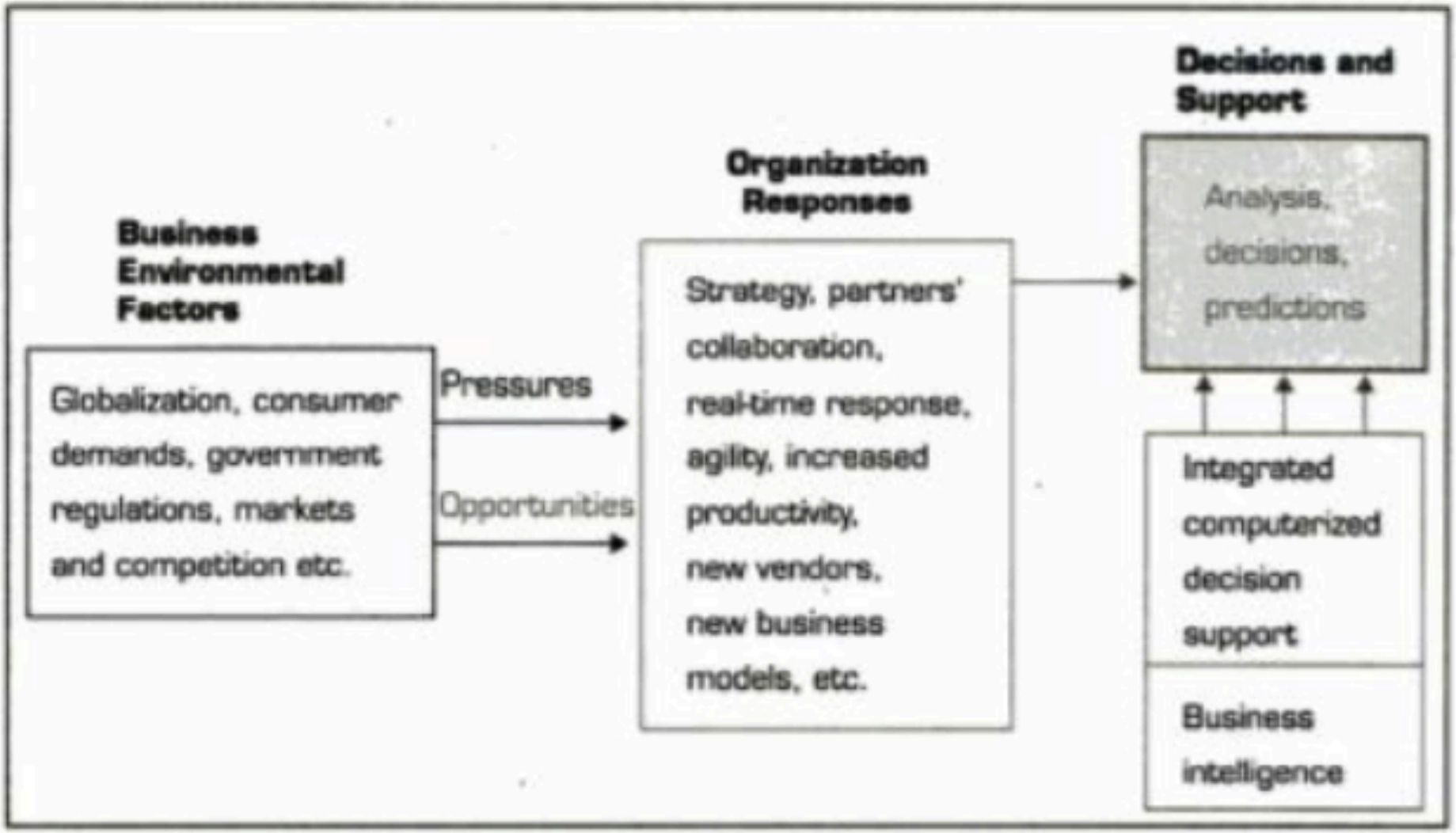


FIGURE 1.1 The Business Pressures–Responses–Support Model

FIGURE 1.2 Decision Support Frameworks

	Type of Control		
Type of Decision	**Operational Control**	**Managerial Control**	**Strategic Planning**
Structured	1 Accounts receivable, accounts payable, order entry	2 Budget analysis, short-term forecasting, personnel reports, make-or-buy	3 Financial management (investment), warehouse location, distribution systems
Semistructured	4 Production scheduling, inventory control	5 Credit evaluation, budget preparation, plant layout, project scheduling, reward system design, inventory categorization	6 Building new plant, mergers and acquisitions, new product planning, compensation planning, quality assurance planning, HR policies, inventory planning
Unstructured	7 Selecting a cover for a magazine, buying software, approving loans, help desk	8 Negotiating, recruiting an executive, buying hardware, lobbying	9 R & D planning, new technology development, social responsibility planning

FIGURE 1.3 The Steps of Decision Support

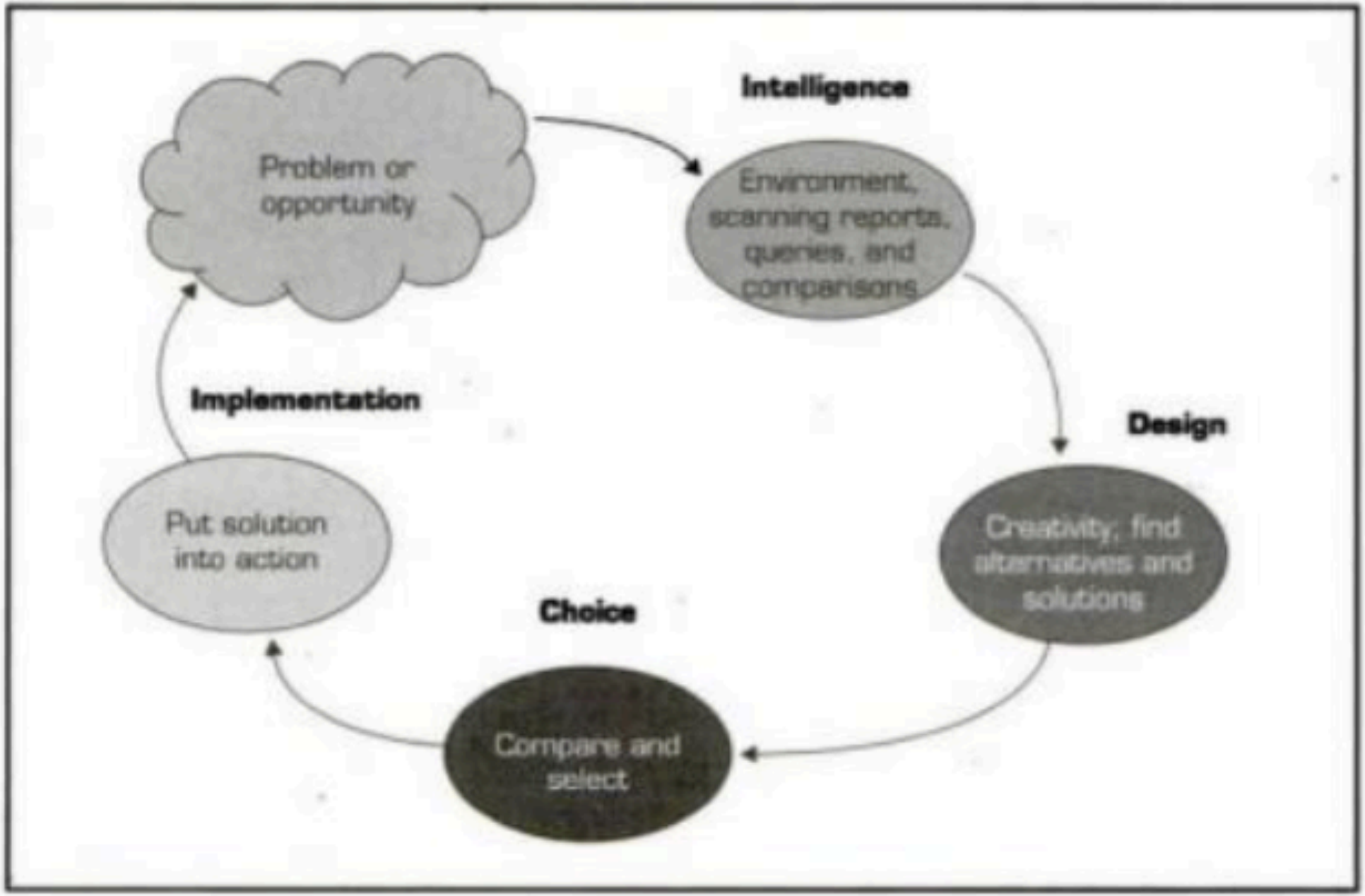
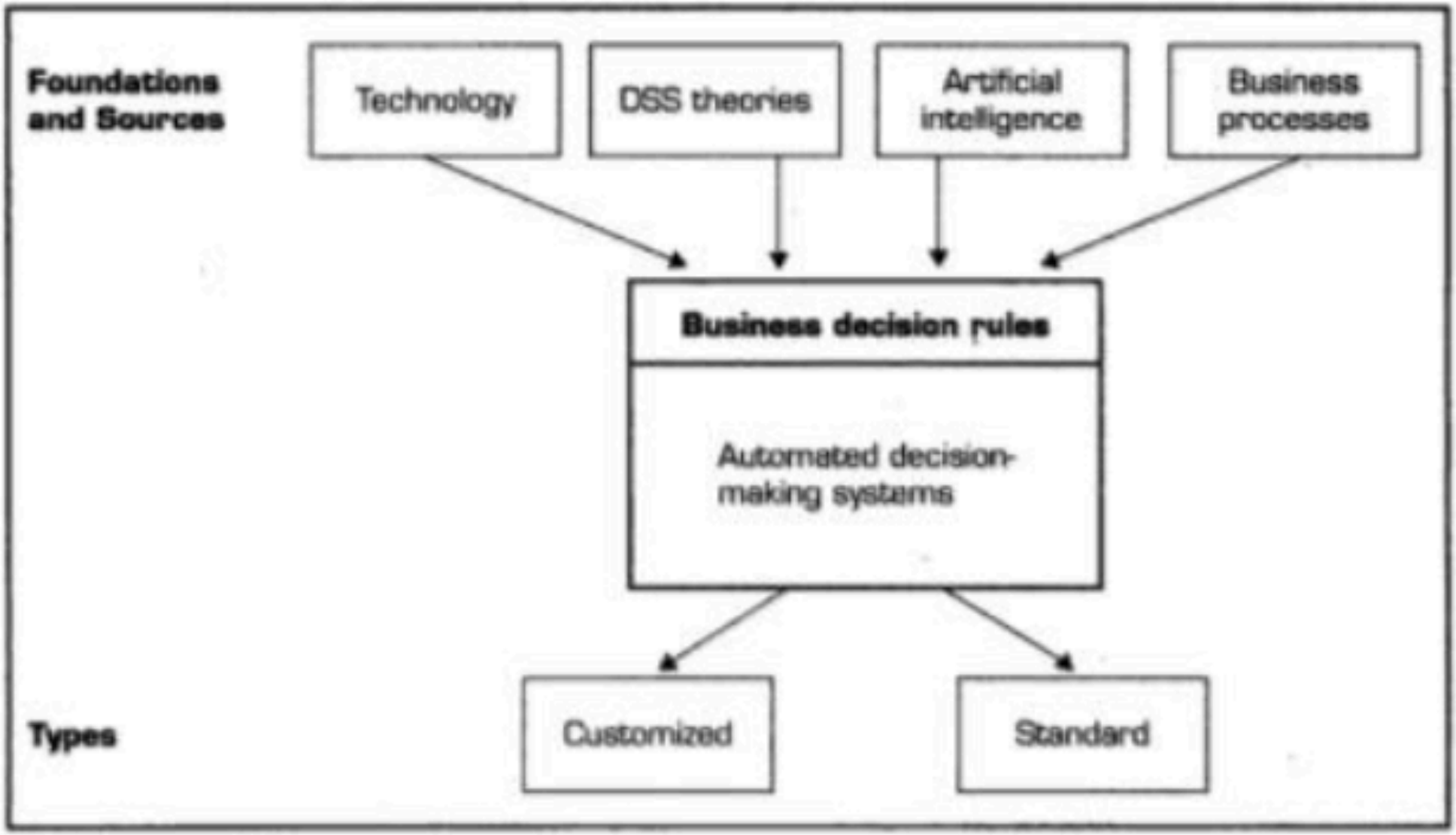


FIGURE 1.4 Automated Decision-Making Framework



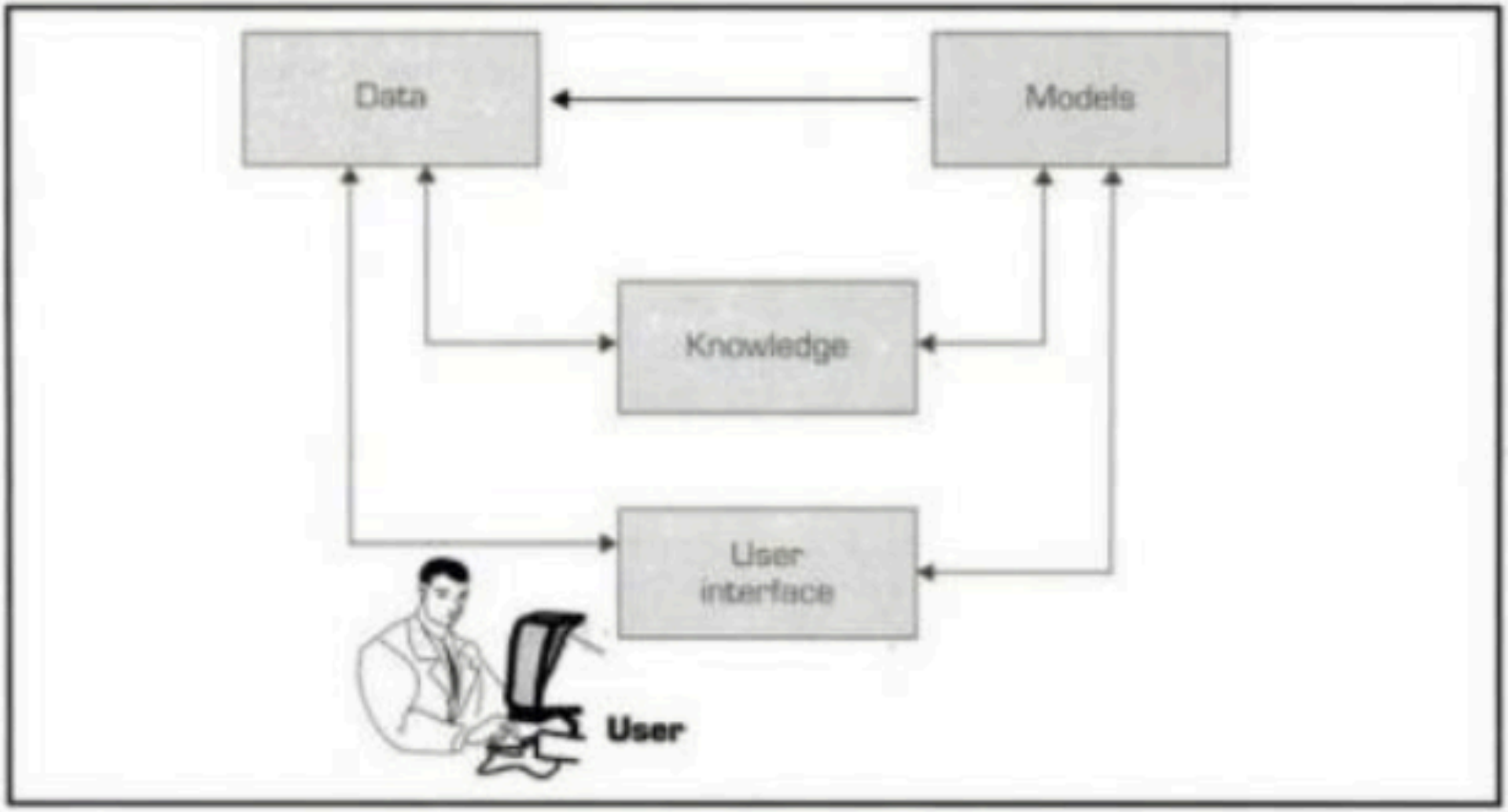
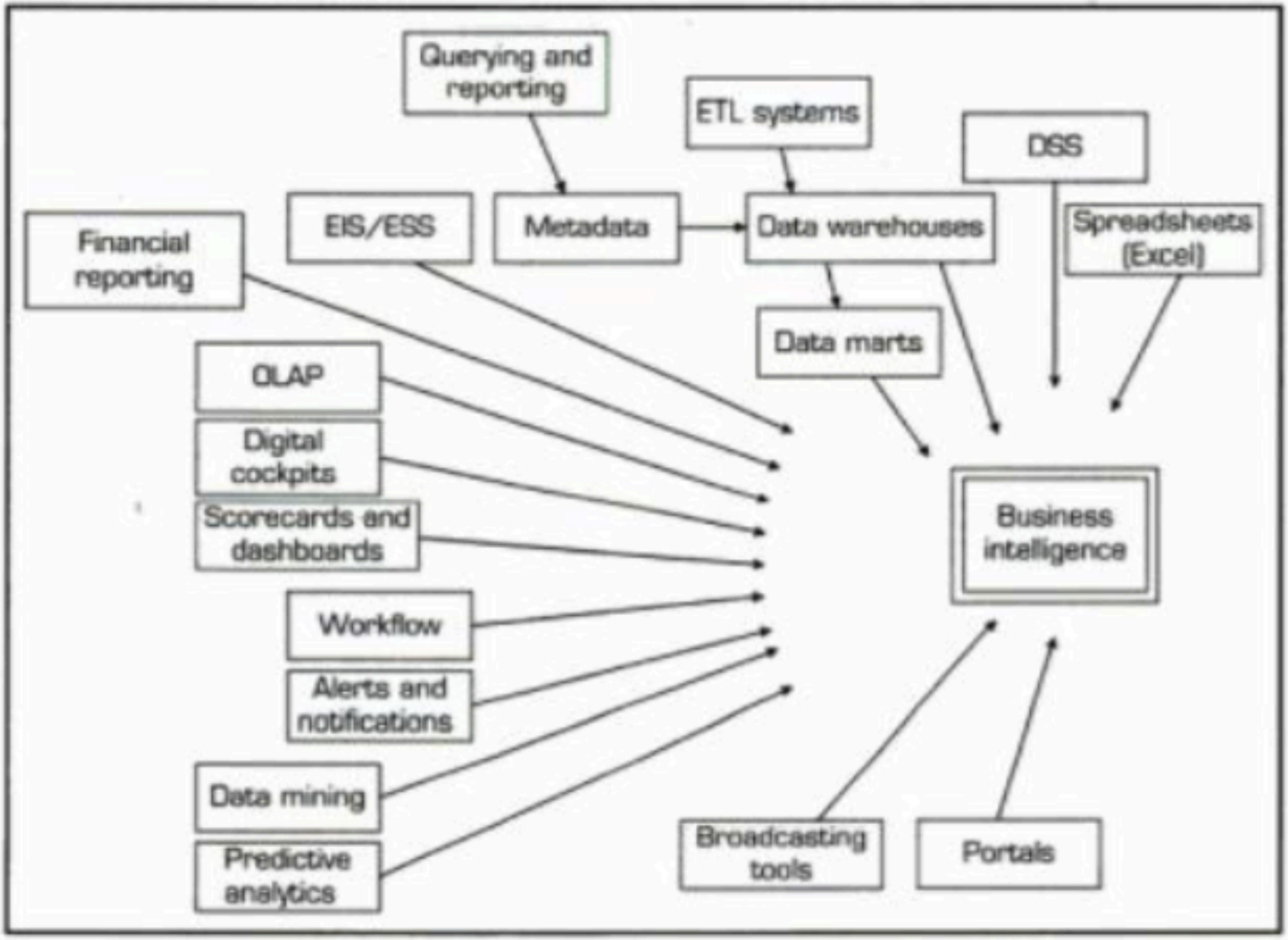


FIGURE 1.5 High-Level Architecture of a DSS

FIGURE 1.6 Evolution of BI



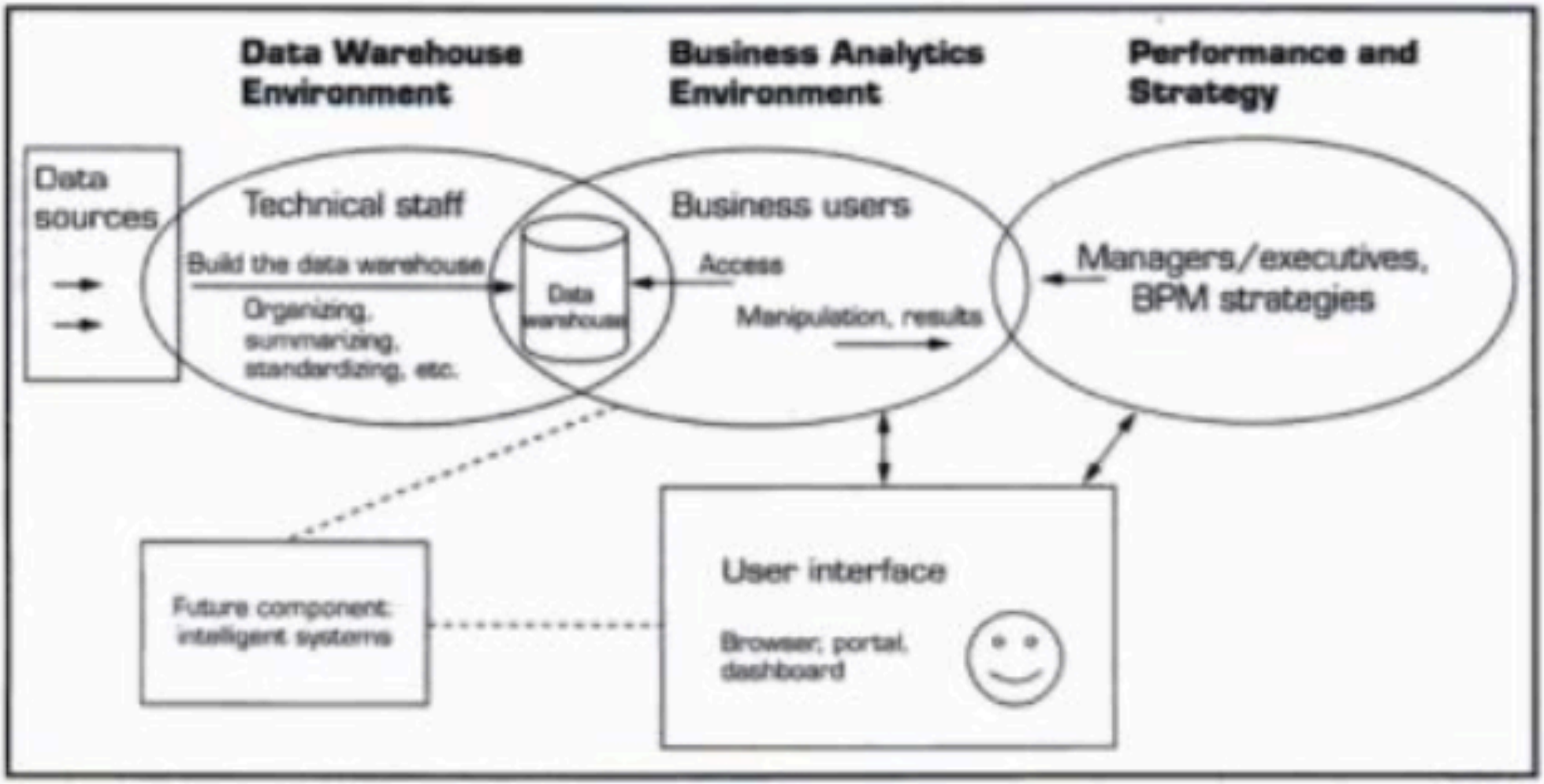


FIGURE 1.7 A High-Level Architecture of BI

FIGURE 5.1 Data Warehouse Framework and Views

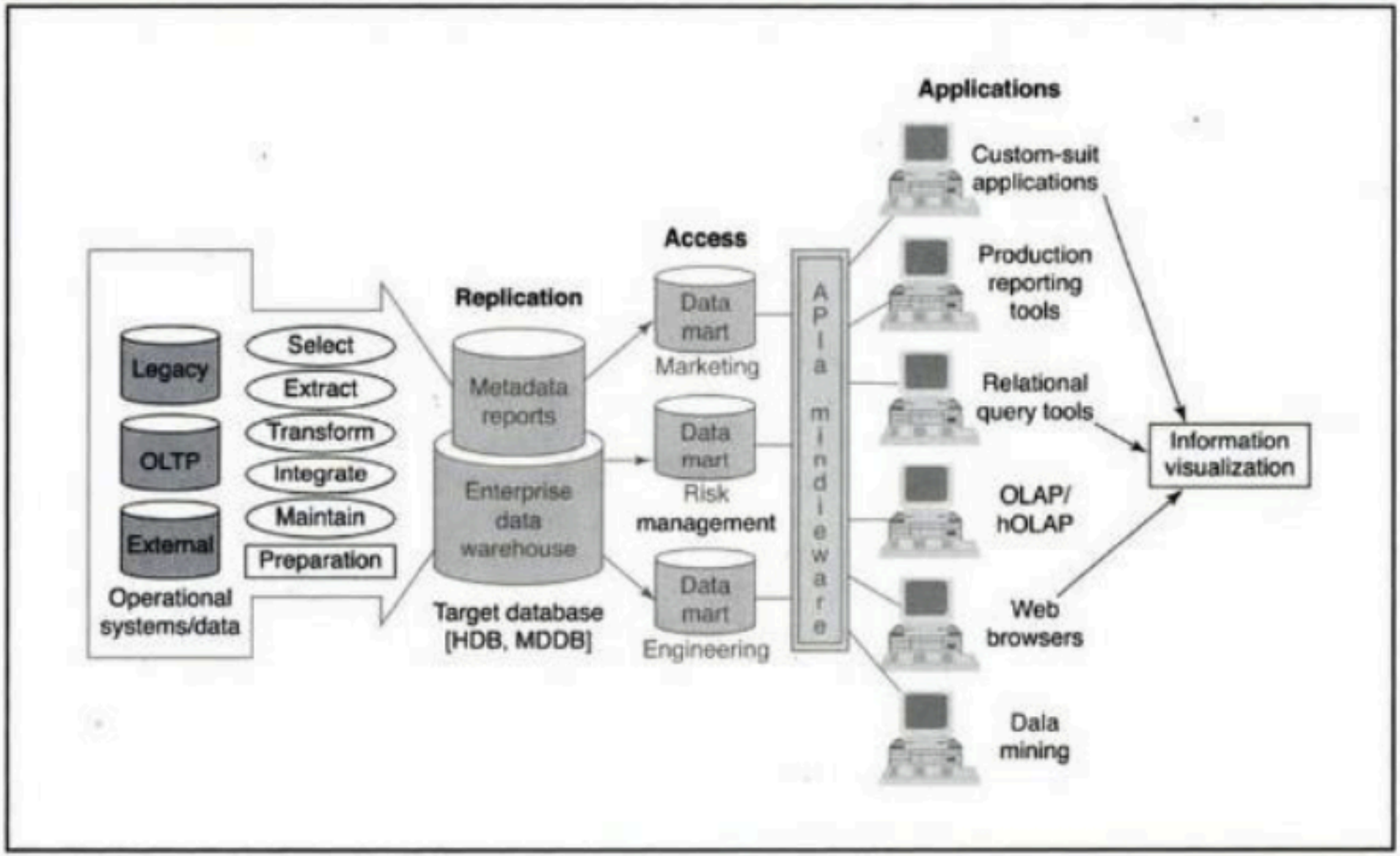
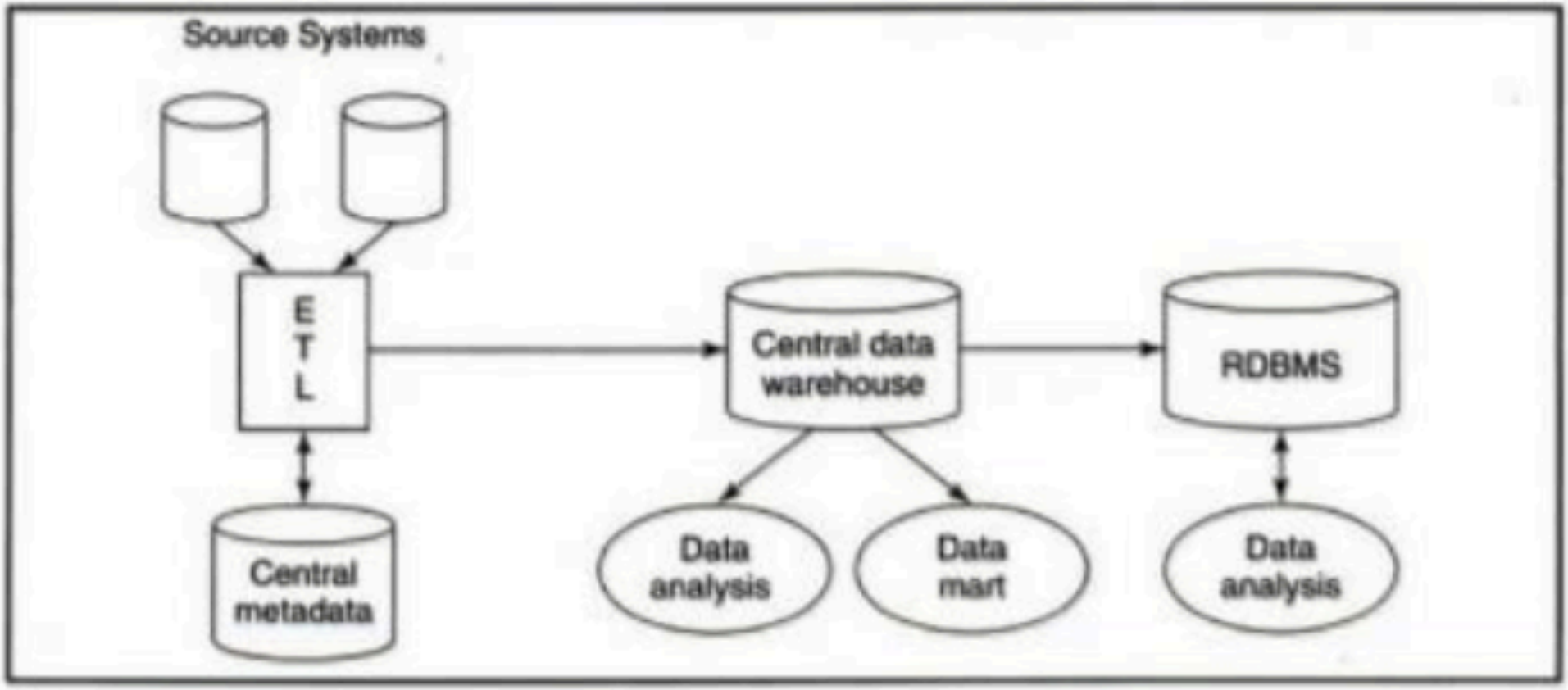


FIGURE 5.5 Alternative Data Warehouse Architectures



5.5a Enterprise Data Warehousing Architecture

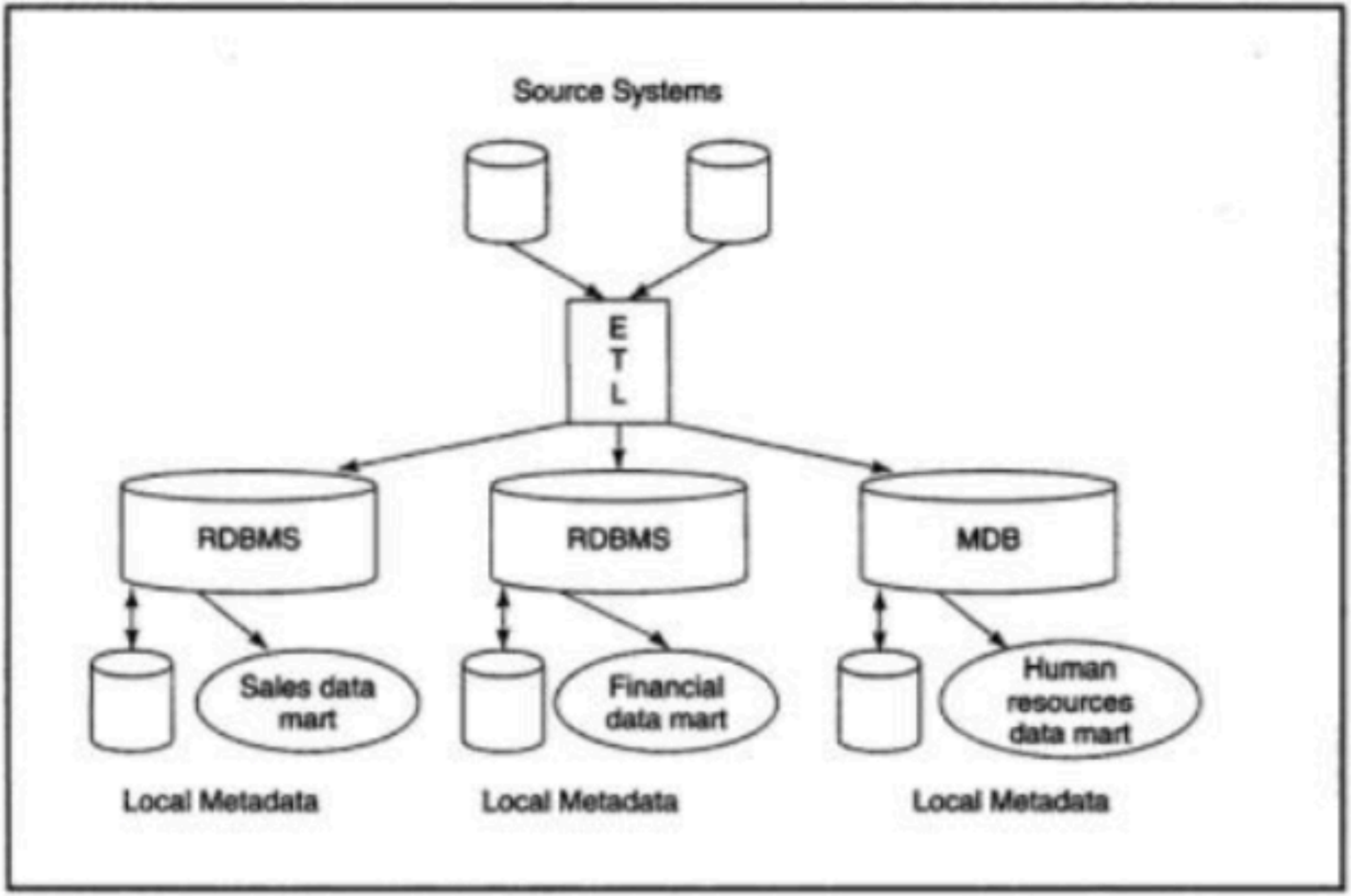


FIGURE 5.5b Data Mart Architecture

FIGURE 5.8 The ETL Process

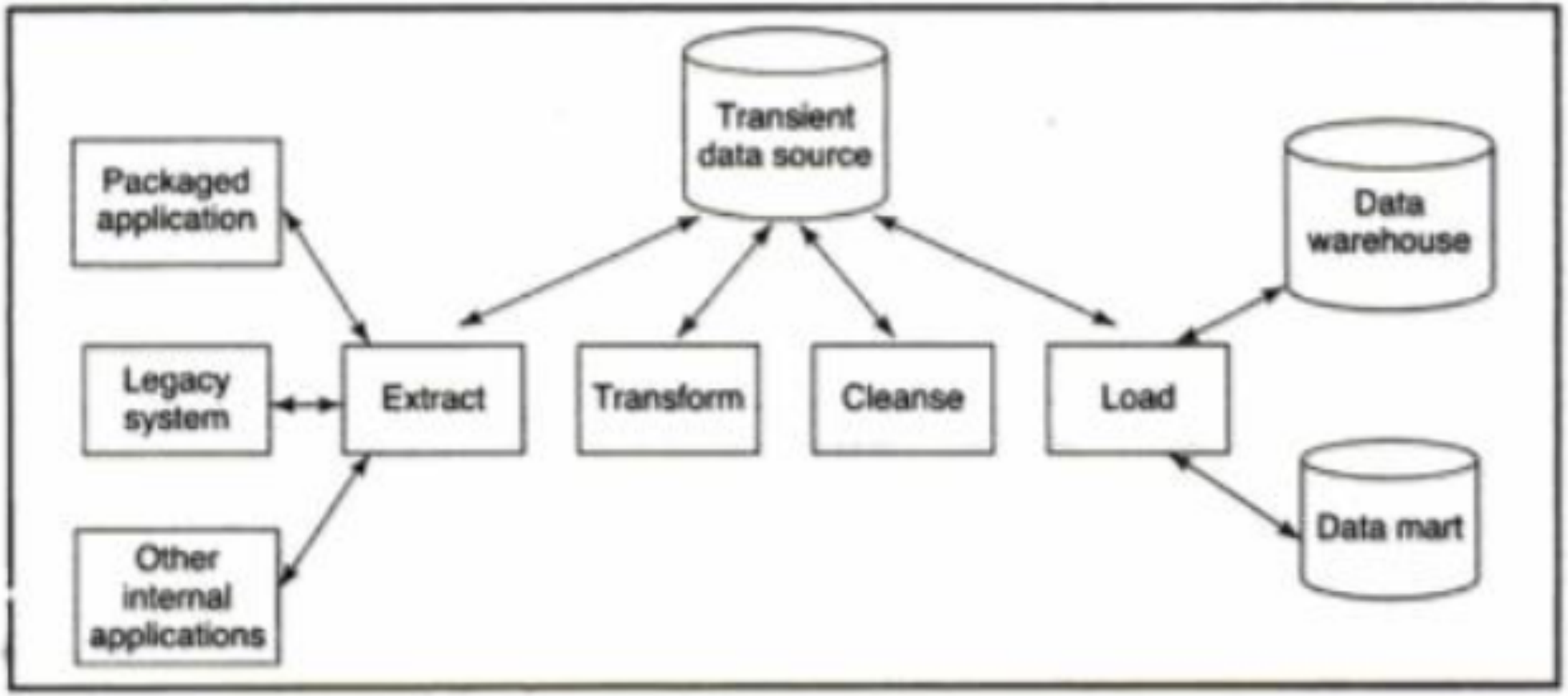


TABLE 5.2 Contrasts Between the Data Mart and EDW Development Approaches

Effort	*Data Mart Approach*	*EDW Approach*
Scope	One subject area	Several subject areas
Development time	Months	Years
Development cost	$10,000 to $100,000+	$1,000,000+
Development difficulty	Low to medium	High
Data prerequisite for sharing	Common (within business area)	Common (across enterprise)
Sources	Only some operational and external systems	Many operational and external systems
Size	Megabytes to several gigabytes	Gigabytes to petabytes
Time horizon	Near-current and historical data	Historical data
Data transformations	Low to medium	High
Frequency of update	Hourly, daily, weekly	Weekly, monthly
Technology		
Hardware	Workstations and departmental servers	Enterprise servers and mainframe computers
Operating system	Windows and Linux	Unix, Z/OS, OS/390
Databases	Workgroup or standard database servers	Enterprise database servers
Usage		
Number of simultaneous users	10s	100s to 1,000s
User types	Business area analysts and managers	Enterprise analysts and senior executives
Business spotlight	Optimizing activities within the business area	Cross-functional optimization and decision making

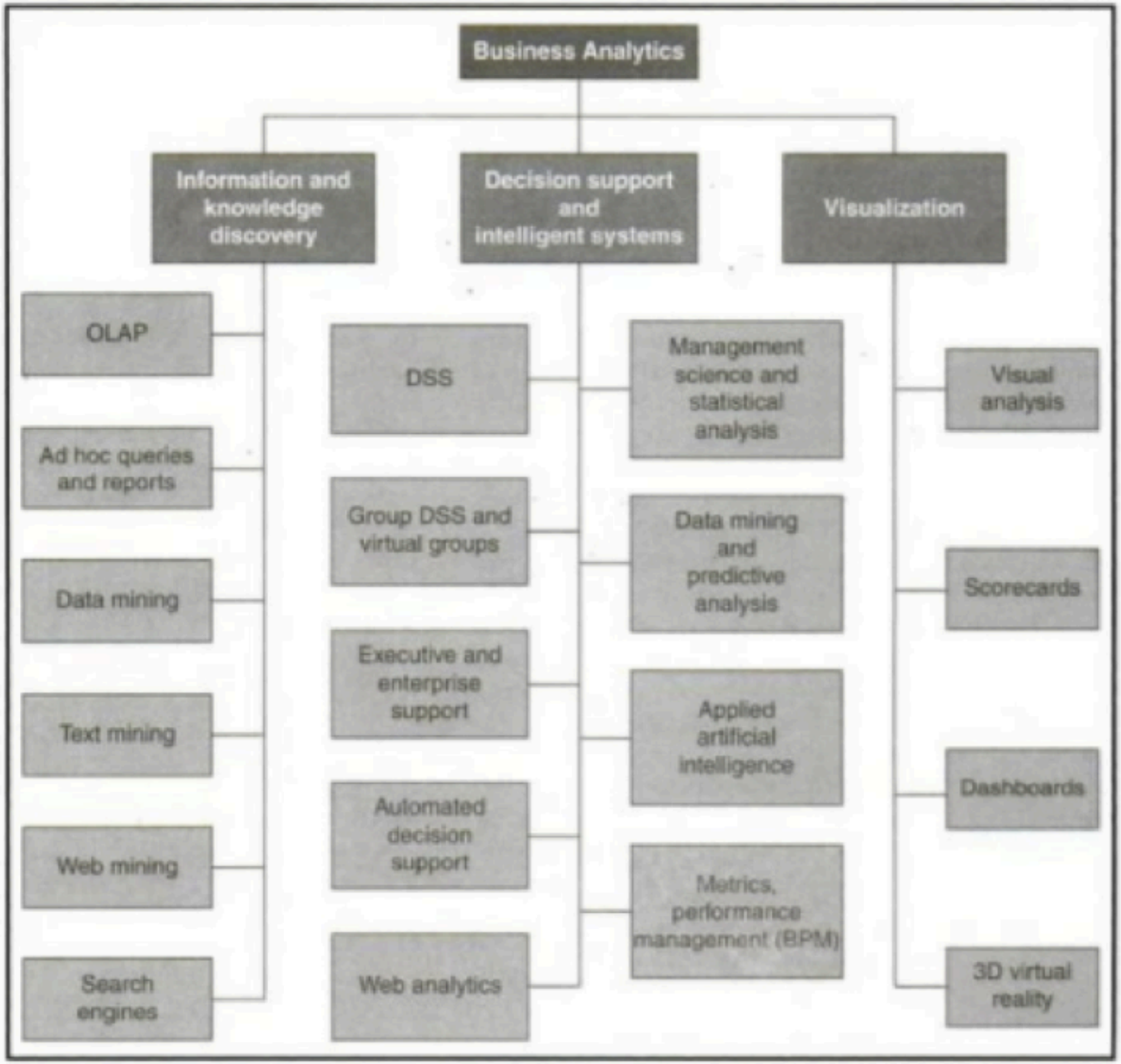


FIGURE 6.1 Categories of Business Analytics

TABLE 7.1 Data Mining Functions, Algorithms, and Application Examples

Data Mining Function	*Algorithm*	*Application Examples*
Association	Statistics, set theory	Market basket analysis
Classification	Decision trees, neural networks, control, risk assessment, rules	Target marketing, quality
Clustering	Neural networks, statistics, optimization, discriminate analysis	Market segmentation
Sequence discovery	Statistics, set theory	Market basket analysis over time, customer life cycle analysis
Modeling	Linear and nonlinear regression, curve fitting, neural networks	Sales forecasting, interest rate, prediction, inventory control
Drill-down and aggregate view of data	Visualization, using many different approaches	Virtually all the preceding applications

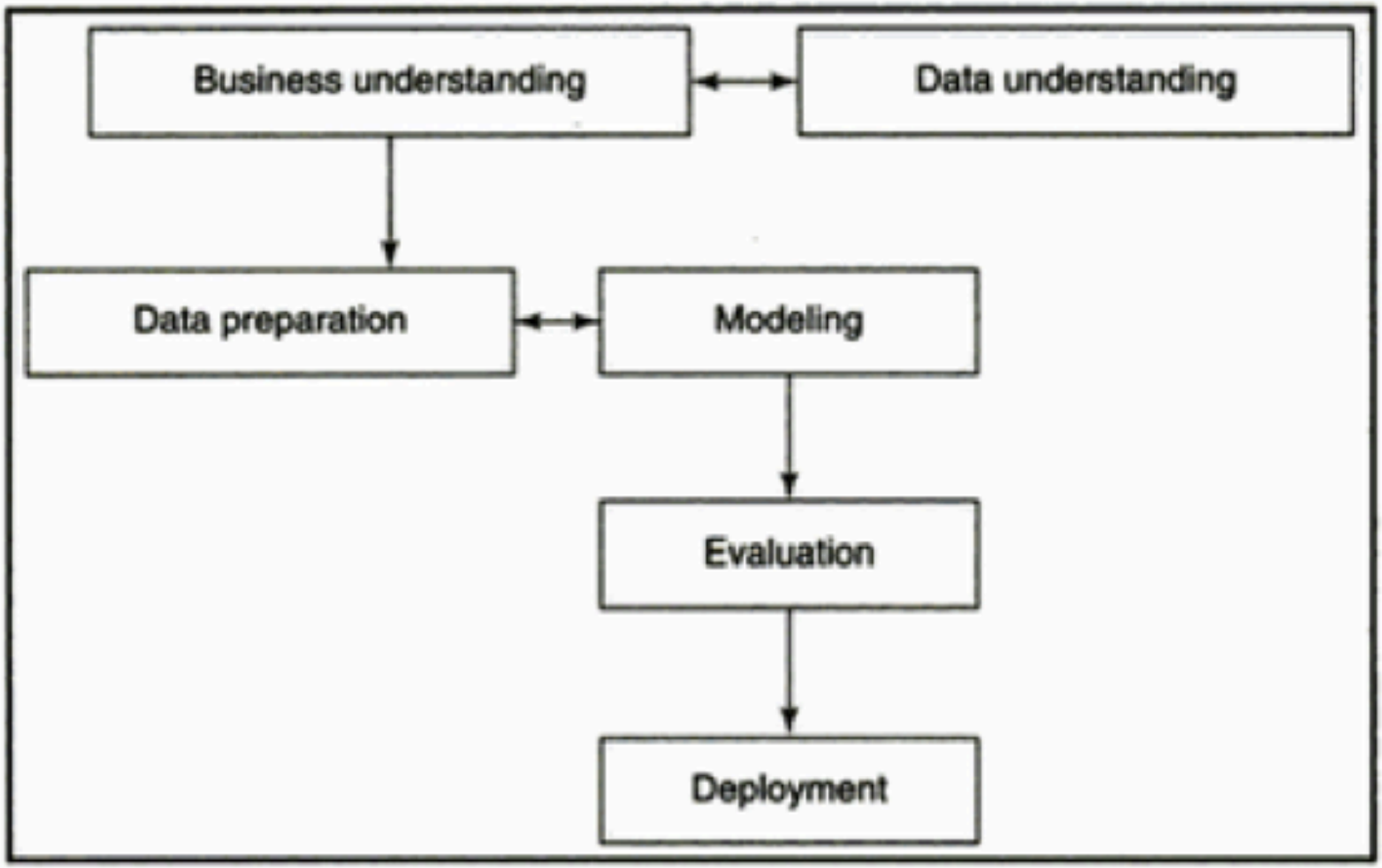


FIGURE 7.2 Data Mining Process Recommended by CRISP-DM

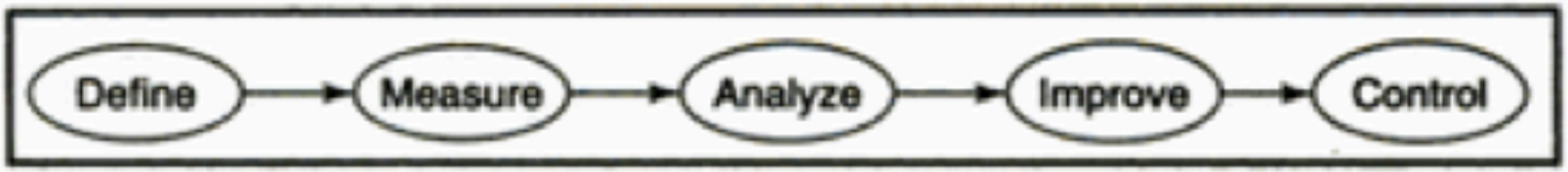
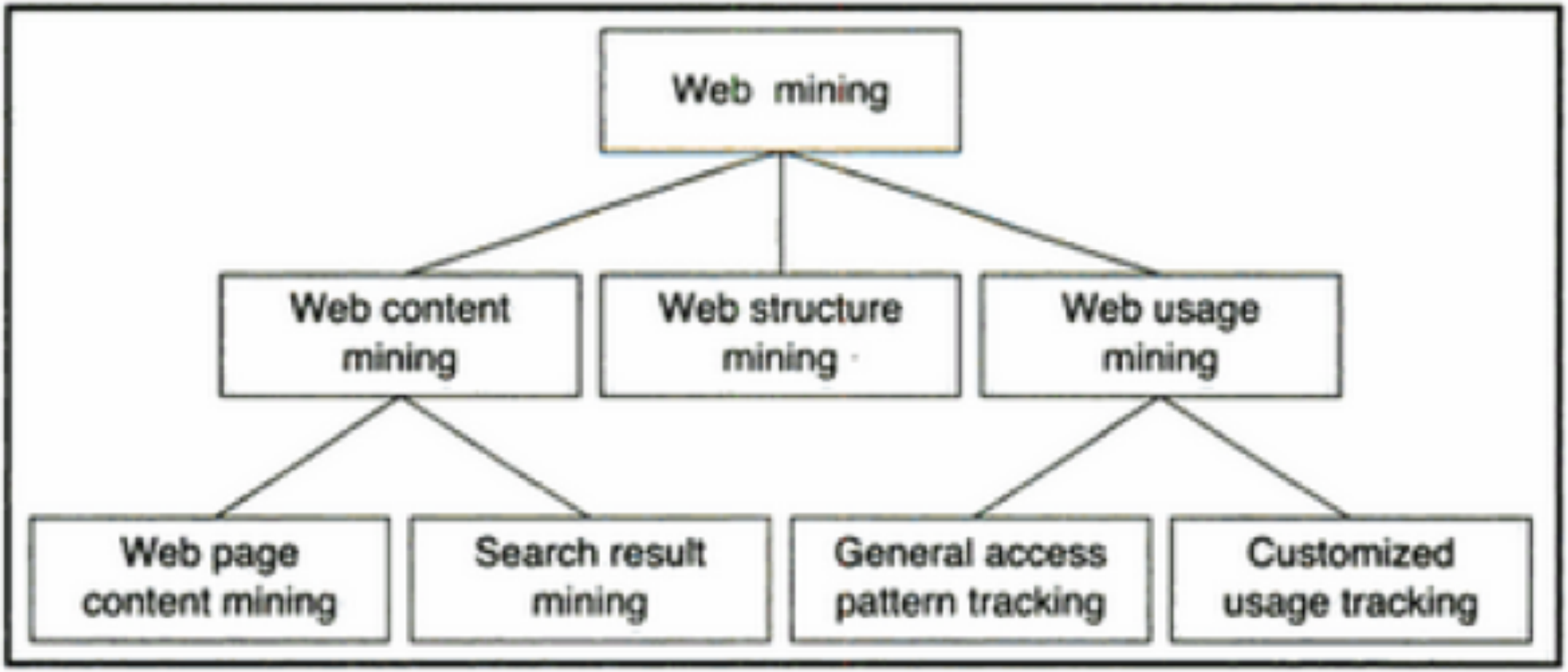


FIGURE 7.3 Six Sigma–Based Data Mining Process

FIGURE 7.5 Types of Web Mining



The Major Theories and Characteristics of Business Intelligence

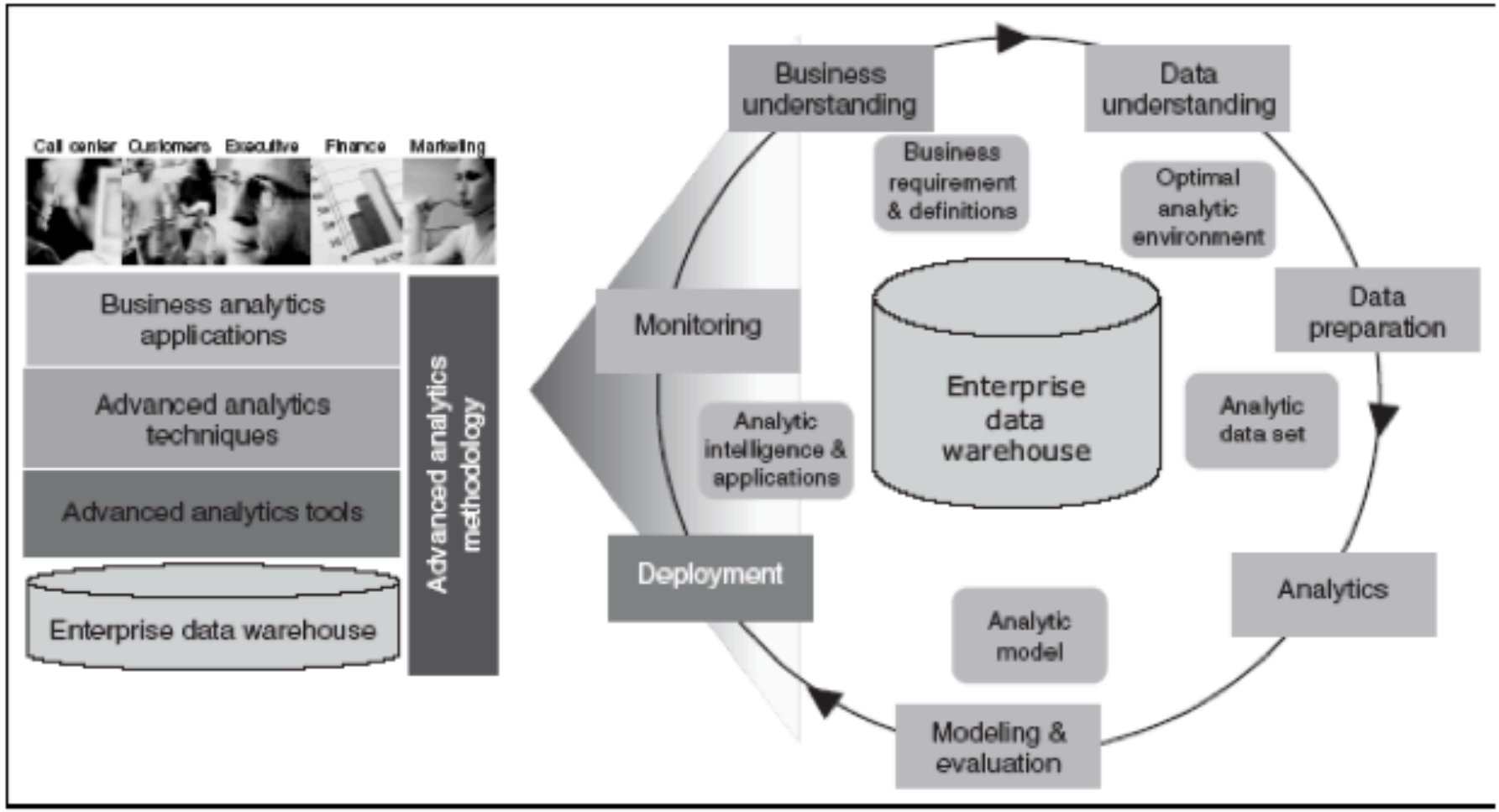


FIGURE 1.6 Teradata Advanced Analytics Methodology

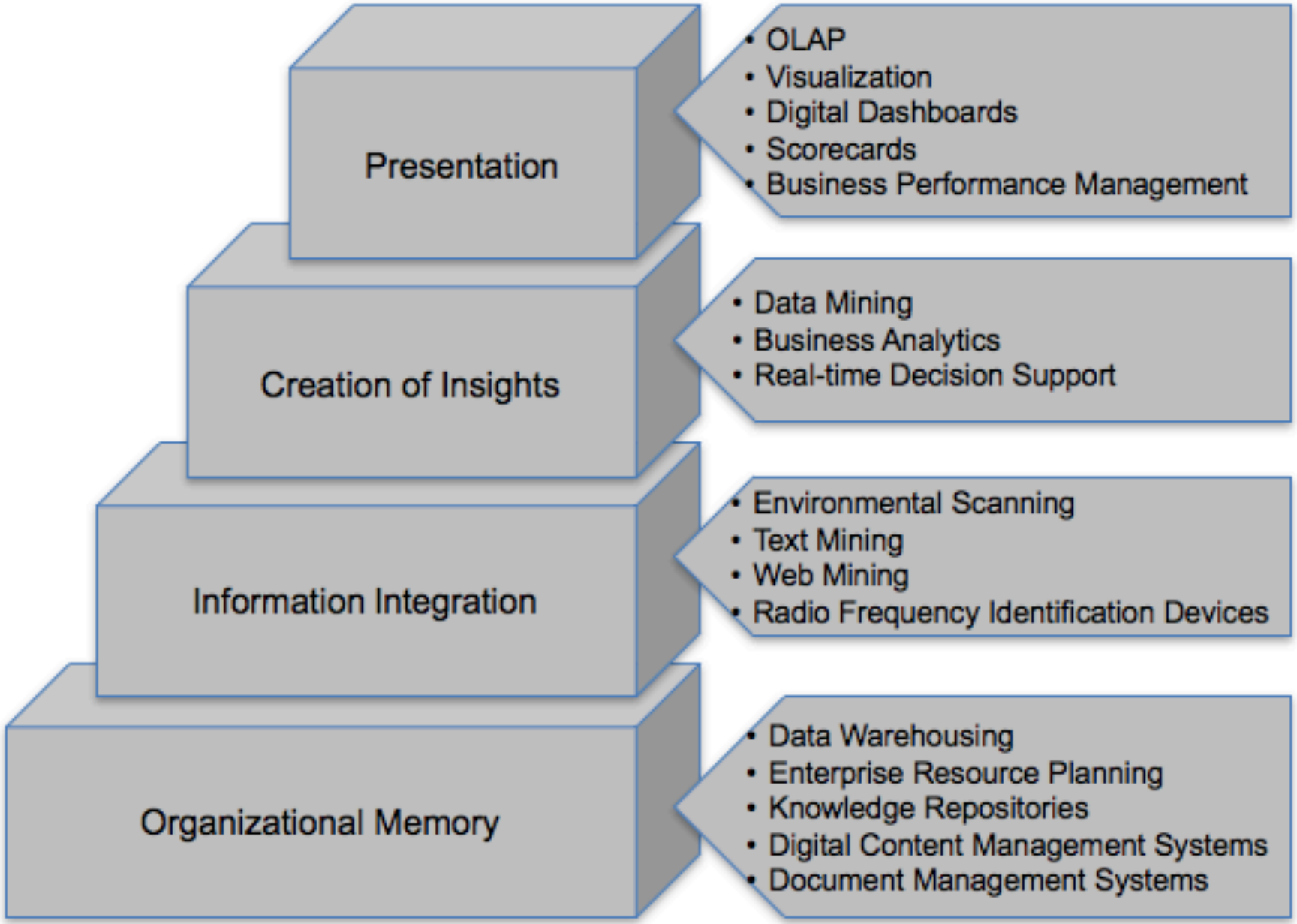

Presentation
• OLAP
• Visualization
• Digital Dashboards
• Scorecards
• Business Performance Management
Creation of Insights
• Data Mining
• Business Analytics
• Real-time Decision Support
Information Integration
• Environmental Scanning
• Text Mining
• Web Mining
• Radio Frequency Identification Devices
Organizational Memory
• Data Warehousing
• Enterprise Resource Planning
• Knowledge Repositories
• Digital Content Management Systems
• Document Management Systems

Table 1.1 Distinctions between BI and Other Related Technologies

	Business Intelligence	**Knowledge Management**	**Data Warehousing**	**Data Mining**	**Decision Support Systems (DSS) or Automated Decision Systems (ADS)**
Inputs	Data, information	Data, information, knowledge	Data (from multiple systems)	Data	Data, information, knowledge
Nature of Inputs	Internal or external, structured or unstructured	Internal or external, structured or unstructured	Internal, structured	Internal, structured	Internal or external, structured
Outputs	Information and explicit knowledge	Tacit knowledge and explicit knowledge	Data (in a single logical repository)	Information	Decision recommendation (in case of DSS) or automated decision (in case of ADS)
Components	Information technologies	Information technologies, social mechanisms, structural arrangements	Information technologies	Information technologies	Information technologies
Users	Across the organization	Across the organization	IT personnel	IT personnel, others trained in IT	Specific, targeted users