Basic Tools

Four Basic Tools For Organizing and Quantifying "IDEA DATA". - Part I

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Most of us have heard the expression, "Where's the data?". The statistics division even has this phrase printed on its Post-it, notes. I believe there is a need for an expansion of this phrase to "Where's the knowledge?" When we say "Where's the data?", we are usually referring to quantifiable data with which to make decisions. Indeed, many of the tools of statistics are designed to use quantifiable data to accomplish specific tasks or activities during the continuous improvement of a process or the implementation of a specific project. However, there are often times when we need to collect information that does not start out as quantifiable data. In areas such as development of vision and mission, all types of planning, problem-solving, brainstorming, etc., the "data" available is more likely to be ideas. This "idea data" usually comes from the collective experiences, opinions, and creative thoughts of a group of people working toward a common purpose or goal. I believe that "idea data" are equal to and, more importantly, synergistic with quantifiable data. The combination of "idea data" and quantifiable data leads to more powerful knowledge-based planning, analysis, problem solving, decisions, etc.

In this two-part "Basic Tools" paper I will discuss a process, using four important tools, that can help you collect, organize, and quantify "idea data." These four tools are a sub-set of the "Seven Management and Planning Tools" referenced in the "Memory Jogger Plus™" (1989), GOAL/QPC. The four tools I have found to be most useful in the manipulation of "idea data" are:

1. Affinity Diagrams

2. Interrelationship Digraphs (ID)

3. Tree Diagrams

4. Prioritization Matrices

The following is a useful process for using these tools to collect, organize, and quantify "idea data."

Step 1. Gather together the right team of people.

Step 2. Brainstorm ideas on the central theme.

Step 3. Complete an Affinity diagram of the collected ideas.

Step 4. Complete an Interrelationship digraph(ID) of the headers from the Affinity diagram.

Step 5. Complete a tree diagram, using the analysis of the Affinity diagram and the ID.

Step 6. Prioritize the information in the tree diagram, using a Prioritization matrix.

Step 7. Take action on the critical few!

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Step 1. Gather together the right team of people.

You should plan carefully who will participate in this step. As stated above, "This "idea data" usually comes from the collective experiences, opinions, and creative thoughts of a group of people working toward a common purpose or goal." One of the most important steps for a successful project is to gather together the right people to collect quality ideas and information.

Step 2. Brainstorm ideas on the central theme.

This is the initial "idea data" gathering step. There are two important sub-steps here. First, agree on a good question to ask. The question should be stated to get positive ideas on the central theme. (i.e., The Statistics Division used a brainstorming question in the booth at AQC. Our theme was "to be the most responsive organization in the universe." The question we posed was, "What would we have to do to make this statement real for you?"). The second important sub-step is the brainstorming itself. Here you should use a pre-agreed process of brainstorming. There are many ways to do this, but you should agree on a set of ground rules for the brainstorming and follow them. Because you will be using the ideas generated in the Affinity diagram, you should record each idea on an individual note or card. 3M Post-it, brand notes work well for this activity because they can be moved around during the analysis.

Step 3. Complete an Affinity diagram of the collected ideas.

The purpose of an Affinity diagram is to analyze large amounts of idea data and to identify key ideas inherent in that data. It allows a team to "boil down" a large amount of data into a manageable set of key ideas. The Affinity process is also very beneficial in helping group consensus. It is essentially a creative process, which is rich in group participation and group interaction.

The Affinity process is simple:

1. Display the completed cards from the brainstorming in step 2. Use a large surface, preferably vertical, randomly place all of the cards on the surface.

2. Arrange the cards in to related groups. Start by finding two cards that are related to each other and post them next to each other. Look for other cards that relate to these two. Repeat this process until you have grouped most or all of the cards into common groupings. Don't force cards into a group to finish. Set them aside, they may fit later or just be stand alone ideas.

The Affinity is meant to be a reactive process rather than a contemplative process. Encourage the team members to work quickly and with energy. It is **critical** that you do this process in silence. This silent process seems to encourage multiple thought processes while discouraging semantic battles at this point. If two participants continue to move a card or group of cards between two different groups, the facilitator should copy the card or cards in question and put the information in both groups. Remember, **no talking!**

3. Create header cards. Now you can talk! There are two important elements of a header card. First, it should clearly identify the common thread that ties together the ideas below it. Second, it should capture the "flavor" of the comments in the group. For example, if the grouping is essentially positive or negative in tone, the header should reflect that tone.

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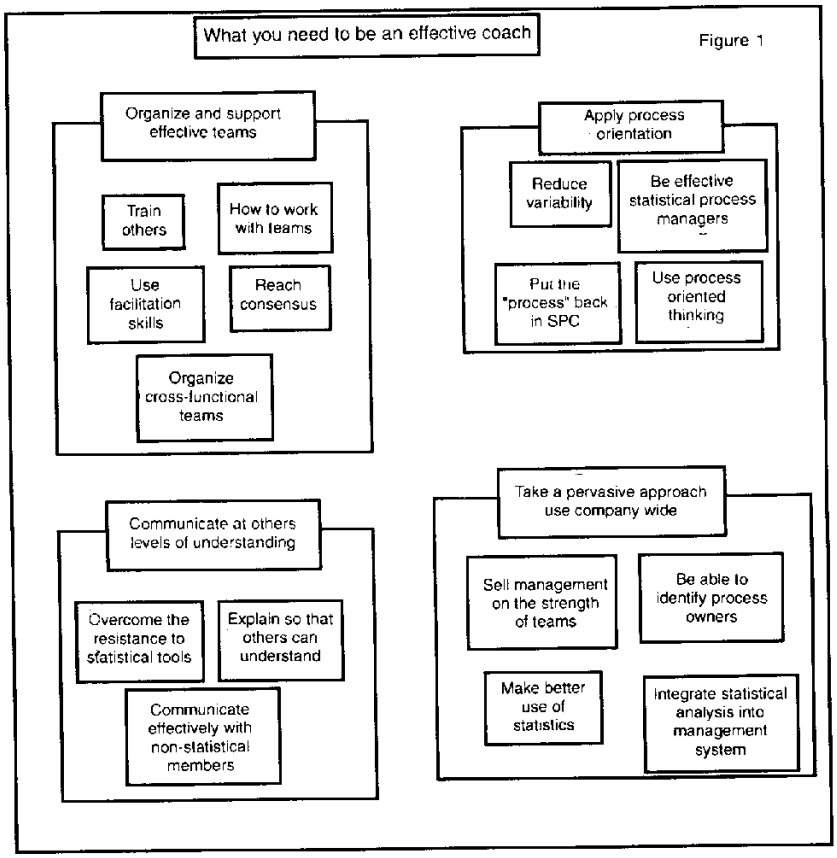
Discuss each group and look for a card in that group that captures the central idea that ties the cards together. Use that card as a header for the group or rewrite a header, that by group consensus best describes that group. Repeat this process until all of the groups have been assigned a header card. If you have a large group of cards discuss them and look for the possibility of sub-groups, with appropriate sub-headers, within the larger group.

4. Agree on a "finished" affinity. Once all of the headers and sub-headers have been identified, step back and review the entire picture. Have a short group discussion of the results and be open to modification and change. Once there is consensus on the Affinity, draw boxes around each grouping to help visualize the final picture. Figure 1 is a simple example of an Affinity diagram.



An Affinity diagram is a powerful tool for consolidating many ideas into a few key ideas. It does not, however, indicate how to take action on the ideas or which ideas are the most important. This is where the other three tools add their power to the process.

Step 4. Complete an Interrelationship digraph(ID) of the headers from the Affinity diagram.

As stated above, the Affinity diagram is essentially a creative tool to allow the free-flowing generation of "idea data." The Interrelationship digraph(ID) will help to develop a logical context to the "idea data" by exploring and identifying the causal relationships between the key ideas generated in the Affinity diagram.

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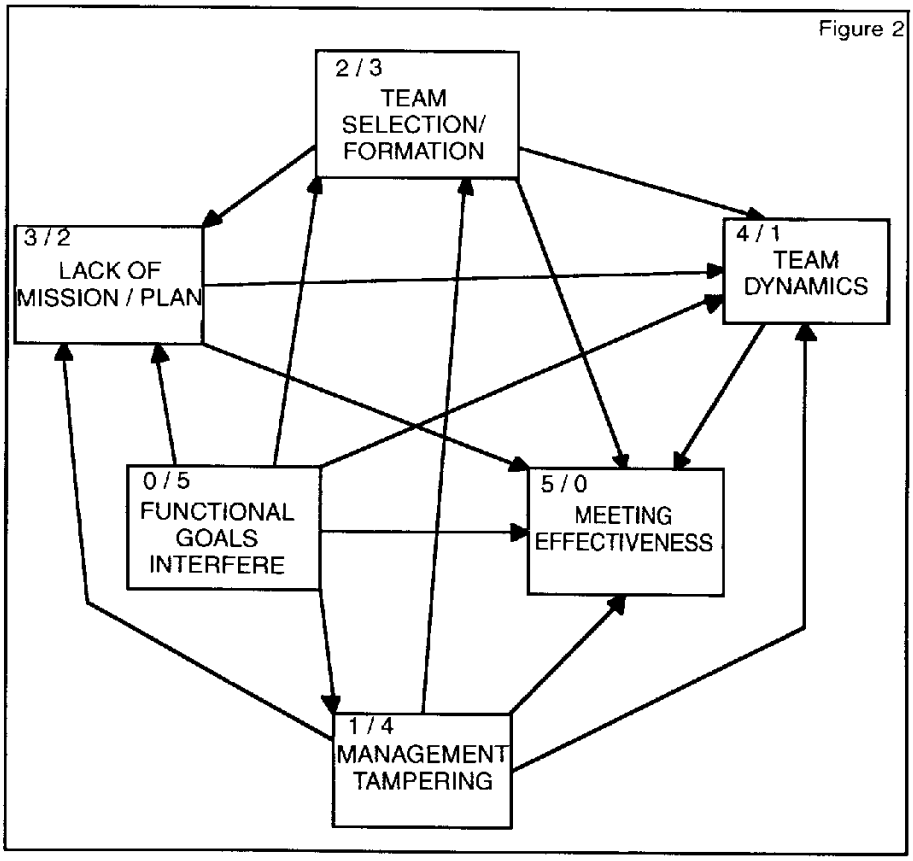
The process for developing an ID is again quite simple:

1. Arrange the header cards from the Affinity diagram randomly on a large sheet of paper(one or more flip chart pages will work well for this). If you have less than 10-15 header cards arrange them in a circular pattern. (Like the hands on a clock.) This will allow for room to draw arrows. If you have more than 10-15 cards arrange them in staggered rows. This will allow you to keep track of which relationships have been discussed during the building of the ID.

2. Agree on the process question to be asked for every pair of cards. For example, "Does this idea(Card A) cause or influence this idea(Card B)?"

3. Pick a single card(I usually start at position 12 on the "clock" or the top left card) and ask the process question for that idea(Card A) in relationship with every other idea in the ID. If the answer is yes, draw an arrow from Card A the related card. If the answer is no, ask the question in the reverse order. For example, "does this idea(Card X) cause or influence this idea(Card A). If the answer is yes, draw an arrow from Card X to Card A. If the answer is no, there is no causal or influential relationship between those two cards. Once you have completed the question and arrow relationships for the first card, move on to the next card and repeat the process. Continue until you have asked the process question for all pairs of cards. Figure 2 is an example of a simple ID.



4. Analyze the ID.

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At this point you will have an Interrelationship diagraph with arrows all over the place. To analyze the results, start by counting the number of arrows coming into a card and the number of arrows going out of a card. Record this information either on the corner of the card or near the card on the paper. This is usually recorded as IN/OUT (i.e., 4 / 1, meaning 4 arrows into the card and one arrow out from the card). Once you have tallied the results for each card some patterns should appear. First, there will be one or more cards with many more arrows coming into them than are going out. These are your key ***effects***. Second, there will be one or more cards with about the same amount of arrows in and out. These are often key milestones or intermediate needs in your project. Third, there will be one or more cards with many more arrows going out than coming in. These are the key ***drivers*** of your project. Often these will be the central ideas to your theme or project goal. These key ***drivers*** will usually be at or near the "trunk" of your tree diagram.

One important note: The analysis of an ID has often been referred to as "reading the tea leaves" by Japanese practitioners. Even though it begins to apply logic to the "idea data," it is still important not to get to "technical" with the analysis by just looking at the IN/OUT results. Have the team spend some time discussion the entire picture of the ID, looking for any flow or patterns that can lead to insight. The power of the ID is its ability to identify which of the ideas are the key ***"drivers"*** of the project and which of the ideas are the key ***effects*** or results of the projects. This should be your goal in the analysis of the finished ID.

This completes Part I of the discussion of FOUR BASIC TOOLS FOR ORGANIZING AND QUANTIFYING "IDEA DATA". In the next edition of the newsletter, I will discuss the final three steps of the process and present some case histories demonstrating the broad application of this process.

References

Brassard, Michael. "The Memory Jogger Plus[TM]", Goal/QPC, Methuen, MA