REQUIREMENT OF A RESEARCH TODAY

The process and techniques used by system analysts to identify problems and solutions from the user community.

System Requirement – something that information system must do or a property that it must have.

Characteristics of System Analyst in Requirement Determination.

Impartiality – Fairness is important, consider issues raised by all parties, your job is to find the best solution to a problem and not to – for example, justify the purchase of new hardware, or impose your views on users.

Relax Constraints – Assume that anything is possible and eliminate the infeasible.

Avoid statements like w have always done it that way.

Traditions are different from rules and policies. Organizations and environments change, traditions can turn into habit rather than sensible procedures.

Reframing – Analysis is a creative process. You must challenge yourself to look at the organization in new ways. You must consider how each user views his requirements. Avoid jumping to the conclusion that new system must work the same way as the one you have built before.

PIECES CLASSIFICATION OF REQUIREMENTS DISCOVERY

Non-Functional Requirement Type Explanation

|  |  |
| --- | --- |
| Perfomance | Performance requirements repsenent the system is required to exhibit and meet the needs of uses |
| Information | Information requirements represent information that is available to users in terms of content, timeliness, accuracy and format |
| Economy | Represent the need for the system to reduce cost and increase profits. |
| Control (and Security) | Represent the environment in which th system must operate, as well as type of security that must be provided |
| Efficiency | Represent the system’s ability to produce outputs with minimal waste |
| Service | Represent needs in order for the system to be reliable |

RESULTS OF INCORRECT REQUIREMENTS

* The system may be unreliable and prone to errors.
* The reputation of the IT staff on the team is tarnished because of any failure

CRITERIA TO DEFINE SYSTEM REQUIREMENTS

* Complete – all possible system inputs and outputs (responses)
* Consistent – They are not ambiguous
* Feasible – Can be satisfied based on the available resources
* Required – They are truly needed and fulfill the purpose of the system
* Accurate – They are stated correctly.
* Traceable – Directly map to the functions and features of the system
* Verifiable – Defined so they can be demonstrated during testing.

FACT FINDING

The formal process of using research, meetings, interviews, etc to collect information about system problems, requirements, and preferences.

It is also called information gathering or data collection.

FACT FINIDNG ETHICS

Ethical behaviors include:

* System analysts must not misuse that information
* System analysts must protect that information from people who misuse it

Otherwise:

* System analyst loses respect, credibility, and confidence of users and management, impairing ability of users to do job.
* Organization and systems analyst could have legal liability.
* System analyst could lose job.

Information can be got from:

* Existing documents eg.

1. Organizational charts
2. Policy manuals
3. Job descriptions
4. Forms, reports
5. Document flow and work flow diagrams

INFORMATION CAN BE GOT FROM:

* System Flow charts
* If computerized:

1. Computer diagram documentation
2. Data dictionary listings
3. Computer operation manuals

INFORMATION CAN ALSO BE GOT FROM:

2. System users and managers

3. External sources: - Might be necessary especially when examining alternatives for new systems. To see what is available.

- Other companies

- Equipment and software vendors

- Business publications, seminars, workshops, or visits to show rooms, exhibitions, or to companies for demonstrations.

METHODS OF GATHERING INFORMATION:

The exisiting systems must be understood before they can be comprehensively designed. The best way of understanding the activities that take place in any particular system whether computerized or manual is to get information from the users and other processing ideas.

FACT FINDING METHODS.

* Sampling of existing documentation, forms, databases,
* Research and site visits.
* Observation of work environment.
* Questionnaires
* Interviews
* Prototyping
* Joint requirement planning (JRP)

1. SAMPLING

Process of collecting a representative sample of ducments, forms, and records.

* Organizational charts.
* Memons and other documents that describe the problem.
* Standard operating procedures for current system
* Completed forms,
* Manual and computerized screens and reports
* Samples of databases.
* Flowcharts and other sytem documentation.

WHY BLANK FORM

Can determine the type of data going into each blank

Can determine size of data going into each blank

Can determine which blanks are not used or not always used

Can see data relationships

OBSERVATION

A fact finding technique where the system analyst either participates in or watches a person perform activities in order to learn about the system

Guidelines to observation:

* Determine the who, what, where and when of the observation.
* Obtain permission from appropriate supervisors or managers.
* Inform those who will be observed of the purpose of the observation.
* Keep a low profile
* Take notes during or after the observation
* Review observation notes with appropriate individuals
* Don’t interrupt the individuals at work
* Don’t focus heavily on trivial activities
* Don’t’ make assumptions

Advantages of OBSERVATION

* Data gathered is highly reliable
* The systems analyst can see exactly what happens especially for tasks, which are difficult to explain in words
* It allows the system analyst to do some measurements or estimations.
* It is relatively inexpensive compared to other techniques.
* First hand information is got.

DISADVATAGES OF OBSERVATION.

* Tendency of people to exaggerate behaviour when they know they are being observed.
* The activities may take place at odd hours hence inconvenience the analyst.
* The analyst may end up observing exceptional activities only.
* It’s subject to bias opinion.

QUESTIONNAIRE.

A special purpose document that allows the analyst to collect information and opinions from respondents.

TYPES OF QUESTIONS.

Open Ended – Allow the interviewee to respond in any way that seems appropriate

Closed Ended – Restricts answers to either specific choices or short direct responses.

WHEN TO USE A QUESTIONNAIRE.

When the system analyst is located at a considerable distance from staff to be questioned.

When there’s a large number of respondents such that interviewing is prohibited by the time available.

When the questions are simple and they call for a direct answer

When limited amount of inromation is required from large number of people

When it is to be used as a means of verifying information found or gathered using other methods.

ADVANTAGES OF USING QUESTIONNAIRES.

* They provide cheap method of gathering data from large number of people
* Allow individuals to maintain anonymity hence provide real facts
* The questions are presented consistently to all respondents without bias.
* The respondents can complete the questionnaire at their own convenience.

DISADVANTAGES OF QUESTIONNAIRES.

* The number of questions is often too low.
* They provide no opportunity for clarification.
* It is not possible for the analyst to observe facial or body expressions.
* There’s no guarantee that the individuals will respond to all questions.
* Good questionnaires are difficult to prepare.

INTERVIEWS.

* A fact finding technique whereby the system analyst collect information from individuals thru face to face interaction
* Can be used to: find facts, verify facts, or clarify facts.

INTERVIEWS CAN BE USED FOR:

* Generate enthusiasm
* Get the end user involved
* Identify requirements
* Solicit ideas and opinions

TYPES OF INTERVIEWS.

1. Unstructured – Conducted with only a general goal in mind with a few specific questions. The interviewer counts on the interviewee to provide a framework and direct the conversation.
2. Structured – The interviewer has a specific set of questions to ask the interviewee.

PROCEDURE TO CONDUCT AN INTERVIEW:

1. Select interviewees.: End users, learn about individual prior to the interview
2. Prepare for the interview: - A checklist of specific questions that will be asked.
3. Conduct the interview: - Summarize the problem, offer an incentive for participation
4. Follow up on the interview: - Memo that summarizes the interview.

INTERVIEW QUESTIONS.

Types of questions to avoid:

1. Loaded Questions
2. Leading questions
3. Biased questions

INTERVIEW QUESTIONS GUIDELINES:

* Use clear language
* Avoid long, complex questions
* Avoid threatening questions
* Don’t include your opinion as part of the question.
* Don’t use “you” when you mean a group of people

THE DO’S OF INTERVIEWS

* Be courteous
* Listen carefully
* Maintain protocol
* Probe
* Observe mannerisms and nonverbal communications
* Be patient
* Keep interviewee at ease
* Maintain self control

DON’T OF INTERVIEWS

* Continuing interview unnecessarily
* Assuming an answer is finished or leading nowhere.
* Revealing verbal or nonverbal clues
* Using jargon
* Tape recording – a sign of poor listening skills
* Revealing your personal bias
* Talking instead of listening
* Assuming

COMMUNICATION WITH THE USER

Guidelines for communication

* Approach session with positive attitude
* Set the other person at ease
* Let them know you are listeing
* Ask questions
* Don’t’ assume anything
* Take notes

COMMUNICATION WITH THE USER

To “hear” is to recognize that someone is speaking,

To listen is to understand what the user want to communicate.

ADVANTAGES OF INTERVIEWS:

* It’s effective in answering how and why type of questions
* Provides immediate feedback
* The problem is understood clearly because the interviewee is able to explain what he want the system to do.
* It eliminates panic, resistance and fear because of greater user involvement.

DISADVANTAGES OF INTERVIEWS.

* It can be time consuming if many people are to be interviewed one by one
* Difficult to get the interviewee or the organization. Eg. Many branches of an organization.
* Some people want to be perceived in their best right, hence giving wrong information.
* It’s possible to forget some important details during interview.
* Incosistent answers from individuals
* One option available to the last point group interview where all the key people are interviewed at once or Nominal group technique. – A facilitated process that supports idea generation by groups.
* At the beginning of the process group members work alone to generate ideas which are then pooled under the guidance of a trained facilitator.

WHEN TO USE INTERVIEWS.

* When respondents are few.
* When interviewees are physically available
* When the main emphasis of system investigation is people
* When system analyst want to seek direct opinion or answers.
* When the system analyst wants to verify the validity of facts collected by other techniques
* When immediate response is required.

RAPID PROTOTYPING

A prototype is a working version of a system ( working model)

It performs the same basic tasks that the finished system would perform but ignores such features as: Efficient, Calculations, Security, Error Handling, and Program under documentation.

The skeleton version “dummies” the internal processing while concentrating on portraying user screens and reports.

PROTOTYPE

* Is easy to build and use because of the 4GLs and the many software tools on the market.
* It is appropriate for online systems because of their strong user interface.
* For example they require multitude of input and output screens, as well as sports on paper.
* Can clarify the user requirements (by verifying that the finished product will meet those requirements).
* It also gets users interested in the system, by the analyst demonstrating what is expected.
* They are user centered, the analyst and user work closely together. It evolves thru a process of iteration or refinements, functions are added one by one as deeper understanding of the system emerges. It gives a user the experience of using the actual system.
* It is good with systems with high uncertainity ( where user and designer are not user of what is required of the system)
* A lot of errors occur in such systems, Uncertainity can be reduced by reducing errors and ommisions

PROTOTYPING:

Three stages of Prototyping

1. Prototype – The user interface (screens/ reports) using dummies for programs
2. Include functional programs
3. Expand to become a finished product
4. Features that are initial left out are:
   1. User documentation, helps screens, security controls, backup procedures, ability to handle large volumes of data.
   2. If added it would be a finished product.
5. If it evolves into a finished product, all the phases of designing a system are left out and the approach is called (Rapid Application Development ) (RAD).
6. RAD systems are grown not built. That is systems design and construction.
7. It evolutionary refinement rather than a step by step process.

With this approach, the finished product is less expensive, and is completed in less time;

Lifetime maintenance will also be cheap.

Limitations of 4GLs make large systems hard to prototype.

For example, some execute slowly, consume memory, and prevent other parts of the system from executing in a timely fashion.

These problems are magnified as the system is expanded.

Therefore, it is wrong to assume that the finished product will execute as fast as versions of steps one and two.

Prototypes whose performances are unacceptable should only be used for demonstration of the new system.

Part or all of it should be recorded in a standard Procedural language.

Whether used or not, a prototype is a useful tool to use when designing a system.

It can be used as a model, or to build user confidence and verify omissions.

ADVANTAGES OF PROTOTYPES

* Heavy user involvement means a more complete, accurate and friendly user interface.
* Prototyping may discover user needs that users were not previously aware of.
* Users feel more confident approving a system they can try out.
* Users have a more positive attitude towards any system that they helped to create.