Data processing project management: A practical approach for publishing a Project Expectations Document

by LOIS ZELLS
Yourdon, Inc.
Scottsdale, Arizona

ABSTRACT

With the mounting demand for proficient personnel and the parallel increase in salaries, management is seeking ways to improve productivity in order to realize a higher return on their investment dollars. Knowing what to do, when to do it, and how to do it prevents costly retries. Given any kind of a project and 2 to \( N \) participants, there will be 2 to \( N \) views of the project. Furthermore, there are always dozens of subtle nuances floating like little puffs of smoke over every enterprise, and they are often not in agreement. It is necessary to crystallize the assumptions that each participant “understands” to be the accepted expectations, resolve the conflicts, and disseminate this information to the community. This paper reflects a practical method for transforming facts and conflicts into an approved development approach and publishing the results in what will be called a Project Expectations Document.
INTRODUCTION

Never underestimate the importance of managing organizational expectations! In any data processing project, effective presentation of the many agreements and decisions is a must!

Made during informal interviews and conversations on the phone, in the hall, and by the elevators, as well as in formal meetings, these agreements and decisions need to be documented. This record starts as soon as the project is initiated and is continuously revised throughout the development cycle.

A project, any project, is composed of four basic stages:

1. Definition of the problem
2. Design of the solution
3. Development
4. Implementation

It is during the definition stage, before the “real” job of analysis, that developers have produced what has traditionally been called the statement of work, feasibility study, or survey. In its simplest form, a feasibility study may be an economic evaluation such as a cost/benefit analysis based on some high-level assumptions. A more complete definition recognizes that analysis of the existing system deficiencies and new system objectives is required as input to the survey. The likely output, the statement of work, may include the following:

1. A cost/benefit analysis
2. A narrative of the project and its deliverables
3. A high-level project plan
4. Preliminary solution alternatives
5. The recommended approach

Generally accepted essentials of the survey, the listed components meet the goals of a feasibility study. However, there are also many undefined and assumed attitudes and expectations infused into every development effort. N number of people will have N number of perspectives pertaining to the project, and they are usually not all in agreement. It is necessary to crystallize these views, resolve the conflicts, and disseminate this information to the community.

This paper proposes to restate the obvious, shift activities, integrate new ideas, and repackaging the product. A practical approach will be provided for transforming the old, incomplete feasibility study into a comprehensive preanalysis phase that illuminates the variations of expectations and concludes with the publication of a Project Expectations Document.

A PRACTICAL APPROACH FOR PUBLISHING A PROJECT EXPECTATIONS DOCUMENT

What is so special about a Project Expectations Document (PED)? Why do we even want to publish a PED? The participants, who range from executive management to the hands-on operators of the system, need to have a clear understanding of the project and its deliverables. This clarification must occur as soon as the project is initiated and must be maintained throughout the project development cycle.

The PED will record all the philosophies, assumptions, dependencies, requirements, and constraints. Organizational expectations will be realistic, approved, documented, and disseminated. Furthermore, the red-flag issues will be brought into the open and dealt with immediately. Failures occur when project participants know that risks are being increased while visibility is being suppressed because management cannot (or will not) acknowledge the problems. However, even the most taciturn managers cannot refute facts that are clearly stated.

To Begin

The foundation for building a PED is the interview process. Information is gathered informally and formally. Informal interviews occur during phone conversations, at the water cooler, during lunch, and so forth. A notebook carried at all times to record the essentials of every conversation helps to identify individual expectations and conflicts. Thus, assumptions, dependencies, constraints, and philosophies are quickly accumulated and documented.

Procedurally, the formal fact-gathering process is much easier. At least three to four organizational levels should be interviewed, using a predeveloped questionnaire and allowing time to record the entire meeting after each interview. The interviewee should be allowed to verify and/or correct the interview report. After all the interviews have been recorded, reviewed, and revised, the results should be analyzed and summarized according to areas of agreement and conflict. Disagreements can be resolved in committee or by a selected group or individual. The original areas of agreement, the conflicts, and the resolutions constitute the final document.

Publication of the PED Requires Time and Effort

During this preanalysis Project Expectations Phase, the fact-gathering process just described is employed. A consolidated document is the deliverable, and the activities leading up to its completion are as follows:
1. Publish a draft PED.
2. Select the reviewers of the draft PED.
3. Distribute the draft PED.
4. Schedule the review of the draft PED.
5. Review the draft PED.
6. Revise the draft PED.
7. Publish the PED.

Some of these jobs must be done sequentially; others can be done in parallel. Partitioning publication into smaller tasks and their dependencies allows better control and management of the entire process.

**A PED Addresses Many Issues**

It is impossible to develop a generic solution to all projects in all environments. Therefore, the following list with the subsequent discussion is offered as a menu of suggested areas of interest:

1. Executive Overview
2. Scope of the project
3. Systems overview
4. Analysis of alternatives
5. Project management philosophies
6. Constraints, assumptions, and dependencies
7. Costs
8. Completion criteria
9. Success criteria
10. Acceptance testing criteria
11. Project plans
12. Management reports
13. Management summaries

**Executive Overview**

Senior managers are too busy to read a lengthy document. They want the information in an easy-to-absorb offering. Although it is the last job completed in the phase, the one-page Executive Overview is the first item in the document and describes the project history, the existing system efficiencies and deficiencies, the new system goals, the costs of the new system, a cost/benefit overview, and the estimated completion date.

Also included in the Executive Overview is a brief description assessing the effect on existing operations of doing/not doing the project. Impact assessment will be discussed in detail in the following section.

**Scope of the Project**

In this section of the PED the boundaries of the new system are set. The user organization is established, identifying the affected departments and describing their major areas and components. We decide what is to be built, what needs to be done, and how long it should take. It is also necessary to specify what the system will not do and to determine existing manual and automated systems.

**Impact assessment**

With the introduction of the impact assessment, a helpful dimension is added to the Scope of the Project section. Often, as project managers, we assume that our project is pure goodness, something akin to motherhood and apple pie. How can users fail to love and embrace it? The project may be completed on time and within budget, yet the users are unhappy. Why? Can the project then be considered a success?

If there is any chance of resistance, the situation should be assessed early in the project. Perhaps the condition can be overcome (publicity, user involvement, and so forth); but if the project will have a truly negative impact on the organization, let us know about it now. If we cannot correct the problems, do we want to spend $N on a white elephant?

The Impact Assessment answers such questions as these:

1. How do the users feel about the new system?
2. Where are the resistance pockets?
3. Will operations change?
4. Will departmental boundaries change?
5. Will jobs be changed? Added? Eliminated?
6. How will users react to new technology?
7. What is the priority of the project in relationship to existing business operations?
8. What is the effect of the project on existing business operations?

Evaluating these issues early in the project enables informed and effective decision making.

**Systems Overview**

Although the project expectations phase is a preanalysis phase, it is nevertheless necessary to initiate some high-level analysis at this stage. The Systems Overview explains the current system’s deficiencies, but in-depth study is postponed until the analysis phase. The key features of the new system are identified, new functions are described, and development costs are estimated in order to justify, prioritize, and recommend those that may be included, delayed, or excluded. The major inputs and outputs to the system are identified, and system interfaces are declared. Performance requirements may also be included, along with any pertinent comments on existing hardware or software.

**Analysis of Alternatives**

The project team is responsible for providing management with several solutions or proposals for the new system. Immediately following analysis there should be a special phase for in-depth evaluations of several implementation alternatives. However, some foundation work may begin during the project expectations phase. For each alternative, summarize the key features, major functions, assumptions, advantages/disadvantages, opportunities/risks, and estimated costs. Recommendations are also appropriate.
Project Management Philosophies

The desire to manage projects effectively and be perceived as exceptional contributors stimulates our interest in many issues, not the least of which is how much control and responsibility is to be assumed and by whom. Relying on the psychological adage that involvement implies commitment, we propose that the selection and approval of the project management philosophies be a participative activity for the following items:

1. Development life cycle,
2. Planning philosophy,
3. Problem management plan,
4. Formal plan for review,
5. Change management plan,
6. Approval cycle plan,
7. Organization plan, and
8. Status reporting plan.

The tasks described in the earlier sections, To Begin and Publication of the PED Requires Time and Effort, should be applied to producing a document for each item in this list.

Development life cycle

Traditional project development usually follows some set of steps from start to completion. The steps may be a series of ad hoc responses as needs are recognized, or the project may be completed using an accepted methodology. Furthermore, a given project may use only a limited number of steps chosen from the methodology. More enlightened data processing environments may have a selection of several kinds of methodologies, which enables the customization of a project development life cycle. It is unusual to solicit management and user involvement in the choice of the development approach. Nevertheless, that is precisely what we are advocating.

Planning philosophy

We must help the organization to understand that project planning is an iterative process. It is impossible to present a comprehensive and detailed schedule for implementation on the first day of a project. Furthermore, it is unlikely that a project plan that is precise can be completed before design is finished. Consequently, as we migrate through the development life cycle, our knowledge base of the project becomes broader and we are able to refine the plan continually.

We will also advise the organization to employ the participative approach (those who are closest to the work will plan and estimate); and we will tell the organization the method of partitioning the work and the way in which we calculate dates.

Problem management plan

No project can go from start to completion without its share of problems. Contentions build gradually and often persistently. Usually it is not until a situation has become serious that its resolution becomes an issue. We recognize that problems are unavoidable and will institute a problem management plan.

Formal reviews

The procedures and participants for walkthroughs and formal reviews are identified.

Change management plan

Change is inevitable. Any time we attempt to freeze a specification, we are deceiving ourselves. We are only restricting the system's view of the real world. Admitting that we cannot control change, we will manage change by implementing easy-to-follow procedures.

Approval cycle

The final document from each phase must be approved, the project plans must be approved, the analysis specification must be approved, the design must be approved, and so on. It is advisable to itemize all the activities in the project that need ratification. A responsibility matrix is completed; it designates accountability and provides visibility to important activities.

Organization plan

The organization plan describes the partitioning of the project into specialty groups, the group charters, the assignment of participants to groups, and the group members' percentage of participation.

Status reporting plan

If a project control and accounting system is already installed in the environment, it is important to indicate which reports will be used, who will be on the distribution lists, and how often the reports will be produced.

If the organization has no reporting system, an evaluation of alternatives (which should include manual reporting, purchased packages, and internally developed software) should be presented, along with a recommended plan of action.

Constraints, Assumptions, and Dependencies

It is important to specify the subtle nuances that are usually floating like little puffs of smoke over every project. There are dozens of little assumptions that everyone "understands" are the accepted expectations of the project. Rarely, however, are these subtleties addressed until they become issues:

1. User participation is clarified.
2. The four classic tradeoffs when a project is late are delineated.
3. Computer requirements such as equipment availability and turnaround time are specified.
4. Responsibility issues such as levels of control, skill levels, and conflict resolution are stated.
5. Technical decisions pertaining to software packages, design tools, and development tools are made.
6. Management overhead is detailed.
7. Administrative support is defined.

Costs

The determination of costs is needed for informed decision making, evaluation against benefits, budgeting, and establishing the yield on the investment.

Costs to date and projected costs to completion will be reported as each phase is completed so management can make informed go/no-go decisions to proceed.

Development costs may be weighed against the benefits of anticipated operating savings, high returns, improved service, or tax savings.

The payback period for return on investment, net present value, and internal rate of return may be used to compare the yield on the investment against other potential ventures.

In our continued effort toward managing organizational expectations, it is important to stress that estimates at this stage may be misjudged by as much as 70% to 200%.

Completion Criteria, Success Criteria, Acceptance Testing Criteria

It is important to stipulate, early in the project, the conditions for determining that the project is finished, that the project is successful, and that the project is acceptable.

Agreeing on a terminating landmark prevents project completion from floating toward infinity. But how will we know when the project is finished? Will the conclusion of an activity such as acceptance testing or the shakedown period indicate completion? Will the system be considered delivered after it has run error-free for some prescribed period of time? The criteria for terminating the project must be specified now.

Success criteria may be described from varying perspectives. Management, users, operations, and data processing each have their respective standards for success:

1. Is the project on time and within budget?
2. Is the system user-friendly?
3. Does the system operate efficiently?
4. Is the system easy to maintain?
5. Is the system an asset to the organization?

These and similar questions will be addressed in identifying the requirements for success.

Acceptance testing is the act of simulating a live environment with conditions that will exist after Day 1 of implementation. It is the final process that satisfies the users that the system is operational.

Although the development of the actual test cases for acceptance is done in the testing group after the analysis phase, it is important to give the process of acceptance testing visibility early in the project. The level of user participation and a demonstration plan will be defined at this time.

Project Plans

At the conclusion of the project expectation phase, the project may be continued or canceled. If the decision is made to carry on, the next phase will be the analysis phase. During the analysis phase a parallel group of activities for planning project completion will also be occurring. Restated, the next events that occur will be analysis and planning.

The PED will contain three sets of plans:

1. A detailed plan for analysis
2. A detailed plan for planning
3. A high-level plan for project completion after analysis

Management Reports

Major milestones, major responsibilities, and preliminary resource requirements are identified and high-level network diagrams such as PERT/CPM or Gantt charts are drawn.

Management Summaries

Accumulating historical information on project development serves as a foundation for repeating successes and avoiding failures. Problems and their resolutions, possible pitfalls, and successful approaches are described in summaries of the current project expectations phase and the project history to date, and a narrative of the planning effort is written.

IN CLOSING

To document organizational expectations takes time and it takes people! Managers who resist dedicating time and resources to this project early are deceived into believing the effort will not be expended later in reacting to undefined expectations. A construction project would not be launched without defining the method of building as well as what was to be built. If it were, there would be misunderstandings and the necessity for demolition and reconstruction—time-consuming and costly—or living with the error. The same analogy can be brought to project planning.

In attempting to introduce change in your organization, study your subject, know your facts, and provide supporting documentation. Cite problems in your environment and benefit to be derived from the new approach. Develop an action plan and provide recommendations. Choose a pilot project and establish a time and dollar range. Plan and schedule an orientation meeting and

GOOD LUCK!
ACKNOWLEDGMENTS

This paper has been written on airplanes, in hotel rooms, and other places where it is virtually impossible to carry reference material. Therefore, aside from using the outline from one chapter in the Workshop for Project Planning and Control that I developed for Yourdon, Inc., this paper is pure “stream of consciousness.”

Nevertheless, I would like to acknowledge that I could never be in this place without the help of all my professional colleagues, who forced me to crystallize my thoughts.

That I bear the scars of managing many projects without managing expectations legitimized my underlying belief, “There has to be a better way.” I am grateful to the organizations that allowed me to test my hypotheses.

I am also grateful to the literature (see the following list) that supports my belief and to the company that allows me to proselytize.

BIBLIOGRAPHY

DATABASE/DISTRIBUTED SYSTEMS

As we move into the mid-80s we see major advances in database technology. The sessions in this track will touch on the subjects that seem to offer the greatest potential in the future:

A close look will be taken at what database management system options exist for the microcomputer user through the distribution of databases as parts of a large central data processing operation.

New database technologies such as the much-awaited relational database systems will be explored, along with the often-discussed database machine for unloading the central processing complex.

In our session on enterprise analysis, we will also take a look at the process one goes through in deciding how to describe business requirements in terms translatable into database systems.