Module 5: The need for transparency in the design of digital devices

We have the power to demand more information about the digital devices offered on the market. Buying a device should give us the right to this information so that we can assess its circularity and our contribution to a sustainable world.

Device design and durability

There are many decisions that go into designing a digital device. The design determines the materials that will be used, where they will be sourced (e.g. from which suppliers or specific manufacturers), how easily a device can be disassembled, the durability of its parts, and whether they can be easily replaced, repaired, reused or recycled.

The ability to upgrade a digital device with additional storage, RAM (or random access memory), and a new battery or camera can significantly extend its useful life, and make its computational power comparable to a new device.[1] But for a manufacturer driven by units of products sold, durability is an enemy of the future sales of new devices. Because of this, technology design may make decisions in favour of or against obsolescence. Planned obsolescence is a huge barrier to the circularity of digital devices.

The importance of public access to technical data

Access to technical data about devices is important. It can help organisations exchange and aggregate data records about models and devices to produce statistics about the durability of devices, among other qualities. This also helps to make recycling and e-waste management more accountable and verifiable.

Public data sheets that list various details such as the composition of a product, the methods used in its manufacturing, the sources of its parts, links to operation, maintenance, repair or recycling manuals, and their durability ratings, are crucial in assessing a product's sustainability. These public data sheets usually apply to models, but they could be specialised according to regional variants, batches built in specific factories, or even to individual items with a unique serial number. A digital representation of this data, linked to other digital datasets, is referred as a "digital twin" or a "digital product passport". It allows us to automatically find out product details, compare different products, and assess their level of circularity, and can facilitate the maintenance, repair,

reuse and recycling of a device.

Transparency on the technical details of devices can come from the manufacturers themselves, differentiating them from competitors. Governments can also impose minimum requirements on the industry. Voluntary reporting and monitoring mechanisms can become an incentive to design and use more circular digital devices.

What is being done?

In order to promote circular design, ecodesign initiatives are defining minimum requirements or ratings[2] to promote the durability and repairability of digital devices. Ecodesign initiatives have also expanded their activism to procurement. Organisations that certify, evaluate and monitor digital devices and procurement processes are discussed in Module 7.

Fairphone, a social enterprise described in a case study for this module, shows probably the most publicly documented effort to develop smartphones that are designed and produced with minimal environmental impact. Fairphone was founded to develop a mobile device that does not contain conflict minerals, has fair labour conditions for the work force along the supply chain producing it, and helps people to use their phones longer.

Footnotes

[1] The modularity of the Fairphone 3 has allowed owners of this model to buy an upgrade kit to replace the camera modules so that they are on par with the 3+ model. See:

https://www.fairphone.com/en/camera-upgrades-for-fairphone-3

[2] International Telecommunication Union. (2020). *ITU-T Recommendation L.1023: Assessment method for circular scoring*. http://handle.itu.int/11.1002/1000/14301

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