

ADDRESSING E-WASTE

How can Blockchain be used to solve the growing e-waste problem? **Stewart McGrenary** explains

It's no secret that some of the world's best inventions were come upon by accident. Penicillin, the microwave oven, x-ray and even potato chips were created not to be what they are today, but thanks to these mistakes we now enjoy convenience, better medical help and enjoyable, if unhealthy, snacks.

In regards to one of the world's biggest problems can the blockchain, perhaps one of the most high profile technological buzzwords of recent years, help to reduce the amount of e-waste that gets dumped in landfills each day?

Despite the efforts of environmental groups and organisations, well-meaning people and others trying to combat the problems associated with e-waste, cumbersome practices and inefficient methods are hampering their efforts. There are some who suggest that the blockchain solution could be a way of getting more e-waste recycled or reduced via green programs.

The UK waste problem

It started with the problem of disposing of plastic and trying to stop the material from invading the world's oceans and killing marine life along the way.

In the UK, only 7.4 million tons of 11.5 million in total plastic waste currently gets successfully recycled. Moreover, only 0.9% of the recovered material is being reused for newer products.

Most of the materials were from plastic bottles and nylon packages that were created from fossil fuel, i.e. petroleum and natural gas. The factories involved in their production then gave out toxic gases and chemicals as a result of manufacturing them, endangering nearby populations and local flora and fauna.

But it has been the rise of smartphones and other handheld devices that have helped to make things considerably worse.

As electronic components decompose they release toxic gases or liquids into landfills. Chemicals can and have made their way to the water supply or the soil where food is grown.

Precious metals and electrical components that could have been reused are slowly decomposing and harming the environment.

It's been estimated that the enormous footprint created by smartphone manufacturers will overtake that of the automotive and transportation industry by 2040. Add to the fact that there are more smart phones, tablets, and laptops being made each year and we'll have a serious e-waste problem on our hands.

The whole world has

become aware of this problem and efforts have been made to put a stop to the e-waste being produced.

Recycling programs have been implemented and the dumping of waste into oceans and landfills better controlled by well-meaning regulations.

However, as governments pour in money, time and resources to try and reverse the problem, a growing number of unscrupulous companies and 'uncouth' practices have combined to sabotage waste management, reducing its efficacy.

The blockchain - a new form of technology - although unrelated, can be used to help streamline recycling processes and increase the likelihood that e-waste actually gets to the recycling plant for reusing.



What is A Blockchain?

A “block” is an immutable piece of data that gets a unique digital signature. It’s followed by a similar piece of “block”, and so on. Larger pieces of data make up larger portions of a blockchain.

This technology is unique as it’s decentralised, which means no single person or organisation has direct control over it. The users who use and employ the blockchain are the owners via a peer-to-peer protocol. As each chain has its own unique security process, the data contained are impossible to corrupt.

The blockchain’s original purpose was for cryptocurrency, a kind of digital money that can be used to purchase products or services. As it became more popular, companies and organisations wanted to use its immutability and unparalleled security for various purposes, which included recycling.

Has the Blockchain ever been adapted to address the issues of better waste management?

Believe it or not, the blockchain has already been making itself useful in various recycling programs around the world.

In Canada, a company called Plastic Bank was created as a platform to reduce plastic waste. Currently, it operates in various countries such as Peru and Haiti,

with plans of expanding into other nations.

Plastic Bank has set up recycling centres in strategic locations, where individuals are able to bring their plastic waste, such as a bag or a bottle in exchange for digital tokens. A machine streamlines the process and makes it easy for people to just drop off their by-products and get digital currencies within a convenient platform. The token may be used for food and other essentials via an app or at a participating store.

Collected plastic is sold to a company which then gets reused.

The blockchain has helped with the platform’s integrity as the vendors and third parties know where the waste and the tokens are going.

In France, the blockchain is being used to collect specific information about recycling, including how much waste was collected, the types of waste and where a bin went, for example. Instead of having to rely on paper, the company - French Rail – has opted for a more secure version, and as such enjoyed immense success in the process.

With their waste management streamlined the company was able to save more than \$2,000 per station in one month.

Through this pilot program, the blockchain technology has shown promise as that figure can be made cumulative per station and per month for a whole year.

There’s no doubt that the blockchain can be useful in recycling practices, but how can it be implemented to solve the e-waste problem?

E-waste recycling

The two implementation methods above show how the blockchain helps with the recycling process by recording and securing each stage. The immutability aspect can translate to accountability in the form of where the e-waste goes and if it really goes to recycling centres as planned.



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In 2017, the UK spent over £8 billion in an effort to curb the e-waste problem, yet the real problem when it comes to addressing this issue lies in the fact on whether actions were really carried out or not.

Third party contractors could easily claim to have collected e-waste and charge it on the government even if they didn’t do so. Older, more corruptible systems make this easy for contractors to make a sizeable profit without delivering on their promises.

So, by using this new technology, it could make the recycler, collector and contractor liable for their actions.

Once installed, recycling companies could use machines similar to Plastic Bank - and encourage people to bring in their e-waste in exchange for digital tokens.

Data recorded may not be changed and will provide an accurate reflection of the situation. A landfill that’s supposed to have less e-waste and yet appears to be full will have a digital footprint in the form of a blockchain, ensuring much greater accountability and integrity.

More accurate data can be an encouragement to the parties and governments that what they’re doing is working. Money will be better spent and individuals will have better incentives to go to a recycling centre or a blockchain-based recycling machine to get something in exchange for doing the environment good.

A brighter future awaits

It’s true that e-waste is a serious problem that has far-reaching consequences all over the world. We must need to be on the same page if we are to ensure that this issues gets properly addressed, and that means ensuring much greater accountability.

With the blockchain, everything becomes easier for all the parties involved. Specific, protected data can level the playing field for contractors, recycling platforms and companies who are looking to address the problem.

