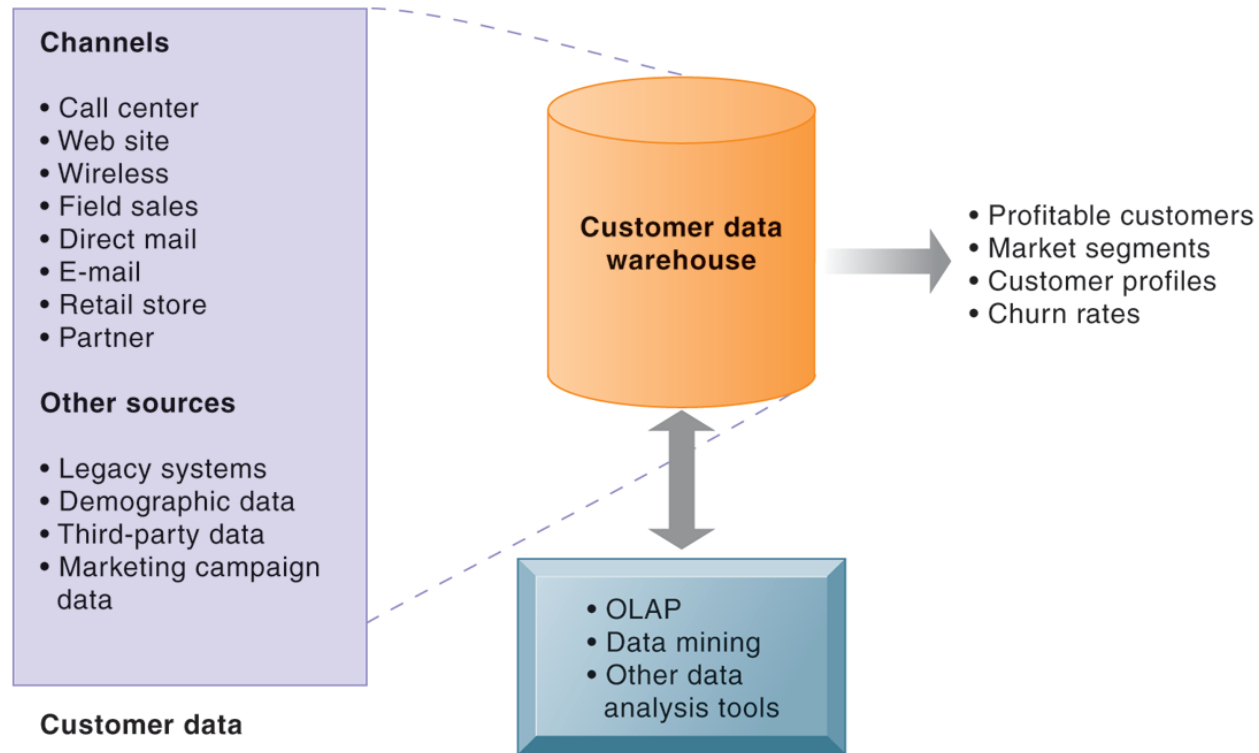
# Other types of CRM systems

- **On-demand CRM**
  - Hosted by an external vendor in the vendor's data center

- **Mobile CRM**
  - Interacting directly with customers through mobile devices

- **Open-source CRM**
  - Source code openly available to developers and users

# Benefits

- Increased customer satisfaction

- More effective marketing

- Lower costs for customer acquisition/retention

- Increased sales revenue

- Reduced churn rate
  - Number of customers who stop using or purchasing products/services from a company
  - Indicator of growth/decline of a firm's customer base

# Challenges

- Social Networks
- News & Bookmarking
- Blogs
- Microblogging
- Video Sharing
- Photo Sharing
- Message boards
- Wikis
- Virtual Reality
- Social Gaming
- Related:
  - Podcasts
  - Real Simple Syndication (RSS)
  - Social Media Press Release