Distributed System

& the Impact of Internet

Lecture 4

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Objectives

- **Define a distributed system**

- **Understand the organizational benefits of distributed systems**

- **Discuss the use EDI communications**

- **Discuss the impact of the internet**

Distributed System

❑ A **distributed system** is a group of computers that work together to achieve a common goal. They can be used to process large amounts of data or to provide services such as email and file storage.

❑ The main difference between networks and distributed systems is that networks are designed to connect devices within a single location, while distributed systems are designed to connect devices across different locations.

❑ For example, imagine you have a large dataset that you need to process quickly. If you use a single computer to process the data, it might take a long time. However, if you use a distributed system, you can split the data into smaller pieces and process each piece on a different computer. This can significantly reduce the time it takes to process the data.

❑ Distributed systems can be used at different organizational levels within a business.

- At the operational level, distributed systems can help manage inventory, order fulfillment, and logistics.

- At the managerial level, distributed systems can facilitate decision-making and resource allocation.

- At the strategic level, distributed systems can help with long-term planning and forecasting.

➢ Distributed systems can provide real-time information sharing and decision-making capabilities across different levels of an organization.

➢ They can improve collaboration, coordination, and communication across departments and locations.

➢ By using a common platform and sharing data, distributed systems can reduce redundancy and improve efficiency.

➢ They can also provide insights and analytics that can inform strategic decision-making.

❑ In distributed systems, data is often distributed across multiple devices or servers. This distribution can be based on different criteria such as geographic location, type of data, or user access. The goal of data distribution is to improve performance, reduce latency, and increase availability.

➢ Strategies for distributing data include replication, partitioning, and caching.

1. Replication copies data to multiple devices to improve availability and reduce latency.

2. Partitioning divides data into subsets and distributes them based on criteria.

3. Caching stores frequently accessed data to improve performance and reduce network traffic.

• The chosen strategy depends on the specific needs of the system.

- Electronic Data Interchange (EDI) is a computer-to-computer exchange of business documents in a standard electronic format between trading partners.

- This means that instead of manually creating, sending, and receiving paper-based documents such as purchase orders, invoices, and shipping notices, these documents are exchanged electronically between computer systems of the trading partners.

- BIS solutions that incorporate EDI can improve supply chain visibility, reduce errors, and enable real-time decision-making.

- A company uses EDI to order toner cartridges from a supplier. When the company's inventory runs low, an electronic order is automatically generated and sent to the supplier's EDI system.

- The supplier's system checks inventory and generates an invoice, which is sent back to the company's EDI system.

- An electronic payment is generated and sent back to the supplier's system, and the toner cartridges are shipped to the company. The entire process is automated and efficient.

- **Websites** have become essential for businesses to establish an online presence and reach a wider audience.

- Website development involves designing, building, and maintaining websites that meet the needs of both the business and its customers. Example: A small retail business that wants to expand its reach and increase sales can benefit from developing a website. By creating an online store, customers can browse and purchase products from anywhere at any time, resulting in increased sales and revenue for the business.

- Websites can serve different purposes, such as providing information, selling products or services, and facilitating communication and collaboration. An example of a website that facilitates communication and collaboration is Amazon, which enables businesses to sell products to customers worldwide.

➢ **E-commerce:** selling products and services online, reaching customers worldwide. Example: Amazon, the world's largest online retailer, has over 2.5 million active sellers from around the world and operates in multiple countries.

➢ **Globalization:** connecting with suppliers and partners from other countries. Example: Coca-Cola, a multinational corporation, operates in over 200 countries and relies on global supply chains to source raw materials and distribute products.

➢ **Significant and far-reaching impact.**

  ▪ Example: The rise of e-commerce has disrupted traditional brick-and-mortar retail, leading to the closure of many physical stores and the emergence of new online-only businesses.

➢ **Revolutionized communication, marketing, and information sharing.**

  ▪ Example: Social media platforms such as Facebook, Instagram, and Twitter have provided businesses with new marketing channels to reach and engage with customers.

➢ **Transformed business operations and processes through automation.**

  ▪ Example: The use of chatbots and AI-powered customer service has enabled businesses to handle customer queries and complaints in a faster and more efficient manner.

➢ **Has created new business models and opportunities.**

- Example: The rise of the gig economy and platforms such as Uber have created new opportunities for individuals to generate income and for businesses to tap into new markets.

➢ **Continues to shape the way businesses operate and interact with their stakeholders**.

- Example: The ongoing development of new technologies such as blockchain and the Internet of Things (IoT) is set to further transform the business landscape in the years to come.

1. Can you provide examples of how distributed systems can be used at each of the organizational levels within a business?

2. Can you provide examples of technological advancements that have significantly impacted various industries and how they have transformed communication, marketing, information sharing, and business operations through automation?

3. What is website development and how can it benefit businesses? Can you give examples of how websites are used for various purposes and provide an example of a website that enables global sales for businesses?