3 STEP IT
CIRCULAR ECONOMY
DERIVING VALUE FROM MORE SUSTAINABLE IT

20 YEARS OF 3 STEP IT
FOUNDED in 1997
ASSET MANAGEMENT TOOL released in 1998
2001 EXPANSION TO SWEDEN
2005 TURNOVER EXCEEDS 100M€
2007 MORE THAN 100 EMPLOYEES
2009 > 500,000 ASSETS
2011 EXPANSION TO FAR EAST
2012 DEVELOPED SMARTPHONE AND TABLET SERVICE
2014 3FINDIT IS LAUNCHED
2015 NEVTOR, TECFINANCE & ITMOVE ACQUIRED
MANAGING 1.79 MILLION ASSETS
10th CONSECUTIVE TIME ON GREAT PLACE TO WORK LIST IN FINLAND
98% OF EQUIPMENT FINDS A NEW HOME
2016 3 STEP IT WINS MAJOR AWARDS
2017 20 YEARS OF 3 STEP IT

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“The goods of today are the resources of tomorrow, at yesterday’s resource prices."

Walter R. Stahel

Founder-director at the Product-Life Institute, Geneva

PREFACE

This paper describes the circular economy, and the huge economic potential it offers. It looks at the ways in which the model can be integrated into the technology life cycle, and some of the practical challenges that need to be overcome. Finally it examines the IT life cycle management services 3 Step IT offers, from a circular economy perspective.

In envisaging a move from 'take, make and dispose' to 'take, make and re-use', the circular economy promises substantial savings in material costs, as well as recurring GDP improvements. But while the potential of the circular economy is vast, it has so far been challenging to realize. For example, used technology collection rates are only around 50% today, while re-use rates languish below 5%. Clearly collection rates need to rise so more equipment can be reused or recycled.

The case for technology leasing has always been to enable a client to acquire equipment they need while conserving their cash and lines of credit. Leasing offers a way to maintain IT investment plans, even when a budget is stressed or completely exhausted. In addition, some lessors offer leases with integrated or associated services that can help to raise IT service levels, and, as lessors may own the equipment at the end of the lease, they can enhance sustainability too.

THE CIRCULAR ECONOMY: AN OPPORTUNITY FOR ALL

The circular economy describes a move from "take, make and dispose" to a "take, make, re-use, re-make and re-cycle" economy where products are designed and optimised for multiple cycles of disassembly and re-use. It seeks to switch to the presumption of restoration, rather than disposability. Figure 1 shows the flow of manufacturing activity in a circular economy.

The promise the circular economy offers is dramatic. To select just a few benefits described in a World Economic Forum study[1]:

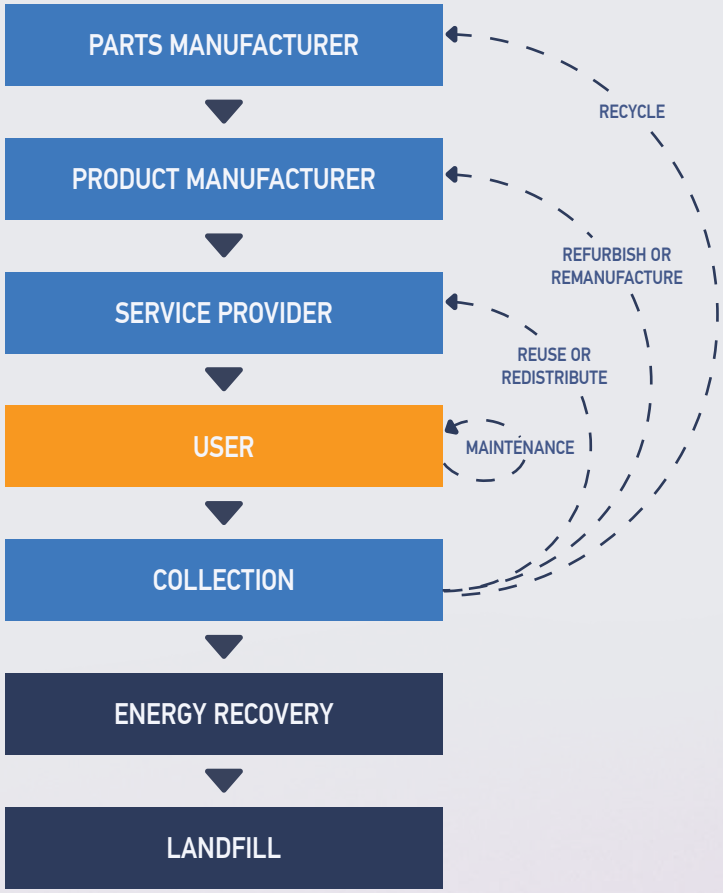
Substantial net material savings in medium-lived complex product industries of around 20%. This is similar to a recurring saving of nearly 4% of GDP.

Net material cost savings of 21.9% in FMCG, which similar to a recurring 1.1% of GDP

Other benefits include mitigating raw material supply risks, improving innovation as suitable products and processes are created, and creating jobs in new re-manufacturing and recycling industries. In a helpful summary[2], the World Economic Forum asks if this is 'the biggest economic revolution in 250 years' i.e. since the original industrial revolution.

Using a different methodology, the EU estimates savings of 8% of turnover are readily available, but have not yet been realised[3]. Waste prevention, eco-design, re-use and similar measures could bring net savings of EUR 600 billion for businesses in the EU (equivalent to 8% of their combined annual turnover), while reducing total annual greenhouse gas emissions by 2-4%.

FIGURE 1: MATERIAL FLOWS IN CIRCULAR ECONOMY



Source: Based on Towards the Circular Economy[1]

In their assessment, the EU cites the possibilities for smartphones as an example, suggesting that the cost of re-manufacturing these devices could be halved if only it were easier to take them apart. If 95% of mobile phones were collected, this could generate savings on manufacturing material costs of more than EUR 1 billion annually.

In a bullish assessment, Accenture[4] predicts that circular economic activity will deliver USD 4.5 trillion of economic output by 2030. They see five business models delivering the full potential of the Circular Economy:

1. Sharing platform

2. Product-as-a-Service

3. Product Life Extension

4. Circular supply chains

5. Recovery & recycling

Whichever estimate you choose, it's clear the potential is dramatic. Yet to date, the benefits have been hard to achieve. The circular economy may eventually become the biggest economic revolution for centuries, but society has only just begun to scratch the surface.

THE NEED
TO IMPROVE COLLECTION

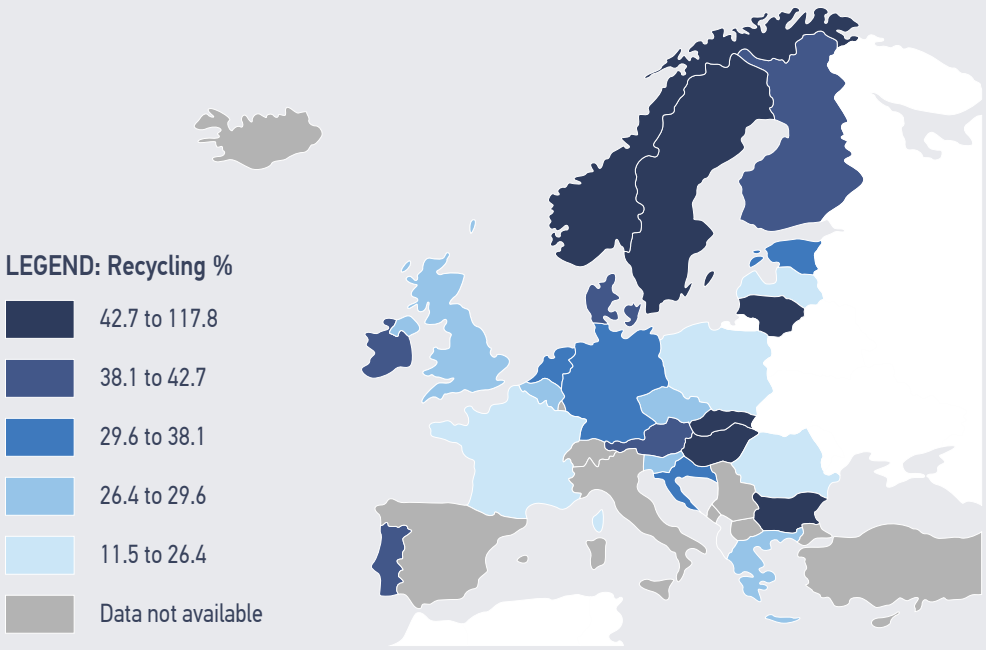
Reuse has to begin with collection. Perhaps the most optimistic observation to make of collection rates today is that there is substantial scope for improvement. Going further beyond collection – to re-cycling or re-use – the scope for improvement only increases.

Collection and recycling in Europe has been supported by the Waste from Electric and Electronic Equipment (WEEE) directives since 2004. Even with this official support, collection rates in Europe are only around 50%. Of this, only about half is currently recycled, while less than 10% is eventually reused. Figure 2 shows current recycling success rates in Europe for telecommunications and technology waste.

Clearly financing equipment (which could be leasing or renting) has a substantial role to play in driving up collection rates, and depending on how the lessor handles returned equipment, there is potential to improve reuse and recycling rates too.

This is not a new idea. Tyre leasing, for example, is almost as old as the motor industry itself. Michelin began leasing tyres in the 1920s and today does so for around 300,000 large trucks. They use leasing as a way to manage replacement, and then control the re-tread and re-use process through to the eventual end of life material recovery[5].

FIGURE 2: ELECTRONIC WASTE HANDLING IN EUROPE



Despite 13 years of regulatory support, technology waste collection rates are only around 50% - and rising slowly. When measured as material recovered, recycling rates in Europe are between 20-40% (some smaller countries with very high rates import waste and recover over 100% of what was put on their market). Re-use rates are much lower, with less than 10% of what is collected being re-used.

Source: Eurostat, 2017

For a thoroughly modern example from the motor industry, consider Renault. Today the French company leases its electric car batteries, as this simplifies recovery, recycling and quality control[5]. It may also help to maintain the eventual re-sale value of the electric vehicle.

The Ellen MacArthur Foundation website[6] gives many successful examples where leasing is a key element in a circular business model. Looking at these, it's clear that manufacturers have a fundamental role to play in designing products that are suitable for re-manufacturing, as well as designing manufacturing processes that reduce waste.

While financing can help to raise collection rates, many users are reluctant to lease so other approaches are needed: trade-in and buy-back programs can also help to boost collection.

The circular economy is an interdependent web of partnerships, so retailers, distributors and lessors all have roles to play. Specialists with particular skills and capabilities can participate in several of the circular economy's cycles.

PURCHASING POLICIES HAVE A ROLE TO PLAY

While the circular economy offers potentially massive benefits, progress in delivering this new business model has been slow. Successful examples are cited, but they are generally sporadic and isolated. Although there are signs of a shift in some Nordic countries, until now sustainability has mainly been used as a purchase decision tie-breaker to help select otherwise equivalent suppliers.

Purchasing functions potentially have a critical role to play. They can make sustainability considerations a buying criterion. This would help to speed a breakthrough to these new models becoming business as usual.

The Nordic Business Council proposes four circular procurement models[7] that are complementary rather than mutually exclusive.

Procurement including Green Public Procurement (GPP) based 'circular' criteria	**Procurement of new 'circular' products and materials**	**Procurement of services and new business concepts**	**Procurement promoting circular ecosystems**
Improved products & services are procured by adding more GPP and circular criteria to the tender competition. These criteria include recyclability, the share of recycled materials in a product, reuse, packaging material, etc.	New products are procured and/or developed by innovative public procurement. The idea is that such products are significantly better in terms of recyclability, share of recycled materials, long lifespan, disassembly, etc.	Product-service systems are procured and new approaches are applied that promote circular aspects such as leasing, buy per use, shared use, buying and selling back, etc.	Investments are made that stimulate the development of "circular ecosystems" that develop or support closed loops, create new networks and alliances, and promote a "waste as material" concept.
Examples: Paper products ICT devices Packages Furniture	**Examples:** Building components from recycled material Textiles made of recycled material	**Examples:** Buying light instead of lamps Leasing furniture instead of buying it	**Examples:** Buses that run on locally produced biogas Construction projects with closed material loops
Better quality products	**New products**	**New business concepts**	**Circular ecosystems**

While the Nordic Business Council has proposed these models for public bodies, they can be applied to any kind of organisation as a way of realising the sustainability elements of CSR policies.

RAISING THE COLLECTION RATE OFFERS VALUE

A trade-in program helps to sell replacement equipment. For the potential product purchaser, trade-in:

1. ***Provides funds for their next purchase, making it more affordable.***
2. ***Reduces the inertia caused by losing value from their current solution.***
3. ***Removes old equipment, while handling security and privacy risks.***

A lease offer can also help to increase sales, as it offers the customer an affordable, predictable payment stream, instead of having to make a large cash outlay. An operating lease further improves affordability, as it uses the residual value of the used equipment to reduce rental payments. Effectively, these smaller rental payments recognise the future trade-in value of the used equipment. As the customer, you only pay for what you use as you use it, and eventually return what you don't use without having to pay for it.

How can a program to increase new sales also improve sustainability? In fact, both approaches naturally lead into the re-use cycle of the circular economy. Both trade-in and residual value leasing need a process for refurbishing, reusing and extracting value from returned items, to improve the economics of the offers. Collected equipment is refurbished and reused, so the process delivers a sustainable product life extension . In addition, when handling older or damaged devices, specialist collection will lead to more efficient recycling when re-use is not a viable outcome.

MORE SUSTAINABLE IT

Now we'll look at IT equipment to see how an enhanced lease service brings better value when the equipment is in use, and improves sustainability at the end of its first use cycle.

During the 1990s, the PC proliferated as a business tool. The sums organisations invested in their PC portfolios began to compare with other IT investments, so the concept of PC Total Cost of Ownership (TCO) was conceived and developed[8] as an IT management discipline. The goal was to minimise TCO by taking into account not only the original purchase price, depreciation, but also their maintenance and support costs, and the costs for decommissioning and disposal of the used equipment. As a general rule, the optimal period to use a PC to achieve the lowest TCO was around three to four years[9]. After four years, rising maintenance and support costs outweighed the savings from lower depreciation.

When commercial PC use was confined to IT enthusiasts and a few number crunchers, PC purchases were often managed out of petty cash. But as the in-company demand for PCs developed into a need for hundreds or even thousands of devices (often million dollar transactions), PC purchases became to represent a significant portion of an organisation's cash. Regular PC refreshes made the cash challenge even worse.

At the time, IT financing was mainly for mainframe computers, leasing just a few high cost items only. Finance departments recognised that PC acquisition and regular replacement would be well served by leasing, creating demand for a new type of transaction: financing for many low-cost items, often installed piecemeal over time, but together representing a significant investment.

**In circular economy terminology, re-use in a second life is known as 'product life extension'. While the costs have changed, the optimal time period has been stable over time: it's still three to four years according to Gartner's recent assessment[10]. While approaches to calculating TCO include initial cost, maintenance costs and support costs, these calculations generally omit user inconvenience. When the disruptive effect of device failures is factored in, the optimal period shortens. This effect is compounded as the user's salary rises.*

OFFERING A LIFE CYLE SERVICE

This was the environment in which 3 Step IT was founded in 1997. The company set out to build a business based on helping its clients to plan and manage a regular refresh of PCs and laptops. Its approach was based on leasing PC equipment with a primary lease period that matched the equipment's three to four year planned life. The lease delivered attractive rental payments for the company's clients and made it easy for them to budget for PC replacement. Lease economics only made sense though if devices were properly used and generally in good condition when returned, for 3 Step IT to realise their residual value.

To manage this residual value, 3 Step IT offered an asset management tool to complement the lease, and developed an industrial process to handle returned devices. The asset management tool helps the lessee to keep track of equipment: where it is, who's using it, how old it is, and when it's scheduled for replacement. When replaced devices are returned, their data is securely erased, devices are cleaned and tested, and then they are resold. This returns process now achieves a resale success rate of approximately 98%. The few devices that cannot be re-sold have their data erased and are then sent to be recycled.

Once a used device is sold, there is no control over its eventual disposal. This is why 3 Step IT prioritises resale to countries with e-waste collection and disposal programs (see Figure 3). The aim of this is to ensure that the final recycling rate is reasonably high.

To make the most of the resale opportunity, 3 Step IT seeks the prompt return of used equipment at the end of the primary lease period*. This approach both reduces costs for the client and presents a commercial opportunity to 3 Step IT: a win-win for both parties.

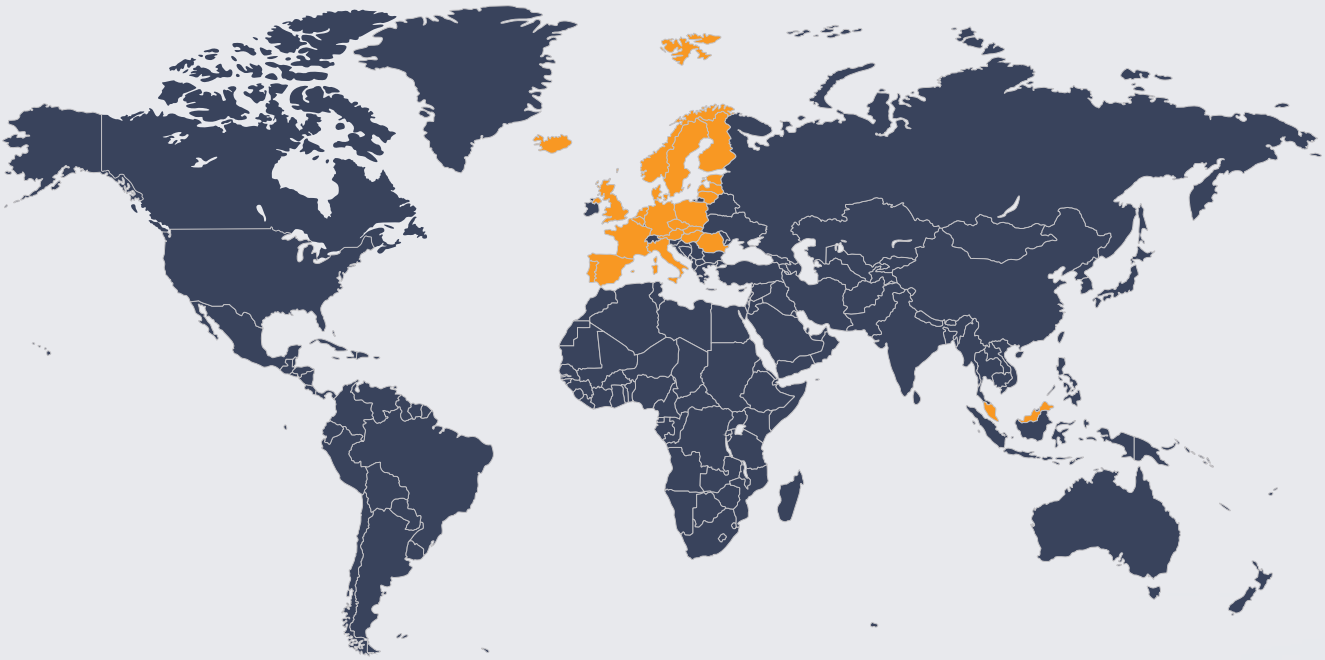
One of 3 Step IT's clients, Cargotec[11], has been using this managed lease approach for some 12 years to regularly refresh its PC equipment. This allows Cargotec to manage costs, stay at the leading edge of technology, and realise its environmental goals.

Technology users that purchased their equipment can also obtain value from the remarketing service. For these parties 3 Step IT offers a buy-back program that securely handles the challenge of IEEE compliant e-waste disposal. It realises value for the bought-back or traded-in equipment, processing it sustainably with returned end of lease equipment.

**This is unusual behaviour for a lessor. Many plan on profitable lease extension revenue, sometimes relying on lessees failing to understand the costs of some contract clauses such as end of lease notice periods, end of lease payments and long default extensions. The revenue they plan on receiving is often used to recover profit after a low primary term lease rate has been offered.*

FIGURE 3: RESALE DESTINATIONS FOR RECONDITIONED DEVICES

The map shows the destination for over 95% of remarketed devices. Sale of refurbished PCs is directed to local markets where there are e-waste disposal programs: Poland is the largest destination country.



In 2016, 3 Step IT refurbished 360,000 devices in five ISO certified centres. Equipment is data erased, cleaned and tested before reselling. 98% of equipment was resold for further use, with the remaining 2% recycled.

Equipment is resold to countries with effective e-waste governance programs, so there is a good chance it will eventually be recycled in an environmentally friendly manner when it reaches the end of its productive life. The map shows the countries taking over 95% of resold devices, with Poland being the largest single destination.

Source: 3 Step IT Annual report, March 2017

The business logic that sought to help clients manage PC hardware with a regular refresh aligned 3 Step IT with part of the circular economy. The company's way of operating delivered value for both parties due to the economics of the refresh, re-use and re-distribute Product Life Extension cycle of the circular economy. Asset management and asset resale services are built into a 'service-plus' lease offer. Figure 4 shows how the elements fit together.

FIGURE 4: THE MAIN FEATURES OF THE 3 STEP IT SERVICE

The service works in three device life cycle stages: initial funding for the purchase; an asset management service to help track and manage devices in use; and end of life data destruction, followed by refurbishing and resale.

Together, these enable a regular planned technology refresh which helps to reduce TCO, raise IT service levels. At the same time, this makes IT more sustainable, because replaced devices go on to enjoy a second productive life, rather than being recycled.

THE NEXT ITERATION

IT continually advances to improve performance and reduce prices. This progress has been accompanied by more complex software, heightened privacy and security concerns, and an ever greater dependence on the personal productivity devices we use. While a regular hardware refresh helps to reduce TCO, it's an incomplete solution. A broader approach offers ways to optimise more of the personal device ecosystem.

The world has hundreds of millions of PCs, billions of smartphones, and it will have tens of billions of Internet of Things devices. The proliferation of smartphones, together with their cost (which is similar to that of a laptop) means they too have become a significant investment.

Their popularity initially drove Bring-Your-Own-Device (BYOD) policies, which were accompanied by novel security challenges. As a result, BYOD is morphing into Choose-Your-Own-Device (CYOD). This eliminates many of the security problems associated with personal device use at work, while restoring choice to the end user. The user is more likely to cherish a device they chose; so these devices are more likely to be re-usable when they are replaced.

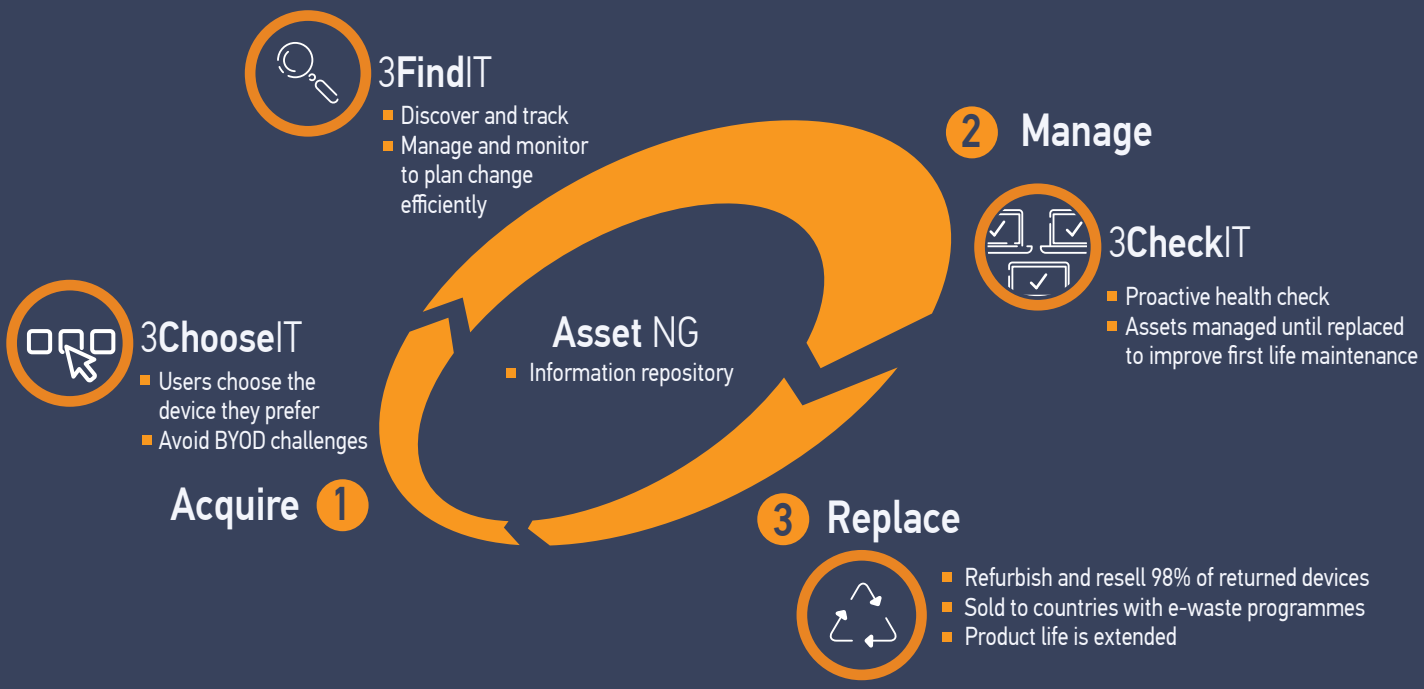
Whether devices are chosen by the user, or imposed upon the user, their proliferation brings its own IT management challenges. Scale requires automation if the huge inventory of 'things' is to work predictably and efficiently. The 3FindIT™ service complements 3 Step IT's online asset management service: it interrogates network devices to discover hardware and installed software, and reports changes in the user and device name . This gives the IT support team an up to date asset register with the detailed device information they need to plan changes. It also allows them to spot devices missing from the network so they can act to neutralise a security exposure.

In addition to tracking what's on a device and where it is, we also need to automate the way a continual device health check. This will help prevent and pre-empt performance problems, as well as provide users with productivity tools that work as intended. 3CheckIT™ does exactly that, providing desktop operational intelligence that continually monitors workstation and application reliability, restarts and restart speeds, and compliance with selected security criteria. Armed with this information, IT departments can move from repair and recovery, to prevention and planning. As the IT service level improves, so does the productivity of the end user.

**A separate smartphone app, 3AppIT, provides a similar service that combines real device data with lease data. With this information, the lessee knows which smartphones are active, inactive or missing; when to return devices; and how to adjust replacement plans.*

From a circular economy perspective, these services enhance the maintenance cycle before the reuse cycle begins. They enable customers to extract more value from the first use of the asset, effectively turning the original hardware asset management service into a more complete device life cycle service. Adding the maintenance cycle moves 3 Step IT towards a Device-as-a-Service offering: another of the replicable circular economy business models. Figure 5 shows how these capabilities fit together to offer complete IT lifecycle support options.

FIGURE 5: ENHANCING THE MAINTENANCE CYCLE



The original 3 Step IT service, with its asset management foundation, helped IT departments to plan and manage devices through their first life cycle, and offered sustainable Product Life Extension when replaced devices were refurbished and resold for further productive use.

New 3FindIT, 3CheckIT & 3ChooseIT services enable more efficient and effective maintenance and support during the first device life cycle.

REMARKETING IN THE CIRCULAR ECONOMY CONTEXT

Touted as the next economic revolution[2], the circular economy promises substantial savings. In practice, however, these saving have been hard to realise. With its re-use and re-sale processes, 3 Step IT captures some of the promised value and delivers it to customers in the form of:

- **A planned refresh program designed to optimise life cycle costs**
- **An approach to asset management that helps to preserve and protect installed devices**
- **Device monitoring services that help obtain best value during the first cycle**
- **A lease rental subsidised by end of lease residual value**
- **Buy-back offers for owned used equipment that depend on recycling and resale**

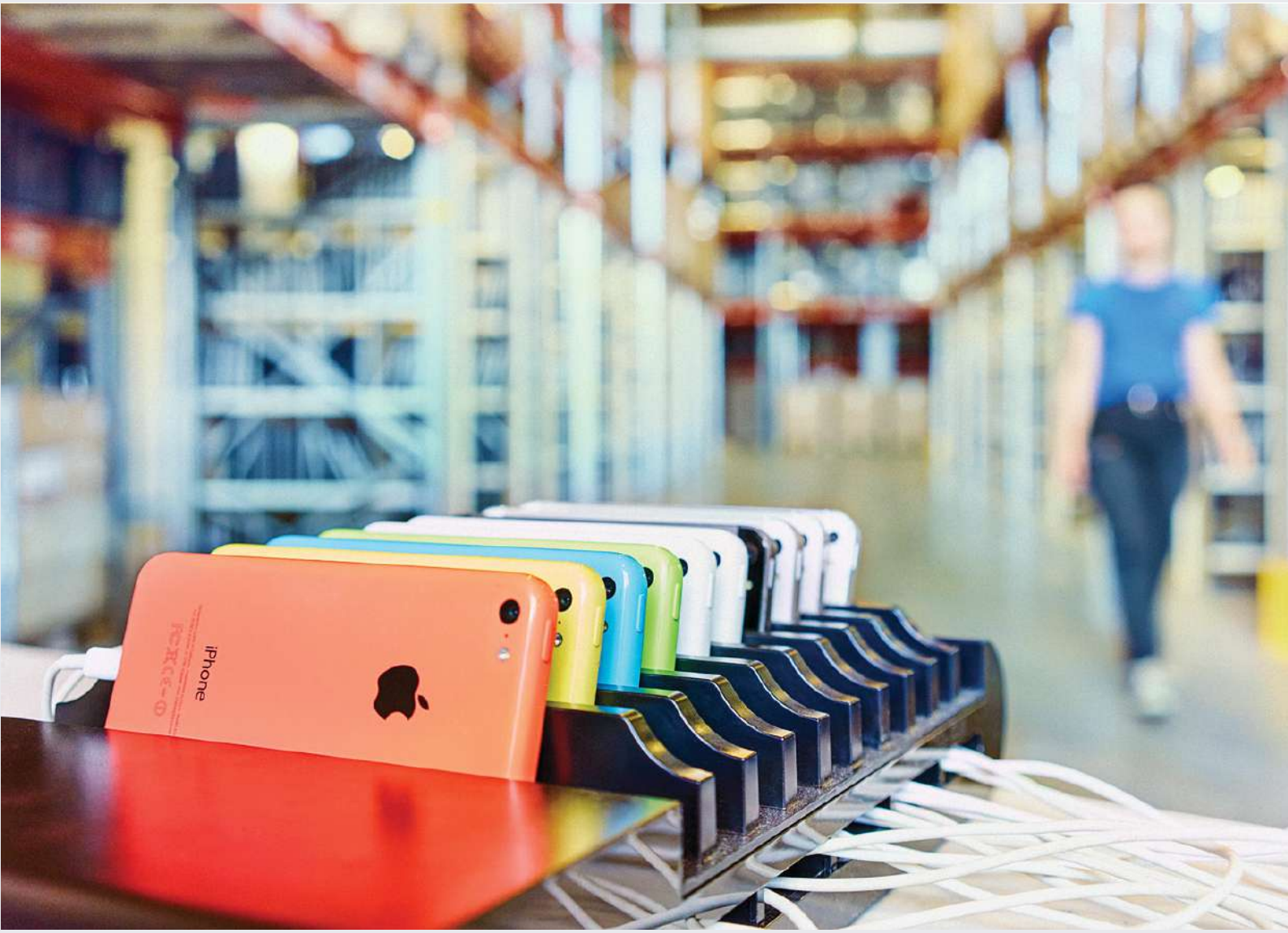
Device tracking and pre-emptive support enable more effective maintenance so users get a better service. A planned refresh reduces TCO. Product life extension helps to realise end of lease or buy-back value. Reusing devices helps to meet corporate sustainability goals.

3 Step IT originally saw technology leasing through a circular economy lens. This led to an affordable, sustainable, and manageable approach to budgeting for regular PC refreshes. The critical element in the financing model was to realise value through resale at the end of the lease.

Now the same vision leads the company towards helping its customers automate their use of an ever increasing number of devices. These services will help customers to manage and nurture their technology assets, with the promise of sustainable value recovery at the end of their planned life. In this way, sustainable economics delivers tangible value.

ABOUT 3 STEP IT

3 Step IT offers financing for technology purchases, asset management services, and remote monitoring & management of PC and laptop equipment. Asset management both complements equipment leasing and can be used independently. 3 Step IT is an expert participant in the circular economy: asset management helps protect equipment on lease, monitoring services help to improve maintenance and remarketing processes realise end of lease residual values. The company operates five plants – in Finland, Norway, Sweden, UK and Malaysia – to provide IT asset re-use services. In 2016, it refurbished and re-sold approximately 360,000 end-user devices.



REFERENCES

1. Towards the circular economy: Accelerating the scale-up across global supply chains, World Economic Forum, January 2014

2. Is this the biggest economic revolution in 250 years? World Economic Forum, September 2015.

3. European Commission Circular Economy Package: Questions & Answers, December 2015

4. The circular economy advantage, Waste to Wealth, Accenture, 2017

5. Remaking the industrial economy, McKinsey, February 2014

6. Case studies and much more at: www.ellenmacarthurfoundation.org/case_studies

7. Circular Public Procurement in the Nordic Countries, Nordic Council of Ministers, 2017

8. Defining Gartner Total Cost of Ownership, Gartner, 2005; reviews the TCO approach and its origins.

9. PC Leasing and Financing: Strategic Operational and Financial Factors to Consider, IDC #238064, Dec 2012

10. Recommended Life Spans for Mobile, PC and Other Endpoint-Computing Devices, Gartner, G00281950 2016

11. Cargotec case study video, 2016 https://youtu.be/vJAIg5EXX_g
See other case study videos at https://www.3stepit.com/why-3-step-it

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