Requirements Gathering

What is a requirement?

* It’s a statement of what the system must do and the characteristics it must have
* Written in a business perspective (“what” of system)
* Requirements become more technical along the way

**Requirements Determination**

* Part of analysis where the project team turns a high-level explanation of business requirements into a precise list of system requirements
* AKA requirements discovery

**Requirements Gathering**

* Techniques used during the requirements determination to define the system requirements
* **The Process:** 
  + Establish trust and rapport with the users
  + Get buy-in from the users
  + MUST talk to all key stakeholders (employee, owners, suppliers, customers)
  + Determine ways in which you will gather the requirements such as:
    - Interviews
    - Questionnaire
    - Document analysis
    - Observation
    - JAD sessions
    - Domain research

**Requirement Gathering Techniques**

* **INTERVIEWS**
  + Select Interviewees
    - Based on information needed.
    - Often good to get different perspectives so try to get variety such as managers, users, or ideally all stakeholders
    - **TYPES OF QUESTIONS:**
      * Open (What do you think about the system? What problems do you have?)
      * Closed (How many orders are received a day? Are runs assigned?)
      * Probing (Why, can you explain further, can you give an example?)
  + Design interview questions
    - Unstructured:
      * Used to get broad information
      * Use early in the process
    - Structured:
      * Used to get more specific questions
    - Organize questions in a logical sense
    - Strategies:
      * Bottom up: very specific -> moderately specific -> very general
      * Top Down: very general -> moderately specific -> very specific
  + Prepare for the interview
    - Prepare list of questions, anticipated answers, and follow-ups
    - Confirm areas of knowledge of interviewees
    - Set priorities in case of time shortage
    - prepare interviewees before the interview.
      * Give schedule
      * Inform of reason of interview
      * Inform on areas of discussion
  + Conduct the interview
    - Appear professional
    - Record all information
    - Separate facts from opinions
    - Give interviewees time to ask questions
    - Be sure you understand all issues at hand
    - Be honest
    - Watch body language
    - Summarize key points
    - Pay attention
  + Follow-up with post-interview information
    - Look for gaps and new questions
    - Prepare interview report
    - Prepare interview notes
  + **Advantages**
    - Establishes rapport with users
    - Allows to probe for more information/feedback
    - Questions can be adapted for each interviewee
  + **Disadvantages**
    - Very time consuming
    - Highly dependent on analyst’s interpersonal skills
    - May be difficult due to physical location of interviewees.
* **QUESTIONAIRES**
  + It is a set of written questions for obtaining information
  + Usually used when the system will spread to multiple locations or is used outside the organization.
  + Mass produced and distributed to respondents
  + Possibility to do it electronically
  + **Steps:** 
    - Select participants
    - Design questionnaire
      * Begin with non-threatening and interesting questions
      * Group items logically
      * Put important items at the top, not bottom
      * Don’t crowd a page with too many items
      * Avoid abbreviations
      * Number the questions
      * Pre-test the questionnaire to receive feedback
    - Administer the questionnaire
    - Follow-up on responses.
  + **Completion Rates:** 
    - Are participants completing and returning the questionnaire?
    - How to improve:
      * Explain why it’s being conducted
      * Explain why the respondents have been selected
      * Provide a completion date
      * Provide an incentive to complete such as giveaways
      * Offer to provide a summary of responses
  + **Advantages:**
    - Can be answered quickly
    - Relatively inexpensive
    - Allow individuals to remain anonymous
    - Responses can be gathered quickly and automatically
  + **Disadvantages:** 
    - Responses are usually low
    - Answers may not be detailed enough
    - Users cannot ask follow-up questions
    - Tough to prepare good questions
    - Questions can be misinterpreted
* **DOCUMENT ANALYSIS**
  + Provides clues about the “as-is” system
  + Typical documents are:
    - Forms
      * Look for unused form elements
      * Look for additions to form
    - Reports
    - Policy manuals
  + **Advantages:** 
    - Provides good insight of as-is system
    - Can provide background information on requirements
  + **Disadvantages:** 
    - may only tell formal system not the real system
    - left up to interpretation of the analyst
* **OBSERVATION**
  + Since managers don’t always remember what they do, then go watch them
  + Behaviors change when people are watched
  + Avoid ignoring periodic activities
  + Do not influence the person working
  + **Advantages:**
    - Data is very reliable
    - Able to see exactly what is being done
    - Relatively inexpensive
    - Analyst can do the work measurements
  + **Disadvantages:**
    - People can feel uncomfortable
    - You must observe for a long time
    - Can be inconvenient to schedule
    - Tasks observed are subject to interruption
    - Workers can perform tasks differently when being watched.
* **DOMAIN RESEARCH**
  + Involves researching relevant locations, websites and determine what the other competitors are doing
  + Determine requirements based on what others are offering
  + See what is good and bad (the things you want to do vs the things you want to avoid)
* **JOINT APPLICATION DEVELOPMENT (JAD)**
  + Allows project team, users and managers to work together to identify the requirements
  + Highly structured meeting to gather requirements
  + Often the most useful method for collecting information from users\
  + Scope creep is reduced by 50%
  + Avoids requirements being too specific or too vague
  + 10-20 participants led by a facilitator
  + E-JAD is becoming popular
  + Key Roles:
    - Facilitator: sets the meeting agenda and guides the discussion
      * Keep session on track
      * Help with technical terms
      * Record group input
      * Help resolve issues
    - Scribe: records notes, making copies, etc.
  + JAD Setting
    - U-Shaped seating
    - Away from distractions
    - Whiteboard/flip chart
    - Prototyping tools
  + Lasts about 5 – 10 days over a three-week period
  + Prepare questions as with interviews
  + Formal agenda and ground rules
  + **Managing problems in JAD sessions**
    - Encourage non-contributors
    - Reduce domination
    - Side discussions
    - Agenda merry-go-round
    - Use humor
    - Violent agreement

**Requirements for Prototyping**

* Convert basic information into something tangible for the user
* Give it to the user to spark further conversation
* May make user think of other things such as missing fields, too many fields, data calculations
* **Prototyping is useful when:**
  + Requirements are unclear
  + Few users/stakeholders
  + Complex designs need to be validated
  + History of communication problems
  + Tools are readily available
* **Prototyping Drawbacks**
  + Replace formal documentation
  + Geared toward small set of users
  + Built as standalone system without accounting for security, sharing data, interactions, etc.
  + Users may think it’s the final answer!

**Agile Methodology Requirements**

* Continual user involvement
* Agile usage-centered design:
  + Similar to JAD sessions
  + Gather all the experts together for a meeting
* User stories
* Brief (1 or 2 sentences) of each piece of functionality

**Usage-Centred Requirements Gathering**

1. Gather all the experts together
2. Give everyone a chance to vent
3. Determine user roles and write them down (Index cards)
4. Determine tasks per user role
5. Group task cards by similarity
6. Write task description on card
7. Treat each task as a set to be supported by a single interface
8. Prototype and refine each task set