Effectively Understanding User Requirements

by
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Though I don't have time to read the daily comics as often as I would like, I really enjoy Mr. Boffo, and especially the occassional "Unclear on the Concept." As I was laying awake one night recently, I began pondering my commitment to produce this paper, and my mind was wandering the fields of several design efforts of years past as examples of do's and don'ts.
One, especially, came to mind. Picture a medium sized organization where several distinct operational departments, in addition to Finance and Sales and Marketing, have no visible (or invisible) means of communication. Policies set by one department are rarely even known by another. Customers call regarding advertised specials, which order takers have no knowledge of, or ability to enter in the system. Due to this lack of communication in combination with inadequate and/or non-existent management information systems, the organization appears to be loosing about $750,000 a month more than they need to simply due to penalties, etc.
We were brought in to do a requirements definition which could in turn be used as the basis for an RFP (request for proposal). After going through the design process and publishing and distributing the requirements document, I called the head of MIS, who was my liaison, to ask what feedback she had had and when we could schedule a walkthru of the document. She reported that the users were extremely disappointed in the document I had produced. They felt that "all it really did was present what they already

knew they wanted and had asked for in the course of our interviews," and that "anyone could have come in and documented how they did business, and what they wanted the system to do." As I reminisced there in the dark, I could not help but giggle at the thought of overlaying the picture with an "Unclear on the Concept" heading.

Despite my amusement at what I feel was an obviously comical situation, I had signals from the very beginning of that effort that it would end badly. If we went through a video of the activities which took place, you would be able to check off a violation of virtually every point as we discuss "Effectively Understanding User Requirements," and the steps to insure the success of this process.

Setting Expectations Up Front

Whether the "User Requirements" process will take two days or two months, the first step must always be the mutual understanding of how the process will work and setting realistic expectations. What I have found to be the most effective way of doing this is to have a "kick-off" meeting which should be attended by the department or area head and their most knowledgeable designee (if possible) from every department or area which will be a direct or peripheral user of the system. At this meeting you want to tell the attendees:

1. Who you are. Provide not only your name, but also your background. Be up front with them about your strengths (ie. I have designed five major systems which are still successfully in operation) and your weaknesses (ie. I have never designed a widget tracking system before, so I will be looking to each of you to help me better understand how this business works).

2. Why you are here. Make this as strong a statement as possible, as this can dramatically affect the co-operation you will receive (ie. "The president has determined that a widget tracking system will increase our profitability by 15% and is looking to all of us to make this happen as quickly and successfully as possible," would be more effective than "I've been given the job of designing a widget tracking system and I need your help.") If possible enlist someone high up in the company to do the initial introduction, someone who will command the attention and response of those present.

3. What you expect to produce. Lay out for the users, in as much detail as possible, what the end result of this effort will be. If you have examples of previous similar efforts, use them to illustrate your points. What the users can expect should be something which will be meaningful to them, in their language, not a bunch of data processing mumbo jumbo. Data flow diagrams and the like may be fine

for a systems analyst who has been to a structured design class, but they mean zilch to a payroll clerk.

4. What you will want from them. The first thing users always want to know is "how much of my time is this going to take?" Remember that whereas this is your job, they have to do their jobs above and beyond the time they spend with you. However, this is a difficult question to answer, and of course can vary depending on how good a resource they turn out to be. It also varies by system, as some systems take weeks of interviewing while others take only hours. For an average system I would typically respond something like "I will want to spend two to three hours with each of you initially to become familiar with your area. At the end of that meeting I can give you a better idea of how many sessions we will need beyond that. Usually, I will ask you to spend one to two more three or four hour sessions with me. After that I can usually call you with questions."

5. How their time with you will be spent. I like to prepare them for the time we will spend together, so they can think about what they want in advance, and so that they can begin to gather the materials they use in their job and pay attention to some of the details of their job they may take for granted, but which will be important details for me. I describe the interviewing process, the kind of documents I will ask them for, and the kinds of questions I will ask. I emphasize that though I know they are extremely busy, interruptions, meetings cut short, and so on can severely impact the successful outcome of our time together. That way they can plan in advance to have someone else field problems while we meet.

Once this part of the meeting is complete, you want to do two very important things:

1. Let them know that you will personally reconvene with the entire group and go through your ideas and understandings before producing the final document. This is extremely important, both to the process as a whole, and in terms of taking some of the pressure off them to be "perfect" during the interviewing process. This lets them know they will have a chance to catch their mistakes as well as those of others before it is too late.

2. Ask them if they have questions, concerns or problems with anything you have said. If they want to negotiate anything, up to and including the format of the final document you will produce for them, now is the time to discuss it. Remind them that the goal of this meeting is to make sure that everyone leaves the room with the same goals and the same expectations for this process.

Effective Interviewing

The interviewing process is like an art. It requires talent, skill, practice, the right equipment, discipline and patience.

1. Timing and Environment.
   User interviewing is very intense. You should attempt to limit user interviewing to four hours a day so that you don't spend time when you are too tired or burned out to be effective. Mornings are best because frequently people get a bit logy in the afternoon. Avoid spending less than two hours, because you can't get enough completion or depth in less time.
   A small room with a door that closes, no phone and good ventilation is best. The user should have a feeling of intimacy and privacy, so that they will not hold back information that might be important. Poor ventilation can make people drowsy. A closed door and no phone help prevent interruptions.

2. Equipment.
   There are a few things I consider essential for user interviewing. First and foremost is a tape recorder and lots of blank tape (90 minute tapes for infrequent changes). I assure the user that anything they say will be kept in the strictest confidence and that no one else will ever hear the tapes, but that they help me go back later and verify my recollections of our conversations. If the user resists heavily, drop it, but otherwise be diligent about recording every word - it's invaluable. Second, have plenty of pads of paper and pens or pencils. Even though you are recording every word, you will want to jot down key points, notes to yourself, questions which you want to ask but don't want to interrupt, and ideas. Besides, people think you are more attentive to what they are saying when you take notes. Third, have a flip chart with colored pens to use for illustrating key ideas. Use different colors for different functions or departments. Flip charts are much better than boards, as you can tape up many sheets around the room to refer to as you are talking (don't forget the masking tape), and then take them with you when you are finished for future reference.

3. Control
   One of the most critical, and most difficult, aspects of user interviewing is to make sure that you are the person in control at all times. If you lose control of the process you can come out of the interview having wasted your time and everyone elses, with no solid information to show for your efforts. Maintaining control of the user interview means that you direct the conversation and insure that what is being discussed is precisely what you want discussed at any given point, that the level of detail progresses to the level of detail you need, and that you

are getting "real" information. There are three classic things that I have found I need to guard against to maintain control. The first is when the user I'm interviewing wants to tell me about their design for the system. Many users fancy themselves better at designing systems than the people interviewing them (and probably some of them are). I respond to this by saying "Gee, those are some great ideas, but it's too early for me too even be thinking about those things. Before we get into all that I need to understand ...." The second, which is even more delicate, is when someone from my clients MIS department wants to tag along so "they can understand the requirements too." Then, either to impress me or to impress the user, I'm never quite sure which, they start monopolizing the conversation. They either start on a diatribe of how the user's department functions, or start asking their own questions, which are rarely the same questions I would ask. How you handle this one depends totally on the politics of the situation. My only advice is, if you can't get them to shut up then end the interview as quickly as possible (ie. develop a terrible case of stomach flu). Third, is the situation where you are meeting with the department head and their designee, and it quickly becomes obvious that though the designee knows everything and the department head has no idea how things operate, the department head either wants to do all the talking or has the designee so brow-beaten that they won't give you "real" information. This is really similar to the second situation, but easier to handle. What you want to do here is use your imagination to get the designee away from the department head so that you can talk privately. Try something like "Gee, Mr. DepartmentHead, you've been extremely helpful and I think from what you've said I have a real good "big picture" of how your department operates. I know you're real busy, so why don't we wrap up and maybe Mr. Designee and I could go find a few of the forms I need copies of and he could show me your present operation." Do whatever it takes, but don't waste time in situations where you don't have control.

4. Good Guy, Bad Guy
I don't know if you're an avid reader of murder mysteries, but if you are you'll notice that the cops usually interview sources and suspects where one cop plays the good guy and one cop plays the bad guy. If you can find the right person to team up with this can be the absolute optimum way to do user interviewing. The person you choose should be very different from you and should be a "compensating" personality, in other words someone who is strong in areas where you are weak, etc. There are many positive results which can accrue from this approach. First of all, there is a much better chance that at least one of you will develop a close rapport with the user given the differences in personalities. Second, since people think differently, one of you may pick up on things that

the other misses, and so on. Third, rather than really playing good guy, bad guy it is very effective to play smart guy, dumb guy or funny guy, serious guy or whatever seems to be called for given the personalities at hand. If your user seems to be a bit slow, it is helpful for one of you to appear even slower, to set the user at ease. If the user is extremely chatty, one of you can seem equally chatty but the other can continuously pull the conversation back to work.

5. Attitude
One of the biggest differences between people who make successful interviewers and people who don't, is whether the interviewer goes into the event with the attitude that they are the teacher or they are the pupil. The whole idea of conducting user interviews is to learn how the user does their job, how their business works, what they need to make it work better. The idea is not to show the user how smart you are, how much you know about their job or their business, or how much you know about your job. The interviewer should be a sponge, soaking up as much knowledge and information as possible. Their role is to be the inferior, the pupil, while the user is the superior, the teacher.

6. Technique
It is very difficult, and takes a lot of time and hard work, to develop a user interviewing technique which works for you. Since every person is different, every person needs their own technique. It must appear and feel natural for their individual personality. My goal, when I conduct a user interview, is to come out of the interviewing process feeling that I know enough to do the person's job. Therefore, the posture I take is to pretend that I am a trainee for the job and that the person I am interviewing will be leaving for vacation as soon as we finish the interviewing process, so I had better have the job down by then. I begin by getting a functional overview of the job, ie. "Let's start with how you get widgets in the first place. Do you make them here at the plant, or do you buy them from outside vendors?" This is then followed by getting in to each step of the job function in more detail. This would logically be the second interview, ie. "Now, the last time we met you said that you order the widgets from an outside vendor. How do you do this? Do you have a blanket order on file with them, do you phone in orders when you're running low, do you send them purchase orders, etc.?" It is critical to this process that you don't have a problem with looking dumb, and asking the same question twenty five times if that's what it takes to understand exactly what is going on. The final step of interviewing, and this might logically be the third interview, is to physically go through the job, ie. watch the way forms are completed, listen to the way phone calls are conducted, listen to the kinds of problems that come up, and so on.

It is very important to know the physical layout and the physical processes that are gone through, as these are frequently just as big a source of inefficiency as the logical processes.

Verifying Your Understanding

Now that all the data has been gathered, you will need to sift it, sort it, and put it into an order that you understand, so that you can start to formulate an idea of how a system might look from the users perspective. You should not be thinking about data base designs and the like at this point. You only want to think about the system through the users eyes. You can cheat to the extent that if you know something is technically impossible, don't mentally design it into the system.

It is a good idea at this point to listen to tapes to refresh your memory, draw diagrams of how a system might flow on your flip charts, and walk thru your thinking with your interviewing partner or other co-workers. Let your mind wander, let your creative juices flow, but think like the user, not like a data processing person.

When you feel confident that you can picture the system in your mind, you will want to set up a meeting with all the users who were in the kick-off meeting and who you have interviewed, and walk through your understanding of the work flow and how the new system will fit into it. What I generally find works for me to accomplish this process is to divide areas or departments into different colors, and using the color coding, draw the entire work flow and new system use out on the flip chart, taping completed pages up in sequence around the walls. This not only provides the user with a very visual feedback, but lets me make changes or re-draw a piece easily if I did not have a correct understanding, and then lets me take the whole thing back to my office to serve as an outline for the final document.

When this walk-thru meeting is complete, everyone in the room should be in agreement that the diarama you have created represents a common understanding of both the way the business operates and the functional requirements of a system which will satisfy the users' needs. Be sure you tape this meeting!

Follow-up

The final step in the process is to follow-up, what should now be a common understanding, with the requirements document and any review or walk-thru meetings which will insure that the document is understood and accepted.

How detailed this document becomes depends on its purpose, your standards, your budget and so on. At a minimum it should include:

1. Table of contents

2. Management Overview

This should be a general narrative of what the system will encompass, what it's approximate cost will be, what the benefits will be and a very brief narrative summary of the functionality of each sub-system.

3. System Description
   On a sub-system by sub-system basis this should outline the functional flow of the system, and name and describe all screens, reports and processes in the system. It may or may not get to the level of a detailed layout of each screen and report, but at a minimum should include the critical information contained on each screen or report, ie. a list of elements.

4. Implementation Plan
   This should contain the proposed scenario of how this system will be implemented, both in terms of hardware and software. It should detail realistic estimates of time and cost. It is basically a "to do" list to get from here to an implemented system.

5. Appendix
   This should include:
   *A Glossary of Terms - there may be many words or terms that are particular to this applicaation or environment. This is especially important if the document will be sent to outside vendors to bid on.
   *Data Dictionary - this should be a complete list, including descriptions and if possible size, type, etc., for every element in the system.

Once this document is published and circulated, you will want to set up at least a brief meeting to address questions and comments. Frequently, if it does not put too much of a strain on peoples time, a full walk-thru of the document is helpful to insure everyone's understanding and concurrence.

Conclusion

The underlying message in this paper is probably already clear to you. In order to effectively understand user requirements you basically need to to do two very important things. First, you must follow all the basic rules of good human communication. Listen carefully, put yourself in the other person's shoes, and feed back what you think you heard. Second, and most important of all, you must forget that you are a data processing professional until the user requirements phase is finished. Otherwise you will confuse your knowledge of resource management, performance considerations, normalized data bases and on and on, with the users functional requirements. Good interviewing!