

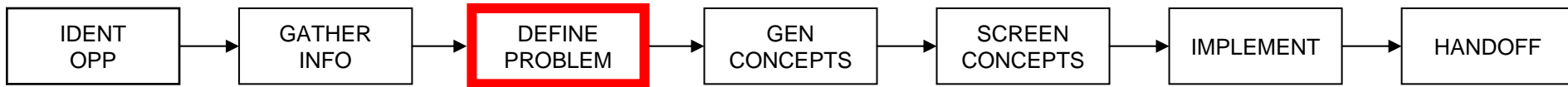
DEFINE PROBLEM

Determining Customer Needs
Setting Product Requirements

Please sit with your team
Access your Google site

Ref: Chap. 4, Ulrich & Eppinger text

Ref: Chap. 5, Ulrich & Eppinger text



DETERMINING CUSTOMER NEEDS

As practiced in ME4054

(Ref: Chap. 4, Ulrich & Eppinger text)

Some ways to determine needs...

- **My advisor said, “Do it this way”**
- **Marketing said, “Here are the specs”**
- **Team member Sam said, “Gosh, I would buy one!”**

Another way to determine needs...

- Determine *who* the customers are
- Determine *what* information should be gathered from customers
- Determine *how* that information should be gathered

And then, *translate* that information into product requirements and engineering specifications

Within teams, list main customers

Gathering customer information

- **Depth interviews**
- **Surveys**
- **“On the job” observations**
- **Focus groups**

Gather and report raw data, no interpretations....yet!

Depth interviews

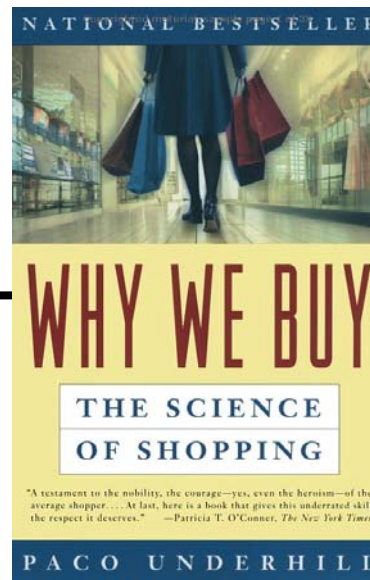
- **Great for getting lots of info quickly**
- **Can go into the “why”**
- **Have an interview script...clear with team and with advisor**
- **Take notes...of everything, not just what you want to hear...record direct quotes**
- **Can be hard to schedule**
- **Be mindful of people’s time**
- **Do over telephone or in person**

Surveys



- **Hard to create a good questionnaire**
- **Keep it short**
- **Minimize essay questions (interview instead)**
- **Need large N for quantitative data**
- **Screen respondents...you want the right sample**
- **Mail surveys...time scale wrong for ME4054**
- **Web surveys...only if you direct people to it**

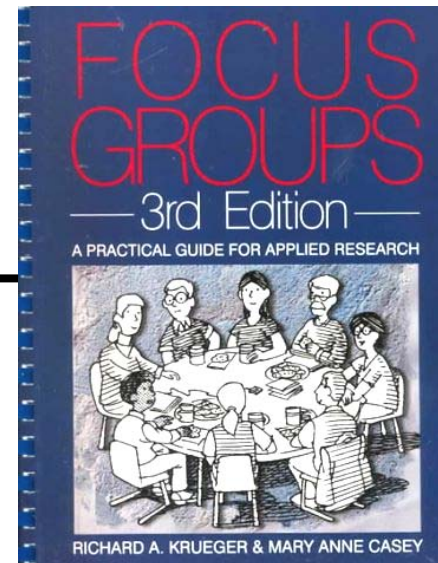
Observations



- **GREAT method!**
- **Be a “fly on the wall”**
- **Observe environment where design will be used**
- **Take notes**
- **Best way to understand the user**
- **Important for *engineers* to observe...and not simply rely on what others say**

Focus groups

- **Generates group discussion**
- **Can resolve conflicting views**
- **More than just getting people together**
- **Needs a skilled moderator**
- **Sometimes done in special facility with 1-way mirror and design team watching**
- **Requires planning, scheduling**
- **Logistics challenging for 4054 project**



What to do with the information...

- **Collect information as raw data, do not interpret as you take notes**
- **See text for some great methods to organize and translate raw data into info you can use to design your product**
- **Always check info against your common sense**

Example: Design of a Cordless Screwdriver



Steps:

1. Gather data from customers
2. Interpret as a “need”
3. Organize into a hierarchy
4. Establish relative importance

Interview with Customer

Customer:	Bill Esposito	Interviewer(s):	Jonathan and Lisa
Address:	100 Memorial Drive Cambridge, MA 02139	Date:	19 December 2002
Telephone:	617-864-1274	Currently uses:	Craftsman Model A3
Willing to do follow-up?	Yes	Type of user:	Building maintenance
Question/Prompt	Customer Statement	Interpreted Need	
Typical uses	I need to drive screws fast, faster than by hand.	The SD drives screws faster than by hand.	
	I sometimes do duct work; use sheet metal screws.	The SD drives sheet metal screws into metal duct work.	
	A lot of electrical; switch covers, outlets, fans, kitchen appliances.	The SD can be used for screws on electrical devices.	
Likes—current tool	I like the pistol grip; it feels the best.	The SD is comfortable to grip.	
	I like the magnetized tip.	The SD tip retains the screw before it is driven.	
Dislikes—current tool	I don't like it when the tip slips off the screw.	The SD tip remains aligned with the screw head without slipping.	
	I would like to be able to lock it so I can use it with a dead battery.	The user can apply torque manually to the SD to drive a screw. (!)	
	Can't drive screws into hard wood.	The SD can drive screws into hard wood.	
	Sometimes I strip tough screws.	The SD does not strip screw heads.	
Suggested improvements	An attachment to allow me to reach down	The SD can access screws at the end of	

Translating Information into Customer Needs

#	Need	Importance
1	Maintains power for several hours of use	4
2	The SD fits into a toolbox	3
3	The SD works with a variety of screws	4
4	The SD makes a pleasant sound when in use.	3

Are you done?

- After you have a concept, or a prototype, get reaction from customer(s)
- Bring the prototype or drawing

**Gathering info from customer is a
*continuous process***

The bottom line...

It makes no sense to create a design that nobody other than the design team wants!