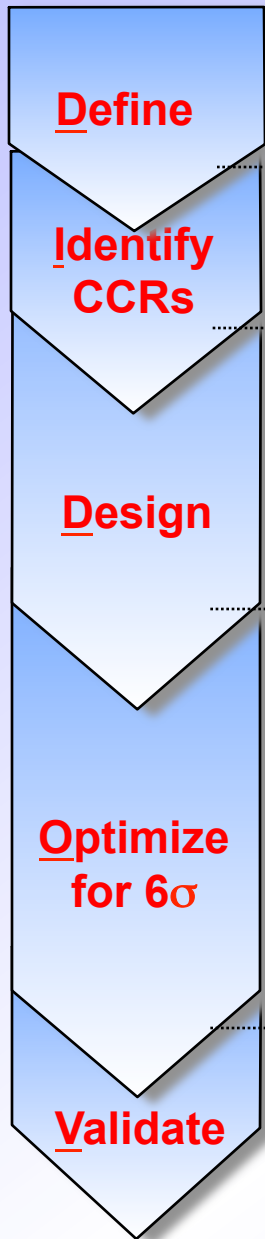


Understanding Customer's Viewpoint



Voice of Customer



Define the Project
 Business Case, Opportunity Statement, Goal,
 Scope and Boundaries

Capture & Analyze Voice of Customer
 Identify Critical Customer Requirements (CCRs) &
 Establish System Specifications via QFD1

Identify Conceptual Design
 Determine System Functionality
 Map CCRs to System Functions via QFD2

Develop Detailed Design
 Map Functions to Design Parameters via QFD3

Design for Robust Performance
 Minimize Sensitivity to Design & Operating Variations

Design for Manufacturability
 Minimize Sensitivity to Mfg Variations

Predict Quality
 Predict σ ; Iterate to Meet Quality Target

OK

Test & Validate
 Assess Performance, Reliability, Mfg, ...

OK

Deliver to Customer



Typical DFSS Process

VOC Discussion Objectives



- Define Voice of Customer
- Understand the **need** to gather Voice of Customer
- Provide a **Step-by-Step approach**
- Present **Best Practices** to interview Customers
- Set-up **Homework** Assignment

Voice of Customer Is . . .

- **A proven market research methodology to gather customer, client, or market information**
- **VOC techniques are used to identify, explore and quantify customer needs & requirements**
 - Commonly utilized in product, service, process, software, IT, & system development
- **Data is gathered through a variety of methods**
 - Interviews
 - Focus Groups
 - Surveys
 - Observations



Who is the “Customer”?

Companies, organizations or individuals who's **needs must be met** for our new offering to be successful



Broadly . . . **anyone who touches the offering** through its life cycle down the Value Chain

- Direct buying customers
- Industrial end users
- Original Equipment Mfgs. (OEMs)
- Retail consumers

Why Conduct Voice of Customer Research?

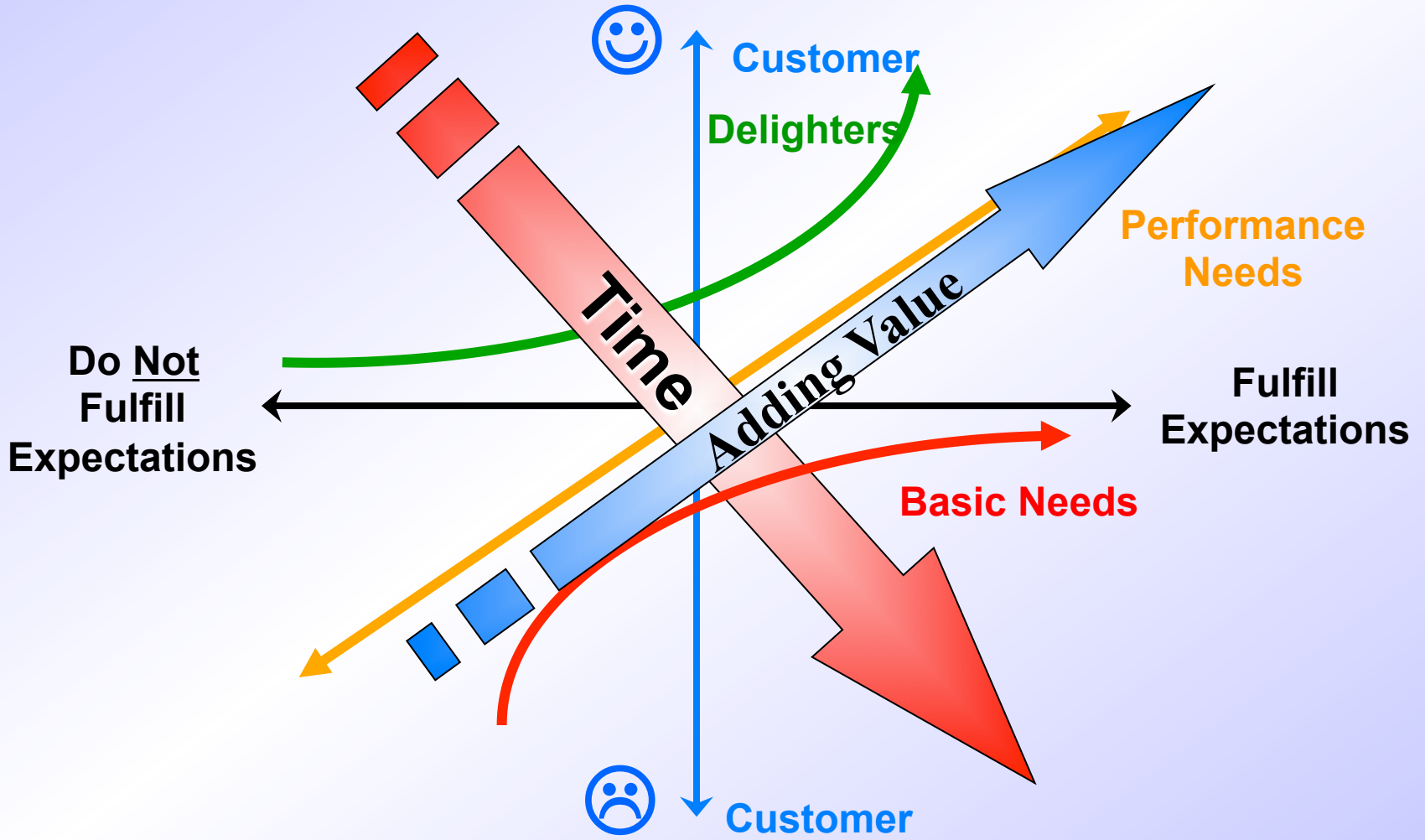


- Prime Customers for buying via **design participation**
- Data based **decision making** ... versus “folk lore”
- Increases **probability of success**
- Create an ‘**outside in**’ perspective

- Discover **opportunities** hidden to competitors
- Invest engineering into “**winnable**” **battles**
- Leave **obvious opportunities** to competitors



Kano Model



Voice of Customer: Step-by-Step Approach

- Conduct **Secondary Literature Research**
- Develop **Interview Guide**
- Determine **Who** to interview
- Conduct **Interview**



VOC Starts with Secondary Literature Research



- **Size and Growth Rate of Market**
- **Segmentation by: Geography, Customers, Application, and Buying Preference**

- **Trends in the Marketplace**
- **Issues & Dynamics facing the Market: Regulatory, Consolidation, New Entrants**
- **Discontinuities in Market**
- **Patents**

Most Frequent Cited Reason for New Product Failure (APQP 2003)



Utilize Internet for Secondary Research

Site	Information
www.google.com	Google Scholar for technical information
www.profound.com	250M market research reports
www.marketresearch.com	Tens of thousands of market research reports 350 publishers
www.frost.com	Tens of thousands of market research reports
www.ingenta.com	30M industry publications

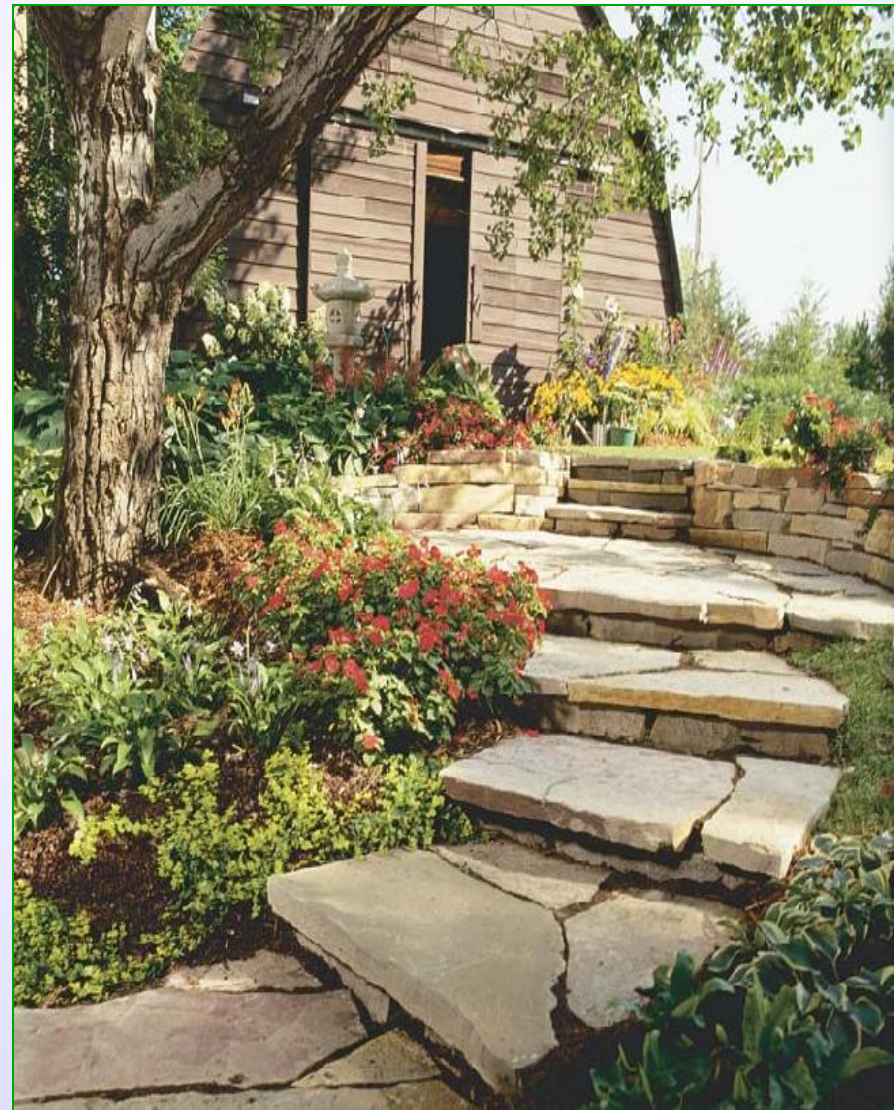
Why use an Interview Guide?

- **Agenda** - Maintain meeting focus and allocate time in proportion to topic importance
- **Speed** - Developed more easily than Questionnaires
- **Conversational** - Phrased in everyday language
- **Spontaneity** - Customer's previous comments are easily woven into future questions
- **Consistency** - Interview to Interview
- **Exploration** via open-ended questions



Interview Guide Development Step-by-Step Approach . . .

1. Identify **What** needs to be learned from the Customer
2. Determine **Content** of each individual question
3. Develop **Wording** of each individual question
4. Determine **Sequence** of Questions & Probing Questions
5. **Pre-Test** Interview Guide



Identify What Needs to be Learned from the Customer

- **Focus on what you need to learn**
- **Brainstorm a list of Questions**
- **Check your Secondary Literature Research**
 - **Is the Question / Issue already answered?**
 - **Could it be answered by Secondary Research?**
- **Review / update Questions constantly as you learn**



Workhorse Areas to Explore

- Define the **Job** your Customer is doing
- Understand **Context** of your product in overall system
- Identify **Likes and Dislikes**
 - Extent of like and dislike
- Identify **Unsolved Problems**
- Force **Trade-Offs**
 - Understand importance one functionality is over another
- Push for **Priority**
 - Ask Customer to spread 100 points over list of needs



Determine Individual Question Content

- Is every **question necessary**?
 - What action are we going to take with the information?
- Ask several **simple questions** in place of one complicated one.
- Does Interviewee have **necessary information**?
 - May be flattered to be asked, but answer is meaningless
- Will Interviewee **share** Information?
 - Consider work involved in answering
 - Be aware of sensitivity of the issue



Develop Individual Question Wording

- Use **open ended Questions** for dialog
 - Allows Interviewee to steer the discussion
 - Reveals what's on their mind
- Some Questions appear to be open ended, but in reality are closed ended
 - “how satisfied . . . ”
 - “to what extent . . . ”
 - “would you . . . ”
 - “could you explain . . . ”
 - “do you see any differences . . . ”



Develop Individual Question Wording

- **Ensure time to answer a given question is in proportion to it's importance**
- **Ensure each Question is simple, specific, and addresses only one issue**
- **“Bad” Questions have multiple interpretations, and are easy to spot**
 - **Lots of words**
 - **Technical or business jargon**
 - **Lots of commas, colons, and hyphens**



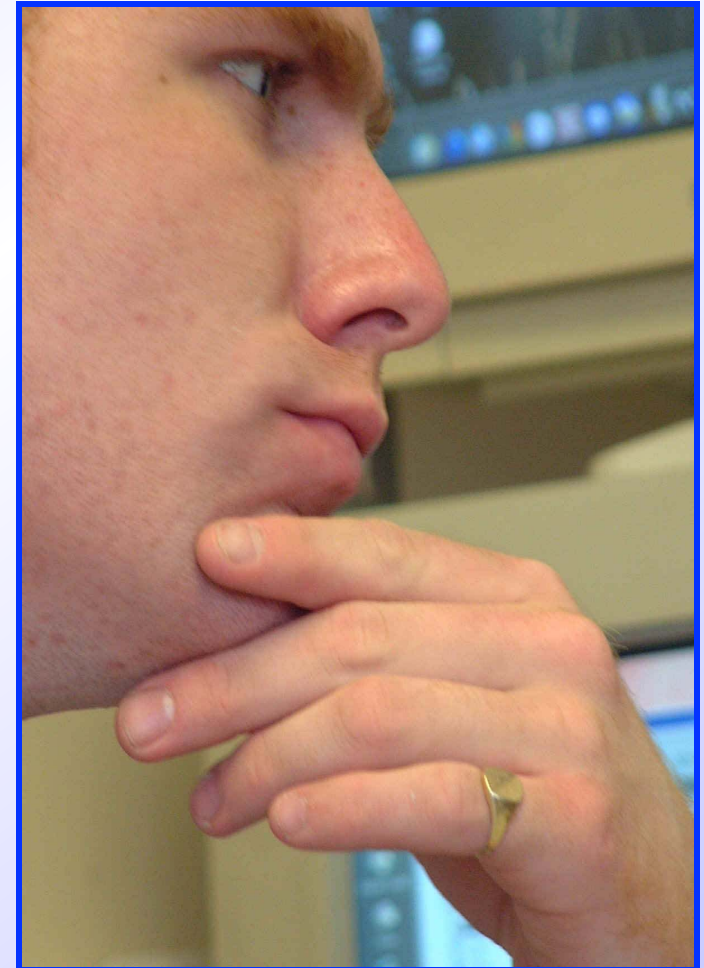
Avoid Asking Why



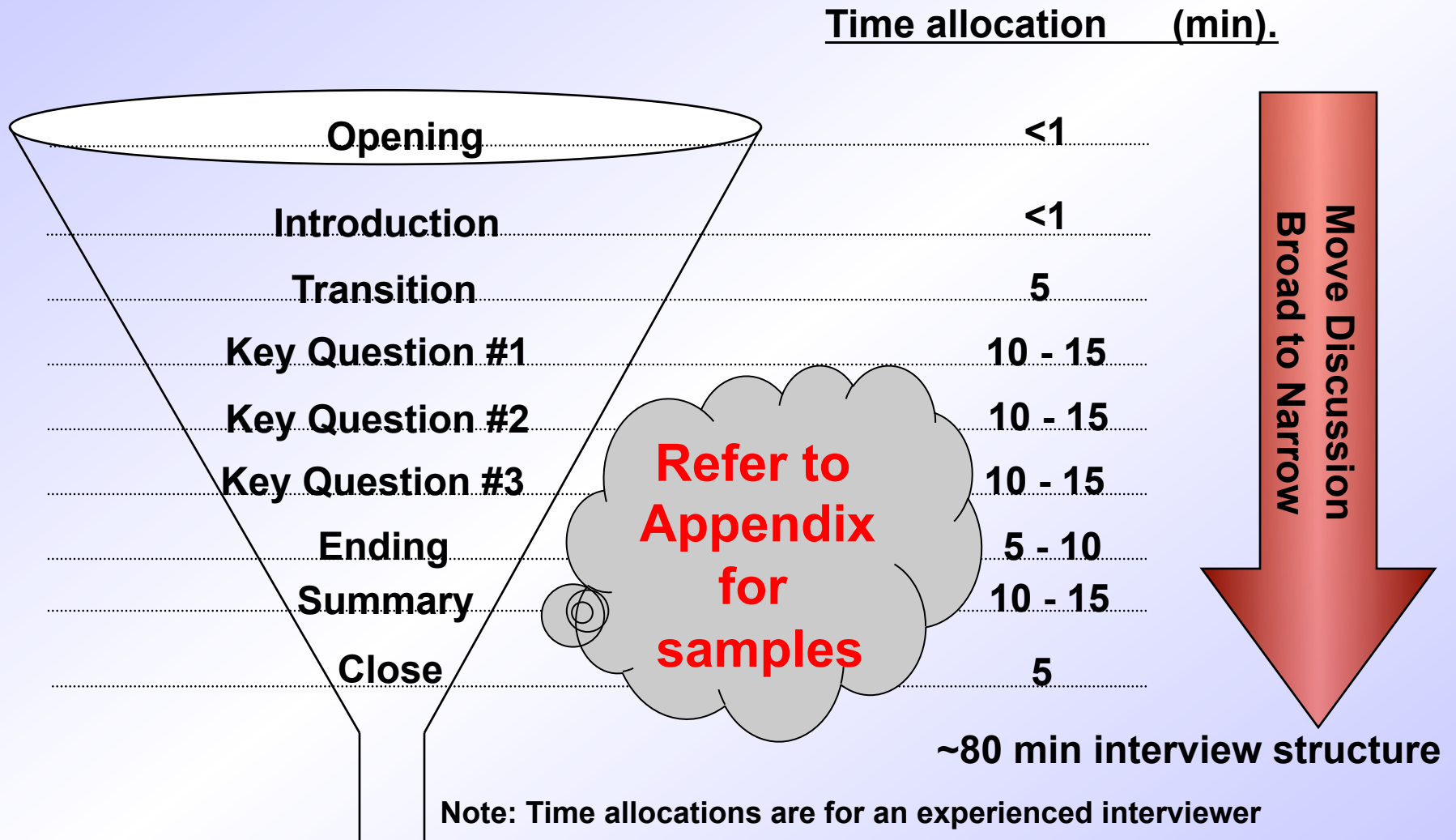
- **“Why” implies a rational cause-effect answer**
 - Impulse often governs decision making
- **“Why” has a sharpness, feels like interrogation**
 - Raises defensive barriers
 - Forces people into a position that may not be representative of their true position

Ask Interviewee to “Think Back”

- **Reflect on personal experiences**
 - Provide facts and data
 - Examples, both good and bad
- **Provides context for response**
- **Lets Interviewees know you want specifics. Do not want:**
 - Hearsay
 - Future intentions
 - Possible outcomes



Determine Question Sequence



Identify Probes for Key Questions

Classic Probes:

- “Please explain _____ further?”
- “Please describe a situation when things went well, and not so well?”
- “I simply do not understand?”
- “What else should discuss today?”
- “Describe what success would look like”

Not everything is worthy of a probe

- Too much probing leads to excessive detail and trivia
- Used only for Key Questions



VOC Table Defines Who to Interview

Company	Mktg.	Engin.	Purch.	Mfg.	Styling	...
GM	*		*	*		
Ford	*	*			*	
Chrysler		*		*		
Toyota	*	*		*		
Honda		*	*		*	
Nissan	*		*			
....						

Spotting Compensatory Behaviors

- **Observe product in use on plant tour**
- **Look for non-logical, inefficient, or avoidance behavior**
- **Seek instances where product is not performing to customer expectations**
- **Sense customer frustration(s)**
- **If possible, stop customer when compensatory behavior is seen, . . . probe . . . probe . . . probe**





Before, During, and After the Interview

Before

- Be familiar with Interview Guide
- Note topics most important for that specific interview
- Gather materials – pen & paper, computer (doc set up), guide

During

- Create a comfortable atmosphere
- State purpose of interview and assure confidentiality
- Follow Interview Guide
- Take detailed notes
- After Interviewee is finished speaking, wait before speaking
- Accept what you hear



Before, During, and After the Interview

After the Interview

- Ask Interviewee for additional comments
- Wait for literature, information, & samples offered during interview
- Thank them for their time & information
- Establish best mechanism to make a follow-up call for questions
- De-brief IMMEDIATELY
 - Fill in blanks in notes (Ebinhauser effect)
 - Determine follow-up questions
- Send Thank You letter

Homework Assignment

Objective

- Develop a complete Interview Guide for your Senior Design Project
 - Use “Funnel Model” described in lecture
 - One Interview Guide per Team

Instructions

- Brief paragraph – “Elevator Speech” - describing your Project Goal(s)
- Follow Step-By-Step process described in lecture
- Refer to examples in Appendix
- Guide to include:
 - Opening Question & Ice Breaker
 - 3 Key Questions and 2 Probes for each of the three Key Questions
 - Closing

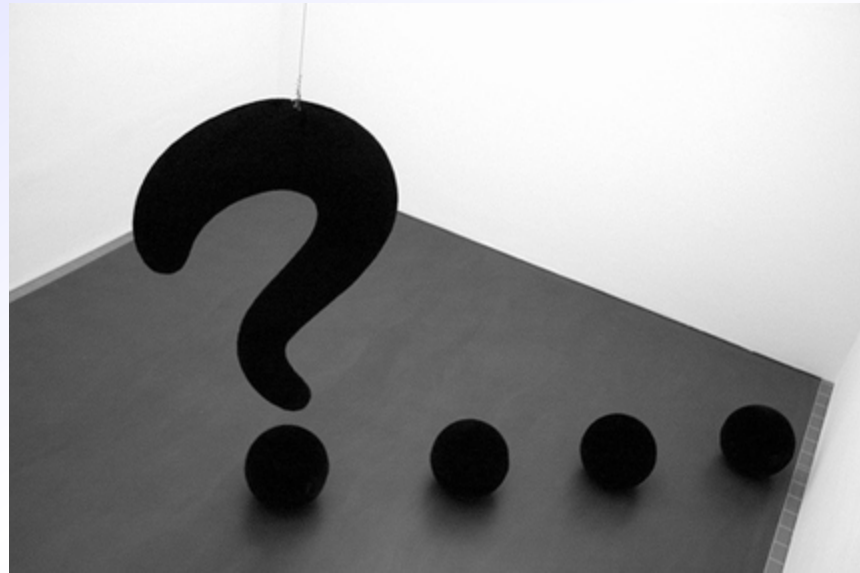
Deliverables

- Typed “Elevator Speech” and Interview Guide in Microsoft Word for each Team
- E-Mail Interview Guide to G. Motter at sail1070@Yahoo.com and to Dr. Shanblatt

Due Date

- One Week from Today

Questions and Discussion



Appendix

Ten Classical Questions to Assist in Developing Key Questions

- 1) If you were in charge, what kind of changes would you make?
- 2) What would it take for this (product) to get a gold star? If this product received an award, what would it be for?
- 3) If you were the moderator, what would be the next question you would ask the group?
- 4) What would you tell a best friend or family member about this product?
- 5) Assume this product could talk, what would it say about itself?
- 6) If you could change one thing about this product, what would you change, and what's the main reason that one thing needs changing?
- 7) What would it take for this to get an A?
- 8) Tell me five positive things about this product, no matter how small that positive thing is?
- 9) If you were responsible for selling 1000 units of this product, what key point would you stress in the ad campaign?
- 10) What do you need to know about this product in order to accept or reject it?

Opening Question

- **Designed to be answered quickly (~30 sec)**
- **Make people feel comfortable and connected by common characteristics**
- **Answer based on fact or data (attitude/opinion require too much time)**

Examples:

- ***“Tell us your name and where you practice dentistry.”***
- ***“Describe who you are and your favorite memory of last summer.”***
- ***“Tell us your name and one thing you’d like us to know about your child.”***

Introduction

- Introduce general topic of discussion with 30 sec “Elevator Speech”
- Foster conversation and interaction with a broad open ended question

Examples:

- *We are here today to discuss our Customer Service provided with product XYZ.*
- *“When you hear the words Customer Service, what comes to mind?”*

Transition

- **Move conversation towards Key Questions that drive the study**
- **Help participants envision the topic in broader perspective**
- **Accomplished by a single, simple interesting question**

Examples:

- ***“Describe how have you been involved in community education?”***
- ***“Tell us about courses you have taken to improve your skills.”***
- ***“What are the benefits of working for this agency?”***

Key Question(s)

- These drive the study
- Typically, there are 2-5 questions in this category
- May require 15-20 minutes to answer per question

Examples:

- ***“Tell me about the things you tried to do but discontinued; the changes you tried to make but were not successful.”***
- ***“What roles did others have in your success?”***
- ***“What helped you continue the change?”***
- ***“Suppose you were trying to encourage a friend to participate in this program. What would you say?”***

Ending

- **Bring closure to the discussion**
- **Enable Interviewee to reflect on previous comments**
- **Interviewee may have shared inconsistent points of view, this is an opportunity to clarify their position**

Examples:

- ***“Suppose you had one minute to talk to the governor on the topic of _____. What would you say?”***
- ***“Of all the needs we discussed, which one is most important to you?”***
- ***“Jot down on a piece of paper one phrase or one sentence that best describes your position on this topic.”***

Summary Question

- **Given after the interviewer has presented a short summary (2-3 min) of the meeting and the big ideas or concepts that emerged from the discussion**

Examples:

- ***“Is this an adequate summary?”***
- ***“Did I correctly describe your position?”***
- ***“How well does that capture our discussion?”***