

Protocols for Data Gathering

The purpose of the Data Gathering protocol is to enable the team to elicit the business and system requirements of the assigned database system. The requirements focus on three main aspects, namely the business data, rules and processes, all of which are needed to prepare the Field Work report and to develop a similar prototype system. Four methods of data elicitation can be conducted, namely *online software evaluation*, *site visitation and observation*, *stakeholders interview*, and *end user survey*.

An important input to the Data Gathering protocol is the Data Gathering Plan, which was developed as an output of the Preliminary Research protocol. The Data Gathering plan contains one or more sub-plans to guide the team through the requirements gathering phase using the relevant elicitation methods.

Step 1: Align your Data Gathering sub-plans with each of the elicitation method protocols described below. The alignment process involves checking that the plan will lead the team to gather all needed data such that at the end of the process, the team has the answers to ALL of the following questions:

- What are the reasons for using a database in your organization?
 - Can you state the Mission Statement for the database system?
 - Can you enumerate the classes of users that will need access to the database?
 - Can you define the data views for each of these users to restrict their access to the database?
 - Are there any plans for modifying the database in the near future (that you may consider implementing in your prototype database system)?
- Who are the customers of your database? Who are the end users?
 - Are your customers the primary or the secondary users?
 - Who is the customer's customer?
 - How does data relate to the customer's customer?
 - What is the customer's relationship with the end user?
 - How will the customers and the end users interact with one another?
- What classes of data does the business maintain?
 - Is the data static, or does it change often?
 - What business rules affect how the data is stored and accessed?
 - What business processes are involved for creating and processing the data?
 - What business processes need to retrieve the data? For what purpose?
 - What information needs to be derived from the data? For what purpose?
- Can you specify the Business Requirements?
 - What tasks (business processes) need to be performed in the database?
 - Who will perform these tasks?
 - What data are associated with each of these tasks?
 - How do the processes interact with one another?
- Can you translate the Business Requirements into a set of System Requirements?

Step 2: Revise your sub-plans accordingly to address any gaps.

Step 3: Execute your sub-plans using the data gathering protocols below.

- a. Online Software Evaluation. The purpose of this data gathering method is to enable the team to have a first-hand experience on using the software system, and in doing so, be able to evaluate the software's processes in collecting and disseminating data and information to its intended users. By going through

each of the online software's features, the students can identify the data being collected and the information that is generated. Use the *Protocol on Conducting Software Evaluation*.

- b. Site Visitation and Observation. The purpose of this data gathering method is to enable the team to observe the database system in actual use. This method is complemented by the following data elicitation methods. Use the *Protocol on Conducting Site Visitation*.
- c. Stakeholders Interview. The purpose of this data gathering method is to enable the team to direct questions to the stakeholders in order to get a deeper and broader understanding of the database system's role in the organization's operations. Face-to-face interview as well as technology-based mechanisms (such as emails) can be utilized. Prior to the interview, the students should have sufficient background knowledge about the organization and the software system in order to formulate the correct questions and to be able to do follow-on questions based from the responses of the stakeholders. Use the *Protocol on Conducting Stakeholders Interview*.
- d. End User Survey. The purpose of this elicitation method is to enable the team to identify the various types of users of the software. From these types of users, the team can gather their feedback regarding the purpose and functionality of the software, with focus on the data that the software collects and the information that the users gain from the software. The important concepts of views, data integrity and data consistency should be evident after this method has been performed. Use the *Protocol on Conducting End User Surveys*.

Exit Criteria:

The Data Gathering phase ends once your team can clearly define a complete process of data capture, storage, manipulation and retrieval by 2 or more classes of users. Otherwise, perform as many data gathering activities as needed to complete the requirements.

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Protocol: Conducting Software Evaluation

Purpose:

The purpose of this elicitation method is to enable each member of the team to have a first-hand experience in using the software. By going through each of the online software's features, the students can identify the data being collected and the information that is generated. With this format, the team can then productively explore in detail as a group the different classes of data and identify their attributes and constraints; determine the types and frequency of the reports that need to be generated; and describe how the software supports the tasks of its different classes of users. The output of the group evaluation and discussion can then be used to further expound on the software scope and prepare the group for both database design and application design activities.

Pre-requisites:

1. An *Online Software Evaluation* plan has been established and revised to align with this protocol.
2. Each member of the team has conducted an individual preliminary evaluation of the online software to familiarize oneself with the software. The evaluation should focus on the following:
 - Data that are captured, processed and retrieved
 - The application interface through which users may access (entry, view) the data
 - The availability of basic tasks – add, modify and remove data – for each class of users
 - Other tasks that users can perform in the system

Process for Group Evaluation:

1. Sit in a circle.
2. Identify a member, called the “Note Taker”, to take down notes of the discussion.
3. The team lead reviews the purpose and the process of conducting the software evaluation (as stated in the team’s *Online Software Evaluation plan*)
4. Each member (including the “Note Taker”) takes turn in identifying a major class of data or information that is processed by the software.
 - a. The Reader explains how he/she has accessed the data or information by walking through the software with the Discussants.
 - b. The Reader describes the data or information and its relevance.
 - What class of data is accessed (captured, manipulated and retrieved)
 - Describe the business process, and why it needs access to the data
 - What the sample data (input, output) are telling you about the possible domain, constraints, relationships between data
 - c. Everyone must listen attentively while the Reader is speaking.
 - d. Then one by one, each of the Discussants provides his/her response, both positive and negative, and either as a statement or a question. The purpose of the response is to explore the correctness and completeness of the identified data or information, and to address the database design-related concerns.
 - e. Discuss openly and respect each other’s questions and viewpoints.
 - f. Continue around the circle until the discussion has covered all of the following items:
 - Classes of data that are captured, processed and retrieved
 - Tables used for each of the reports
 - Data included in the report
 - Column data types
 - Column integrity constraints
 - The application interface through which users may access (entry, view) the data
 - Restrictions, i.e., *Are users restrained from accessing certain data?*
 - If applicable, how long are historical data stored for online access/retrieval?
 - Classes of users
 - The tasks that each class of users can perform in the system
 - Relevant issues for your application design
5. The Note Taker summarizes the important points from the discussion, the items to be included in the Field Work report, and the items to be included in the Interview and Observation data gathering sub-plans for further research or validation.

Post-requisites:

1. At the end of this protocol, it is expected that the students have gained sufficient knowledge regarding the software in order to design its database structure and reports.
2. The team should have also made preliminary notes to support the application design task for the prototype database system to be developed for INTRODB.
3. The team has revised its Interview and Observation data gathering sub-plans to reflect additional items that need to be clarified or validated through interviews and observation.

Protocol: Conducting Stakeholders Interview

Purpose:

The purpose of this elicitation method is to enable the team to direct questions to the stakeholders in order to broaden their understanding of the database system's role in the organization's operations. With this format, the team can do a deeper exploration of the basic requirements, focusing on the **business data, rules and processes**. The discussion format should also allow the team to raise questions regarding the software system, to clarify and resolve issues and assumptions in order to increase understanding needed for the Data Analysis phase.

Pre-requisites:

1. A *Stakeholder Interview* plan has been established, containing the following:
 - a. Background information about the organization and the software system
 - b. Methodology of the interview, e.g., face-to-face or technology-based mechanism;
 - c. Classes of stakeholders;
 - d. The actual stakeholders, date of interview, place of interview;
 - e. The number of iterations (e.g., preliminary and secondary interviews);
 - f. The set of questions for each class of stakeholders.

Notes:

- *You can split your interview into two or more sessions, with the preliminary interview using a basic set of questions. The answers to these basic questions can then be used to derive more specific questions to be asked during a second interview.*
2. Print multiple copies of the interview questions, one for each member of the team. Have an extra copy in case the Interviewee requests for one.

Process for Face-to-Face Interview:

1. Introduce yourselves (your name, degree and school), and the purpose of the interview.
2. Provide an interview outline, i.e., what do you want to get out of this interview.
3. If you will be recording the interview, respectfully ask for permission.
4. Identify a member, called the "Note Taker", to take down notes of the interview. You can opt to have a backup note taker.
5. Identify a member, called the "Lead Interviewer", to ask the main questions.
6. The Lead Interviewer starts with a basic question.
7. Give the Interviewee the chance to speak while all team members listen intently.
8. Allow each member to have the opportunity to ask his/her follow-on questions based on the response of the interviewee in order to gather more details and to clarify assumptions.
9. When the team is satisfied that the main question and the follow-on questions have been answered, proceed to the next question.
10. When the list has been exhausted, the Lead Interviewer reviews the list of questions again to make sure you did not miss anything.
11. When there are no more questions from the team, the Note Taker summarizes the important points from the Interview. During this process, new questions may suddenly arise. Just respectfully inform the Interviewee that you have another question, then repeat steps 6 to 10.
12. Sincerely thank the Interviewee. Respectfully ask, if needed, for his/her email address and if you can use this to correspond to him/her in case you need to clarify some things during Data Analysis and Report Writing.

13. Repeat the same process for each class of interviewees.
14. Guidelines:
 - a. Be patient with the interviewee.
 - b. Speak the interviewee's language.
 - c. Ask questions concerning the database system.

Process for Email Interview:

1. Email interview can adopt the same process as face-to-face interview.
2. The first email can provide an introduction of the team, the purpose of the interview, and an interview outline. It should then contain only basic questions. The email ends with contact details of the team members, and a note of thanks.
3. The second email should start with a note of thanks for replying to your first email. It then explains the need for the second email, and the set of clarification questions. The email again ends with contact details of the team members, and a note of thanks.
4. Repeat #3 until you have gathered your requirements.
5. Guidelines:
 - a. Compose your letters well. Do not send incomplete or unedited emails.
 - b. Do not write long letters that will tire out the reader.
 - c. Observe proper use of the language.
 - d. Check your spelling and grammar.
 - e. If the Interviewee does not respond within a couple of days, explore alternative elicitation methods or find alternative Interviewees.

Post-requisites:

1. After the interview, review your notes again to make sure you have addressed all issues and concerns.

Protocol: Conducting End User Surveys

Purpose:

The purpose of this elicitation method is to enable the team to gather feedback regarding the software from the end users. The focus of the survey is on the data that the software collects from the end users and the information that the end users gain from using the software. The important concepts of views, data integrity and data consistency should be evident after this method has been performed.

Pre-requisites:

1. The team has completed the protocol on *Conducting Software Evaluation*.
2. An *End User Survey* plan has been established, containing the following:
 - a. Background information about the organization and the software system
 - b. Summary of software processes and data (output from Executing the Software Evaluation plan)
 - c. A survey form containing items or questions regarding an end user's experience in using the software (focusing on data and processes/tasks that the end user can perform in the software)
3. Print multiple copies of the survey form.
4. Maintain end user confidentiality and privacy during the survey.

Process:

1. Introduce yourselves (your name, degree and school), and the purpose of the survey.
2. Pre-survey: Go through the survey questionnaire with the end user to ensure he/she understands what you are looking for.
3. Survey proper: Let the end user answer the questionnaire without your intervention to avoid introducing biases.
4. Post-survey: Review the filled survey questionnaire. If necessary, ask the end user if it is *alright* to do a debriefing for you to clarify some of his/her answers. Do NOT take any photo or video recording to maintain end user confidentiality and privacy.
5. Sincerely thank the end user for his/her time.
6. In some cases, an End User interview may be conducted instead. In this situation, follow the protocol for Conducting Stakeholders Interview.
7. End User surveys can be conducted in parallel, i.e., one team member per end user.

Protocol: Conducting Site Visitation

Purpose:

The purpose of this elicitation method is to enable the team to observe the database system in actual use by End Users.

Pre-requisites:

1. The team has completed the protocol on *Conducting Software Evaluation*.
2. A Site Visitation plan has been established, containing the following:
 - a. Background information about the organization and the software system
 - b. Summary of software processes and data (output from Executing the Software Evaluation plan)
 - c. A checklist of items to observe or look for at the actual site

Process:

1. Ocular Inspection: Visit the site prior to the actual observation schedule in order to find a spot where you can discreetly observe the end users. Do NOT take any video or photo recording of the observation process unless you have secured the approval of the site manager and the end user.
2. Observation Proper: Observe how the end users are actually using the system.
 - How long do they use the system?
 - What are their typical tasks?
 - Do they seem lost or confused?
 - Did they encounter any problems in using the software?
 - Were they able to do the necessary tasks in the system?
 - Were they able to access the data that they needed?
3. Post Observation: Usually, it may be helpful to complement the observation process with an End User Survey in order to get immediate and first-hand feedback regarding the user's recent experience with the software system.
4. Repeat the same process until you are satisfied that you have gathered sufficient feedback from your observation to write in your report.