

Special Purpose KJ Language Processing

KJ analysis is a method of developing insight into themes and relationships among issues. It helps "drill" from high level issues at one level of context (usually abstract or vague) to a more detailed set of common, reusable statements. KJ is particularly useful in software because people have a tendency to state problems as abstract characteristics they do not like as opposed to making data-based statements about what they need. KJ is helpful in creating a flow-down of information leading to solid requirements at an appropriate level of context.

KJ can be used effectively in Six Sigma projects. And Six Sigma practitioners can benefit by a proper understanding of the approach.

Jiro Kawakita, whose Japanese initials "KJ" are the tag for the methodology he founded, deserves a great deal more visibility and credit for his insights and contribution to practical data-driven learning. As an anthropologist in the 1950s, he was confronted with lots of snippets of factual language data from his field research, and he had an "aha!" about using rules of abstraction to group the data and distill useful fundamental messages. His problem was not unlike today's software developer's in many areas of requirements development and problem formulation – where there is a sampling of data that touches on many important aspects of the story. Kawakita found a robust way to amplify the signal and reject a good amount of the noise in that data.

Contrasting KJ and Affinity Diagram

A number of web sites describe KJ as another name for an affinity diagram. This is an unfortunate generalization. Table 1 outlines some key distinctions between the two. Central is the fact that KJ focuses on facts, putting some rules around the traceability and clarity of every piece of language data introduced. This reduces variation in the meaning to be distilled – recognizing that no amount of language processing can overcome vague and ill-founded facts (garbage in/garbage out). Affinity diagrams, on the other hand, often encourage brainstorming, letting all ideas into the mix. Even before each tool kicks in, this difference in the incoming data is a major distinction.

Table 1: Contrasting KJ and Affinity Diagram		
	Affinity Diagram	KJ Analysis
Preparation	Little or none, spontaneous	Care taken in constructing a "theme" question
Source Material	Ideas, brainstorming	Facts, data gathering
Grouping	Quick, informal, logical grouping; often based on keywords; often no limit on group size – grouping is encouraged	Pensive, in silence, based on "the story being told" in each note; typically three maximum per group – "lone wolves" are encouraged
Titling of Groups	Quick, informal, "printer problems," "poor communication"	Disciplined, using rules of abstraction; complete sentences that answer the theme questions
Reflection/Post Processing	Little or none, a stack of groups is often it	Cause-and-effect dynamics, voting and conclusion statement powerfully capture insight

Three Special Purpose KJs

One "hidden" power of KJ is its ability to adapt to special uses. Table 2 outlines three KJ types that have been most useful. The thing that creates a new KJ type is the "theme" statement – the question that is inviting all the data as factual answers. Small changes in the theme statement, even within one of these types, can make a big difference in the team experience building it, and in the outcome.

Table 2: Special Purpose KJs			
KJ Type	Theme	Data	Uses
Weakness or Problem-Formulation	What has been preventing us from...?	Fact related to problems or obstacles (A major customer became confused with all the options and pulled out of the sales process.)	Formulating a problem; focusing on where to do more detailed problem-solving work
Context of Image	What scenes and images describe...?	Word pictures (Forgetting to record information in his log, a staffer then fills it in from memory.)	Understanding an environment
Requirements	What are the key requirements for...?	Needs – Solution-Free (Users define customer quality control procedures as required for their region.)	Finding themes and underlying messages in a complex set of needs

Weakness or Problem-Formulation KJ - This KJ is probably the best place for a new facilitator or team to start. The theme takes on a weakness tone, looking for problems, obstacles, challenges, etc. The power in a weakness orientation is that it focuses a team on facts – and on the present and past. In contrast with the affinity diagram, this KJ does not seek ideas or brainstorming. That is an important point. It might seem more optimistic to say, "What can we do to improve X?" But that would seek ungrounded ideas. Turning the same situation around to a weakness view, it becomes, "What are our key problems with X?" That creates an entirely different set of responses. Sounds a bit pessimistic, but actually it is that way for a positive reason – to pull out the most pertinent, useful facts.

**"Facts and Measures" Have Not
Been an Organizational Priority**

**Cultural Resistance
to Standards and
Measurements
Runs Deep**

Minimal standardization of processes across development teams has led to variation in outputs product design, quality and supporting material (specs, global doc, help files, test guides)

The last two efforts driving for increased use of metrics were 'defeated' by passive resistance in the development and support organizations

Our enterprise business process software has been installed without taking advantage of most of the built-in metrics gathering and reporting tools

**What internal challenges do we
face as we move to Six Sigma
software product and process
development?**

**Team
Vote-Getters**

- Top
- Second
- Third

**Arrows
Indicate**

Cause → Effect

Gaps in Information Flow Have Become Ingrained

**Our Strategy
Around Knowledge
Management Does
Not Focus First on
the Customers
Needs**

Bug fixes are not published – causing cases to be submitted on bugs that have already been fixed

Documentation is hard to locate and not centrally spread across multiple locations

We do nothing to teach customers about the new features and help them understand how it will help their business. We hand them a 300 page manual per application, a 100 page test guide and say 'have a go at it'

**We Don't Always
Get the 'Right'
Information to
(and from) the
Right People at the
Right Time**

We do not certify the knowledge of our staff prior to release

Support and hotel resources are not involved in the development process early enough to ensure their insight on design elements is drawn into new elements

**We Don't Have a
Systematic
Approach for
Creating, Using
and Validating
Requirements**

Marketing and development are often unclear about:

Who will drive the requirements process?
Where is the line between requirements and design?
Who should be involved?

We do not have clear traceability of VOC and requirements data that facilitates downstream understanding

We don't communicate and enforce infrastructure specs for clients – introducing uncertainty and install-ability when the product is installed or upgraded

**Gaps in Our
Knowledge About
New Technology
Will Prevent Us
from Succeeding**

Support, install teams and sales have broad differences and gaps in their understanding of key technologies (web, network, hardware)

Debugging/ troubleshooting knowledge (in the web) is increasingly important to the success of our future offerings – yet our plans to grow that knowledge base are ad hoc

Context or Image KJ - A context KJ, also known as image KJ, seeks to document and distill powerful word pictures describing an environment. It is the KJ with the broadest reach. At first, many people have trouble distinguishing this from a problem-formulation KJ. A context KJ calls for all manner of images that describe "the way things are" in the environment of interest. Problems and weakness may show up as part of that picture – to the extent that they provide useful answers to the theme question. In addition, a context KJ may include images about future trends, and situations and dynamics that are neutral or positive. The problem-formulation KJ, with its focus on weakness, puts a narrower filter on the incoming data.

Requirements KJ - A requirements KJ calls for functionality in answer to a theme question such as, "What are the key requirements for...?" Many times the facts are in the form of a quote, representing a customer or "actor" describing what they need or would like to be able to do. "I can track and change my own orders online" or "For at least three years, we need to manage a mixture of the newest and some of the oldest technology" would be examples of basic fact statements at the base of a requirements KJ.

When to Do a KJ

To help decide whether to do language processing and, if so, whether to use affinity or KJ, consider these steps:

1. Articulate the theme: the top-level question the team would like to use the data to answer.
2. Develop the list of participants the team would like to see working on this.
3. Gauge the prospective value of the activity on these dimensions in the Language Data Processing Planner form below.

Language Data Processing Planner		
Assign a prospective value for each activity, scoring anywhere between 1 and 5		Score
Perspective	<div>1 ----- 5</div> <div> <p>The participants already have a common view of the data they would bring.</p> <p>Participants have different data and different perspectives ...not widely shared.</p> <p>There is value in their seeing the issue from one another's perspective.</p> </div>	
Complexity	<div>1 ----- 5</div> <div> <p>The issues (regarding the theme) are not</p> <p>The issue is complex ...there are many</p> </div>	

	<p>particularly complex. The hierarchy and/or relationships among the data are pretty constrained and easy to see already.</p> <p>ways the data could be distilled. It is not easy to see what the distilled answers would be.</p>	
Urgency	<p>1 ----- 5</p> <p>Most participants would not see this as an issue worth spending time on.</p> <p>Most participants see the value in better understanding this issue right away.</p>	
Communication/- Documentation	<p>1 ----- 5</p> <p>We already have the data in a form that is communicable/- reusable by others.</p> <p>The data regarding this issue is dispersed – it is getting hard to see the forest for the trees.</p>	
Total Score		

Interpreting the Planner Score:

Up to about 6 - Team KJ not worthwhile. Consider simple affinity or net-touch grouping by a smaller team, or no data processing if appropriate.

About 8 to 10 - Reconsider the theme and/or participant list.

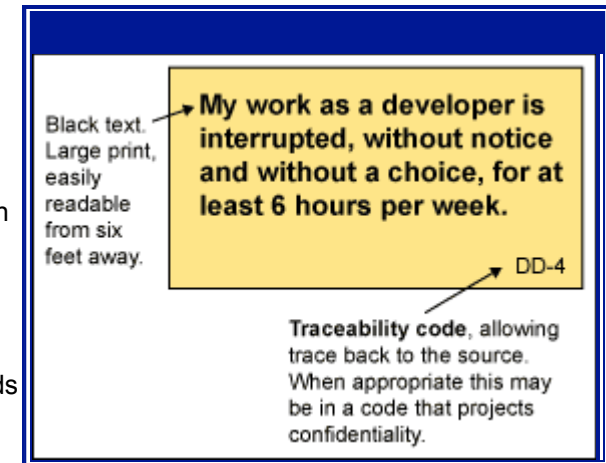
About 12 and above - A KJ is probably worthwhile.

If a team decides to do a KJ, it should remember the data input fundamentals in the illustration to the right:

Scrubbing the Data - Part of the KJ discipline involves "scrubbing" the language on each of these incoming notes. Each note wants to be stated in "report language." Also, the message in the note wants to be clear and unambiguous to any reader downstream – especially those who did not take part in the building of the KJ. Team members can help that process by putting each of their own notes to the test, rewording as necessary, before coming to a KJ meeting.

After KJ Is Done, Then What?

A good KJ session should yield several rewards. First, the team that created the KJ usually finds big gains in shared understanding about one another's perspectives and facts. By working together to group, title and arrange their data, a team gets inside a common thought process about important meanings and dynamics.



More on Language Processing

- *The Original KJ Method* by Jiro Kawakita, Kawakita Research Institute, 1991.
- *The Language Processing Method* by Shoji Shiba, et al, CQM, Boston, 1995.
- *Language in Thought and Action* by S.I. and Alan R. Hayakawa, Harcourt Brace Jovanovich, fifth edition, 1990.
- *Customer Visits* by Edward F. McQuarrie, Sage Press, second edition, 1995.

For people who were not on the team, a KJ is a very efficient communication document. If the team had spent the same few hours in chairs around the meeting table with someone taking notes, it would be a longshot that many others would read and understand the notes. The KJ, on the other hand, is a 2-D pattern- oriented device that almost immediately conveys lots of information and related thought process to those who were not there. It is perfect for the "one-minute manager."

Last but not least, over time a KJ can help the team that built it to remember and reflect back on their thinking. It can "reboot" the group mind months or even years later. KJs should be kept in an accessible place (and as online shareable versions) to get all possible benefits.

About the Author: **David L. Hallowell**, a founding partner of [Six Sigma Advantage](#), has more than 20 years of experience as an engineer, manager and Master Black Belt.

As Digital's representative to Motorola's Six Sigma Research Institute, he worked on the original courseware for Black Belts and the application of Six Sigma to software. He has supported Six Sigma deployments worldwide. With a special focus on Design for Six Sigma, he has led development teams in the concept development and design of a number of commercial products. Mr. Hallowell has patents and publications in the area of microelectronics packaging and high speed interconnect. He has authored courses in software DFSS, design of experiments, C++ and computational intelligence tools. Mr. Hallowell can be reached at dhallowell@6sigma.com.