

RECYCLABILITY MAPS

Enabling designers to evaluate the tensions between two circular design strategies; repair and recycling

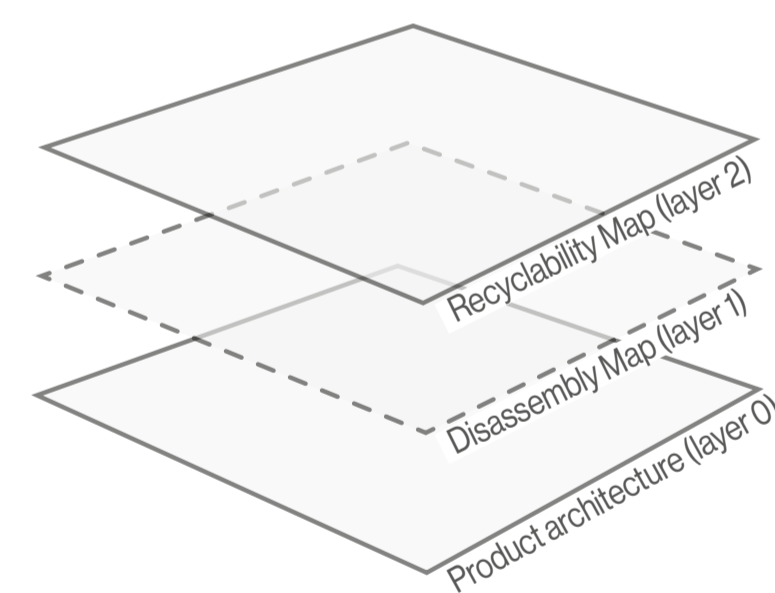
Product design for a circular economy

All products eventually reach a point where they cannot be repaired, reused or refurbished, leaving recycling as the only sustainable option left. This step is critical for closing material loops and moving towards a circular economy. However, before products reach this stage, other circular strategies, such as repair, can extend their lifespan and keep them in the economy longer, minimising the depletion of critical raw materials.

Design choices that improve the reparability of a product can affect its recyclability and vice versa. It is therefore crucial to balance these considerations in product design

The layer framework

By using this method, you can visually map design choices and explore the effect on the recyclability and the reparability of the product. This allows you to make well considered design choices by designing for a circular economy.



The method is build up out of three layers.

- Layer 0: Product architecture
- Layer 1: Disassembly Map of the product, a method that is already in place (de Fazio et al., 2020)
- Layer 2: Recyclability Map

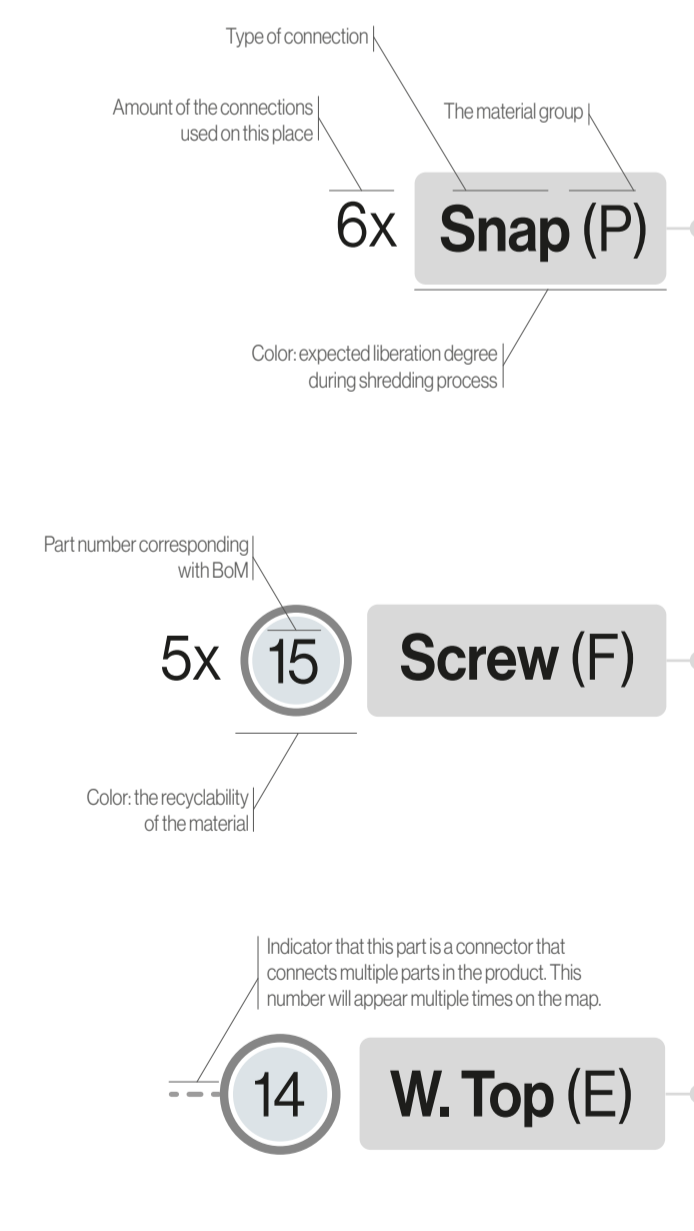
The method

The method uses connection blocks, indicating the expected liberation of connections during shredding. Next to this, it uses a two-colored scale to show the recyclability of a material. By mapping these recyclability related factors for the product, the map visualises the connections and materials that can cause problems during recycling and could be improved.

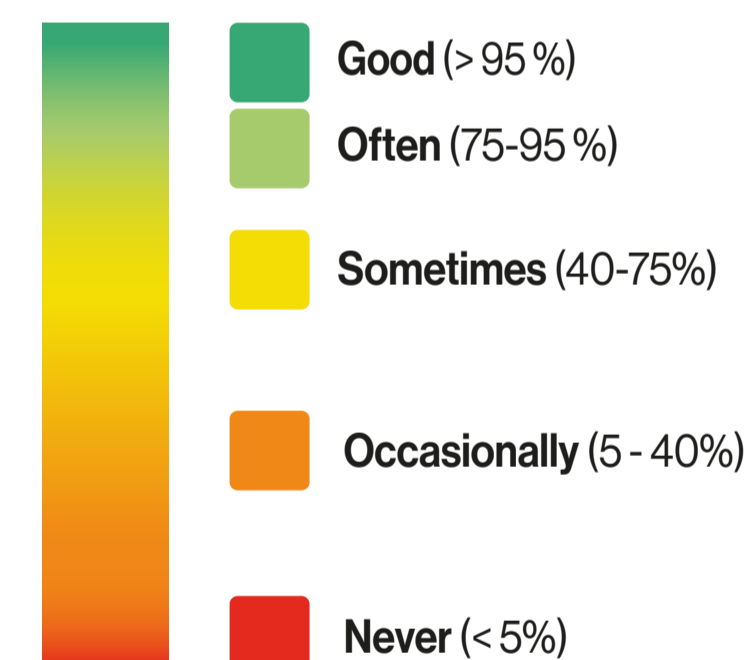
The Disassembly Map (de Fazio et al., 2020), maps disassembly related factors, Resulting in an overview of the pain points for repair.

By comparing these maps, problematic design features can be identified and optimised. Resulting in more circular designs for the future.

Connection blocks



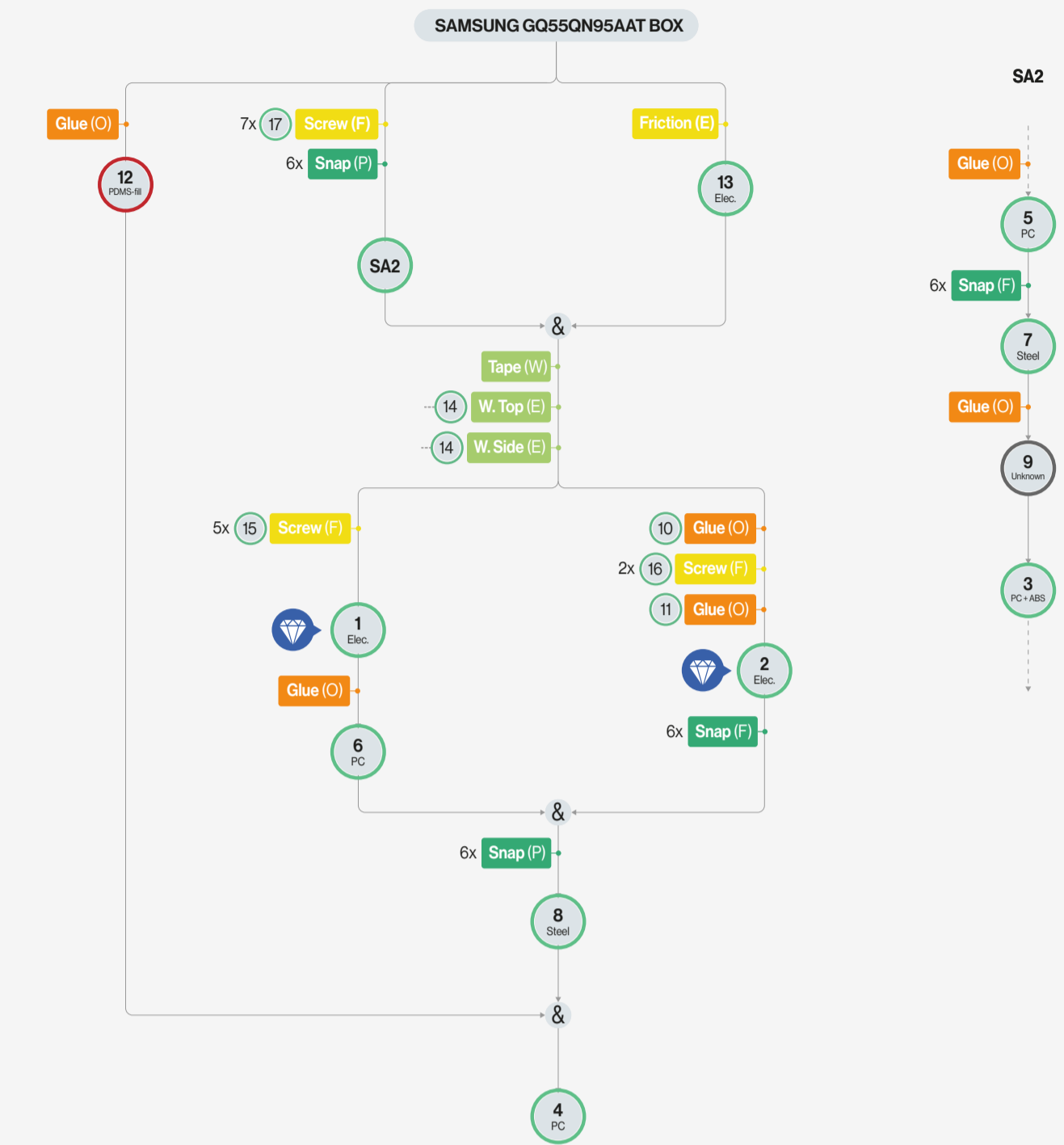
Expected liberation of connections



Recyclability of the material



Recyclability Map



Disassembly Map

