Syde361 - Concept Testing

Concept Testing is Used for Several Purposes

- Go/no-go decisions
- What market to be in?
- Selecting among alternative concepts
- Confirming concept selection decision
- Benchmarking
- Soliciting improvement ideas
- Forecasting demand
- Ready to launch?

Concept Testing Process

- Define the purpose of the test
- Choose a survey population
- Choose a survey format
- Communicate the concept
- Measure customer response
- Interpret the results
- Reflect on the results and the process

Concept Testing Example: emPower Electric Scooter

Scooter Example

- Purpose of concept test:
  - What market to be in?
- Sample population:
  - College students who live 1-3 miles from campus
  - Factory transportation
- Survey format:
  - Face-to-face interviews

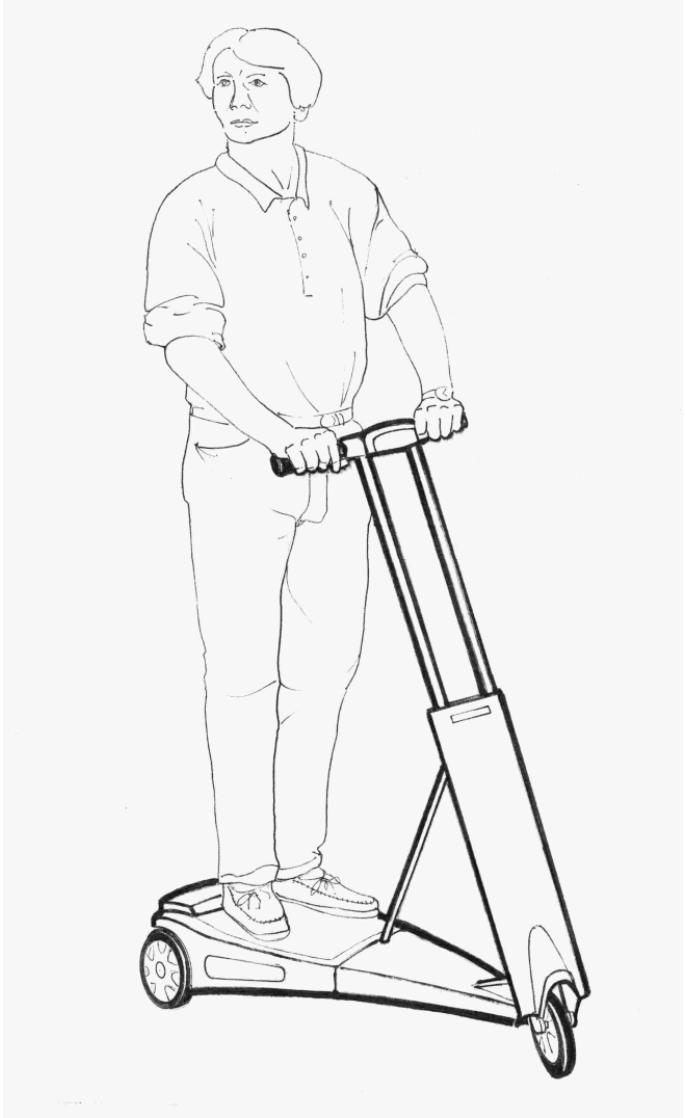
Communicating the Concept

- Verbal description
- Sketch
- Photograph or rendering
- Storyboard
- Video
- Simulation
- Interactive multimedia
- Physical appearance model
- Working prototype

Verbal Description

- The product is a lightweight electric scooter that can be easily folded and taken with you inside a building or on public transportation.
- The scooter weighs about 25 pounds. It travels at speeds of up to 15 miles per hour and can go about 12 miles on a single charge.
- The scooter can be recharged in about two hours from a standard electric outlet.
- The scooter is easy to ride and has simple controls — just an accelerator button and a brake.

Sketch

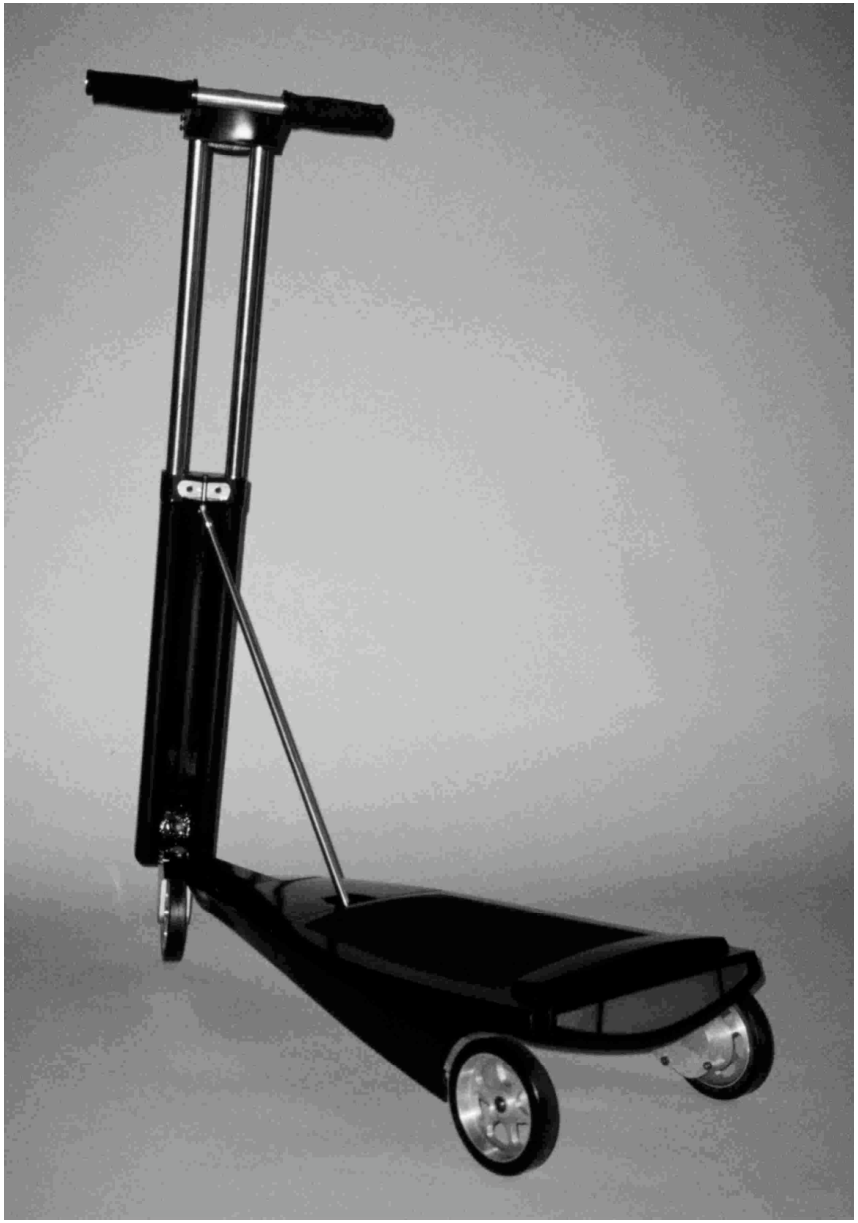


Rendering

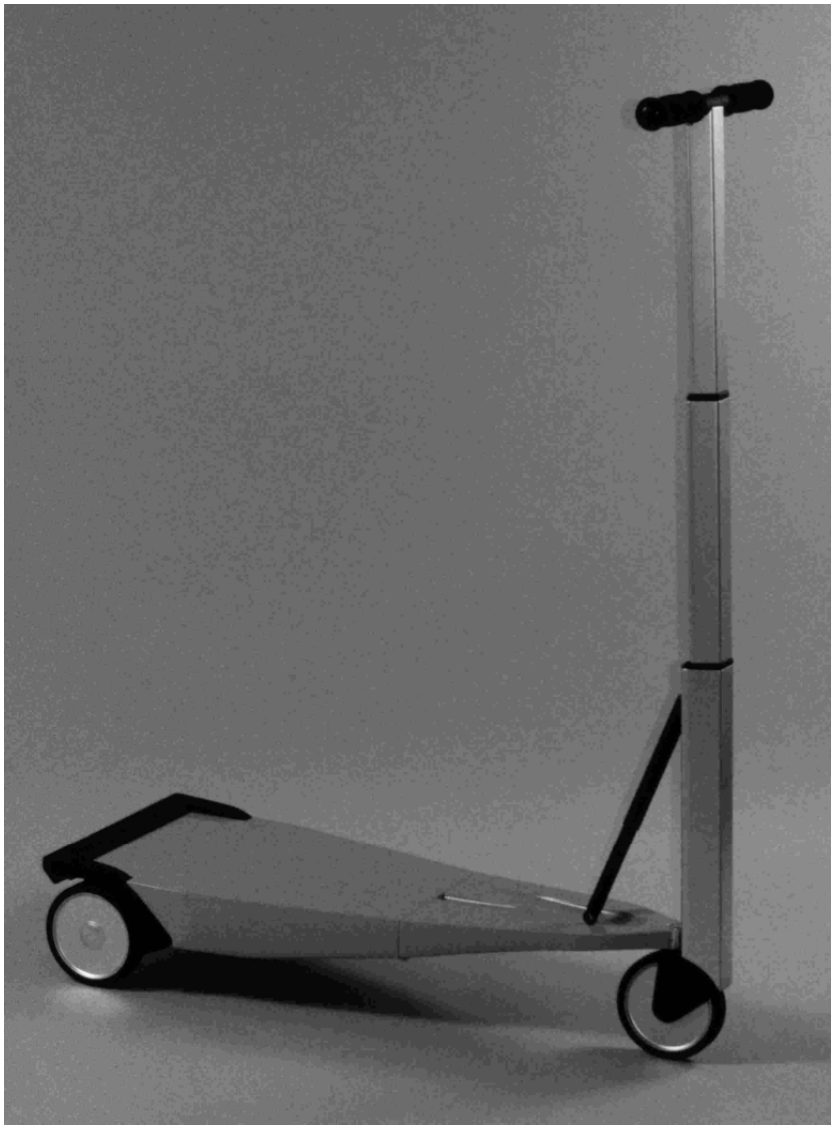
Storyboard


EMpower tranSport
compact storage
portable
transportation
reduced
transit
time

3D Solid CAD Model



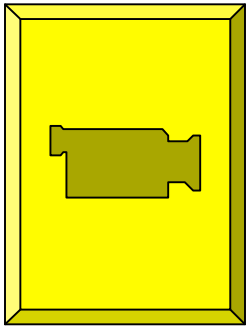
Appearance Model



Working Prototype

Beta Prototype

Video
Animation
Interactive Multimedia
Live Demonstration

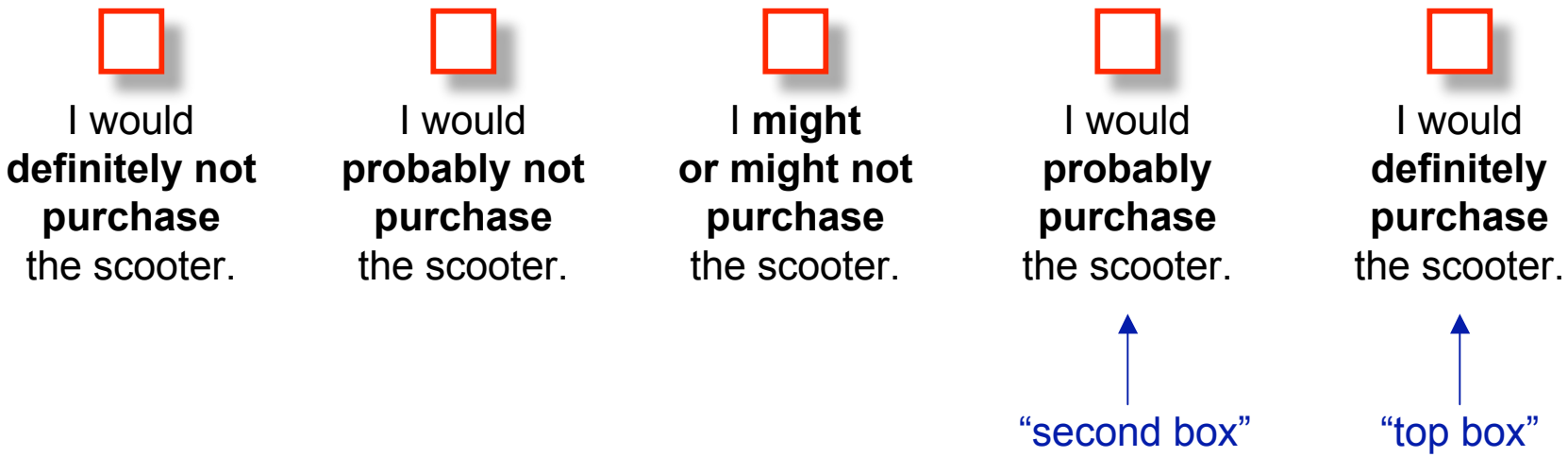


Survey Format

- **PART 1, Qualification**
  - How far do you live from campus?
    - <If not 1-3 miles, thank the customer and end interview.>
  - How do you currently get to campus from home?
  - How do you currently get around campus?
- **PART 2, Product Description**
  - <Present the concept description.>

Survey Format

- **PART 3, Purchase Intent**
  - If the product were priced according to your expectations, how likely would you be to purchase the scooter within the next year?



Survey Format

- **PART 4, Comments**
  - What would you expect the price of the scooter to be?
  - What concerns do you have about the product concept?
  - Can you make any suggestions for improving the product concept?
- **Thank you.**

Interpreting the Results: Forecasting Sales

$$Q = N \times A \times P$$

- Q = sales (annual)
- N = number of (annual) purchases
- A = awareness x availability (fractions)
- P = probability of purchase (surveyed)

$$= C_{def} \times F_{def} + C_{prob} \times F_{prob}$$

"top box" "second box"

Forecasting Example: College Student Market

- N = off-campus grad students (200,000)
- A = 0.2 (realistic) to 0.8 (every bike shop)
- P = 0.4 x *top-box* + 0.2 x *second-box*
- Q =
- Price point $795

Forecasting Example: Factory Transport Market

- N = current bicycle and scooter sales to factories (150,000)
- A = 0.25 (single distributor's share)
- P = 0.4 x *top-box* + 0.2 x *second-box*
- Q = 150,000 x 0.25 x [0.4 x 0.3 + 0.2 x 0.2]
  = 6000 units/yr
- Price point $1500

emPower's Market Decision: Factory Transportation

Production Product

Sources of Forecast Error

- Word-of-Mouth Effects
- Quality of Concept Description
- Pricing
- Level of Promotion
- Competition

Discussion

- Why do respondents typically overestimate purchase intent?
  - Might they ever underestimate intent?
- How to use price in surveys?
- How much does the way the concept is communicated matter?
  - When shouldn't a prototype model be shown?
- How do you increase sales, Q?
- How does early (qualitative) concept testing differ from later (quantitative) testing?

+/- of communicating

- *What are some different ways you could communicate a concept for a new user interface for an automotive audio system? What are the strengths and weaknesses of each approach?*

- Vriens, Marco, Gerard H. Loosschilder, Edward Rosbergen, and Dick R. Wittink, "Verbal versus Realistic Pictorial Representations in Conjoint Analysis with Design Attributes," *Journal of Product Innovation Management*, Vol. 15, p. 455-467, 1998.

Textual description of how the interface would work, with a list of each input/output device and its function.	May be useful to catalog the features and information associated with the user interface.	Since the quality of a user interface is so dependent on the details of its layout and execution, this approach is not likely to result in an accurate test of usability.
Two-dimensional layout of the interface (e.g., sketch or rendering on paper)	Quick and inexpensive to prototype.Useful way to articulate several alternatives.	Will not be able to communicate key functional features of the interface.
Computer simulation in which a computer mouse is used to control the input devices.	Can test interaction (unlike sketches) with the user.Easy to modify to test different versions of the design.	Limited usefulness for testing physical ergonomics.
Comprehensive prototype, both "looks like" and "works like"	Very effective in testing the quality of a completed design.May be the only way to test issues such as "ease of use with gloves on."	May provide misleading results if the execution of the prototype is not very close to the production version of the product.Expensive in time and money.

Estimating N

- *Roughly estimate* N *for the following products. List your assumptions.*
- *·A sleeping pillow for air travelers.*
- *·An electronic weather station (monitoring temperature, pressure, humidity, etc.) for homes.*

Sleeping pillow for air travelers.

Q = N x A x P

- Assume that there are 2000 jumbo jets in service and that most sleeping pillows will be used on jumbo jets. If each jet makes on average two flights per day with an average of 300 passengers, then 600*2000=1,200,000 passenger trips are made each day on jumbo jets. Assume that 25% of these trips are during hours in which people would want to sleep. This leaves 300,000 passenger trips per day in which a sleeping pillow might be used. If we assume that on average, each passenger makes 4 trips per year, then there are 365*300,000/4 = 27,350,000 passengers in the world who could use a travel pillow. Based on observations of behavior on late-night flights, we assume that about 5% of these travelers own sleeping pillows, so the "installed base" is about 1.4 million. If the life of a travel pillow is five years, then the annual sales might be about 273,000 units worldwide. We could use this value for N if our estimated purchase probability is based on consumers who are shopping for a travel pillow.

An electronic weather station for homes

- We know that there are about 8 million homes in the United States with household incomes of greater than $75,000. These are the most likely purchasers of this product. If our concept test will sample affluent households and ask how likely they are to purchase within the next year, then N could be assumed to be 8 million.

$$Q = N \times A \times P$$

Why do you think respondents typically overestimate the likelihood that they will purchase a product?

- Most respondents do not have to actually pay cash to respond to the survey. It is much easier to commit fictitious money than real money. Also, most respondents seem inclined to want to please the surveying entity. Finally, rarely is a product placed right in front of a consumer. They generally have to actually seek it out, which may further erode the probability of purchase.

When might it not be advantageous to communicate the product concept to potential customers using a working prototype? Under what circumstances is it better to use some other format?

- If the prototype is relatively clumsy or unrefined, it may be better to leave the product concept to the respondents imagination. Also, if there is substantial latitude in how the product concept may be implemented, then the team may not wish to bias the results because of an arbitrary choice of implementation.