Industrial Design

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What is Industrial Design?

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

- *ID the discipline v. ID the service*

Examples A

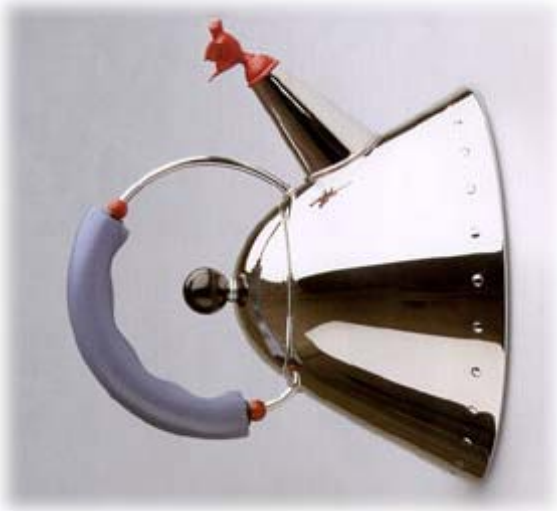
Footware

Sports car

iMac computer

All photos courtesy of Allesi S.P.A. Products

Kettle with purple bird shaped whistle



Merdolino Toilet Brush

Examples B

Dr.Skud Flyswatter

Examples C

Ultrasound machine

Wire Manufacturing Machine

Examples D

Bicycle

Aeron Work Chair

Examples E

Sports utility vehicle

Medical equipment

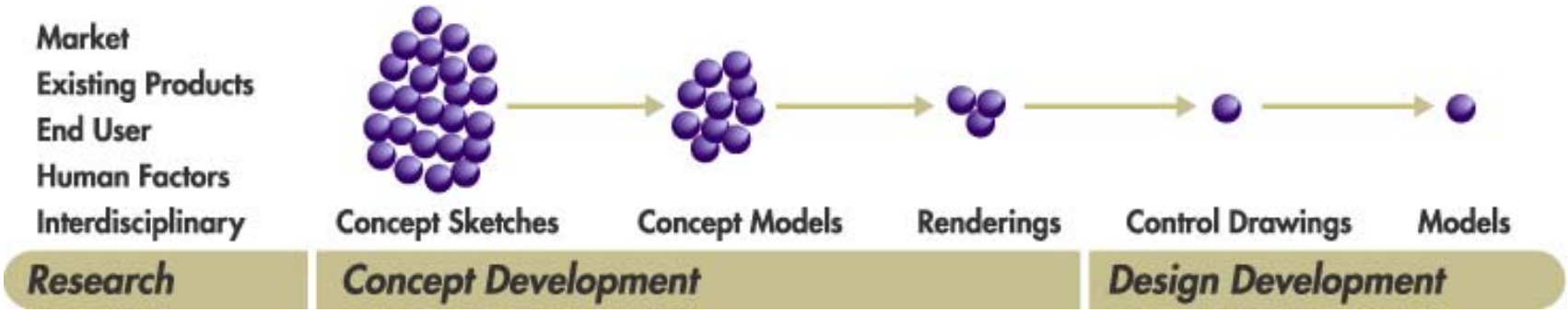
Discussion Questions

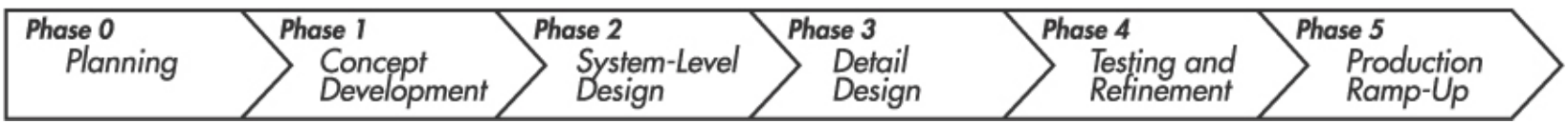
- *How do the examples express the ID mission?*

- *How does the ID process differ for some of these products?*

The Industrial Design Process

Caller ID device

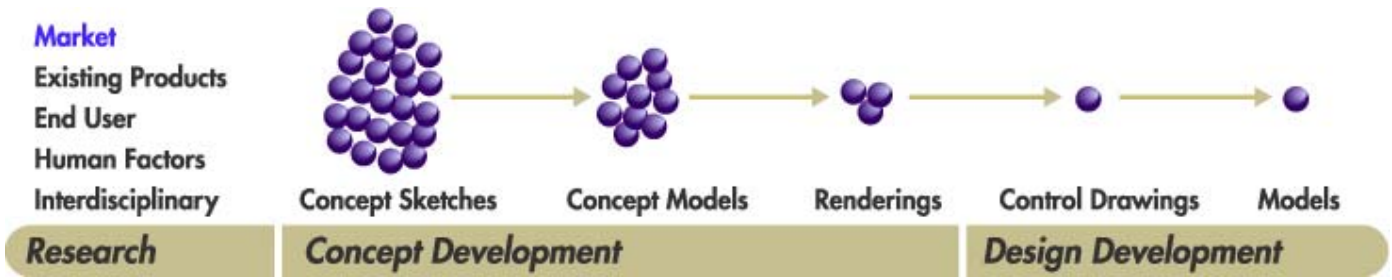




Research - Market

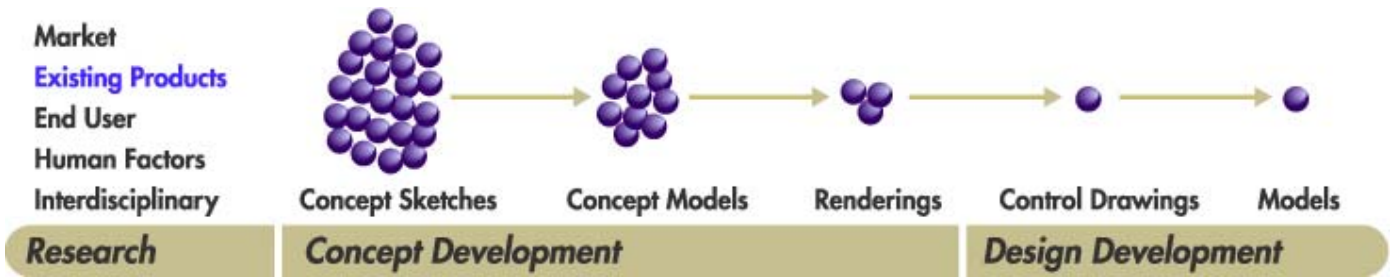
- Demographics
  - Who uses it
  - Who buys it
- Social and cultural factors
  - Barbies or Harleys
- Aesthetic parameters
  - Current vocabulary
  - Trends
- Applicable technologies
- Environmental factors
  - Responsible materials
  - DFR

Trade show



Research - Existing Products

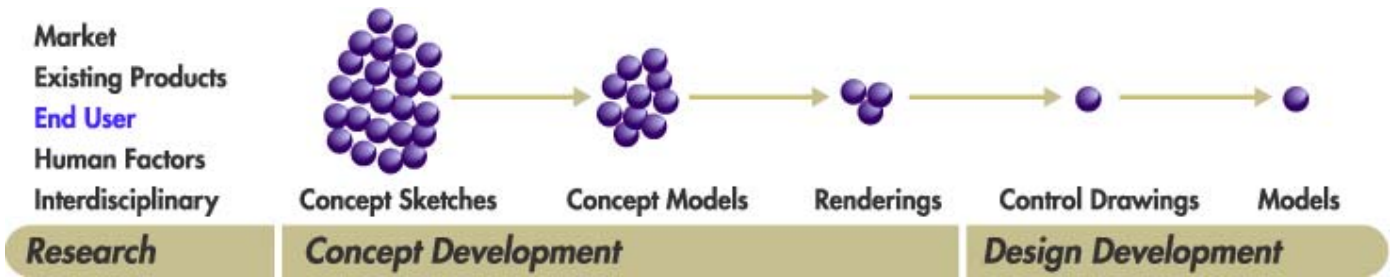
- *Reverse engineering*
  - *Aesthetics*
  - *Functional behaviors*
  - *Mechanical features*
  - *Materials*
  - *Manufacturing processes*
- *Product positioning*
  - *Features and pricing*



Research - End User

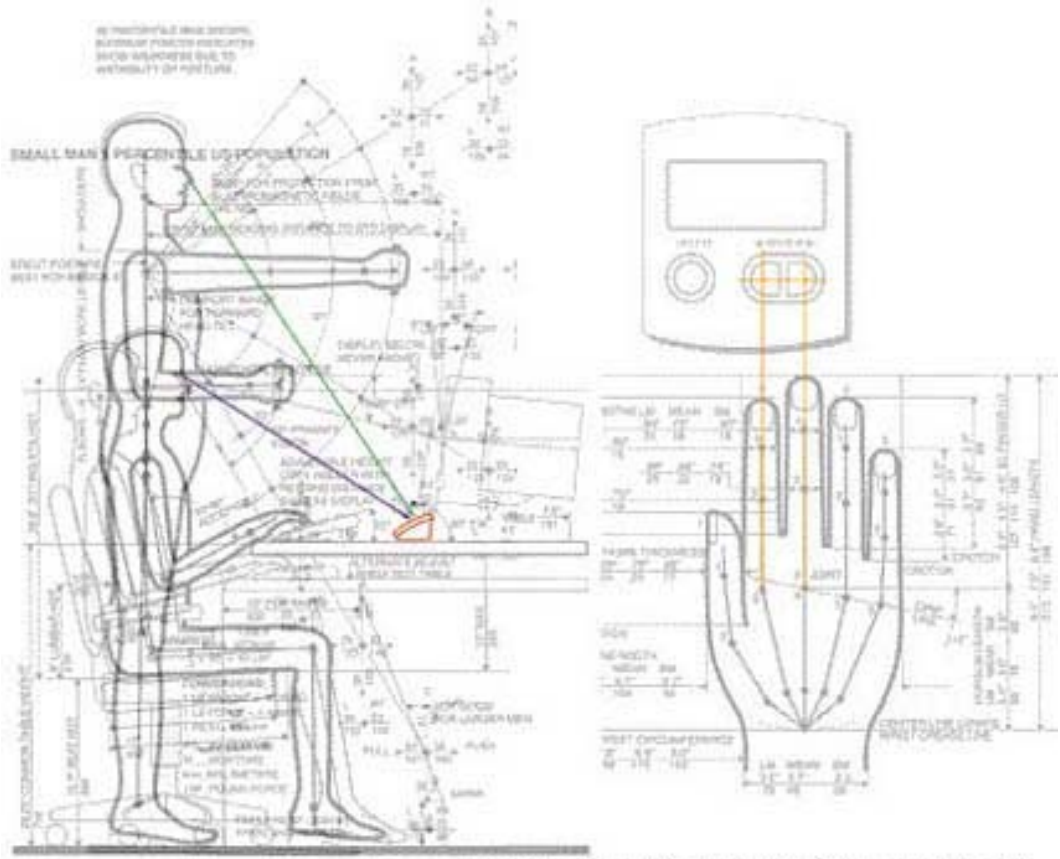
- *Environment*
  - *Physical*
  - *Psychological*
- *Observation of Use*
  - *Features actually used and their hierarchy*
  - *Misuse*
  - *Time-motion study*

Physical environment

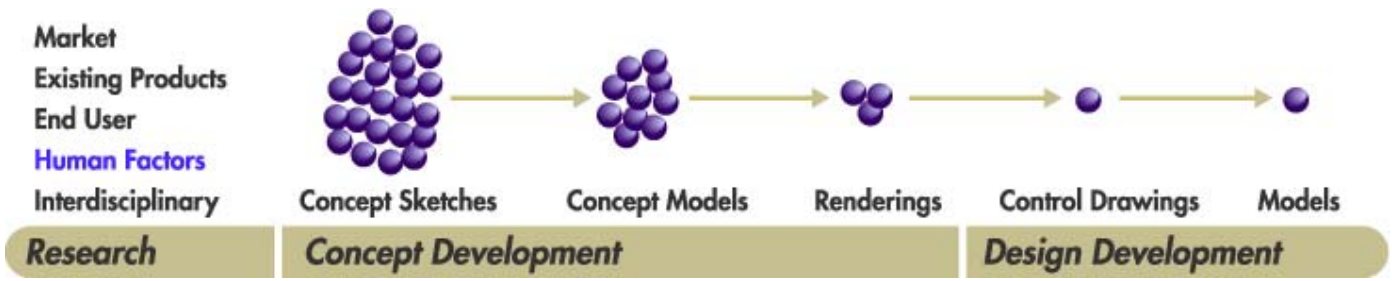


Research - Human Factors

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

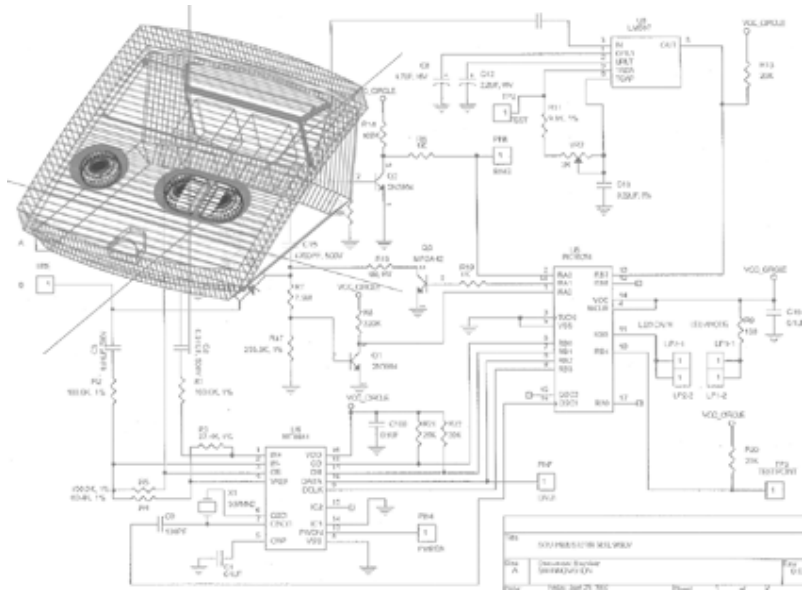


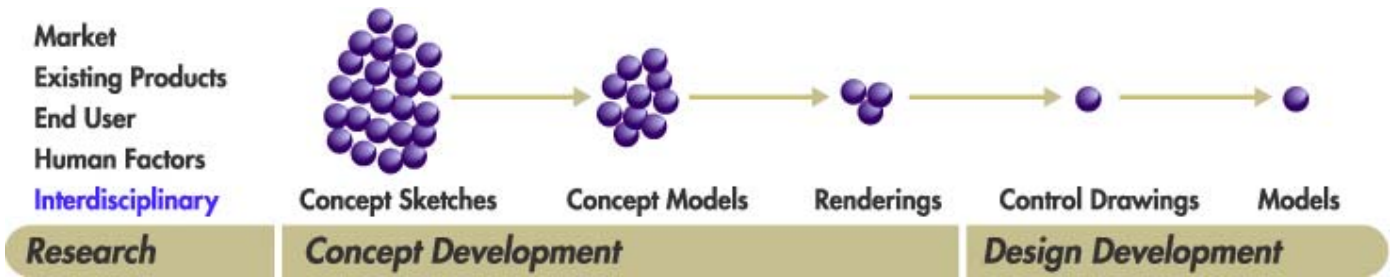
Excerpted from "The Measure of Man and Woman".



Research - Interdisciplinary Integration

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

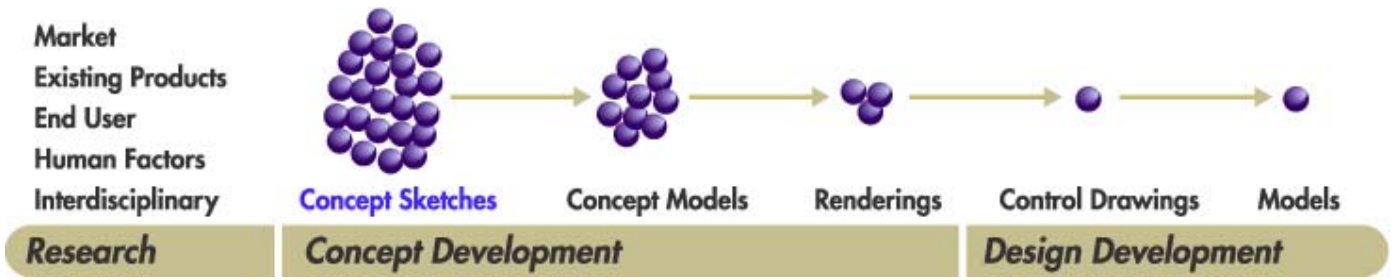




Concept Development - Sketches

- *Benefits*
  - *Fast and iterative*
  - *Synthesize the research*
  - *Functional and aesthetic conceptualization*

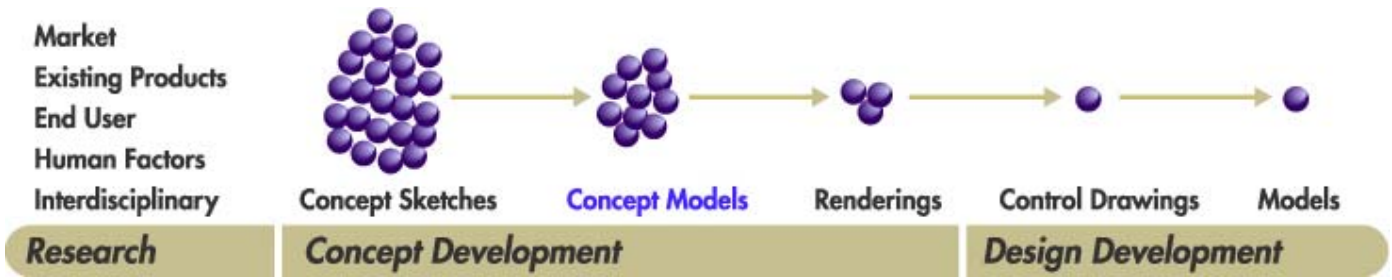
- *Techniques*
  - *Pen, marker, colored pencil*
  - *Trace, white paper, newsprint*



Concept Development - Models

- *Benefits*
  - *Fast and iterative*
  - *Ergonomic evaluation*
  - *Form evaluation*

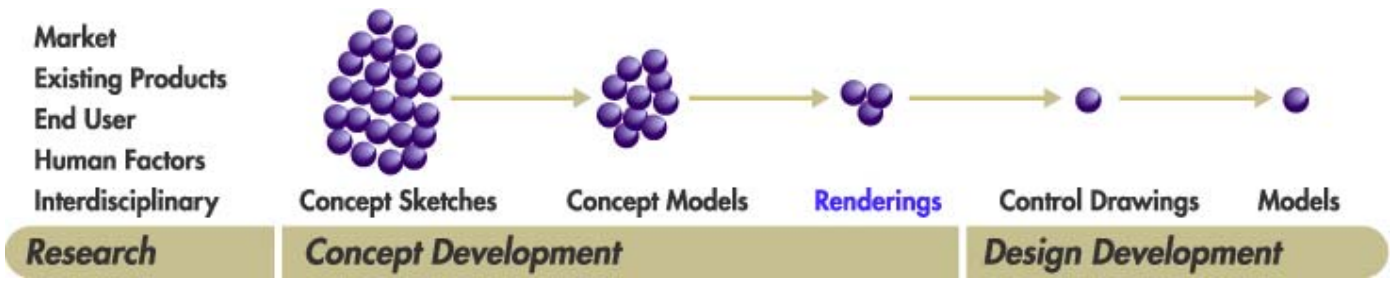
- *Techniques*
  - *Foamboard insulation, Foamcore*
  - *Found objects, existing parts*
  - *Pine strapping, bricks*
  - *Hot glue, double stick tape, sheet rock screws*



Concept Development - Renderings

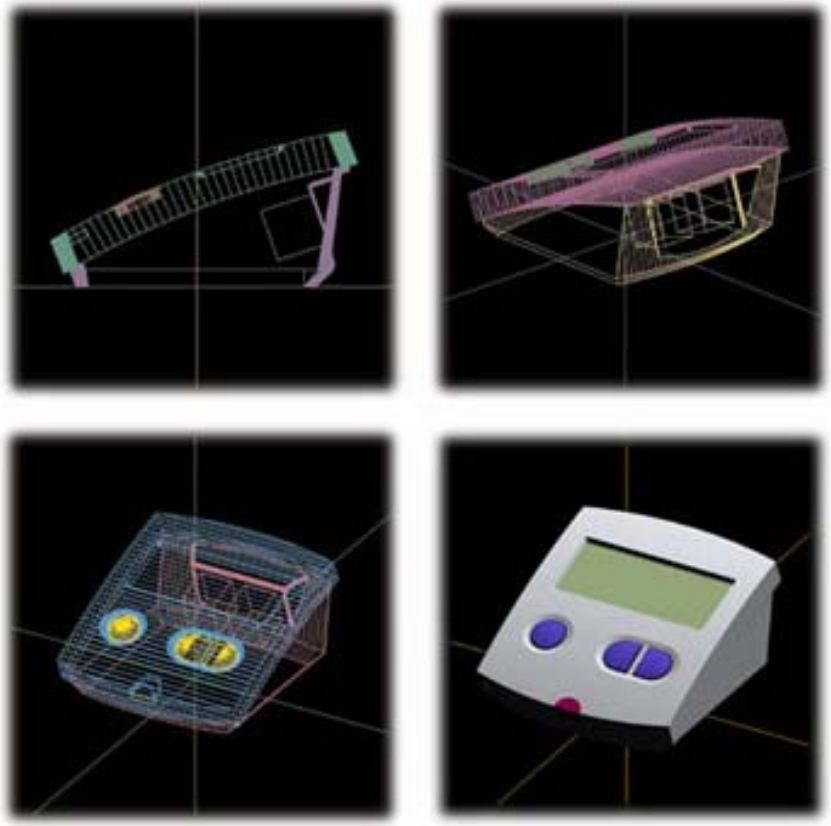
- *Benefits*
  - *Styling subtleties*
  - *Product Graphics*
  - *Can be used as a sales tool and in focus groups*

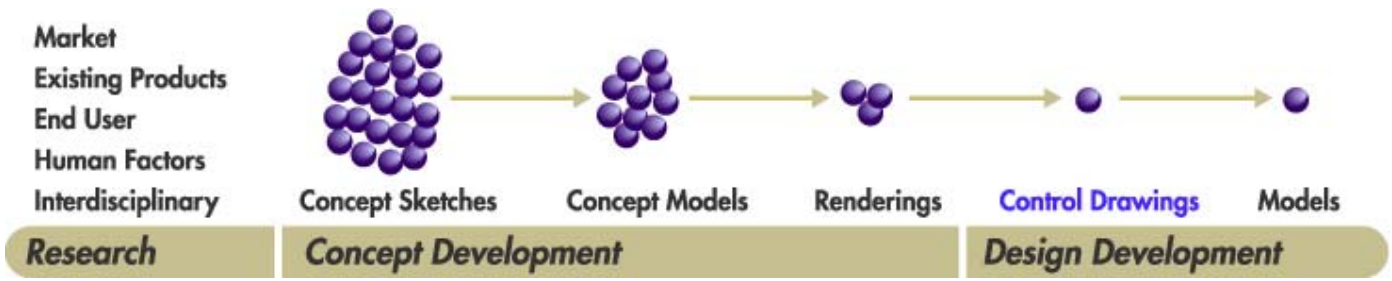
- *Techniques*
  - *Markers and bond*
  - *Colored pencil*
  - *2D illustration programs*
  - *3D rendering programs*



Design Development - Control Drawings

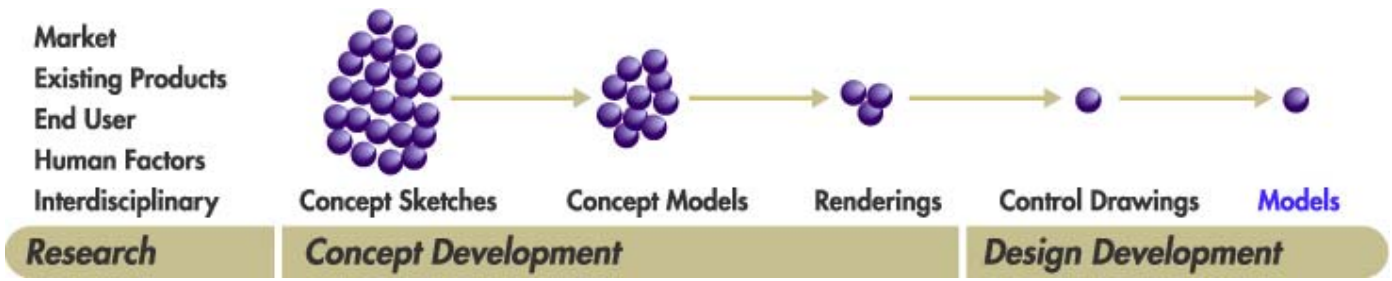
- *Benefits*
  - *Communicates ID downstream*
- *Techniques*
  - *Classic drafting tools*
  - *Dimensioned 2D computer drawings*
  - *3D files - IGS, STL*





Design Development - Hard Models

- *Benefits*
  - *Represents final aesthetic and function*
  - *Not necessarily a prototype*
- *Techniques*
  - *Hand tools*
  - *Machine tools*
  - *Rapid prototyping processes*
  - *Spray paint*
  - *Dry transfers*



Projects

- *Decent amount concept iterating*
  - *15 Concept Sketches*
  - *3+ Concept Models (Foam, cardboard, etc.)*
  - *1+ Renderings*

- *ID content in the final design*