

**BECOME A**  
**WASTE**  
**HERO**

**REDUCE TO ZERO**



# Circular Design Challenge

Level 4 Advanced Lesson





# Lesson Prep & Curriculum Alignment

Prep time: 10 – 15 minutes

Students will apply the circular strategies to solve a linear problem of an everyday product. They will work through a design thinking exercise to identify circular opportunities by reflecting on the functional and emotional needs of the customer.

- 1** Display the lesson slides for the class and create a discussion about what they already know about circular business models and introduce design thinking to identify solutions to customer problems. Ask students the guiding questions in the PowerPoint slide notes.
- 2** **Print out the 5 handouts:** 1. Design Thinking 2. Areas of Circularity 3. Circular Lifecycle Map 4. Circular Solution 5. Circular Design Challenge
- 3** **Follow the steps on the next slide** and in the teacher notes in slides 20 to 24 to conduct the class activity.

# Lesson Prep & Curriculum Alignment

Prep time: 10 – 15 minutes

## Key Learning Outcomes and Curriculum Alignment:

- **Science - Earth and Human Activity:** Communicate solutions that will reduce the impact of humans on the land, water, air, and/or other living things in the local environment. Things that people do can affect the world around them. But they can make choices that reduce their impacts on the land, water, air, and other living things.
- **English Language Arts and Literacy:** Participate in collaborative conversations with diverse partners about topics and texts. Follow agreed-upon rules for discussions. Use words and phrases acquired through conversations, reading and being read to, and responding to texts.
- **Social Studies - People, Places, and Environments:** The study of people, places, and environments enables us to understand the relationship between human populations and the physical world.

## SDG Alignment



## Flexible and adaptive lesson

Lesson plans are designed to be flexible and responsive to the evolving needs of your classroom. Lessons are editable and customizable to meet the different individual student and classroom contexts. A PowerPoint version with teacher instructions and a printable PDF lesson are available for download.



# The Lesson

Lesson duration: 25 - 30 minutes

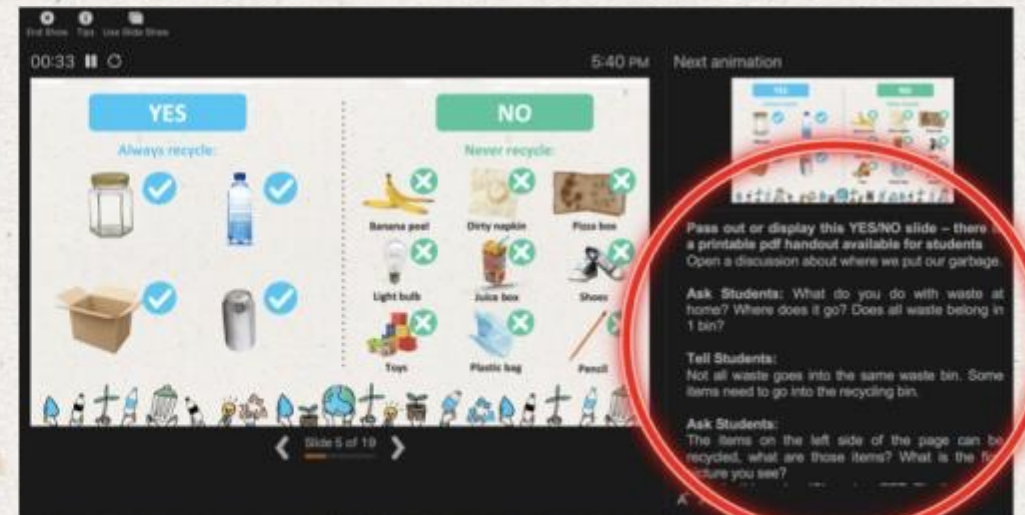
- 1** **Split into groups of 3-5** and prepare a posterboard or use the design thinking handout. It is advised to do the design thinking exercise on a large posterboard with sticky notes.
- 2** **Pick one of the following products**
  - Single use ketchup packets
  - Expensive laptop or cell phone
  - Baby clothes
  - Food wrapping
  - Small single use packaging for nuts or vegetables
  - Flip flops
- 3** **Use the design thinking and lifecycle map handout** to develop your circular solution for the product.
- 4** **Apply one or more circular design models to the product. When finished encourage students to share their circular innovations with the class.**

# Prepare the PowerPoint presentation

When you are ready to present the lessons to your class click on **Slide Show** on the top menu bar then select **Presenter View**. In Presenter view, you can see your notes as you present while the audience see only your slides.



The notes appear in a pane on the right. The text should wrap automatically, and a vertical scroll bar appears if necessary. You can also change the size of the text in the Notes pane by using the two buttons at the lower left corner of the Notes pane.





# Linear Economy

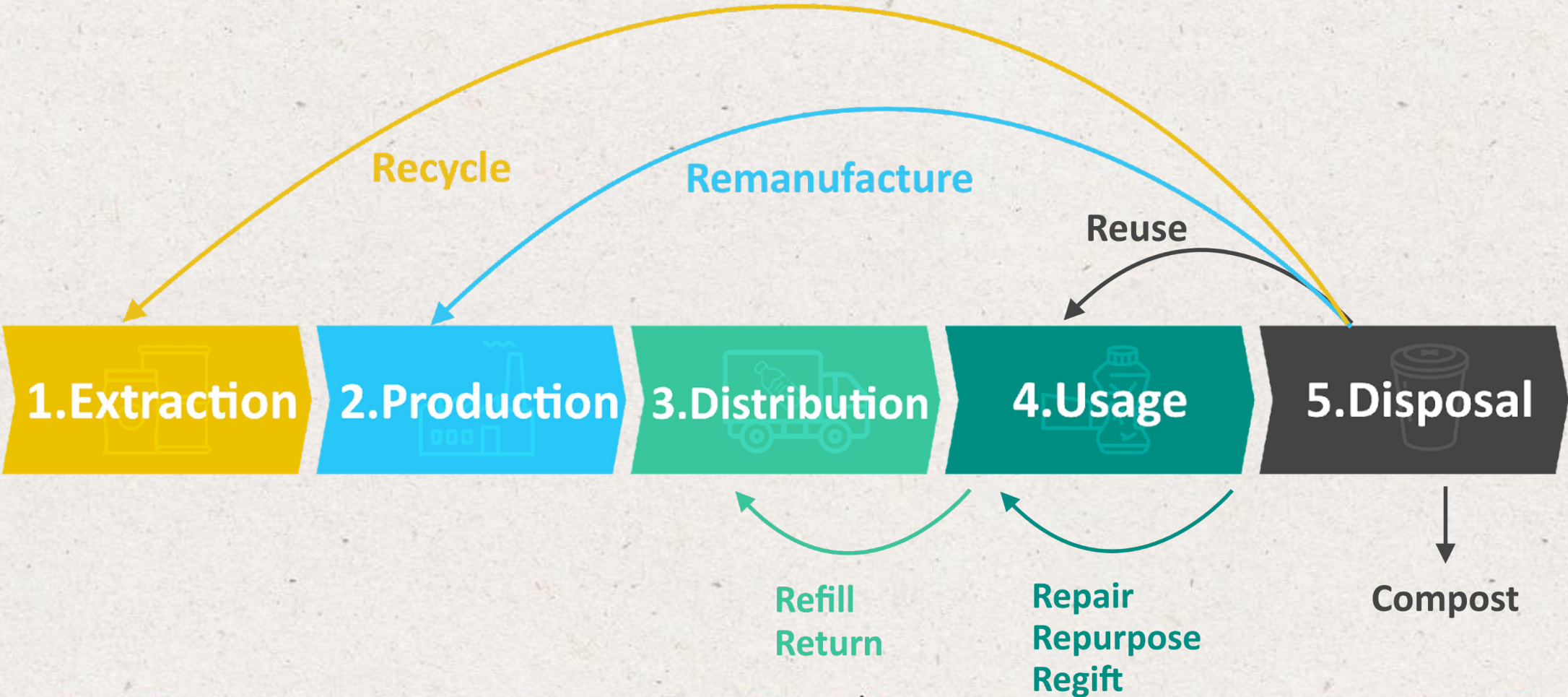
VS

# Circular Economy





# Life Cycle Mapping





# Five Business Models of Circularity

## Circular Supplies



Products made from fully renewable, recyclable, or biodegradable resource inputs.

## Resource Recovery



Services that work to eliminate resources, materials, or waste from leaking into the environment and maximizing the value of it to reenter the loop.

## Product Life Extension



Services that offer to extend the life of an otherwise discarded product through repairing, upgrading, or reselling back into the loop.

## Sharing Platform



Sharing platforms allow people to collaborate and share a product amongst themselves without singular ownership by the customer.

## Product As A Service



Products that are used by one or more customers as a pay-as-you-use arrangement.





# Five Business Models of Circularity

Sharing Platform: **Ridesharing**



Resource Recovery: **Waste to energy**



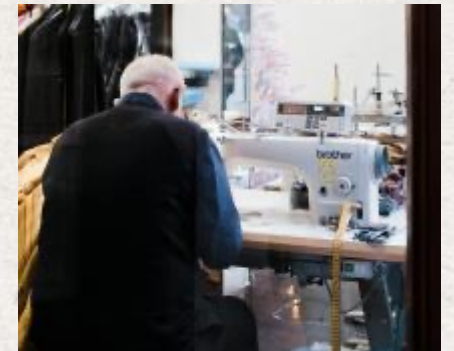
Product As A Service: **Clothing rental**



Circular Supplies: **Shoes made from plastic**



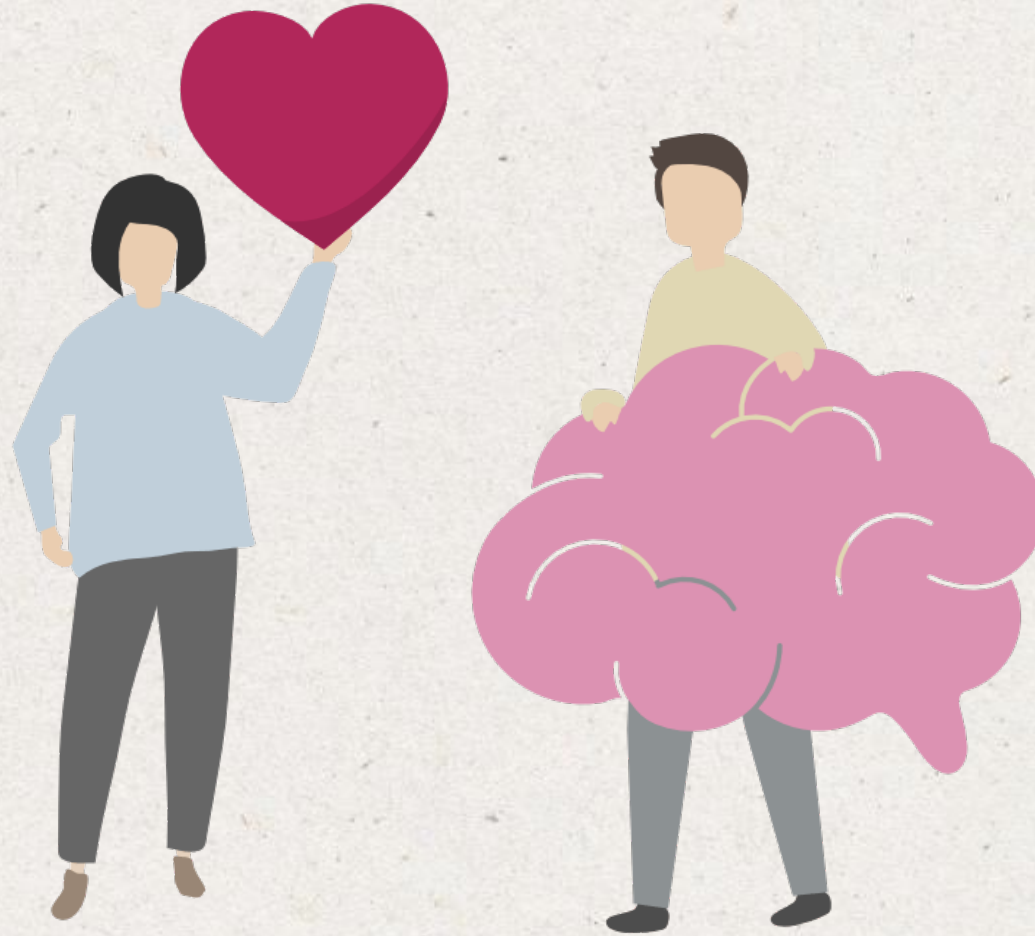
Product Life Extension: **Takeback & repair service**





# Emotional vs Functional

**Emotional benefits** provide customers with a positive feeling when they purchase or use a particular brand.



**Functional benefits** are based on a product attribute that provides the customer with functional utility.





# Design For Circularity

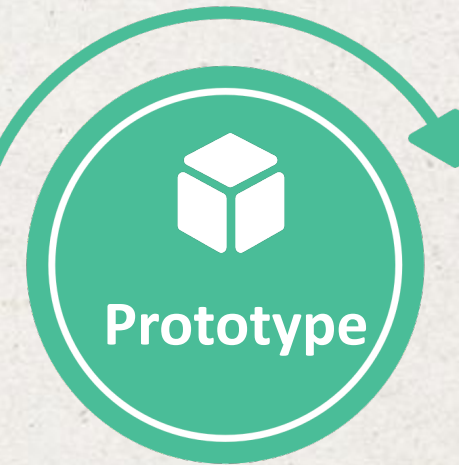
## Design Thinking

Learn about the audience.



Sharpen key questions.

Brainstorm and create solutions.



Build representations of one or more ideas.

Test idea and gain user feedback.





# Product As A Service: **Clothing rental**







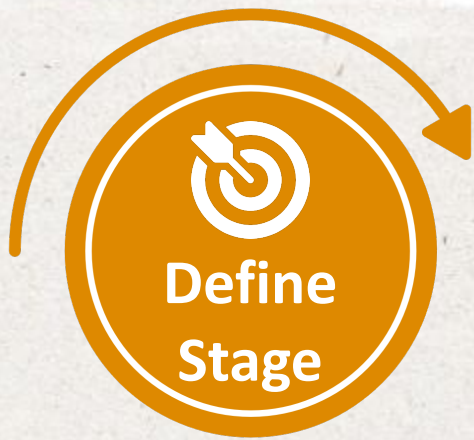
Empathize  
Stage

Learn about the audience for whom you are designing, by observation and interview.

- *Who is my user?*
- *What matters to this person?*





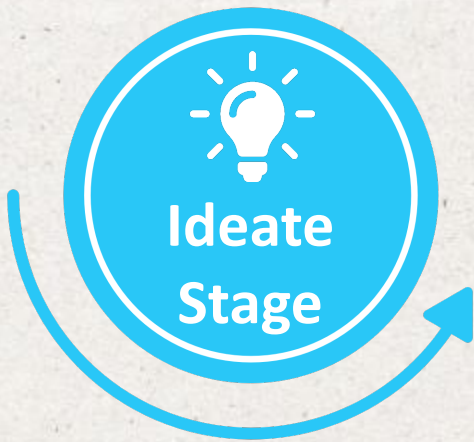


Create a point of view that is based on user needs and insights.

- *What are their needs?*





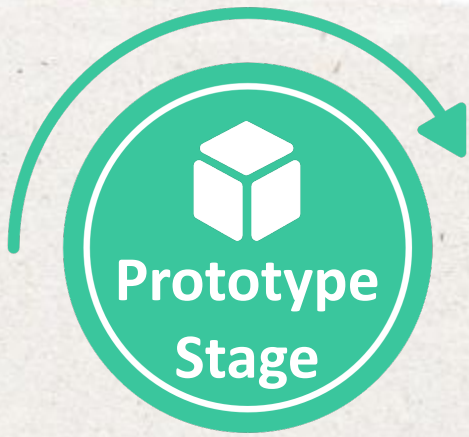


Brainstorm and come up with as many creative solutions as possible.

- *Wild ideas encouraged!*





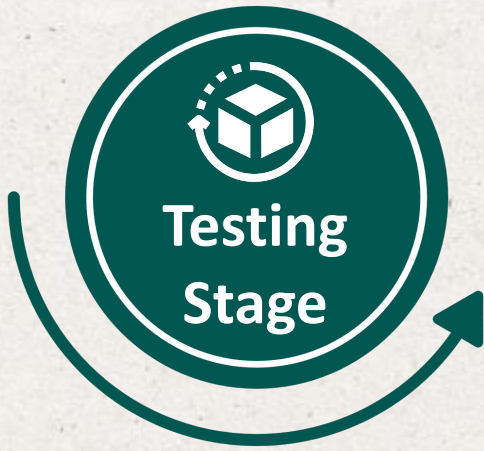


Build a representation of one or more of your ideas to show to others.

- *How can I show my idea?*
- *Remember: A prototype is just a rough draft!*





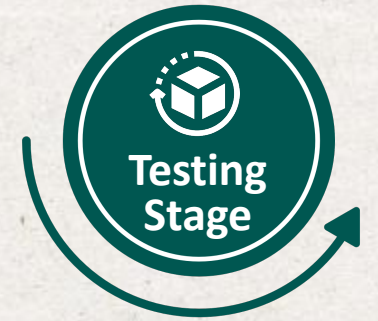
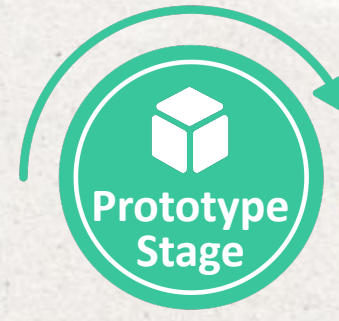
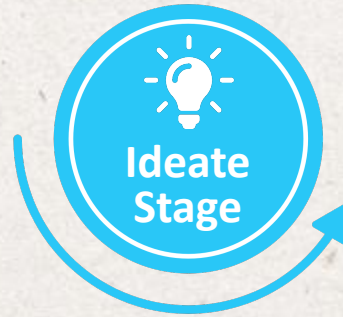


Shared your prototyped idea with your original user for feedback.

- *What worked?*
- *What did not?*







Budget conscious shopper

Wears the latest fashion trends

Does not want to clutter their wardrobe with unused items

Wants access to trendy clothes

Rent clothes to customers

Sell cheap trendy clothes

Prototype Stage

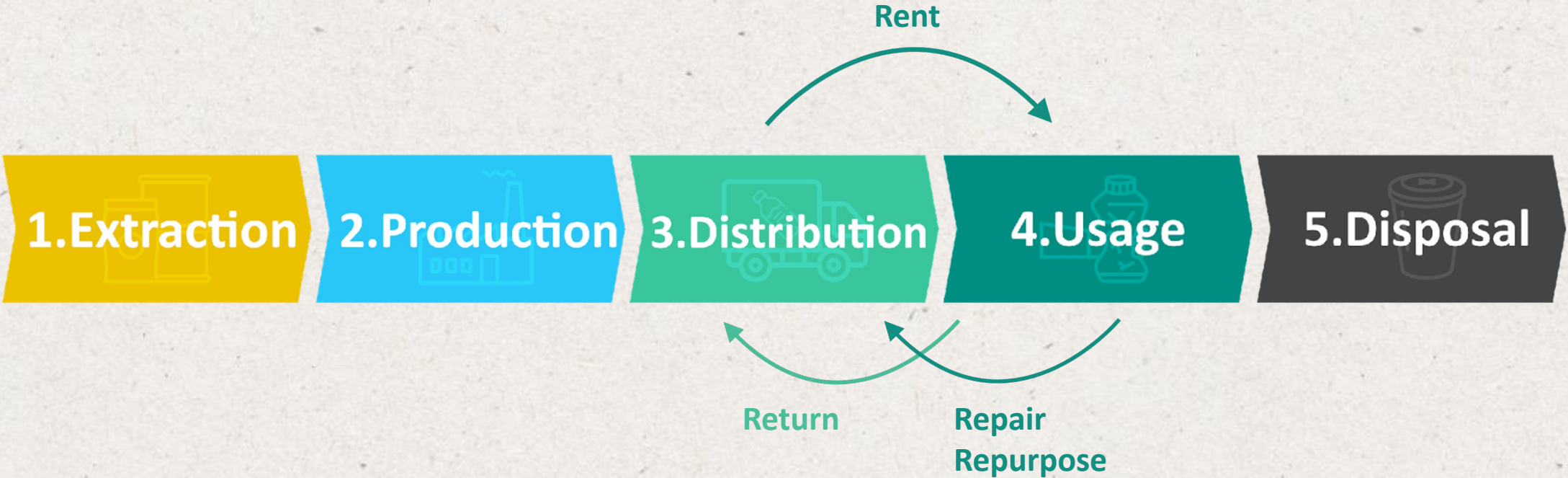
Create a small offline clothes rental shop amongst friends and family

Borrow clothes from friends to rent to other friends and charge a small fee





# Clothing rental areas of circularity





1

Split into groups of 3-5 and prepare a posterboard or use the design thinking handout.

3

Use the design thinking handout to develop your circular solution for the product.

4

Apply one or more circular design models to your product.

5

Share your ideas to redesign for the circular economy.

## Class Activity

2

Pick one of the following products

- Single use ketchup packets
- Expensive laptop or cell phone
- Baby clothes
- Food wrapping
- Small single use packaging for nuts or vegetables
- Flip flops

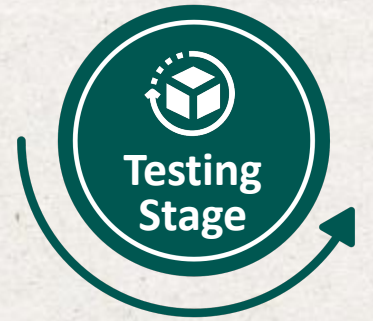
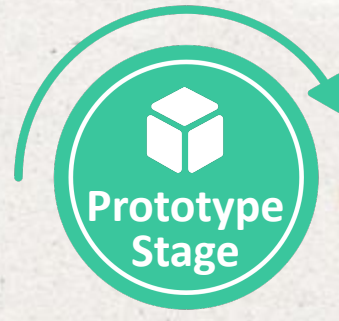
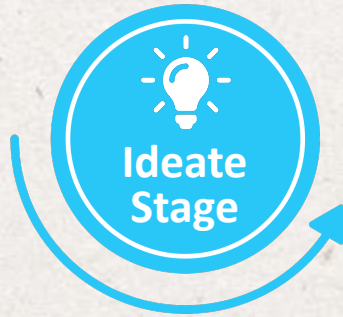
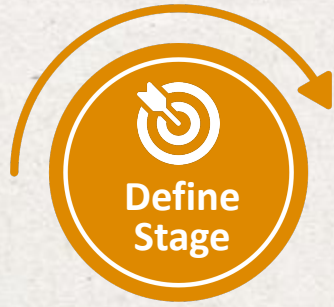




# Chose a product to redesign for circularity







Empty rounded rectangular box with a yellow dotted border for notes in the Empathize Stage.

Empty rounded rectangular box with an orange dotted border for notes in the Define Stage.

Empty rounded rectangular box with a blue dotted border for notes in the Ideate Stage.

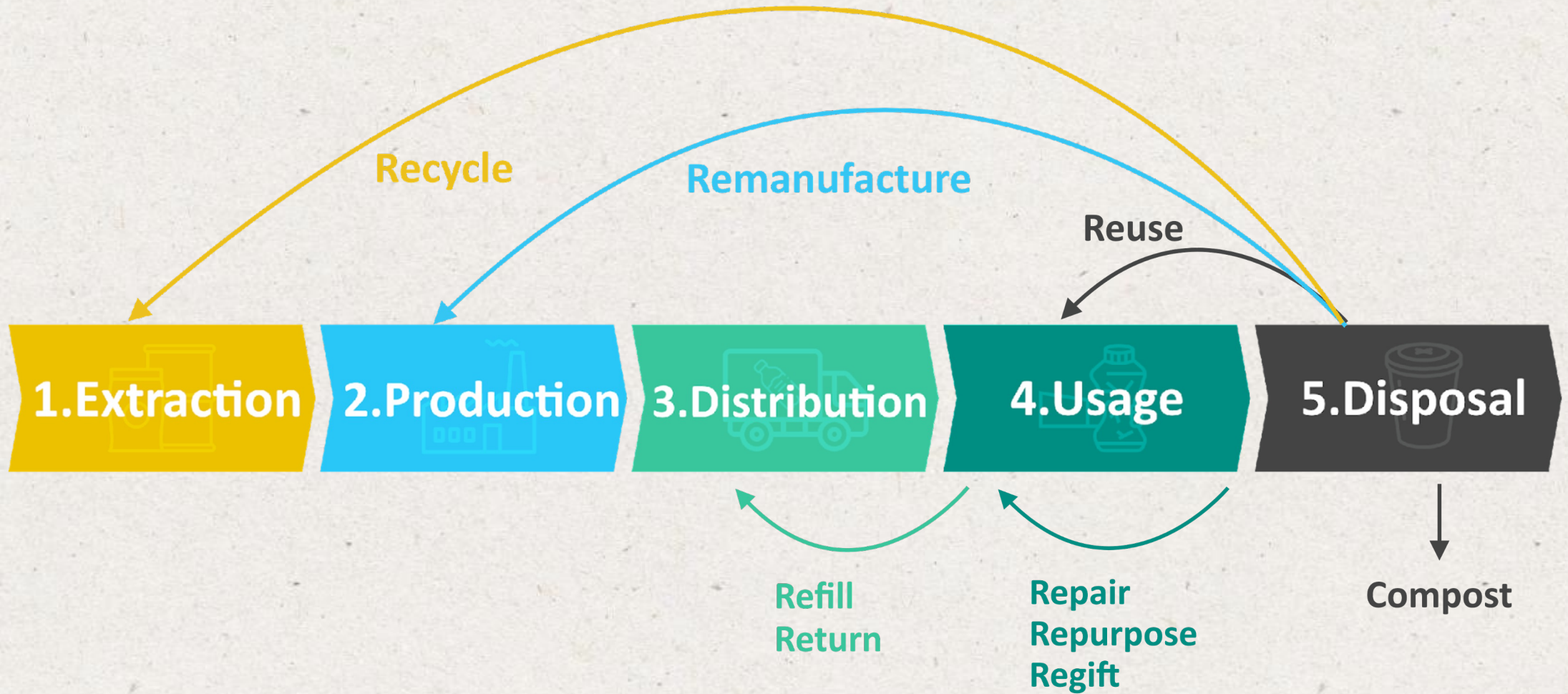
Empty rounded rectangular box with a green dotted border for notes in the Prototype Stage.

Empty rounded rectangular box with a dark green dotted border for notes in the Testing Stage.

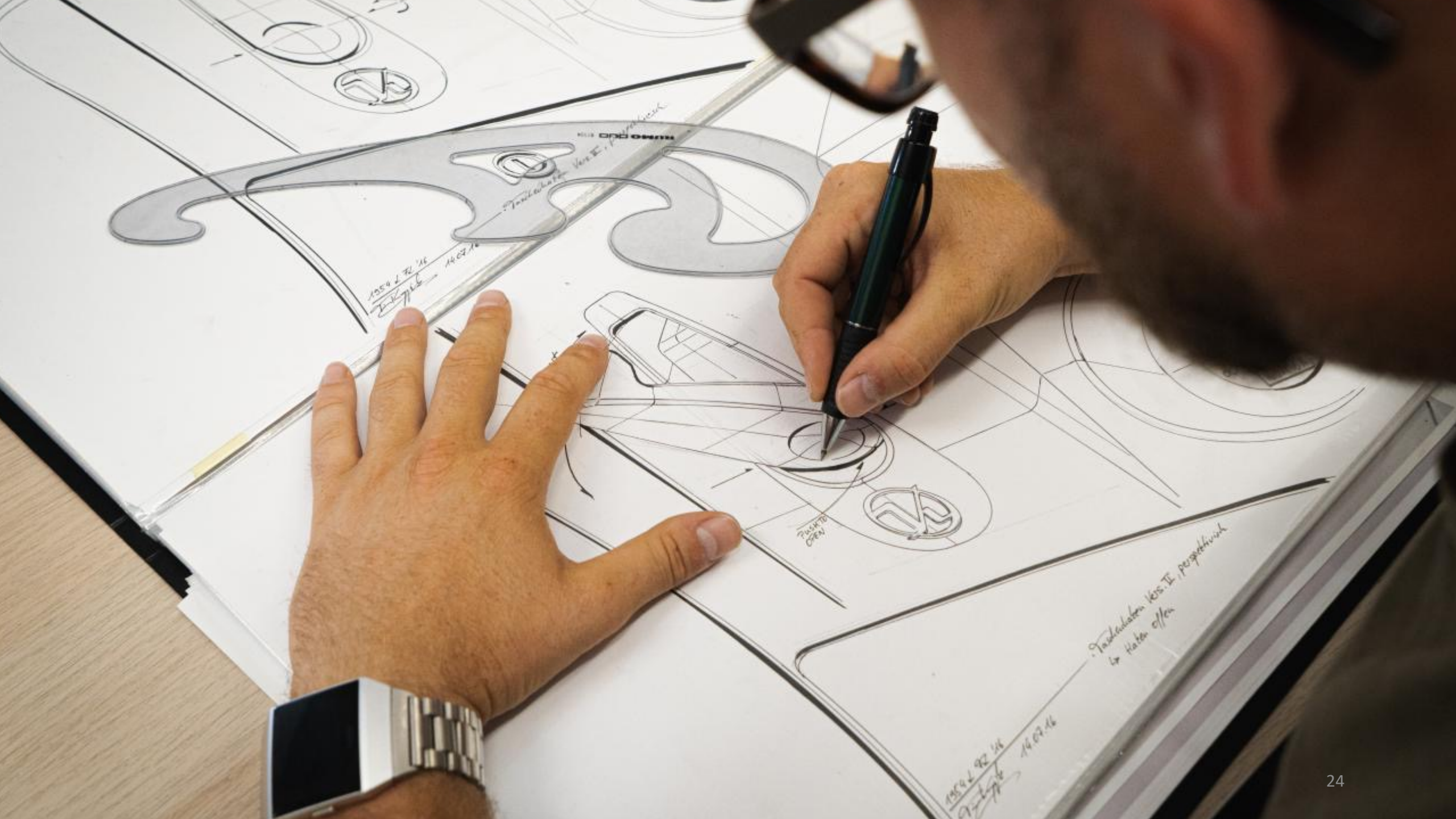




# Circular Lifecycle Map







1959/192/14  
97-1576  
1409/16  
Tischkalkulation Vers. II, perspektivisch

PUNKT  
OPEN

Tischkalkulation Vers. II, perspektivisch  
↳ Kasten offen

1959/192/14  
97-1576  
1409/16