Practical Significance of Industrial Information Systems in Modern Science

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Annotation: Industrial Information Systems are integral to modern data-driven environments, offering advanced data analytics and reporting capabilities that are essential for informed decision-making in both scientific research and industrial processes. These systems not only streamline processes but also enhance overall productivity by providing insights that lead to better resource allocation and reduced downtime. Furthermore, the robust analytical tools embedded within IIS facilitate the assessment of trends and patterns, empowering researchers and industrial operators to make strategic decisions that drive innovation and improve outcomes.

Keywords: Informed Decision-Making, Industrial Processes, Operational Efficiency, Real-Time Data Analysis, Critical Data Insights, Process Optimization, Performance Metrics.

INTRODUCTION

Industrial information systems are integrated computer systems managed by a separate geographically distributed company. They are based on extensive use of database, network technology, access to resources, telecommunication system, system and processing applications [1-4].

The first generation of industrial information systems include the developments developed in the 50s and 70s on the basis of large electronic computing machines (EHM), currently called "mainframe". Their main task was to transfer difficult, outdated and laborious data processing operations to EHM [5-7].

MATERIALS AND METHODS

The development of industrial information systems stimulated the creation of algorithmic languages, relational models, network and hierarchical databases, high-performance algorithms for working with data.

In the second stage, the transition from the centralized technology of data processing to the decentralized and distributed technology using personal computers in workplaces was carried out.

In the third stage, the need for a comprehensive approach to the implementation of a set of interconnected issues in enterprise management required a new approach to automation, implementation of collective work of users based on the principles of "client-server" architecture [8-14].

DISCUSSIONS AND RESULTS

In other words, industrial information systems are a management system in which modern tools are used to store and transmit data using economic-mathematical methods for collection, systematization, processing, enterprise management issues.

A corporate information system is an integrated computer system for the management of a distributed corporation, based on application programs for processing, with extensive use of network technology, access to resources in a telecommunication system, based on application programs for working with data . The difference of IAT from the corporate information system is that it is a legal device of one manager [15-18].

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[1] Fergana branch of the Tashkent University of Information Technologies named after Muhammad al-Khwarizmi

The computer network of industrial information systems includes individual units, local networks of offices, regional networks interconnected with the main office, and elements of global networks (Pic. 1).

Local Area Networks (LANs) are several computer systems clustered within the boundaries of buildings and structures. Their main task is to unite functionally similar subscribers (accounting, personnel, marketing service). The length of local networks at the highest speed of data exchange is several kilometers, because packets transmitted through the network do not require initial communication.

Regional networks (MAN) cover subscribers of a city or other administrative area and provide interconnection of subscribers from tens to hundreds of kilometers. They combine local networks, work at higher than average speeds, can also work on leased high-speed communication channels.
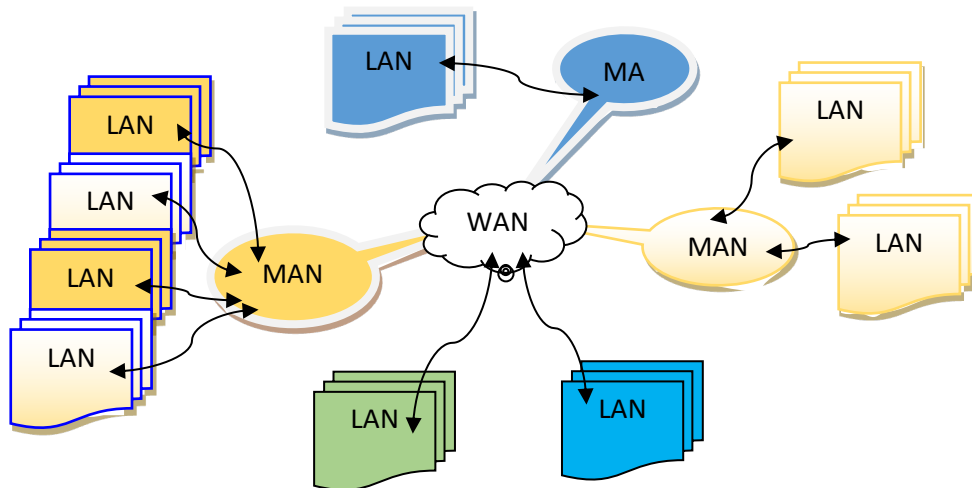
Picture-1. The structure of the computer network forming the industrial information system.

Global networks (WAN) allow to establish interconnection between subscribers at large distances, their length can be thousands of kilometers. These networks are aimed at establishing initial communication between subscribers before direct data transmission [19-20].

CONCLUSION

According to the above, the main characteristics of industrial information systems: integrated management of the corporation: planning, accounting, document management, finance, analysis and regulation; spread of objects across the territory, long-distance communication of customers with information resources; integration of technical and software support, whose components are not the same; corporate computer network is apparently a single information space; implementation of control laws on a real-time scale; scalability, high level of security, reliability and openness [21-23].

the basic definitions of industrial information systems : architecture (composition of elements and rules of their interaction); network topology and adopted network technologies; organization of the database and the volume of stored data; speed of processing transactions in the system; number of subscribers and user interface; technologies used in the collection, processing, storage and transmission of data [24-25].

The architecture of industrial information systems is its software hardware platform, computer network topology, organization of storage and access to the database, telecommunication tools, remote interconnection tools.

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