re-universe
Digital pioneers

How digital technology is powering pioneering reuse and recycling initiatives

The massive environmental impact caused by our throw-away culture poses a grave threat to the health of our planet. With the finite and valuable resources we have at our disposal, it is essential that we shift our mindset and take decisive action.

Innovation will play a pivotal role in transitioning away from the single-use model and facilitating the shift towards circularity, thereby regenerating nature and creating an economy that benefits both people and the planet.

Significant changes in behaviour are necessary if nations are to fulfil their commitments in saving the planet. Governments worldwide are introducing legislation to reduce waste with notable initiatives such as the European Green Deal, WEEE directive, Zero Waste Cities, and EU Green Deal. Additionally, Extended Producer Responsibility (EPR) and Deposit Return Schemes (DRS) are aiming to accelerate the transition in the UK.

By combining innovative solutions aimed at driving changes in behaviour with strong governmental support, we can pave the way towards a sustainable future. A future where waste is minimised, resources are utilised efficiently, and our planet is safeguarded for generations to come.

Digital backbone of circularity

That is why we have been working with our partners at re-universe, a pioneering green-tech company that accelerates change through disruptive technology.

The re-universe returns platform makes it easy for people to return items for reuse or recycling through a frictionless user journey that also provides transparency, data and insights for industry. With re-universe's expertise and forward-thinking approach, they have the ability to make a significant and lasting impact in the drive for sustainability.
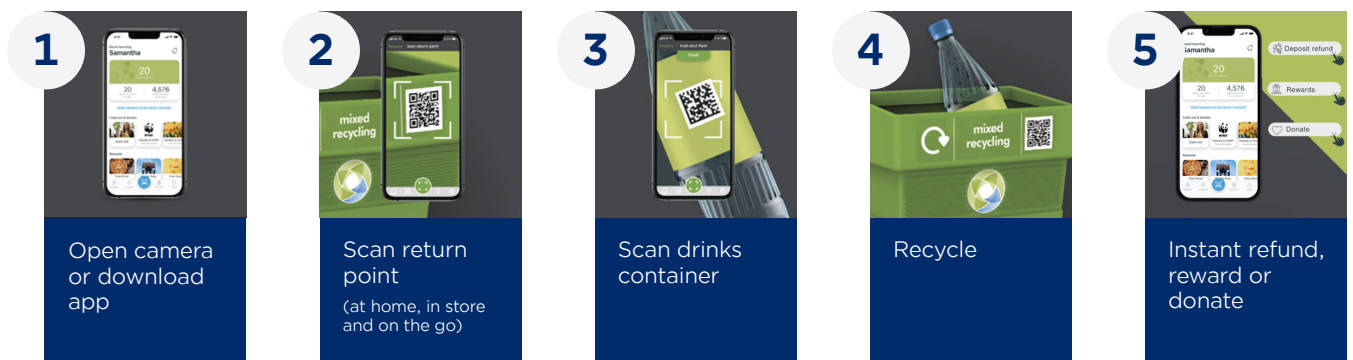
Their projects include world first digital DRS pilots in Whitehead and Dublin, both of which saw impressive community engagement and return rates of 94%.

What is DRS and digital DRS

Deposit return schemes (DRS) are designed to encourage recycling by charging consumers a deposit on drinks containers which is refunded when items are returned to a collection point.

While a "traditional" deposit return scheme involves people manually returning containers to reverse vending machines (RVMs) or handing them back to retailers, online delivery drivers or takeaway outlets, a digital deposit return scheme or, DDRS, allows them to return drinks containers via a network of 'on the go' return points or their home kerbside boxes. This can be done by including a QR code on returnable containers that consumers simply scan to register their return and redeem the deposit via their smartphone.

Digital DRS – how it works

1 Open camera or download app

2 Scan return point
(at home, in store and on the go)

3 Scan drinks container

4 Recycle

5 Instant refund, reward or donate

We love Whitehead.
Recycling helps
keep litter out of
our town.
Pupil - Whitehead Primary School

There's a new app in town.

Reward 4 Waste | Together, let's revolutionise recycling.
Download the app to take part.
For more information visit www.reward4waste.com

Bryson Recycling | Mid & East Antrim Borough Council

BRITVIC • PEPSICO • encirc

Dublin digital DRS pilot

Deposit/refund

This pilot was the World's First Public Deposit / Return Scheme. The trial was run in collaboration with IWMA (Irish Waste Management Association). The pilot ran for 4 weeks in August 2021.

Mechanics

200 participants.
Participating items were uniquely coded.
Home recycling boxes uniquely coded.

Due to the frequency of consumption, milk was used as the participating item. Deposit of 25c on participating items which was returned upon recycle.

Results

The pilot demonstrated a **94% return rate**.

Whitehead digital DRS pilot reward based

Background

The Whitehead Pilot in Northern Ireland was the World's First Public Digital DRS Trial.

The trial was run in collaboration with Bryson Recycling and MEA Borough Council, with proud support from Britvic Ireland, PepsiCo and Encirc.

Queen's University Belfast undertook an independent assessment of the trial, using qual and quant methods to get insight on consumer attitudes and engagement.

Mechanics

3000 Households | 4 months
Self contained town. No levy - only reward.

Participating items: plastic drinks bottles including soft drinks and HDPE milk, drinks cans and glass bottles, which were uniquely coded and purchased from the local SPAR retailer.

Home kerbside recycling boxes were also uniquely coded to 'capture' the recycle (weekly collections) and there were 4 x out of home (OOH) bins in litter hotspots.

To take part, residents downloaded the app, purchased items from store, scanned the unique code on their home recycling box or out of home bins, and scanned the unique code on their empty drinks containers to register a recycle and redeem instant reward points.

Results

High community engagement
Seamless tech integration

"The roll-out of a UK DRS should consider a digital DRS approach instead of, or at least in addition to, a conventional DRS. Digital DRS allows consumers the convenience of recycling at home, which is the preferred option"
Queens University Belfast – School of Psychology 2021

Working with household brands

The re-universe team soon recognised a need for its technology across other categories. Their mantra is "any item – any return point" which they a putting into action with a variety of recycling and reuse projects.

Over the last 12 months the company has worked and collaborated with household names such as evian, Wimbledon, Sainsbury's and Blenheim Palace, enabling digital reuse and recycling initiatives that engage the user and deliver tangible benefits.
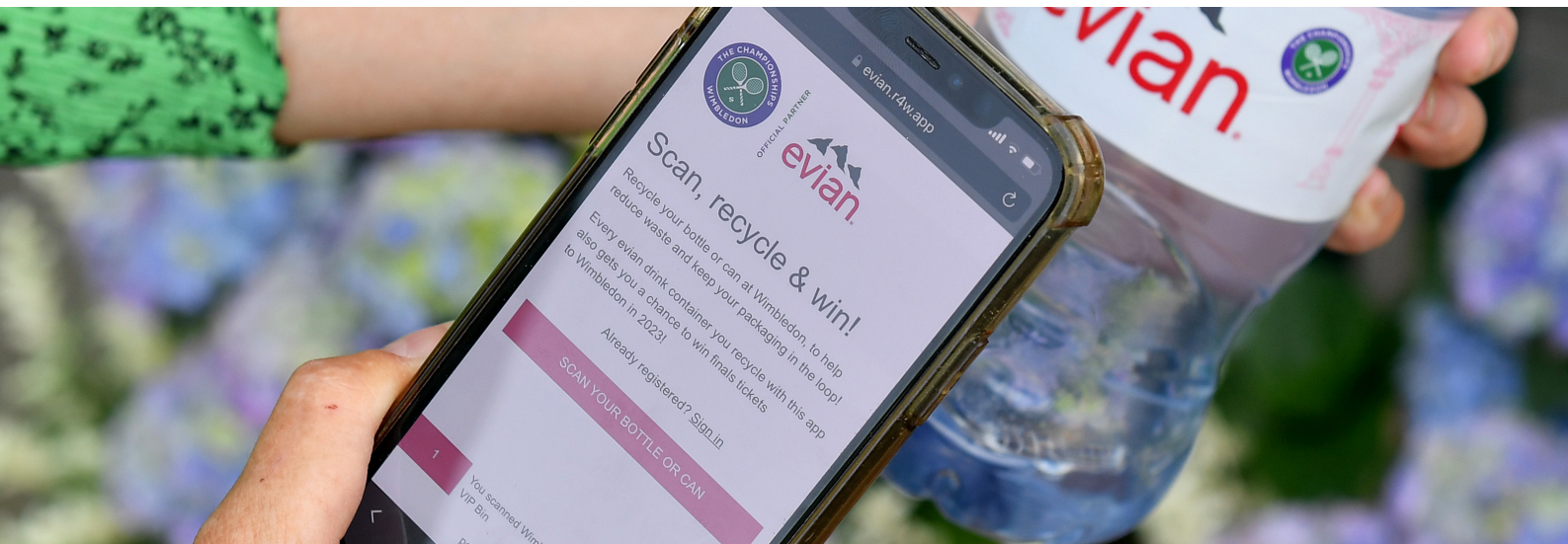
Scan Recycle Win at Wimbledon with evian and re-universe

In June 2022, re-universe partnered with evian at Wimbledon to help increase recycling among athletes and attendees.

Together, they launched the scan, recycle, win scheme which incentivised recycling by entering participants into a prize draw for two pairs of tickets to the Wimbledon 2023 Women's Finals – one of the most iconic summer events in the UK.

Visitors were encouraged to return their bottles by scanning the code on evian drinks containers before returning them to any of the designated return points found across the Grounds and Wimbledon town centre.

Each return point featured a unique QR code which users had to scan before returning their bottle to be recycled. This automatically opened a web app on the user's smartphone which showed the return had been registered by an 'IN' tick, similar to a successful line challenge, followed by an animated message telling the user 'you're in the draw.'

Following the success of Wimbledon, 'Return4Reward' was launched at Sainsbury's during Recycle Week.

This innovative user-experience allowed evian to explore how engaging digital platforms can drive recycling amongst their consumers, supporting the their long term commitment to becoming a 100% circular brand by 2025.
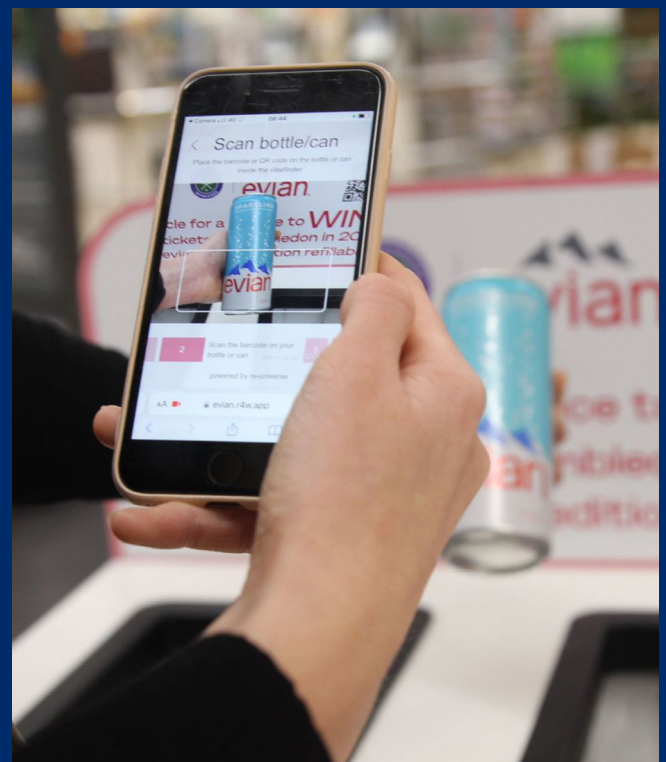
Enabling effective reuse systems

All research points towards reusable systems needing to be as easy to use as possible for widespread adoption. In order to keep reusable containers within the system, a deposit is often attached to the container at point of purchase and refunded soon after point of return. The more cumbersome the process, the less appealing the system is.

re-universe technology platform enables effective reuse systems through unique coding and, where appropriate, RFID enablement. Citizens use the front facing web-app that opens on scan of item or return point code. One of the many benefits of the re-universe technology is that it delivers a frictionless and secure refund, and resetting for reuse. The platform makes it easy for people to take part and easy for organisations to integrate into their business without the need to refund people at till.

Returnable coffee cups

According to EarthDay.org, the world uses 500 billion plastic cups every year with 2.5 billion consumed in the UK alone. A 2017 report from the UK's House of Commons Environmental Audit Committee found that only one in 400 cups end up being recycled, with the vast majority going straight to landfill. Even cups promoted as compostable cannot be recycled conventionally.

In their mission to pioneer new innovations in reducing waste and tackling the millions of single-use coffee cups that end up in landfill every year, re-universe launched the digital return cup system.

Blenheim Palace

In 2022, re-universe launched a ground-breaking digital reuse pilot at Blenheim Palace to assess how their solution could eradicate single use, drive impact and encourage engagement through a returnable cup system. The scheme is now due to roll out across the visitor attraction this summer 2023.

Blenheim Palace is a UNESCO World Heritage Site with more than 300 years of history, built by Queen Anne between 1705 and 1722 as a reward for John Churchill, 1st Duke of Marlborough, in recognition of his military triumphs in the War of the Spanish Succession. Named after Churchill's famous victory at the Battle of Blenheim in 1704, it remains one of England's largest houses and welcomes over 600,000 visitors each year. Visitors travel from all over the world to marvel at its baroque architecture, explore its colourful history and wander through 150 acres of beautiful gardens designed by Capability Brown.

Blenheim Palace is fully committed to building a greener future and has pledged to become carbon neutral on scopes 1-3 of the Greenhouse Gas (GHG) protocol across all operations by 2027. As part of their strategy for achieving this goal, Blenheim Palace aims to keep 99% of their waste out of landfill.

With over 500,000 hot drinks sold each year, 400,000 of which are served in take-away disposable cups, tackling the environmental impact of single use cups represented a key challenge in meeting Blenheim Palace's sustainability and circularity ambitions.

The digital returnable cup system at Blenheim Palace

The re-universe Digital Returnable Cup System was launched at Blenheim Palace at the end of September 2022, running for 4 months over the busy Christmas period. Visitors to the Walled Garden Pizzeria and The Stables Café were given their hot drink in a returnable cup.

re-universe collaborated with Circular&Co., creators of the Circular Returnable Cup. Tested for at least 1,000 uses, the cups are 'real world' recyclable at end of life. Using the cup less than three times means it is carbon neutral vs single use. The digital Return Points from Unisan were located around the pilot site for easy return. Unique GS1 QR codes were placed on each cup and return point, with re-universe connecting the cup to the user, engaging and incentivising them to return their cup for reuse.

There was no deposit, visitors were rewarded for returning cups with a free prize draw.

Carefully designed to present as few barriers as possible, the user journey was simple, consisting of just three intuitive steps using consumer-facing technology that most visitors were already familiar with.

Learnings gained

The learnings gained from the pilot have informed a wider roll out across the visitor attraction this summer.

1) Deposit. The most striking learnings were the need for a deposit refund model or DRS. Despite the rewards offered, without a deposit, users were not incentivised enough to return the cup, and cup losses were seen.

2) Branded vs. non branded cup. For the pilot, the returnable cup was beautifully Blenhem branded and therefore more collectable and taken home as souvenirs. For full roll-out the new cup will be unbranded with a bright lid.

3) Marketing and comms. Strong, impactful comms that educate and engage users are required to drive long term behavioural change.

A blueprint for the future of returnable containers

Based on the learnings of the pilot, re-universe continues to prioritise ease-of-use for both the consumer and customer. Frictionless user journey with item-to-item transparency and data through QR and RFID coding.

This, along with the implementation of the GS1 Digital Link standard to enable unique identification and full traceability, will support the delivery of efficient, cost effective, and future proofed digital deposit return schemes that could capture any item at any return point.

Rolling out across the entire visitor attraction

Following the learnings from the returnable cups pilot, Blenheim Palace is rolling the scheme out across the entire visitor attraction in the summer of 2023.

Pioneering digital DRS

The roll-out will encompass a pioneering digital deposit return scheme, whereby visitors will pay a deposit at point of purchase which will be refunded digitally when they return the cup for reuse, without the need to register before purchasing a cup of coffee. This is important as it reduces friction and appeals to a mass audience.

Each cup will be uniquely identified by GS1 powered QR codes and RFID. This will not only provide a way to securely validate each return and prevent fraud, but will also offer greater insight by tracking each cup throughout its lifecycle. Over time, return points can become more intelligent and richer data can be gathered as a result.

Returnable cups by Circular&Co

The cups for the wider roll out will have a strong reuse message, minimal branding and a bold orange lid.

This ground-breaking project has helped pave the way for the future of reuse. As well as transforming the way Blenheim Palace and their visitors engage with reuse, it has provided re-universe with a proven blueprint for future initiatives.
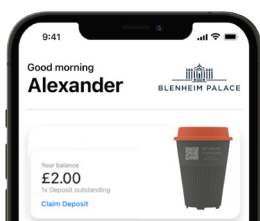
> **We believe climate change is the single biggest threat to Blenheim Palace's long-term survival and we're committed to doing all we can to reduce and mitigate its impacts and help safeguard this World Heritage Site and its resources for future generations.**
>
> **"We serve over 400,000 hot drinks on site each year, so this new scheme has the potential to make a big impact. As well as incentivising people to return their used cups, the initiative also helps us to analyse behaviour and better manage cup collection."**
>
> – David Green, head of innovation at Blenheim Palace

Digital return system for cups
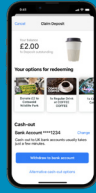
How it works

Pay deposit to barista

When you order your coffee and enjoy drink as usual

Scan | return or Scan | scan | return

automatically opens re-universe platform

Return cup get deposit and/or

get a virtual 'cup' in the shape of a QR code to reuse again and again, donate to charity, get vouchers and rewards

See your impact see communities imapct

Number of cups returned, refund status, carbon saved

Delve deeper find out more

Client sustainability values are shared here

Scan | scan | return

With unique QR codes on cups and return points, consumers scan cups and return points (or over the counter) to return

Scan | return

With unique QR codes coupled with RFID / NFC there is no need to scan the return point.

Returns can be validated as soon as the cups are dropped in the Return Point and best suits DRS based initiatives and fast moving areas such as events and transport hubs

RFID technology by Avery Dennison, brings the benefits of traceability, stock control and ease of consumer use.

Person, product, place

None of this would be possible without the unique identification of every participating person, product and place. In order to process each return, reward each consumer, and accurately trace each cup throughout its lifecycle, re-universe needed to generate trusted data on who was participating, what they were returning, where they were returning it, and when.

This was done by uniquely coding each cup with serialised QR codes powered by the GS1 Digital Link standard to ensure end-to-end transparency throughout the supply chain. Using DLT Blockchain and AI to provide anonymity, security, and behavioural modelling, this technology creates transaction records that are immutable, and enables transparent ledgers where updates are nearly instantaneous. In fact, for any digital deposit return scheme to work, serialised, unique-every-time codes on-pack will be essential for enabling full traceability and preventing fraud.

These QR codes can provide businesses with a much more accurate picture of their supply chains and product lifecycles.

They allow both brands and retailers to understand exactly how much packaging they put into the ecosystem, how it is disposed of, where it ends up and how much is reused or recycled and further insights down to granular individual level on what was returned, where and when – information that is currently largely unavailable for brand owners and organisations.
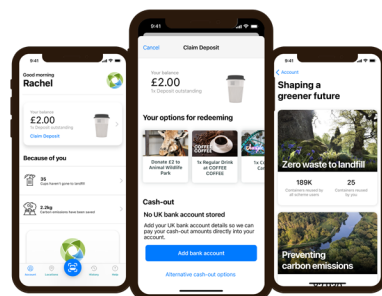
> **"**
>
> **The investment re-universe have made is very exciting, they are both creative and push boundaries with very innovative ideas. The use of our standards will undoubtedly future proof their customers and we are delighted to be working with them to reduce our collective dependency on single use plastic packaging."**
>
> – Jason Hale, head of product, GS1 UK

About GS1 UK

Whether online, in store or in a hospital, the common language of GS1 global standards is helping our community of more than 58,000 organisations across Britain to uniquely identify, describe and track anything, creating greater trust in data for everyone.

From product barcodes to patient wristbands, GS1 standards have been transforming the way we work and live for nearly 50 years.

GS1 UK is one of 116 neutral and independent GS1 organisations operating worldwide.

**GS1 UK
Hasilwood House
60 Bishopsgate
London
EC2N 4AW**

T: 020 7092 3501
E: support@gs1uk.org

www.gs1uk.org

About re-universe

We are passionate about the environment and like tackling big problems. That's why we created re-universe.

Using digital technology to engage and spark citizen behavioural change, re-universe offers a transparent and incorruptible method of tracking individual items through the circular economy.

From digital DRS, digital recycling and digital reuse, get in touch to find out how we can support your circular projects.

**re-universe
The Eco Business Centre
Charlotte Ave
Elmsbrook
Oxfordshire
OX27 8BL**

E: info@re-universe.com

www.re-universe.com

www.linkedin.com/company/re-universe/