The hardest single part of building a software system is deciding what to build… No other part of the work so cripples the resulting system if done wrong. No other part is more difficult to rectify later.

Fred Brooks
The Mythical Man Month

One of the two most common causes of runaway projects is unstable requirements

Robert L. Glass
“Frequently Forgotten Fundamental Facts about Software Engineering”
IEEE Software, 2001
Difficulties in Requirements Elicitation

- Problems of Scope

- Problems of Understanding
  - Customers not completely sure of what is needed
  - Customers do not have a full understanding of the problem domain
  - Different customer and developer terminology
  - “Obvious” information is omitted
  - Conflicting requirements
  - Ambiguous requirements

- Problems of Volatility
Functions/Objectives of Requirement Analysis

- To specify software functions and performance
- To indicate the software interface with other system elements
- To establish constraints that system must meet
- To provide designer with a representation of information and function that can be translated into design
- To provide developer and customer with the means to assess quality once software is built

Analysis Tasks

- Problem Recognition
- Evaluation and Synthesis
- Modeling
- Specification
- Review
Analysis Principles

1. The information domain of a problem must be represented and understood

2. The functions that the software is to perform must be defined

3. The behavior of software (as a consequence of external events) must be represented

4. The models that depict information, function and behavior must be partitioned in a manner that uncovers detail in a layered (or hierarchical) fashion

5. The analysis process should move from essential information toward implementation detail

Role of Models

- Aid the analyst in understanding the information, function and behavior of a system

- Become the focal point for review

- Become the foundation for design

(Pressman, R. Software Engineering: A practitioner’s approach, Fifth Edition)
A computer dealer gets computers from suppliers and delivers them to customers. There is often a delay in processing requests due to lack of co-ordination between various departments e.g. There is no inventory list and the sales department is not informed of the available or missing items, so they promise delivery times which are unrealistic. Accounts department is sometimes informed of a purchase/sale weeks after a delivery so that incorrect cheques/invoices are sent to suppliers/customers. Information is not available on time for decision making.

Problems

- Missing Functions
  - Inventory list not maintained
- Unsatisfactory Performance
  - Delay in processing requests
  - Slow response to user inquiries
- Costly operations
  - Inaccurate cheque amounts
  - Paying same cheque twice

Scope

Limited to normal accounting and reporting activities associated with accounts receivable and accounts payable systems ???

Objective

- Reduce delays in order processing
- Eliminate errors
- Reduce costs
Scope

- Accounts Receivable system

The system will include an accounts receivable module where the following information will be maintained

- Customer details
- Sales details (items sold, price, payments)

- Accounts payable system

The system will include an accounts payable module where the following information will be maintained

- Supplier details
- Receipt details (items bought, price, payments)