

PHASE 2 ~ CONCEPTUAL DESIGN

Deliverable 4 ~ Needs Assessment

INSTRUCTIONS. Write a needs assessment documenting what your stakeholder's needs are for your design project system. Your needs assessment is due electronically and you should add it to your design history file as well. Your document should have the filename convention Team-*yournumber*_del4_needs_assessment.

Purpose

It is critical to conduct a thorough needs assessment very early in the design process (e.g., see example design videos viewed earlier). By understanding the needs, interests, and objectives of the design, designers are able to provide concepts that effectively meet the needs and promote the success of the designed system. In addition, a needs assessment will place proper constraints on the scope of the design. Information collected during the needs assessment will inform and drive decisions about the conceptual design(s) and provide measures for success.

Critical Information

The needs assessment is a list of the stakeholders' needs for a solution to the problem you have defined. The needs assessment is:

- Non-technical (avoid jargon)
- Qualitative (no numerical information)
- Complete (cover all relevant aspects)
- Specifiable (a need can be transformed to a specification later)

In general, the needs assessment should answer the following questions:

- Are all the stakeholders identified?
- Are the needs of each stakeholder clearly described?
- Are the process and results of each project learning activity described?
- Have essential needs (i.e., those that must be in the system) been distinguished from secondary needs (i.e., wants)?
- Is the prioritization of the secondary needs, if done, fully and clearly justified and its process documented?
- Are the process and results of the gap analysis, if done, fully described?
- Is there documentation to show that the stakeholders validated and concur with the identified key needs?
- Are the key needs, constraints, and corresponding measures of effectiveness clearly and unambiguously described?

Format of the Needs Assessment

The needs assessment should include the following sections:

1. TITLE PAGE
 - NEEDS ASSESSMENT FOR THE (insert name of project) AND (insert name of stakeholders and their affiliations)
 - Date that the document was formally approved by stakeholders
 - The organization responsible for preparing the document
 - Revision version and date issued
2. PURPOSE OF DOCUMENT. This section is a brief statement of the purpose of this document. It is a description and rationale of the needs that the system will be built to meet. This is a vehicle for stakeholder feedback, and a justification for the key needs selected.
3. OVERVIEW. This section gives a brief overview of the system to be built, describes the stakeholders, and the expected role of each.
4. REFERENCED DOCUMENTS (*optional*). This optional section is a place to list any supporting documentation used and other resources that are thought useful in understanding the operations of the system.
5. NEEDS ELICITATION. This section is the description and discussion of all elicitation (i.e., project learning) activities. The process used and the results are included, possibly backed up by specifics (e.g., records of interviews) included in the appendix.
6. NEEDS DESCRIPTION. This section is the heart of the document. It does the following:
 - It describes clearly and fully the needs expressed by the stakeholders as they stand after the elicitation (i.e., project learning) and validation (i.e., determining needs are correct) processes.
 - The essential needs are highlighted, and distinguished from those that are wants that may be sacrificed for cost or for more critical needs.
 - This section also includes all system constraints that are known at this point.
 - In addition, the needs should be easily transformable into corresponding specifications measures of effectiveness or measures of performance at a later date that provide metrics for how well, or whether, the need is met.
7. NEEDS VALIDATION. This section describes the process and results of validating the collected needs (i.e., determining needs are correct) with the stakeholders. Any changes that came out of this process should be incorporated into the Needs Description in the above section.

8. GAP ANALYSIS (*optional*). This optional section describes the current system, compares it with the needs, and identifies the most pressing gaps to fill, in terms of criticality of the need and the extent of the gap. This section is not needed if the needs in the Needs Description section are consistent with each other and with budget and schedule.
9. COST COMPARISON (*optional*). This optional section may be used if there are conflicting needs. This gives a rough order of magnitude life cycle cost estimate for each option. Alternatively, ease of implementation, or some other stand-in for cost, may be used. This section may also be used to document any analysis that was done to verify that the identified needs can be met within the budget.
10. SELECTION OF KEY NEEDS (*optional*). This optional section is used if the needs must be prioritized according to the Gap Analysis and Cost Comparison sections above. This section documents the process and results of prioritizing the needs, and the rationale for the selection. It describes the selected key needs.
11. VALIDATION OF KEY NEEDS (*optional*). This optional section documents the final feedback of the stakeholders relative to the key needs described in the Selection of Key Needs section above. It is used if the needs must be prioritized. This section documents the stakeholders' agreement that the system will focus on the identified key needs.
12. APPENDIX (*optional*). The appendix is optional. This is a good place to put back-up material that would prevent the main sections from being succinct. Full justification of the results is available here for those interested. It also may include a glossary or notes, if appropriate.