Chapter 7

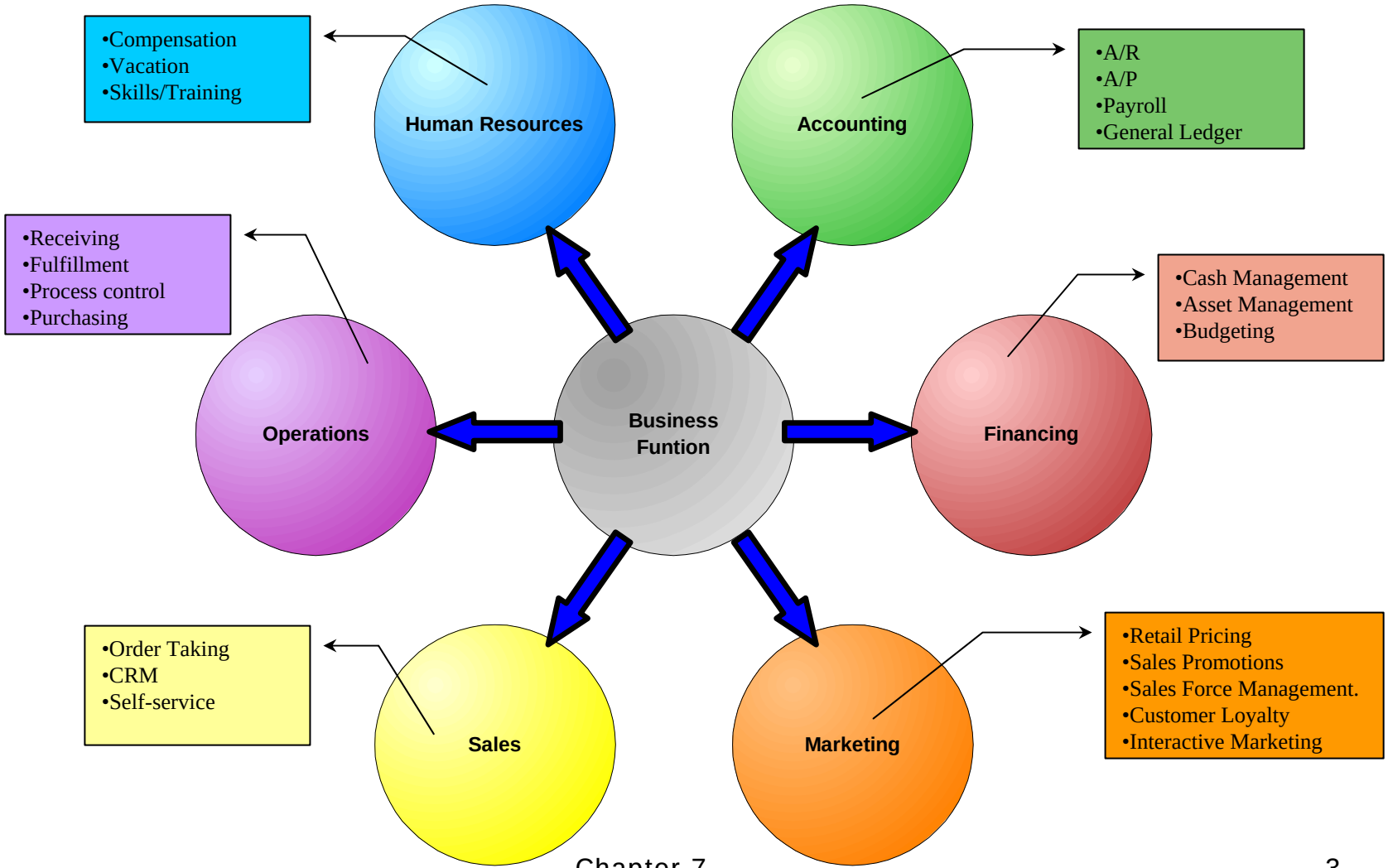
Transaction Processing, Functional Applications, CRM, and Integration

Information Technology For Management 4th Edition
Turban, McLean, Wetherbe
Lecture Slides by A. Lekacos,
Stony Brook University
John Wiley & Sons, Inc.

Chapter Objectives

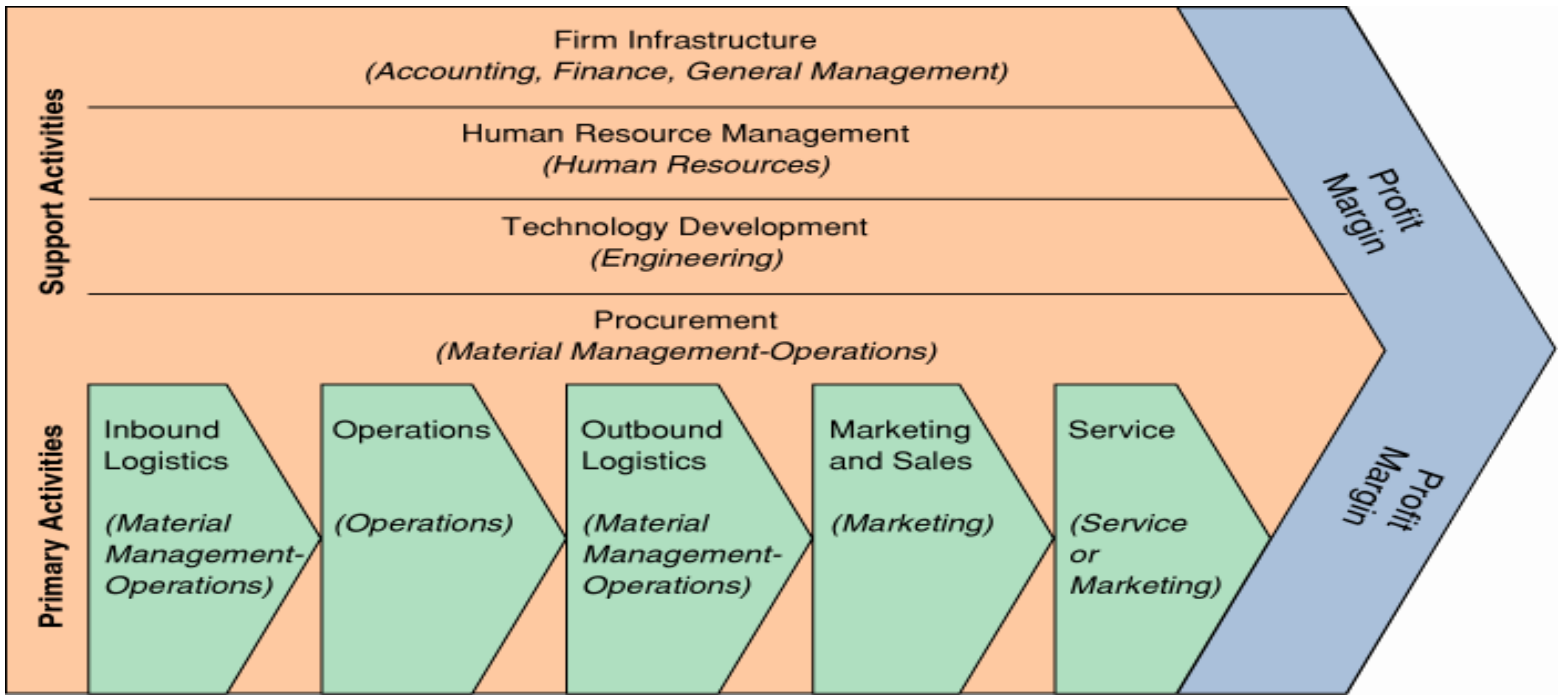
- Relate functional areas and business processes to the value chain model.
- Identify functional management information systems.
- Describe the transaction processing system and demonstrate how it is supported by IT.
- Describe the support provided by IT and the Web to production/operations management, including logistics.
- Describe the support provided by IT and the Web to marketing and sales.
- Describe the support provided by IT and the Web to accounting and finance.
- Describe the support provided by IT and the Web to human resources management.
- Describe the role of IT in facilitating CRM.
- Describe the benefits and issues of integrating functional information systems.

Functional Areas in a Business



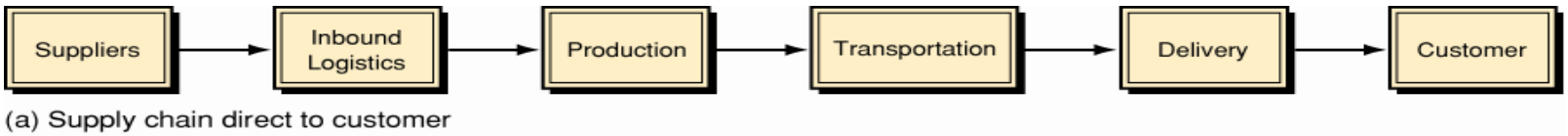
Functional Areas – Value Chain Perspective

The value chain model, views activities in organizations as either primary (*reflecting the flow of goods and services*) or secondary (*supporting the primary activities*). The organizational structure of firms is intended to support both of these types of activities.

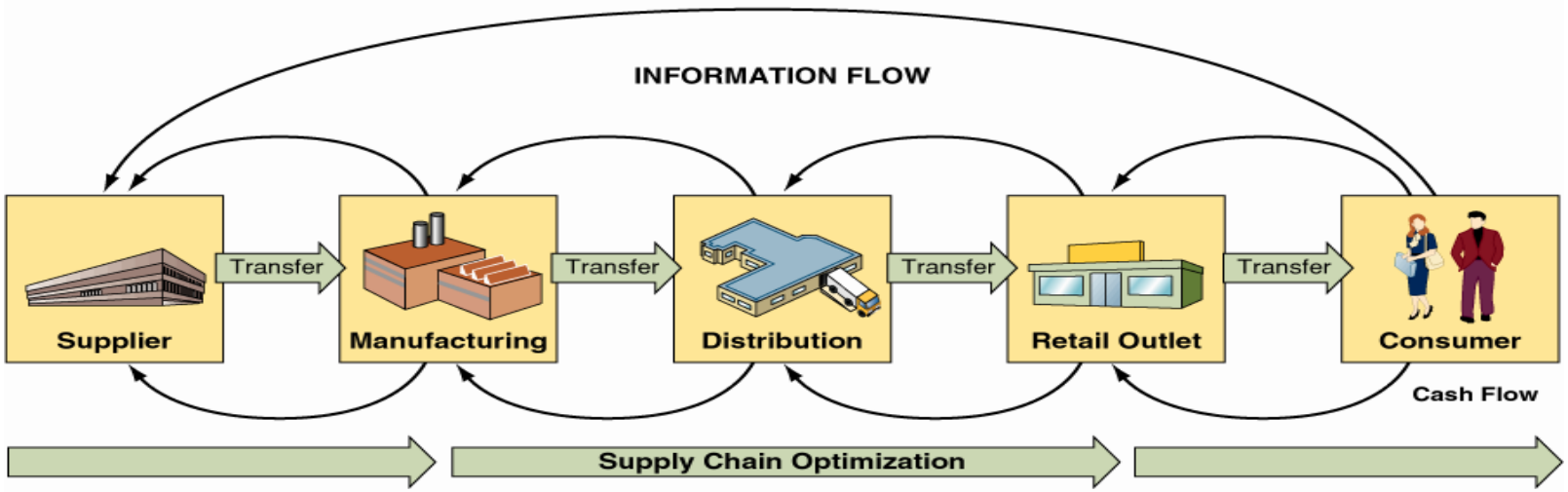


Functional Areas – Supply Chain Perspective

The supply chain is a business process that links all the procurement from suppliers, the transformation activities inside a firm (*the value chain*) and the distribution of goods or services to customers via wholesalers and retailers.

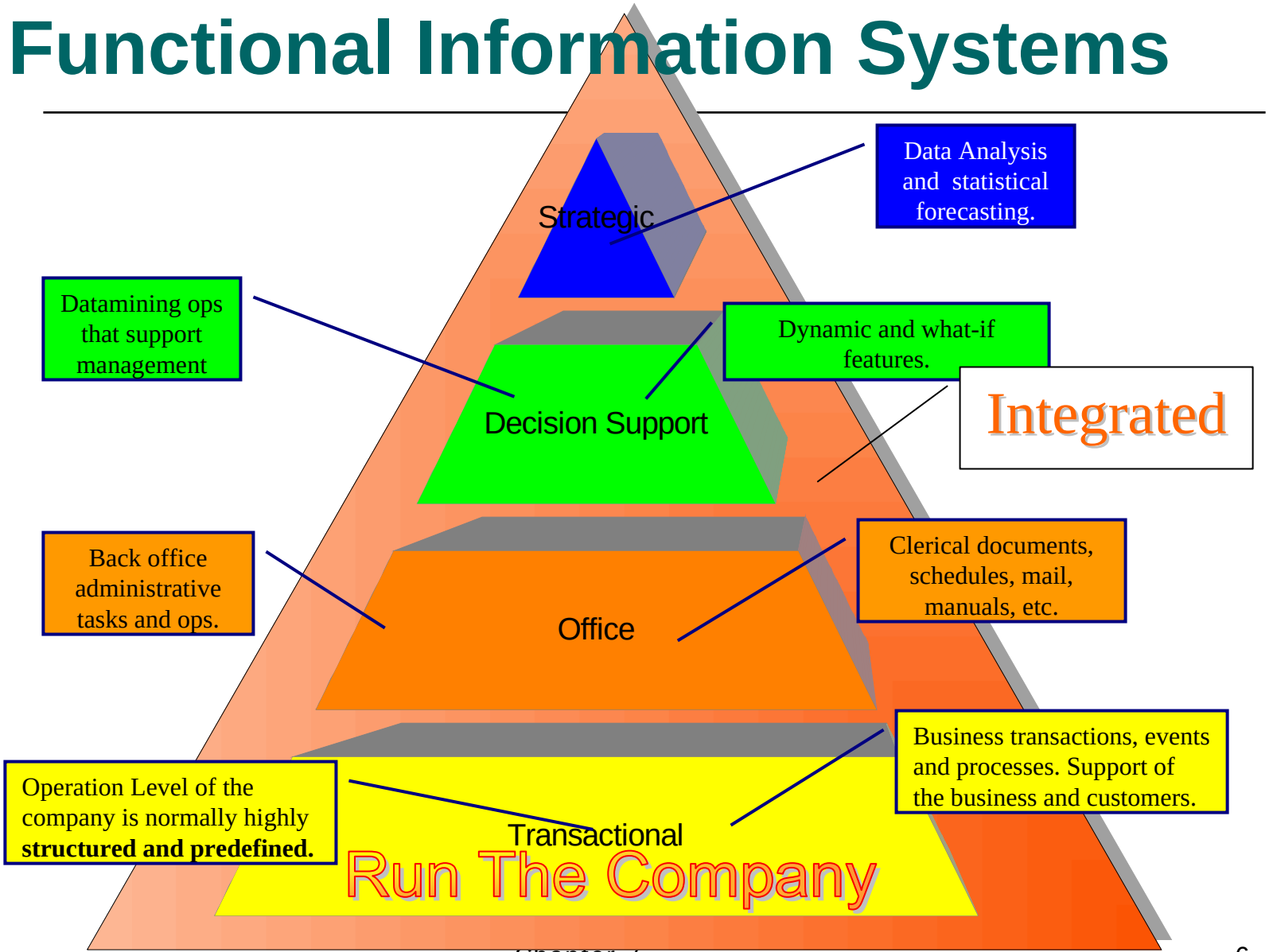


(a) Supply chain direct to customer

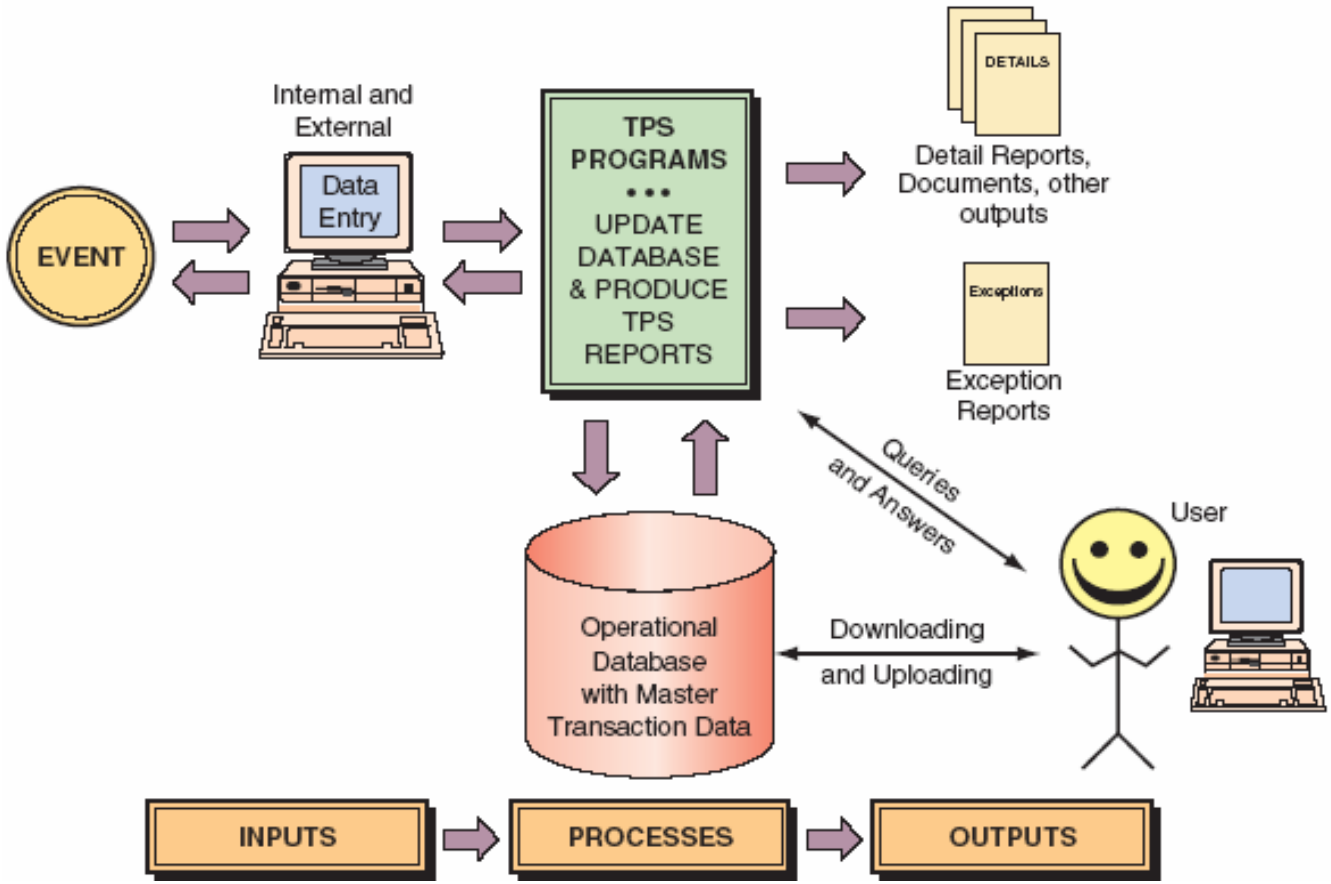


(b) Supply chain including wholesellers (distribution) and retailers

Functional Information Systems



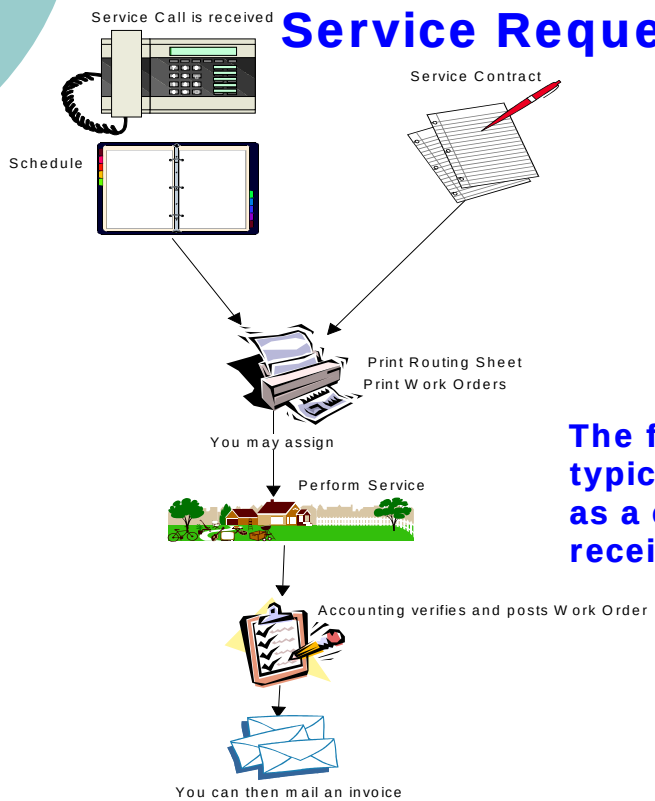
Transaction Processing Information Systems



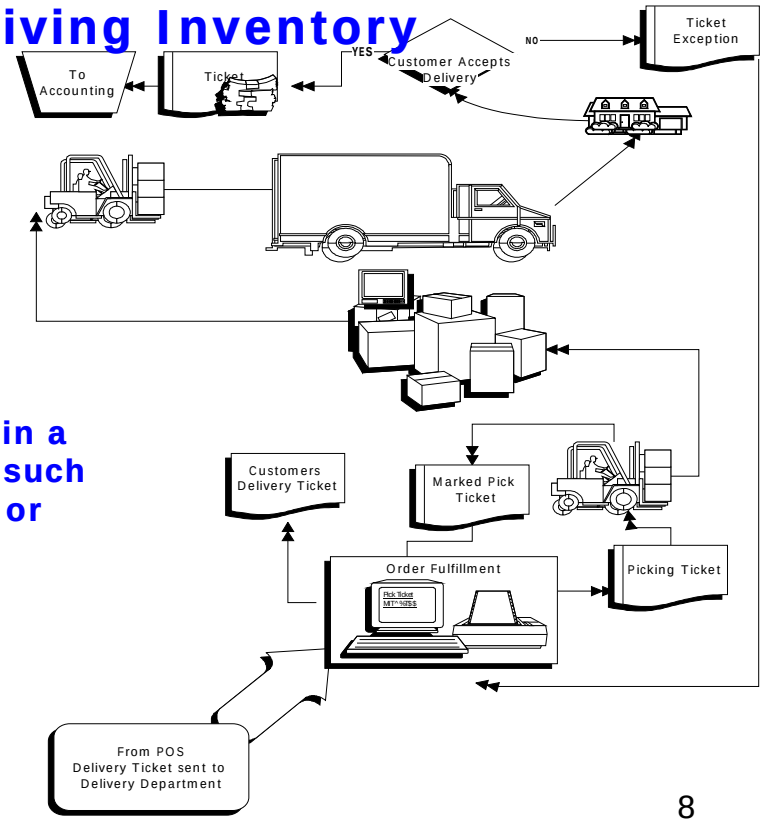
The **primary goal of TPS** is to provide all the information needed to keep the business running properly and efficiently.

TPS – Flow of Information

The processed information can be either a report or an entry in the database. In addition to a scheduled reports, users can query the TPS for ad hoc information. The system will provide the appropriate response by accessing the transaction database.



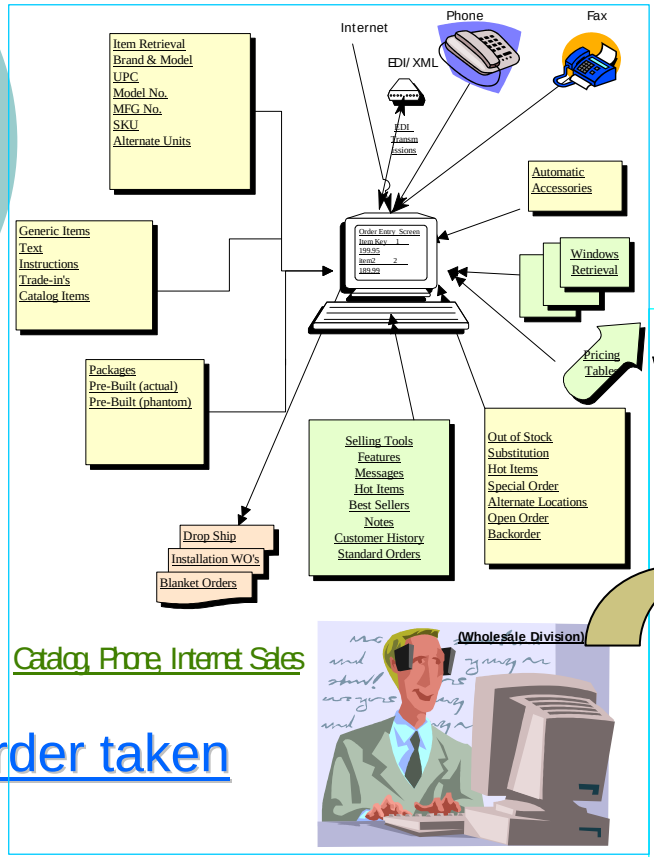
The flow of information in a typical TPS transaction, such as a customer purchase or receiving inventory.

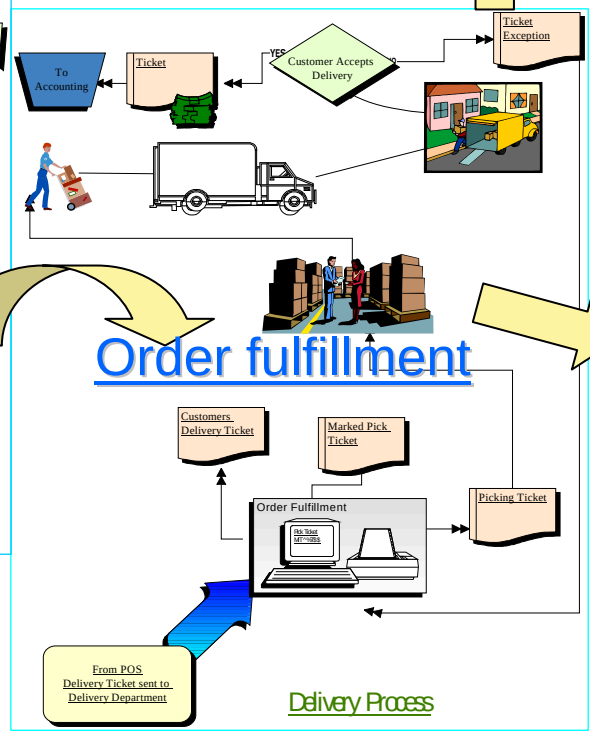


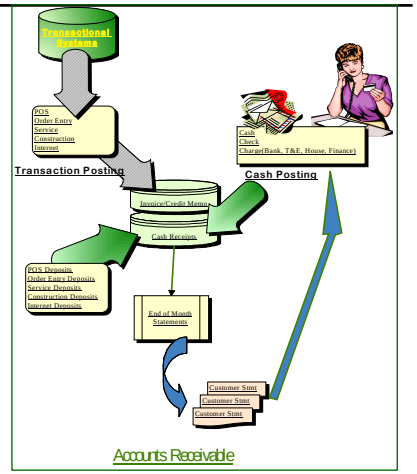
TPS – Online Transaction Processing Systems

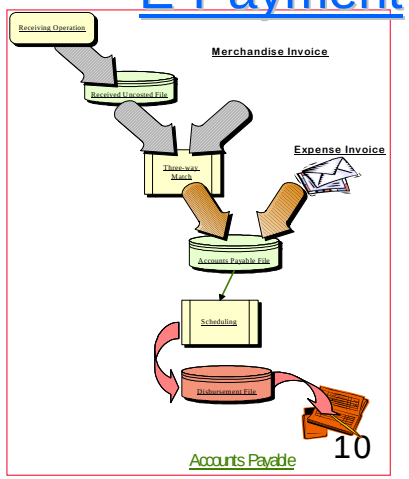
- With OLTP and Web technologies such as an extranet, suppliers can look at the firm's inventory level or production schedule in real time. The suppliers themselves, in partnership with their customers, can then assume responsibility for inventory management and ordering.
- Interactive Internet TPS expands OLTP to provide enhanced real time transaction processing over the Internet or intranets. Multi-store chains can access a centralized computer system no longer requiring in-store processors.

TPS – Typical Transaction Processing (Order)







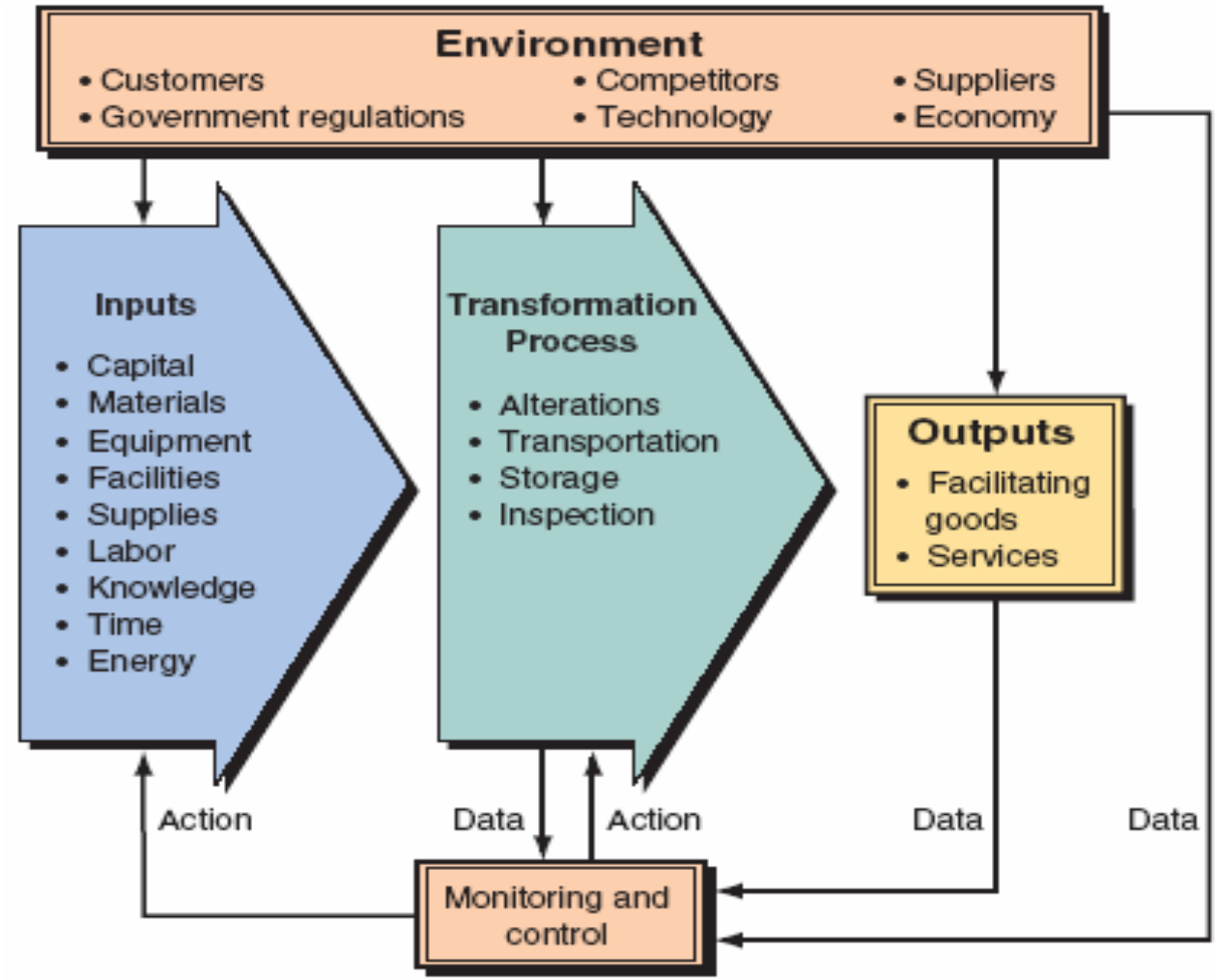


TPS – Managing Production/Operations & Logistics

The production and operations management (POM) function in an organization is responsible for the processes that transform inputs into useful outputs. In comparison to the other functional areas, POM is very diversified as are the supporting TPS. It also differs considerably among organizations.

- A few of the IT supported POM areas are:
  - In-house logistics and materials management
  - Planning production/operations
  - Computer-integrated manufacturing (CIM)
  - Product lifecycle management (PLM
  - Automating design work and manufacturing

TPS – Managing Production/Operations & Logistics



TPS – In-House Logistics & Materials Management

Logistics management deals with ordering, purchasing, inbound logistics (receiving), and outbound logistics (shipping) activities. These logistical activities cross several primary and secondary activities on the value chain.

- Inventory management determines how much inventory to keep. Overstocking can be expensive; so are understock conditions.
- Manufacturing quality-control systems can be stand-alone systems or part of an enterprise-wide total quality management (TQM) effort. They provide information about the quality of incoming material as well as the quality of work-in-process and finished goods.

TPS – Planning Production/Operations

POM planning is a major component of operational systems.

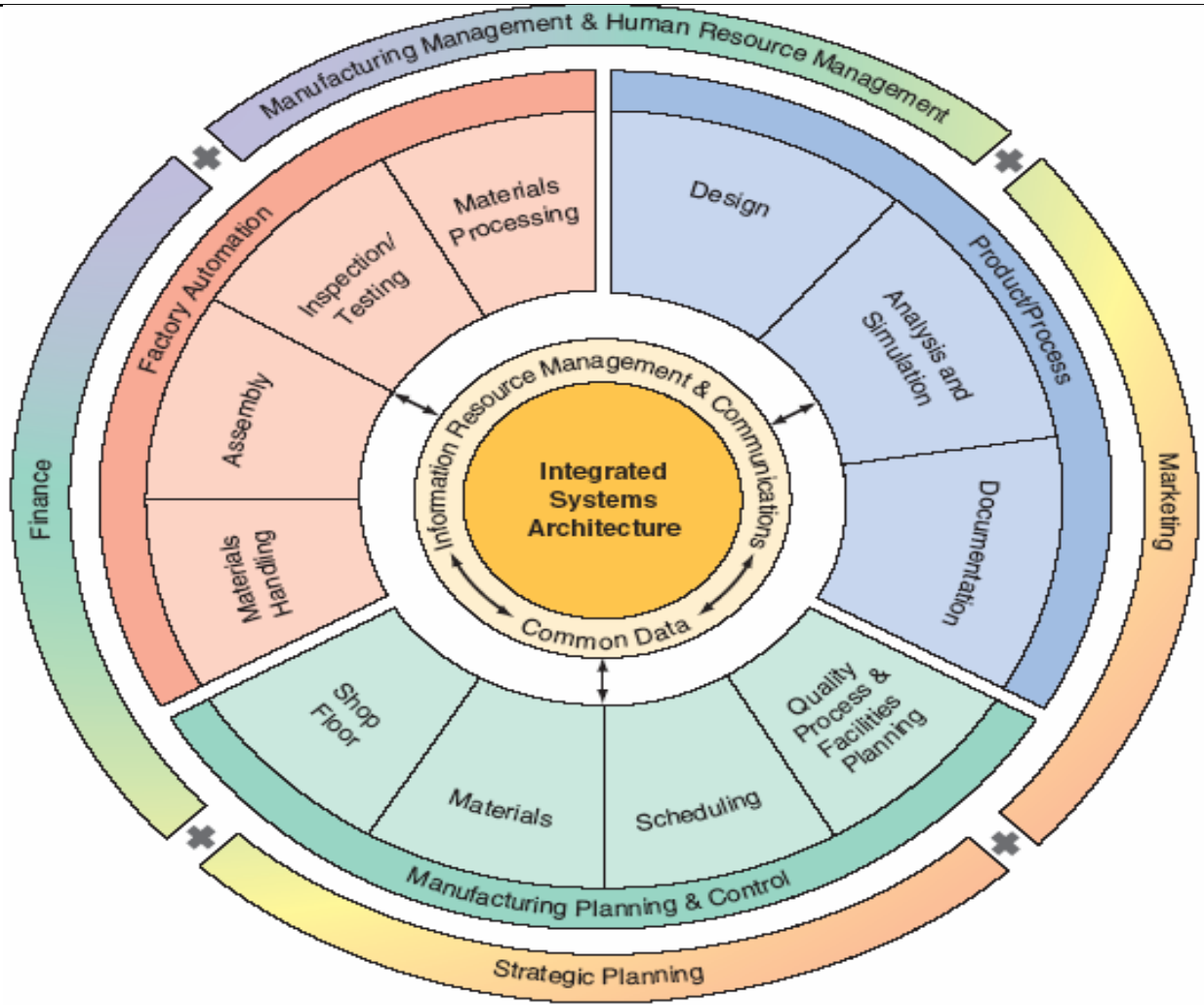
- **Material Requirements Planning (MRP)** is software that facilitates the plan for purchasing or producing parts, subassemblies, or materials in the case of interdependent items. It integrates Master Production Schedules, BOM's and Inventory levels.
- **Manufacturing Resource Planning (MRP II)** adds functionalities to a regular MRP system by determining the costs of parts and the associated cash flow. It also estimates costs of labor, tools, equipment repair, and energy while generating a requirements report.
- **Just-in-Time Systems** is an approach that attempts to minimize waste of all kinds (of space, labor, materials, energy, and so on) and to continuously improve processes and systems. The JIT concept is used in mass customization and build-to-order environments.
- **Project Management.** A project is usually a one-time effort composed of many interrelated activities, costing a substantial amount of money, and lasting for weeks or years. Software tools such as: *program evaluation and review technique (PERT)* and the *critical path method* (*CPM*) are used to manage milestones, resources, costs, etc.
- **Work Management Systems (WMS)** automatically manage the prioritization and distribution of work. These systems deal with resource allocation and reallocation.

TPS – Computer-Integrated Manufacturing

CIM is a concept that promotes the integration of various computerized factory systems. It has three basic goals: (1) the *simplification* of all manufacturing technologies and techniques, (2) *automation* of as many of the manufacturing processes as possible, and (3) *integration and coordination* of all aspects of design, manufacturing, and related functions via computer hardware and software.

- Typical integrated technologies are:
  - FMS - Flexible-manufacturing systems
  - JIT – Just-in-Time
  - MRP – Materials Requirements Planning
  - CAD – Computer Aided Design
  - CAE – Computer Aided Engineering
  - GT - Group technology

TPS – Computer-Integrated Manufacturing

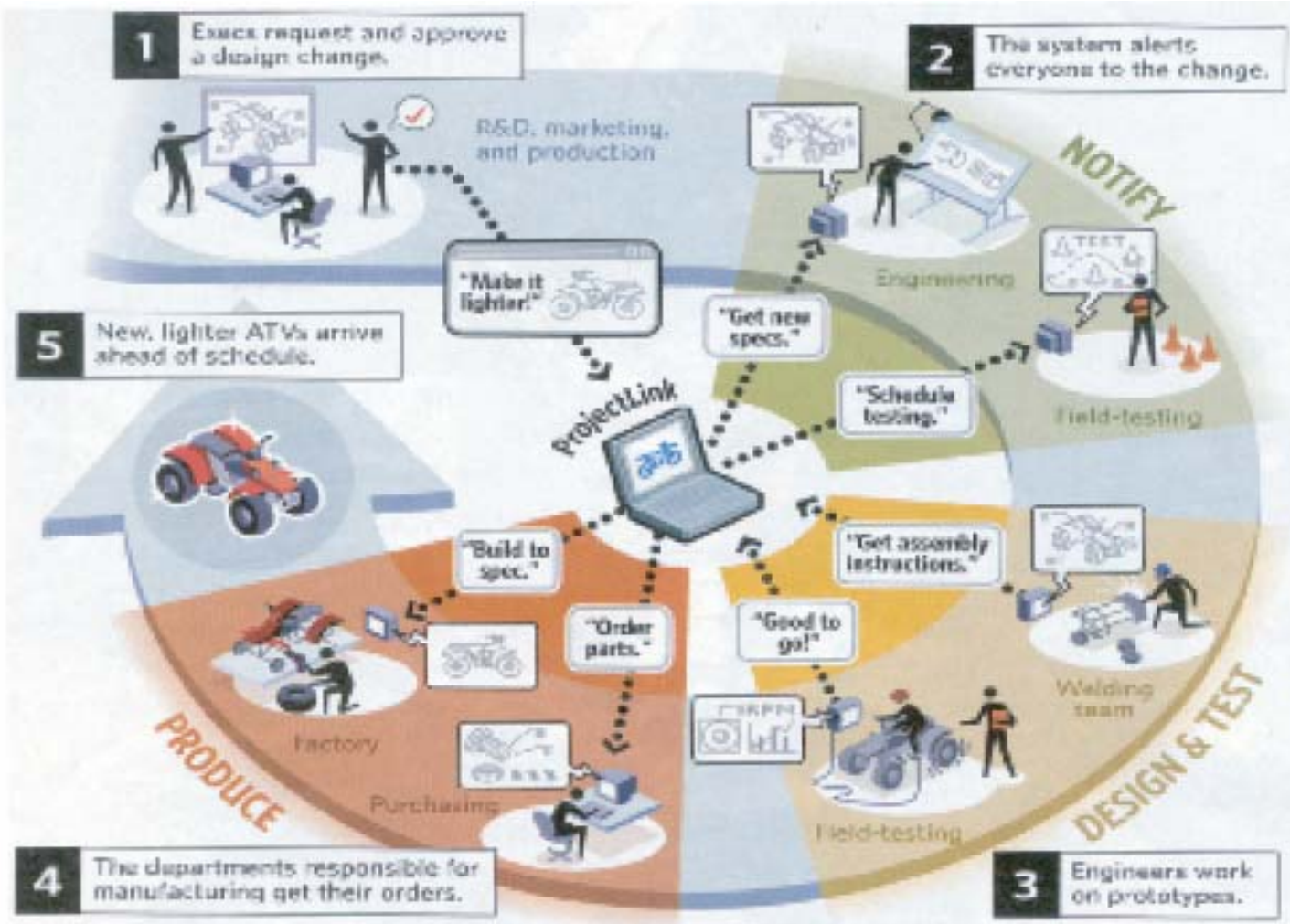


TPS – Product Lifecycle Management

PLM is a business strategy that enables manufacturers to control and share product-related data as part of a products design and development efforts. Web-based supply chains and other technologies are employed to automate this collaborative effort.

- *This electronic-based collaboration can*
  - *reduce product cost*
  - *travel expenses*
  - *reduce costs associated with product-change management*
  - *reduce the time it takes to get a product to market*

TPS – Product Lifecycle Management

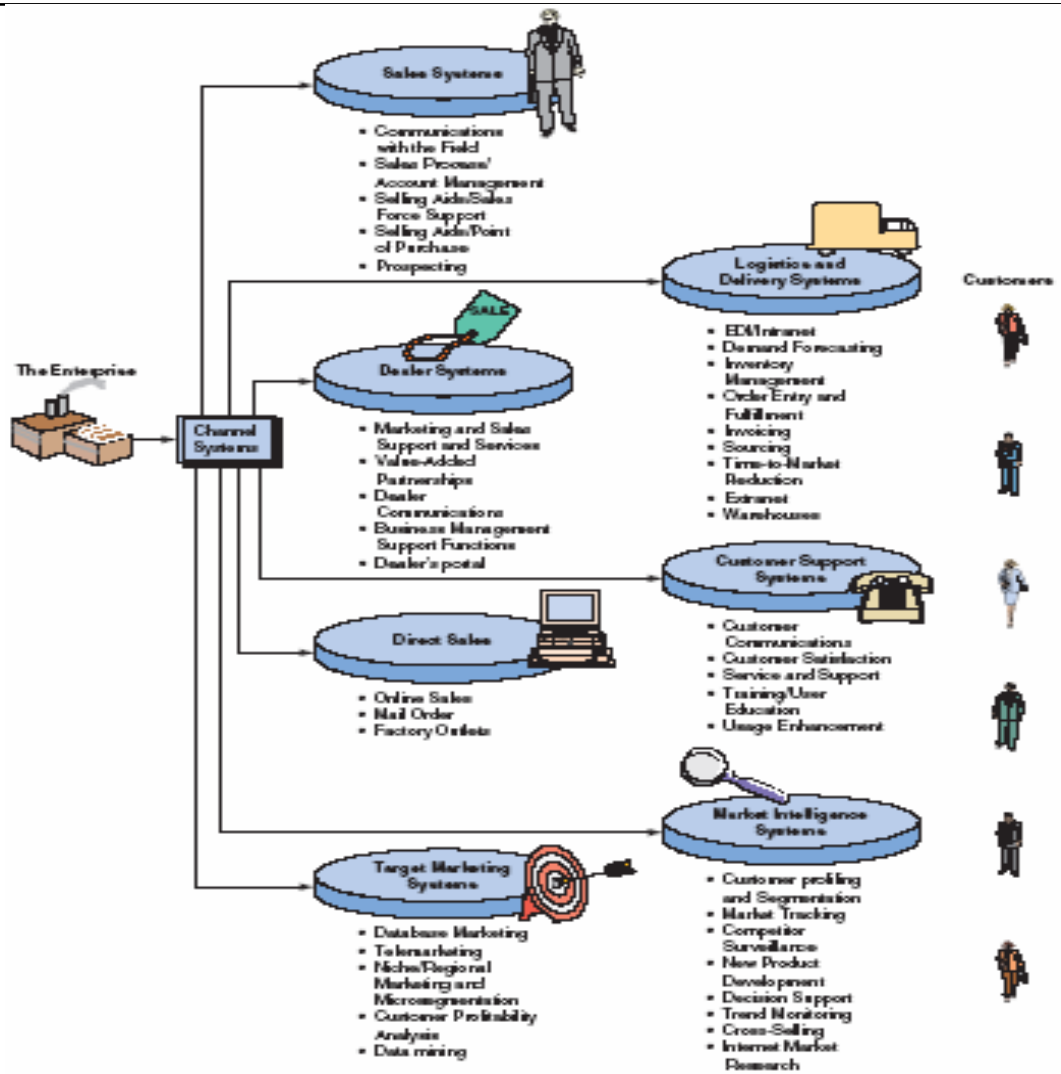


TPS – Marketing and Sales Systems

Channel systems are the TPS involved in the process of getting a product or service to customers and dealing with their needs. These systems link and transform marketing, sales, procurement, logistics, and delivery activities with other corporate functional areas.

- *Some of the channel-system activities are:*
  - customer relations
  - distribution channels and in-store innovations
  - marketing management
  - telemarketing

TPS – Marketing and Sales Systems



TPS – Customer Relations

It is essential for companies to know who their customers are and to treat them properly. Innovative products and services, successful promotions, customization, and customer service are a necessity for most organization.

- **Customer Profiles and Preference Analysis.** Sophisticated information systems are being developed to collect data on existing and potential customers, their demographics (age, gender, income level), and preferences.
- **Prospective Customer Lists and Marketing Databases.** All firms need to know and track who their existing and potential customers are. These prospective-customer lists can be analyzed and sorted by classification for direct mailing, e-mailing, or telemarketing.
- **Mass Customization.** Today's customers prefer customized products. Through *mass customization, the* practice of maintaining WIP inventory, manufacturers can offer different product configurations at reasonable prices.
- **Personalization.** Special product offers are made, based on where the customer spent their time and on what they may have purchased.
- **Advertising and Promotions.** Special promotions, coupons are presented to the customer via mails, email, wireless and pervasive computing applications.

TPS – Distribution Channels & In-Store Innovations

Organizations can distribute their products and services through a variety of delivery channels. A company may use its own outlets, mfg. Representatives or distributors to name a few.

- **IT-Supported Distribution Channels**
  - Internet
  - Location Based Mapping
  - Self-service convenience stores
- **Improving Shopping and Checkout at Retail Stores**
  - Hand-held wireless devices that scan the bar code UPC
  - Smart card or credit card
  - Information kiosk enable customers to view catalogs in stores
  - Self-checkout machines
  - Check-writers attached to cash registers
  - Computerization of various activities in retail stores
  - Video-based systems count and track shoppers in a physical store

TPS – Marketing Management

Many marketing management decision applications are supported by computerized information systems.

- Pricing of Products or Services. Sales volumes are largely determined by the prices of products or services as is profit.
- Salesperson Productivity. Salespeople differ from each other in selling skill. Sales-force automation increases salesperson productivity by providing them with mobile devices, access to information, etc.
- Profitability Analysis profit contribution of certain products and services can be derived from cost-accounting systems
- Sales Analysis And Trends. Marketing TPS collect sales figures that can be searched for trends and relationships.
- New Products, Services, and Market Planning. New products and services can be an expensive risk. “Will it sell?” Requires careful analysis, planning, forecasting and Market research.
- Web-Based Systems support marketing and sales through data capture

TPS – Accounting and Finance Systems

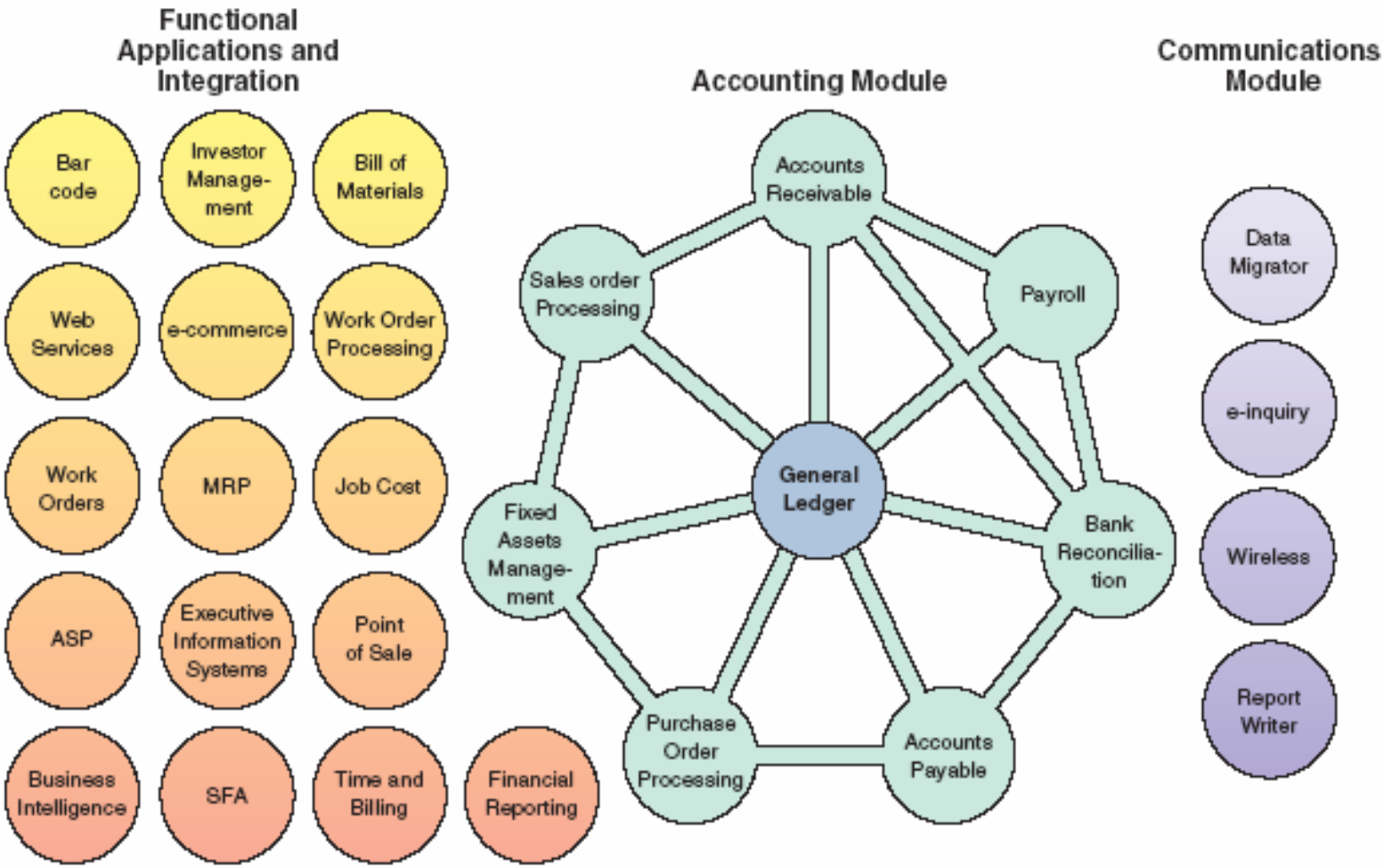
Accounting and finance functional areas manage the inflows and outflow of organizational assets. This involves all functions of an organization including payroll, billing, cash management, etc.

- Financial Planning and Budgeting
  - Financial and Economic Forecasting
  - Planning for Incoming Funds
  - Budgeting
  - Capital Budgeting
- Managing Financial Transactions
  - Financial and Economic Forecasting
  - Planning for Incoming Funds
  - Budgeting
  - Capital Budgeting

TPS – Accounting and Finance Systems Continued

- E-Commerce Applications of Financial Transactions
  - Global stock exchanges and multiple currencies
  - E-Bonds
  - Factoring online
  - Electronic re-presentment of checks
  - Electronic bill presentment and payments
- Virtual Close
- Expense Management Automation
- Investment Management
  - Financial Analysis
  - Access to Financial and Economic Reports
- Control and Auditing
  - Budgetary Control and Auditing
  - Financial Ratio Analysis
  - Profitability Analysis and Cost Control
  - Product Pricing

TPS – Accounting and Finance Systems Continued



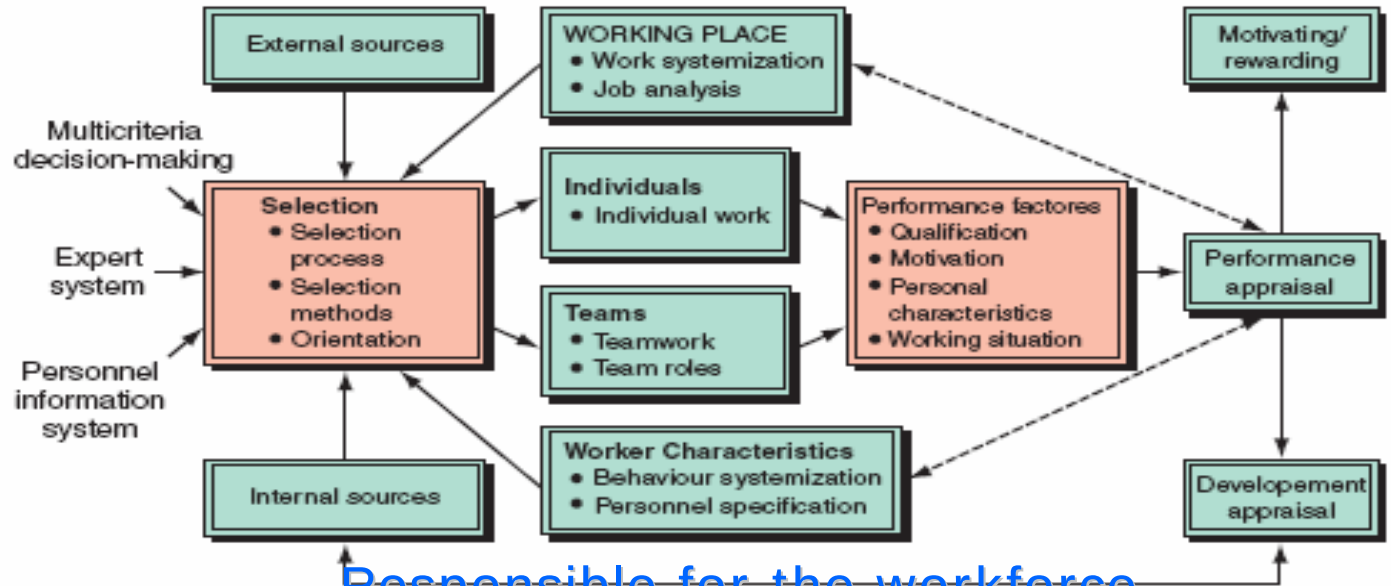
TPS – Human Resources Systems

Web-based systems have increased the popularity of human resources information systems which provide applications mainly related to acquiring, hiring, rewarding, developing, training, protecting and retaining human resources.

- Recruitment is finding employees, testing them, and deciding which ones to hire. The Web has enhanced the recruitment process.
  - Position Inventory
  - HRM Portals and Salary Surveys
  - Employee Selection
- Human Resources Maintenance and Development
  - Performance Evaluation
  - Training and Human Resources Development

TPS – Human Resources Systems continued

- Human Resources Planning and Management
  - Personnel Planning
  - Labor –Management Negotiations
  - Payroll and Employees' Records
  - Benefits Administration
  - Employee Relationship Management



TPS – Customer Relationship Management (CRM)

CRM recognizes that customers are the core of a business and that a company's success depends on effectively managing relationships with them. It focuses on building long-term and sustainable customer relationships that add value both for the customer and the company.

- **Types of CRM**
  - **Operational CRM** is related to typical business functions involving customer services, order management, invoice/billing, etc.
  - **Analytical CRM** involves capture and analysis of customer data.
  - **Collaborative CRM** deals with all the communication, coordination, and collaboration between vendors and customers.

TPS – Customer Relationship Management (eCRM)

CRM has been practiced manually by corporations for generations. However, **eCRM** (electronic CRM) started in the mid-1990s, when customers began using Web browsers, the Internet, and other electronic touch points. The use of these technologies made customer services much more effective and efficient than before. Through these technologies, data generated about customers can be easily supplied to marketing, sales, and customer service applications and analysis.

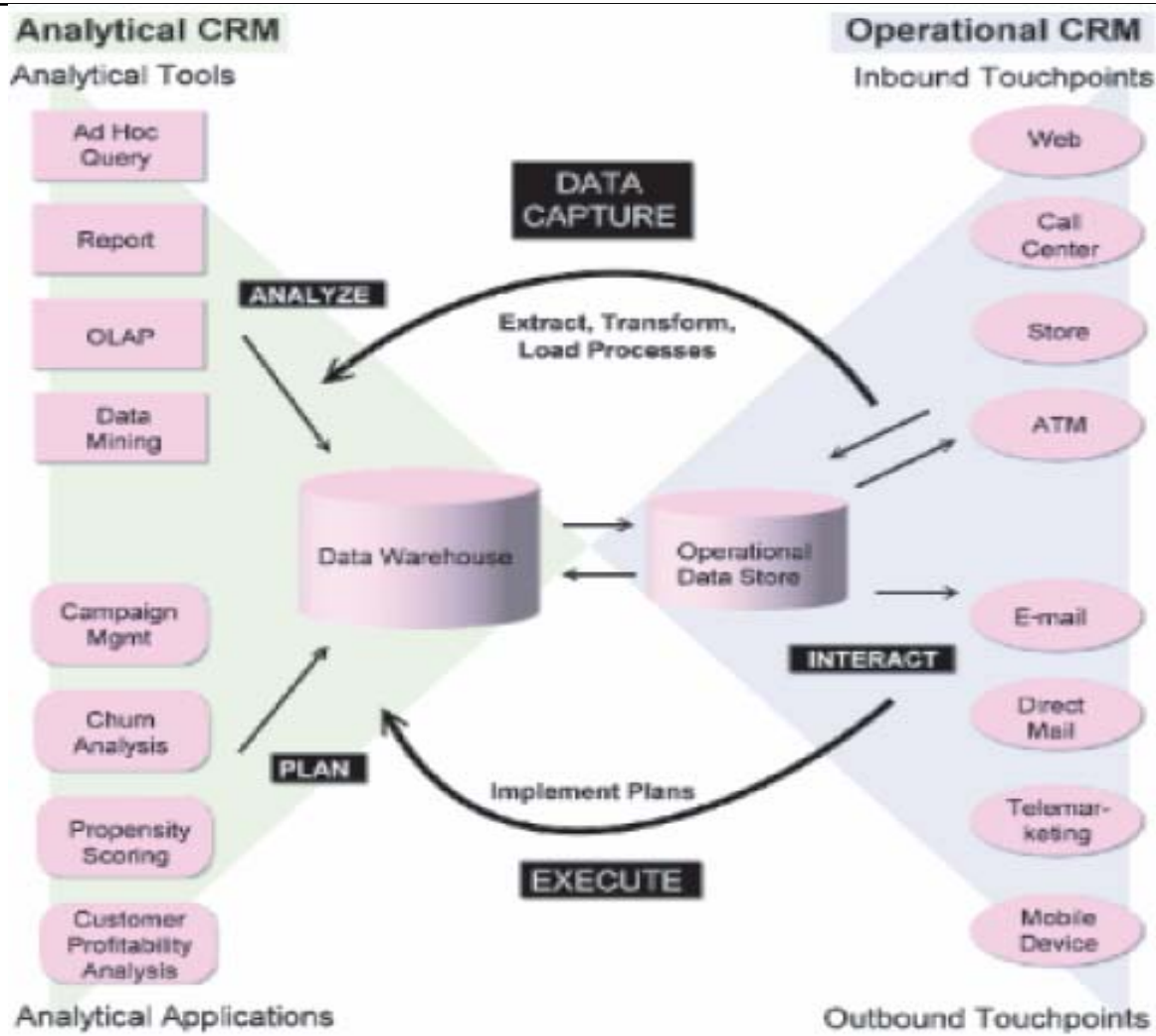
- Scope of eCRM
  - Foundational services, the minimum necessary services such as order fulfillment.
  - Customer-centered services such as order tracking.
  - Value-added services such as online information.

TPS – Customer Relationship Management continued

CRM Activities

- Customer Service on the Web.
  - Search and Comparison Capabilities
  - Free Products and Services
  - Technical and Other Information and Service
  - Allowing Customers to Order Products and Services Online
  - Letting Customers Track Accounts or Order Status
- Tools for Customer Service
  - Personalized Web Pages
  - FAQs
  - Chat Rooms
  - E-Mail and Automated Response
  - Call Centers
  - Troubleshooting Tools
  - Wireless CRM

TPS – Customer Relationship Management continued



TPS – Enterprise Wide Information Systems

Integration of Cross-Functional Information Systems tears down barriers between and among departments & corporate headquarters and reduces duplication of effort.

MANAGERIAL ISSUES

- **Integration of functional information systems.** Integration of existing stand-alone functional information systems is a major problem for many organizations. Although client/server architecture is more amenable to integration than legacy systems, there are still problems of integrating different types of data and procedures used by functional areas. Also, there is an issue of willingness to share information, which may challenge existing practices and cultures.
- **Priority of transaction processing.** Transaction processing may not be an exotic application, but it deals with the core processes of organizations. It must receive top priority in resource allocation, balanced against innovative applications needed to sustain competitive advantage and profitability, because the TPS collects the information needed for most other applications.
- **The customer is king/queen.** In implementing IT applications, management must remember the importance of the customer/end-user, whether external or internal. Some innovative applications intended to increase customers' satisfaction are difficult to justify in a traditional cost-benefit analysis. Empowering customers to enter into a corporate database can make customers happy since they can conduct self-service activities such as configuration and tracking and get quick answers to their queries. Self-services can save money for a company as well, but it may raise security and privacy concerns. Corporate culture is important here, too. Everyone in the organization must be concerned about customers. Management should consider installing a formal CRM program for this purpose.

MANAGERIAL ISSUES Continued

- **Finding innovative applications.** Tools such as Lotus Notes, corporate portals, and Web-based business intelligence enable the construction of many applications that can increase productivity and quality. Finding opportunities for such applications can best be accomplished cooperatively by end users and the IS department.
- **Using the Web.** Web-based systems should be considered in all functional areas. They are effective, cost relatively little, and are user friendly. In addition to new applications, companies should consider conversion of existing applications to Web-based ones.
- **System integration.** Although functional systems are necessary, they may not be sufficient if they work independently. It is difficult to integrate functional information systems, but there are several approaches to doing so. In the future, Web services could solve many integration problems, including connecting to a legacy system.
- **Ethical issues.** Many ethical issues are associated with the various topics of this chapter. Professional organizations, either relating to the functional areas (e.g., marketing associations) or in topical areas such as CRM, have their own codes of ethics. These codes should be taken into account in developing functional systems. Likewise, organizations must consider privacy policies. Several organizations provide comparisons of privacy policies and other ethical-related topics.

Chapter 7

Back-ordering Cycle

- **Backorder** is a distribution term that refers to the status of items on a purchase order in the event that some or all of the inventory required to fulfill the order is out of stock. This differs from a forward order where stock is available but delivery is postponed for another reason.
- Different computer systems will handle back orders in different ways. Typically received stock is allocated first to back orders. These orders are then available to be fulfilled in the normal way.