

CHAPTER

12

**Systems
Investigation
and Analysis**

Systems Development

- What is it?

*“If you can’t do it better,
why do it?”*

-Herbert H. Dow,
Founder, Dow Chemical Company

Why Plan?

- Why do we need a process?

Why Plan?

- For every 100 application development projects, there are 94 restarts.
- 60% of companies rated themselves successful at meeting the data analysis expectations of end users and senior management. What about the other 40%?
- 73% of IS software projects have been cancelled, over-budget, or late.

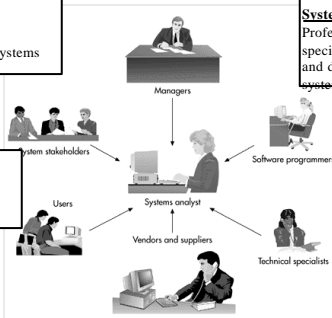
Participants in Systems Development

Stakeholders
Individuals who are beneficiaries of the systems development effort

Systems Analyst
Professional who specializes in analyzing and designing business systems.

Programmer
Individual responsible for modifying or developing programs to satisfy user requirements.

Users
Individuals who interact with the system regularly.



Who manages the process?

What's a Systems Analyst

- **Computer Systems Analysts**
- California Occupational Guide Number 541
- "The first task of the Computer Systems Analyst is the evaluation of business procedures and problems. Analysts begin an assignment by talking with managers or specialists to determine the precise nature of the problem and to break it down into its component parts. This may involve interviews with staff to specifically identify what information is being processed, where it comes from, and where it goes. In addition to the interview method of data collection, analysts also conduct written surveys and observe workers performing tasks. On occasion an Analyst may assume the worker's role for a week or so in order to understand and document the processes being performed."

What's a Systems Analyst

- After sufficient information has been collected, the analyst prepares charts and diagrams that constitute a representation of the new system in terms which managers or non-data-processing personnel can understand. Analysts consult with management throughout this phase in order to confirm that the analyst and the management agree on the principles of the system. Analysts also prepare analyses which present cost versus benefit as a result of implementing the proposed new system.

What's a Systems Analyst

- Once the system is accepted, Systems Analysts prepare specifications for programmers to follow. The specifications include detailed descriptions of the records, files, and documents used in processing, and data flow charts describing the interrelationship of the data elements to be considered by the programmers. The analysts also coordinate the development of test problems to debug the system and participate in trial runs of the systems. They also may determine what computer hardware and software will be needed to set up the system.

What's a Systems Analyst

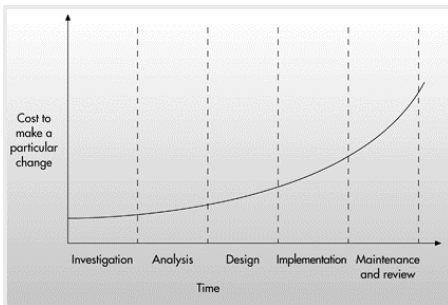
- Employers usually want analysts with a background in accounting, business management, or economics for work in a business environment
- A growing number of employers seek applicants who have a degree in computer science, information science, information systems, or data processing. Regardless of college major, employers look for people who are familiar with programming languages. Courses in computer concepts, systems analysis, and data base management systems offer good preparation for a job in this field. Systems Analysts must be able to think logically and should like working with ideas. They often deal with a number of tasks simultaneously. The ability to concentrate and pay close attention to detail also is important.

Typical Reasons to Initiate a Systems Development Project?

Systems Development Life Cycle

- Systems Investigation (Problem)
 - What is the problem and is it worth solving?
- Systems Analysis (Solution)
 - What can the IS do to solve the problem?
- Systems Design (Plan)
 - How will the IS do what it must to solve the problem?
- Systems Implementation (Action)
 - Creating, acquiring, assembling, and implementing
- Systems Maintenance & Review
 - Ensure operations and make necessary modifications

Systems Development Life Cycles



Rapid Application Development (RAD)

A concept that products can be developed faster and of higher quality through:

- Gathering requirements using workshops or focus groups
- Prototyping and early, reiterative user testing of designs
- The re-use of software components
- A rigidly paced schedule that defers design improvements to the next product version
- Less formality in reviews and other team communication

Managing Change

- Recognize Potential Concerns
 - Jobs will be lost
 - More work will be created
 - Developers don't understand processes
 - Other problems are more pressing
 - Unwillingness to learn new procedures

Project Management

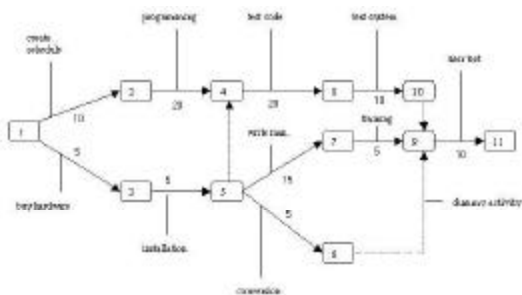
- Use of project management tools
 - Schedules – What is to be done
 - Milestones – Critical dates for completion
 - Deadline – When the project is to be operational
 - Critical path – Activities with zero slack
 - Program Evaluation Review Technique (PERT)
 - Gantt chart

PERT Chart

(Program Evaluation and Review Technique)

- A project management tool used to schedule, organize, and coordinate tasks within a project.
 - Developed by the U.S. Navy in the 1950s to manage the Polaris submarine missile program.
- A similar methodology, the *Critical Path Method (CPM)* was developed for project management in the private sector at about the same time
 - Has become synonymous with PERT

PERT Chart



Use of Computer-Aided Software Engineering (CASE) Tools

- Computer-Aided Software Engineering (CASE)
 - Tools that automate many of the tasks required in a system development effort and enforces adherence to the SDLC.
- Upper CASE Tools
 - Tools that focus on systems investigation, analysis, and design activities
- Lower CASE Tools
 - Tools that focus on the later implementation stage of systems development. May be capable of automating code creation.

24

Systems Investigation

Systems Investigation

- Answers the following questions...
 - What problems might a new or enhanced system solve?
 - What opportunities might be provided?
 - What are the associated risks?
 - Is it feasible...?

27

Systems Investigation Feasibility Analysis

- Technical Feasibility
 - Can the hardware, software, and other system components be acquired or developed to solve the problem?
- Operational Feasibility
 - Can the project be put into action or operation?
- Schedule Feasibility
 - Can the project be completed in a reasonable amount of time?
- Economic Feasibility
 - Does the project make financial sense? (NPV)

28

Systems Analysis

Systems Analysis Data Collection

- Learn more about the problems identified in the current system.
 - How?

33

Systems Analysis Data Analysis

- Manipulating the collected data so that it is usable for the development team members who are participating in systems analysis.
- Can be generated with CASE tools
 - Entity Relationship (ER) Diagrams
 - Data Flow Diagrams (DFD)
 - Application Flowcharts

34

Systems Analysis Requirements Analysis

- Requirements Analysis
 - An assessment used to determine user, stakeholder, and organizational needs in a new system (functional requirements).
 - ◆ What they want and expect
 - ◆ What is critical to the business (CSF)
 - ◆ How they wish to interface (screen layouts)
 - ◆ What output they need (report layouts)

38
