

WEEK 8 – Enterprise Computing & Emerging Trends

I. Enterprise Information Systems (HRIS, CRM, ERP, DSS)

Enterprise information systems are large-scale software applications that support business operations, decision-making, and strategic functions across an organization.

- **HRIS (Human Resources Information System)** – Focuses on employee data, recruitment, payroll, training and performance management.
- **CRM (Customer Relationship Management)** – Manages customer interactions, sales leads, service cases, and helps improve relationships with customers.
- **ERP (Enterprise Resource Planning)** – Integrates core business functions (finance, HR, supply-chain, manufacturing) into a unified system sharing a common database.
- **DSS (Decision Support System)** – Provides tools and analytics to assist planning, forecasting and decision-making at management levels.

Role in Organizational Functions:

- HRIS streamlines workforce management and supports HR strategy.
- CRM drives sales growth and enhances customer service.
- ERP improves operational efficiency by breaking down departmental silos and providing real-time data.
- DSS gives managers insights and scenario-analysis capabilities to respond to changing business conditions.

II. Cloud Computing Models & Virtualization

Cloud computing refers to delivering computing resources (such as servers, storage, databases, networking, software) over the Internet ("the cloud") on demand.

Deployment Models:

- **Public Cloud** – Services offered over the public Internet by third-party providers, accessible to anyone with an account.
- **Private Cloud** – Dedicated infrastructure operated solely for one organization, either on-premises or hosted by a provider, offering more control and privacy.
- **Hybrid Cloud** – Combines public and private clouds with orchestration between them, allowing flexibility and scalability while retaining control.

Virtualization Concepts:

Virtualization allows one physical server or system to host multiple virtual machines or environments, improving resource utilization, scalability and manageability. It is a foundational technology enabling cloud deployments and flexible infrastructure.

Impact on Organizational IT Decisions:

Organizations choosing cloud models must consider cost, security, compliance, scalability, vendor lock-in and disaster recovery. Virtualization enables more efficient use of hardware, easier provisioning of services and smoother maintenance.

III. Backup Strategies & Disaster Recovery Basics

Reliable backup and disaster recovery strategies are essential to maintain business continuity and protect against data loss due to hardware failures, cyberattacks, natural disasters or human error.

Key Strategies:

- **Regular backups:** Full, incremental or differential backups stored off-site or in the cloud.
- **Redundancy:** Duplicate critical systems and data so failure of one component doesn't halt operations.
- **Recovery plans:** Defined roles, procedures and testing (DR drills) to restore operations in case of failure.
- **RPO/RTO:** Recovery Point Objective (how much data loss is acceptable) and Recovery Time Objective (how quickly systems must be restored) drive strategy.

In choosing an approach, organizations must evaluate their risk profile, data criticality, regulatory requirements and budget.

IV. E-commerce Models (B2B, B2C, C2C)

E-commerce (electronic commerce) is the buying and selling of goods or services via electronic systems such as the Internet.

- **B2B (Business-to-Business):** Transactions between businesses (e.g., manufacturer to wholesaler).
- **B2C (Business-to-Consumer):** Transactions from businesses directly to consumers (e.g., online retail).
- **C2C (Consumer-to-Consumer):** Transactions between consumers, usually through a third-party platform (e.g., online marketplace).

Organizations must choose the right model, platform, security measures and payment/fulfillment systems to succeed.

V. Emerging Trends in Computing

Technology continues to evolve rapidly, and organizations must adapt to stay competitive and innovative. Some of the major emerging trends include:

- **Artificial Intelligence (AI) & Machine Learning (ML):** Systems that can learn from data, make decisions and automate tasks.
- **Internet of Things (IoT):** Network of connected devices and sensors that gather and exchange data.
- **Blockchain Applications:** Distributed ledger technologies enabling transparent, immutable records and smart contracts.
- **Edge Computing & 5G:** Processing data nearer to source devices (edge) and leveraging 5G for low-latency, high-bandwidth connectivity.
- **Cybersecurity Developments:** Emerging security paradigms such as zero-trust, quantum-safe cryptography and federated learning.

- **Quantum Computing (Overview):** Quantum processors that exploit quantum mechanics to solve problems infeasible for classical computers (e.g., optimization, cryptography).

These trends are already being used in enterprise scenarios. For example, an ERP vendor might incorporate ML for demand forecasting, a CRM system might use AI-driven chatbots for customer service, or a supply-chain system may integrate IoT sensors and edge computing for real-time logistics tracking.