

Case studies: Sustainable solutions for transforming the smartphones and ICT sector



Circular Computing: giving laptops a new lease of life

Circular Computing is a specialist in laptop remanufacturing for supply to corporates and institutions. It solves the typical problems that prevent large buyers from choosing used equipment. By making laptops as good as new, and by educating buyers and sellers, Circular Computing is proving that second-hand tech is now a real alternative to buying first-hand.

Laptops are essential to the modern workforce but are often replaced as warranties expire – often within three years – as businesses cannot risk compromising on performance. Organisations also need large numbers of the same product. The only option most buyers know is to buy new equipment from trusted brands via familiar channels. They don't have the time or expertise to assess the varying conditions of 'refurb' laptops, even if available at volume. Many organisations cannot even accept unused ICT that has been unboxed as they no longer consider it 'new' or 'safe'.

Businesses and institutions also need the security of a long warranty – typically not available for second-hand products. There is also a perception that pre-used ICT is less pleasant to use. While some Original Equipment Manufacturers (OEMs) incorporate recycled plastics

or metals into new products, the process of material recovery uses a great deal of energy and fails to retain the full value of the equipment.

Solution and business model

Circular Computing takes bulk volumes of ex-lease laptops from businesses or institutions across the world and sends them to its remanufacturing facility in the United Arab Emirates. Here they are conditioned to a standard indistinguishable from a new product in every way, from appearance to performance. Keyboards can be reprinted, and scratches repaired with full cosmetic detailing. Defunct parts of laptops are replaced with functioning parts from others, and a new battery is added. A large 'components library' allows repair across a wide variety of models. Instead of recycling the laptop into materials, this process retains the maximum possible value of the original product. Only truly unusable parts (less than 1% of weight) are sent to a specialist e-waste processor for materials recovery. After valuable metals are extracted, the residue is recycled into various products including shipping pallets.

“Bulk volumes of ex-lease laptops are conditioned to a standard indistinguishable from a new product in every way, from appearance to performance.”

Tests by Cranfield University show that the remanufactured laptops achieve 97% of the performance of new laptops – perfectly viable for most users. They are sold with a warranty

similar to those that come with a new product, and they arrive via the same resellers from which the purchaser would usually buy their ICT. Thanks to global sourcing of pre-used products, large numbers of identical units are made available. The result is a

far more sustainable purchase, with zero compromise in the user experience or buying process. After the new warranty runs out, buyers are offered a discount on the next purchase (12% of the price of the first product). This is an incentive for the user to return their equipment into the reuse cycle.

A key to this business model's success is the team's logistics expertise. They have been able to develop a smooth operation, using a keen understanding of legal issues around the movement of e-waste and how to take advantage of reverse logistics routes.



Image credit: Circular Computing

Empowering clients to make the sustainable choice

Circular Computing also creates demand by building the market's knowledge of what is available. Remanufactured laptops are often a completely new product for resellers, so Circular Computing runs learning activities for resellers and their clients. This helps all parties understand the product benefits. Resellers gain the confidence to talk about remanufactured ICT with key target clients such as the educational sector.

A particularly effective approach has been to bring together the CSR and IT departments of a company, with the financial director as a bridge between them. This helps to create a logical link between reduced cost and better social and environmental impact, while removing doubts about the product. Some of these workshops even reassess the company's whole approach to sustainability, allowing it to teach staff about the downsides of new IT and the benefits of remanufactured IT.

Impact and influence

With careful remanufacturing and warranties to back it up, Circular Computing adds up to three 'life cycles' to a laptop, beyond the typical 3-year initial use. This can extend use to over 12 years. It has processed about 10,000 tonnes of laptop parts – the weight of the Eiffel Tower and its foundations – that would have otherwise become e-waste.

Remanufacturing, transport and extended use of a laptop do involve energy and carbon emissions.

A key challenge in growing the demand for sustainable ICT is making a clear and emotive connection between the buying decision and the meaningful impact that follows. To make this connection, Circular Computing works with WeForest to plant trees at projects in India and Zambia to offset the carbon emissions of remanufacturing and laptop use. Local families receive long-term income for caring for the trees and support for forest-related livelihood activities. This gives resellers and end users a story to tell.

One of Circular Computing's biggest potential impacts is its scope to influence industry practice. In a sector where everyone from manufacturers to end users consider only original, sealed equipment to be 'new' and therefore risk-free, the most important task may be the re-education of the industry. Today, legal regulation and procurement policies actively impede development of a thriving pre-used ICT industry because of these perceptions. As the world's first and only 'Secondary Equipment Manufacturer', Circular Computing is well-positioned to help realign standards and policies to reflect what remanufacturing can offer.

Circular Computing has processed about 10,000 tonnes of laptop parts – the weight of the Eiffel Tower and its foundations – that would have otherwise become e-waste.

For this purpose, Circular Computing speaks at the EU and UN, and sits on the British Standards advisory committee for manufacture, disassembly and end-of-life processing. Parts of this committee's work have now been adopted into international ISO standards.

Through engagement with public and industry bodies, Circular Computing is changing perceptions in the sector that 'new is good' and 'used is bad'.

What next, and how?

Circular Computing sells mostly through resellers in the UK, Netherlands, Belgium and Sweden, and possibly soon in the USA. Major end users thus far are SMEs and educational institutions. These users see great value in high-end, high-grade laptops at a lower cost than the recommended retail price. They are also more agile in their scope to change their procurement criteria. However, Circular Computing argues that the public sector should be leading the charge. With 20% of ICT global purchase value and a mandate to create social good, the public sector has the scope and the scale to really power-up the demand for innovative circular ICT. Its 'clients' are citizens – so to serve them fully, public purchasing should tally with its other ambitions on sustainability.

One potential bottleneck is the supply of well-cared-for, second-hand ICT products, and replacement parts. This requires both the OEM and the first user to develop a sense of 'duty of care' towards the product's next life. Advances in 3D printing technology may also offer ways to invigorate the remanufacturing industry. If OEMs could release 3D printing files for components, this would enable remanufacturers to keep renewing old and rare laptop models long after the original parts run out.

ICT remanufacturing's true potential will be realised when it becomes well-known in the wider market and can compete with the allure of pristine 'new' tech. Circular Computing is inviting users to ask themselves "how new is new enough?" – and offering them a more sustainable choice that matches up to their expectations.

Find out more:

www.circularcomputing.com



Image credit: Circular Computing

Keys to success

- Develop ways to restore second-life electronics to good-as-new condition
- Target markets that appreciate quality at lower cost
- Sell via channels that don't require buying procedures to change
- Tell stories to help the customer understand the true social value of the product.

Next steps

- Electronics industry to understand, regulate and trust second-life electronics
- Public sector procurement to lead the charge in demanding sustainable ICT
- Manufacturers and consumers to develop a 'duty of care' to keep devices in use for multiple life-cycles.

About Transform Together

[Transform Together](#) works with civil society, governments and businesses to advance sustainable consumption and production in high and middle income countries. Bioregional is the convenor and secretariat of the partnership.

About Bioregional

[Bioregional](#) works with partners to create better, more sustainable places for people to live, work and do business. We call this One Planet Living®.