2.2.2 Requirements Elicitation

The next phase followed by feasibility studies is requirements elicitation which involves asking the customer, user, others what the objectives of system is , what is to be accomplished, how the system (or) product fits into the needs of the business and how the system (or) product is to be used on a day-day basis.

Problems making requirements elicitation difficult

▪ **Problem of scope:** The customers/users specify unnecessary technical detail which confuse rather than clarifying system objectives (i.e.) the boundary of the system is defined.

▪ **Problem of understanding:** The customers/users have a poor understanding of the capabilities and limitations of computing environment, They don' t have a full understanding of problem domain. They have trouble in

communicating needs to the system engineer or specify requirements that are ambigious (or) untestable.

▪ **Problems of volatility:** The requirements are not static and change overtime.

▪ **Problems of political factors:** These may come from managers who demand specific system requirements because these allow them to increase their influence in the organization.

A generic process model of the elicitation and analysis process is shown in Fig. 2.4. The process activities are

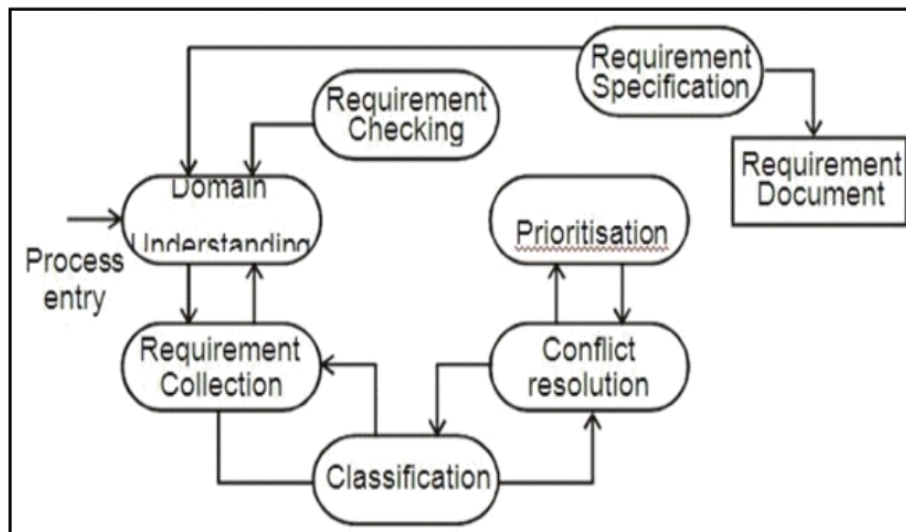▪ **Domain Understanding:** Analysts must develop their understanding of the application domain.

Fig. 2.4 Requirements Elicitation and Analysis Process

▪ **Requirements Collection:** Process of interacting with customers/users in the system to discover their requirements.

- **Classification:** It takes the unstructered collection of requirements and organises them into coherent clusters.

- **Conflict Resolution:** It is concerned with finding and resolving conflicts of multiple user requirements.

- **Prioritization:** In any set of requirements source will be more important than others. It involves interaction with customers/users to discover the most important requirement.

- **Requirements Checking:** The requirements are checked to discover if they are complete, consistent and in accordance with what customers really want from the system.

- **Requirements Specification:** A specification can be a written document, a graphical model, a formal mathematical model, a collection of usage scenario, a prototype (or) any combination of these.

- **Requirements Documents:** The software requirements document (sometimes called the Software Requirement Specification SRS) is the official statement of what is required of the system developers. It should include both the user requirements for a system and a detailed specification of the system requirement. Fig. 2.3 shows that requirement elicitation and analysis is an iterative process write continual feedback from each activity to other activities.

Guidelines for Requirements Elicitation

1. Assess the business and technical feasibility for the proposed system.

2. Identify the people who will help specify requirements and understand the organizational bias.

3. Identify domain constraints such as characteristics of the business environment specific to the application domain that limit the functionality (or) performance of the system.

4. Define technical environment (eg. computing architecture, OS, telecommunication needs) into which the product will be placed.

5. Define one or more requirement elicitation methods such as interviews, focus groups, team meetings.

6. Identify ambiguous requirements as candidates for prototyping.

7. Create usage scenarios to help customers/users better identify key requirements.

2.2.6 Requirements Management

Requirements management is a set of activities that help the project team to identify, control and track requirements and changes to requirements at any time as the project proceeds.

Like SCM requirements management begins with identification. Each requirement is assigned a unique identifier that might take the form

< requirement type > < requirement # > Requirement type may be

F = Functional requirement   D = Data requirement

B = Behavioural requirement   I = Interface requirement

P = Output requirement

Requirements Classes

1. **Enduring Requirements:** Stable requirements which are derived from the core activity of the organisation and which   relate directly to   the domain of   the system.

2. **Volatile Requirements:** These requirements are likely to change during the system development or after the system has been put into operation.

   a. **Mutable Requirment:** Requirements which change because of changes to the environment in which the organisation is operating.

   b. **Emergent Requirement:** Requirements whcih emerge as the customers understanding of the system develops during the system development.

   c. **Consequential Requirement:** Requirements which result from the introduction of the computer system which may change the organisations process and open up for new system requirements.

   d. **Compatibility Requirements:** Requirements which depend onthe particular systems or business processes within an organisation.

Requirements Management Planning

As requirements management is very expensive and for each project planning is an external first stage which involves the following stages:

- **Requirements Identification:** Each requirements must be uniquely identified which can be cross referenced by other requirements and used in traceability assessements.

- **Change Management Process:** The set of activities which assesses the impact and cost of changes.

- **Traceability Policies:** Traceability is an overall property of a requirements specification which reflects the ease of finding related requirements. Some of the traceability information are :

  1. **Source traceability information:** links the requirements to the customers/ stakeholders who proposed the requirements.

  2. **Requirements traceability information:** links dependent requirements written the requirements document. It is used to assess how many requirements are likely to be affected by a proposed change and the extent of consequential requirement changes.

  3. **Design traceability information:** links the requirements to the design modules where these requirements are implemented.

- **Case Tool Support:** Requirements management involves the processing of large amounts of information about the requirements (eg.) spread sheets and databases. Some of the ease tools are need for automated support and for the following purposes:

  Requirements Storage: Requirements should be maintained in a secure, managed data store which is accessible to everyone involved in requirements engineering process.

  Change Management: Requirements change management should be applied to all proposed changes to the requirements as illustrated in the Fig. 2.5.
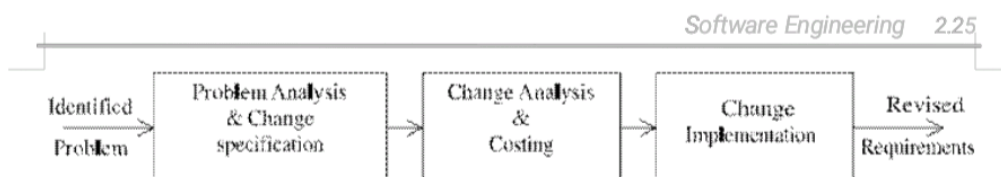
Fig. 2.5 Requirements Change Management

Problem analysis and change specification

During this stage, the problem or the change proposal is analysed to check whether it is valid.

Change analysis and costing: The effect of the proposed change is assessed using traceability information. The cost incurred by both modifications of requirements documents, system design and implementation is analysed and a final decision is made.

Change Implementation: The requirements document the system design and implementation is modified.