Fact finding techniques in system investigation

Fact-finding is an important activity in system investigation. In this stage, the functioning of the system is to be understood by the system analyst to design the proposed system. Various methods are used for this and these are known as fact-finding techniques. The analyst needs to fully understand the current system.

The analyst needs data about the requirements and demands of the project undertaken and the techniques employed to gather this data are known as fact-finding techniques.

Various kinds of techniques are used and the most popular among them are interviews, questionnaires, record reviews, case tools and also the personal observations made by the analyst himself. Each of these techniques is further dealt in next pages.

Two people can go into the same area to gather facts and experience entirely different results. One spends weeks and gets incomplete and misleading data. The other is finished in a few hours and has complete and solid facts. This session outlines some of the things a person can do to achieve the latter.

Requirements analysis encompasses all of the tasks that go into the investigation, scoping and definition of a new or altered system. The first activity in analysis phase is to do the preliminary investigation. During the preliminary investigation data collecting is a very important and for this we can use the fact finding techniques.

The following fact finding techniques can be used for collecting the data:

Interviews – Analysts can use interviews to collect information about the current system form the potential users. Here the analysts discover the areas of misunderstanding, unrealistic exception and descriptions of activities and problems along with resistance to the new proposed system. Interviews are time consuming.

Questionnaires – Here the analysts can collect data from large groups. Questionnaires could be Open-ended or Close questionnaires. Open-ended questionnaires are used to learn feelings, opinions, general experiences on process detail or problem. In it, questions are answered in their own words. Where as in closed questionnaires a set of prescribed answers are used and specific response have to be selected. This is a costly affair as the questions should be printed out.

*Getting Cooperation in Fact Finding:

The cooperation of operating people is crucial to fact gathering. However, if the operating people believe that the purpose of the fact gathering is to make changes in the work with the object of reducing staff, it is naïve to expect them to help. The key to obtaining cooperation is two-way loyalty and trust. We get this by commitment to developing improvements that simultaneously serve the interests of employees while they serve the interests of owners, managers and customers.

Process improvement projects should be undertaken with the object of making the company as good as it can be, not reducing staff. Of course process improvements will change the work, often eliminating tasks. This is obvious. Not quite so obvious is the fact that eliminating tasks does not have to mean reducing staff. It can mean having resources available at no

additional cost to do any number of things needed by the organization, not the least of which could be further improvement work. And, no one is in a better position to improve the work than the people who know it firsthand. When organizations are truly committed to their people and their people know this, their people can relax and enthusiastically commit themselves to continuous improvement.

This article is written for companies that want to capture the enormous potential of enthusiastic employees embracing new technology. They cannot accomplish this with lip service. The employees of an organization are its most valuable resource. When executives say this sort of thing publicly but then treat their people as expenses to be gotten rid of at the first opportunity, that is lip service. Resources should be maintained and utilized, not dumped. When they are dumped, trust dissolves.

Meanwhile the people and their society have changed significantly in the last few decades. The popularization of computers stands high among the factors that have contributed to recent social change. Young people are being exposed to computers early in their education. A sizeable portion of the work force is comfortable working with computers. This was certainly not so a generation ago.

Another social change that is very important to process improvement is the increasing acceptance of involving operating level employees in the improvement process. It has become rather commonplace to form teams of operating people. Along with the increasing acceptance of employee

involvement has come a dramatic change in the role of the internal consultant who is learning new skills for working with teams.

This article addresses the role of the facilitator who gathers facts about work processes to use with an improvement team. The facilitator follows a work process as it passes through departmental boundaries and prepares an as-is Chart. Then an improvement team made up of people from the departments involved in the process studies the as-is Chart and develops a To-be Chart. Facilitators learn how to study work processes. Facilitators are a great help as they gather and organizing the facts of work processes and guide the study of those facts by improvement teams.

*What Facts to Gather?

Knowing what facts you want to gather is crucial to effective fact gathering. When a people do not know what they are looking for but attempt to learn everything they can, in effect " to gather all of the facts", they embark on endless and often fruitless effort. Knowing what facts not to gather is just as important as knowing the facts that are needed.

There is a pattern to fact gathering that is particularly helpful during process improvement. It makes use of the standard journalism questions: what, where, when, why, who and how. This pattern focuses on the information that is relevant for process improvement and avoids that which is not. How it accomplishes this is not completely obvious. It goes like this.

*Distinguishing Between Facts and Skill:

No matter how carefully facts are gathered, they will never match the understandings of people who have experienced the work first hand for

years. Those people possess the organizational memory. They have accumulated detailed knowledge that is available to them alone. They access this knowledge intuitively, as they need it, in a fashion that has the feel of common sense. But, they cannot simply explain it to someone else.

For instance, we could ask an experienced medical doctor what he does when he visits a patient and expect a general answer like, " I examine the patient and enter a diagnosis on the patient record form." However, if we then asked " How do you do that? How do you know what to write as the diagnosis?" we would be asking for detail that took years to accumulate. During those years this detail has been transformed from myriads of individual facts to intuitively available skill. We simply cannot gather it.

The information that the doctor and for that matter all employees can readily provide answers the question, " What?" The information that cannot be provided because it resides in the realm of skill answers the question, " How?" Rather than attempt to gather the skill and settling for simplistic/superficial data we acknowledge that that information is not accessible to the fact gatherer.

However, this information is critical to effective improvement. In order to get at it, we must invite the people who have it to join in the improvement development activity. This is the fundamental strength of employee teams. They provide the organizational memory.

And, don't think for a moment that medical doctors have skill but clerks don't. In all lines of work there are differences of skill levels. Our object in process improvement should be to incorporate into our changes the finest

skills available. So we use teams of the best experienced employees we have. To do otherwise invites superficiality.

*Using the Description Pattern:

The description pattern provides facts, not skills. We organize these facts on charts as effective reminders of the steps in a process. When these charts are used by people who are skilled at performing those steps, we have the knowledge we need for improvement. Therefore:

What – Answer this question at every step. This tells us what the step is and provides the necessary reminder for the team.

Where – This question deals specifically with location. Answer it for the very first step of the process and then every time the location changes and you will always know location.

When – When dealing with processes, this question generally means how long. Ask it throughout the fact gathering, making note of all delays and particularly time-consuming steps.

Who – This question deals specifically with who is performing each step. The easiest way to collect and display this information is to note every time a new person takes over.

How – This question is important but it changes the fact gathering to skill gathering. We should rarely get into it. Instead we leave this information to be provided by the team, as needed.

Why – This question is different. It is evaluative rather than descriptive. It becomes most important when we study the process for improvement but while we are fact gathering, it is premature. Just gather facts. Later as a team we will question the why of each of them.

http://www. freetutes. com/systemanalysis/images/decriptivepattern. gif

Follow this pattern and:

- You will always show what is happening.

- You will always show where the work is happening.

- You will show who is doing the work whenever a person is involved.

- You will show when most of the processing time is occurring.

- You won't bog your readers down with how the individual steps are done, non flow detail.

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*How to Initiate Fact Gathering – Public Announcement:

A public announcement can go a long way towards inspiring cooperation. It can also provide an opportunity to forestall the anxieties just discussed. The people working in the areas affected by the project are informed that a five or ten minute meeting will be held at the end of a work shift and that a senior executive has an important announcement. (This senior executive should be a person whose authority spans the entire project.)

The meeting includes an announcement of the project, its objective, who is involved in it, a request for the support of all employees and an invitation for questions. It is conducted by the executive mentioned above because it is important that statements about the intent of the project be made by someone who has the authority to stand behind his or her words. It is also helpful for the executive to introduce the analyst and the team members who have been assigned to the project.

The issue of staff cuts may be introduced by the executive or may surface as a question. (Or, it may not arise at all in organizations where loss of employment is a non-issue.) If it is addressed, it should be answered directly and forcefully. " I guarantee there will be no loss of employment because of work improvement." This is not a difficult guarantee for executives who genuinely believe that their people are their most valuable resource. (Note, this is not a guarantee that there will be no loss of employment. If we fail to improve our work, there is a pretty certain guarantee that there will be loss of employment.)

This meeting can also have constructive side effects. One is that the analyst gets a public introduction to the people from whom he or she will be gathering data. Simultaneously, everyone is informed of the reason for the project, making it unnecessary for the analyst to explain this at each interview. And, the explanation carries the assurances of the boss rather than an analyst.

*Common Sense Protocol – Where to Get the Facts?

It is critical that the analyst go where the facts are to learn about them. This means going where the work is done and learning from the people who are doing it. If there are a number of people doing the same work, one who is particularly knowledgeable should be selected or several may be interviewed.

Unfortunately, analysts often try to collect data in indirect ways. Occasionally this may be for no better reason than that the analyst is too lazy to go where the work is done. Or, the analyst may have been instructed to keep the project a secret because management wants to avoid stirring up concern about job loss. Unfortunately, when employees learn (and they will) that secret projects are underway in their areas, their anxiety levels will rise all the higher, encouraging more non-cooperation.

Introverts tend to be attracted to research type work and they also tend to find excuses to avoid meeting people. They are often tempted to use written procedures as their source of data rather than going directly to the operating people. Or, they may simply assume data to avoid having to go after it.

Sometimes an analyst arrives in the supervisor's office (a proper practice when visiting a department for the first time) and the supervisor wants to provide the information rather than having the analyst bother the employee who does the work. This could be motivated by a sincere desire to help. The supervisor may also want to slant the data. Regardless of the motive, it separates the analyst from the work place and the person doing the work.

Whatever the reasons, each time an analyst settles for collecting data at a distance from reality, the quality of the analysis suffers. Guesses replace facts. Fantasy replaces reality. Where the differences are small the analyst may slide by, but professionals should not try to slide by. Where the differences are large the analyst may be seriously embarrassed. Meanwhile, the quality of the work suffers and, in the worst cases, major commitments to work methods are made based on faulty premises.

Introduction to the Employee at the Work Place

When we are gathering data, everywhere you go people are accommodating you, interrupting their work to help you do your work. The least you can do is show that you are willing to return the favor. When the time is not convenient, agree to come back later. Occasionally an employee will suggest that it is an inconvenient time and ask that you come back later. Sometimes, however, the employee is seriously inconvenienced but for some reason does not speak up about it. A sensitive analyst may notice this. However, to be on the safe side it helps to ask, " Is this a convenient time?" Coming back later is usually a minor problem. Typically you have a number of places to visit. Pick a more convenient time and return. Don't be surprised if the employee appreciates it and is waiting for you with materials set out when you return.

Whatever you do, don't start suspecting that every time a person puts you off that person is trying to scuttle your work or is a difficult employee. Assume the person is honestly inconvenienced and simply come back later. If someone puts you off repeatedly, it is still a minor inconvenience as long as you have data to collect elsewhere. Give the employees the benefit of the

doubt, knowing that every time you accommodate them their debt to you grows. If you do in fact run into a genuinely uncooperative and eventually have to impose a time, it is nice to be able to remind that person of how many times you have rescheduled for his or her benefit. At such times you will also appreciate the project-announcement meeting when the senior executive brought everyone together, described the importance of the project and asked for support.

As you are about to start the interview the employee may bring up a subject for idle conversation such as the weather, a sports event, a new building renovation, etc. People often do this when they first meet in order to size up one another (on a subject that doesn't matter) before opening up on subjects that are important. Since the purpose, on the part of the employee, is to find out what you are like you will do well to join in the conversation politely and respectfully. Then when it has continued for an appropriate amount of time, shift to the subject of the interview, perhaps with a comment about not wanting to take up too much of the employee's time.

*Respect:

Most of the time analysts gather data from people at the operating levels who happen to be junior in status (i. e. file clerks, messengers, data entry clerks). Be careful not to act superior. One thing you can do to help with this is to set in your mind that wherever you gather data you are talking to the top authority in the organization. After all, if the top authority on filing in the organization is the CEO, the organization has serious trouble. Don't treat this subject lightly. We all receive a good deal of conditioning to treat people in

superior positions with special respect. Unfortunately, the flip side of this conditioning leads to treating people in lesser positions with limited respect.

Unintentionally, analysts frequently show disrespect for operating employees by implying that the way they do their work is foolish. The analyst is usually eager to discover opportunities for improvement. When something appears awkward or unnecessarily time-consuming the analyst is likely to frown, smile, act surprised, etc. In various ways, an analyst can suggest criticism or even ridicule of the way the work is being done. The bottom line is that the analyst, with only a few minutes observing the work, is implying that he or she knows how to do it better than a person who has been doing it for years. This is unacceptable behavior. Don't do it! Go to people to find out what is happening, not to judge what is happening. First get the facts. Later we can search out better ways and invite knowledgeable operating people to join us in that effort.

*A Caution about Instant Improvements:

While the analyst cannot match the employees' detailed knowledge of what happens at their workplaces, it is not at all difficult to discover some things that those people are unaware of, things that involve multiple workplaces. During data collection, opportunities for improvement of a certain type surface immediately. Some of them are outstanding. The analyst discovers, for instance, that records and reports are being maintained that are destroyed without ever being used. Time-consuming duplication of unneeded records is found. Information is delivered through roundabout channels creating costly delays. The only reason these opportunities were not discovered earlier by the employees is that the records had never been

followed through the several work areas. These instant improvements simply weren't visible from the limited perspective of one office. The people preparing the reports had no idea that the people receiving them had no use for them and were destroying them. The people processing redundant records had no idea that other people were doing the same thing.

These discoveries can be clearly beneficial to the organization. However, they can be devastating for the relationship between the analyst and the operating employees. The problem lies in the fact that the analyst discovers them. This may delude the analyst into believing that he or she is really capable of redesigning the procedure without the help of the employees. " After all, they have been doing this work all these years and never made these discoveries. I found them so quickly. I must be very bright."

Most people spend a great deal of their lives seeking confirmation of their worth. When something like this presents itself, an analyst is likely to treasure it. It becomes a personal accomplishment. It is perceived as support for two judgments, " I am a lot better at this than those employees." and " Employees in general are not capable of seeing these kinds of things." Both of these judgments are wrong. The credit goes to the fact that the analyst was the first person with the opportunity to follow the records through their flow. If any one of those employees had done the same thing, the odds are that the results would have been the same.

The analyst is apt to alienate the employees if he or she grabs the credit for these discoveries. If this prompts the analyst to proceed with the entire redesign of the procedure without the help of the employees, he or she will

be cut off from hundreds of finer details, any one of which could seriously compromise the effort.

Taking credit for these early discoveries can also alienate employees even if they are invited into the improvement activity. For instance, it is not uncommon for an analyst who is about to go over a new process chart with a group of users to start by telling them about the discoveries made while preparing the chart. This can appear very innocent, but the fact is, the analyst does this in order to get the credit for the discoveries before the team members spot them. Instinctively, the analyst knows that as soon as the employees see the chart those discoveries will be obvious to them as well.

An analyst who realizes that the enthusiastic involvement of the team members is much more important than the credit for one idea or another will want to keep quiet about early discoveries until after the employees get a chance to study the chart. In doing this the analyst positions himself or herself to provide professional support to knowledgeable employees. Soon they make these obvious discoveries for themselves and this encourages them to become involved and excited about the project. It makes it theirs. In the end the analyst shares the credit for a successful project, rather than grabbing the credit for the first few ideas in a project that fails for lack of support.

*Recording Technique:

Recording Data

The keys to effective data recording are a reverence for facts and knowing how to look for them. You do not go into data collection with a preconceived notion of the design of the final procedure. You let the facts tell you what shape the procedure should take. But, you must be able to find facts and know how to record them. This is done by breaking down the procedure into steps and listing them in proper sequence, without leaving things out. The analyst keeps his or her attention on the subject being charted, follows its flow, step by step, and is not distracted by other subjects that could easily lead off onto tangents. The analyst becomes immersed in the data collection, one flow at a time.

Record what is actually happening, not what should happen or could happen. Record without a preference. Wash the wishes from your eyes and let the facts speak for themselves. When later you have them neatly organized and present them for study the facts will assert their authority as they tell their story.

*The Authority of the Facts:

There are two authority systems in every organization. One is a social authority set up for the convenience of arranging people and desks and telephones, dividing up the work and making decisions. The other authority system is reality itself. Too often the former is revered and feared and attended to constantly, while the latter is attended to when time permits.

Yet, whether we come to grips with the facts or not, they enforce themselves with an unyielding will of steel. ' Reality is' – whether we are in touch with it or not. And, it is indifferent to us. It is not hurt when we ignore it. It is not pleased or flattered or thankful when we discover it. Reality simply does not care, but it enforces its will continuously.

We are the ones who care. We care when reality rewards us. We care when reality crushes us. The better we are able to organize our methods of work in harmony with reality, the more we prosper. When we are unable to discover reality, or deny reality we are hurt. Period!

So we enter into data collection with respect for reality. We demonstrate respect for the people who are closest to reality. And, we do our best to carefully record the unvarnished truth.

*Observation:

A person who has been doing a job for years will have an understanding of the work that goes well beyond his or her ability to describe it. Don't expect operating people to describe perfectly and don't credit yourself with hearing perfectly. Sometimes it is a lot easier for a person to show you what he or she does than to describe it. A demonstration may save a good deal of time. A person might be able to show you how the task is done in minutes but could talk about it for hours.

Most people are able to speak more comfortably to a human being than to a machine. Furthermore, a tape recorder doesn't capture what is seen. If you are going to use a tape recorder, use it after you have left the interview site.

It can help you capture a lot of detail while it is fresh in your mind without causing the employee to be ill at ease.

*Level of Detail:

As covered earlier while explaining the Description Pattern, you can gather facts but not skill. If you attempt to gather enough information to redesign a procedure without the help of experienced employees, your data collection will be interminably delayed. For instance, if you are studying a procedure that crosses five desks, and the five people who do the work each have five years of experience, together they have a quarter of a century of first-hand experience. There is no way to match that experience by interviewing. No matter how many times you go back, there will still be new things coming up. Then, if you redesign the procedure based solely on your scanty information, your results will be deficient in the eyes of these more experienced people. It doesn't do any good to complain that they didn't tell you about that after you have designed a defective procedure.

Save yourself a lot of time and grief by not bothering to record the details of the individual steps and concentrate on the flow of the work. It goes here. They do this. It sits. It is copied. This part goes there. That one goes to them. Never mind the detail of how they do the different steps. Just note the steps in their proper sequence. Then, when it comes time to analyze and you invite in those five people, they bring with them their twenty-five years of detailed experience. Voila! You have the big picture and you have the detail. You have all that you need to discover the opportunities that are there.

*Defused resentment:

When people who have been doing work for years are ignored while their work is being improved, there is a clear statement that their experience is not considered of value. These people tend to feel slighted. When the organization then pays consultants who have never done the work to develop improvements, this slight becomes an insult. When the consultants arrive at the workplace trying to glean information from the employees so that they can use it to develop their own answers, how do you expect the employees to react? Do you think they will be enthusiastic about providing the best of their inside knowledge to these consultants? " Here, let me help you show my boss how much better you can figure out my work than I can?" Really!

We don't have to get into this kind of disagreeable competition. Instead we honestly accept the cardinal principle of employee empowerment which is, " The person doing the job knows far more than anyone else about the best way of doing that job and therefore is the one person best fitted to improve it." Allan H. Mogensen, 1901-1989, the father of Work Simplification.

By involving operating people in the improvement process, you also reduce the risk of getting distorted or misleading data. Their experience is brought into improvement meetings, unaltered. If they get excited about helping to develop the best possible process they will have little reason to distort or withhold the data.

*How to Keep the Data Organized:

One important characteristic of professional performance is the ability to work effectively on many assignments simultaneously. Professionals have to be able to leave a project frequently and pick it up again without losing ground. The keys to doing this well are:

1. Knowing the tools of the profession and using them in a disciplined manner.

2. Working quickly.

3. Capturing data the same day that it is gathered

*Using the Tools of the Profession with Discipline:

In this respect, there is more professionalism in a well conceived set of file names and directories than there is in a wall full of certificates belonging to a disorganized person. For that matter, a three-ring binder may do more good than another certificate.

A professional simply keeps track of the information that he or she gathers. Perhaps the worst enemy of data organization is the tendency on the part of intelligent people, who are for the moment intensely involved in some activity, to assume that the clear picture of it that they have today will be available to them tomorrow or a week later or months later. One way of avoiding this is to label and assemble data as if it will be worked on by someone who has never seen it before. Believe it or not, that person may turn out to be you.

*How to Keep the Data Organized:

A word about absentmindedness may be appropriate. When people are goal-oriented and extremely busy they frequently find themselves looking for something they had just moments before. The reason is that when they put it down their mind was on something else and they did not make a record of where they put it. To find it again they must think back to the last time they used it and then look around where they were at that time. Two things we can do to avoid this are:

1. Develop the discipline of closure so that activities are wrapped up.

2. Select certain places to put tools and materials and do so consistently.

*Working Quickly:

An analyst should take notes quickly. Speed in recording is important in order to keep up with the flow of information as the employee describes the work. It also shortens the interview, making the interruption less burdensome to the employee, and it reduces the probability that something will come up those forces the interview to be terminated prematurely. At the close of the interview it is a good idea to review the notes with the employee, holding them in clear view for the employee to see and then, of course, thank the employee for his or her help.

Skill in rapid note-taking can be developed over time. This does not mean that you rush the interview. Quite the contrary. Address the person from whom you are gathering information calmly and patiently. But, when you are actually recording data you do it quickly and keep your attention on the person. For process analysis data gathering, you don't have to write tedious sentences. The charting technique provides you with specialized shorthand

(using the symbols and conventions of process charting in rough form). See the rough notes following.

*Same Day Capture of Data:

The analyst then returns to his or her office with sketchy notes, hastily written. These notes serve as reminders of what has been seen and heard. Their value as reminders deteriorates rapidly. While the interview is fresh in mind these notes can bring forth vivid recall. As time passes they lose this power