

# *Industrial Design*

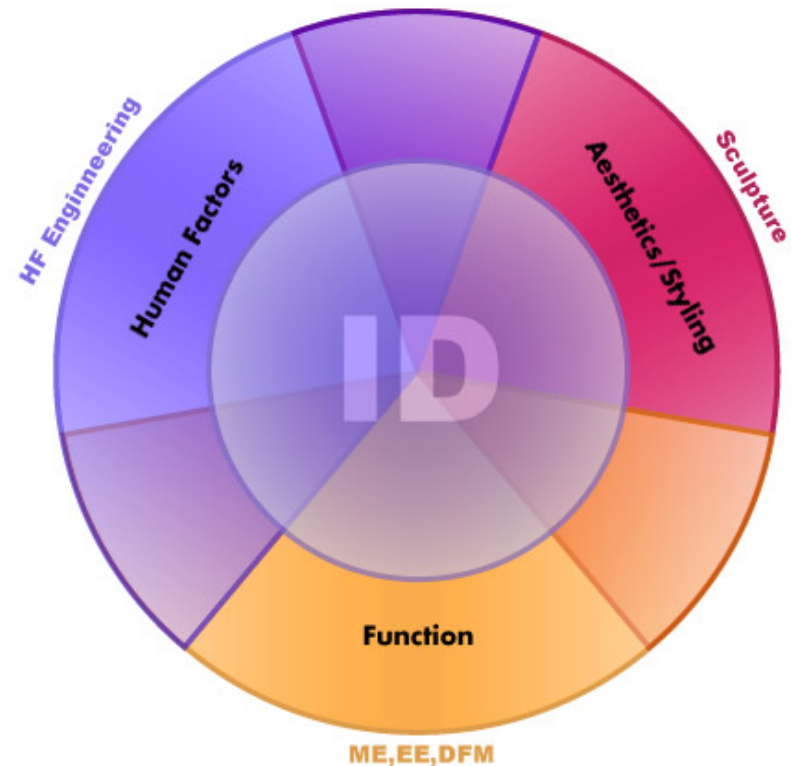
*Matt Kressy*

• *Designturn* •

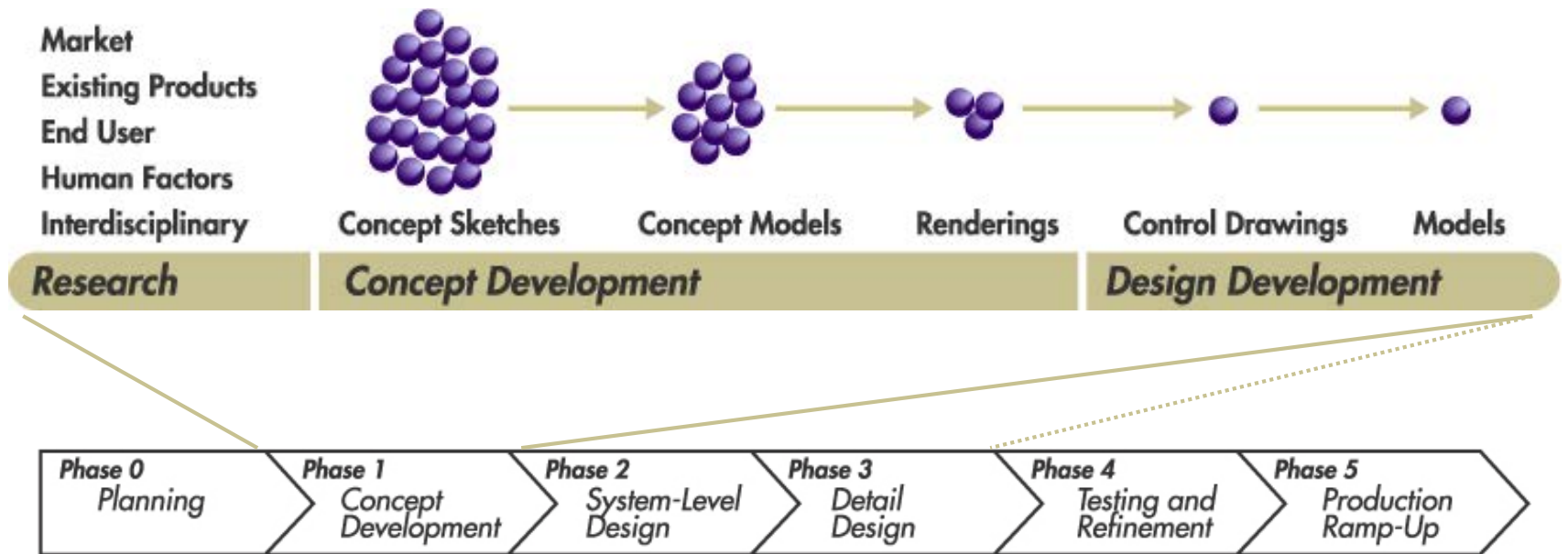


# What is Industrial Design?

- *Mission: Enhance the user's experience*
  - *Form / Aesthetics*
  - *Simplified Functionality*
  - *Improved Human Factors*
  - *Spirit - wow factor, novel, cool, hip, etc.*

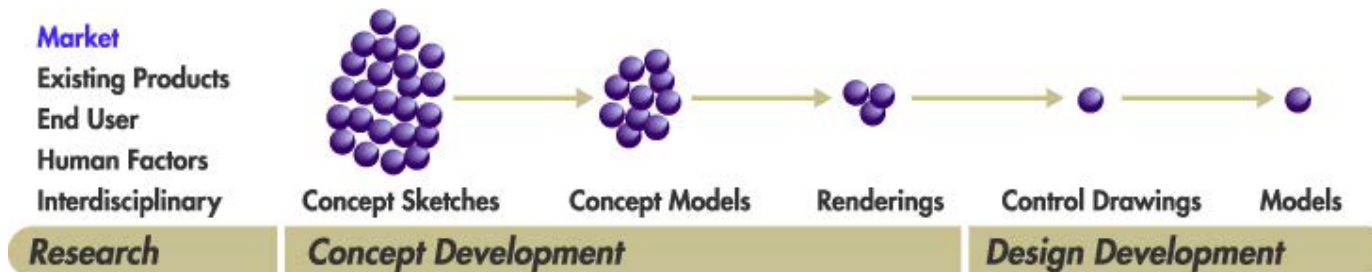


# The Industrial Design Process



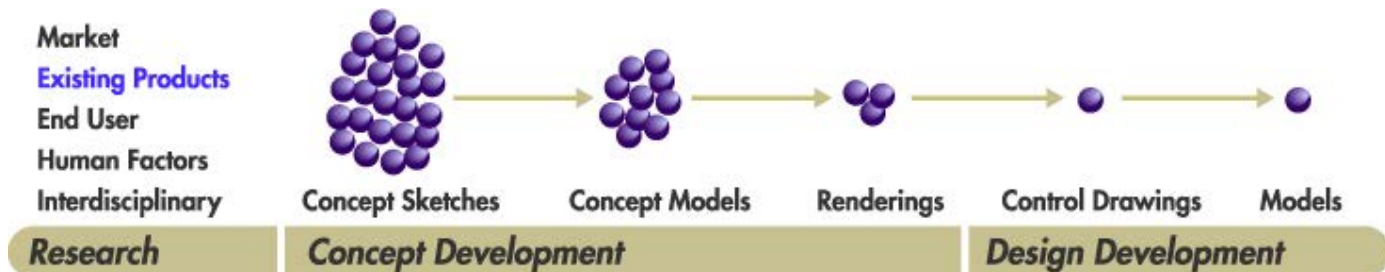
# Research - Market

- *Demographics*
  - *Who uses it*
  - *Who buys it*
  - *Who experiences it*
- *Social and cultural factors*
  - *Barbies or Harleys*
- *Aesthetic parameters*
  - *Current vocabulary*
  - *Trends*
- *Environmental factors*
  - *Responsible materials*
  - *DFR*



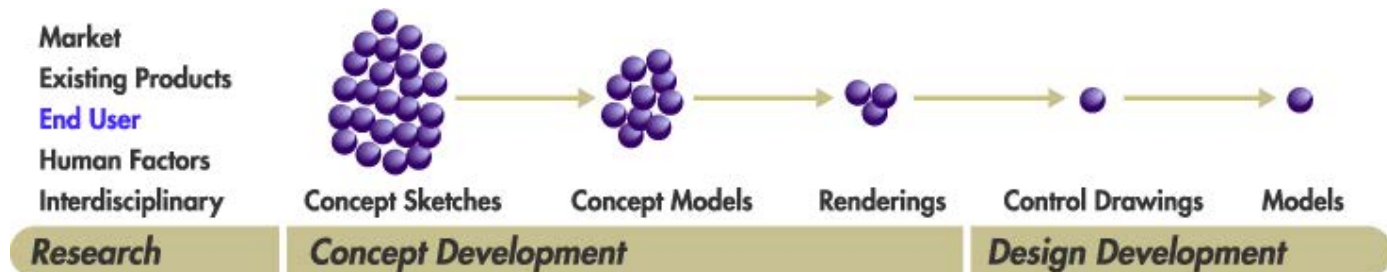
# Research - Existing Products

- *Reverse engineering*
  - *Aesthetics*
  - *Functional behaviors*
  - *Mechanical features*
  - *Materials*
  - *Manufacturing processes*
- *Product positioning*
  - *Features and pricing*



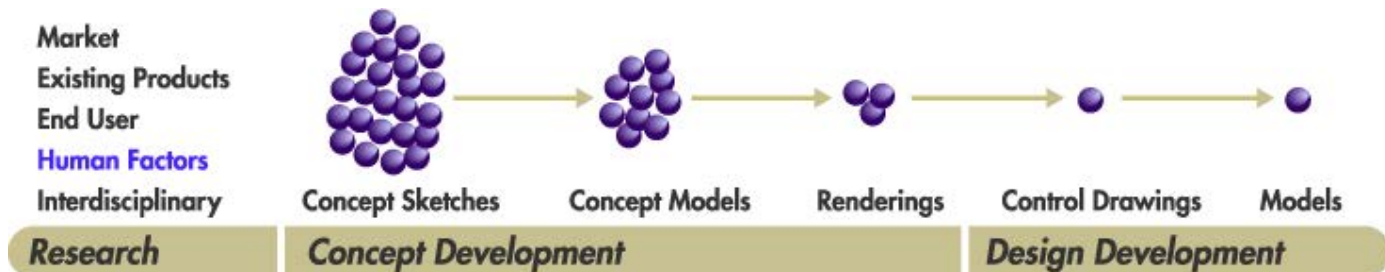
# Research - End User

- *Environment*
  - *Physical*
  - *Psychological*
- *Observation of Use*
  - *Features actually used and their hierarchy*
  - *Misuse*
  - *Time-motion study*
- *Create Dialog with User*
  - *Ask for ongoing feedback*
  - *Visit them frequently*



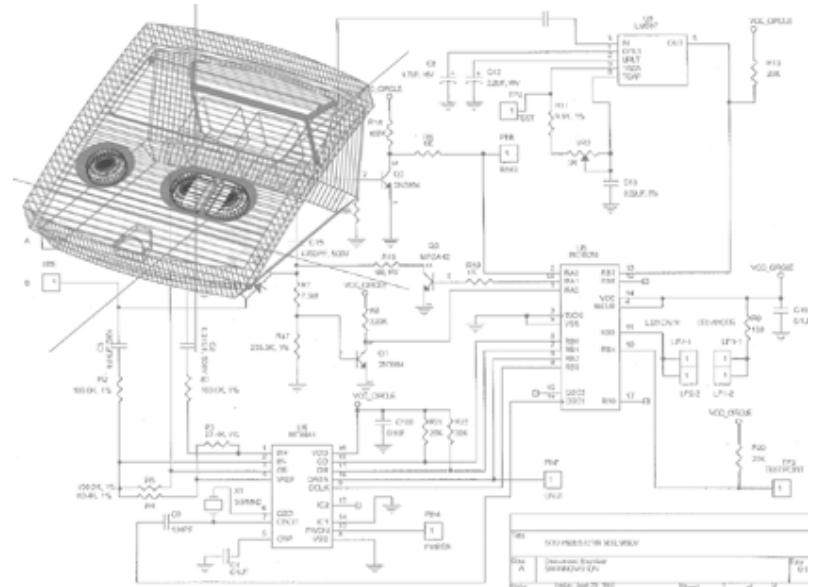
# Research - Human Factors

- *Ergonomics*
  - *Physical interface*
  - *GUI*
  - *Tactile feedback*
- *Intuitive Use*
  - *Form communicates function*
  - *Product graphics*
  - *Icons and visual consistencies*



# Research - Interdisciplinary Integration

- *Mechanical requirements*
  - *Product architecture*
  - *Component envelopes*
- *Electrical requirements*
  - *RF or EMR constraints*
  - *Thermal constraints*
- *Manufacturing requirements*
  - *Cost*
  - *Preferred processes*



Market  
Existing Products  
End User  
Human Factors  
Interdisciplinary



Concept Sketches



Concept Models



Renderings



Control Drawings



Models

Research

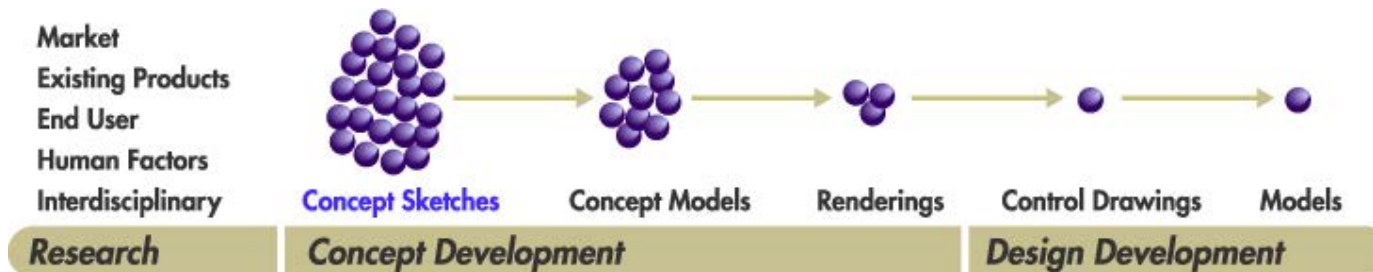
Concept Development

Design Development



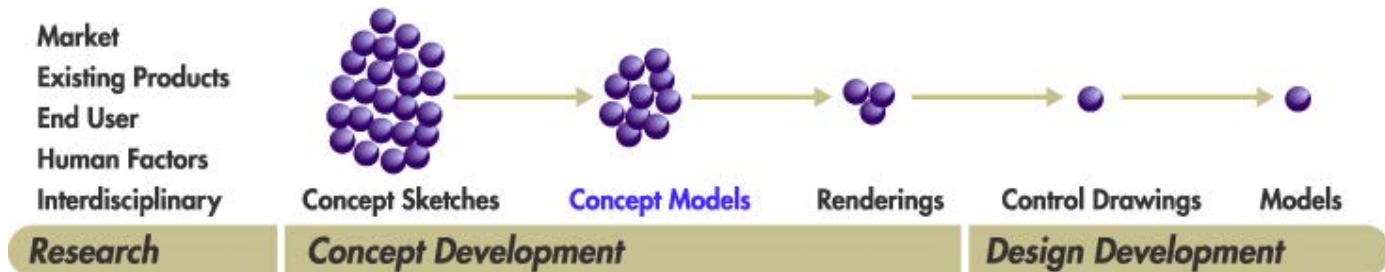
# Concept Development - Sketches

- *Benefits*
  - *Fast and iterative*
  - *Synthesize the research*
  - *Functional and aesthetic conceptualization*
- *Techniques*
  - *Pen, marker, colored pencil*
  - *Trace, white paper, newsprint*



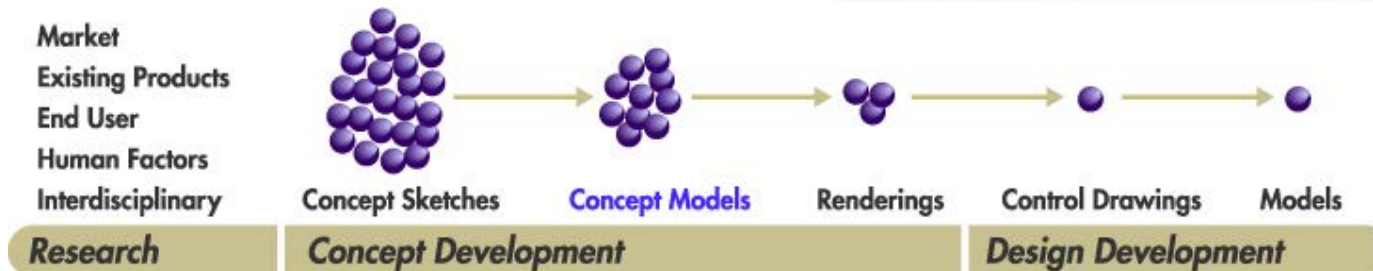
# Concept Development - Form Models

- *Benefits*
  - *Fast and iterative*
  - *Ergonomic evaluation*
  - *Form evaluation*
- *Techniques*
  - *Foamboard insulation, Foamcore*
  - *Found objects, existing parts*
  - *Pine strapping, bricks*
  - *Hot glue, double stick tape, sheet rock screws*



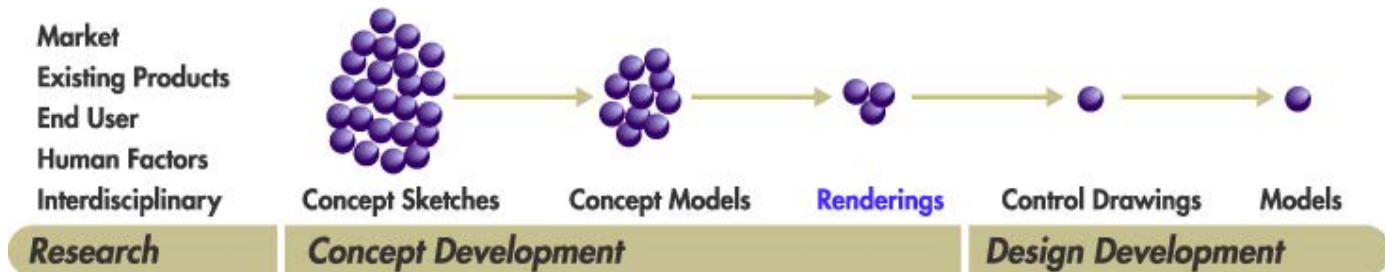
# Concept Development - Ergonomic Models

- *Human Factor Studies*
  - *Height*
  - *Weight*
  - *Articulating parts*



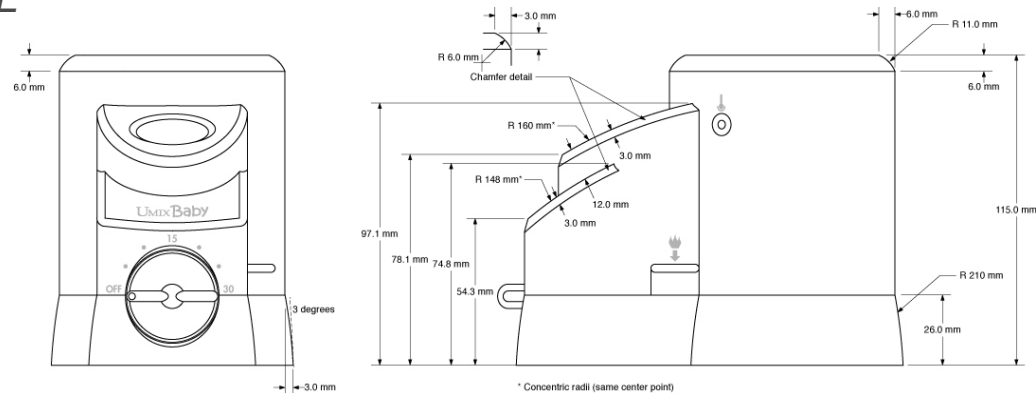
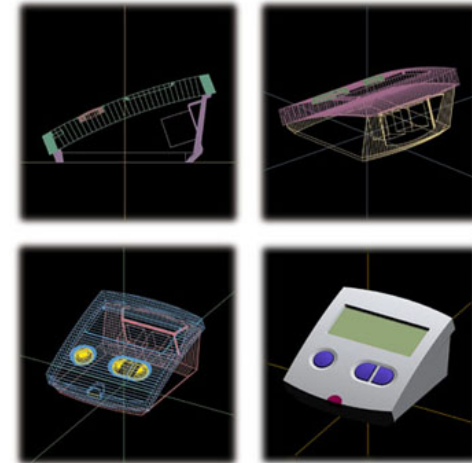
# Concept Development - Renderings

- *Benefits*
  - *Styling subtleties*
  - *Product Graphics*
  - *Can be used as a sales tool and in focus groups*
- *Techniques*
  - *Markers and bond*
  - *Colored pencil*
  - *2D illustration programs*
  - *3D rendering programs*

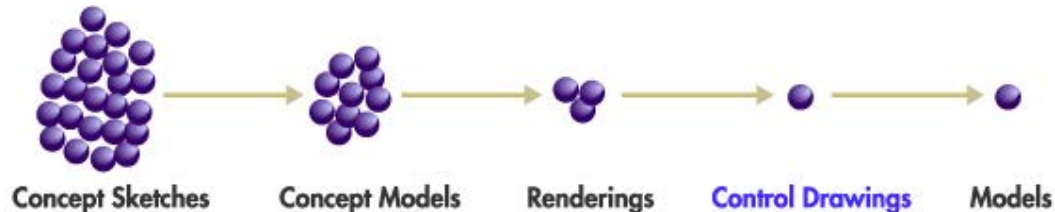


# Design Development - Control Drawings

- *Benefits*
  - *Communicates ID downstream*
- *Techniques*
  - *Classic drafting tools*
  - *Dimensioned 2D computer drawings*
  - *3D files - IGS, STL*



Market  
Existing Products  
End User  
Human Factors  
Interdisciplinary



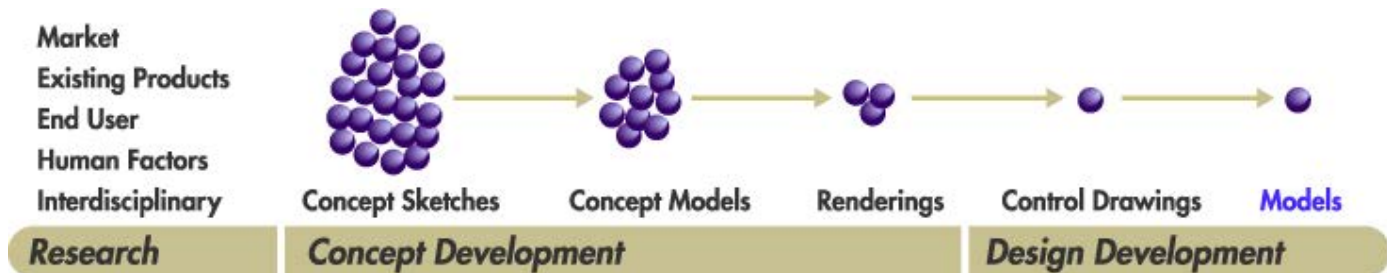
**Research**

**Concept Development**

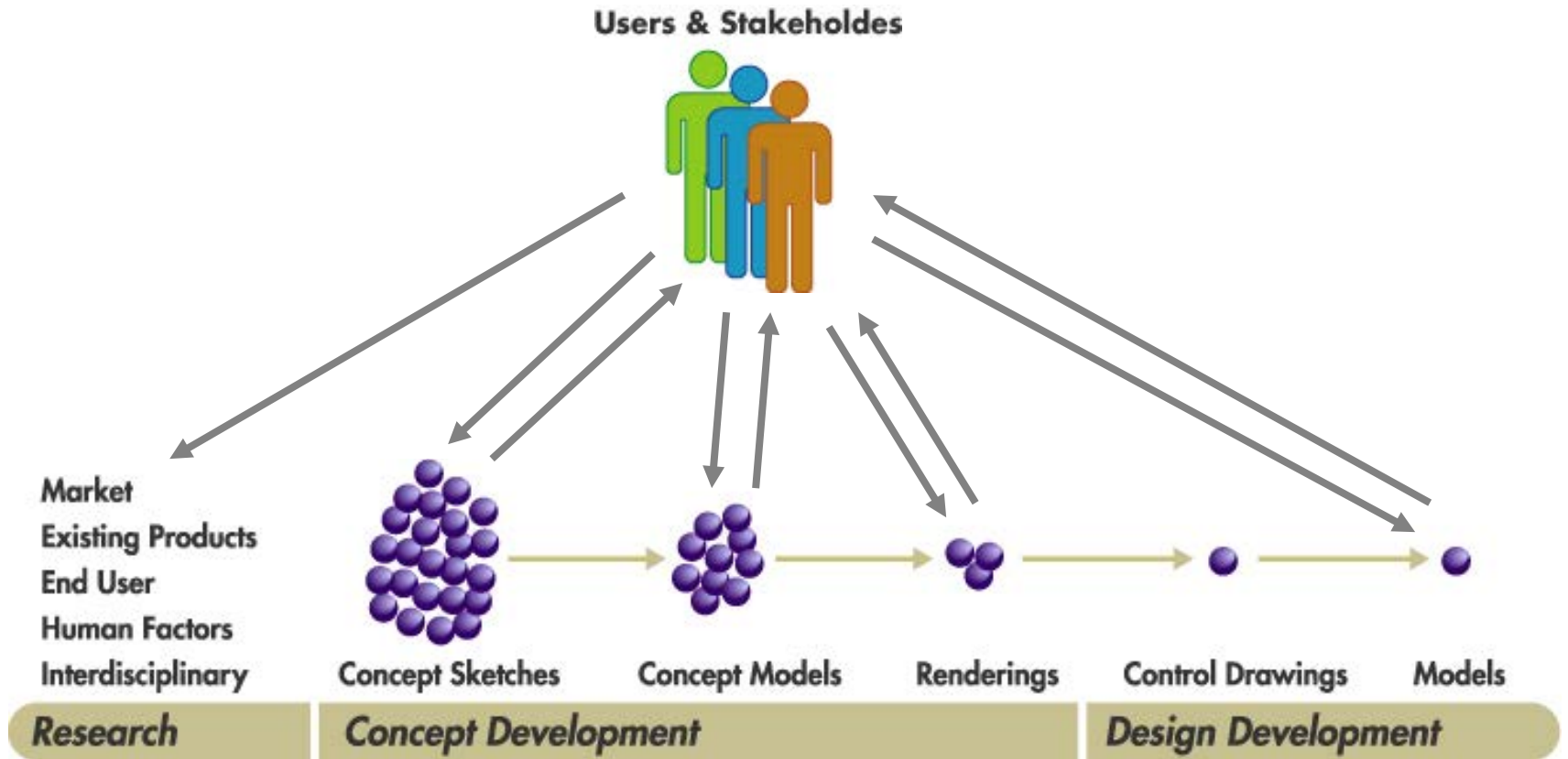
**Design Development**

# Design Development - Hard Models

- *Benefits*
  - *Represents final aesthetic and function*
  - *Not necessarily a prototype*
- *Techniques*
  - *Rapid prototyping processes*
  - *Rubber molds*
  - *Hand building and milling*
  - *Spray paint*
  - *Dry transfers*



# User Feedback



# *What is a Successful Design?*

- *Completely committed to a particular human need (or market)*
  - *Function*
  - *Form*
  - *Ergonomics*
  - *Emotion*
- *Must be honest*
- *Cannot completely fail on any one attribute*



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