KEY SYSTEMS APPLICATIONS

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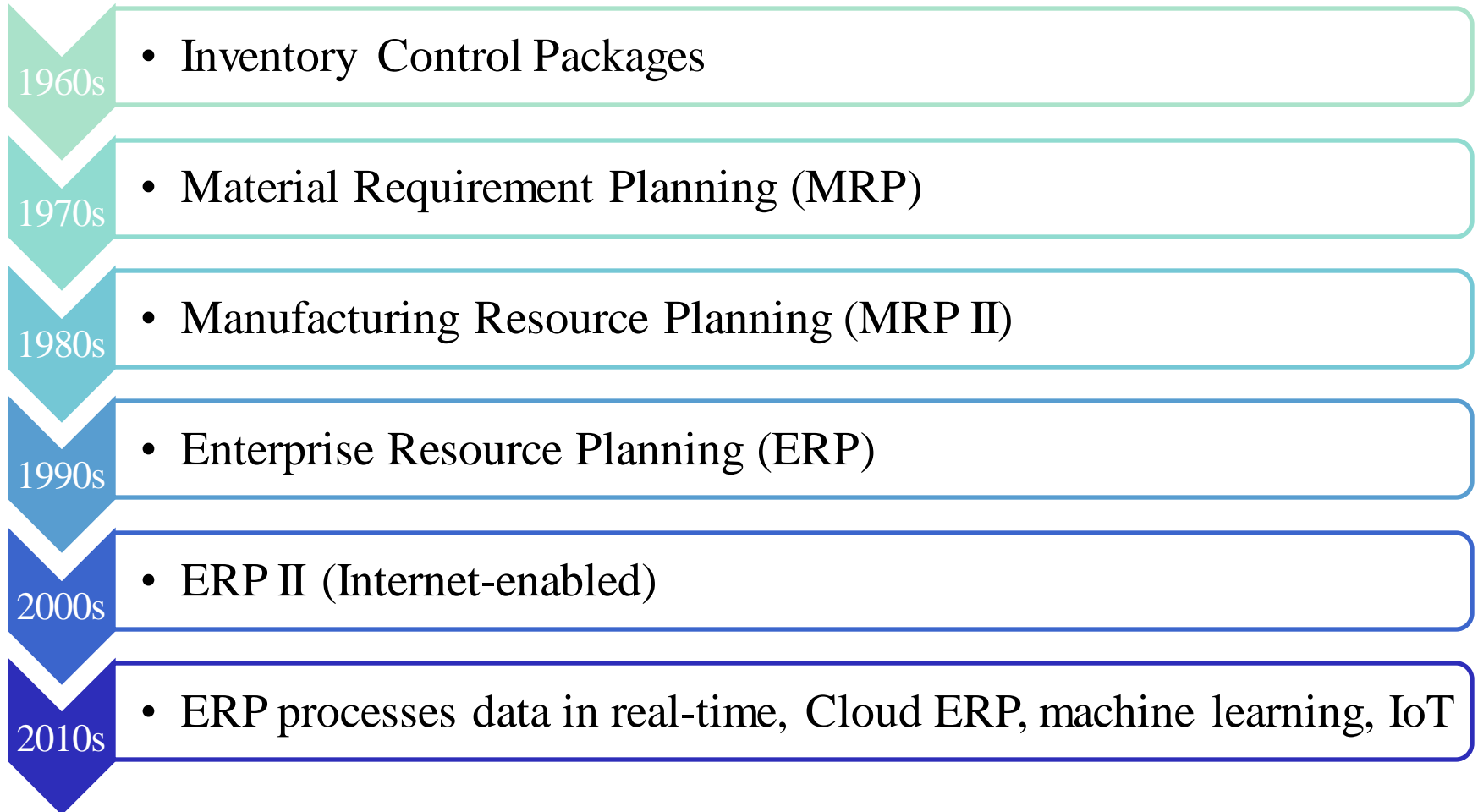# Learning Goals

Students will be able to:

- Describe and analyze IT in the context of society and organizations

- Propose, select, choose and build solutions of IT infrastructure and **IT applications**

- Reflect and evaluate IT management and development

Index

1. Enterprise Applications
2. E-commerce
3. Managing Knowledge and Artificial Intelligence
4. Enhancing Decision Making

Enterprise Applications

The Evolution of Enterprise Systems

1960s
- Inventory Control Packages

1970s
- Material Requirement Planning (MRP)

1980s
- Manufacturing Resource Planning (MRP II)

1990s
- Enterprise Resource Planning (ERP)

2000s
- ERP II (Internet-enabled)

2010s
- ERP processes data in real-time, Cloud ERP, machine learning, IoT

ERP: Big International Players

ERP: Portuguese Players
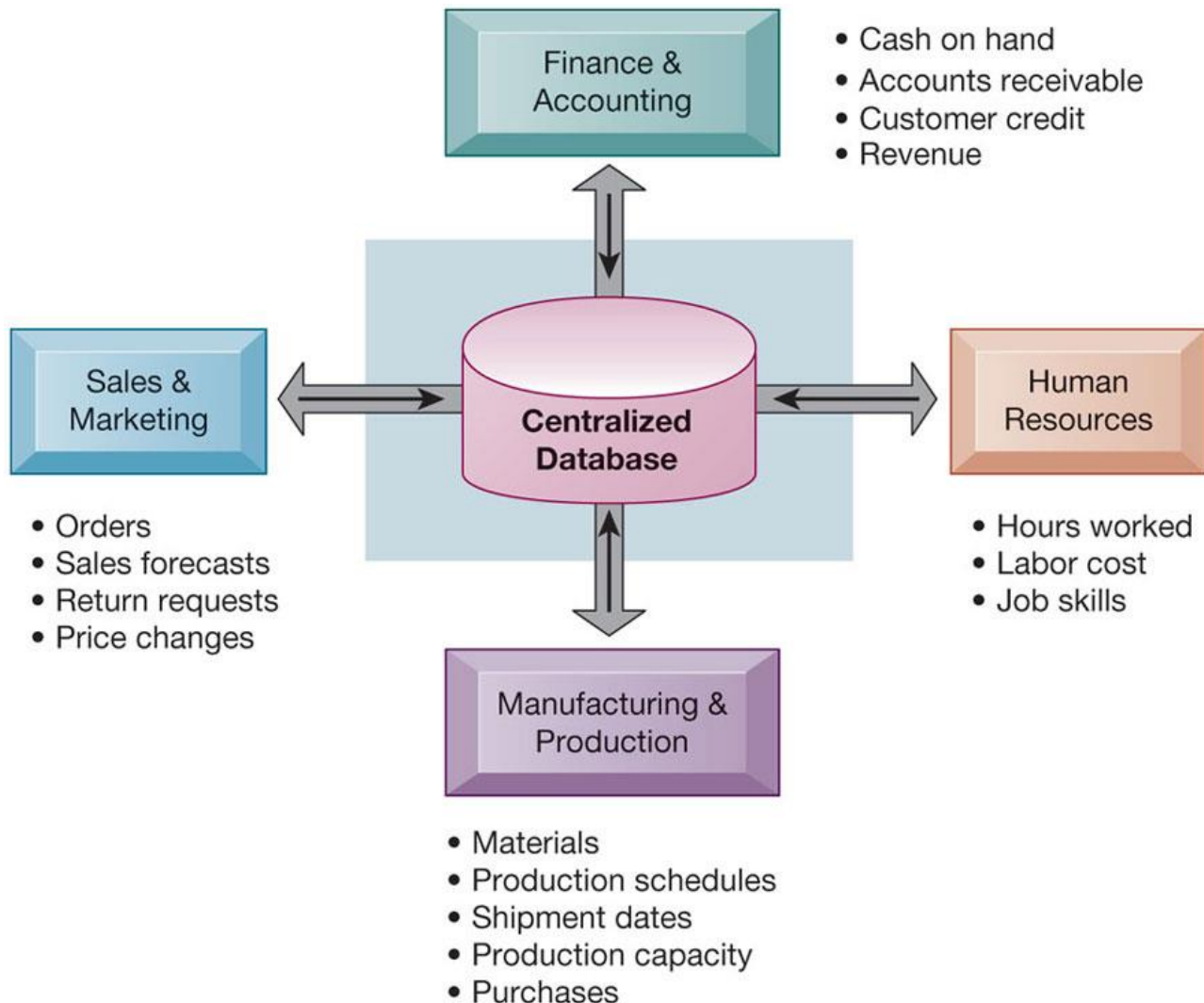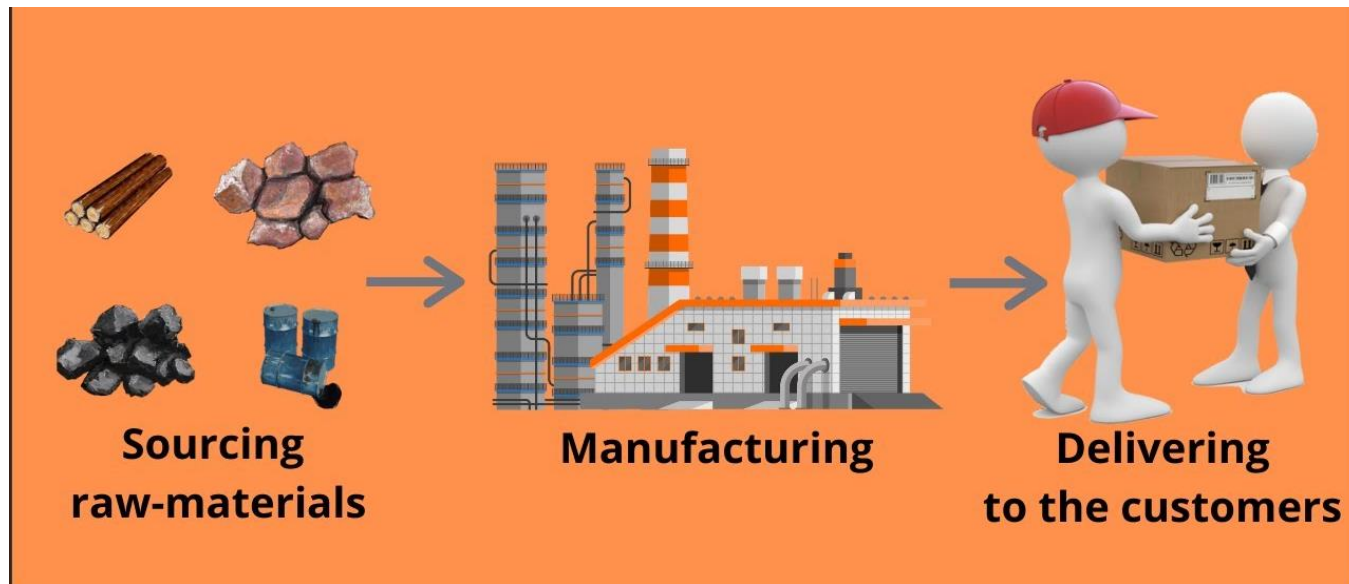
ERP Open Source

Enterprise systems
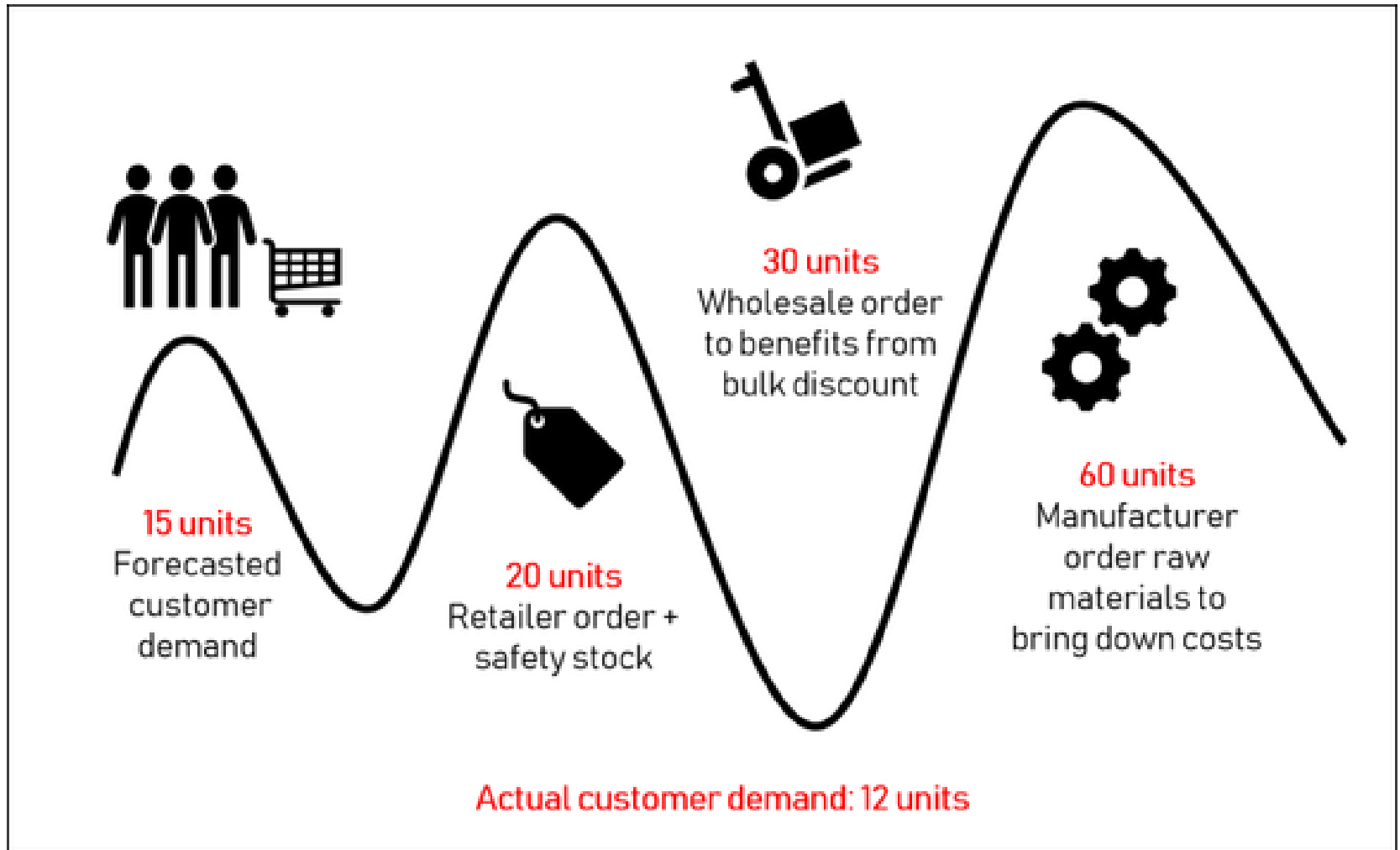
Supply Chain Management (SCM) systems

- The management of the flow of goods and services
- Includes all processes that transform raw materials into final products from the procurement of raw materials to the delivery of the product to its final destination.
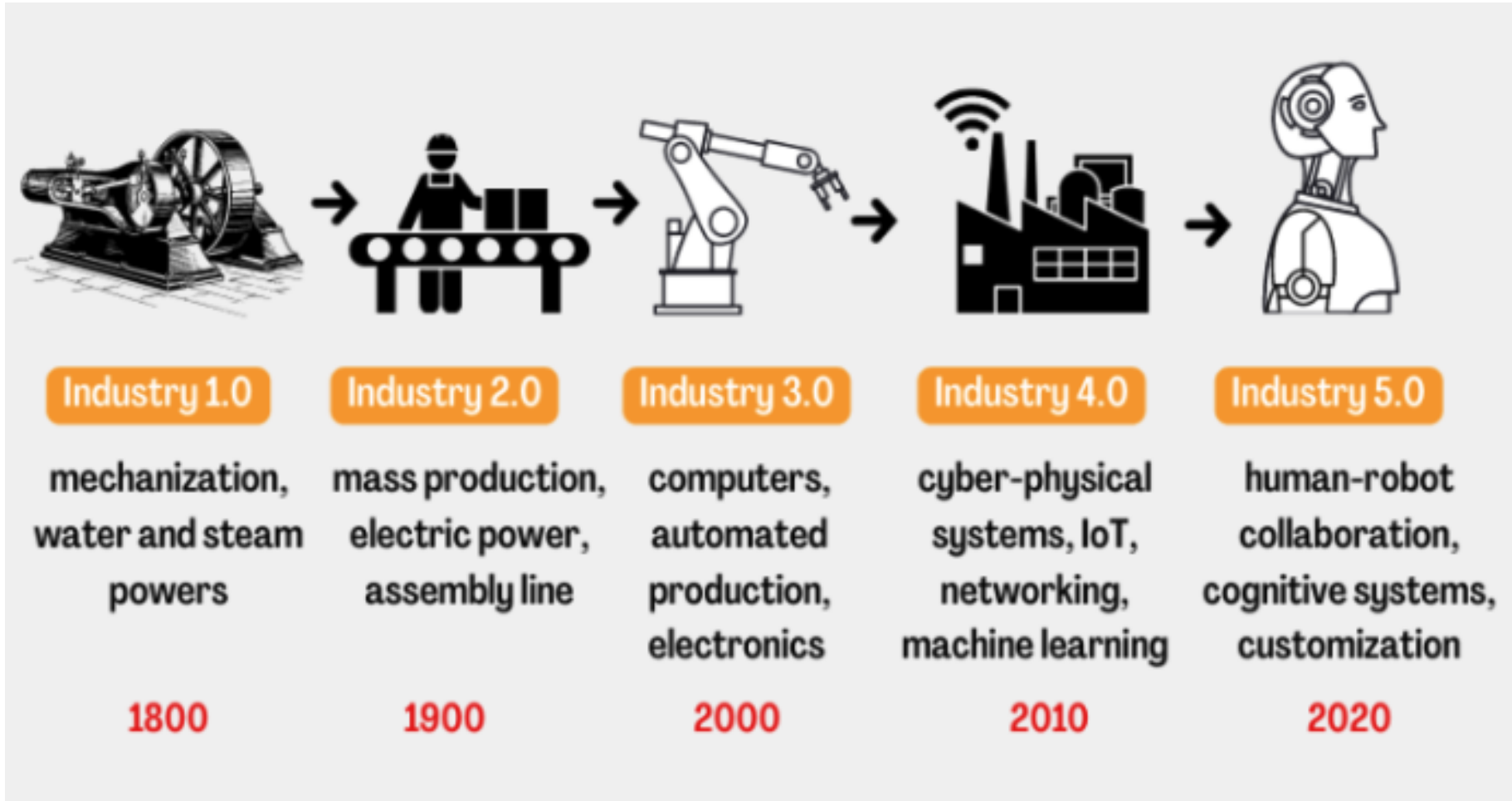

Sourcing raw-materials → Manufacturing → Delivering to the customers

Five parts of SCM

Bullwhip Effect

15 units
Forecasted customer demand

20 units
Retailer order + safety stock

30 units
Wholesale order to benefits from bulk discount

60 units
Manufacturer order raw materials to bring down costs

Actual customer demand: 12 units

Industrial Revolution

Industry 1.0	Industry 2.0	Industry 3.0	Industry 4.0	Industry 5.0
mechanization, water and steam powers	mass production, electric power, assembly line	computers, automated production, electronics	cyber-physical systems, IoT, networking, machine learning	human-robot collaboration, cognitive systems, customization
1800	1900	2000	2010	2020

Customer Relationship Management (CRM)

# CRM Delivery Processes (1)

- Campaign Management
    - To generate leads or potential clients

- Sales Management
    - To convert lead into potential clients

- Service Management
    - Provide ongoing support for the client and assist in the operation of product or services

- Complaint Management
    - To improve customer satisfaction

CRM Delivery Processes (2)

- Market Research
  - Focuses on systematic design, collection, analysis and reporting of data relative to sales activity

- Loyalty Management
  - Provides the processes to optimize the duration and intensity of relationships with customers

- Customer Profiling
  - Marketing profile of every customer

- Feedback Management
  - Gather, analyze and share customer information

Analytical CRM
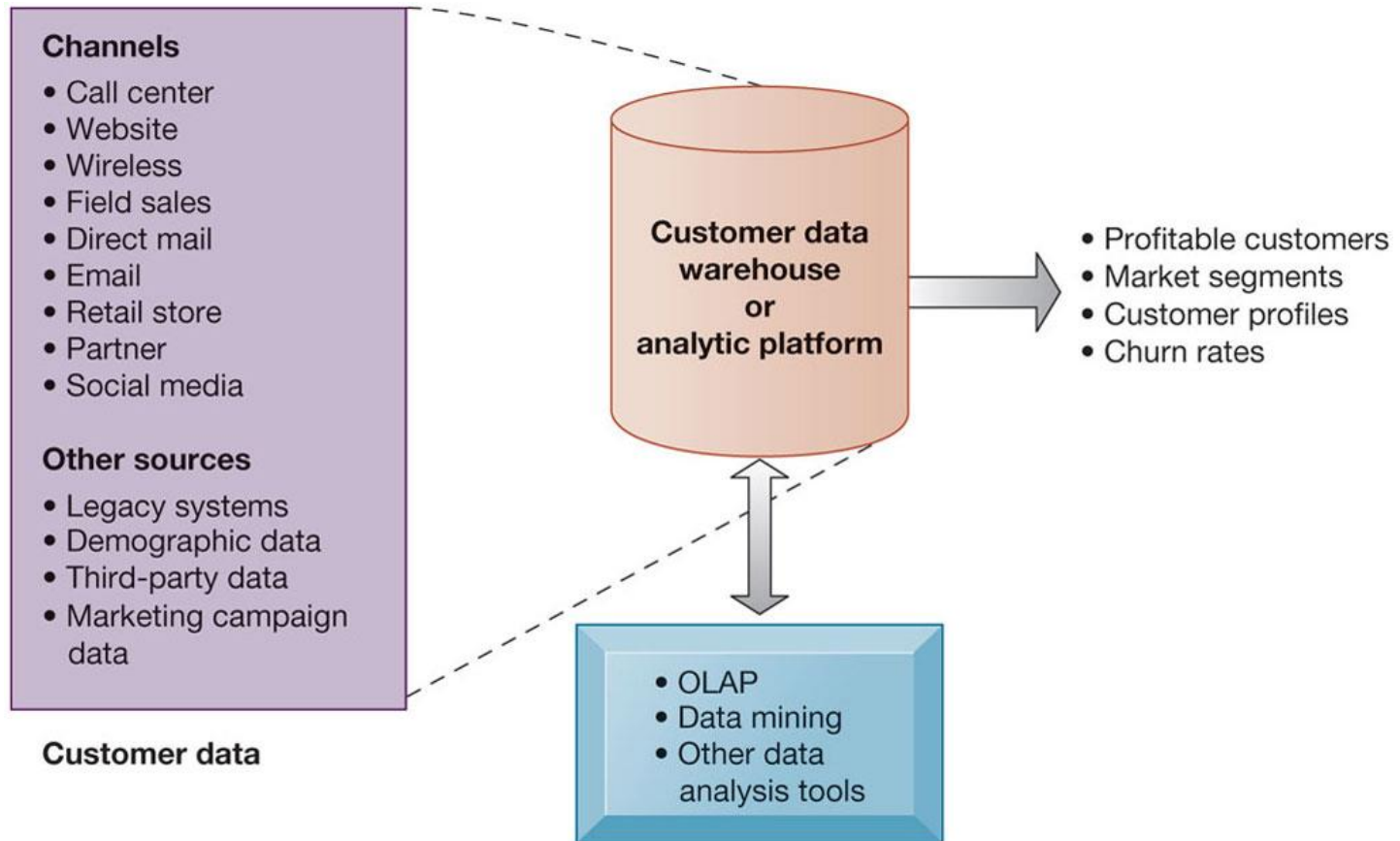
CRM Softwares

Source: Gartner (June 2021)

Enterprise applications Challenges

- Expensive to purchase and implement enterprise applications
  - Multi-million-dollar projects in 2018
  - Long development times
- Technology changes
- Business process changes
- Organizational learning, changes
- Switching costs, dependence on software vendors
- Data standardization, management, cleansing

E-commerce

Features of e-commerce

- Internet and digital markets have changed the way companies conduct business
- Information asymmetry reduced
- Menu costs, search and transaction costs reduced
- Dynamic pricing enabled
- Switching costs

E-commerce business and revenue models

- Portal
- E-tailer
- Content provider
- Transaction broker
- Market creator
- Service provider
- Community provider

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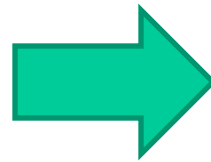
Advertising
Sales
Subscription
Free/Freemium
Transaction fee
Affiliate

M-commerce

- M-commerce in 2017 is 35 percent of all e-commerce
- Fastest growing form of e-commerce
  - Growing at 20 percent or more per year
- Main areas of growth
  - Mass market retailing (Amazon, eBay, etc.)
  - Sales of digital content (music, TV, etc.)
  - In-app sales to mobile devices
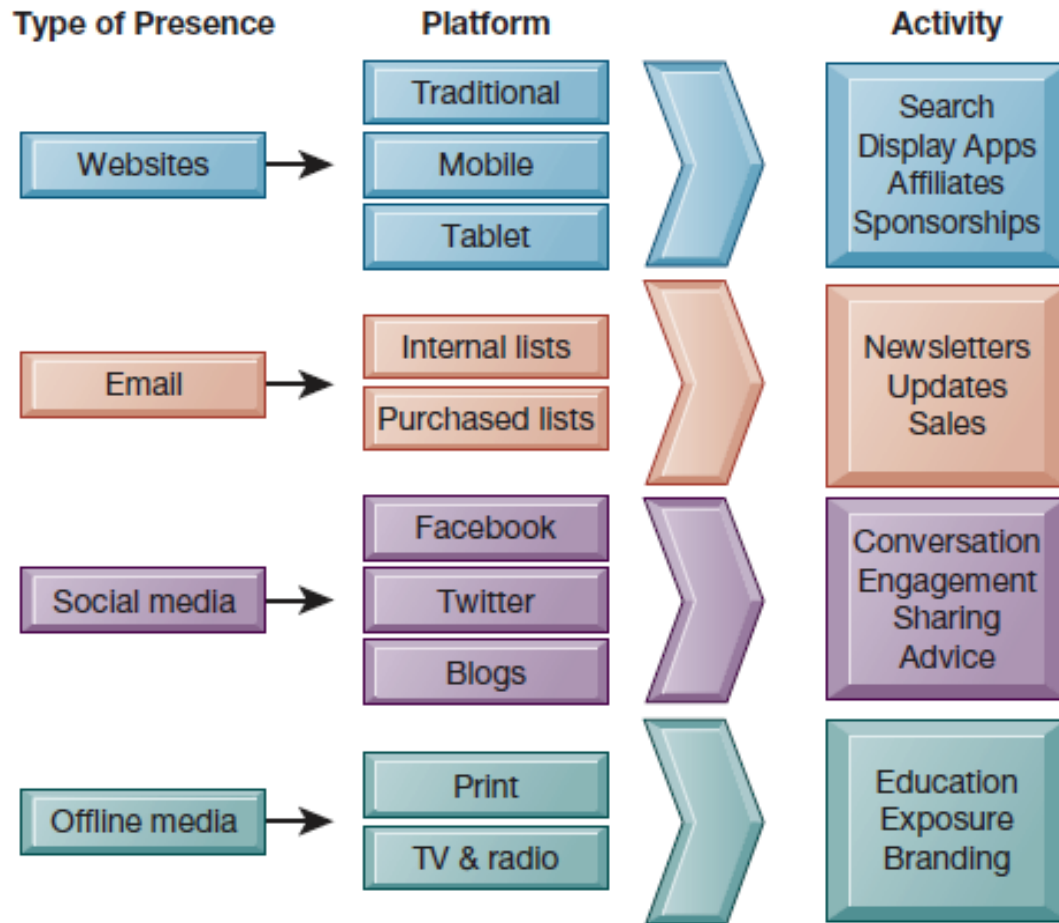
How has e-commerce transformed marketing?

- Internet provides new ways to identify and communicate with customers
- Long tail marketing
- Internet advertising formats
- Behavioral targeting
  - Tracking online behavior of individuals
- Social commerce

How has e-commerce affected B2B?

- U.S. B2B trade in 2020 was $14.5 trillion

  - U.S. B2B e-commerce in 2019 is $6.7 trillion

- Internet and networking helps automate procurement

- Variety of Internet-enabled technologies used in B2B

  - Electronic data interchange (EDI)

  - Private industrial networks (private exchanges)

  - Net marketplaces

  - Exchanges

What issues must be addressed when building an e-commerce presence?

Type of Presence | **Platform** | **Activity**

Websites → Traditional, Mobile, Tablet → Search, Display Apps, Affiliates, Sponsorships

Email → Internal lists, Purchased lists → Newsletters, Updates, Sales

Social media → Facebook, Twitter, Blogs → Conversation, Engagement, Sharing, Advice

Offline media → Print, TV & radio → Education, Exposure, Branding

Managing Knowledge and
Artificial Intelligence

Knowledge Management Systems

- **Knowledge Management** is a process of defining, capturing, organizing, evaluating, sharing, and retaining all the information assets of the organization.
- The assets include documents, policies, databases, expertise, and the experience of employees.
- **Explicit** Knowledge is kind of information and knowledge can be easily captured and documented like Financial reports
- **Implicit** Knowledge is learned skills or know what is the best way of doing something like the way to prioritize tasks.
- **Tacit** Knowledge gained through personal experience and individual context like Leadership, or the perfect time for salesperson to pitch the product during the meeting.
- **Knowledge Management System** is a tool used by companies to help organize documentation, frequently asked questions, and other information into easily accessible formats for both internal and external customers.

Knowledge Management Tools

- **Document Management Systems (DMS)**
- **Content Management Systems (CMS)**
- **Leaning Management Systems (LMS)**
- Enterprise search
- Collaboration Tools
  - **Wikis**
- Artificial intelligence and machine learning platforms

Knowledge Management Use-cases

- Onboarding employees
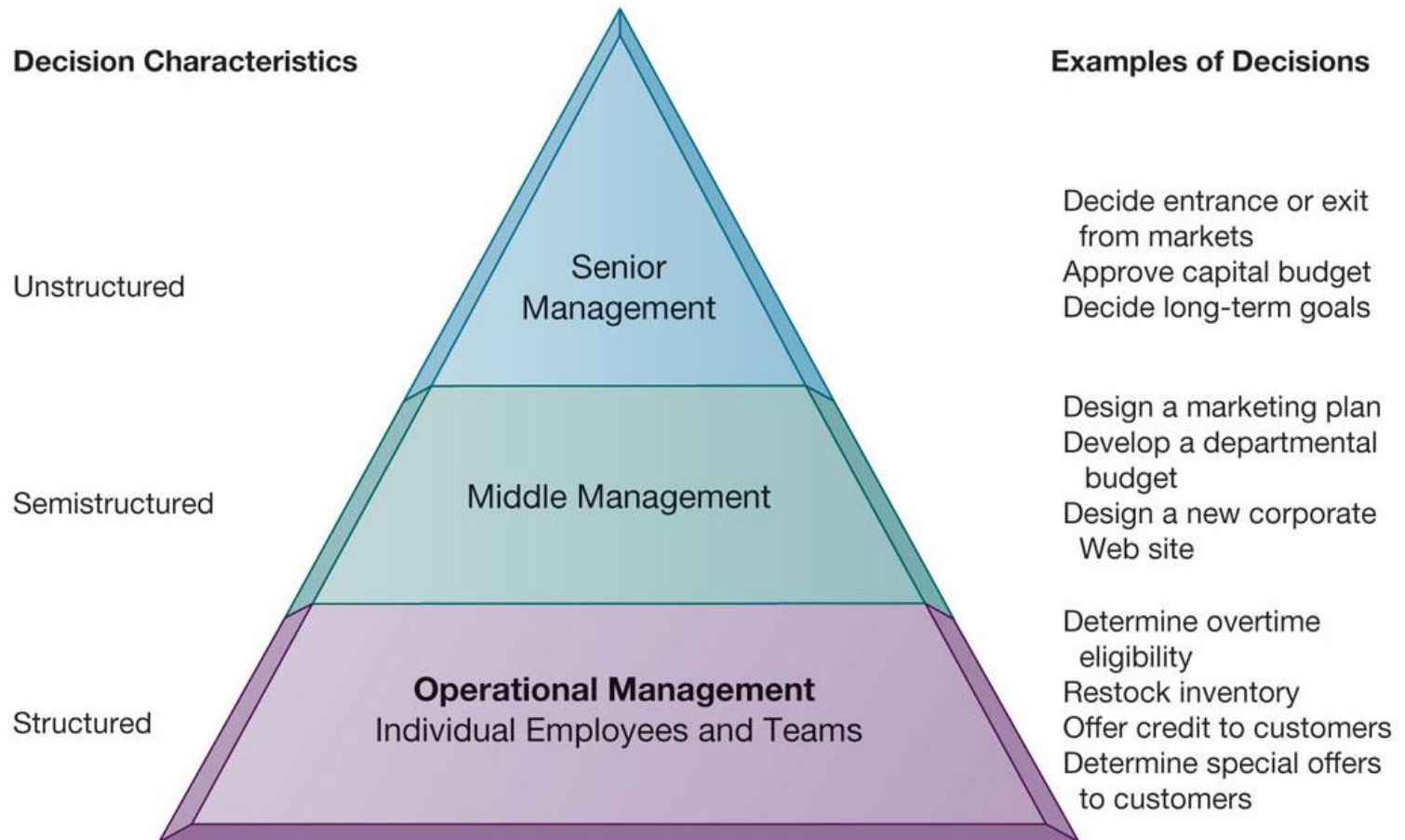- Day-to-day employee tasks
- Self-serve customer service

Leveraging Artificial Intelligence in Knowledge Management

- Content discovery and analysis

- Knowledge organization and categorization

- Intelligent chatbots and virtual assistants

- Predictive analytics and forecasting

- Personalized recommendations and learning
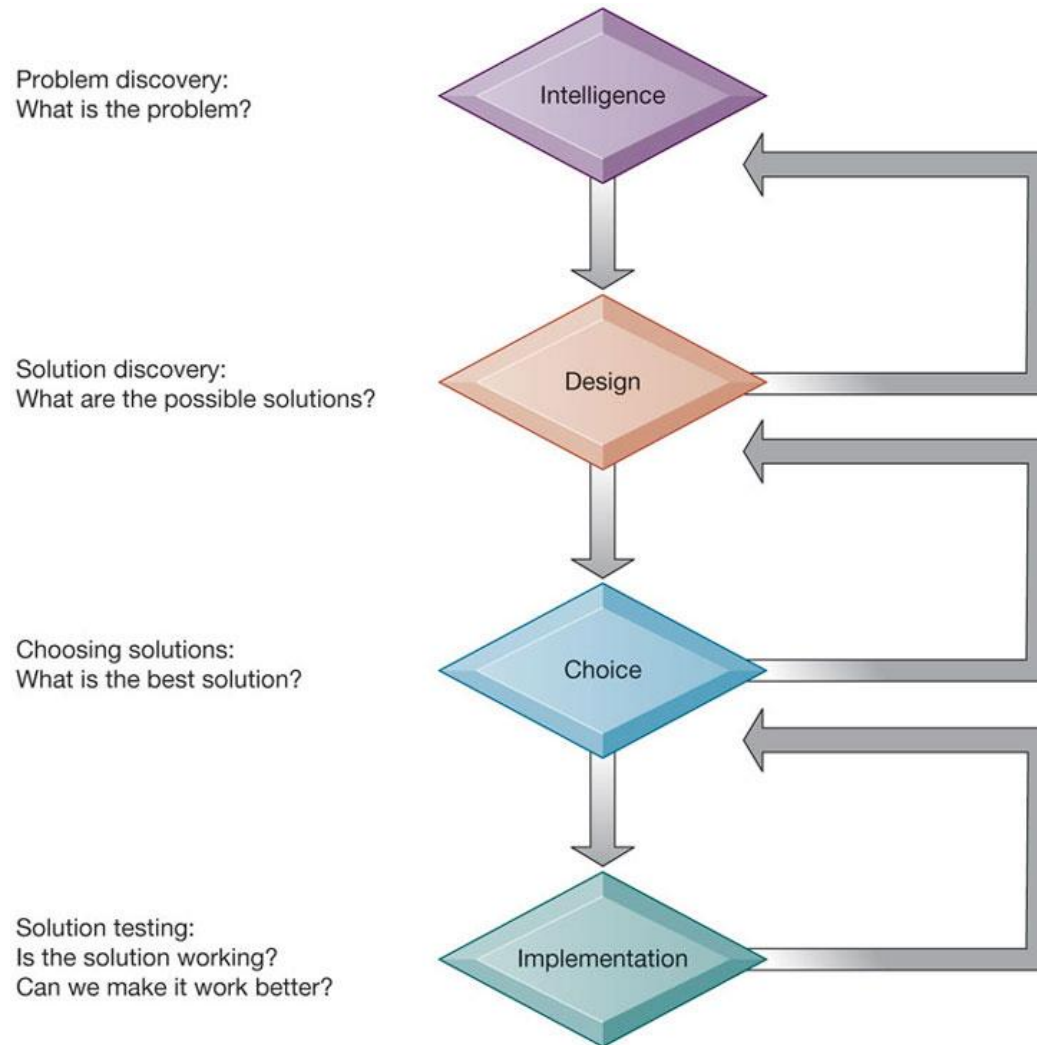
- Data-driven decision-making

Enhancing Decision Making

Types of Decisions

Decision Characteristics

Unstructured

Semistructured

Structured

Senior
Management

Middle Management

Operational Management
Individual Employees and Teams

Examples of Decisions

Decide entrance or exit
 from markets
Approve capital budget
Decide long-term goals

Design a marketing plan
Develop a departmental
 budget
Design a new corporate
 Web site

Determine overtime
 eligibility
Restock inventory
Offer credit to customers
Determine special offers
 to customers

The Decision-Making Process

Problem discovery:
What is the problem?

Intelligence

Solution discovery:
What are the possible solutions?

Design

Choosing solutions:
What is the best solution?

Choice

Solution testing:
Is the solution working?
Can we make it work better?

Implementation

information systems & decision making

Three main reasons why investments in IT do not always produce positive results

- Information quality
  - High-quality decisions require high-quality information
- Management filters
  - Managers have selective attention and have variety of biases that reject information that does not conform to prior conceptions
- Organizational inertia and politics
  - Strong forces within organizations resist making decisions calling for major change

Enhancing Decision Making

Power Users:
Producers
(20% of employees)

IT developers

Super users

Business analysts

Analytical modelers

Capabilities

Production Reports

Parameterized Reports

Dashboards/Scorecards

Ad hoc queries; Drill down
Search/OLAP

Forecasts; What if
Analysis; statistical models

Casual Users:
Consumers
(80% of employees)

Customers/suppliers
Operational employees

Senior managers

Managers/Staff

Business analysis

Power BI

Next Session

- IT in Business and Society
- IT Infrastructure
- Key Systems Applications
- **Build and Manage Systems**