

Elicitation of Unstated Needs: Training Session 1 (KJ+ Method Overview)

17 September 2014

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Purpose and Introductions

The primary purpose is to teach the KJ method and Kano analysis and describe the SEI's approach for using these techniques in a virtual (non face-to-face), distributed setting.

SEI and Participant Introductions



KJ Training Sessions Roadmap

 **Session 1** – Introduce the KJ Method and describe the SEI’s approach for adapting this method in a virtual (non face-to-face), distributed setting.

Session 2 – Explain and practice KJ interviewing techniques, emphasizing the critical importance of capturing context information regarding good and bad extremes of experience. Provide examples of KJ report statements.

Session 3 – Explain and practice KJ affinitization technique, emphasizing grouping by non-obvious themes of experience. Explain and provide examples of innovative solutions and unstated needs.

Session 4 – Explain and practice Kano analysis and continue the example from Session 3. Provide a course review.



Overview of SEI Approach



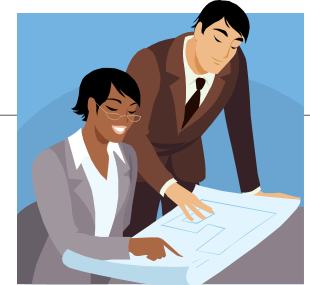
Step 1: Evaluate existing knowledge of stated needs and requirements



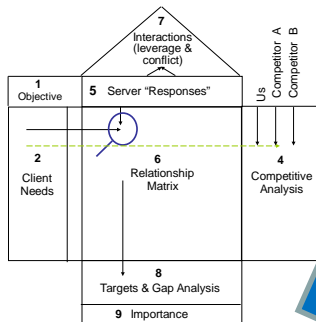
Step 2: Design the open-ended, probing questions to be used in KJ interviews



Step 3: Conduct KJ interviews collecting all possible context information



Step 4: Analyze raw output of interviews to form context need / activity statements



Step 8: Use AHP weighting and QFD matrix to determine quality and performance measures of delighters

Step 7: Conduct Kano analysis to determine must-be's vs. satisfiers vs. delighters



Step 6: Identify Unstated Needs and subsequent Innovative Requirements



Step 5: Conduct the KJ Workshop including specialized affinity exercise



Traditional Requirements Elicitation Approaches

Interviews of customers/users to elicit problems and usage needs

Inventory of problem reporting systems harboring customer complaints

Solicitation of specification from customers/users to build a system/product/service specification

Specification developed by marketing and/or engineering that reflects their thinking on what the customer/user requirements are

Normally, a specification-driven process!



Our SEI Approach

Structured interviews of customers and users with subtle modifications to existing interview techniques

KJ workshops to develop themes and innovative observations within and between themes

Kano analysis to confirm requirements as “**delighters**” vs. “**satisfiers**” vs. “**must-be’s**”

Future use of semi-automated, state-of-the-art text analysis tools and collaborative methods to scale up the above methods for distributed geographic participation by many more people



KJ – Origins and Applications



Kawakita Jiro (KJ), a Japanese anthropologist, developed a systematic way to find messages in complex qualitative data.

A KJ can be helpful when

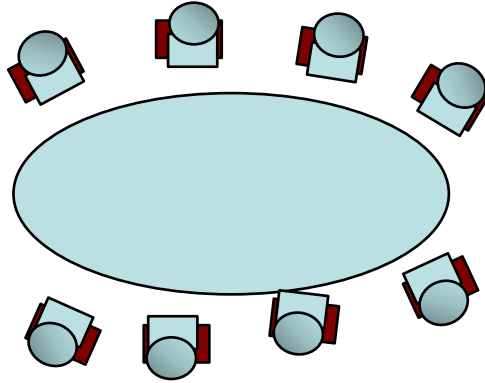
- issues are **complex**
 - lots of information available, but many potential interpretations
- team would benefit by **learning together**
 - based on facts
 - developing common understanding and focus
- **communication and reuse of the information** is important
 - KJ is a powerful way to store and transmit data



KJ is a *Different* Kind of Meeting

Traditional Meeting

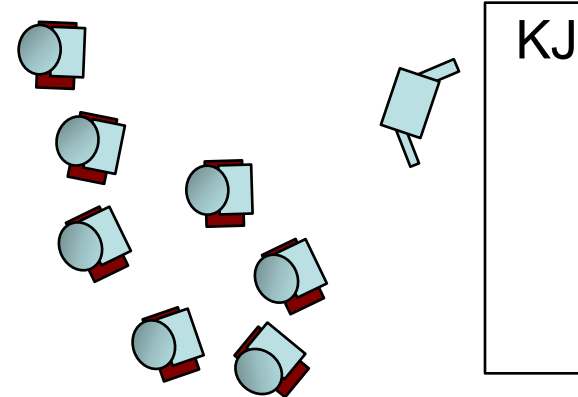
“Chairs around the table” meeting



- mixing opinions, ideas, and facts
- focusing on what we want to say next (vs. listening and learning)
- getting that uneasy feeling we’ve burnt up time on this same discussion recently
- hoping someone is taking notes (which will unlikely be read)

KJ Workshop

“Chairs facing the wall” meeting



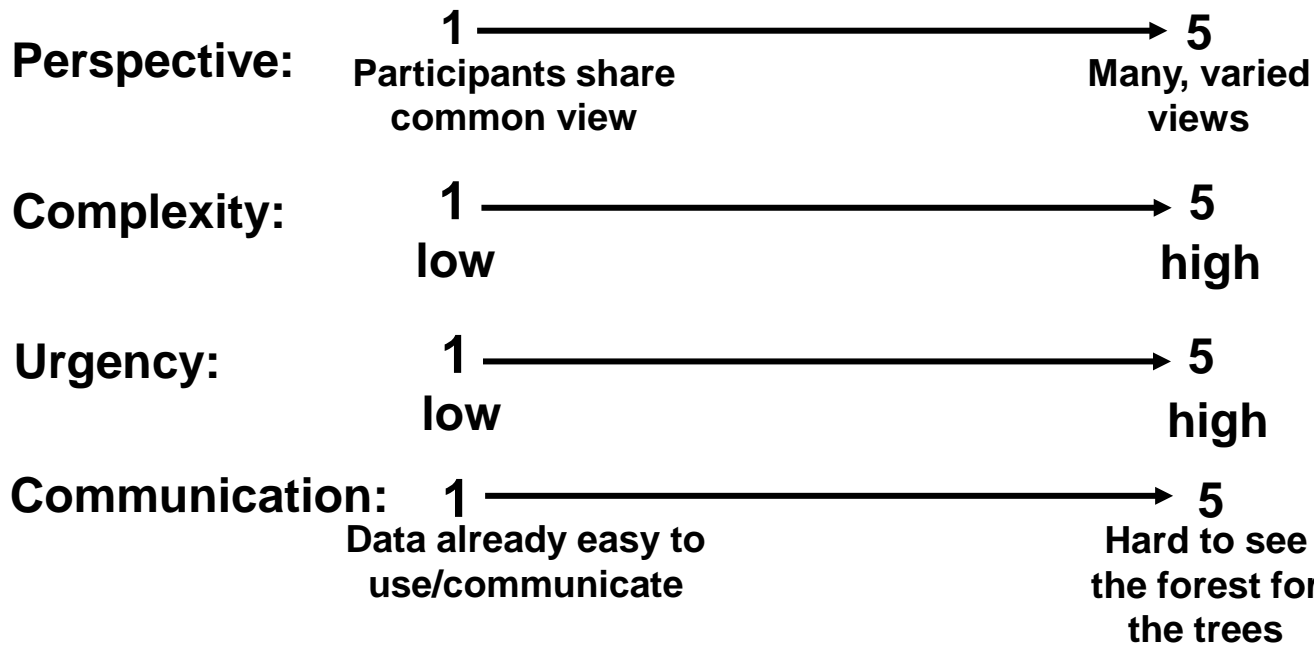
- being clear about the questions we are trying to answer
- understanding one another’s facts
- learning, together, about the broader messages and themes that were hidden in the low-level facts
- building a 2D, visual, report (the KJ) that others can quickly and deeply understand

Should KJ Be Used?



1. Articulate the theme 2. Develop participants list

3. Assess (1-5)



Assess
Total

< about 6	simple affinity would suffice
< 8-10	reconsider theme and/or participants
> About 12	KJ probably worthwhile





Types of KJ

There are many useful types of KJ.

KJ Type	Theme	Data	Uses
Context / Image	What scenes and images describe...?	Word pictures <div style="background-color: yellow; border: 1px solid black; padding: 5px;">Forgetting to record information in my log – then filling in from memory</div>	Understanding an environment
Requirements	What are the key requirements for...?	Needs (solution-free) <div style="background-color: yellow; border: 1px solid black; padding: 5px;">Users define custom QC procedures as required for their region</div>	Finding themes and underlying messages in a complex set of needs
Weakness / Problem-Formulation	What has been preventing us from...?	Facts related to problems or obstacles <div style="background-color: yellow; border: 1px solid black; padding: 5px;">A major customer became “confused with all the options” and pulled out of the sales process</div>	Formulating a problem; focusing on where to do more detailed problem-solving work



KJ – A Method for Processing Data

Method for Collaborative Processing of Data

- Method for transmuted *tacit* knowledge into *explicit* knowledge consisting of more and more objective statements

Structured Interviews

- Broad, open ended questions, with probes as necessary
 - Clarification asking for examples, asking “how” and “why”
- Focused on positive and negative experience, *not* solution space

Workshop

- Affinity grouping of concise statements derived from interviews
- Use of ubiquitous “yellow stickies,” rearranged by workshop participants



Roles in the KJ+ Method -1

KJ+ Method Step	Requirements Analyst Role	Stakeholder Role
1) Evaluate stated needs and requirements	Confirm readiness to begin KJ+	(None)
2) Design open-ended, probing questions	Identify critical stakeholders, their profiles, and important attributes on which to focus KJ interviews	(None)
3) Conduct KJ Interviews	Use open-ended, probing questions to focus on the context surrounding the extreme negative or positive experience (moving from: opinion to facts, solution to problem, and getting to “why”)	Participate in interviews, providing context for extreme experiences
4) Analyze interview results	Summarize notes and other results from interviews into context-rich need/activity statements (KJ Report Statements)	(None)



Roles in the KJ+ Method -2

KJ+ Method Step	Requirements Analyst Role	Stakeholder Role
5) Conduct KJ Affinitization	Identify themes of experience by repeatedly scanning the KJ Report Statements (KRSs) to construct messages that unite a subset of KRSs	(None)
6) Identify unstated needs and candidate innovative solutions	Hypothesize unstated needs from the resulting affinities and perhaps involve technologists in brainstorming innovative candidate solutions	(None)
7) Conduct Kano Analysis	Administer survey to determine must-be's, satisfiers, delighters	Respond to survey, identifying degree of disappointment or delight
8) Characterize requirements	Abstract Kano-tested solutions into requirements statements	(None)



Questions?



Thank You for Your Attention!

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Elicitation of Unstated Needs: Training Session 2 (KJ Interviewing)

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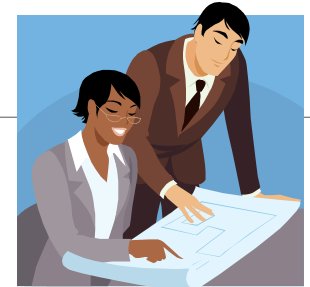
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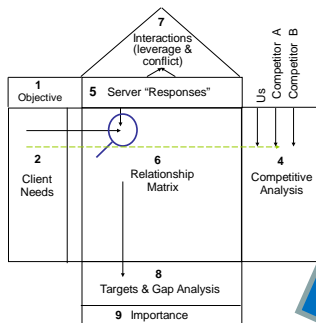
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Session Exercises

There are two exercises in this session.

- Exercise 1: Develop an Interview Script
- Exercise 2: Practice KJ+ interviews in breakout groups



Traditional User Interviewing Approach

Selected customers/users are interviewed either individually or in group settings.

Discussions center initially on areas of dissatisfaction.

Interviewing questions and discussion then migrate to solutions that might help.

Both interviewers and customers/users provide ideas for improvement.

Discussion may proceed into details of design and implementation.

Side benefits of these interviews include the following:

1. Interviewers are able to test out their own solution ideas.
2. Customers/users are able to put their recommended solutions on the table.
3. Customers/users feel better after “venting” about their dissatisfaction.



KJ Interviewing Approach

Selected customers/users are interviewed either individually or in group settings.

Questions and discussion focus on two extremes: **very dissatisfied or very happy**.

Additional open-ended, probing questions are used to collect **maximum context information** surrounding the extremely negative and positive experiences.

It is impossible to know in advance which information will prove actionable until we've identified information from all interviews. Therefore it is important in each interview to carefully probe the context of an experience to collect **sufficient information** by which relevant and reasonable **themes of experience** can later be constructed.

Copious note-taking of the context information is mandatory in these interviews.

The interviews absolutely do not touch on the solution space.

This is a challenging approach to interviewing customers/users.

To the untrained observer, the interview may seem to be a mere “complaint” exercise!





Approaches to Interview Questions

Three generic avenues of discussion may be used to start conversations, then probe and follow intuition to learn in real time.

Experience

Gaps in past performance often have clues about future value.

“Why was this a problem ...?”

“What went very well?”

Current Practice

How they “do” things can reveal compensatory behavior, waste, etc. – also sources of future potential value.

“How do you ...?”

Future Trends

Where they see things going may hold clues about future value, and tips about robust design or “future-proofing” a solution.

“Looking ahead...?”





Gathering Better Data

Sharpening Interview and Discussion Skills

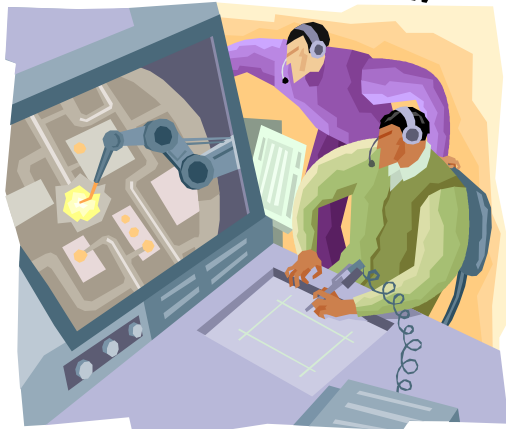


A surface dialogue reveals

- **Stated needs and facts**
 - complaints
 - problems
 - valued features
 - constraints

Refined data gathering and probing can reveal...

Why Who When How Where



• **What's it like in the environment? (context data)**

- User-Scenarios
- Observations
- Process Maps

• **Underlying functionality (needs data)**

- “What does that **do** for you?”
- “How and why is it important?”



Understanding Context and Needs Data



	Needs Data	Context Data
Definition	Statements about what is needed (solution free)	Scenarios that describe what it's like in the environment
Examples	<p><i>"We need to get materials in and finished goods out of our warehouse much more quickly than we do now."</i></p> <p><i>"We need to better monitor contract compliance."</i></p> <p><i>"We need to get data into the system...then out to the right people faster and more accurately."</i></p>	<p><i>"There seems to be a lot of turnover in the shipping department, which means we're constantly training new people."</i></p> <p><i>"Members will increasingly contract directly with medical groups."</i></p> <p><i>"Our biggest challenge is overly complex HMO contracts."</i></p>
How it is helpful	Specifies functionality that would be valuable	Provides clues and facts about latent requirements and operating conditions
How we use it	Capture must-be's and satisfiers	Identify delighters ; inform robust design

Gathering Better Data

Interview and Discussion Skills



Passive Listening

- body language, eye contact

Active Listening

- paraphrasing content “So, you’re saying that ...”
- tracking with emotion “That had to be frustrating.”

Probing

The right follow-up questions

- moving from opinion and emotion to underlying facts
- from their “solutions” to the underlying needs
- getting to *why* they said that (context)



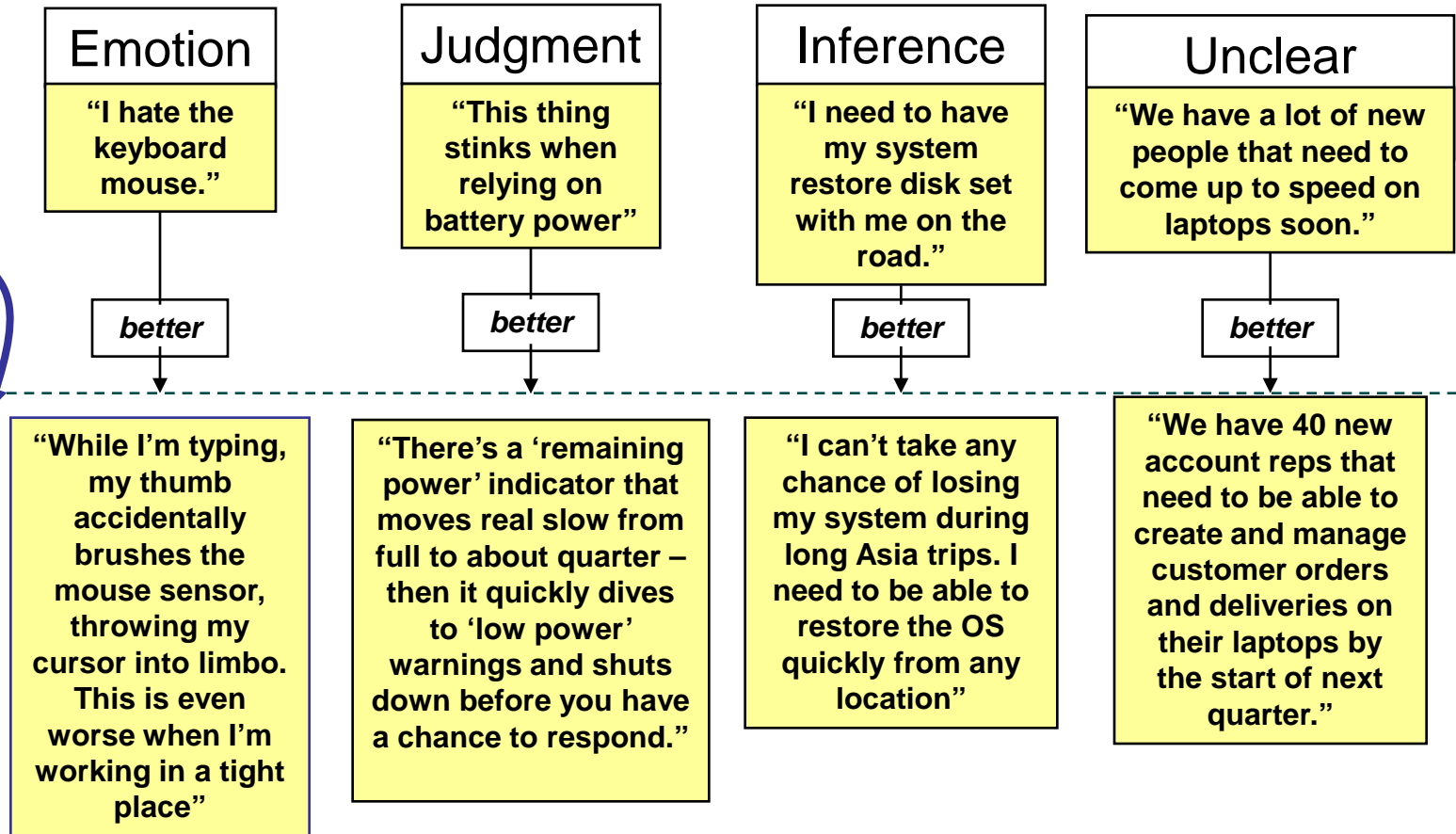
Gathering Better Data

Probing



Language *as we find it* often is the least usable – it may contain...

Probing
“Can you give me an example?”
“How did that happen?”
“Why do you say that?”



Language *as we need it*, scrubbed to “report language” – just the facts



Example Generic KJ Interview Questions

1. What were some of your most negative experiences in the past regarding...?
2. What were some of your most positive experiences in the past regarding...?
3. What do you wish you could also do when performing...?
4. Who else would you like to be able to interact with when performing...?
5. How do you feel when something specific such as ... occurs?
6. How do others around you feel about...?
7. How could you be more effective? productive? efficient?
8. In what ways would you be happier or more fulfilled in performing...?
9. What increases your stress or frustration in performing...?
10. When and where do you use?

(All of these questions would be followed by probing questions of context surrounding the experience! Alternatively, keep asking why?)



Example: Next Generation Laptop

A company wants to design the next generation laptop for use in the home and wants to ensure the product is compelling!

- Our goal is to gather information that will help to develop requirements that will address both stated and unstated needs.

Separate from business users of laptops, home users possess unique needs and interests.

In the upcoming exercises you will develop an interview script and then conduct a KJ interview to elicit contextual details of circumstances (good and bad) that you can recount from using your laptop at home.

The resulting context information will be used by the manufacturer in subsequent KJ steps to identify themes of experience and candidate solutions.





Who (users, other systems) would interact with the system being considered? What roles do they play? What is important to them?

Actor	Role/Profile	Important Attributes
Business user	Road Warrior <ul style="list-style-type: none">• long plane flights• presentations• carrying sensitive files	<ul style="list-style-type: none">• conserving battery power• display clarity• security
Video/audio media professional	Works creatively, collaborating, sharing files	Digital bandwidth (audio and video)
	Capturing sound and visual information	CPU and memory speed

Some things are known at the outset; others we need to *learn*.

What Does the Team Need To Learn?



Actor	RE Learning Objectives
Business user	Obtain information about context surrounding experience with <ul style="list-style-type: none">• tailored use of peripherals• demands on battery power• power conservation options
Video/audio media professional	Obtain information about context surrounding experience with <ul style="list-style-type: none">• data streams and rates• important current and emerging IO standards (e.g., firewire, wireless)

Exercise 1 – Developing an Interview Script

Task

As a group, we will quickly augment an interview guidance script that elicits general product or service capabilities for the home laptop. Refer to the training materials for guidance.

- develop initial open-ended questions (slide 37)
- develop follow-on questions to probe for context information (slides 32 - 36)

Expected Outcome

An interview script to use in the next exercise



Exercise 1 Open-Ended Interview Questions - Examples

1. What do you hate/dislike when you are using a laptop at home?
 - Please elaborate further about how you feel when you are using your laptop in the kitchen.
 - What is the impact when you're reading a recipe at lunchtime?
 - How about in the evening?
 - How often does this happen?
2. What do you like best about using a laptop at home?
 - Please provide more detail about carrying it from room to room.
 - Please describe how your daughter feels about carrying the laptop from room to room.
 - Why does she have problems?
3. What other things do you want to be able to do with laptop at home?
 - Why is it important for you to store pictures on your laptop?
 - When would you use this?
 - How do you do this?



Exercise 1 Interview Script – Your Turn

Modify each question for the home laptop user. Add probing questions that will allow you to capture needs and context data. (Avoid questions that can be answered yes/no.)

1. When and where do you use?

-
-
-

2. How do others around you feel about...?

-
-
-

3. How could you be more effective? productive? efficient?

-
-
-



Exercise 2 – Conducting the Interview - 1

Objective

Find out what you can about requirements for a next generation laptop for the **Home User** that

- attracts new customers
- leverages existing customer loyalty when buying new computers
- removes risks and operational problems related to maintenance and costs

Expected Outcomes

- 1) Practice using probing questions to probe into the context surrounding an experience
- 2) Interview Notes: Each participant is expected to take notes.



Exercise 2 – Conducting the Interview - 2

SEI will assign groups. Each group will be doing the same exercise.

For each group repeat the following steps as time permits:

- Identify 1-2 members to role play the home user of a laptop (interviewees).
- Identify a lead interviewer with all remaining participants acting as note takers and follow-up interviewers.
- Remember to use appropriate open-ended and follow-on questions to probe into the context surrounding an experience. Use the script from Exercise 1.
- SEI Exercise Facilitator will interrupt as necessary to help ensure questioning stays on track.



Interview: an Example - 1

Key:

Questions

Extraneous Information

Emotional, superficial response

Need

Context that Goes With Need

B: Can you tell me about your experiences about using a laptop at home.

MB: I've had horrible experiences using my laptop at home.

B: Can you elaborate on why this was such a horrible situation.

MB: I always worry that something is going to happen to it and I will have to replace my laptop.

B: I need you to elaborate even more. Please describe some situations at home where use of your laptop was stressful or frustrating.

MB: I spend most of my time in the kitchen and so I often use my laptop in the kitchen. I use it first thing to check my email, I keep all of my recipes on my laptop and use it while I'm cooking but I often get stressed out that someone either me or my kids are going to spill something on it. It seems like I'm always using it for something.



Interview: an Example - 2

Key:

Questions

Extraneous Information

Emotional, superficial response

Need

Context that Goes With Need

B: Can you elaborate a little more about frustration in using your laptop to store your recipes?

MB: ~~I started to do this after I was visiting a friend, we were having coffee and she was fixing a quiche. I noticed that she kept looking at her laptop. I realized that she was reading the recipe when I saw her looking over. I asked her to send it to me and then I started to keep a file on my computer with recipes. I often get recipes from friends and on the Internet so I LOVE that it is so very easy to store these recipes. However, initially I was keeping them in an unorganized folder and it sometimes took me a long time to find the recipe I needed.~~

B: Tell me more about your actual frustration.

MB: I would get very frustrated because my recipe box has the various tabs that help me to organize my recipes. Once I started to name the recipes with how I refer to them, I just use the “sort by name” feature and I don't have the problem anymore. My biggest complaint about having recipes on my computer is that I have a window in my kitchen above my sink and my stove is near there. I've found that at different times of day, the glare from the window makes the screen hard to read so depending if I'm in a rush, I print out the recipes. I hate doing this because I am concerned about the environment and I have enough clutter. I don't need another piece of paper lying around the house to be thrown away.



Interview Notes – an Example

Each KJ team member takes notes during the interview.

What is your biggest pain point?

Just got new laptop; biggest gripe is can't connect to wireless network unless in same room as wireless router

Where do you prefer to work? Had desktop but bought laptop to be able to work anywhere in house (on bed, on couch); this problem is preventing me from doing that

Is there another possible way to connect router in another room? Yes, but that would be a pain because it's currently in the same room as my office where I connect for work. Don't want to move it to my bedroom where I sleep and have additional magnetic ...

Team # 1 Interview Eduardo Jasso
Interviews - Beth Marlene
What do you dislike about laptop at home
I hate how long it takes to turn on
have to wait for set what were going to do
Dislike color of keyboard depressed screen is dim hard to see at times
Layout of screen difficult to use can't read everything email facebook calendar
what currently doing, can't discern which email open, takes time
Laptop gets hot on lap. Makes lap uncomfortable
Keyboard layout hard to use on phone wish it had numeric keypad Help w/Excel docs
Screen has bad glare when outside wish had non glare screen. Live in desert, not much shade
Use in car as well. Moves locations to avoid glare; didn't come with non glare add shape so difficult
Use laptop at home for work connected to UA network
in main office @ home usually by self others not around
wants to do everything that can be done at work
30 min commute but 90 mins can prepare lunch while working
always feel productive * Can interfere w/ meetings not feasible

your biggest pain point?

Laptop gets hot on lap, makes lap uncomfortable*
can't connect to wireless network unless in same room as wireless router
Keyboard layout hard to use on phone, wish it had numeric keypad

Help with Excel docs

Screen had bad glare when outside wish had non-glare screen

Use in car as well

Live in desert, not much shade – moves locations to avoid glare

Didn't come with non-glare

Odd shape so difficult

can prepare lunch while working
always feel productive

* Can interfere w/ meetings not feasible

can prepare lunch while working
always feel productive

* Can interfere w/ meetings not feasible



Cultivate KJ Report Statements from Interview Notes



In face-to-face KJ workshops, use black text, large print, easily readable from 6 feet away.

My work as a developer is interrupted, without notice and without a choice, for at least 6 hours per week

DD-4

Traceability code allows trace back to the source. When appropriate, this may be in a code that protects confidentiality.

KJ Report Statements – an Example

Interview Notes	KJ Report Statements on Home Computer Use
<ul style="list-style-type: none">• Layout of screen difficult to use• Can't see everything email, Facebook, calendar• What currently doing,• Can't discuss which email open• Takes time	Due to screen layout and font, I have trouble knowing which application is open or active.
<ul style="list-style-type: none">• Keyboard layout hard to use on phone• Wish it had numeric keypad	When I am using Excel or on my phone or using the laptop keyboard with one hand, it is hard to use my keyboard without numeric keypad.
<ul style="list-style-type: none">• Wants to do everything that can be done at work• 50 – 90 minute commute	Because of a 50-90 minute commute, I want to do everything at home that I can do at work, including connectivity and all applications.



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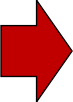
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KJ Training Sessions Roadmap

Session 1 – Introduce the KJ Method and describe the SEI’s approach for adapting this method in a virtual (non face-to-face), distributed setting.

Session 2 – Explain and practice KJ interviewing techniques, emphasizing the critical importance of capturing context information regarding good and bad extremes of experience. Provide examples of KJ report statements.

 **Session 3** – Explain and practice KJ affinitization technique, emphasizing grouping by non-obvious themes of experience. Explain and provide examples of innovative solutions and unstated needs.

Session 4 – Explain and practice Kano analysis and continue the example from Session 3. Provide a course review.



Overview of SEI Approach



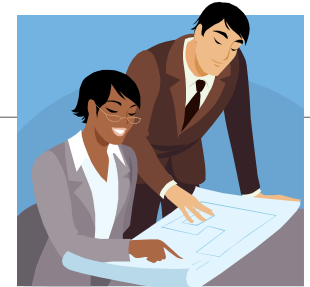
Step 1: Evaluate existing knowledge of stated needs and requirements



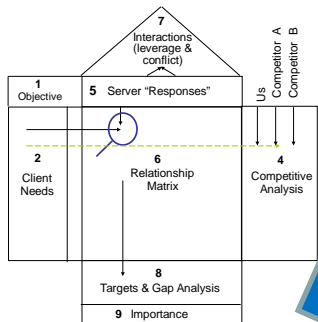
Step 2: Design the open-ended, probing questions to be used in KJ interviews



Step 3: Conduct KJ interviews collecting all possible context information



Step 4: Analyze raw output of interviews to form context need / activity statements



Step 8: Use AHP weighting and QFD matrix to determine quality and performance measures of delighters

Step 7: Conduct Kano analysis to determine must-be's vs. satisfiers vs. delighters



Step 6: Identify Unstated Needs and subsequent Innovative Requirements



Step 5: Conduct the KJ Workshop including specialized affinity exercise



Session Exercises

There are two exercises in this session.

- Exercise 1: Practice identifying themes of experience and innovative solutions
- Exercise 2: Practice with a longer list of KJ report statements derived from interviews for the laptop example



KJ Affinitization:

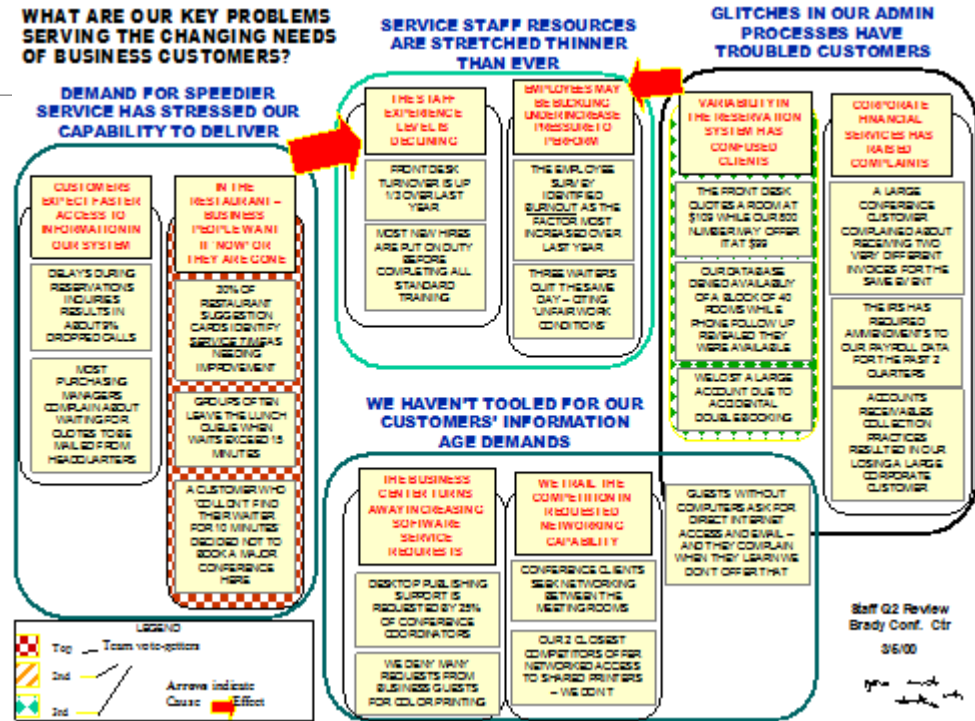
Focusing on method mechanics...



KJ Affinitization Activities - 1

1. State the **theme** (a question).
2. Gather facts (that answer the **theme** question): BLACK.
3. (Team) Understand each fact, scrubbing its language for clarity.
4. Optional: reduce to the key 20-30 if necessary.
5. Group the facts* that really belong together: “lone wolves” very acceptable.
6. Title the groups: RED. Complete sentences, follow abstraction “is-a” rules.
7. Encapsulate lower level facts under the RED titles.

* In traditional KJ, limit to 3 max.



KJ Affinitization Activities - 2

8. Group the RED titles* and any lone wolves that really belong together.
9. Title the groups: BLUE.
10. Encapsulate the RED groups under BLUE titles.
11. Optional:
 - Arrange the BLUE titles and any remaining RED or Lone Wolf items to describe cause and effect relationships. Use arrow and opposition symbols.
 - Vote on the most important RED-level groups or lone wolves.
 - Write a conclusion statement: upper right, in RED.
 - Sign and date the KJ.

** In traditional KJ, limit to 3 max.*





KJ Elements

WHAT HAS BEEN PREVENTING US FROM SERVING THE CHANGING NEEDS OF BUSINESS CUSTOMERS?

Theme Question

Pivotal – everything else on the KJ is a full-sentence, factual answer to this question.

DEMAND FOR SPEEDIER SERVICE HAS STRESSED OUR CAPABILITY TO DELIVER

Titles (red, blue)

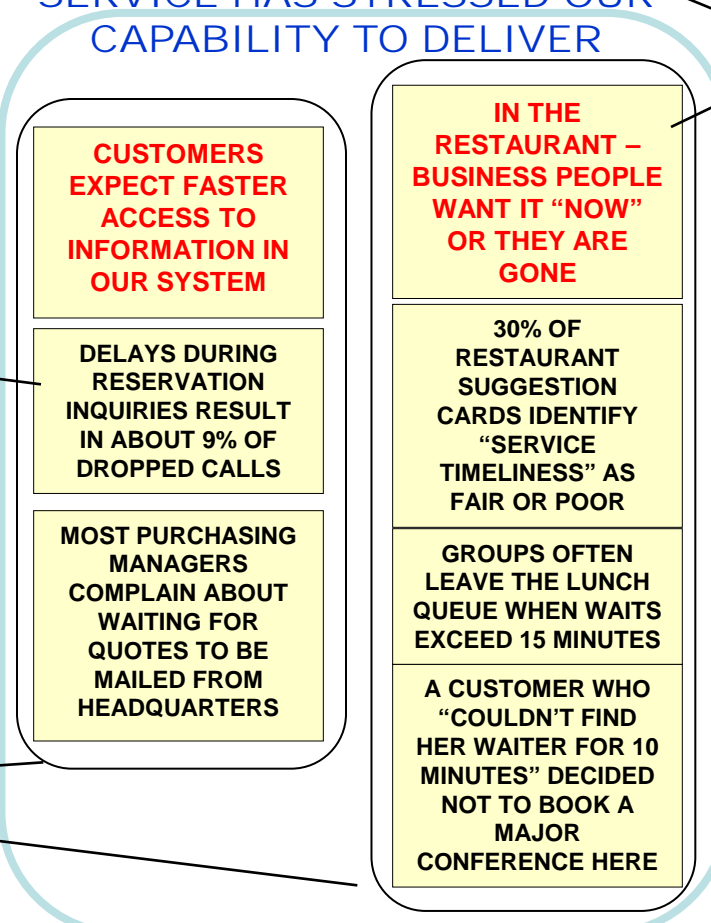
that precisely abstract the story that unites their group

Facts (Black)

traceable to reality (not “ideas”)

Groups

whose story (not keywords) unites the members



CUSTOMERS EXPECT FASTER ACCESS TO INFORMATION IN OUR SYSTEM

DELAYS DURING RESERVATION INQUIRIES RESULT IN ABOUT 9% OF DROPPED CALLS

MOST PURCHASING MANAGERS COMPLAIN ABOUT WAITING FOR QUOTES TO BE MAILED FROM HEADQUARTERS

IN THE RESTAURANT – BUSINESS PEOPLE WANT IT “NOW” OR THEY ARE GONE

30% OF RESTAURANT SUGGESTION CARDS IDENTIFY “SERVICE TIMELINESS” AS FAIR OR POOR

GROUPS OFTEN LEAVE THE LUNCH QUEUE WHEN WAITS EXCEED 15 MINUTES

A CUSTOMER WHO “COULDN’T FIND HER WAITER FOR 10 MINUTES” DECIDED NOT TO BOOK A MAJOR CONFERENCE HERE

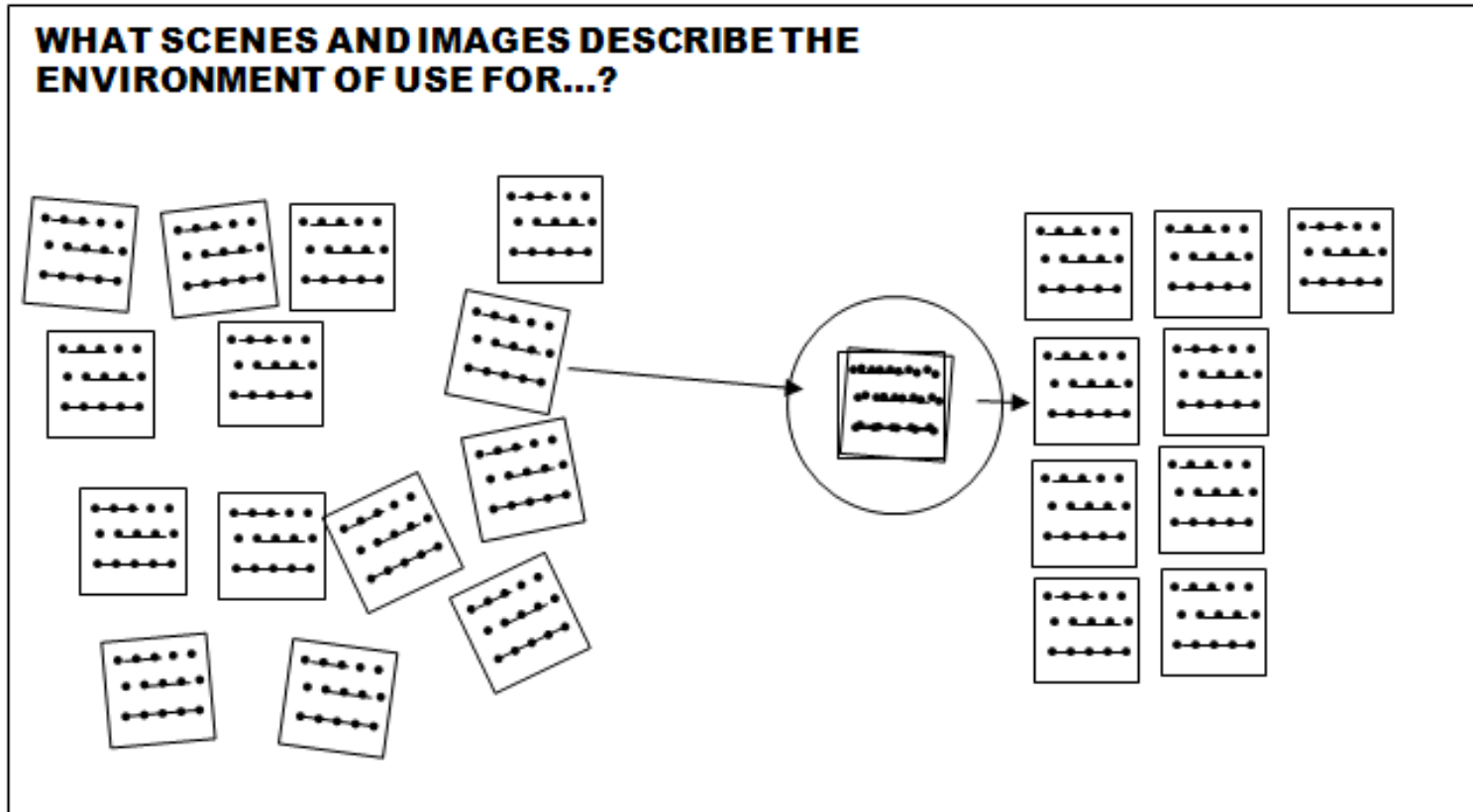


“Scrub” Each KJ Report Statement for Common Understanding



Read aloud and understand each note.

Understand its source and any stories behind it. **Check** the wording, ensure the note is clear to anyone who might read it. **Eliminate** duplicates.



Title the Groups



Title each first-level group, with RED bold pen, using the following rules:

- a. Title is a complete sentence – an answer to the theme’s question – but one rung up the ladder of abstraction.
- b. A good title abstracts the essence of each KJ Report Statement in a “fair” and “equal” way.
- c. When done, each KJ Report Statement should be an equally good example of the issue described in the red note (the “is-a” relationship).

Create a second level of groups, **grouping the RED notes** and any lone wolves, using the same rules as earlier.

Likewise, **title the second-level groups**, using bold BLUE pen, and with the same rules of abstraction used to create the red titles.



KJ Elements

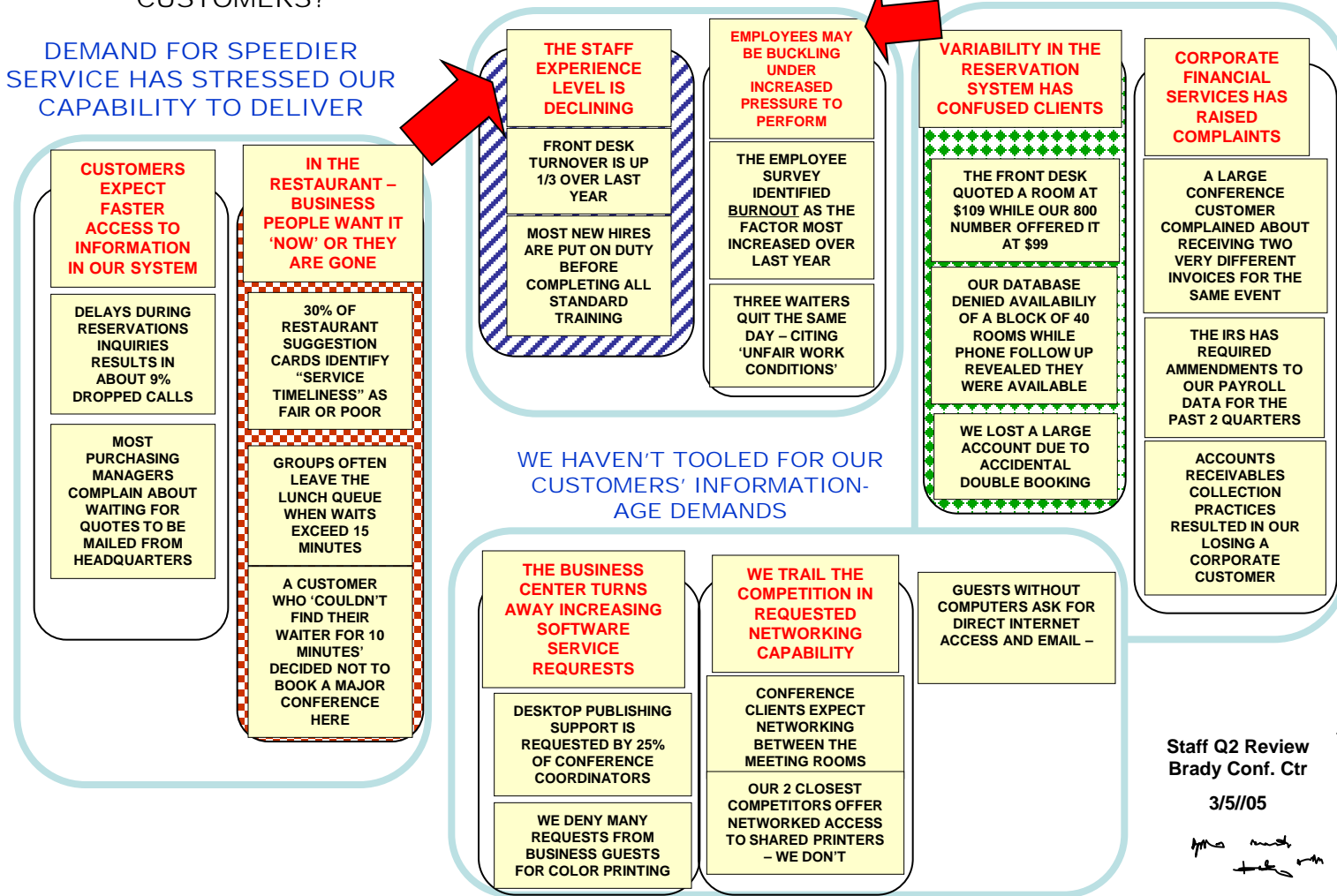
Our staff is being hit from all sides... customers want faster, better service, and the admin processes have let them down. And we aren't addressing business client IT infrastructure demands

WHAT HAS BEEN PREVENTING US FROM SERVING THE CHANGING NEEDS OF BUSINESS CUSTOMERS?

SERVICE STAFF RESOURCES ARE STRETCHED THINNER THAN EVER

GLITCHES IN OUR ADMIN PROCESSES HAVE TROUBLED CUSTOMERS

DEMAND FOR SPEEDIER SERVICE HAS STRESSED OUR CAPABILITY TO DELIVER



Conclusion

Signatures and Date

Staff Q2 Review
Brady Conf. Ctr

3/5/05

[Handwritten signatures]



Common Problems With Affinity



Mixing and mashing of ungrounded ideas, opinions, and facts

Many different levels of abstraction in the raw data

We get a few invoices back each day because of address errors

The sales force doesn't understand our products and services

Ambiguity in the language used on raw-data or title sticky notes

We have a hard time understanding priorities

Some organizations are not onboard with the new system

Grouping using 'logical/keyword' thinking

Printer Issues

It takes forever to order a new printer

The network printers are down at least an hour every day



KJ Affinitization:

Focusing on abstracting a set of facts into a theme of experience...



KJ – Open Thinking

A reminder of what we covered in Session 1

Traditional		KJ
Logical, Sequential		Random
Rational		Intuitive
Analytical		Holistic, Synthesizing
Objective		Subjective
Looks at Parts		Looks at Wholes





Now You Try It -- Group two or more of these...

WHAT SCENES AND IMAGES DESCRIBE
THE RECENT SUMMER VACATION?

Up at 5 AM –
digging worms

Checking my
email at work

Quiet time –
Reading on
the front porch

On the laptop
– playing
computer
games with
the kids

Out in the boat
together -
fishing

All of us
around the
campfire –
telling stories
and singing

Snoozing in
the hammock

Chopping
Firewood



Session Exercise 1

In the following slides, we will practice KJ affinitization:

- Review provided statements
- Identify a theme(s) of experience
- Suggest an innovative solution(s)

The supplemental material includes additional exercises of the same type.



Dexterity Exercise

I sometimes wish I had three hands!

I hate trying to handle the cart and open my car door at the same time!

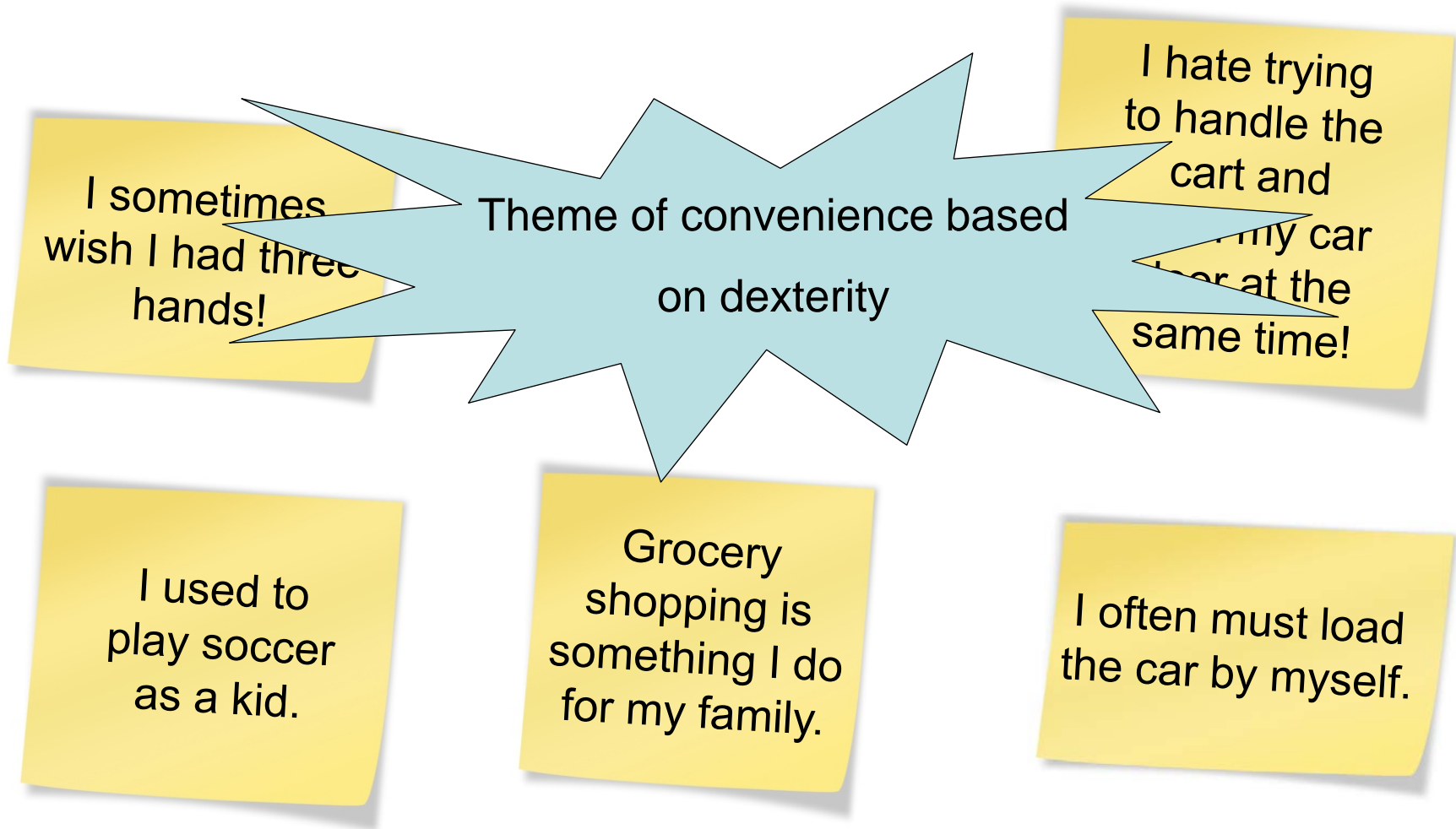
I used to play soccer as a kid.

Grocery shopping is something I do for my family.

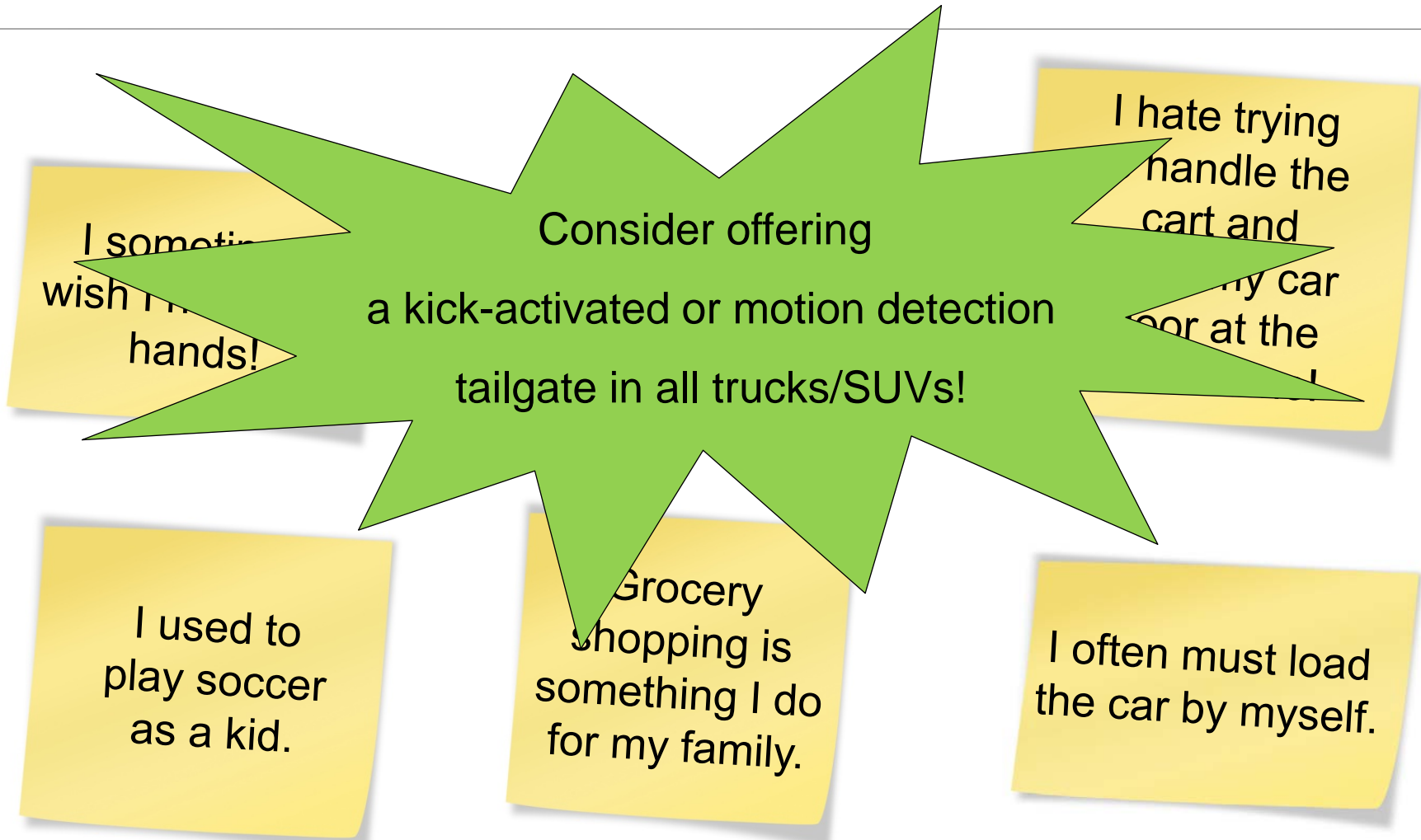
I often must load the car by myself.



Dexterity Exercise



Dexterity Exercise



TV at Bedtime Exercise

Watching TV at night helps me go to sleep.

I get stressed out when I must keep a checklist of things to do before falling asleep.

I usually fall asleep with the TV still on.

I find myself easily distracted.

My electricity bill is too high! I need to cut down.



TV at Bedtime Exercise

Watching TV at night helps me go to sleep.

Theme of using TV as soporific

I get stressed out when I must keep a checklist of things to do before falling asleep.

I usually fall asleep with the TV still on.

I find myself easily distracted.

My electricity bill is too high! I need to cut down.



TV at Bedtime Exercise

Watching TV at night helps me to sleep.

Consider offering a control that lets the user schedule TV shutoff.

I get stressed out when I must keep a checklist of things to do before falling asleep.

I usually fall asleep with the TV still on.

I find myself easily distracted.

My electricity bill is too high! I need to cut down.



TV at Bedtime Exercise

Watching TV at night helps me to relax.

Consider offering a sensor that triggers TV shutoff when the reclining viewer has not left the bed for two hours.

I get stressed out when I must keep a checklist of things to do before falling asleep.

I usually fall asleep with the TV still on.

I often find myself easily distracted.

My electricity bill is too high! I need to cut down.



Session Exercise 2 - 1

In the following slides, we will practice KJ affinitization in a more complicated setting.

This exercise will draw from the laptop example from the previous training session.

A longer list of KJ report statements will be provided.

Identify at least two themes of experience. For each theme

- Provide KJ report statement id numbers.
- Provide a brief title phrase for each group reflecting the unstated theme of experience.
- Provide a 1-3 sentence rationale for your theme.
- If possible, identify solution to meet this unstated theme.



Session Exercise 2 - 2

Remember:

- 1. There is no one correct answer to groupings.***
- 2. Focus on the non-obvious, take a chance, think out-of-the-box.***
- 3. We want maximum ideas!***



Identify at Least Two Themes of Experience

ID#	KJ Report Statements on Home Computer Use
1	I use my laptop everywhere: in bed, on couch, at Starbucks. I take it everywhere.
2	I want to be able to monitor contents of fridge for snacks.
3	I use a wireless mouse but it is just another accessory that I must track and set-up.
4	I like to use my laptop while sitting on my favorite couch watching 60" screen TV.
5	I communicate with others in the house via computer. It's easier than yelling.
6	My mouse is great, helping me easily follow links, surf web, and do look-ups.
7	When using laptop on my lap, it gets unacceptably hot on my legs.
8	I like to prepare lunch and do other tasks at home while working on my laptop.
9	I often forget to turn my wireless mouse off, resulting in depleted batteries that often need to be replaced or requiring me to use my touchpad instead.



Theme, Rationale, and Innovative Solution #1

KJ Affinitization #1

Theme	I want to easily set up and track my wireless mouse and preserve battery power.
Rationale	Three of the KJ Report Statements imply the issue of setting up and tracking the wireless mouse and battery use.
Innovative Solution	Consider offering a wireless mouse with streamlined setup. Each computer in the home network notifies the user of the mouse's most recent connection location and shuts off automatically if the mouse isn't being used.

Related KJ Report Statements

3. I use a wireless mouse but it is just another accessory that I must track and set up.
6. My mouse is great, helping me easily follow links, surf web, and do look-ups.
9. I often forget to turn my wireless mouse off, resulting in depleted batteries that often need to be replaced or requiring me to use my touchpad instead.



Theme, Rationale, and Innovative Solution #2

KJ Affinitization #2

Theme	I want to eat and drink without damaging my laptop.
Rationale	Four of the KJ Report Statements could imply the presence of food and drink near the laptop.
Innovative Solution	Consider a laptop that is waterproof.

Related KJ Report Statements

1. I use my laptop everywhere: in bed, on couch, at Starbucks. I take it everywhere.
2. I want to be able to monitor contents of fridge for snacks.
4. I like to use my laptop while sitting on my favorite couch watching 60" screen TV.
8. I like to prepare lunch and do other tasks at home while working on my laptop.



Theme, Rationale, and Innovative Solution #3

KJ Affinitization #3

Theme	I want to be able to use my laptop and not worry if it is jostled or dropped a lot.
Rationale	Several of the KJ Report Statements could imply an expectation of jostling and dropping of the laptop.
Innovative Solution	Consider a solid-state drive.

KJ Report Statements 1, 2, 3, 4, 7, 8, 9



Summary: Contrasting Traditional vs. KJ Affinitization

	Traditional Affinitization	KJ Affinitization
Goal	Identify obvious requirements; organize in a requirements specification	Create insightful hypotheses of user experiences that may (in later KJ steps) lead to identifying unstated needs and innovative solutions
Input	User needs, feedback, and change requests in the form of a solution	Statements that include rich contextual data about extreme user experiences
Focus	Specific functions, features, and solutions	Message that can be inferred (what is behind the specific words used)
Important Similarities	What job the product or service accomplishes	What job the user tries to accomplish and what challenges he or she may confront
Result	Subset of Must Be's and Satisfiers	More complete subset of Must-Be's and Satisfiers; and something new: a set of Delighters
Output	Needed product capability, function, feature, service, quality attribute	What activity the user needs to do, what challenge or opportunity he or she seeks to address, and why it is so important to the user
Traceability Mapping	Almost one-to-many; objectively verifiable	Many-to-many; no one right answer; lone wolves occur; outputs are not obviously derivable from inputs



Questions?



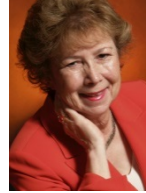
Thank You for Your Attention!

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Elicitation of Unstated Needs

– Training Session 03 (KJ Affinitization)

Supplementary Material



Example of Traditional Affinity Grouping (Hotel)

ID#	Traditional Interviewing Statement	Checkin / Checkout Affinity	Room Quality Affinity	Room Service
1	Clean Room		X	
2	Reliable Room Service Delivery			X
3	No-Hassle Check-In/Out	X		
4	Friendly Staff	X		X
5	Room Service Food Fresh & Hot			X
6	Don't Lose Reservation	X		
7	Room Service Available			X
8	Nice Towels		X	
9	New Bathroom		X	
10	Good Room Service Selection			X
11	Mini-Refrigerator in Room		X	
12	Attractive Furnishings		X	
13	Big TV		X	
14	Express Checkout	X		
15	Quiet Heater/Air Conditioning		X	
16	Non-Smoking Room Available	X		
Taken from affinity website - https://www.moresteam.com/toolbox/affinity-diagram.cfm				



Traditional Responses with Added KJ Contextual Data

ID# Traditional Interviewing Statement with Added KJ Context from Probing

1	<i>Prefer a Clean Room with a fresh smell to give my hotel stay a pleasant start</i>
2	<i>Expect Reliable Room Service Delivery so I don't have to keep calling on status</i>
3	<i>No-Hassle Check-In/Out helps me avoid tracking a lot of detail during a business trip</i>
4	<i>Friendly Staff pick up my spirits when I am tired on a business trip</i>
5	<i>If my Room Service Food is not Fresh & Hot, I have to spend time finding a local restaurant</i>
6	<i>Don't Lose Reservation is a message I don't want to hear because I do not have access to my travel agent</i>
7	<i>I like it when Room Service is Available because I can avoid worrying about logistics</i>
8	<i>Nice Towels put me in a good mood when I have to get up early in the morning</i>
9	<i>New Bathroom gives me a clean feeling and adds energy to my day</i>
10	<i>Good Room Service Selection keeps my stress level down and reduces anxiety about my diet</i>
11	<i>Mini-Refrigerator in Room gives me choices as I decide about food and snacks while working in my room</i>
12	<i>Attractive Furnishings put me in an energetic mood, enabling me to get more work done in my room</i>
13	<i>Big TV helps me see hotel area traffic, whether I am in bed or on the hotel room balcony</i>
14	<i>Express Checkout helps me a lot as I am forgetful about the time and logistics to check out</i>
15	<i>Quiet Heater/Air Conditioning enables me to think creatively on hard problems without distraction</i>
16	<i>Non-Smoking Room Available is a must or I will have a headache while trying to work in my room</i>



Example 1 with KJ Affinitization (Hotel)

ID#	Traditional Interviewing Statement	<u>One theme of experience could be:</u>
2	<i>Expect</i> Reliable Room Service Delivery <i>so I don't have to keep calling on status</i>	<p data-bbox="1182 368 1870 545">As a very busy traveler, I need help in looking up information, contacting remote agencies and tracking a lot of detail, without human assistance or delay.</p> <p data-bbox="1263 619 1789 654"><u>An innovative solution could be:</u></p> <p data-bbox="1182 705 1870 1016">A free application on a smart phone (or hotel issued device), which enables precise SIRI-like queries, and which also communicates with my TV and interactive displays throughout my room, balcony and other areas of the hotel, taking advantage of sensing my location.</p>
3	No-Hassle Check-In/Out <i>helps me avoid tracking a lot of detail during a business trip</i>	
5	<i>If my</i> Room Service Food <i>is not</i> Fresh & Hot, <i>I have to spend time finding a local restaurant</i>	
6	Don't Lose Reservation <i>is a message I don't want to hear because I do not have access to my travel agent</i>	
7	<i>I like it when</i> Room Service <i>is</i> Available <i>because I can avoid worrying about logistics</i>	
13	Big TV <i>helps me see hotel area traffic, whether I am in bed or on the hotel room balcony</i>	
14	Express Checkout <i>helps me a lot as I am forgetful about the time and logistics to check out</i>	

Adapted from affinity website - <https://www.moresteam.com/toolbox/affinity-diagram.cfm>



Example 2 with KJ Affinitization (Hotel)

ID#	Traditional Interviewing Statement	One theme of experience could be:	
1	<i>Prefer a Clean Room with a fresh smell to give my hotel stay a pleasant start</i>	<p>I need to recover from a busy, stressful day and re-generate my entire being during my stay in the hotel.</p>	
4	Friendly Staff <i>pick up my spirits when I am tired on a business trip</i>		
7	<i>I like it when Room Service is Available because I can avoid worrying about logistics</i>		
8	Nice Towels <i>put me in a good mood when I have to get up early in the morning</i>		
9	New Bathroom <i>gives me a clean feeling and adds energy to my day</i>		
10	Good Room Service Selection <i>keeps my stress level down and reduces anxiety about my diet</i>		
11	Mini-Refrigerator in Room <i>gives me choices as I decide about food and snacks while working in my room</i>		<p><u>An innovative solution could be:</u></p>
12	Attractive Furnishings <i>put me in an energetic mood, enabling me to get more work done in my room</i>		<p>I need a complete, relaxing and rejuvenating experience during my presence in the hotel based on a strategic treatment of my five senses, including sensors in my vicinity that can read and provide feedback when things are amiss.</p>
14	Express Checkout <i>helps me a lot as I am forgetful about the time and logistics to check out</i>		
15	Quiet Heater/Air Conditioning <i>enables me to think creatively on hard problems without distraction</i>		
16	Non-Smoking Room Available <i>is a must or I will have a headache while trying to work in my room</i>		



Session Exercise 1

In the following slides, we will practice KJ affinitization:

- Review provided statements
- Identify a theme(s) of experience
- Suggest an innovative solution(s)

Additional exercises for you to try
on your own sometime to develop
your “Open Thinking” capability.



Cell Phone Use Exercise

I'm a physician and need to receive phone calls at all times.

I hate wearing a belt to hold my phone with my dressy clothes.

I go to the symphony pretty often, and must keep my cell phone on *vibrate*.

I must wear my phone to feel it vibrate, but my dressy clothes have no pockets.

I want to keep my phone in my purse.



Cell Phone Use Exercise

I'm a physician and need to receive phone calls at all times.

Theme of needing to receive incoming cell phone calls when quiet is required.

I hate wearing a belt to hold my phone with my dressy clothes.

I go to the symphony pretty often, and must keep my cell phone on *vibrate*.

I must wear my phone to feel it vibrate, but my dressy clothes have no pockets.

I want to keep my phone in my purse.



Cell Phone Use Exercise

I'm a physician and need to receive phone calls at all times.

Consider offering a ring sound of someone sneezing or gently coughing.

I hate wearing a belt to hold my phone with my dressy clothes.

I go to the symphony pretty often, and must keep my cell phone on *vibrate*.

I must wear my phone to feel it vibrate, but my dressy clothes have no pockets.

I want to keep my phone in my purse.



On the Go and Talking Exercise

I'm always on the go.

I don't want to get a ticket for texting while driving.

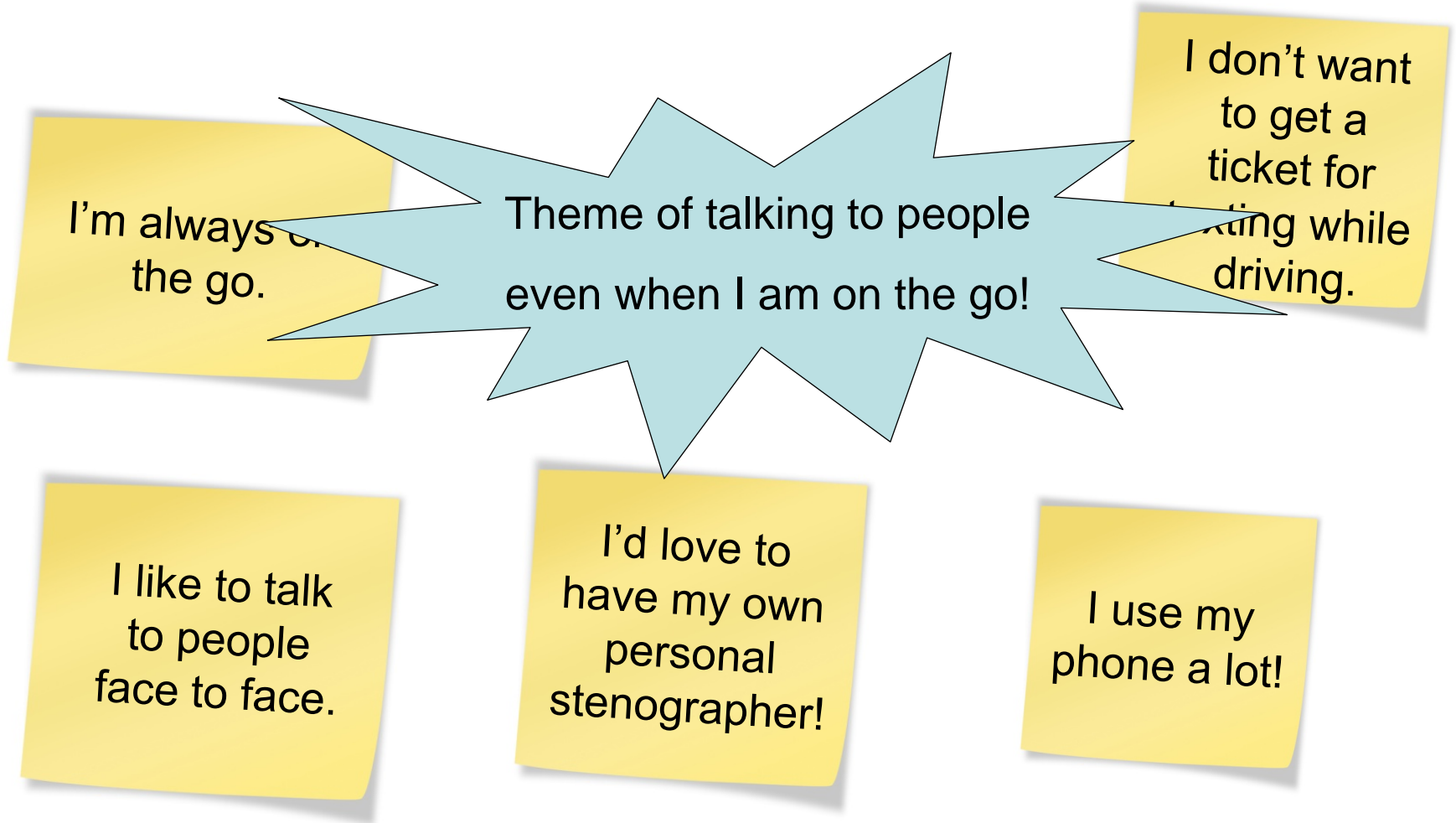
I like to talk to people face to face.

I'd love to have my own personal stenographer!

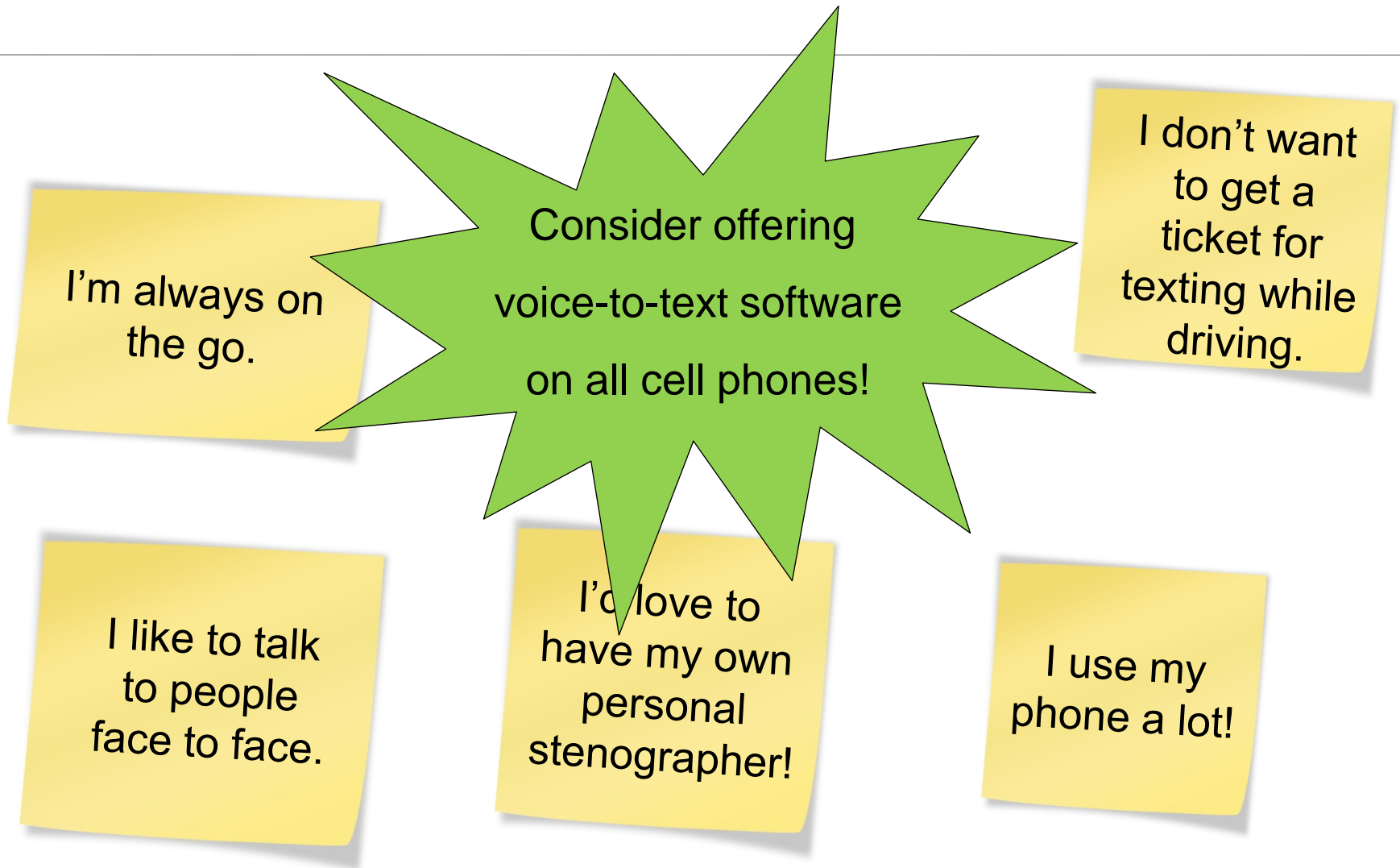
I use my phone a lot!



On the Go and Talking Exercise



On the Go and Talking Exercise



Uneven Heating Exercise

I freeze when I am in my bathroom located above the garage.

Last year, our heating bills went through the roof!

I normally overheat when I am in the laundry room.

I am often blinded by the sun when working at the dining room table.

My children do not invite friends over during the winter time.



Uneven Heating Exercise

Theme of ambient temperature
better matching use of the
home

I freeze when
am in my
bath.
located above
the garage

Last year, our
heating bills
went through
the roof!

I normally
overheat
when I am in
the laundry
room.

I am often
dried by the
sun when
working at the
dining room
table.

My children do
not invite friends
over during the
winter time.



Uneven Heating Exercise

Consider sensors that regulate temperature in each room based on both the room activity and the individuals in the room.

Freeze when I am in the bathroom located above the laundry room.

Last year, our heating bills went through the roof!

When I am in the laundry room, I overheat.

When I am sitting at the dining room table, I get cold.

When I am in the laundry room, I do not involuntarily shiver over during the winter time.



Driving in Your Car Exercise

I need to talk a lot in the car using my hands-free cell phone setup!

I hate it when I have to constantly adjust my radio volume!

My job requires a lot of city and highway driving.

I often get distracted by loud 18 wheelers!

I find classical music quite relaxing.



Driving in Your Car Exercise

I need to talk
in the car using
my hands-free
cell phone

Theme of communicating or
listening to music in the car
without distraction!

I hate it
when I have
to constantly
adjust my
volume!

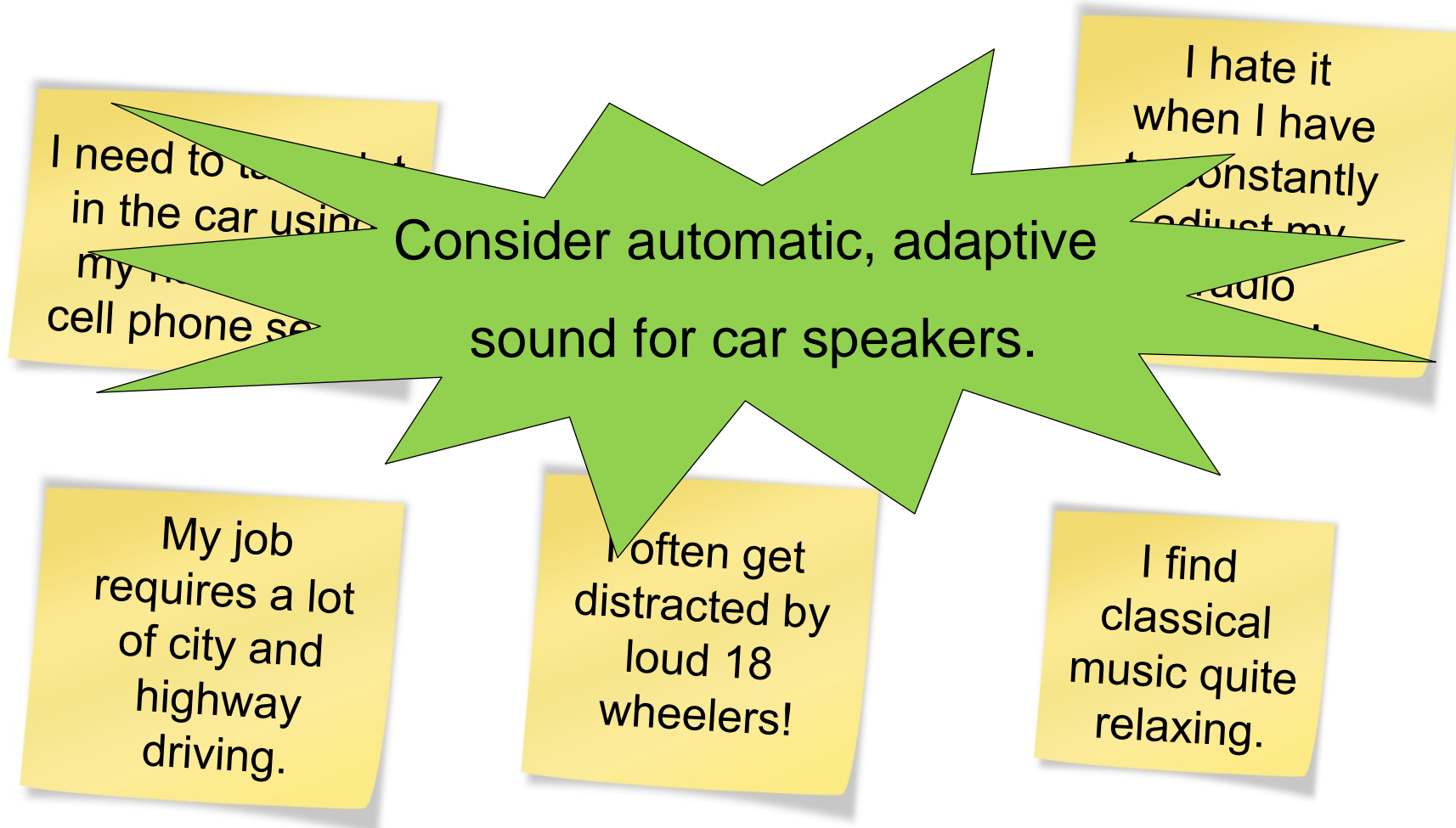
My job
requires a lot
of city and
highway
driving.

get
disturbed by
18
wheelers!

and
classical
music quite
relaxing.



Driving in Your Car Exercise



Elicitation of Unstated
Needs:
Training Session 4
(Review KJ Affinitization;
Conduct Kano Analysis)

17 September 2014

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KJ Training Sessions Roadmap

Session 1 – Introduce the KJ Method and describe the SEI’s approach for adapting this method in a virtual (non face-to-face), distributed setting.

Session 2 – Explain and practice KJ interviewing techniques, emphasizing the critical importance of capturing context information regarding good and bad extremes of experience. Provide examples of KJ report statements.

Session 3 – Explain and practice KJ affinitization technique, emphasizing grouping by non-obvious themes of experience. Explain and provide examples of innovative solutions and unstated needs.



Session 4 – Explain and practice Kano analysis and continue the example from Session 3. Provide a course review.



Overview of SEI Approach



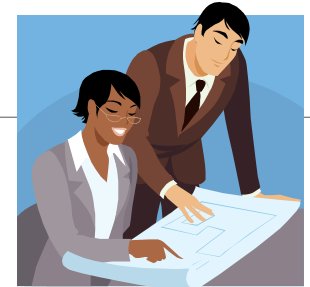
Step 1: Evaluate existing knowledge of stated needs and requirements



Step 2: Design the open-ended, probing questions to be used in KJ interviews



Step 3: Conduct KJ interviews collecting all possible context information



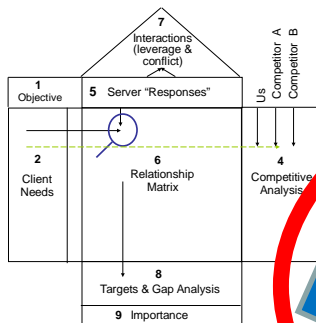
Step 4: Analyze raw output of interviews to form context need / activity statements



Step 5: Conduct the KJ Workshop including specialized affinity exercise

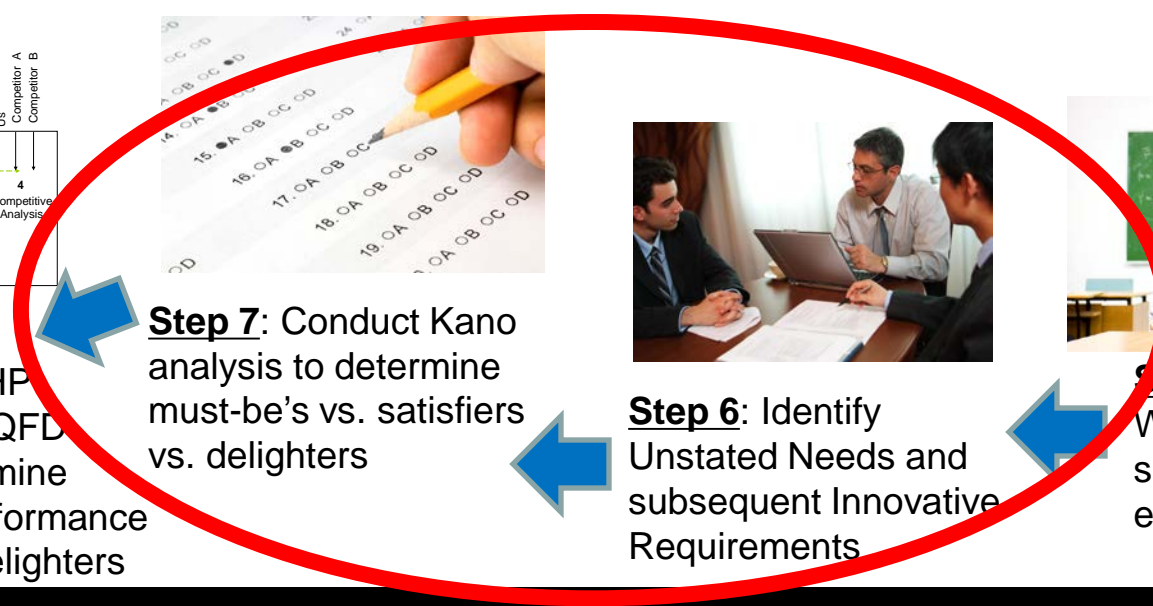


Step 6: Identify Unstated Needs and subsequent Innovative Requirements



Step 8: Use AHP weighting and QFD matrix to determine quality and performance measures of delighters

Step 7: Conduct Kano analysis to determine must-be's vs. satisfiers vs. delighters



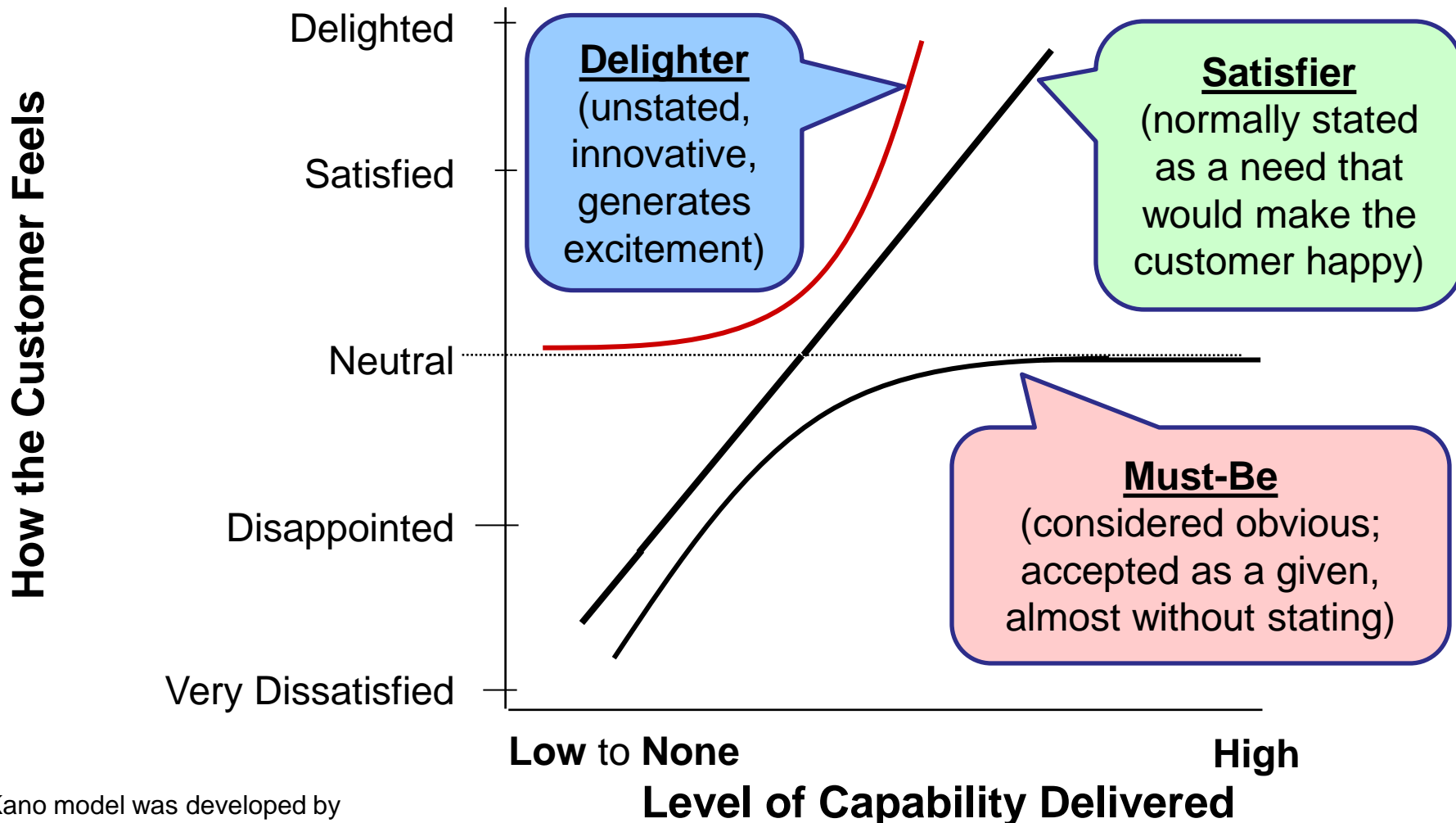
Session Exercise

There is one exercise in this session.

- The Kano Analysis exercise will test newly identified unstated needs against the Kano classification.



Kano Model Classifies the Unstated Need Solutions



The Kano model was developed by Professor Noriaki Kano in the 1980s.



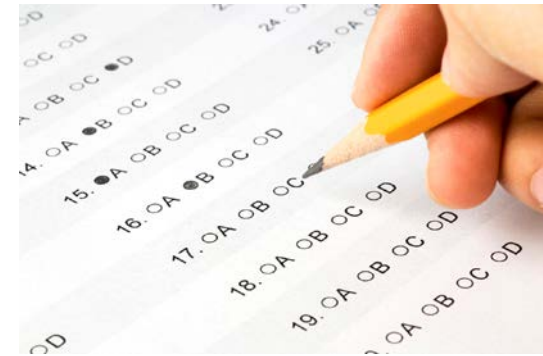
How Kano May Be Used Within Requirements Elicitation Process

Kano Analysis is an approach that categorizes needs and requirements into one of three categories (“Must-Be” vs. “Satisfier” vs. “Delighter”).

All needs and requirements, whether stated or unstated, may be categorized using Kano analysis.

We will show Kano analysis conducted using a survey in which a pair of questions are asked for each unstated need.

Confirmed “Delighters” are then typically translated into requirements statements based on the rich-implementation Kano question.



Kano Reminders

New/refreshed products or services are more compelling if they have some “Delighters” or innovative features.

Programs/projects must not forget to cover the “Must-Be’s” automatically – as they “go without saying.”

“Satisfiers” are good to have but the “Delighters” are much more compelling.

“Must-Be’s” and “Satisfiers” are more easily identified.

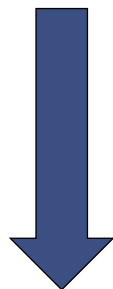
Degradation occurs continuously from “Delighter” to “Must-Be’s” – pace of degradation varies by domain or industry.



From Themes to Unstated Needs and Requirements

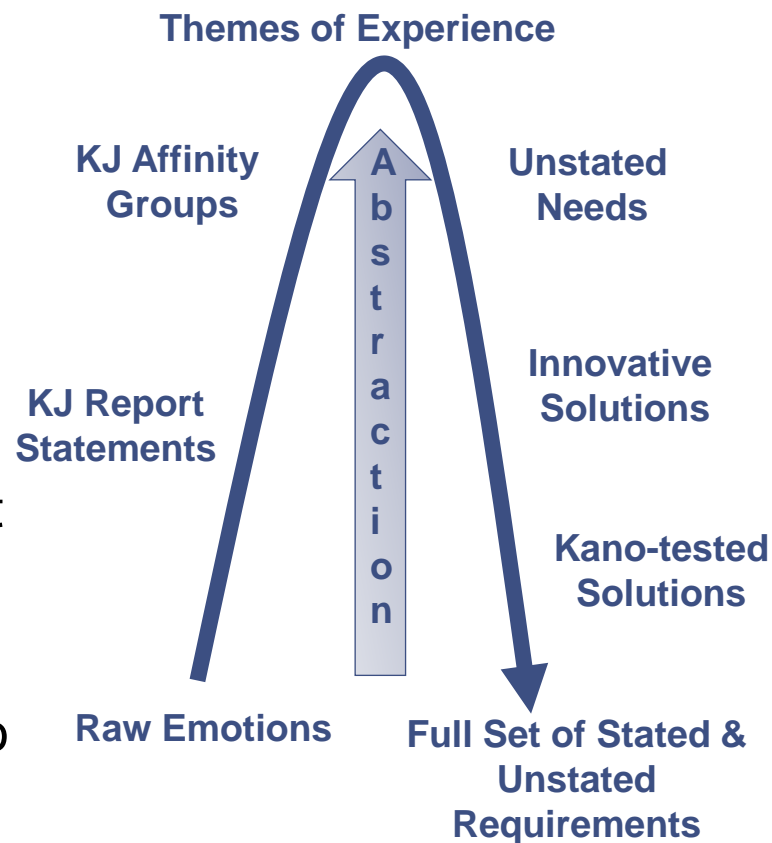
Theme: I want to eat and drink without damaging my laptop.

Rationale: KJ report statements imply the presence of food and drink near the laptop.



Unstated Need: Home laptops are resistant to damage from food and drink.

Unstated Need: Home laptops recognize when food and drink are nearby and go into a safe mode.



Kano Analysis



For each innovative solution to an unstated need, develop a pair of questions that express the need as satisfied at two extreme levels of solution implementation.

Unstated Need: Without training, new users enter eligibility data correctly.

Low

a. If the system alerts the user when a data entry error occurs, how do you feel?

- 5) Delighted
- 4) Satisfied
- 3) Neutral
- 2) Disappointed
- 1) Very dissatisfied

High

b. If, additionally, the system recommends remedial steps and logs the status to the system manager's report, how do you feel?

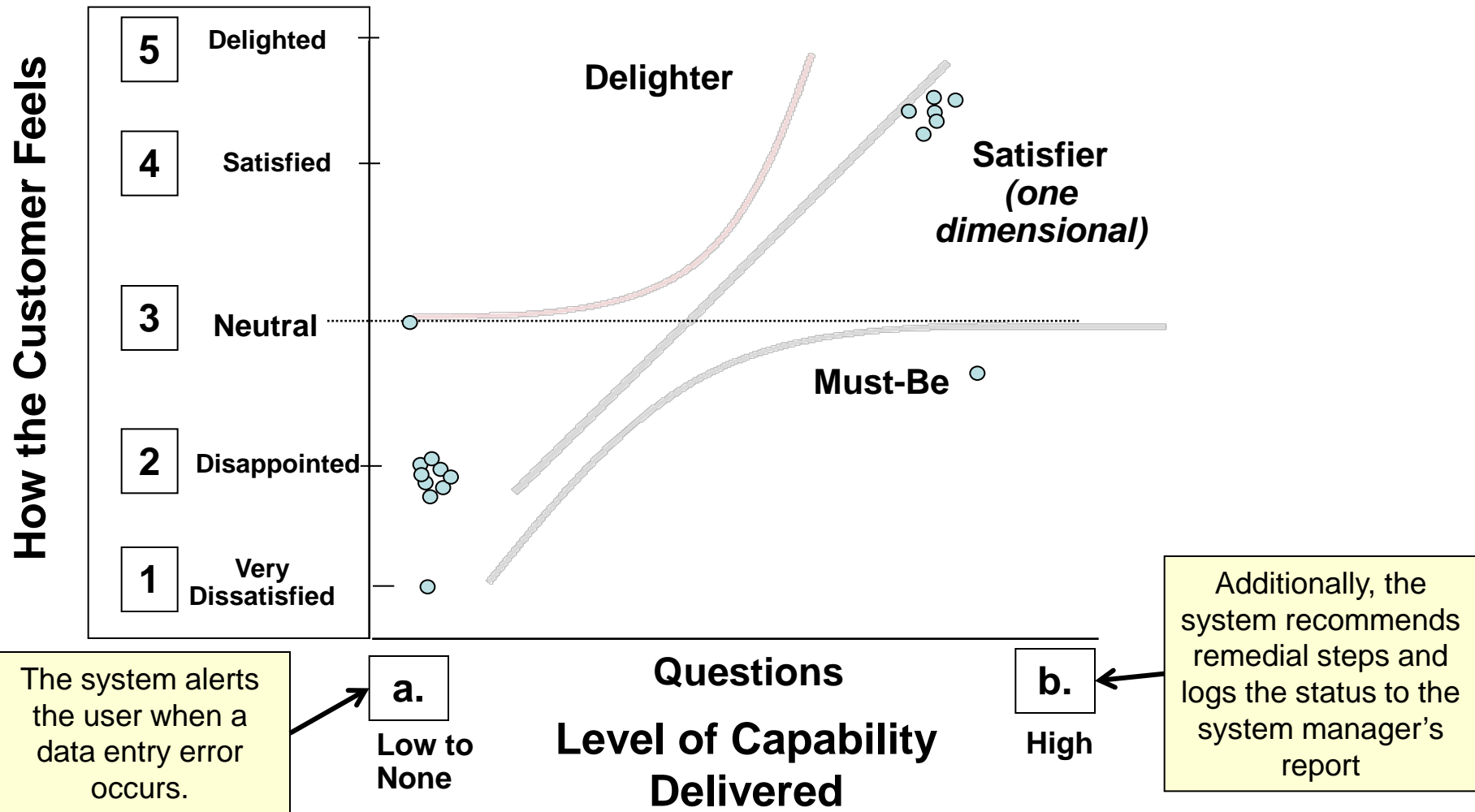
- 5) Delighted
- 4) Satisfied
- 3) Neutral
- 2) Disappointed
- 1) Very dissatisfied



Interpreting Kano Responses



Unstated Need: Without training, new users enter eligibility data correctly.



Kano Analysis Exercise

1. Class selects one new, innovative feature or solution related to a previously identified unstated need for the home laptop user
2. Develop a **pair** of Kano questions in which the “bare bones” and “rich” implementations of the solution are sufficiently described
3. Take a roll call vote for how each participant would vote on the answer scale for each question (refer to scale in previous slide)
4. Class determines the Kano classification
5. Class discusses any learnings, conclusions, etc.
6. Repeat for another unstated need if time allows



Reflections on What You Have Learned

Do you see how Kano analysis could be applied via surveys?

Would Kano analysis help prioritize needs and requirements in your setting?

What are your thoughts on how fast the Kano classifications may degrade in your environment?

Of the complete KJ+ method that you have now seen, which step represents the greatest challenge for implementation in your environment?



KJ+ Summary

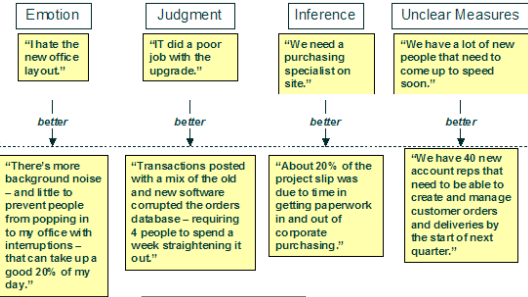
KJ is a method for transmuting *tacit* into *explicit* knowledge consisting of objective statements ...



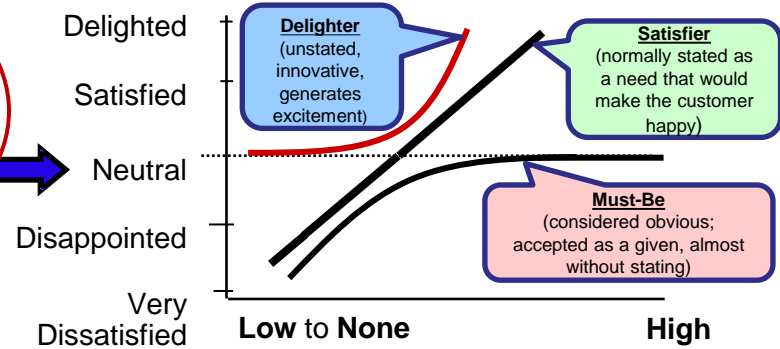
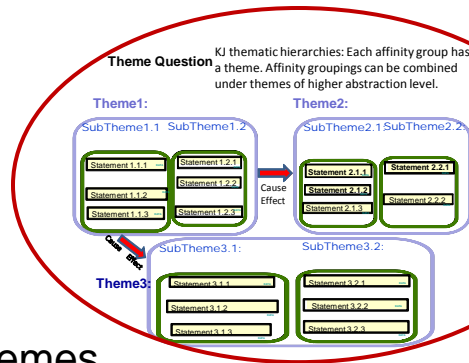
Structured Interviews

Theme Question

Probing
 "Can you give me an example?"
 "How did that happen?"
 "Why do you say that?"



... and refining a collection of these statements into a KJ template that conveys context information and themes of experience.



Adapted from David Hallowell, "Language Data: The 'Other Data' of Six Sigma: Parts 1 & 2," <http://www.isixsigma.com/library/content/c040303b.asp>

Questions?



Thank You for Your Attention!

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