Requirements Determination

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The Analysis Phase

- During the analysis phase, requirements are written from the perspective of the business
  - Focus on what the system needs to do to satisfy business user needs.
- Understand the existing situation (the as-is system).
- Identify improvements.
- Define requirements for the new system (the to-be system).

Requirements Determination

- Transform the system request's high-level statement of business requirements into a more detailed, precise list of what the new system must do to provide the needed value to the business.

What Is a Requirement?

- A requirement is simply a statement of what the system must do or what characteristics it needs to have
- what the business needs (business requirements);
- what the users need to do (user requirements);
- what the software should do (functional requirements);
- characteristics the system should have (nonfunctional requirements);
- how the system should be built (system requirements).

Business Requirements

- In the systems request, there are statements that describe the reasons for proposing the systems development project.
- These statements reflect the business requirements that this system, if built, will fulfill.
- These business requirements:
  - Help define the overall goals of the system
  - Help clarify the contributions it will make to the organization's success

Functional Requirements

- The system's functional requirements evolve from understanding how the new system can support user needs.
  - A functional requirement relates directly to a process the system should perform as a part of supporting a user task
  - Functional requirements begin to define how the system will support the user in completing a task.
  - Information it should provide as the user is performing a task.

Nonfunctional Requirements

- The quality attributes, design, and implementation constraints, and external interfaces which a product must have.
- This requirement category includes important behavioral properties that the system must have
- Notice that the nonfunctional requirements describe a variety of system characteristics: operational, performance, security, and cultural and political.
- These characteristics do not describe business processes or information, but they are particularly important in understanding what the final system should be like.

Nonfunctional Requirement	Description	Examples
Operational	The physical and technical environments in which the system will operate	• The system will run on Android mobile devices. • The system should be able to integrate with the existing inventory system. • The system should be compatible with any Web browser.
Performance	The speed, capacity, and reliability of the system	• Any interaction between the user and the system should not exceed 2 seconds. • The system downloads new status parameters within 5 minutes of a change. • The system should be available for use 24 hours per day, 365 days per year. • The system supports 300 simultaneous users from 9–11 a.m.; 150 simultaneous users at all other times.
Security	Who has authorized access to the system under what circumstances	• Only direct managers can see staff personnel records. • Technicians can see only their own work assignments. • The system includes all available safeguards from viruses, worms, Trojan horses, etc.
Cultural and Political	Cultural and political factors and legal requirements that affect the system	• The system should be able to distinguish between US currency and currency from other nations. • Company policy is to buy computers only from Dell. • Country managers are permitted to authorize custom user interfaces within their units. • Personal information is protected in compliance with the Data Protection Act.

System Requirements

- User, functional, and nonfunctional requirements identified in the analysis phase will flow into the design phase, where they evolve to become more technical, describing how the system will be implemented.
- Requirements in the design phase reflect the developer's perspective, and they usually are called system requirements.

The Process of Determining Requirements

- Systems analysts may not understand the true business needs of the users
- The business users may not be aware of promising new technologies.
- The most effective approach is to have both businesspeople and analysts working together to determine requirements.
- One of the first tasks for the analyst is to identify the primary sources of requirements
  - people who have an interest in the new system (often called stakeholders)
  - The project sponsor, project champion(s), all users of the system

The Requirements Definition Statement

- The requirements definition statement—usually just called the requirements definition—is a straightforward text report that simply **lists the functional and nonfunctional requirements** in an outline format.
- The most obvious purpose of the requirements definition is to **provide a clear statement of what the new system should do in order to achieve the system vision** described in the system request.
- A **critically important purpose** of the requirements definition, however, is to **define the scope of the system**.

Elicitation Techniques

- The analyst must also consider how best to elicit the requirements from the stakeholders.
  - Interviews,
  - Questionnaires,
  - Observation,
  - Joint Application Development (JAD)
  - Document analysis.

Elicitation Techniques - Strategy

- In general, a useful strategy for the analyst to employ is to begin requirements gathering by interviewing senior managers to
  - gain an understanding of the project
  - get the "big picture."
- These preliminary interviews can then be followed by document analysis and, possibly, observation of business processes to learn more about the business domain, the vocabulary, and the as-is system.
- More interviews may then follow to collect the rest of the information needed to understand the as-is system.
- Identifying improvements is commonly done through JAD sessions
  - Enable the analysts, users, and other key stakeholders to work together
  - create a shared understanding of the possibilities for the to-be system.

Elicitation Techniques - Interviews

- Conducted one on one (one interviewer and one interviewee)
- Sometimes, due to time constraints, several people are interviewed at the same time
- Five basic steps to the interview process:
  - Selecting interviewees,
  - Designing interview questions,
  - Preparing for the interview,
  - Conducting the interview,
  - Post-interview follow-up

Joint Application Development (JAD)

- Joint Application Development (JAD) is an information gathering technique that allows the project team, users, and management to work together to identify requirements for the system.
  - Selecting Participants
  - Designing the JAD Session
  - Preparing for the JAD Session
  - Conducting the JAD Session
  - Post-JAD Follow-Up

Questionnaires

- A questionnaire is a set of written questions for obtaining information from individuals. Questionnaires often are used when there are many people from whom information and opinions are needed.
  - Selecting Participants
  - Designing the Questionnaire
  - Administering the Questionnaire
  - Questionnaire Follow-Up

References

- Systems Analysis and Design, 8th Edition by Alan Dennis, Barbara Haley Wixom, and Roberta M. Roth. Published by John Wiley & Sons, 2021