
Books overview & Short note

Information System Analysis

Atik sir

How to?

Highlighted texts are something you have to work on your own, or my comments :)

LLM = Large language model, eg. deepseek, qwen, ChatGPT...

Can be **inaccurate**! Feel free to **criticize**.

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Chapter 01

(Context of Systems Analysis & Design Methods)

Basic Framework

System

A system is a group of interrelated components that function together to achieve a desired result

Information system

Information systems (IS) in organizations capture and manage data to produce useful information that supports an organization and its employees, customers, suppliers, and partners

Transaction processing system (TPS)

Transaction processing system (TPS) is an information system that captures and processes data about business transactions.

Management information systems (MISs)

Management information systems (MISs) use the transaction data to produce information needed by managers to run the business.

Decision support system (DSS)

Decision support system (DSS) is an information system that either helps to identify decision-making opportunities or provides information to help make decisions.

Office automation system

Office automation system help employees create and share documents that support day-to-day office activities.

Executive information system (EIS)

Executive information system (EIS) is an information system that supports the planning and assessment needs of executive managers.

Players

সব player = যাদের system এর প্রতি আগ্রহ আছে = stakeholder

Stakeholder means any person who has an interest in an existing or proposed information system. Stakeholders may include both technical and non-technical workers. They may also include both internal and external workers.

System owner

সিস্টেমের মালিক

System users

যারা সিস্টেম ব্যবহার করে

System users – a “customer” who will use or is affected by an information system on a regular basis – capturing, validating, entering, responding to, storing, and exchanging data and information.

Internal

1. Clerical and service workers
যারা নিয়মিত কাজ করে
2. Technical and professional staff
অপর ভাষায় knowledge worker, যারা একটা নির্দিষ্ট দিক থেকে দক্ষ
3. Supervisors, middle managers, and executive managers
 - ▶ Supervisor = tend to focus on day to day problem solving and decision making
 - ▶ Middle manager = are more concerned with tactical (short-term) operational problems and decision making
 - ▶ Executive managers = are concerned with strategic (long-term) planning and decision making
4. Remote and mobile users (internal but disconnected)
যারা দূর থেকে কাজ করে, যেমন freelancing...

External

1. Customers
2. Suppliers
যাদের থেকে আমরা পণ্য নেই, তারা আমাদের information system এর access দিলে কতোটুকু কাঁচামাল যোগান দিতে হবে তারা বুঝে নিতে পারবে
3. Partners
যারা আমাদের থেকে পণ্য কিনে
4. Employees
যারা দূর থেকে remotely কাজ করে এমন employees

System Designer

এরা সিস্টেম টা ডিজাইন করবে (business requirement → technical solution)

এরা সরাসরি কাজে হাত দিবে না, অর্থাৎ বানাবে না। যেমন, ডেটাবেজের ERD তৈরি করতে পারে বা DDL file টা বর্ণনা করতে পারে

System designer, a technical specialist who translates system users business requirements and constraints into technical solutions

1. Database administrator
2. Network architects
3. Web architects
4. Graphic artists
5. Security experts
6. Technology specialists

System Builder

উপরের system designer যা ডিজাইন করবে সেটা বাস্তবে implement করবে এনারা

System builder a technical specialist who constructs information systems and components based on the design specifications generated by the system designers.

1. Application programmers
2. System programmers
3. Database programmers
4. Network administrators
5. Security administrators
6. Webmasters
যারা web server manage করে, বাস্তব উদাহরণ, apache, nginx :)
7. Software integrators
যারা hardware-software integrate করে

System Analyst

A specialist who studies the problems and needs of an organization to determine how people, data, processes, and information technology can best accomplish improvements for the business.

এরা মূলত মানুষ কি চায় সেটা বুঝার চেষ্টা করবে এবং সে অনুযায়ী business requirement তৈরি করে।

তারপর সেই business requirement এর উপর কাজ করে হলো system designer, এরকম একটা flow chart এর মতো,

owner → analyst → designer → builder → user

নিচে দুই ধরনের analyst এর প্রকারভেদ দেয়া আছে, অর্থাৎ একই সাথে analyst + ...

A programmer/analyst (or analyst/programmer)

Includes the responsibilities of both the computer programmer and the systems analyst.

A business analyst

Focuses on only the nontechnical aspects of systems analysis and design.

Skills needed for system analyst

System analyst এর যেসব skill লাগে আরকি :)

1. Working knowledge of information technology
2. Computer programming experience and expertise
3. General business knowledge
4. General problem-solving skills
5. Good interpersonal communication skills
6. Good interpersonal relations skills
7. Flexibility and adaptability
8. Character and ethics

External service provider (ESP)

সহজ কথায় যদি কেউ অন্য কোনো business এ কাজ করে = outsourcing...

A systems analyst, system designer, or system builder who sells his or her expertise and experience to other businesses to help those businesses purchase, develop, or integrate their information systems solutions; may be affiliated with a consulting or services organization.

Project Manager

সবকিছুর দেখাশোনা করে, এক কথায়

An experienced professional who accepts responsibility for planning, monitoring, and controlling projects with respect to schedule, budget, deliverables, customer satisfaction, technical standards, and system quality.

Usually one or more of these stakeholders takes on the role of project manager to ensure that systems are developed on time, within budget, and with acceptable quality.

Business Drivers – for information system

- ▶ Globalization of the Economy
International market নিয়ে চিন্তা করতে হয়, পাশাপাশি বহু ভাষায় কাজ করতে হয়
- ▶ Electronic Commerce and Business
E-commerce ও E-business এর কনসেপ্ট
কয়েকটি basic type হলো,
 - marketing of corporate image, products, and services
এখানে ইন্টারনেটকে ব্যবহার করা হয় বিজ্ঞাপনের কাজে
 - Business-to-consumer (B2C)
কাস্টমারকে ইন্টারনেটভিত্তিক সার্ভিস প্রদান - amazon
 - Business-to-business (B2B)
পুরো ব্যবসাকেই টেকনোলোজি ভিত্তিক করে গড়ে তোলা
- ▶ Security and Privacy
- ▶ Collaboration and Partnership
- ▶ Knowledge Asset Management
- ▶ Continuous Improvement and Total Quality Management
- ▶ Business Process Redesign

Technology Drivers – for information system

- ▶ Networks and the Internet
- ▶ Mobile and Wireless Technologies
- ▶ Object Technologies
- ▶ Collaborative Technologies
- ▶ Enterprise Applications
 - Enterprise Resource Planning (ERP) – a software application that fully integrates information systems that span most or all of the basic, core business functions.
এখানে একটা কমন ডেটাবেজ থাকবে
 - Supply Chain Management (SCM) – a software application that optimizes business processes for raw material procurement through finished product distribution by

directly integrating the logistical information systems of organizations with those of their suppliers and distributors.

- ❑ Customer Relationship Management (CRM) – a software application that provides customers with access to a business’s processes from initial inquiry through postsale service and support.
- ❑ Enterprise Application Integration (EAI) – the process and technologies used to link applications to support the flow of data and information between those applications.
- ❑ Middleware – software (usually purchased) used to translate and route data between different applications.

A Simple System Development Process

System development process – a set of activities, methods, best practices, deliverables, and automated tools that stakeholders use to develop and maintain information systems and software.

A general problem-solving approach

- Identify the problem.
- Analyze and understand the problem.
- Identify solution requirements or expectations.
- Identify alternative solutions and choose the “best” course of action.
- Design the chosen solution.
- Implement the chosen solution.
- Evaluate the results. If the problem is not solved, return to step 1 or 2 as appropriate.

Overview

- System initiation – the initial planning for a project to define initial business scope, goals, schedule, and budget.
- System analysis – the study of a business problem domain to recommend improvements and specify the business requirements and priorities for the solution.
- System design – the specification or construction of a technical, computer-based solution for the business requirements identified in a system analysis.
- System implementation – the construction, installation, testing, and delivery of a system into production.

Project management

The activity of defining, planning, directing, monitoring, and controlling a project to develop an acceptable system within the allotted time and budget.

Process management

The ongoing activity that defines, improves, and coordinates the use of an organization’s chosen methodology (the “process”) and standards for all system development projects.

Review Questions

1. Why are information systems (IS) essential in organizations? LLM
2. Why do systems analysts need to know who the stakeholders are in the organization? LLM
3. Who are the typical stakeholders in an information system? What are their roles? Players/ Stakeholder এর অংশটুকু
4. Please explain what the consequences are if an information system lacks a system owner. LLM
5. What are the differences between internal users and external users? Give examples. System users section
6. What are the differences between the role of system analysts and the role of the rest of the stakeholders? system analyst বাকিদের সাথে যোগাযোগের gap কম রাখে
7. What kind of knowledge and skills should a system analyst possess? check system analyst section
8. In addition to the business and computing knowledge that system analysts should possess, what are the other essential skills that they need to effectively complete their jobs? LLM
9. Why are good interpersonal communication skills essential for system analysts? LLM
10. What are some of the business drivers for today's information systems? business driver part
11. What are the differences between electronic commerce (e-commerce) and electronic business (e-business)? LLM
12. What are the differences between information and knowledge? LLM
13. What are the most important technology drivers for today's information systems? technology driver section
14. What are the four steps in a system development process? What happens in each step? check overview
15. Why is system initiation essential in the system development process? LLM

Problem exercise

1. Assume you are a systems analyst who will be conducting a requirements analysis for an individually owned brick-and-mortar retail store with a point-of-sale system. Identify who the typical internal and external users might include.
2. Assume you are a systems analyst for a consulting company and have been asked to assist the chief executive officer (CEO) of a regional bank. The bank recently implemented a plan to reduce the number of staff, including loan officers, as a strategy to maintain profitability. Subsequently, the bank has experienced chronic problems with backlogged loan requests because of the limited number of loan officers who are able to review and approve or disapprove loans. The CEO of the bank is interested in solutions that would

allow the approval process to move faster without increasing the number of loan officers, and has engaged your company to come up with suggestions. What is one type of system that you might recommend to the bank?

3. How do communication and collaboration systems improve efficiency and effectiveness? What are some of the communication and collaboration systems that are being used by an increasing number of organizations?

4. Identify the type of information system that clerical workers in an organization would typically use and why.

5. As information systems increase in complexity and comprehensiveness, ethical issues regarding accessing and using data from these systems are also increasing. What are some of these ethical issues?

6. What are business to consumer (B2C) and business to business (B2B) Web applications, and what are some examples of each type?

7. While system development processes and methodologies can vary greatly, identify and briefly explain the "generic" phases of the system development process that are described in the textbook and which must be completed for any project. You are a contractor with a systems integration company.

8. Your company has a contract with a local firm to link all of their systems so they can transparently work together. Their applications include a number of existing legacy systems, which were built at different times by different developers using a variety of languages and platforms, as well as several newer contemporary applications. What is the term for this type of linking? What type of tool would you most likely use, and what are some examples of these tools?

9. Your company has asked you to develop a new Web-based system to replace its existing legacy system. There will be very little change in business requirements and functionality from the existing legacy system. Suggest which system development process you might use and why.

10. You recently joined a retail sales company which has recently bought out and assimilated a commercial industrial supply house. You have been asked to lead a project to develop a consolidated inventory-tracking system. Suggest which system development process you might use and why.

11. Your company president sits down beside you just before a meeting is to begin and tells you that people keep saying the customer needs to install a CRM, but doesn't really know

what it is. The company president then asks you to explain it in nontechnical terms in the next 30 seconds.

12. Industry studies indicate that mobile and wireless technology has become one of the major technology drivers for designing new information systems. Why is this the case and what is the impact?

13. Briefly explain the impact of Web services on Web development. Give some examples of Web services.

14. Identify in which phase of the development process the following activities belong:

- a. Development of the technical blueprint or design document.
- b. Project scheduling.
- c. Integration testing.
- d. Interviewing system users to define business requirements.

15. What are the two most important advantages of object-oriented software technologies over structured software technologies?