

DIGITAL TRANSFORMATION AND THE CIRCULAR ECONOMY

MAXIMIZE AGING BUSINESS ASSETS THROUGH THE EMPLOYMENT OF A CIRCULAR ECONOMY APPROACH

SUMMARY

Today many businesses recognize the importance of ecologically sustainable operating practices and either have a sustainability strategy in place or plan to adopt one in the near future. The terms reuse, recycle and remanufacture are likely some of the first words that come to mind when people think “sustainability.” Less familiar is the broader concept of the circular economy: a reimagining of traditional industrial practices that seeks to maximize resources and minimize waste and pollution. In short, the circular economy strives to keep non-renewables cycling through closed product loops at their highest utility, while returning biodegradables safely to the natural environment. Many businesses don’t realize the huge potential adopting such an approach holds for their bottom lines.

One important area in which businesses across the board can engage the circular economy is in the procurement, maintenance and end-of-use management of IT equipment. In addition to being a boon to a company’s overall sustainability efforts, engaging in the circular economy on this front can deliver very real business benefits. That said, it’s an issue with many considerations — data, security and increasing privacy concerns reign supreme. Also in play are company policies for how long IT equipment must be used, fear that decommissioned equipment may be needed in the future, and more. To better participate in the circular economy and leverage its benefits, the IT industry at large needs a more nuanced understanding of the concept, the environmental and business benefits of adopting such a strategy, and the resources available to assist in this promising business transformation.

WHAT IS THE CIRCULAR ECONOMY?

To trace the origins of the circular economy concept, one must first look back to the first and second Industrial Revolutions, which took place roughly from the mid-1700s to the beginning of the 20th century. During this period of extreme growth and change, engineers, industrialists and inventors all sought to leverage new technologies to solve problems that limited the output and movement of goods. While the advent of mass

standardized production was a boon to the economy, creating new jobs and driving down the price of goods, these systems were shortsighted in design. Most products were designed “cradle-to-grave” for maximum efficiency and profitability — to be used for a while and then discarded.¹ Byproducts and waste were an afterthought — items to be burned, buried, or discharged into the water supply. Little to no attention was paid to environmental systems and how the burgeoning industrial landscape was poised to affect and perhaps irreparably damage them.

Our environmental awareness has grown over the last century, as have our efforts to regulate. Businesses have made huge inroads in sustainability, but it is still not enough. A new strategy is needed to operate sustainably on an increasingly depleted, crowded planet.

Enter the circular economy. The concept originated in the 1970s but only emerged as a popular school of thought in the last five years. This is not surprising given that the global problems necessitating a new model have become more urgent in the last several decades. The Ellen MacArthur Foundation describes the circular economy as one that is “restorative and regenerative by design and aims to keep products, components, and materials at their highest utility and value at all times, distinguishing between technical and biological cycles.”² Technical cycles in this context refer to the usage, recovery and reuse of finite materials, while biological cycles refer to the cycling of renewable biological materials through the economy and back into the biosphere. The Ellen MacArthur Foundation breaks the circular economy down into three main principles, paraphrased as follows:

1. *Preserve and enhance natural resources.* Use fewer materials whenever possible (e.g. through the virtual delivery of utilities), but when resources are necessary, source them intelligently. Utilize renewables or higher-performance materials whenever you can. Foster the flow of nutrients within the system so that they might rejoin the biosphere.
2. *Circulate products, components and materials at the highest utility possible at all times to optimize resource yields.* Design to enable remanufacturing, refurbishing and recycling to keep parts and materials circulating. Embrace tighter loops, such as maintenance vs. recycling,

¹ Michael Braungart and William McDonough, *Cradle to Cradle: Remaking the Way We Make Things*.

² https://www.ellenmacarthurfoundation.org/assets/downloads/TCE_Ellen-MacArthur-Foundation_9-Dec-2015.pdf

when possible. Extend product life cycles and reuse products so that they spend more time in each cycle. Enable biological waste to safely decompose and rejoin the biosphere, thus creating new resource potential.

3. *Reveal and design out negative externalities.* Manage externalities such as land use, pollution and the release of toxic substances in order to reduce damage to environmental and human systems.

As far as environmental benefits go, the circular economy stands to minimize waste and pollution and reduce stress on our environmental systems and rapidly dwindling natural resources. Up until recently, these concerns alone were a tough sell for companies, but many are waking up to the potential business benefits of engaging in just such a model. For example, keeping resources circulating through the system could potentially insulate companies from volatile resource price fluctuations and risks to the supply chain. Additionally, circular business practices can assist companies in complying with environmental regulations, for which there is a growing global appetite. Adopting circular business practices could even help companies gain and retain talent: Surveys find that millennials are significantly more likely to choose to work at a firm with a strong environmental agenda.³

IT and the Circular Economy

Not every business is involved in the material production of goods, where the need for a new model is perhaps most obvious. However, most modern businesses do have an IT department of some shape or form that utilizes computers, printers, routers, scanners, servers and other electronic equipment. Improper end-of-use management and disposal of old IT equipment is problematic for multiple reasons. These electronics can contain toxic materials such as cadmium, lead and mercury. Additionally, according to the most recent exhaustive study on the issue, Global E-waste Monitor 2017, only 20% of the estimated 44.7 million metric tons of e-waste generated in 2016 was recycled properly.⁴ The same report estimated 2016's global e-waste to contain roughly \$55 billion worth of valuable recoverable materials, such as gold, silver, copper, platinum, palladium and more. The World Economic Forum estimates that global e-waste numbers rose to 50

³ <https://www.fastcompany.com/90306556/most-millennials-would-take-a-pay-cut-to-work-at-a-sustainable-company>

⁴ <https://www.itu.int/en/ITU-D/Climate-Change/Pages/Global-E-waste-Monitor-2017.aspx>

million metric tons in 2018, worth \$62.5 billion, and predicts a worst-case scenario of 120 million tons of annual e-waste by 2050.⁵ Astoundingly, the value of global e-waste is already larger than the annual GDP of many countries. To be clear, this is untapped value that businesses of all sizes, across all sectors, could be returning to their “circle” through proper engagement with the circular economy.

By adopting more circular strategies for IT, businesses can maximize their assets, keep equipment in use longer, and free up IT dollars to invest in new technologies. To be clear, keeping equipment in use longer doesn’t mean a company has to put a hold on innovation. Rather, the goal is to ensure the tech remains in a business’s circle once it leaves the environment. There are a number of ways to mitigate e-waste before it heads to the landfill. In the procurement phase, IT departments should seek out technology that is specifically designed with circularity in mind — technology that is easy to disassemble, repair and recycle and that is designed for efficiency and longevity. Organizations should optimize their IT infrastructure to reduce energy consumption and waste. Deploying “as-a-Service” solutions can give organizations added agility and efficiency and eliminate the issue of overprovisioning. All of these strategies make proper end-of-use management of IT equipment a less complex undertaking, though there are still considerations and roadblocks to grapple with.

Many companies set policy requiring assets to be used for a certain length of time, which, with the rapid cadence of technological advancement, can saddle businesses with obsolete technology that no longer functions as effectively as desired. Many businesses stockpile old IT equipment out of fear it may be needed at some unspecified time in the future, or out of fear of it ending up in a landfill. However frugal or noble the intentions may be, both these approaches leave companies with stranded, unutilized resources that take up office space and bring little to no tangible business benefit.

Another aspect of engaging in the circular economy, the deployment of refurbished IT equipment, has its own set of issues. Companies may have rigid policy governing usage of refurbished equipment. Reused products often have shorter lifetimes than new products. Another trade-off that must be considered is the fact that older electronics typically are less efficient and consume more energy than new ones. With so much to weigh, businesses could be left with the question: Is it worth it financially?

⁵ <https://www.weforum.org/agenda/2019/01/how-a-circular-approach-can-turn-e-waste-into-a-golden-opportunity/>

CIRCULAR ECONOMY BEST PRACTICES

Thankfully, there are a number of best practices businesses can follow to simplify their transformation towards the circular economy. According to an HPE Financial Services study, 69% of businesses have an environmental sustainability strategy in IT.⁶

- Join your company's sustainability program and establish a joint sustainability plan between your Chief Information Officer and your Chief Sustainability Officer.
- Coordinate with your program manager to set and align on goals for IT asset reuse, taking into consideration all aspects of the IT asset lifecycle (Moor Insights & Strategy recommends returning 75% of your retired assets back into the circle).
- Educate your teams on your department's sustainability strategy, keeping them abreast of guidelines on IT asset use, including those around refurbished technology.
- Optimize your environment by upcycling (reclaiming materials for use in new or better products) any stranded resources (e.g. zombie servers and underutilized assets) in the office. Given the data-security concerns mentioned earlier, it is crucial that any upcycling occur through a trusted IT Asset Disposition (ITAD) provider. Invest the value from these retired assets into new, transformative IT technology.
- Engage in as-a-Service programs when possible, to eliminate overprovisioning.
- Utilize certified pre-owned products whenever possible in order to support legacy and/or non-revenue generating workloads and applications.
- Consider technology rental programs.
- Last but not least, measure progress towards company sustainability goals and hold yourself accountable for achieving results.

Selecting a trusted ITAD provider

If all of this sounds like a complex undertaking for the average IT department, it doesn't have to be. While many companies attempt to manage their own IT sustainability strategies, Moor Insights & Strategy believes there is value in examining what resources

⁶ HPE Financial Services, "The Circular Economy and IT Mindsets Study," September 2018.

are available to assist in this transformation. Selecting the right provider to recover value from retired assets can be challenging, but worthwhile.

There are certain pitfalls to look out for when selecting and negotiating with an ITAD provider (or whatever entity an organization chooses to engage with for asset recovery). One major red flag is providers that attempt to pass off a net-zero cost model in which they process an organization's assets at no cost or a nominal processing fee. They may attempt to sell it as a win-win situation, but there is almost always some amount of monetary value to be gleaned from retired IT assets — money that goes into the pockets of these ITAD providers, not their customers. This is a bad faith deal that preys on customers that don't realize the value of their old technology. On that note, look out for contractual language that says the provider doesn't have to return value to the customer for any assets designated "non-functional." This is another ploy to pocket the valuable components at no cost.

Additionally, some ITAD providers will offer high quotes based on high-end configurations to customers, but then attempt to negotiate the price down once the retired assets are in their possession. Businesses can gain leverage and avoid this scheme by providing a detailed, accurate list of their assets up front.

It's also good to keep in mind that the lower the processing fee a provider is offering, the lower the value they're likely extracting from the assets. One easy method for comparing potential ITAD providers is to determine overall yield (by subtracting any processing fees from the money returned to the organization) and then divide the yield by the original value of the asset at the time of procurement. Another good guideline for selecting a provider is finding one who has a reuse metric of 75% or higher, versus recycling. This generally means more value will be returned to the organization.

HPE Financial Services – IT Asset Lifecycle Solutions

One such resource worth consideration is HPE Financial Services and its IT Asset Lifecycle Solutions portfolio of products and services. HPE is a company that seeks to align with the circular economy in a number of ways, enabling end-of-use management, the elimination of overprovisioning through as-a-Service offerings, and the optimization of IT structure for energy efficiency and waste reduction. Furthermore, it seeks to design technology specifically for circularity — efficient, lasting products that are easy to repair, recycle and disassemble. HPE puts special emphasis on extending the lifespan of technology in the circle — a reuse *before* recycle strategy. It's worth noting that HPE does not actually refer to itself as an ITAD provider, since its emphasis is less on asset disposal and more directed towards the efficient management of IT asset end-of-use.

HPE's Asset Upcycling Services are a crucial part of the IT Asset Lifecycle Solutions portfolio and HPE's reuse-before-recycle strategy. These services help businesses with the retirement of obsolete IT assets by taking, refurbishing and remarketing them for a second lease on life. According to HPE, almost 90% of all technology processed in its Technology Renewal Centers get a second life, while the remainder is recycled responsibly. Asset Upcycling Services provide secure data cleansing, either through industry-standard methods of data eradication, the actual physical shredding of recording media, or high-power magnetic degaussing (in the case of hard disks). Along the way, HPE provides serialized, asset-level tracking and testing to certify the cleansing of data. Via revenue sharing, HPE provides customers with the true market value of their assets, which can be used to invest in new IT undertakings. In fact, over half a billion dollars was returned to customers by HPEFS through its Asset Upcycling and Accelerated Migration program.

Another useful resource is HPE's portfolio of certified, pre-owned IT equipment, available for purchase, lease or rent. The company's list of pre-owned inventory is impressive, spanning anywhere from 18 months to 25 years out of production across its enterprise equipment portfolio. This includes HPE ProLiant servers, HPE Aruba and ProCurve networking equipment, HPE Integrity servers, HPE Storage offerings, various individual components and much more. Certified, pre-owned equipment can be a highly effective alternative to new technology for some scenarios, with the potential for lower IT costs, optimized ROI and reduced e-waste. Amongst other benefits, utilizing older technology can enable businesses to extend the life of legacy applications. The utilization of pre-owned equipment can even help accelerate innovation by freeing up dollars historically spent on maintaining legacy and/or non-revenue generating systems.

HPE Asset Lifecycle Solutions also offers Virtual Warehousing to customers, allowing them to store their decommissioned IT assets in centralized warehouses until they are updated and redeployed. Additionally, HPE offers Data Center Consolidation Services, which serve to eliminate downtime during the relocation or consolidation of IT infrastructure by offering custom, pre-configured interim systems for rent. Additionally, HPE offers short-term hardware deployments for enabling proof-of-concept demonstrations.

One last major differentiator for HPE's IT Asset Lifecycle Solutions is the Circular Economy Report it makes available to its Asset Upcycling Services customers. This report enables customers to measure and track their contributions and progress towards their sustainability goals, providing a summary of items upcycled and the impact and savings achieved. This is important because it enables IT departments to

better align their technologies with their business's circular economy and sustainability strategies at large and demonstrate the success of such programs to company leadership. As of now, no other OEMs provide such a valuable tool to their customers.

CALL TO ACTION

The potential environmental and business benefits of engaging in the circular economy are significant to say the least. In addition to reducing waste and keeping old IT equipment out of landfills, we believe participating in the circular economy can help businesses maximize their assets and extend product lifespans. Successfully leveraging these benefits requires a business transformation. Best practices should be followed, including the setting of sustainability goals, the measurement of progress, and organizational accountability. Businesses should strive to keep IT assets in the cycle as long as they can by selecting efficient, hardy technology that is easy to maintain, repair and disassemble. As-a-Service offerings can help eliminate overprovisioning and give organizations added agility. On the face, it may sound like a daunting undertaking, but simple actions can yield measurable results.

Programs such as HPEFS's IT Asset Lifecycle Solutions can aid in the transformation through offerings such as its Asset Upcycling Services and Certified Pre-owned Products. HPEFS's offerings can help businesses align more easily to their circular economy goals, execute on those goals, measure results, maintain accountability, and return financial value back to the business to accelerate innovation. For this reason, Moor Insights & Strategy recommends that any enterprise wanting to further its sustainability goals and engage in the circular economy consider HPE Financial Services' Asset Lifecycle Solutions.

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