



Prototype Circular Systems

Learning Factory Lifecycle Design Canvas

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Prototype Circular Systems

Visual canvas for workshop brainstorming

Build the solution and prototype ideas into a circular system using the **Learning Factory Lifecycle Design Canvas**.

Prototyping allows you to test and develop your ideas in a system-wide lifecycle canvas to learn more about closing the loops and finding guidance in the design and manufacturing of sustainable products. A circular process enforces multidisciplinary collaboration to manage whole-system life-cycle design in order to close the loops.

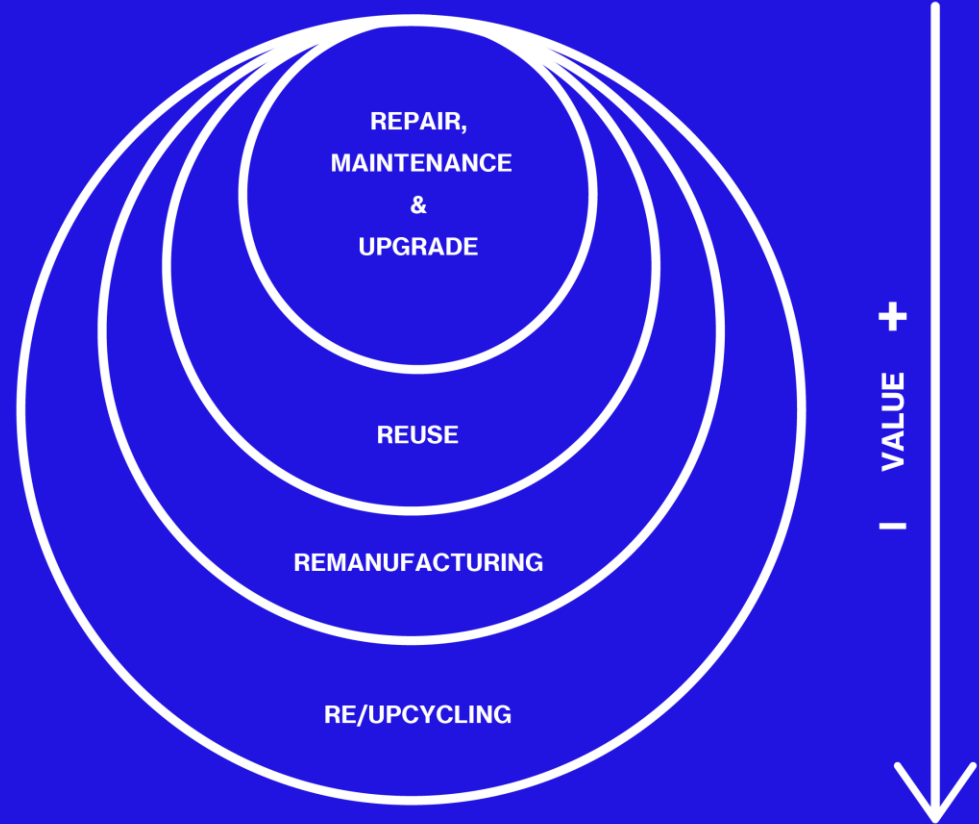
Extending the useful life of products is more than just recycling materials. It is about keeping a product as close as possible to its original state over time, for instance through longer use, repair, upgrading, refurbishment or remanufacturing.

Circular economy 4 loops

Circular economy is all about retaining value

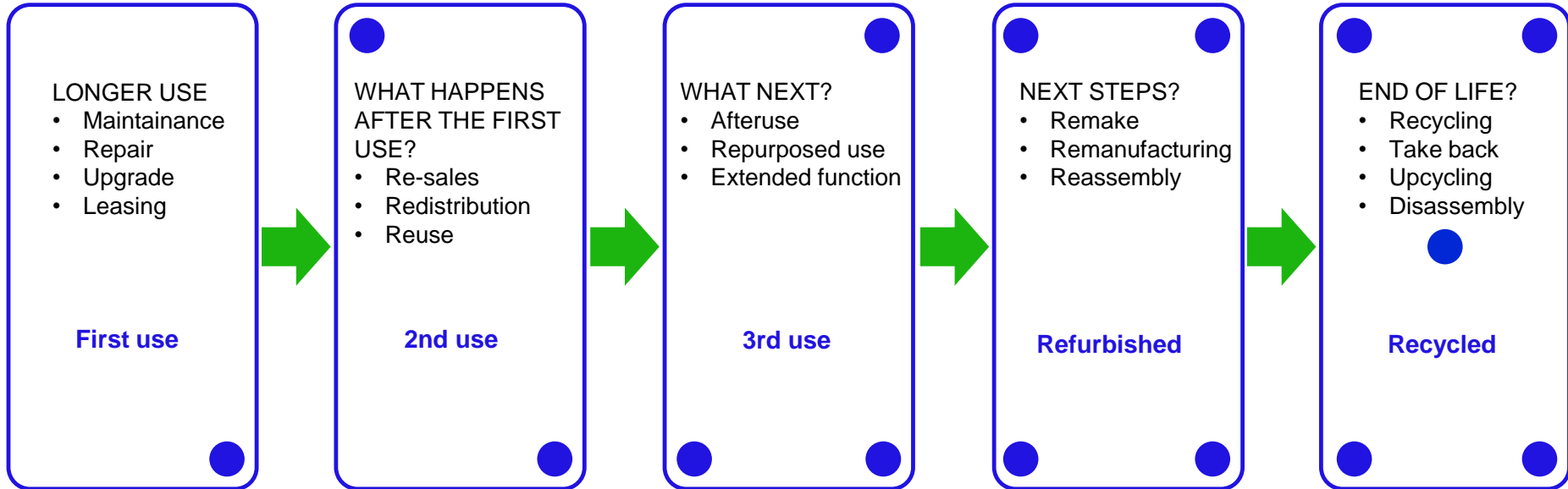
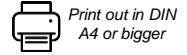
LIFE CYCLE THINKING 3 KEY PRINCIPLES

1. NO WASTE
2. VALUE IS MAINTAINED
3. CONSIDER ECONOMIC FRAMEWORK CONDITIONS



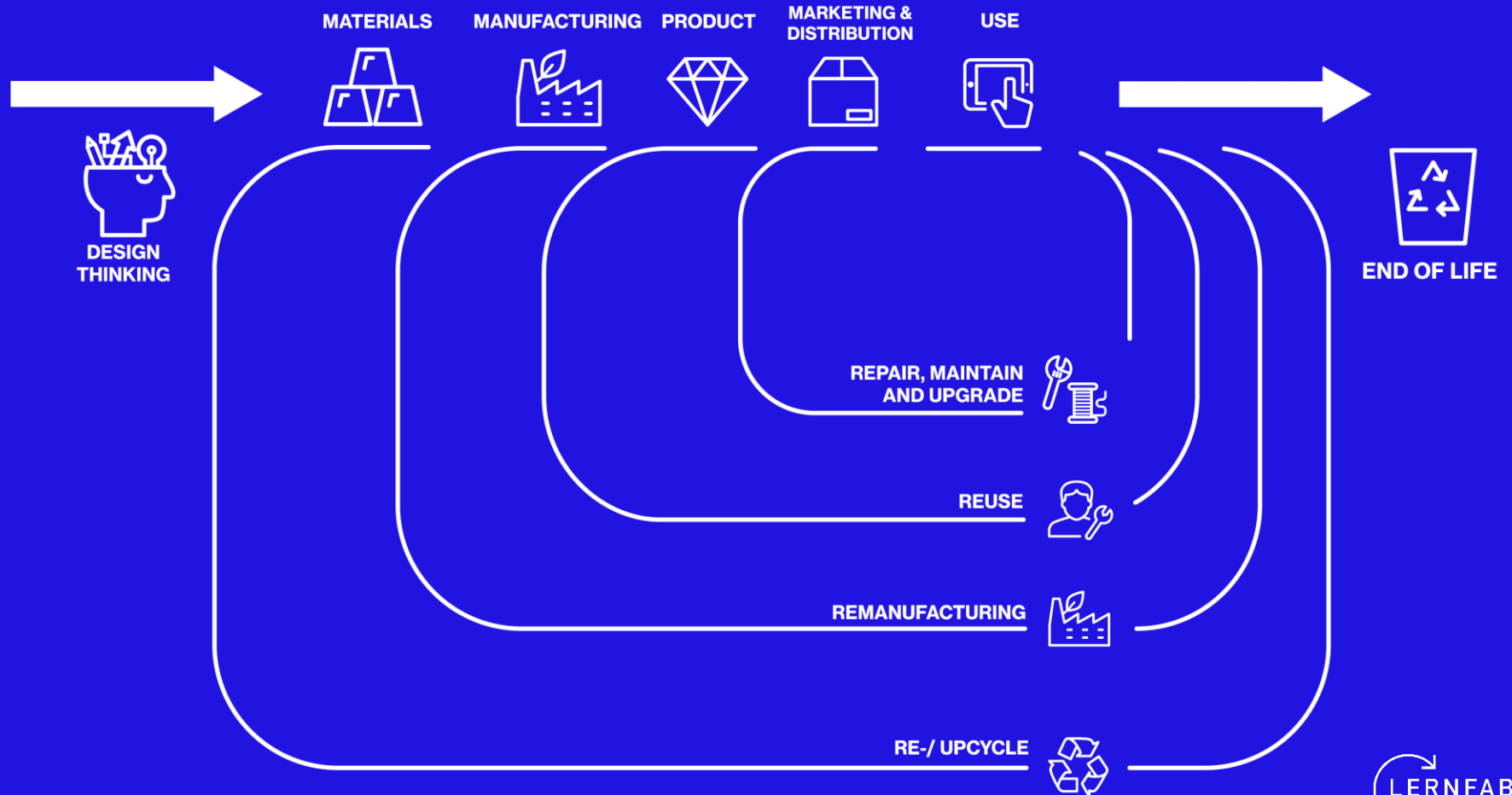
Domino Effect Canvas

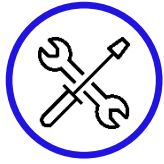
Mapping and extending the product lifecycles



Domino mapping will ensure that your product remains in a useful state for as long as possible and add value at every stage. How long is the intended use phase initially for the product or service? And could this be extended?

System-wide Life-Cycle Thinking closing the loops





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In Learning Factory Lifecycle Design Canvas

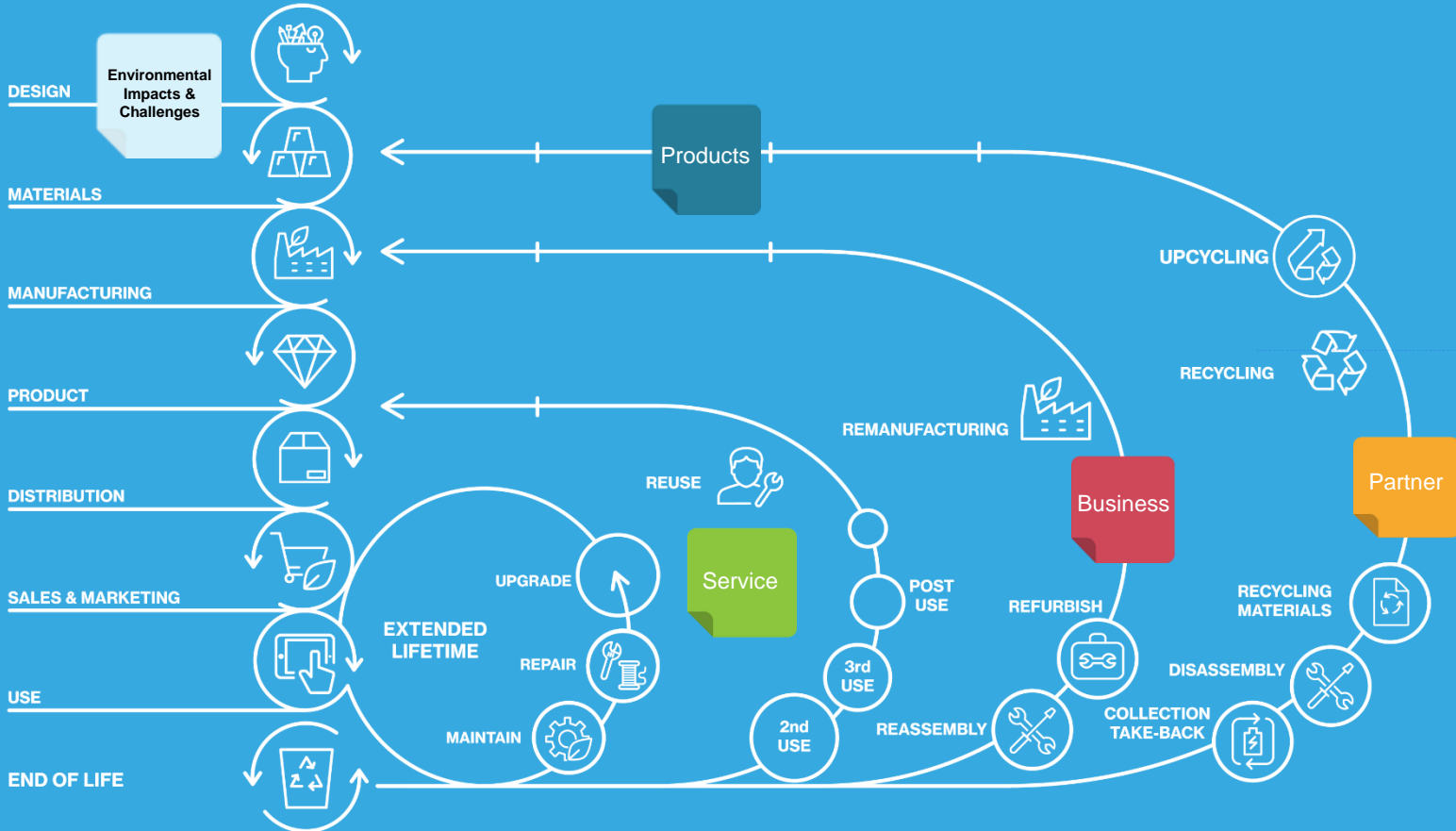
Activity: Group

Directions:

1. Add your post-its from the ideation phase to the template
2. In five sessions closing the lifecycle loops with five filters, add additional elements on post-its
 - **Product (yellow):** What does the product look like in the circular system? (Physical product)
 - **Service (green):** What are the service elements in each cycle? (Physical and digital service, 7min)
 - **Business (magenta):** Revenue streams? How do we save costs? (Business development, 7min)
 - **Partners (orange):** Who do you need in order for the system to work? (e.g. refurbishers, service providers, suppliers, prosumer, co-creators) If possible, already think about their needs, their role and how they profit from the system. post-its. 7min
 - **Environment (blue):** What are the environmental impacts? Materials? (raw or recycled materials, auxiliaries, chemicals, toxic or scarce materials) Energy? (heat & electricity) Emissions into the biosphere? (solid, liquid, gaseous) Health and safety issues? Identify the most important environmental focus areas. How to reduce the environmental impacts? Which stakeholders do you have to involve?

ENVIRONMENTAL IMPACTS/ CHALLENGES

LEARNING FACTORY LIFECYCLE DESIGN CANVAS



LEARNING FACTORY LIFECYCLE DESIGN CANVAS



Print out in DIN
A0 or bigger

DESIGN

MATERIALS

MANUFACTURING

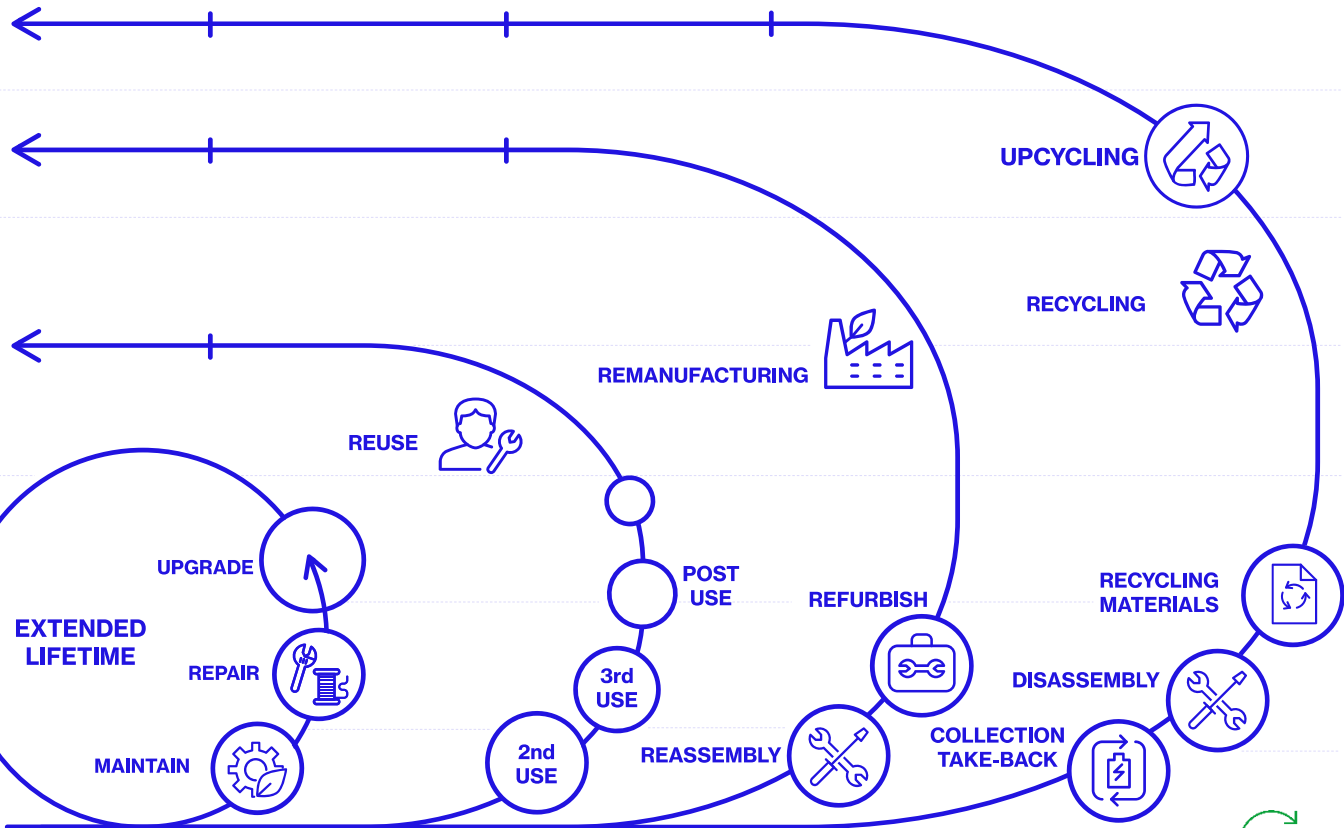
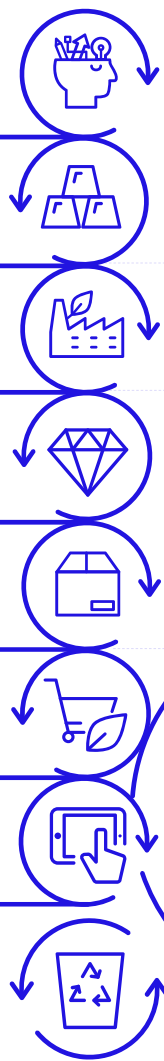
PRODUCT

DISTRIBUTION

SALES & MARKETING

USE

END OF LIFE



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