

# Digital Solutions for a Circular Electronics Value Chain

*A thought paper for  
International E-waste Day 2021*

The current linear economy model is highly unsustainable and vulnerable to economic shocks from the disruption of resources, as seen in the Covid-19 pandemic. For stability and sustainability, a systemic transformation towards a circular electronics value chain is vital, converting the current “take-make-waste model” into one that integrates circularity throughout the electronics value chain. In this shift towards circularity, digital technologies can support the transparency, efficiency, ease and accountability in existing economic systems.

As part of a collaboration for [International E-waste Day 2021](#), The International Telecommunication Union, the WEEE Forum, the GSMA, and Sofies Group have prepared this thought paper to explore the current applicability and scope of digital technologies in enabling the transition to a circular electronics value chain. The paper maps out major digitalization trends and highlights use cases of digital technologies across the electronics value chain, from raw material production and electronics manufacturing, post-consumer e-waste collection, logistics and treatment to overall e-waste system management and monitoring. Examples are drawn from both established and emerging digital solutions, whilst case studies provide a deeper look into real-world applications of digital technologies across the electronics value chain.

## Key Messages:

- Around the world, there is growing interest in digital technologies - particularly AI, robotics, cloud computing, the IoT and blockchain - as tools to strengthen and support a circular electronics value chain from operational and logistical tasks to communications.
- The electronics value chain and its necessary shift towards a circular economy can, given the right conditions, be supported by the use of digital solutions.
- Digital solutions were found to address common challenges in the transition towards a circular to the electronics value chain.
- Digital solutions were found throughout the value chain, ranging from simple digital platforms and Uber-style mobile collection applications, to AI-enabled e-waste recognition and blockchain-based secure communication channels.
- However, these solutions are scattered, vary in scale and are heterogeneous in nature.
- The applicability and effectiveness of these solutions depend on factors such as equal access to digital infrastructure and digital skills, the financial viability of the digital applications, the opportunity for public-private partnerships in the regulation of this space, as well as data security and privacy provision.
- Digitalization comes with numerous benefits, but an unregulated space can alienate actors such as smaller recyclers and the informal sector and underscore inequalities, infringe on privacy and even create more e-waste.

