Concept Testing

Teaching materials to accompany:

Product Design and Development
Chapter 8

Karl T. Ulrich and Steven D. Eppinger
2nd Edition, Irwin McGraw-Hill, 2000.

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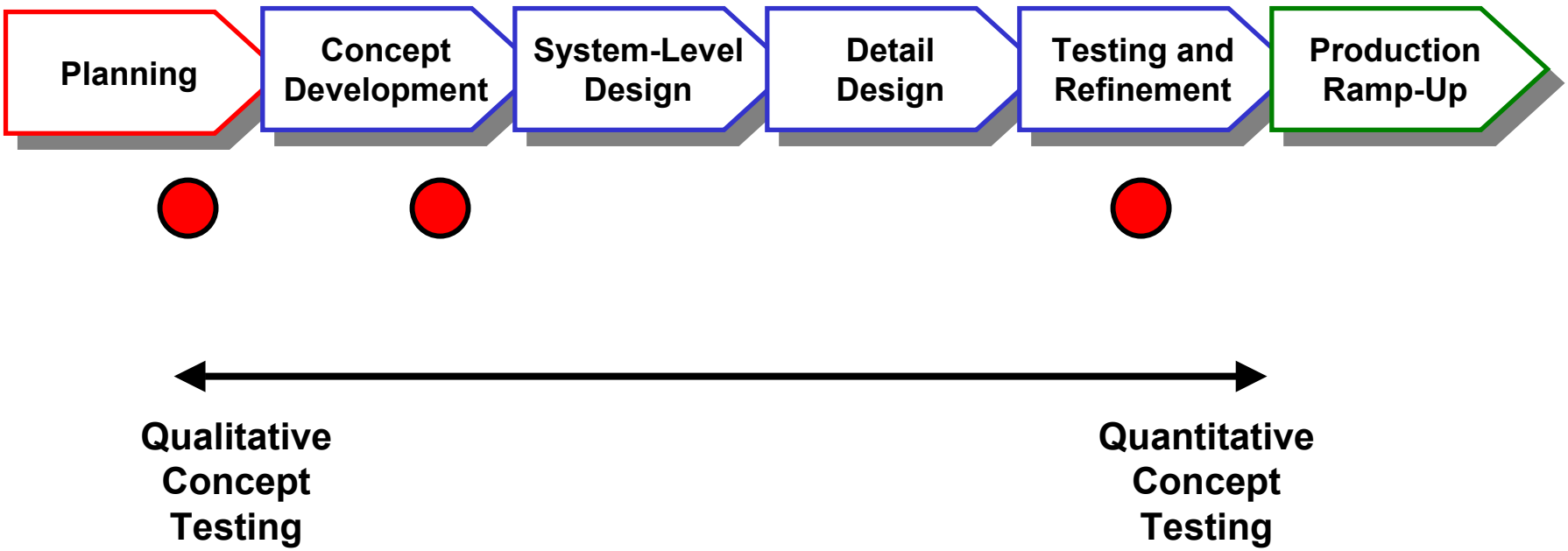
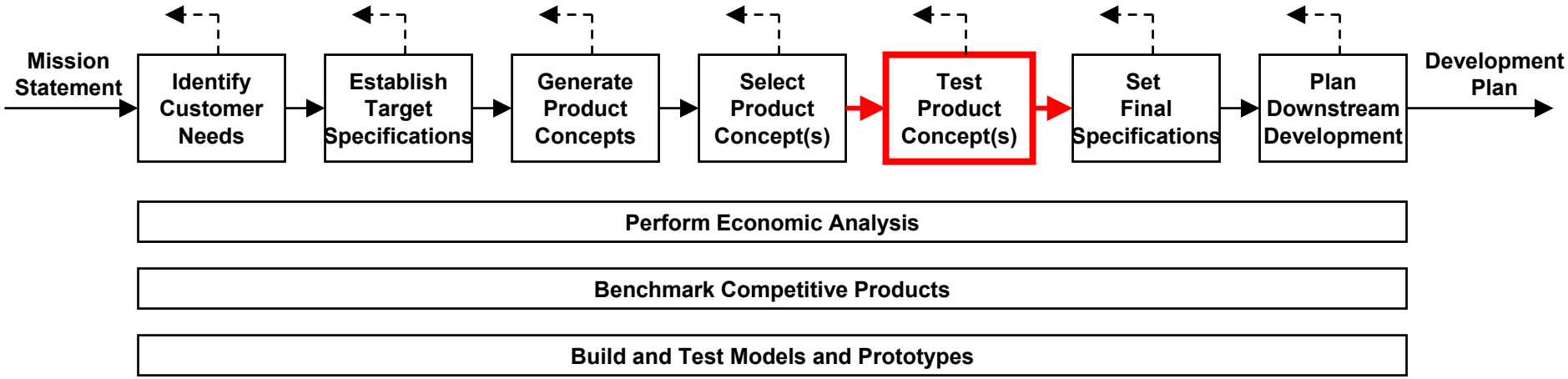
Product Development Process



Concept Development Process



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

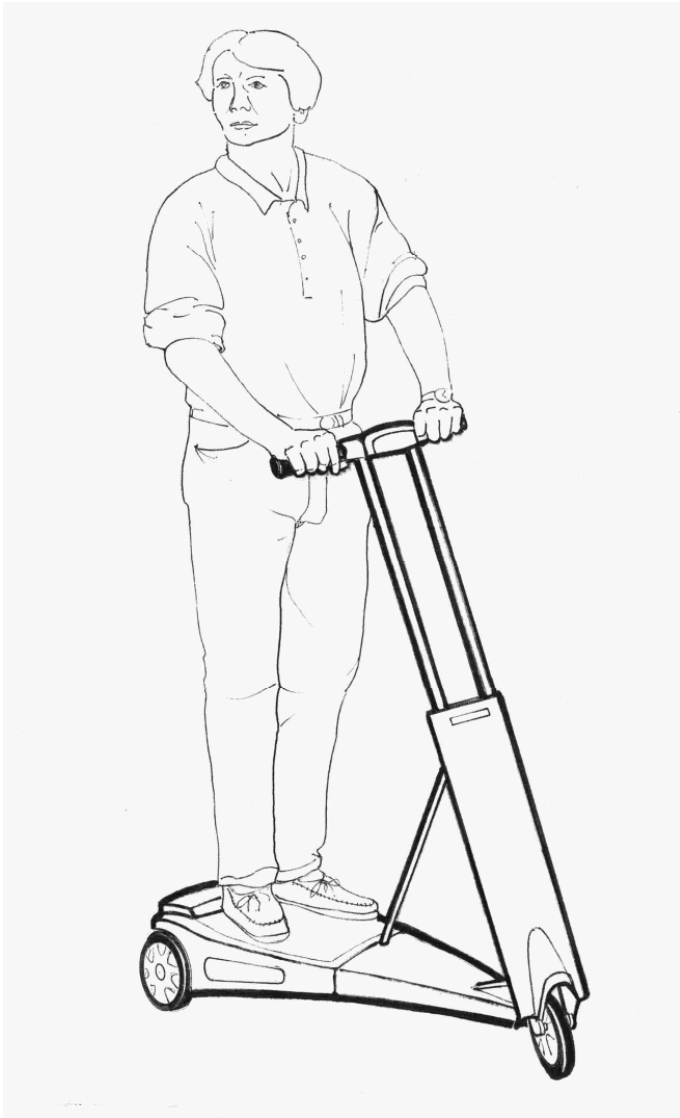
Communicating the Concept

- 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



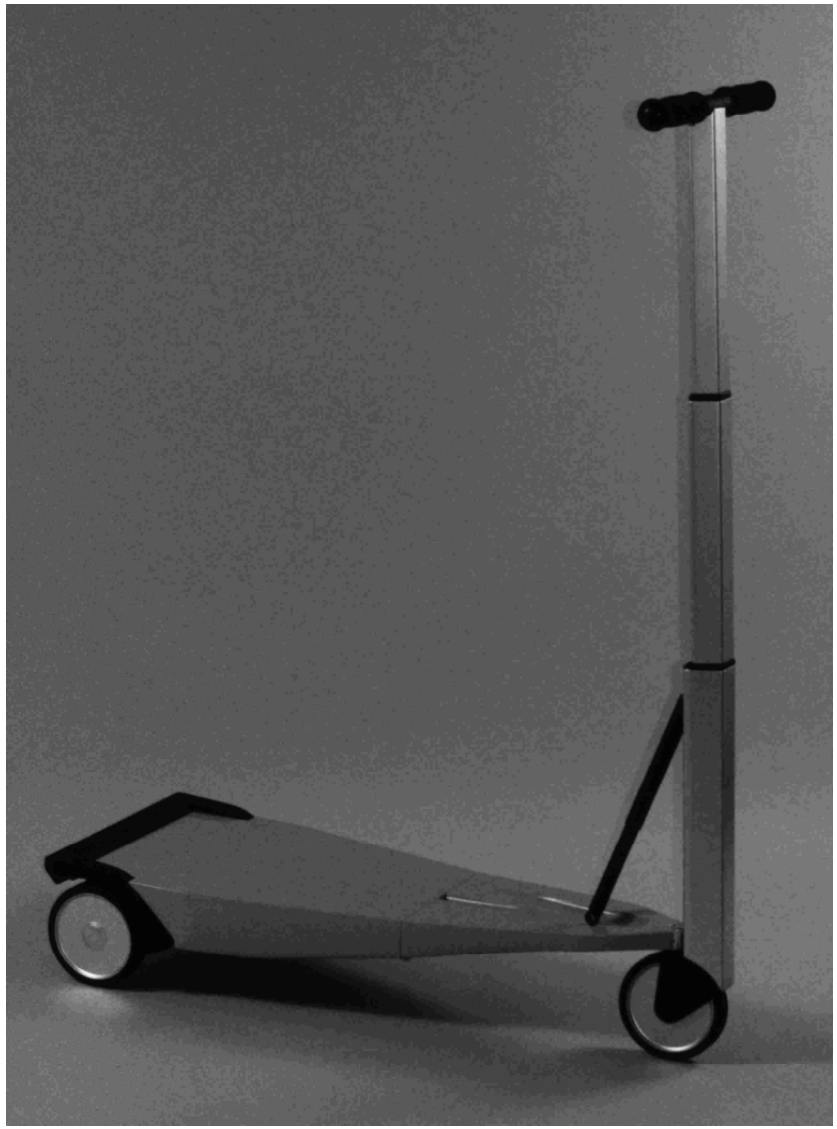
Rendering

Storyboard


EMpower tranSport
compact storage
portable
transportation
reduced
transit
time

3D Solid CAD Model

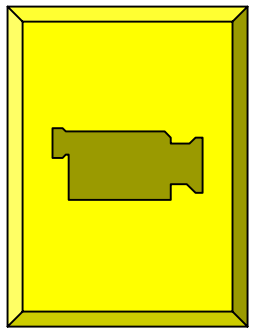
Appearance Model



Working Prototype

Beta Prototype

Video
Animation
Interactive Multimedia
Live Demonstration

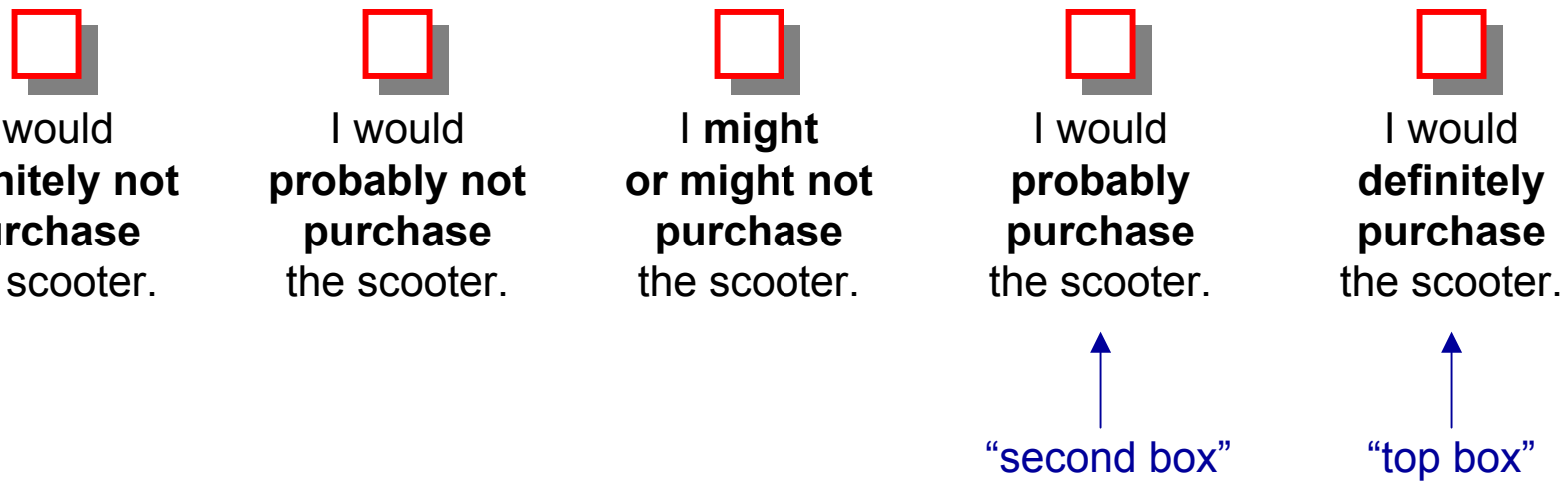


Survey Format

- **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?