

Figure 1: "Single use camera LCA" exhibition poster with disassembled parts attached, Environmentally Adapted Product Development & Manufacturing (EAPD&M) at TH Chalmers in Gothenburg, spring term 2008

BORROWED4USE[®] MOBILE

Transitioning to a circular economy with Sustainable Technology and Interaction Design (STaID)

An almost ancient artefact, the single use camera, is far from being used only once so not nearly 'single use' (see Life Cycle Assessment, Figure 1). The system of single-use cameras bought and sold through photo shops still is - and was when it was much more popular before the rise of the digital camera - very **circular**.

I want to transfer this artefact's circular system onto the mobile phone, those typical single use camera practices: reuse of the whole, reuse of dismantled parts up to 10 times, parts material recycling up to 100 times plus thermal recycling after these iterative uses.

This proposal resembles a **proto-practice** - a not-yet-existent but desirable future (best) practice (Tonkinwise, 2015). For such a practice, designers would have to consider the physical, the digital and the use(r) simultaneously and find a synergetic, integrative solution.

The proto-practice involves 'borrow for use' shops or the producer distributing to local partners (called 'issuers'), that promote a come&go manner for acquisition, repair, upgrade, replacement, take-back, as well as backup, transfer and erasure for the ascribed digital materiality, to the customers.

Customers may resemble a local (or for to begin with global) **community** of mobile phone users - with advantage in a sharing economy environment, or even in a **transition town** - that use this circular system as soon as and as long as they desire to use the services of a mobile phone.

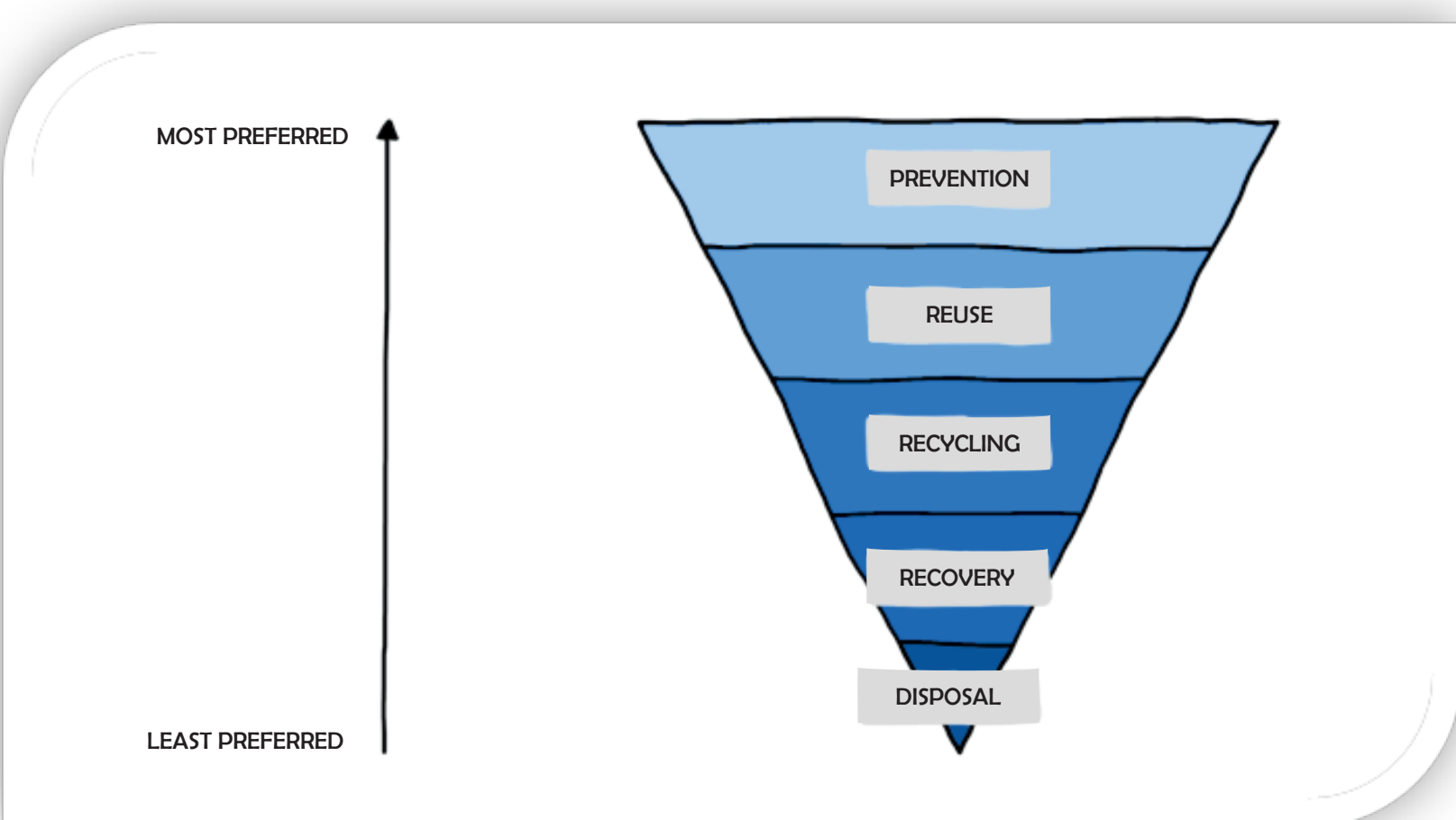
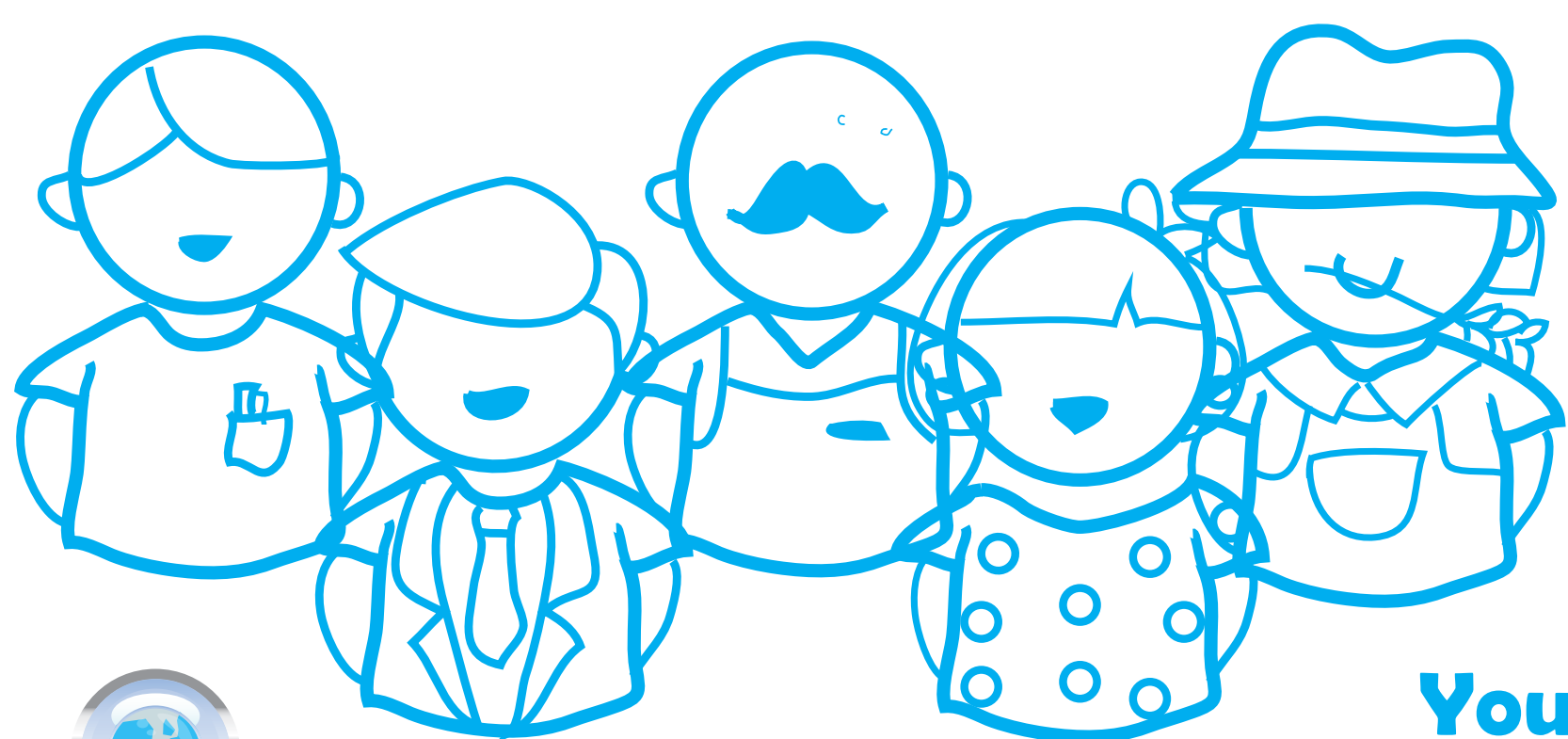


Figure 2: Hierarchy of Waste pyramid

It can go either way: On the one hand the 'borrowed use' scenario brings forth **more durable** things that are kept for longer because the material stays a particular user's for longer. On the other hand, the 'borrowed for use' scenario lets a user upgrade and exchange parts as if they were modules. The material stays not a particular user's for long, but **in the system**, constituted of many users.



Transition community

Yours to open.
Yours to repair.
Yours to circle and share.

See Fig. 3

How Else Are We Supposed To Use Our Phones For Hundreds Of Years?
Designers, Unleash Your Design Ability!

Annual climate impact of EU stock (use and non-use phases):

14.12 MIO. TONNES OF CO₂ EQUIVALENT

SINGLE USE? MOBILE PHONE

How long should products last from a climate perspective?
Average lifetime vs optimal lifetime to limit Global Warming Potential (years)

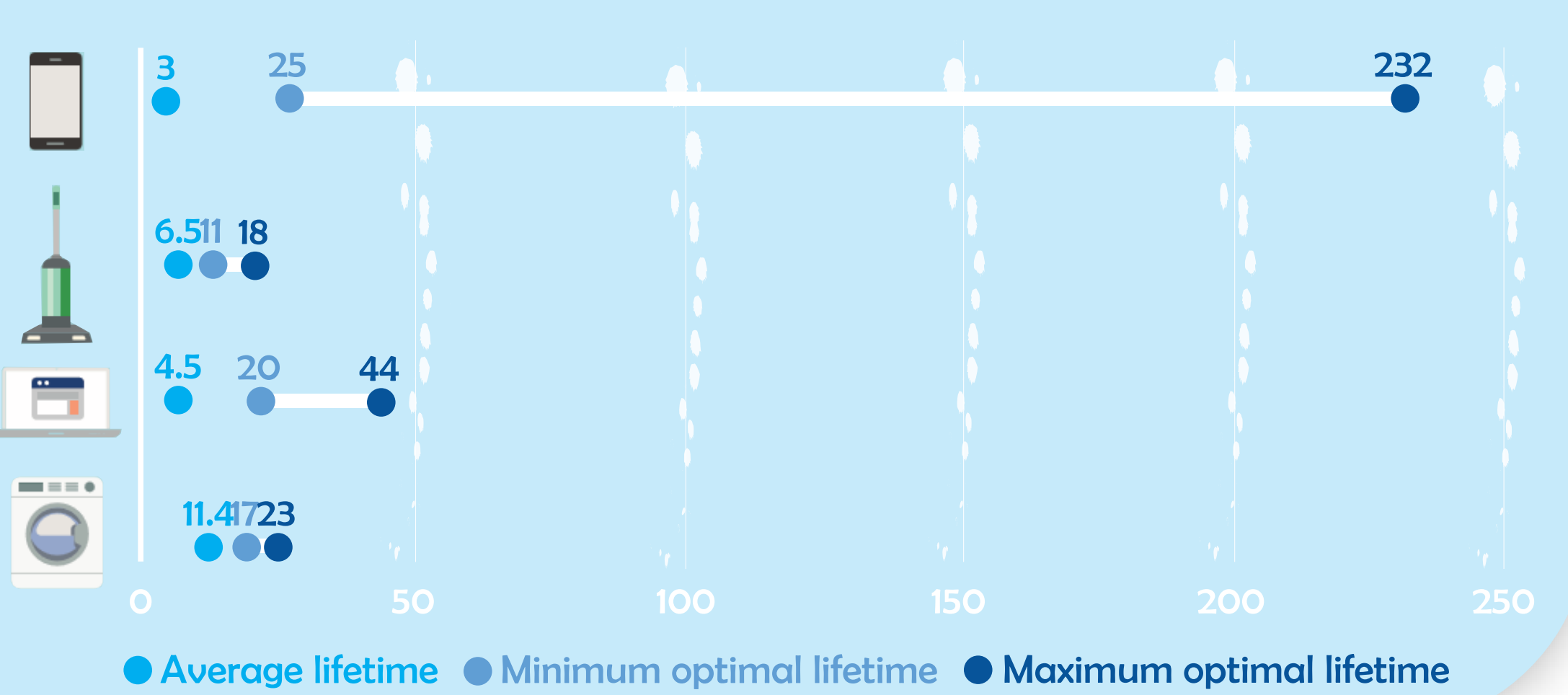


Figure 3: EEB (2019) Coolproducts don't cost the earth - full report. www.eeb.org/coolproducts-report

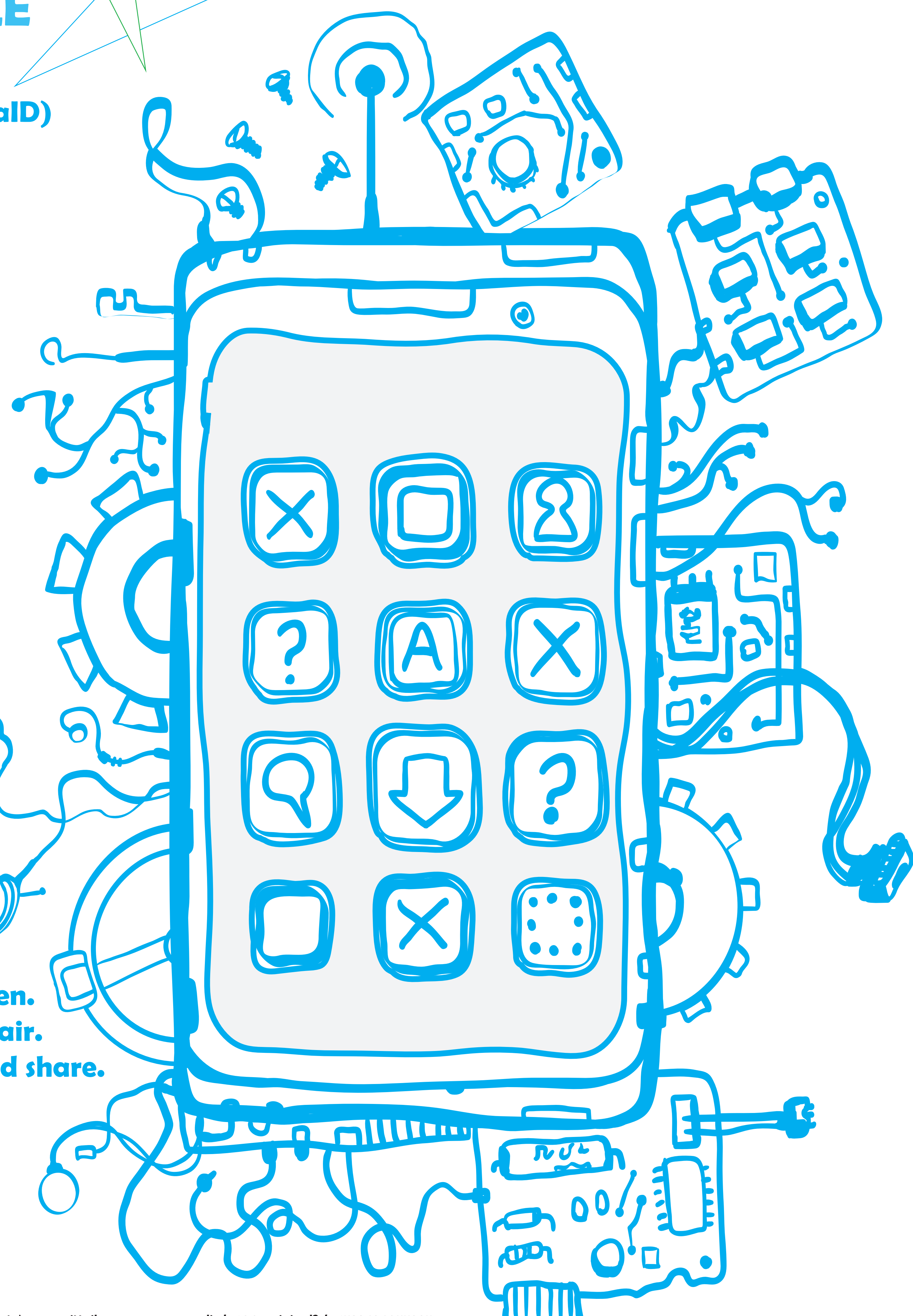
In each and every product's lifecycle the design phase influences largely both production, use and end-of-life: About **70%** of the economic costs, but also of social and environmental **impact** are decided during the conceptual design phase, that is with invention (Sy & Mascle, 2011). When shifting from a previously linear to **circular thinking**, one might assume all the designer in the design phase or the artefact's design itself has to make sure is to "Close the loop!". But this leaves out the temporalities involved.

One worst-case example is scrapping new surplus product items because their disposal (waste management costs) is cheaper than the taxes to be paid in case of a donation to charity (Judzikowski, 2018). The **products' integrity** is destroyed even before the point-of-sale, skipping the usage phase completely and short-cutting in the lifecycle even though it might be a closed-loop one through thermal recycling, the **least preferred** option above disposal in the hierarchy of waste (see Figure 2).

In contrast to that, circular thinking in Sustainable Technology and Interaction Design (STaID) should - besides bettering regulatory and monetary incentives for such examples - **promote detours** instead of shortcuts. Even more loops shall be gone through, small circles within the use phase of ICT added, that mirror the **digital materiality** and its reuse and remanufacturing (even recycling?). The additional circles illustrate that - a) software (apps),

- b) interfaces changing with updates,
- c) learn to interact with a technology over time
- and d) repair of the 'soft matter' in general

- play a vital role, whether and how far users manage to **relieve** using a physical piece of technology.



References

- Hierarchy of Waste pyramid (retrieved from: <http://blog.phonebloks.com/post/89651166898/what-happens-with-our-broken-phones-by-klara>); Judzikowski, S. (2018, June 12). Amazon destroys massive quantities of returned and as-new goods (de: Retouren für den Müll). Retrieved from <https://www.zdf.de/assets/pressemitteilung-amazon-englisch-100-original?cb=153362605295>;
- Sy, M., & Mascle, C. (2011). Product design analysis based on life cycle features. Journal of Engineering Design, 22(6), 387-406. <https://doi.org/10.1080/09544820903409899>;
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