

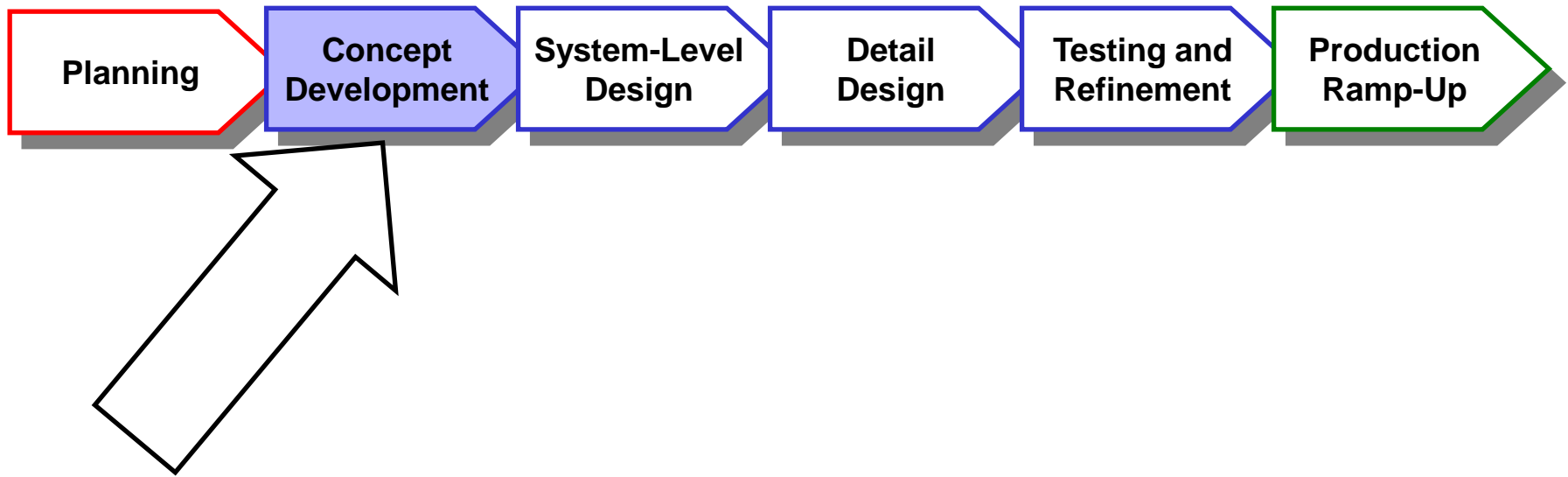


Workshop 4: Design Thinking

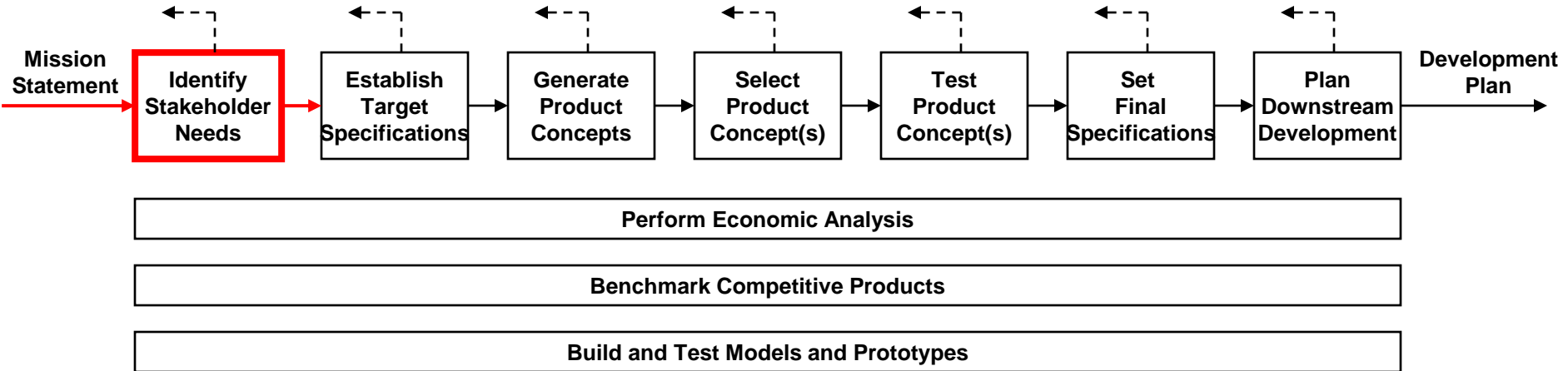
Phase 1: Empathize

**Empathize: Identifying
Customer Needs
Practical Considerations**

Product Development Phases



Concept Development Process



Identifying Stakeholders

Six step process for gathering stakeholder needs.

- Define the Scope
 - Mission Statement
- Gather Raw Data
 - Interviews
 - Focus Groups
 - Observation
- Interpret Raw Data
 - Need Statements
- Organize the Needs
 - Hierarchy
- Establish Importance
 - Surveys
 - Quantified Needs
- Reflect on the Process
 - Continuous Improvement

Stakeholder Needs Example: Cordless Screwdrivers



Mission Statement

Example: Screwdriver Project

Product Description

- A hand-held, power-assisted device for installing threaded fasteners

Key Business Goals

- Product introduced in 4th Q of 2000
- 50% gross margin
- 10% share of cordless screwdriver market by 2004

Primary Market

- Do-it-yourself consumer

Secondary Markets

- Casual consumer
- Light-duty professional

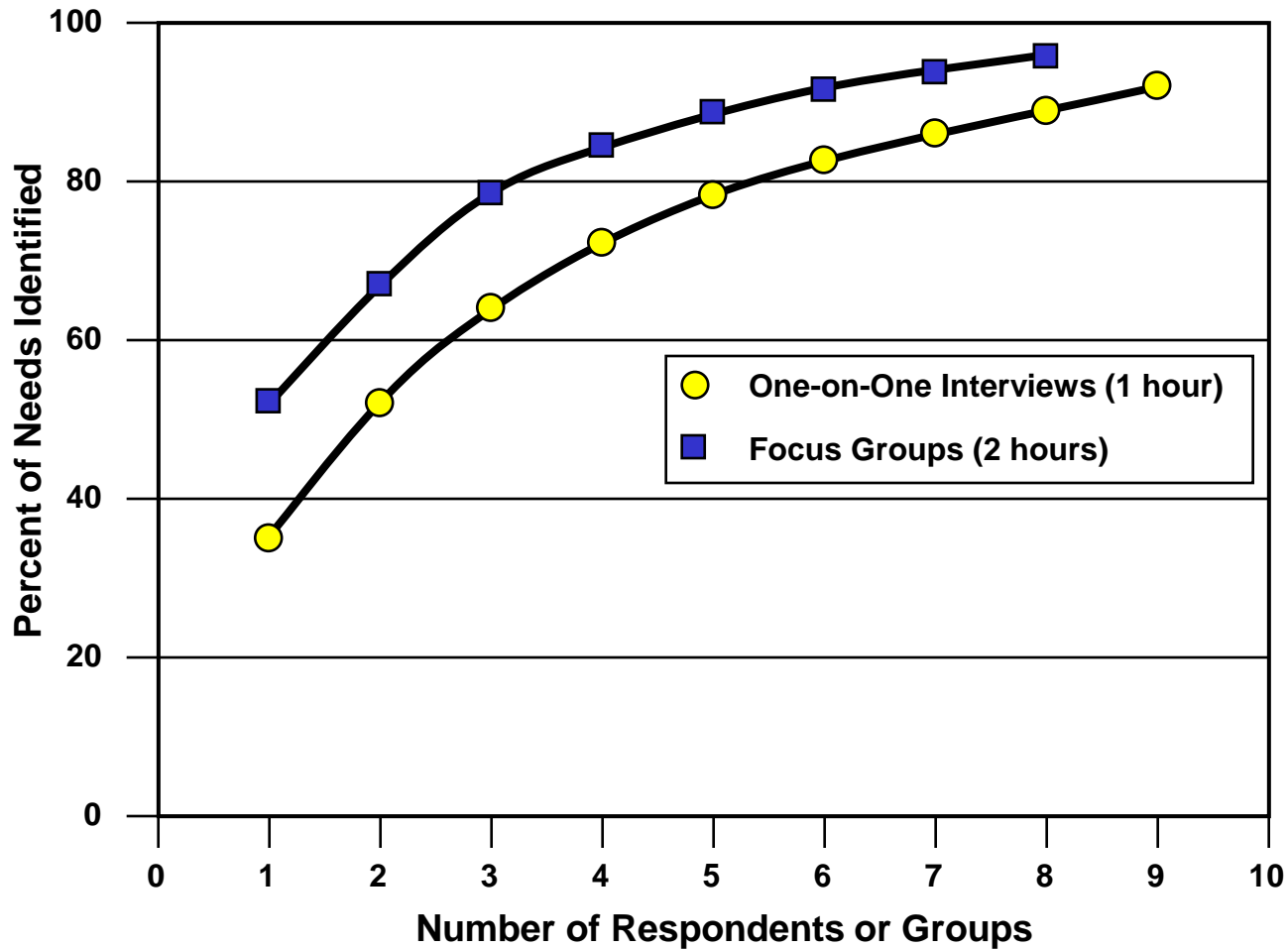
Assumptions

- Hand-held
- Power assisted
- Nickel-metal-hydrate rechargeable battery technology

Stakeholders

- User
- Retailer
- Sales force
- Service center
- Production
- Legal department

How Many Stakeholders?

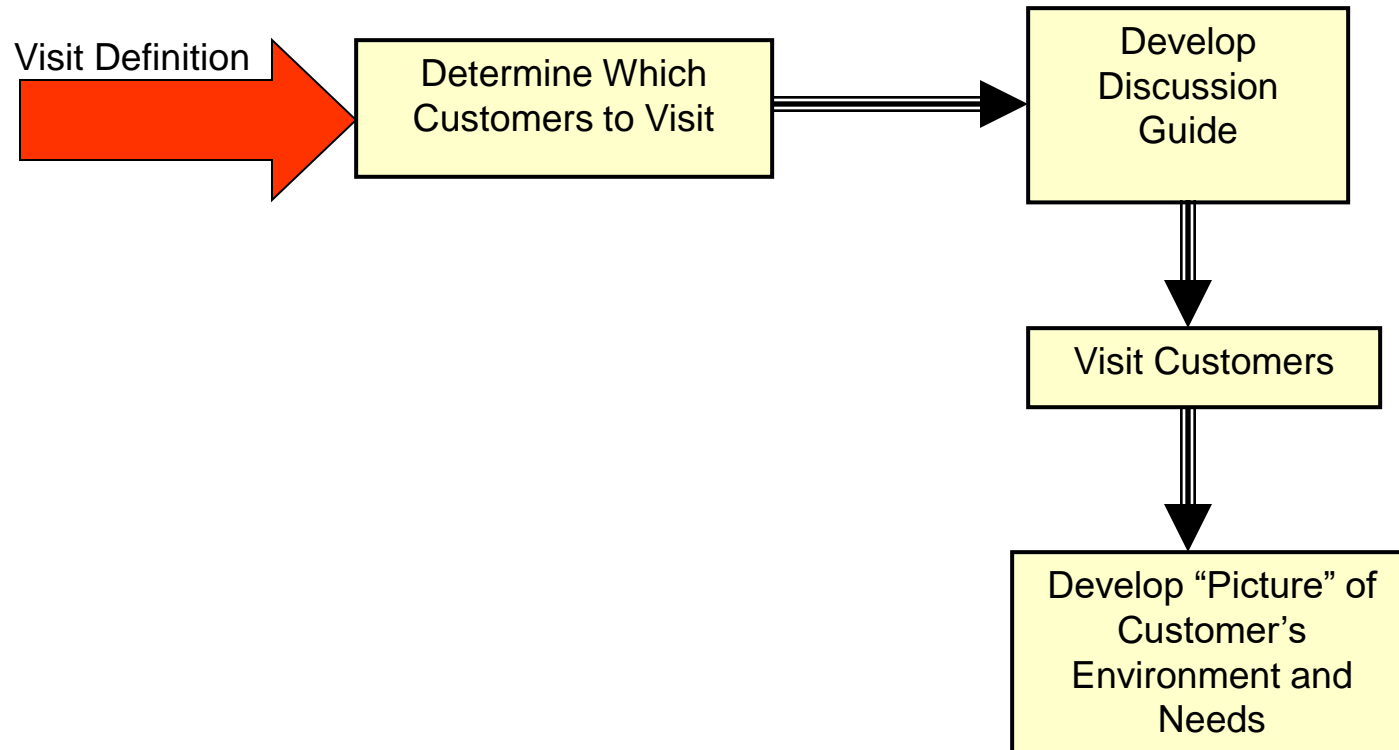


From: Griffin, Abbie and John R. Hauser. "The Voice of the Customer", *Marketing Science*. vol. 12, no. 1, Winter 1993.

Conditions

- Capture “What, Not How”.
- Meet customers in the use environment.
- Collect visual, verbal, and textual data.
- Props will stimulate customer responses.
- Interviews are more efficient than focus groups.
- Interview all stakeholders and lead users.
- Develop an organized list of need statements.
- Look for latent needs.
- Survey to quantify tradeoffs.
- Make a video (or ppt) to communicate results.

Gather Raw Data: Interviews



Determine Which Customers to Visit

- Create a “what do we want to learn” statement
 - To explore_____ in order to_____
 - To discover_____ in order to_____
 - To learn_____ in order to_____
- Examples of customers for Sellers
 - Distributors and dealers, end users
 - Lead/visionary customers
 - Lost customers, Unhappy customers
 - Customers using competitive products
 - External/Internal customers
 - Good current customers
 - Customers who buy multiple products, or from multiple divisions

Creating a Discussion Guide

- Tell the stakeholder why you are there
 - “We are here to discuss our senior design project. Thank you for agreeing to work with us.”
- 6-10 Key Topics
 - Based on what we want to learn
 - Open-ended
 - Subtopics as needed
 - It is a guide, not a script or questionnaire
 - Evoke images of experiences and needs

Guidelines for Creating Discussion Questions

- Scenes or images
 - Stakeholder's use environment
- Perceptions of weaknesses/problems
 - Past experiences
- Current considerations
 - Competitive comparison
- Future enhancements
 - “Delighters”

Question Formats to Avoid

- “Would you like a system that could....?”
- “Wouldn’t you agree that if we could produce a system that could...”

Question Formats to Encourage

- What- tend to focus conversation on events.
“What problems have you experienced?”
Your text has several helpful questions.
- How- tend to focus discussion on the process.
“How do you use..?”
- Why – require an explanation which may be helpful, ***but may elicit a defensive reaction!!***
- Could – are usually perceived as “gentle” and very open.
“Could you give an example?”

Clarity

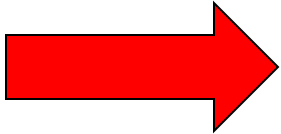
- Keep questions short
 - Break complex issues into a series of short questions
- Avoid technical jargon
 - Be sensitive that jargon is more pervasive than we first think
 - Value of silence
 - Uncomfortable, but helpful

Stakeholder Visit: How to do it

- Assign Roles
 - Better detail
 - Different perspectives
- Interviewer
 - Builds rapport
 - Asks most of the question and follows up
 - Manages the discussion, covering all key topics
- Scribe
 - Takes detailed notes – verbatim when possible
 - Backstop for interviewer
- Observer
 - Soaks up impressions
 - Listens “between the lines”
 - Backstop for the interviewer

Customer Needs Process

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Five Guidelines for Writing Needs Statements

Guideline	Customer Statement	Need Statement-<u>Wrong</u>	Need Statement-<u>Right</u>
<u>What Not How</u>	“Why don’t you put protective shields around the battery contacts?”	The screwdriver battery contacts are covered by a plastic sliding door.	The screwdriver battery is protected from accidental shorting.
Specificity	“I drop my screwdriver all the time.”	The screwdriver is rugged.	The screwdriver operates normally after repeated dropping.
Positive Not Negative	“It doesn’t matter if it’s raining, I still need to work outside on Saturdays.”	The screwdriver is not disabled by the rain.	The screwdriver operates normally in the rain.
Attribute of the Product	“I’d like to charge my battery from my cigarette lighter.”	An automobile cigarette lighter adapter can charge the screwdriver battery.	The screwdriver battery can be charged from an automobile cigarette lighter.
Avoid “Must” and “Should	“I hate it when I don’t know how much juice is left in the batteries of my cordless tools.”	The screwdriver should provide an indication of the energy level of the battery.	The screwdriver provides an indication of the energy level of the battery.

Example

Assume you are charged with developing a better (book) bag for An-Najah University students and staff.

Who are your users? (List at least 5 market segments)

Why would you go and visit these customers?

What would you hope to learn?

Visual Information Example: Book Bag Design



Needs Translation Exercise:

Book Bag Design Example

“See how the leather on the bottom of the bag is all scratched; it’s ugly.”

“When I’m standing in line at the cashier trying to find my checkbook while balancing my bag on my knee, I feel like a stork.”

“This bag is my life; if I lose it I’m in big trouble.”

“There’s nothing worse than a banana that’s been squished by the edge of a textbook.”

“I never use both straps on my knapsack; I just sling it over one shoulder.”

Exercise

- With your partner, translate one of the given statements for the book bag into a need statement.
- Refer to the guidelines to ensure that it meets each one.

Organized List of Customer Needs

The SD provides plenty of power to drive screws.

- * The SD maintains power for several hours of heavy use.
- ** The SD can drive screws into hardwood.
The SD drives sheet metal screws into metal ductwork.
- *** The SD drives screws faster than by hand.

The SD makes it easy to start a screw.

- * The SD retains the screw before it is driven.
- ! * The SD can be used to create a pilot hole.

The SD works with a variety of screws.

- ** The SD can turn philips, torx, socket, and hex head screws.
- ** The SD can turn many sizes of screws.

The SD can access most screws.

- The SD can be maneuvered in tight areas.
- ** The SD can access screws at the end of deep, narrow holes.

The SD turns screws that are in poor condition.

The SD can be used to remove grease and dirt from screws.
The SD allows the user to work with painted screws.

The SD feels good in the user's hand.

- *** The SD is comfortable when the user pushes on it.
- *** The SD is comfortable when the user resists twisting.
 - * The SD is balanced in the user's hand.
- ! * The SD is equally easy to use in right or left hands.
The SD weight is just right.
The SD is warm to touch in cold weather.
The SD remains comfortable when left in the sun.

The SD is easy to control while turning screws.

- *** The user can easily push on the SD.
- *** The user can easily resist the SD twisting.
The SD can be locked "on."
- ! ** The SD speed can be controlled by the user while turning a screw.
 - * The SD remains aligned with the screw head without slipping.
- ** The user can easily see where the screw is.
 - * The SD does not strip screw heads.
 - * The SD is easily reversible.

The SD is easy to set-up and use.

- * The SD is easy to turn on.
- * The SD prevents inadvertent switching off.
- * The user can set the maximum torque of the SD.
- ! * The SD provides ready access to bits or accessories.
 - * The SD can be attached to the user for temporary storage.

The SD power is convenient.

- * The SD is easy to recharge.
The SD can be used while recharging.
- *** The SD recharges quickly.
The SD batteries are ready to use when new.
- ! ** The user can apply torque manually to the SD to drive a screw.

The SD lasts a long time.

- ** The SD tip survives heavy use.
The SD can be hammered.
- * The SD can be dropped from a ladder without damage.

The SD is easy to store.

- * The SD fits in a toolbox easily.
- ** The SD can be charged while in storage.
The SD resists corrosion when left outside or in damp places.
- ! * The SD maintains its charge after long periods of storage.
The SD maintains its charge when wet.

The SD prevents damage to the work.

- * The SD prevents damage to the screw head.
The SD prevents scratching of finished surfaces.

The SD has a pleasant sound when in use.

The SD looks like a professional quality tool.

The SD is safe.

- The SD can be used on electrical devices.
- *** The SD does not cut the user's hands.

Thank You :)