Tutorial 06

Requirement Elicitation Techniques

System Analysis and Design

SE103.3

Individual Assignment

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Contents

1. INTERVIEWS

1.1 Studies on pupils who obtain practice exams from "paper mill" websites

Choosing Interviewees: Pick academic integrity officers, instructors, professors, and students who have expertise or experience with this matter.

Formulating Questions for Interviews: Prepare inquiries on the frequency of this behavior, its causes, its effects on education, and possible remedies.

Getting Ready for the Interview: Learn as much as you can about the subject by reading up on academic honesty, plagiarism, and student internet resources.

Conducting the Interview: To get deeper insights, ask questions based on your prepared list, listen intently to the replies, and follow up on noteworthy topics.

Following the interview Follow-up: Recap the main ideas from each interview, look for patterns or differences, and decide whether to do more research or take other appropriate action in light of the results.

Designing interview questions

Types of Questions	**Examples**
Closed-ended questions	Have you ever downloaded an old paper from a website known as a "paper mill"? (Alright/Alright)
	Do you think that a common problem among college and high school students is downloading papers from these websites?
	Do you know of any particular cases in which students have been discovered turning in papers that they got from these websites?
Open-ended questions	What effects do you believe the availability of "paper mill" websites has had on students' academic experiences in high school and college?
	What, in your opinion, are the primary motivators for students to download and turn in papers as original work from these websites?
	Could you elaborate on any unfavorable outcomes that you have seen or heard about as a result of pupils obtaining papers from these websites?

Probing questions	You said that strain from their studies overwhelms some pupils. Could you elaborate on how they could utilize "paper mill" websites as a result of this pressure?
	You said that some students don't think it's wrong to download papers. Could you provide instances of the reasoning they use to support this behavior?
	You said that regulations pertaining to academic integrity are often unknown to students. should you provide suggestions on how schools should better educate their pupils about plagiarism?

1.2 Directing the arts program at the nearby junior high schools that is supported by the CEO

Choosing Interviewees: Conduct interviews with the CEO, administrators of the school, art educators, and experts in the field of arts education.

Formulating Questions for Interviews: Inquire about the program's objectives, the condition of arts education at the moment, junior high school needs, and implementation tactics for successful arts programs.

Interview preparation: Learn about the CEO's goals for the initiative, look into successful arts education initiatives, and craft questions specific to each interviewee's position.
Conducting the Interview: Talk with each person, listen to their recommendations and worries, and ask questions that are pertinent to their area of expertise.

Following the interview As a follow-up, compile the information gleaned from each interview, highlight important suggestions or tactics, and create a strategy for carrying out the arts program.

Designing interview questions

Types of Questions	**Examples**
Closed-ended questions	Have you ever worked on putting up arts programs in junior high schools?
	Do you think that include the arts in the curriculum may help pupils do better academically overall?
	Do you know of any obstacles junior high schools must overcome to provide their kids an arts education?
Open-ended questions	What effect do you think the CEO-funded arts program will have on junior high school students' involvement and creativity?
	Are there any successful examples or best practices from other arts programs that you might provide that our effort could use?
	According to you, what particular tools or resources are needed by junior high schools in order to successfully include the arts into their curriculum?
Probing questions	You said that one of the most important things for arts programs to succeed is student participation. Could you provide more details on how you intend to assess and enhance the program's student engagement?
	The significance of community engagement in arts education was brought up by you. In what ways will you work with the community to improve the program's impact?
	You indicated that putting the arts program into action could be difficult due to financial limitations. Could you elaborate on how you intend to deal with these limitations and guarantee the program's long-term viability?

1.3 Building an information system for managing fingerprint-based lecture attendance at a university

Choosing Interviewees: Conduct interviews with developers, IT personnel, university officials, and users (lecturers and students) who will interface with the system.

Formulating Questions for Interviews: Inquire about the system's needs, technical aspects, user experience, and opinions on the current attendance tracking systems.

Getting Ready for the Interview: Prepare questions specific to each interviewee group, learn about biometric technologies, and do research on attendance management solutions.

Carrying Out the Interview: Inquire about system needs, usability, and possible difficulties; furthermore, pay attention to what users and administrators have to say.

Follow-up After the Interview: Provide a summary of the comments you got, list the essential features or enhancements the system needs, and make a strategy for its creation and deployment.

Designing interview questions

Types of Questions	**Examples**
Closed-ended questions	Have you already utilized an attendance system based on fingerprints?
	To what extent do you find the existing attendance management system satisfactory?
	Do you believe that increasing attendance accuracy using a fingerprint-based system is possible?
Open-ended questions	What potential integrations do you see between the new attendance system and other university systems?
	Could you elaborate on any particular issues you have with the existing attendance system and how you expect the new one will resolve them?
	What effects do you believe the implementation of a fingerprint-based system

	will have on lecturers' and students' experiences with attendance tracking?
Probing questions	You brought up privacy concerns about biometric data. Could you explain on the particular privacy features you hope the new system will have?
	You made reference to the significance of user training. Could you provide instances of how you think training need to be carried out to guarantee that users are proficient with the new system?
	You brought out the need of harmonious system integration. Could you elaborate on the systems that are most important for integration and why?

QUESTIONNAIRE

1. **Demographic Information**
    - What is your age group?
        - 18-25
        - 26-35
        - 36-45
        - 46-55
        - 56+
    - What is your gender?
        - Male
        - Female
        - Non-binary

        - Prefer not to say
    - What is your job role?
        - Sales
        - Marketing
        - Customer Service
        - IT
        - Other (please specify)
    - What industry do you work in?
        - Technology
        - Healthcare
        - Retail
        - Finance
        - Other (please specify)

2. **Usage and Adoption**
    - How frequently do you use the CRM system for work-related tasks?
        - Multiple times a day
        - Once a day
        - A few times a week
        - Once a week
        - Less than once a week
    - How likely are you to recommend the CRM system to a colleague or friend?
        - Extremely likely
        - Very likely

        - Somewhat likely
        - Not so likely
        - Not at all likely
    - What factors influenced your decision to start using the CRM system?

3. **User Experience**
    - How would you rate the overall user interface of the CRM system?
        - Excellent
        - Good
        - Fair
        - Poor
        - Very Poor
    - Have you encountered any bugs or technical issues while using the CRM system? If yes, please describe.
    - How satisfied are you with the mobile responsiveness of the CRM system (if applicable)?

4. **Training and Support**
    - Have you received any training on how to use the CRM system?
        - Yes
        - No
    - How would you rate the quality of the training you received?
        - Excellent
        - Good
        - Fair
        - Poor

        - Very Poor
    - How satisfied are you with the level of customer support provided for the CRM system?

5. **Future Improvements**
    - What new features would you like to see added to the CRM system in the future?
    - How important is it for the CRM system to integrate with other software tools you use?
        - Extremely important
        - Very important
        - Somewhat important
        - Not so important
        - Not at all important

1.2 There are benefits and drawbacks to using questionnaires for requirement elicitation in big enterprises with a variety of stakeholders.

Advantages:

1. Wide Reach: Questionnaires can be distributed to a vast number of stakeholders across various locations and departments, ensuring broad participation.
2. Consistency: They offer a uniform structure for data collection, ensuring that all respondents provide information in a similar manner.
3. Cost Efficiency: Questionnaires are a more budget-friendly option for gathering data from a large group compared to methods like interviews or focus groups.
4. Privacy: Respondents might be more inclined to share honest feedback when they can do so anonymously.
5. Statistical Analysis: The structured nature of questionnaires simplifies the process of quantifying responses and conducting statistical evaluations.

Disadvantages:

1. Superficial Understanding: Questionnaires might not fully capture the intricate details of stakeholders' requirements or the subtleties of their needs.
2. Incomplete Data: There is a risk of low participation rates, as stakeholders might overlook or deprioritize filling out questionnaires.
3. Misinterpretation: In the absence of immediate clarification, stakeholders might misunderstand questions, leading to inaccurate answers.
4. Limited Engagement: Questionnaires may not promote the same level of interaction and discussion as in-person elicitation techniques.
5. Response Bias: The way a questionnaire is structured can introduce bias, affecting the answers and distorting the outcomes.

Risk Mitigation Strategies:

1. Combining Techniques: Employ questionnaires alongside other elicitation methods such as interviews or workshops to gather both quantitative and qualitative insights.
2. Pilot Testing: Test the questionnaire with a select group of stakeholders to identify and rectify any issues before a broader rollout.
3. Clarity in Questions: Ensure that the questions are straightforward, concise, and relevant to prevent confusion and motivate completion.
4. Encouraging Participation: Offer incentives or highlight the significance of stakeholder feedback to boost response rates.
5. Persistent Follow-up: Send reminders and follow-up messages to stakeholders who haven't responded to increase participation.
6. Sharing Results: Communicate the findings of the questionnaire with stakeholders and show how their input is being utilized to foster trust and encourage future engagement.

2.JOINT APPLICATION DEVELOPMENT (JAD)

2.1 Project Management Software Requirements Gathering Agenda for the JAD Session

Attendees:

- Project Sponsor
- Project Manager
- Business Analysts
- IT Personnel (Developers, System Architects)
- End Users (Project Managers, Team Members)
- Quality Assurance Team
- Representatives from essential departments (Finance, HR, Operations, etc.)

Goals:

- Collaborate to define the requirements for the new project management software.
- Minimize scope creep by ensuring a thorough understanding of the project's needs.
- Utilize the JAD process to effectively collect input from 10 to 20 key users.

Schedule:

1. Opening (15 minutes)
    - Greetings and introductions
    - Overview of the JAD session's objectives and advantages
    - Review of the agenda
2. Project Summary (15 minutes)
    - Presentation of the project's vision and objectives
    - Discussion of the business requirements driving the software development
3. Requirement Gathering (1 hour)
    - Conducting facilitated breakout sessions to identify and document requirements
    - Concentrating on essential features such as task management, resource allocation, scheduling, reporting, and collaboration tools
    - Examining integration requirements with current systems

4. Break (15 minutes)
5. Prioritization and Confirmation (45 minutes)
    - Group discussion to rank the identified requirements
    - Confirmation of requirements with stakeholders to ensure consistency and limit scope creep
6. Project Scope and Limitations (30 minutes)
    - Dialogue on project scope, boundaries, and limitations
    - Identification of potential risks and development of mitigation strategies
7. Planning and Next Steps (15 minutes)
    - Outline of the subsequent steps in the project development process
    - Allocation of responsibilities and deadlines for deliverables
    - Arranging follow-up meetings or sessions
8. Questions & Conclusion (15 minutes)
    - Opportunity for any questions or clarifications
    - Recap of the main outcomes and decisions from the session
    - Expressing gratitude to participants and concluding the meeting

2.2 Talk about the possible difficulties of holding JAD sessions virtually.

Challenges of Virtual JAD Sessions for Global Teams:

1. **Time Zone Conflicts:** Aligning schedules across various time zones can result in inconvenient meeting hours for some attendees.
2. **Technical Difficulties:** Issues like unstable internet connections, software problems, and compatibility challenges can disrupt the session.
3. **Reduced Non-Verbal Communication:** The absence of physical presence limits the ability to interpret body language and other non-verbal signals, which may affect communication effectiveness.
4. **Participant Engagement:** Keeping all participants engaged and ensuring their active involvement can be more challenging in a virtual environment.

5. **Data Security:** Safeguarding the security and privacy of shared information in a virtual setting can be difficult.

Strategies for Overcoming Virtual JAD Session Challenges:

1. **Adaptive Scheduling:** Utilize scheduling tools to identify a reasonably convenient meeting time for all participants, and consider rotating meeting times to distribute the inconvenience of unusual hours.
2. **Reliable Technology:** Select a dependable virtual meeting platform with interactive session features like screen sharing, breakout rooms, and polls. Ensure everyone has the necessary software and perform a technical check before the session.
3. **Proactive Facilitation:** The facilitator should actively manage the session, making sure everyone has a chance to contribute. Employ techniques such as directly calling on participants and using virtual hand-raising features.
4. **Use of Visual Aids and Collaboration Tools:** Employ visual aids like shared documents, whiteboards, and flowcharts to aid discussion and collaboration. Tools like Miro or Mural can be used for interactive brainstorming and requirement mapping.

3.DOCUMENT ANALYSIS

3.1 Determine the kinds of papers that would be examined

1. **System Documentation:**
    - **Objective:** Grasp the technical details, architecture, and features of the existing ERP system.
    - **Key Information:** Software release, database schema, data flow charts, integration points, custom modifications, and third-party extensions.
2. **User Manuals and Training Resources:**
    - **Objective:** Evaluate user interaction with the system and pinpoint any shortcomings in functionality or user experience.

- **Key Information:** Detailed instructions, visual aids, typical scenarios, troubleshooting guidelines, and common queries.

3. **Business Process Documentation:**
    - **Objective:** Examine the support the ERP system provides to current business operations and pinpoint opportunities for enhancement.
    - **Key Information:** Process flowcharts, descriptions of procedures, roles and responsibilities, critical decision points, and performance indicators.
4. **Reports and Dashboards:**
    - **Objective:** Assess the reporting features of the ERP system and the effectiveness of data presentation.
    - **Key Information:** Variety of reports, key performance indicators (KPIs), data origins, options for report customization, and user feedback on report usability.
5. **Policy Guides and Compliance Records:**
    - **Objective:** Ensure the updated ERP system complies with organizational policies and regulatory standards.
    - **Key Information:** Data protection policies, security measures, audit logs, compliance checklists, and regulations specific to the industry.
6. **Change Requests and Problem Logs:**
    - **Objective:** Identify persistent issues, user challenges, and areas where the current system is lacking.
    - **Key Information:** Frequent problems, feature requests, occurrence rate of issues, resolution times, and user satisfaction levels.
7. **Organizational Structure and Role Definitions:**
    - **Objective:** Understand the organizational hierarchy and how different roles use the ERP system.
    - **Key Information:** Organizational layout, department functions, levels of system access, and usage specific to each role.
8. **Vendor Agreements and Service Level Agreements (SLAs):**
    - **Objective:** Examine the terms of existing contracts for ERP system support and maintenance.
    - **Key Information:** Duration of the contract, support services included, SLA metrics, policies for upgrades, and conditions for contract termination.

3.2 Contrast document analysis with observation in this way.

Comparative Analysis of Document Analysis and Observation Techniques in Requirement Elicitation:

Document Analysis:

- **Characteristic:** Analytical and indirect approach.
- **Advantages:** Provides historical and formal insights into the system, policies, and processes. It is non-intrusive and can be carried out without disrupting regular operations.
- **Disadvantages:** Might not accurately represent the current state or informal practices. There is a risk of relying on outdated or incomplete documents.
- **Preferred Situations:** Most effective for gaining an understanding of the formal system, compliance needs, and in scenarios where access to stakeholders or the system is constrained.

Observation:

- **Characteristic:** Empirical and direct approach.
- **Advantages:** Offers a real-time perspective on the actual usage of the system and the execution of processes. It captures informal practices and subtleties that might be missed in documentation.
- **Disadvantages:** Can be time-intensive and may influence the behavior of the observed individuals (known as the Hawthorne effect). It demands skilled observers to accurately interpret actions.
- **Preferred Situations:** Best suited for comprehending user interaction with the system, pinpointing workflow inefficiencies, and when it is necessary to capture the implicit knowledge of users

4. OBSERVATION

4.1 Create an observational study to comprehend the difficulties and process.

1. **Establish Goals:**
    - Comprehend the daily routines of store staff.
    - Pinpoint difficulties encountered by both employees and customers.
    - Monitor customer interactions and behaviors.
2. **Choose Observation Techniques:**
    - Opt for a mix of direct observation (watching employees and customers) and shadowing (following employees during their tasks).
3. **Identify Key Observation Areas:**
    - **Check-out counters:** Examine cashier efficiency, customer waiting times, and payment processing.
    - **Aisles and shelves:** Observe restocking methods, customer browsing habits, and product positioning.
    - **Customer service desk:** Look at how returns, complaints, and inquiries are handled.
    - **Entrance and exit:** Study foot traffic patterns and the effectiveness of the store layout.
4. **Create an Observation Framework:**
    - Develop a checklist or template to systematically record specific behaviors, interactions, and processes.
    - Ensure there is space for noting the time, location, and duration of each observation.
5. **Prepare Observers:**
    - Train observers to understand the goals and how to utilize the observation framework.

- Stress the importance of being discreet and maintaining impartiality.

6. **Execute Observations:**
    - Schedule observations at various times throughout the day and week to capture different workflow and customer traffic scenarios.
    - Systematically document observations using the framework, noting any unforeseen events or additional insights.
7. **Evaluate Observations:**
    - Aggregate and arrange the collected data.
    - Identify recurring themes, trends, and areas of concern.
    - Point out any inefficiencies, bottlenecks, or challenges observed.
8. **Present Results:**
    - Compile a report summarizing the main findings, supported by examples and data from the observations.
    - Offer suggestions for addressing the identified challenges and enhancing workflow.
9. **Engage with Stakeholders:**
    - Share the report with store management and other relevant stakeholders.
    - Discuss the significance of the findings and collaborate on formulating action plans for improvement.

4.2 Talk about the possible biases and ethical issues that need to be handled.

When carrying out observations for requirements gathering, it's crucial to address ethical concerns and potential biases to maintain the integrity of the process and safeguard participants' rights. Here are some essential considerations:

Ethical Concerns:

1. **Informed Consent:** Ensure participants are fully informed about the observation's purpose, procedures, and data usage. Obtaining their consent, preferably in writing, is vital.
2. **Privacy and Confidentiality:** Observers must respect participants' privacy and keep any sensitive information confidential. This involves anonymizing data and protecting it from unauthorized access.
3. **Minimizing Disruption:** Observations should be conducted in a manner that minimizes disturbance to participants' regular activities. Observers should aim to be discreet and not influence the behavior being observed.
4. **Protecting Vulnerable Groups:** Special attention should be given to observing vulnerable populations, such as children or individuals with disabilities, to ensure their safety and well-being.

Potential Biases:

1. **Observer Bias:** Observers might unconsciously interpret behaviors or situations based on their personal experiences, beliefs, or expectations. Training observers to recognize and reduce their biases is crucial.
2. **Confirmation Bias:** Observers may inadvertently focus on data that supports pre-existing beliefs or hypotheses while neglecting conflicting evidence. It's important to remain open-minded and objective.
3. **Selection Bias:** If the participant sample or observation settings are not representative of the larger population or context, the results may not be widely applicable. Addressing this risk requires careful selection and randomization.
4. **Hawthorne Effect:** Participants might change their behavior because they are aware of being observed. This can be managed by blending into the environment, extending the observation period, or using less obtrusive methods.

To handle these ethical concerns and potential biases, establishing clear protocols for conducting observations, training observers, and implementing measures to ensure data integrity and participant protection is essential. Regularly reviewing and reflecting on the observation process can also help identify and address any ethical or bias-related issues that may emerge.

5. APPLICATION SCENARIO

1. **Focus Groups:** This method brings together a diverse group of stakeholders, such as students, accommodation staff, and university administrators, to discuss their requirements and expectations for the accommodation management system.

    - **Rationale:** Focus groups facilitate dynamic conversations, allowing stakeholders to voice their opinions, share experiences, and generate ideas. This approach can provide a comprehensive understanding of the varied needs and potential obstacles in managing student accommodations.

    - **Implementation:** Conduct several focus group sessions, each focusing on different groups of stakeholders. Develop a series of open-ended questions to steer the discussion, addressing topics like room assignment, maintenance requests, payment procedures, and communication methods. Encourage participants to discuss their experiences with current systems and propose features they would like in the new system. Document and evaluate the discussions to extract common themes and requirements.

2. **Surveys:** This method involves distributing questionnaires to a broader group of stakeholders to collect both quantitative and qualitative data on their requirements and preferences.

    - **Rationale:** Surveys can reach a larger audience, including those who might not be able to attend focus groups. They offer a systematic way to gather information on specific aspects of the accommodation management system, enabling statistical analysis of the responses.

    - **Implementation:** Create a survey with a combination of multiple-choice, rating scale, and open-ended questions. Send the survey to students, staff, and administrators via email or an online platform. Incorporate questions about desired features, usability concerns, accessibility needs, and any issues with existing accommodation management practices. Analyze the survey responses to identify trends and prioritize requirements based on the frequency and significance of the feedback.

By employing both focus groups and surveys, we can compile a comprehensive set of requirements for the student accommodation management system. Focus groups offer depth and context to the discussions, while surveys provide breadth and quantifiable data. Together, these techniques ensure that the system is designed to cater to the diverse needs of all stakeholders involved in student accommodations.