Sustainable Product Design: Getting to Campus

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Oregon State University
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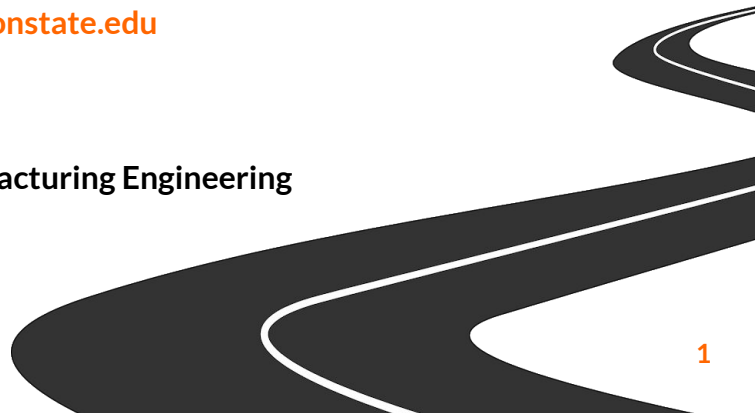
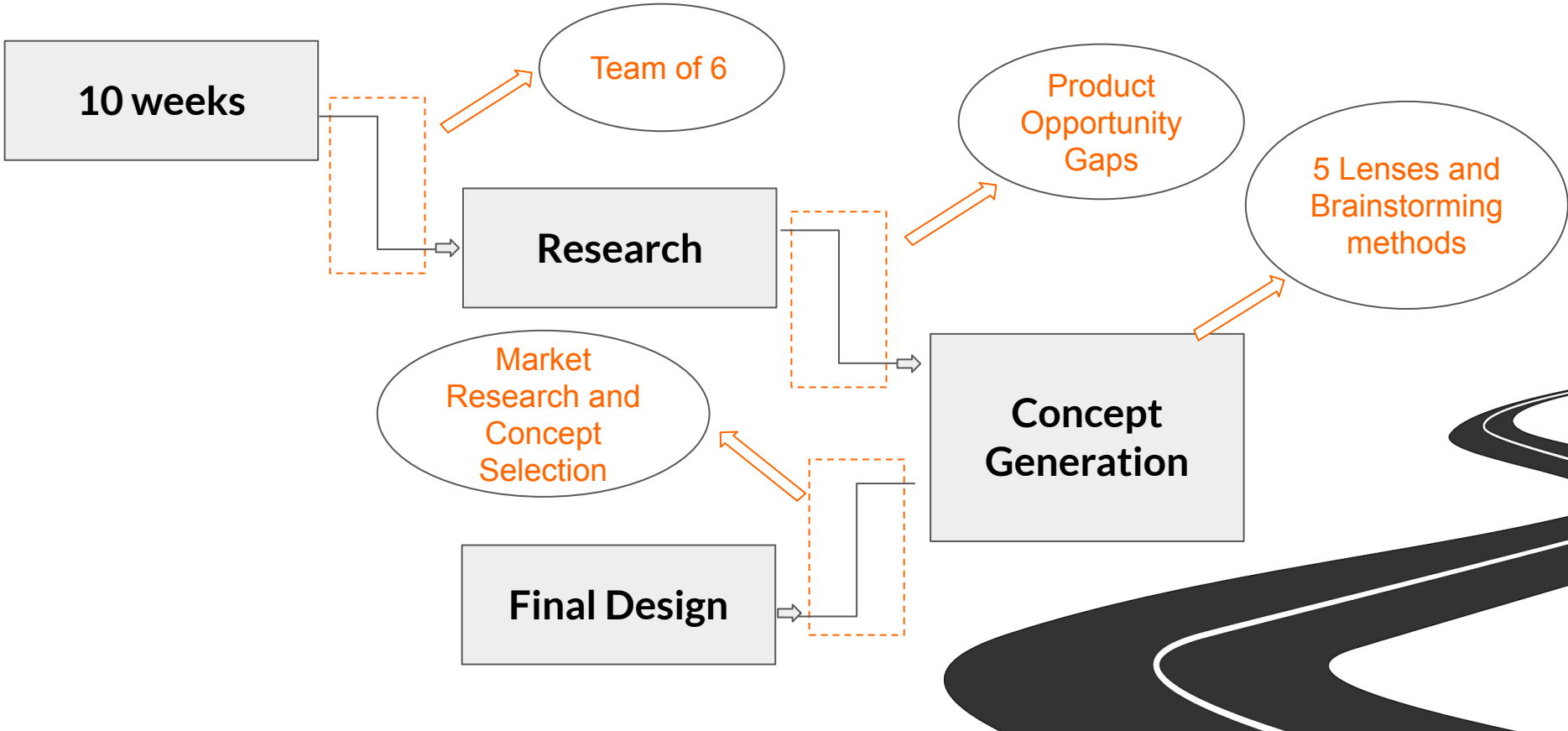
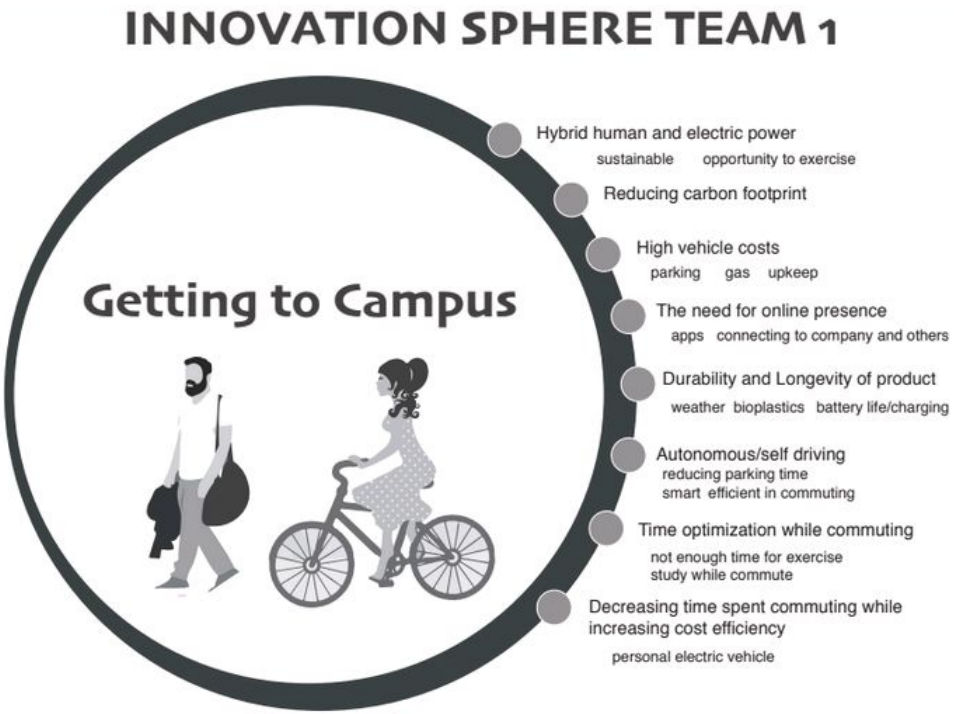


Sustainable Product Development

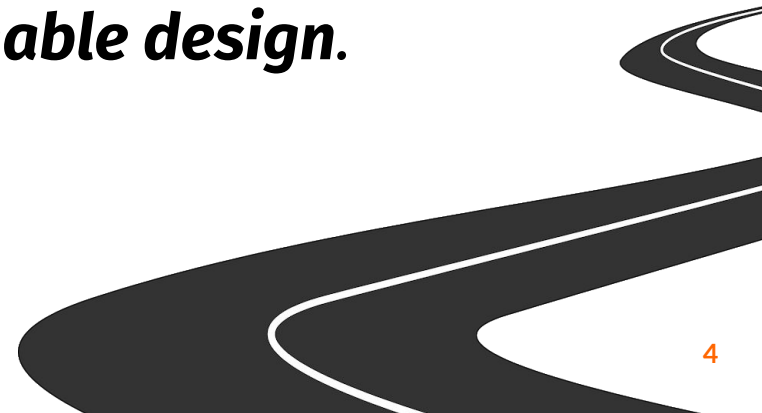


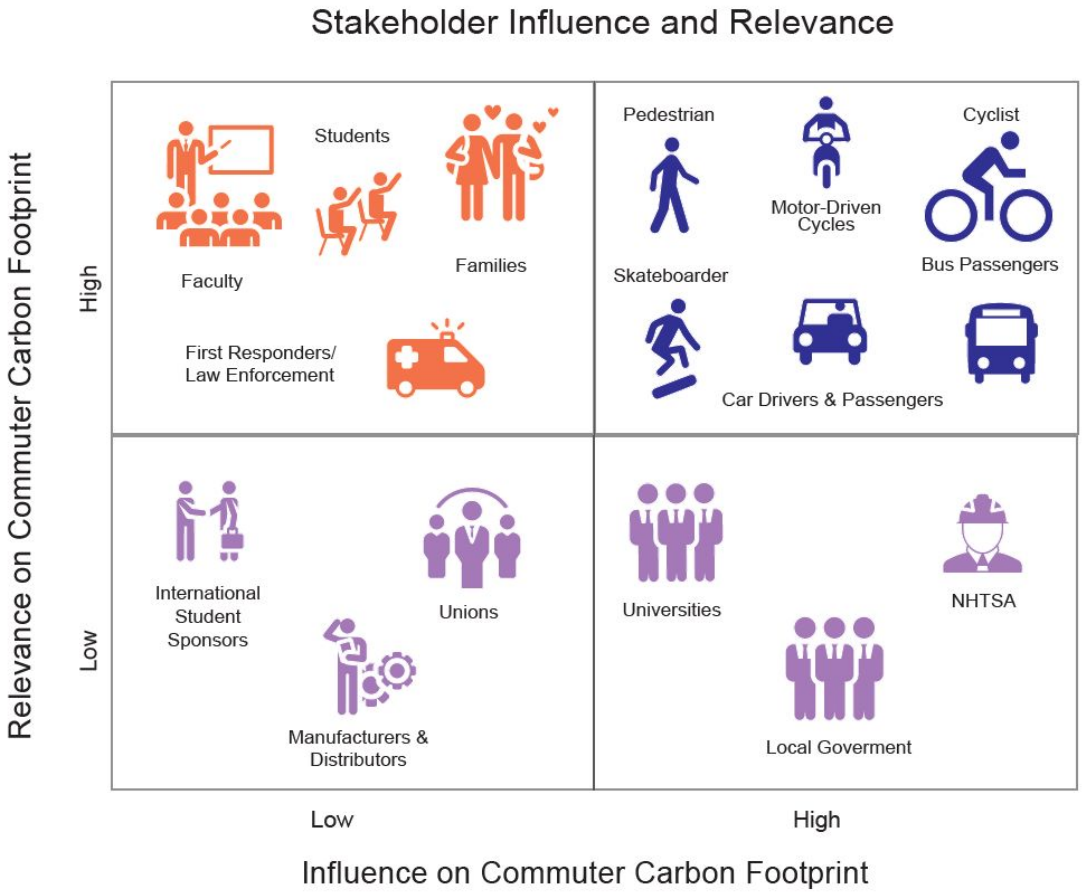
Product Opportunity: Getting to Campus



Opportunity statement

*There is an opportunity to **reduce the carbon footprint** and **ease parking frustrations** in commuting by creating a product that improves **ease, safety, and comfort** of **human powered transportation**, while maintaining **high aesthetic value and a focus on sustainable design**.*




Stakeholder Influence and Relevance
Relevance on Commuter Carbon Footprint
High
Low
Students
Faculty
Families
First Responders/
Law Enforcement
Pedestrian
Cyclist
Motor-Driven
Cycles
Skateboarder
Bus Passengers
Car Drivers & Passengers
International
Student
Sponsors
Unions
Manufacturers &
Distributors
Universities
NHTSA
Local Goverment
Low
High
Influence on Commuter Carbon Footprint

Concept Generation

Material Lens	Individual →
Manufacturing Lens	5-3-5 Method →
Energy Lens	Brainball Method →
Biomimicry Lens	Asknature.org →
System Level Lens	Gallery Method →

https://knedmonds.wixsite.com/gettingtocampus

Concept Generation

Material Lens	Individual →	18 Concepts
Manufacturing Lens	5-3-5 Method →	12 Concepts
Energy Lens	Brainball Method →	6 Concepts
Biomimicry Lens	Asknature.org →	18 Concepts
System Level Lens	Gallery Method →	12 Concepts

66 Concepts

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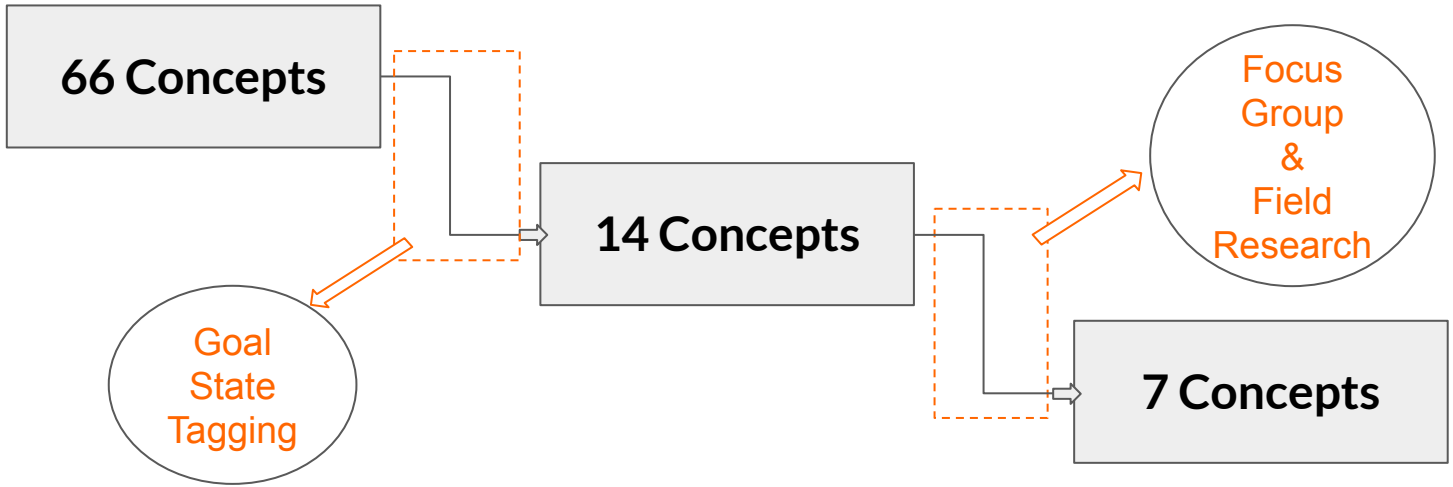
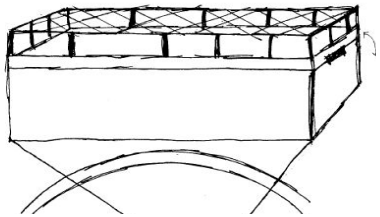
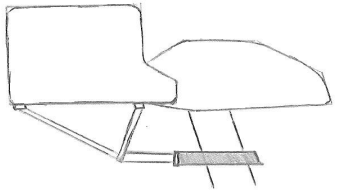
Concept Refinement

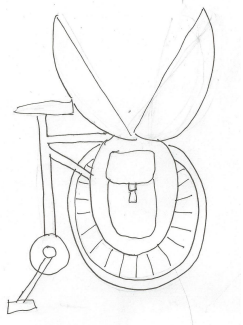


Top Concept Clusters

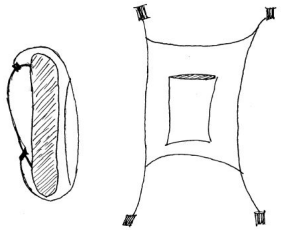
Bike Attachments

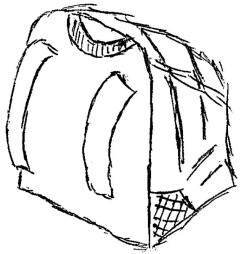


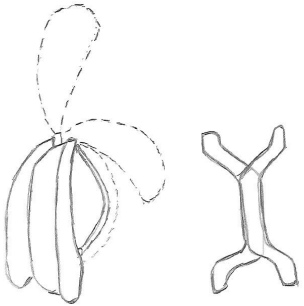




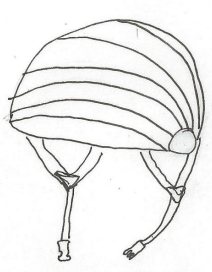
Backpack Storage

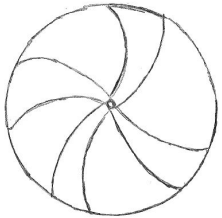


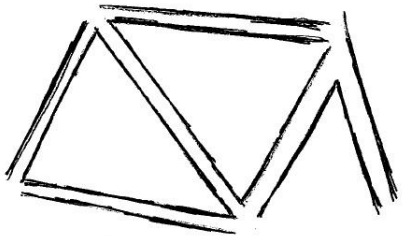




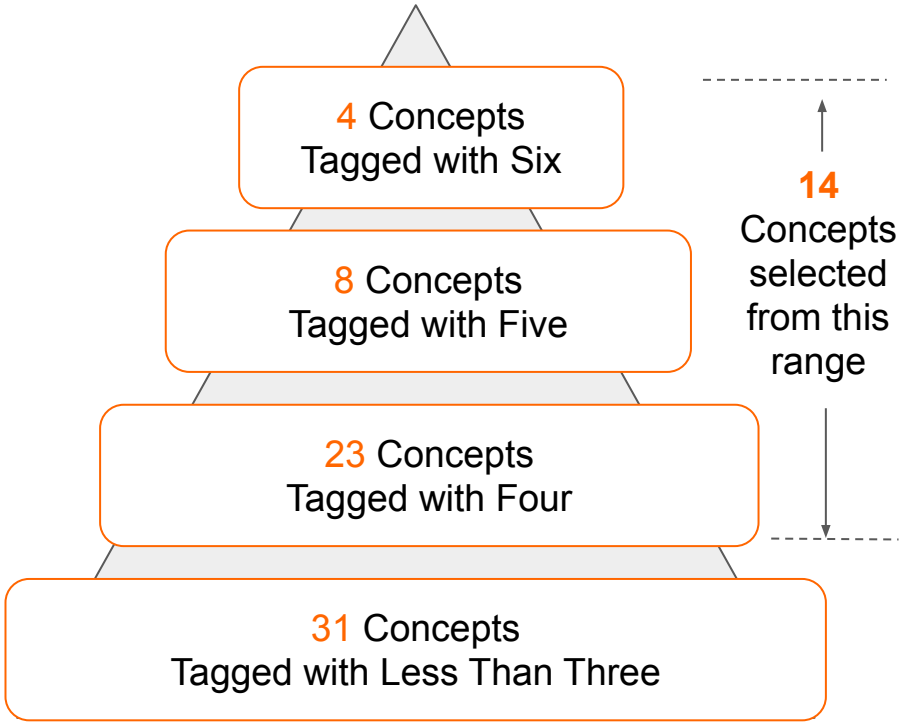
Safety & Security



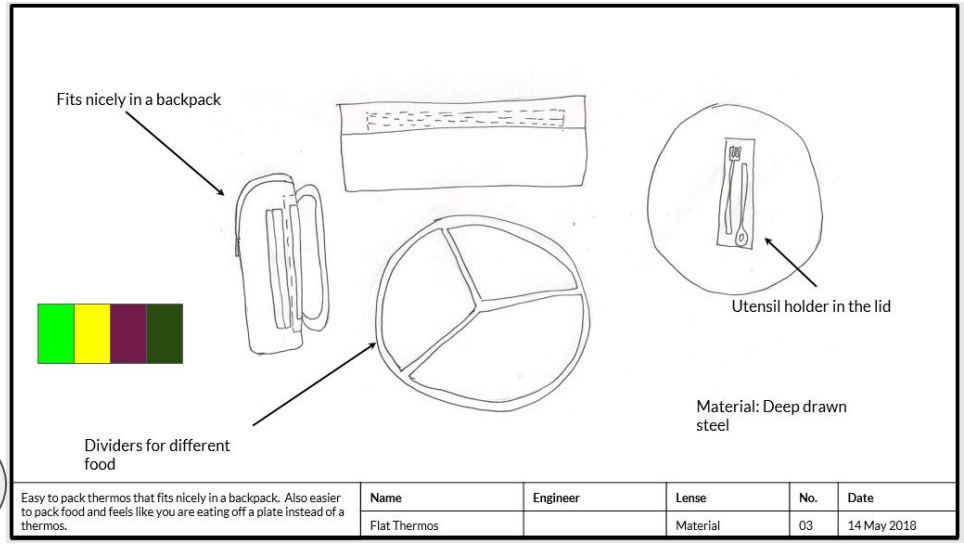




Goal State Tagging



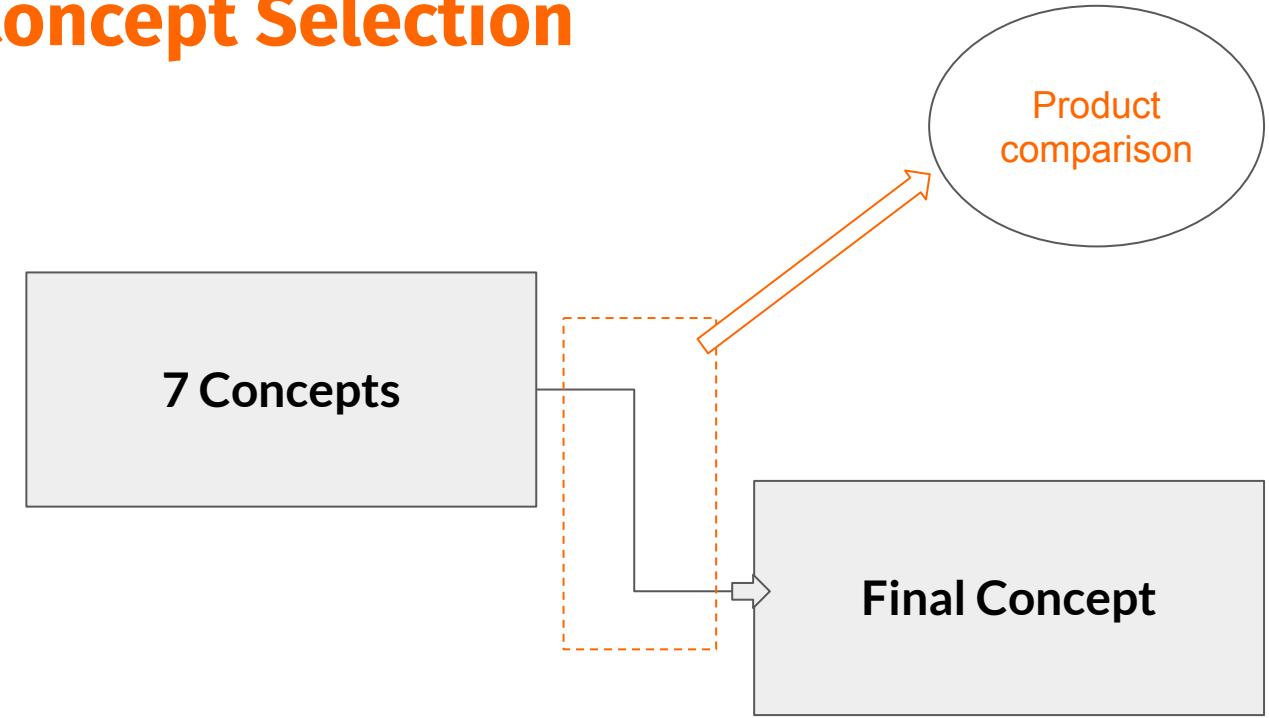
Focus Group



Attendees :12 OSU Graduate Students

14 Concepts Presented

Concept Selection



Value Opportunity Weightage (Pugh Chart)

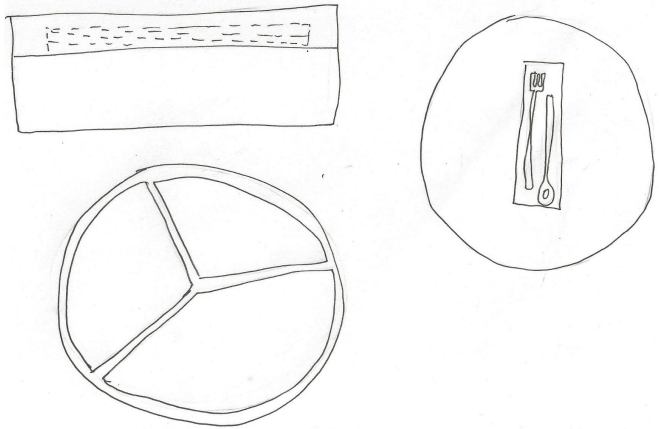
- 14% Reliable
- 10% Safety
- Environment 14%
- Visual 10%
- 13% Durability
- 9% Security
- Comfort 13%
- Independence 5%
- 12% Ease of Use

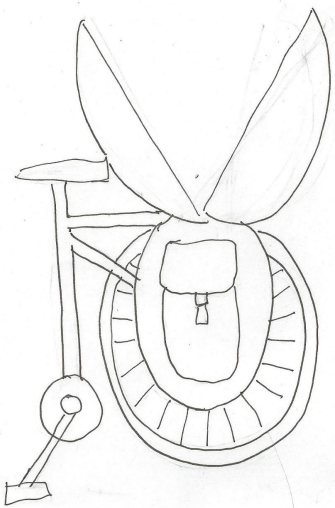
2 Datums Compared to 6 Concepts

Weightage was given based on the importance and relevance to our project scope.

Product Comparison - Datum 1 : Flat Thermos

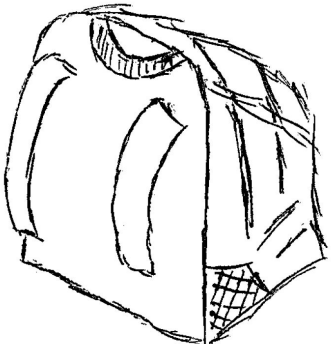
Datum 1 : Flat Thermos





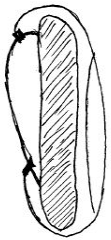
Beetle Bicycle

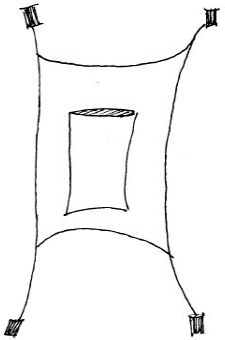
Pannier +20%



Dry Pack

+8%





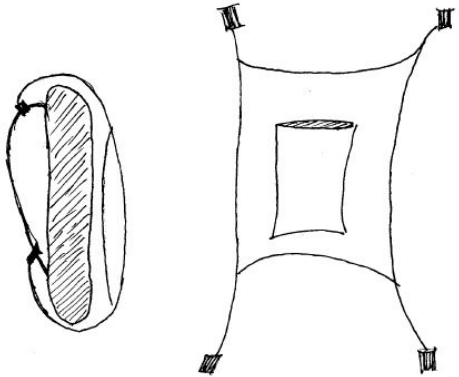
Rain Cover

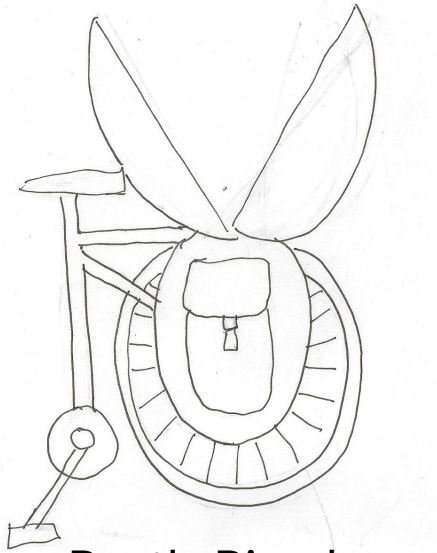
Gym Bag

+9%

Product Comparison - Datum 2 : Rain Cover Gym Bag

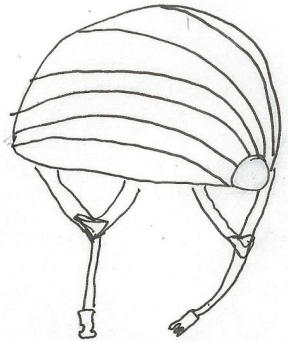
Datum 2 : Rain Cover Gym Bag





Beetle Bicycle

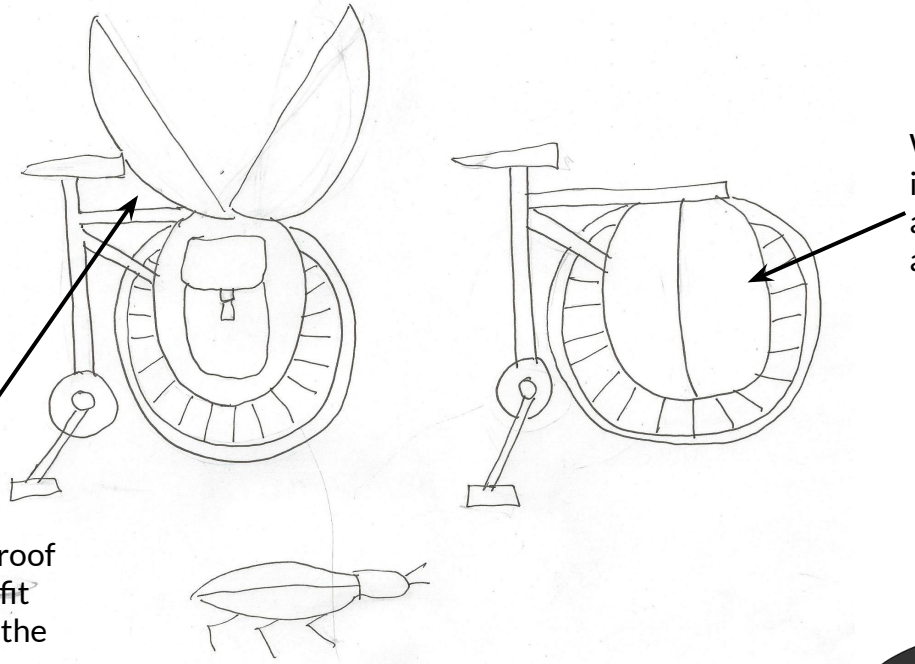
Pannier +16%



Roly Poly

Helmet +10%

Final Concept : Beetle Bicycle Pannier



When closed the shell is waterproof and also secure. Could add a lock feature.

Rigid and waterproof shell opens up to fit soft backpack on the inside

Marketing Research: Current Pannier Pain Points

- Repairs can be tricky
- Difficulty attaching it to the bike
- Not all are waterproof
- Material not durable
- Issue with dents/scratch/wear

Beetle Bicycle Pannier

SPECS

ORDERING INFORMATION	
Size	One size
Colors	Green, Yellow, Blue
U Lock Upgrade	$50
COMPONENTS	
Plastic Case	Recycled Polypropelene
Hinges	Recycled Polypropelene
O ring seals	EPDM
Attachment Hardware	Recycled Steel and Aluminum
GEOMETRY	
Case	16in x 10in x 20in

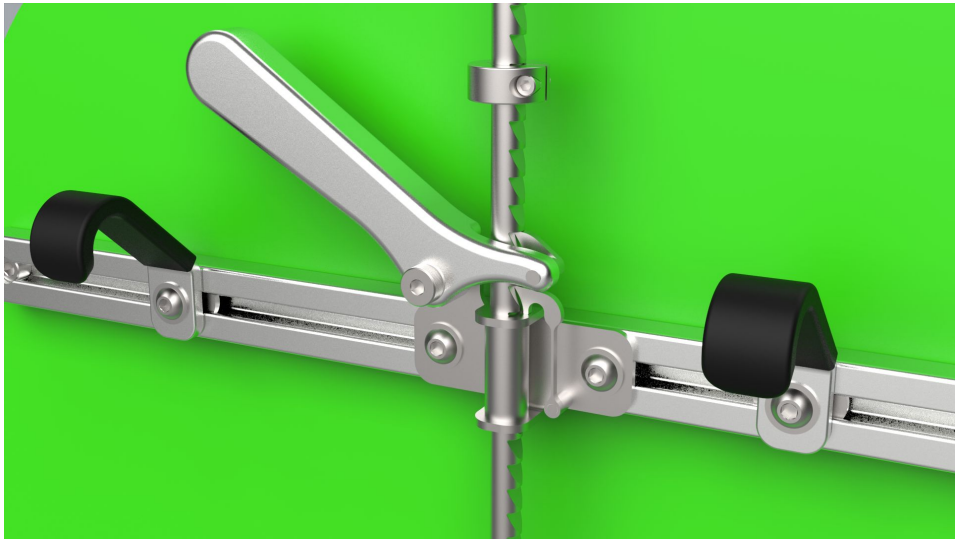
FEATURES

- Waterproof
- Durable
- Lockable
- Adjustable and secure attachment to the bike
- Adjustments done with hex tool
- Laptop compartment
- Bioinspired Design

Recommended Retail Price Pair $125 Single $75

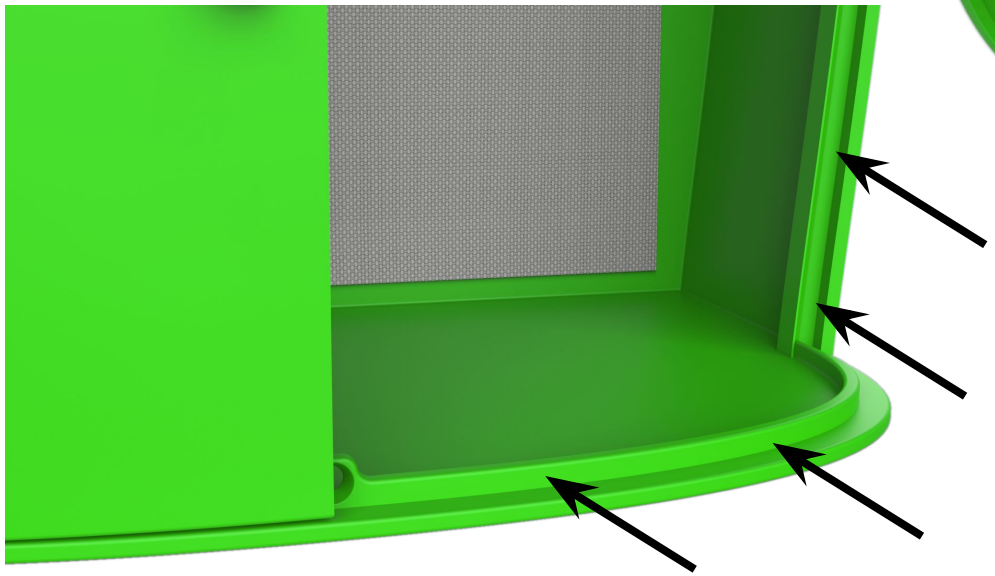
Bicycle Attachment

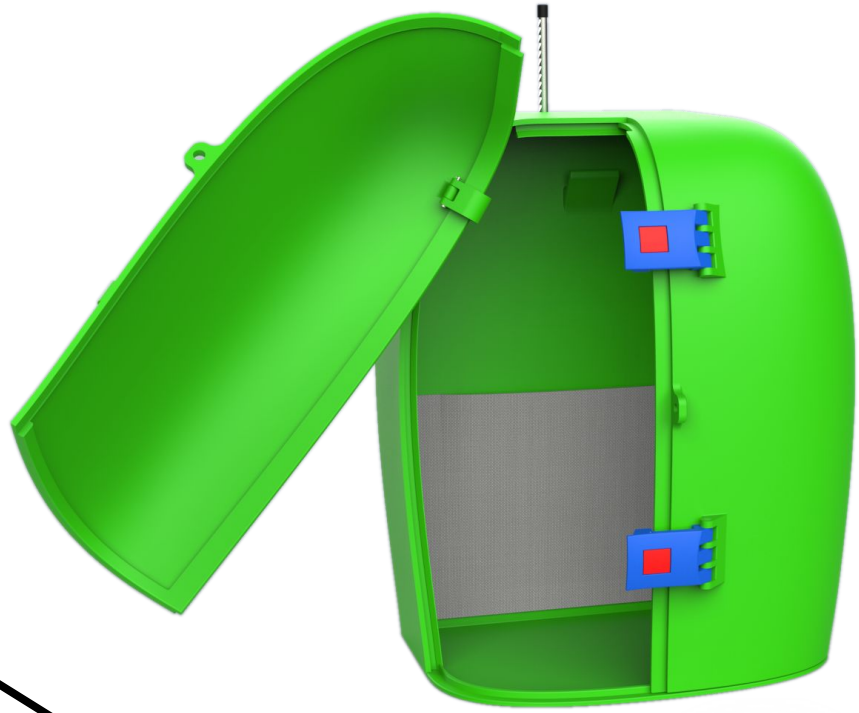
- Ratchet mechanism
    - Cover for security

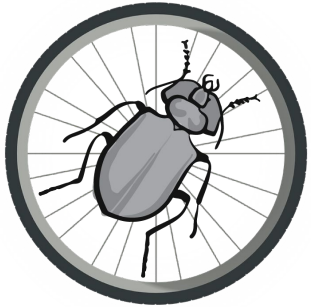


Waterproofing

- Overlapping joints
- EPDM seals

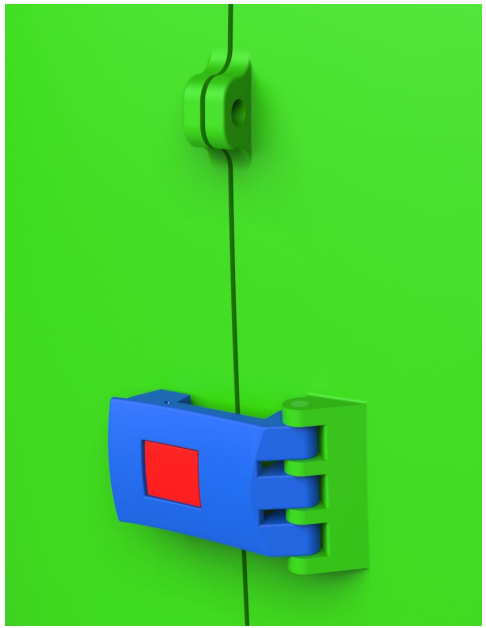


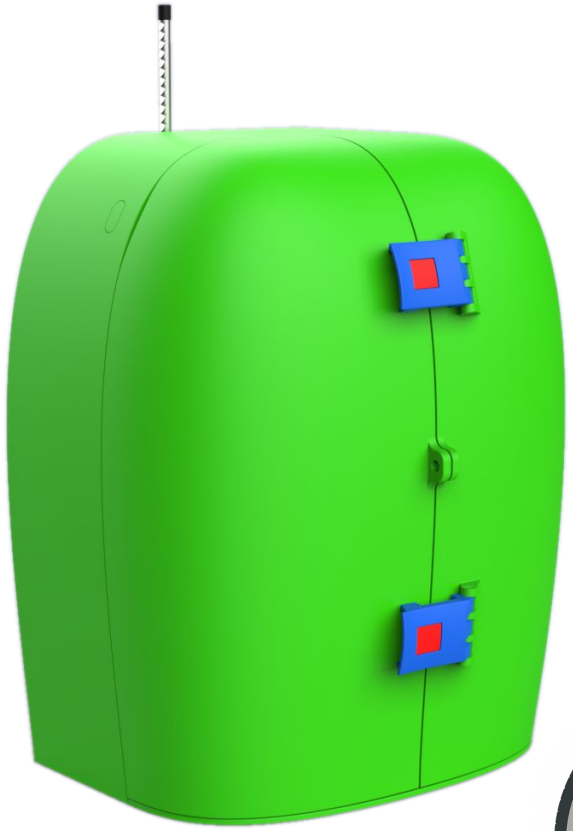


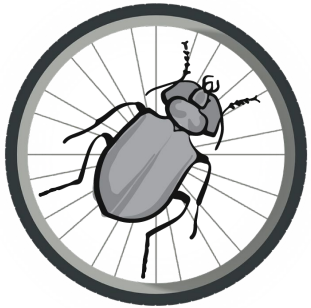


Latching and Locking

- Pelican-style latches
- Lock attachment point

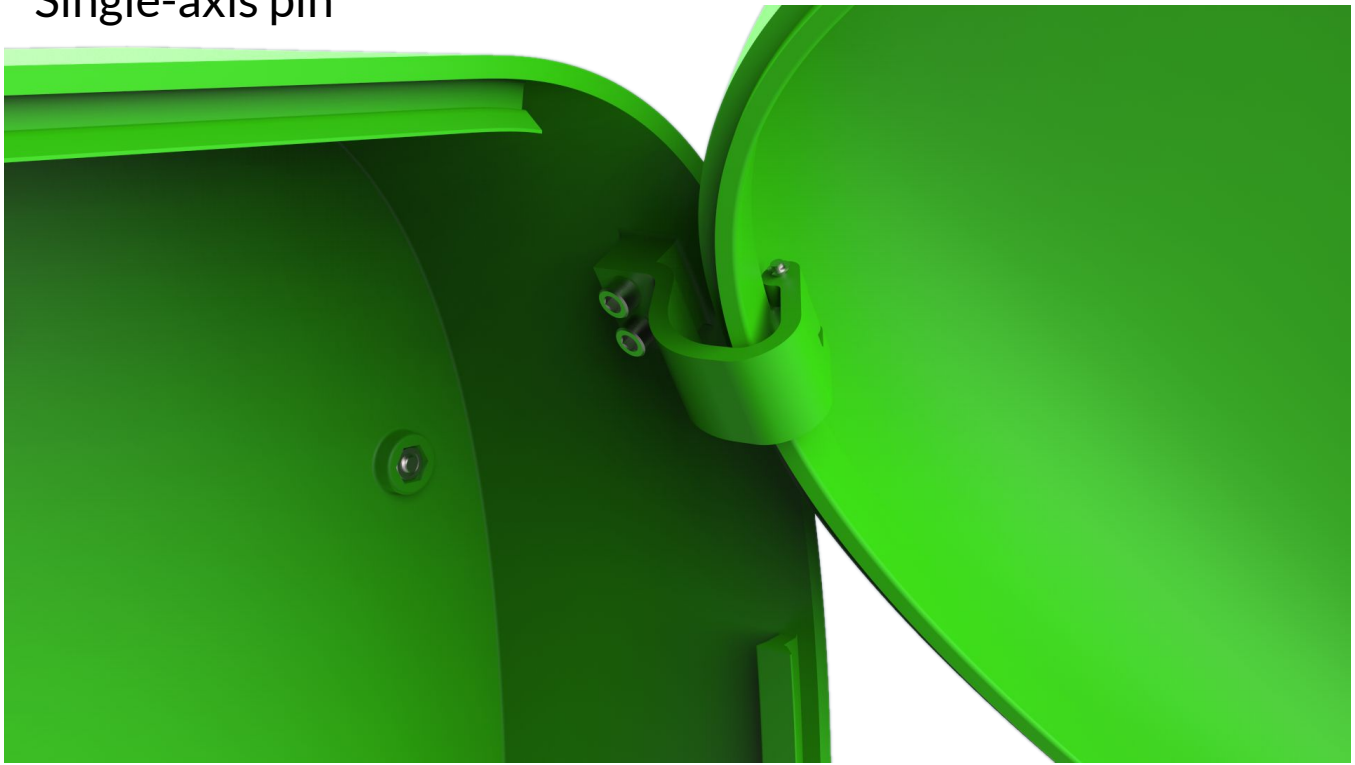


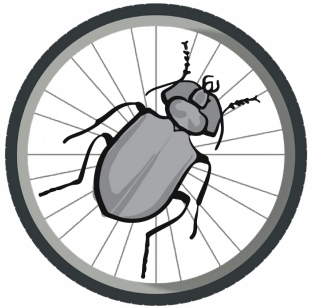




Opening Hinges

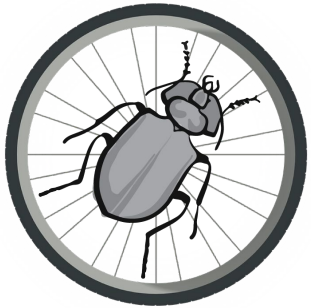
- Single-axis pin





Sustainable Aspects of our product

- Durable Materials so the product is long lasting
- Using recycled materials when applicable
- Can be disassembled and fully recycled
- Pieces that break can be replaced
- Ships unassembled, smaller shipping footprint




Recycle
nternational

Design Team

Thank you!

We believe we have developed a market ready product in the beetle cycle pannier. Providing a durable, waterproof large pannier that securely stays on the bike and is lockable will be filling a product opportunity gap.