Problems in SE are

- immensely complex
- understanding the problem can be very difficult
- it cannot be assumed that the customers fully understand the problem.

Software Requirements

We are being asked to identify the problem the customer \textit{wishes} to have solved. It includes the qualities and tasks the solution needs to perform.

It is generated using customer-supplied information

We are building Software Systems for Customers!
Remember we are building Software Systems for Customers!

A **system** is an association of interdependent devices, people, rules, and/or procedures organized to form an unified whole to achieve a common purpose.

– General Motors is a "system" for making and selling cars.
– A college is a "system" organized to provide students with a post-secondary education.

Remember we are building Software Systems for Customers!

- Software consists of the computer programs and associated documentation required to develop, operate, and maintain the programs.
- A customer is a person, or persons, who pay for the system and usually decide the requirements.
- The customer is not always the user.

What are the system’s Requirements?

- Identifying **need** is the starting point in the evolution of a computer based system.
- Analyst assists the customer in defining the goals of the system (product)
  – What information will be produced?
  – What information is to be provided?
  – What functions and performances are required?
Software Requirements

Distinguishes between
Customer "needs" --
AND
Customer's "wants" --

How do we gather data to determine a Project's Requirements?

- Observation - Watch
- Interview - Listen
- Research - Learn

Interview

- Determine who are the project’s stakeholders!
- Talk to customers
- Talk to users
- Talk to other stakeholders
The Interview Process

- Put person you are interviewing at ease.
- Avoid or Reduce interruptions.
- Focus attention

Meeting of minds:
- Review as you go along
- Note taking?
- What happens after?

How many persons should attend an interview?
The Interview Process

- Provide feedback
- What is it I heard?
- What do I understand?
- Rephrase critical information
- Ask the same question in a slightly different way, do you get the same response?

- not everything spoken is the truth
- sometimes people lie or forget facts
- most often they speak from their own ignorance or point of view
- interview many people to gather balanced information
- evaluate what you are hearing
- watch body language

What happens after the interview?

- Immediately write down interview results.
- Research show that even in a life-and-death situations:
  
  50% of what took place is forgotten within 30 minutes.

- Follow-up Memo
Observation:
Watch, Who, Where, Why?
- Watch the way it is done: Go to the customer’s site, spend time in the users real-world environment!
- Who does the job?
- Where is it done?
- Why is it done in this particular way?
Learn everything you can about the way the process is done. At this stage it doesn’t matter if it is done by hand or by computer.

Research and Observation
How do we get what we need?
- Obtain copies of ALL operating documents
- Assess existing documents
- Assess current procedures
- Focus on identifying what’s visible
- Observe current procedures
- Cross “fertilization”

Research
- Study documentation provided by the customer.
- Collect materials generated by the existing system, even if such materials are paper-and-pencil versions
- Examine the input and output currently generated
Data Gathering for Software Requirements

Analysis takes practice
Demands Prioritization
Means Identifying Goals

Prioritization

- users are likely to ask for the moon if there are no limits.
- beauty should not outweigh functionality.
- help customer be realistic about expectations.
- useful to identify enhancements for future work once basic product is developed.

Prioritization:

- Guides team in allocating effort
- May be needed to schedule incremental development
- Enables determination of what is really important
- Avoid "gold-plated" software