

The information systems infrastructure in modern era

Muqaddas Maxamadjonovna Anvarova

m.anvarova@tsue.uz

Tashkent State University of Economics

Abstract: This paper is based on the major impacts of information infrastructure in modern society. And it illustrates how increasing the role of the information systems infrastructure is.

Keyword: information systems, information infrastructure, computer-based information systems, information communication technologies, global economy

Introduction

Information systems have a critical role in organizations. Practically all companies and organizations depend on information systems and their operations. Therefore, robustness and reliability are key issues in information systems and information systems infrastructures. Trustworthiness of technologies and systems is important, meaning that these need to be the goals of information systems management and development. In this article, we look at development of robustness of organization's information systems infrastructure. The goal is to find the key issues that affect the infrastructure, impacting reliability and continuity of systems and technologies in the organization. Information systems need to be developed so that robustness and flexibility could be built into information systems and infrastructures. The goal is to develop systems that enable rather than restrict, so that systems act as a robust basis for activities and operations, and make it possible to reach for operative and strategic goals.

An information infrastructure consists of the physical facilities, services, and management that support all shared computing resources in an organization. There are five major components of the infrastructure: computer hardware, software, networks and communication facilities (including the Internet and intranets), databases, and information management personnel. Infrastructures include these resources as well as their integration, operation, documentation, maintenance, and management.

Information technology architecture

Information technology architecture is a high-level map or plan of the information assets in an organization including the physical design of the building that holds the hardware. It is both a guide for current operations and a blueprint for future directions. The IT architecture integrates the entire organization's needs for information, the IT infrastructure, and all applications. The IT architecture is analogous to the architecture of a house. An architecture plan describes how the house is to be constructed; including

how the various components of the house, such as electrical systems, are to be integrated. Similarly, the IT architecture shows how all aspects of information technology in an organization fit together. Figure 1 illustrates the IT architecture of a travel agency.

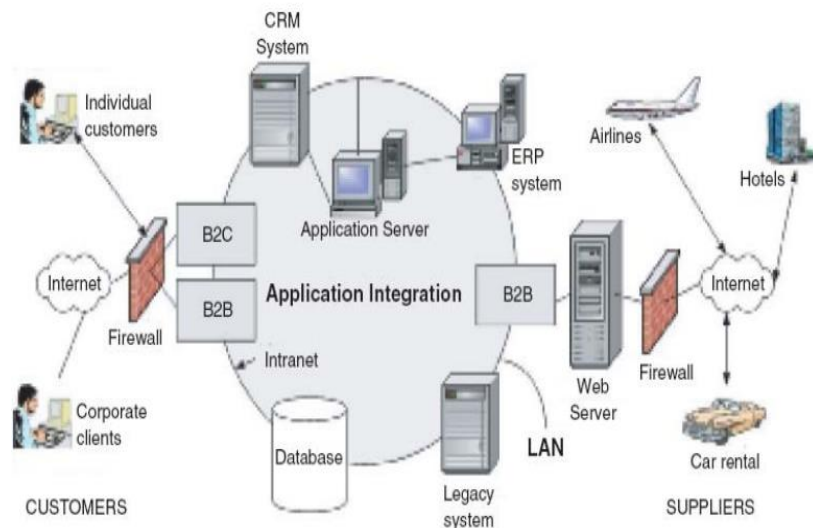


Figure 1. Architecture of an online travel agency.

An organization's information technology (IT) infrastructure consists of the physical facilities, IT components, IT services, and IT personnel that support the entire organization. Starting from the bottom of Figure 2, we see that IT components are the computer hardware, software, and communications technologies that provide the foundation for all of an organization's information systems. As we move up the pyramid, we see that IT personnel use IT components to produce IT services, which include data management, systems development, and security concerns. Computer-Based Information Systems The IT architecture and IT infrastructure provide the basis for all information systems in the organization. An information system (IS) collects, processes, stores, analyzes, and disseminates information for a specific purpose. A computer-based information system (CBIS) is an information system that uses computer technology to perform some or all of its intended tasks. Although not all information systems are computerized, most are. For this reason, the term "information system" is typically used synonymously with "computer based information system."

Major Capabilities of Computer-Based Information Systems

- Perform high-speed, high-volume, numerical computations.
- Provide fast, accurate communication and collaboration within and among organizations.
- Store huge amounts of information in an easy-to-access, yet small, space.
- Allow quick and inexpensive access to vast amounts of information, worldwide.
- Facilitate the interpretation of vast amounts of data.
- Increase the effectiveness and efficiency of people working in groups in one place or in several locations, anywhere.

- Automate both semiautomatic business processes and manual tasks.

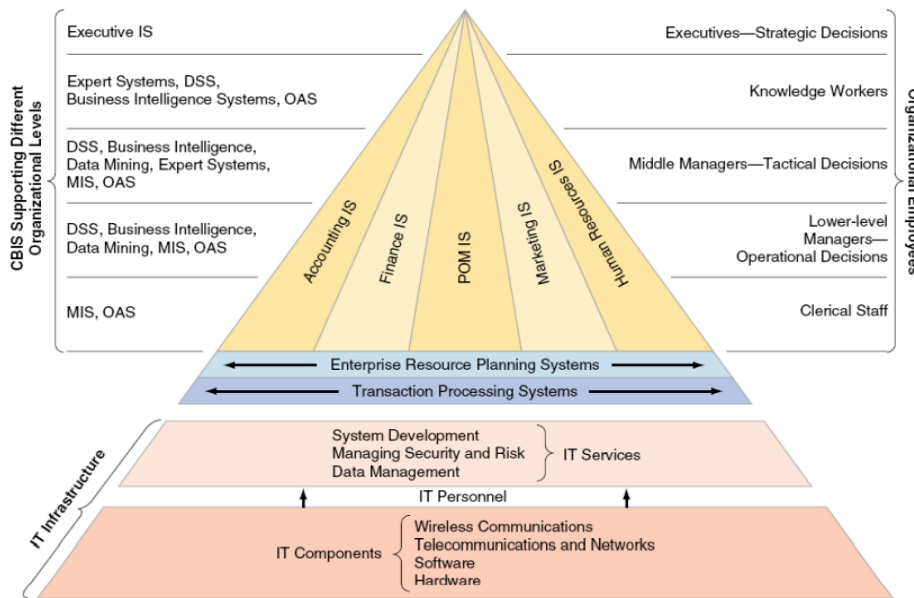


Figure 2. Architecture of an online travel agency.

Application programs

An application program is a computer program designed to support a specific task or process. Each functional area or department within a business organization employs dozens of application programs. Note that application programs are synonymous with applications. For instance, the human resources department sometimes uses one application for screening job applicants and another for monitoring employee turnover. The collection of application programs in a single department is usually referred to as a departmental information system. For example, the collection of application programs in the human resources area is called the human resources information system (HRIS). One can see in Figure 4.5 how a variety of applications enables Commerce Bank to successfully serve its customers. Creating the IT architecture is a cyclical process, which is driven by the business architecture. Business architecture describes organizational plans, visions, objectives and problems, and the information required to support them. The potential users of IT must play a critical role in the creation of business architecture, in order to have both business architecture and IT architecture that meets the organization’s long-term needs. We can use the architecture of a house as an analogy. When preparing a conceptual high-level drawing of a house, the architect needs to know the requirements of the dwellers and the building constraints (time, money, materials, etc.). In preparing IT architecture, the designer needs similar information. This initial information is contained in the business architecture. Once the business architecture is finished, the system developer can start a five-step process of building the IT architecture, as shown in Figure 3 Notice that translating the business objectives into IT architecture can be a very complex undertaking. Let us look now at various basic elements of IT architecture.

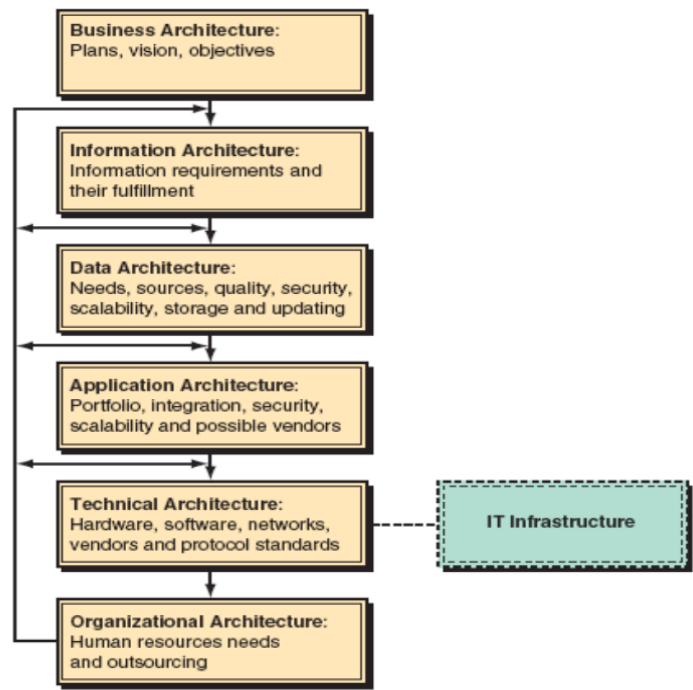


Figure 3. Steps of constructing IT architecture.

Managing Information Resources Information resources are a general term that includes all the hardware, software (information systems and applications), data, and networks in an organization. In addition to the computing resources, numerous applications exist, and new ones are continuously being developed. Applications have enormous strategic value. Firms rely on them so heavily that, in some cases, when they are not working (even for a short time), an organization cannot function. In addition, these information systems are very expensive to acquire, operate, and maintain. Therefore, it is essential to manage them properly. However, it is becoming increasingly difficult to manage an organization’s information resources effectively. The reason for this difficulty comes from the evolution of the MIS function in the organization. When businesses first began to use computers in the early 1950s, the information systems department (ISD) owned the only computing resource in the organization, the mainframe. At that time, end users did not interact directly with the mainframe. Today, computers are located throughout the organization, and almost all employees use computers in their work. This system is known as end user computing. As a result of this change, the ISD no longer owns the organization’s information resources. Instead, a partnership has developed between the ISD and the end users. The ISD now acts as more of a consultant to end users, viewing them as customers. In fact, the main function of the ISD is to use IT to solve end users’ business problems.

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References

1. Porter, M.(2001). Strategy and the Internet. *Harvard Business Review*: 79 (3) 62–78
2. Bursztynsky , J. (2020, August 19). Apple becomes first U.S. company to reach a \$2 trillion market cap. *CNBC*.
3. Information systems in economics: a textbook for academic baccalaureate. / Under the editorship of V.N. Volkova, V.N. Yuryev. – Yurayt Publishing House, 2018
4. Lapidus L.V. Digital economy: management of electronic business and electronic commerce: monograph / L.V. Lapidus. – M.: INFRA-M. 2019.-381 p.
5. Titorenko G.A. Information technology management. Tutorial. - M: UNITY-DANA, 20 - 439C
6. Asanov R.K. Formation of the concept of "digital economy" in modern science / R.K. Asanov // *Socio-economic sciences and humanitarian research*. – 20– No. – S. 143–148.