



05. Information Systems Integration

Introduction to Information Systems Integration

- IS Integration =

- The process of combining different components or subsystems of an organization's information technology infrastructure to work together seamlessly.
- Goal: To facilitate the flow of data and information across various systems within an organization, enabling efficient communication, collaboration, and decision-making.
- Almost always, it involves connecting disparate systems, such as databases, applications, and software platforms, to ensure they can share data and functionality effectively.

IS Integration – Key Aspects

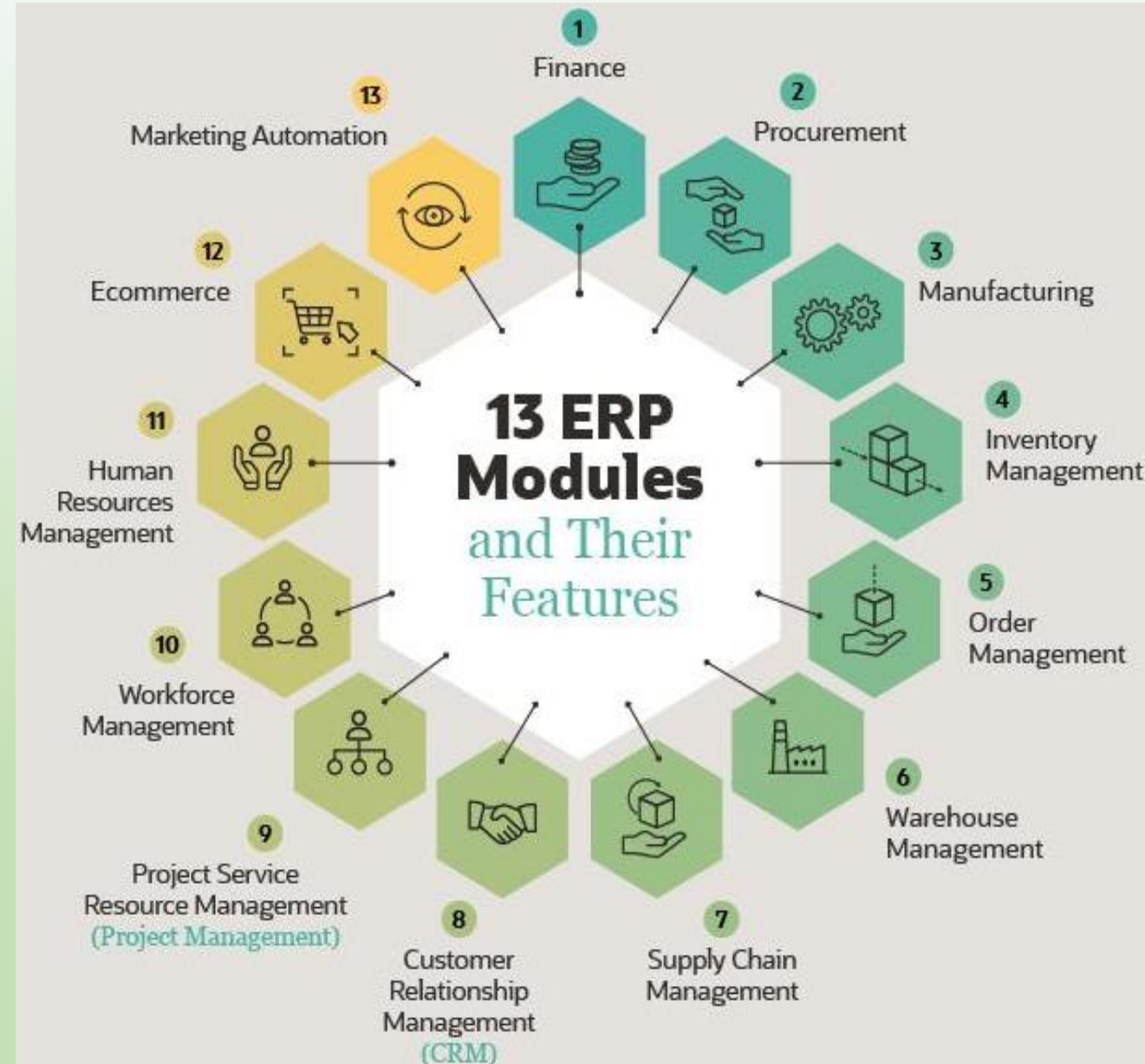
- **Data Integration:**
 - Ensuring that data from different sources or systems can be accessed, processed, and shared across the organization without inconsistencies or errors.
 - Usually involves data transformations and mapping to align data formats and standards.
- **Application Integration:**
 - Connecting and coordinating the functionality of different software applications or modules to enable seamless business processes.
 - Usually involves using middleware, APIs (Application Programming Interfaces), or integration platforms to facilitate data exchange between applications.
- **Process Integration:**
 - Streamlining and automating business processes by implementing ideas such as workflow automation, business process management (BPM), and service orchestration
- **Technology Integration:**
 - Ensuring compatibility and interoperability between various hardware and software components within the organization's IT infrastructure.
 - Usually involve standardizing technology platforms, adopting open standards, and implementing integration patterns and architectures.
- **Organizational Integration:**
 - Aligning information systems integration initiatives with the organization's overall goals, strategies, and structures.
 - Usually involves fostering collaboration between different departments, establishing governance mechanisms, and promoting a culture of information sharing and cooperation.

Enterprise Systems (aka enterprise software or enterprise applications)

- Large-scale software systems designed to support business processes across an entire organization
- Examples:
 - **Enterprise Resource Planning (ERP) systems**
 - **Customer Relationship Management (CRM) systems**
 - **Supply Chain Management (SCM) systems**
 - **Human Resource Management Systems (HRMS):** HRMS systems handle various HR functions, such as payroll, benefits administration, recruitment, and employee records management.

Enterprise Resource Planning (ERP) systems

- A category of business software that automates business processes and provides insights and internal controls, drawing on a **central database** that collects inputs from departments
- ERP systems provide cross-departmental visibility, enable efficient analysis, resolve data conflicts, and drive process improvements.
- That would usually translate to cost savings and better productivity



Top ERP Benefits



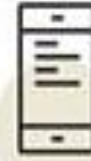
Data Security

Data from across the company stored securely



Increased Productivity

Simplify and improve processes for greater efficiency



Mobility

Access critical insights anywhere, from any device



Customer Service

Faster, personalized support to keep customers happy



Centralized Data

Information from all functions unified in one system



Visibility

Increase communication and collaboration with other teams



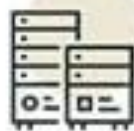
Cost Savings

Automation and efficiency gains reduce costs



Compliance

Traceability and reporting to meet evolving standards



Scalability

Grows with you to support increasing needs



Reporting

Analyze and compare every aspect of the business



Forecasting

Accurate predictions to better prepare for the future

Customer Relationship Management Systems



- Software solutions purposely designed to help organizations manage and nurture their relationships with customers, prospects, and other stakeholders throughout the customer lifecycle.
- Common components and functionalities:
 - Contact and account management
 - Lead and opportunity management
 - Sales forecasting and pipeline management
 - Marketing campaign management
 - Customer service and support management
 - Analytics and reporting tools
 - Integration with other business systems (e.g., ERP, SCM, social media)

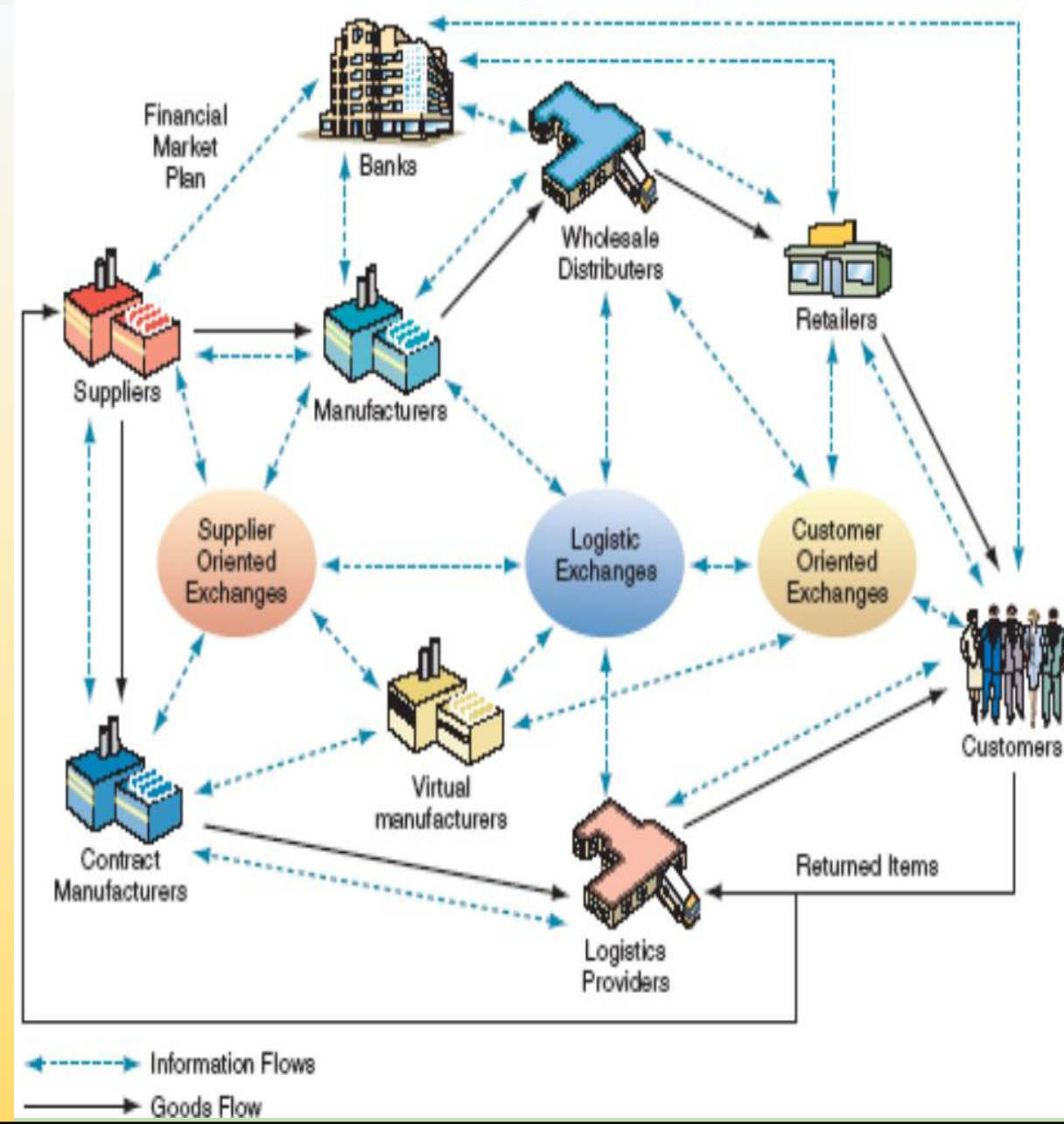
Supply Chain Management Systems



- Software solutions designed to optimize the flow of goods, services, and information across the entire supply chain, from procurement of raw materials to the delivery of finished products to end customers
- Common components and functionalities:
 - Purchasing and procurement management
 - Inventory management and warehouse management
 - Order management and fulfillment
 - Transportation and logistics management
 - Supplier relationship management
 - Demand forecasting and production planning
 - Analytics and reporting tools

Interorganizational Systems

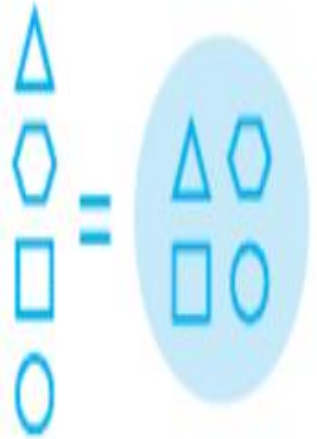
- A system that involves information flow among two or more organizations
- Key objective: to facilitate efficient processing of transactions e.g. transmitting orders, bills and payments
- Examples:
 - B2B trading systems to facilitate trading among business partners
 - B2B support systems: Non-trading systems such as hubs, directories and other services
 - Global systems: Connect two or more companies in two or more countries. e.g. the SWIFT system
 - Electronic funds transfer (EFT)
 - Shared databases



IS Integration – Major Goals

- Streamlining Processes
- Data Accuracy and Consistency
- Real-Time Information Access
- Enhanced Customer Experience
- Improved Collaboration
- Efficient Resource Utilization
- Strategic Decision-Making
- Adaptability and Scalability
- Compliance and Risk Management
- Competitive Advantage

Methods of Integration



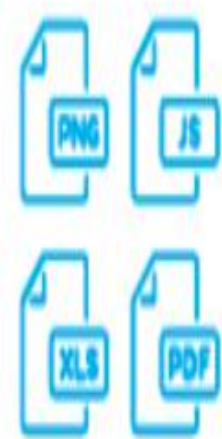
Vertical integration
combines unrelated
subsystems into one
functional unit.



Horizontal integration
assigns a specialized
subsystem to communicate
with other subsystems.



Point-to-point integration
enables the
interconnection of the
remaining subsystems.



Common data format
provides data translation
and promotes automation.

Types of IS Integration

- Enterprise Application Integration (EAI)
- Data Integration
- Business Process Integration (BPI)
- Cloud Integration
- Legacy Systems Modernization
- Partner and Supplier Integration
- Mobile Integration
- Internet of Things (IoT) Integration
- Merger and Acquisition Integration
- Compliance and Regulatory Integration

Integration Approaches and Architectures

Enterprise Application Integration (EAI)

- Integrating disparate applications and systems by providing a central integration platform or middleware.
- The approach typically involves using messaging systems, data transformation engines, and adapters to enable communication and data exchange between different applications.
- EAI solutions aim to create a unified view of data and processes across the organization.

Service-Oriented Architecture (SOA)

- SOA promotes the development and deployment of reusable, loosely coupled services.
- Applications are broken down into modular services that can be accessed and combined to create new applications or processes.
- SOA uses standardized protocols and interfaces (e.g., SOAP, REST) to enable communication and integration between the services.
- SOA aims to promote agility, flexibility, and reusability of software components across the enterprise.

API-based integration

- Application Programming Interfaces (APIs) provide a standardized way for applications to expose their functionality and data to other applications, allowing them to interact and integrate seamlessly.
- API-based integration is often considered a more modern and lightweight approach compared to traditional EAI or SOA solutions

Integration Approaches and Architectures

- Data Integration Methods e.g.
 - Extract, Transform, Load (ETL)
 - Enterprise Information Integration (EII) / Data Virtualization
 - Enterprise Service Bus (ESB)
 - Master Data Management (MDM)
 - Data Replication
 - Data Federation
 - API-based Integration(for data integration)

IS Integration Process

- Assessment and Planning
- Requirement Gathering
- System Design
- Development and Configuration
- Testing and Quality Assurance
- Deployment and Rollout
- Maintenance and Optimization

IS Integration Challenges

- Technical Complexity
- Data Synchronization and Quality
- Interoperability Issues
- Legacy Systems Integration
- Organizational Resistance to Change
- Cultural and Organizational Silos
- Resource Constraints
- Security and Privacy Concerns
- Vendor Lock-In
- Scalability and Future-Proofing

IS Integration Projects: Success Factors

The above is your personal assignment. Get yourself at least ten strong points. List them and explain them.

The End

**CAT II: Apr 3rd 2024, 8 am
(usual venue)**